



Electronic Components High Quality **CAPACITORS**

CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS
ALUMINUM ELECTROLYTIC CAPACITORS WITH CONDUCTIVE POLYMER SOLID ELECTROLYTE
ALUMINUM ELECTROLYTIC CAPACITORS
ELECTRIC DOUBLE LAYER CAPACITORS "DYNACAP®"
PLASTIC FILM CAPACITORS

ELNA CO., LTD.

CAT.No.2017/2018E

Certifications of Quality Management System (as of Dec. 2016)

Factory	Applicable Standard	Certification Number	Item	Applicable Organization
ELNA TOHOKU CO., LTD. AOMORI Factory (Japan)	ISO 9001	JP05/060268	Aluminum electrolytic capacitors Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte Electric double layer capacitors	SGS
	ISO/TS 16949	IATF0178185 SGS JP14/062589	Aluminum electrolytic capacitors Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte	SGS
TANIN ELNA CO., LTD. (Thailand)	ISO/TS 16949	IATF0216504 44 111 060686	Aluminum electrolytic capacitors Electric double layer capacitors	TÜV
	ISO 9001	44 100 990506	Aluminum electrolytic capacitors Electric double layer capacitors	TÜV
ELNA-SONIC SDN. BHD. (Malaysia)	ISO/TS 16949	IATF0246007 SGS MY04/0675	Aluminum electrolytic capacitors	SGS
	ISO 9001	SG02/20012	Aluminum electrolytic capacitors	SGS

Certifications of Environmental Management System (as of Dec. 2016)

Factory	Applicable Standard	Certification Number	Applicable Organization
ELNA TOHOKU CO., LTD. AOMORI Factory (Japan)	ISO 14001	JQA-EM2918	Japan Quality Assurance (JQA)
TANIN ELNA CO., LTD. (Thailand)	ISO 14001	04104 990506	TÜV
ELNA-SONIC SDN. BHD. (Malaysia)	ISO 14001	MY03/60718	SGS

Please read the following warning and cautions !!

The Electronic components shown in this catalog are designed and produced mainly for such general purpose electronic equipment as audio and visual equipment, home appliances, office equipment and information processing and communication equipment.

If you wish to use these components in medical equipment, transportation equipment, (automotive, train, ships, etc), aircraft, spacecraft, security systems or other equipment that requires high security application, you are required to confirm application through your own testing and own judgment.

Regardless of a component intended use, if high safety application is required, it is recommended that you shall establish a protective or redundant circuit and shall conduct own evaluation test.

It is highly recommended that you shall follow our "Cautions for using"

Also it is recommended that you shall obtain technical specifications from Elna Co., Ltd to ensure that the component is suitable for your intended use.

It is not our responsibility for any kind of problems without technical specifications.

Specifications and dimensions shown in this catalog are subject to change without prior notice.

Be sure to read "Cautions for Using Electrolytic Capacitors", before using those products.

1

Aluminum Electrolytic Capacitors

5

Polymer hybrid type aluminum Electrolytic Capacitors

ALUMINUM

Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte

POLYMER HYBRID

23

Chip Type Aluminum Electrolytic Capacitors

CHIP ALUMINUM

57

Miniature Type Aluminum Electrolytic Capacitors

MINIATURE ALUMINUM

93

Large Capacitance Aluminum Electrolytic Capacitors

LARGE ALUMINUM

151

Aluminum Electrolytic Capacitors for Audio

FOR AUDIO ALUMINUM

179

2

Electric Double Layer Capacitors “DYNACAP”, “POWERCAP”

203

3

Plastic film Capacitors

245

■ “GREEN CAP”

“GREEN CAP”, ELNA considers the global environment and it is a product that doesn't use the hazardous substance and “Lead Free” in the plating of terminals and outer Sleeves.
The product in this catalog is 'GREEN CAP'.

The hazardous substance is

Pb : lead, Cr⁶⁺ : hexavalent chromium, Hg : mercury and Cd : cadmium,
PBB : the polybrominated biphenyl, PBDE : the polybromo-diphenyl ether,

■ Regarding to various environmental Regulations

- It suits “EU RoHS Directives”.
- According to the content of RIP3.8TGD(Technical Guidance Document which is published on 26 May 2008), our electronic components are “articles without any intended release”.
Therefore they are not applicable for “Registration” for EU REACH Regulation Article 7 (1).
- ELNA develops the products without substance of very high concern(SVHC). DEHP(CASNo.117-81-7) was contained as some covering material.
- If you need “Halogen-Free” products, please consult with us.

Terminal area plating material and sleeve material

● Aluminum (Polymer hybrid,Conductive Polymer Solid Electrolyte) electrolytic capacitors

Category	Terminal area plating	Plating thickness	Sleeve
SMD (Chip type)	φ 3 to 6.3	Sn-Bi	12μm Sleeve less
	φ 8,10	Sn-Bi	12μm PET or sleeve less
	φ 12.5	Sn 100%	12μm PET or sleeve less
	φ 16 to 18	Sn 100%	12μm Sleeve less
	Supplementary terminal of RT* type	Sn 100%	12μm PET or sleeve less
	Supplementary terminal of RY* type	Sn 100%	12μm Sleeve less
Lead terminal	Sn 100%	12μm	PET or sleeve less
Snap-in	Sn 100%	12μm	PET
Screw terminal	—	—	PET

● Electric double layer capacitors

Category	Terminal area plating	Plating thickness	Sleeve
Coin cell	Single cell	Sn 100% or Sn+Cu	5μm Sleeve less
	Piled cell	Sn 100%	5μm PET
	Lead type	Sn 100%	5μm PET
Large capacitance	Lead terminal	Sn 100%	12μm PET
	Snap-in terminal	Sn 100%	12μm PET
	Screw terminal	—	PET

Note : Sn : Tin Bi : Bismuth Cu : Copper

Please inquire when hoping excluding the above-mentioned terminal plating and sleeve.

■ About the Sn whisker

1. Sn whisker-generating mechanism on the lead wire

On the surface of the lead wire, Sn and aluminum will get mixed instead of getting dissolved.

The surface condition is complex, aluminum will expand due to the heat and humid causing the oxidation and hydration. This reaction will cause the inner stress and influence the development of the whisker.

2. Generation control of the Sn whisker

In the past, Sn whisker was reduced by adding a lead(Pb). Aluminum electrolytic capacitor was also using the Sn-plate with Pb on the lead wire.

But due to environmental regulation such as the “ELV” and “RoHS”, Pb was strictly prohibited since 2000.

Lead wire not containing the Pb was used, which caused the Sn whisker problem to happen again.

Since Sn whisker is influenced by the mixture of aluminum, method of reducing the aluminum on the welding surface was to clean the lead terminal using the alkali.

However since the welding area of the large case size is larger compared to the small ones, whisker will generate even if it is cleaned by alkali. This whisker will scatter outside of the capacitor and potentially cause the short-circuit. Countermeasure of keeping the whisker inside the capacitor is being discussed.

3. Prevention of scattering of Sn whisker

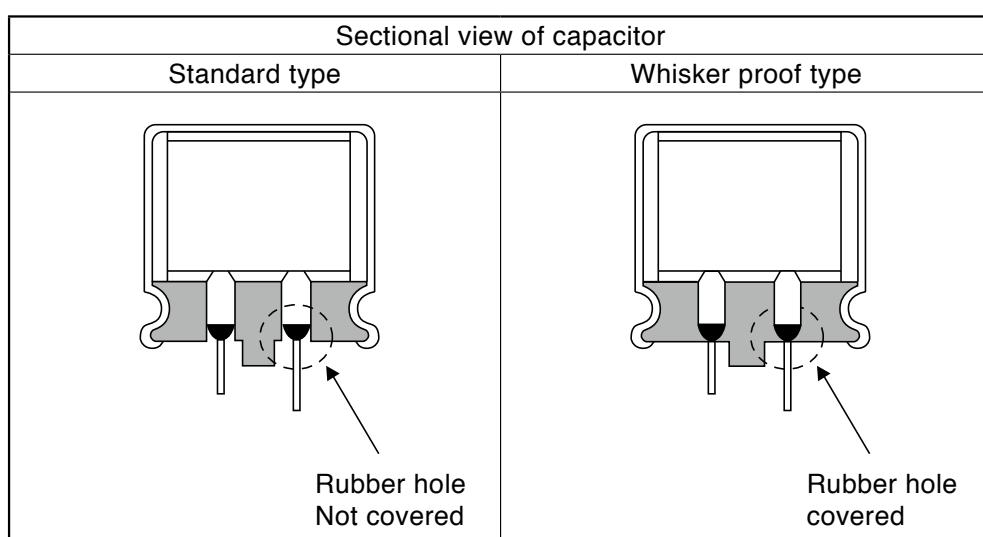
In the past Sn-plate with Pb was used and recently plate with Bi is being introduced to prevent the whisker from generating. However the whisker will still generate under the temperature and moisture condition.

Therefore, the current method of preventing the whisker will not completely prevent the whisker from generating.

In our company, we are developing and supplying products with design of preventing the whisker from scattering outside the capacitor.

This design corresponds to series such as the RJD and RJE for 105°C use, RKD and RPK for 125°C use.

If it is required for the other series, please feel free to make an inquiry.



■ Ordering Information

Please order by the multiples of the minimum order quantity (MOQ).

Aluminum Electrolytic Capacitors

Classification		Case Size φD×L (mm)	Quantity (PCS.)					
			Long lead		Forming lead		Taping (flat box)	Taping (reel)
Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte Conductive Polymer Hybrid Aluminum Electrolytic Capacitors	Chip Type	φ5 to φ6.3×4.0 to 7.7	—	—	—	—	1,000	5,000
		φ8×6.7 to 7.7	—	—	—	—	1,000	5,000
		φ8×8.7 to 10.5, φ10×10, 10.5	—	—	—	—	500	2,000
		φ10×12.5	—	—	—	—	400	1,600
	04 Type	φ6.3×8	200	2,000	200	2,000	2,000	—
		φ8×8	200	2,000	200	2,000	1,000	—
		φ10×12.5	200	1,000	200	1,000	500	—
		φ4	—	—	—	—	2,000	10,000
Chip Type	04 Type	φ5 to φ6.3×4.5 to 7.7, φ8×6.5	—	—	—	—	—	1,000
		φ8 to φ10×10 to 10.5	—	—	—	—	—	500
		φ12.5×13.5	—	—	—	—	200	1,000
		φ16×16.5, φ18×16.5	—	—	—	—	125	375
		φ16×21.5, φ18×21.5	—	—	—	—	75	225
		9.5×19 to 24	—	—	—	—	400	2,000
		φ4 to φ5×5, φ4×7	200	2,000	200	5,000	2,000	—
		φ5×7	200	2,000	200	4,000	2,000	—
04 Type	04 Type	φ6.3×5, φ6.3×7	200	2,000	200	2,000	2,000	—
		φ8×5 to 7	200	2,000	200	2,000	1,000	—
		φ5 to φ6.3×11, 11.5	200	2,000	200	2,000	2,000	—
		φ8×11.5, 12	200	2,000	200	2,000	1,000	—
		φ8×15	200	1,000	200	1,000	1,000	—
		φ8×20	200	1,000	200	1,000	1,000	—
		φ10×12.5	200	1,000	200	1,000	500	—
		φ10×16	200	1,000	200	1,000	500	—
		φ10×20	200	1,000	100 (200)	500 (1000)	500	—
		φ10×25 to 30	200	1,000	100	500	500	—
		φ12.5×15 to 20	100	1,000	100 (200)	1000 (200)	500	—
		φ12.5×25	100	500 (100)	100 (200)	1000 (200)	500	—
		φ12.5×30	100	500 (100)	200	2000 (200)	500	—
		φ12.5×35	100	500	200	2000 (200)	500	—
		φ12.5×40	100	500 (100)	200 (100)	2000 (100)	—	—
		φ16×16 to 25	100	500	100	1000 (100)	—	—
		φ16×31.5 to 35.5	50	200 (400)	100	1000 (100)	—	—
		φ16×40	50 (100)	100	100	800 (100)	—	—
		φ18×16	50	100	100	1,000	—	—
		φ18×20 to 25	50 (100)	100 (500)	100	1000 (100)	—	—
		φ18×31.5 to 35.5	50 (100)	100	100	1000 (100)	—	—
		φ18×40 to 50	50 (100)	250 (100)	100	800 (100)	—	—
		φ20×25 to 35.5	50	100	100	600	—	—
		φ20 to 22×40	50	200	100	400	—	—
LA*, LT*		φ22 to φ25	—	100				
		φ30 to φ35	—	50				
331Type or Others		φ36 to φ101	—	*				

(Note) In the case of RH* series, please see the inside of each parenthesis.

* Please inquire.

Electric Double Layer Capacitors

Series		Case size φD×L(mm)	Quantity (PCS.)					
			Long lead		Standard lead		Taping (f lat box)	Taping (reel)
(Q'ty/Bag)	MOQ/Box	(Q'ty/Bag)	MOQ/Box	MOQ/Box	MOQ/Box	MOQ/Reel	(Q'ty/Bag)	
DX,DXJ,DXN,DXS(H or V Terminal)	φ11.5	—	—	200	2,000	—	—	—
DX,DXJ,DXN (V Terminal)	φ19	—	—	100	500	—	—	—
DH,DHL,DHC,DBJ	φ13.5	—	—	200	1,000	—	—	—
DK,DB,DBN,DBS	φ21.5	—	—	100	500	—	—	—
DC,DCK	φ6.8	—	—	200	6,000	—	—	—
DS,DSK	φ4.8	—	—	—	—	—	2,000	10,000
DS,DSK	φ6.8	—	—	—	—	—	1,500 to 2,000*	6,000 to 8,000*
DVN,DVS	φ12.5×8.5	—	—	—	—	—	300	1,500
DVL	φ12.5×10.5	—	—	—	—	—	250	1,250
Series		Case size φD×L(mm)	Quantity (PCS.)					
			Long lead		Forming lead		Taping (f lat box)	Taping (reel)
(Q'ty/Bag)	MOQ/Box	(Q'ty/Bag)	MOQ/Box	MOQ/Box	MOQ/Box	MOQ/Reel	(Q'ty/Bag)	
DU DY DZ DZN DZH	φ6.3	200	2,000	200	2,000	2,000	—	—
	φ8×12	200	2,000	200	2,000	1,000	—	—
	φ8×15 to 22	200	1,000	200	1,000	1,000	—	—
	φ10×20	200	1,000	100	500	500	—	—
	φ10×30 to 35	200	1,000	100	500	500	—	—
	φ12.5×25	100	500	100	1,000	500	—	—
	φ12.5×35	100	500	200	2,000	—	—	—
	φ16×20 to 25	100	500	100	1,000	—	—	—
	φ16×31.5 to 35.5	50	200	100	1,000	—	—	—
	φ16×40	50	100	100	800	—	—	—
DW	φ18×35	50	100	100	1,000	—	—	—
	φ18×40	50	250	100	800	—	—	—
	φ25	—	50 or 100*	—	—	—	—	—
	φ35	—	50 or 100*	—	—	—	—	—
	φ61	—	*	—	—	—	—	—
DZP		8.5×17×16	—	*				
		8.5×17×24	—	*				
		10.5×21×29	—	*				
		10.5×21×39	—	*				

* Please inquire.



Aluminum Electrolytic Capacitors

List of Contents

1. Type List for Aluminum Electrolytic Capacitors	6
2. Systematized Classification of Aluminum Electrolytic Capacitors	9
3. Product Symbol System for Aluminum Electrolytic Capacitors	12
4. Recommended Land Pattern and Size, for Chip Type	13
5. Recommended Soldering Conditions	14
6. Recommended Taping for Chip Type	16
7. Lead Forming and Taping for Lead Type	17
8. Cautions for Using Conductive Polymer Hybrid, Conductive Polymer Solid Electrolyte Aluminum Electrolytic Capacitors	24
9. Specifications for Conductive Polymer Hybrid Type Aluminum Electrolytic Capacitors by Series	28
10. Specifications for Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte by Series	34
11. Cautions for Using Aluminum Electrolytic Capacitors	52
12. Specifications for Chip Type Aluminum Electrolytic Capacitors by Series	57
13. Specifications for Miniature Aluminum Electrolytic Capacitors by Series	93
14. Specifications for Large Aluminum Electrolytic Capacitors by Series	151
15. Specifications for Aluminum Electrolytic Capacitors for Audio by series	179
16. Technical Notes of Aluminum Electrolytic Capacitors	192
17. Technical Data of Aluminum Electrolytic Capacitors	197



★ : New series
☆ : Upgrade

■ Type List for Aluminum Electrolytic Capacitors

● Aluminum (Conductive Polymer, Hybrid) Electrolytic Capacitors

Category	Series	Page	Application	Category Temp. Range (°C)		Life time Range (hours)	Rated Voltage Range (V.DC)		Rated Capacitance Range (μF)		Size range φD x L (mm)		Outside color	JIS Configurati	Note
				Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.			
Hybrid	HV	28	Low ESR Hybrid Polymer Chip	-55	+105	10000	25	100	10	560	6.3×5.8	10×12.5	Silver	32	☆
	HT	28	Low ESR Hybrid Polymer Chip, Vibration resistance	-55	+105	10000	25	100	15	560	8×10	10×12.5	Silver	32	☆
	HVK	30	Low ESR, 125°C, Hybrid Polymer Chip	-55	+125	4000	25	100	10	560	6.3×5.8	10×12.5	Silver	32	☆
	HTK	30	Low ESR, 125°C, Hybrid Polymer Chip, Vibration resistance	-55	+125	4000	25	100	15	560	8×10	10×12.5	Silver	32	☆
	HVX	32	Low ESR, 135°C, Hybrid Polymer Chip	-55	+135	4000	16	35	150	470	8×10	10×10	Silver	32	★
	HTX	32	Low ESR, 135°C, Hybrid Polymer Chip, Vibration resistance	-55	+135	4000	16	35	150	470	8×10	10×10	Silver	32	★
Polymer	PVG	34	Ultra Low ESR Conductive Polymer Chip	-55	+105	2000	2.5	6.3	120	1200	5×5.7	10×7.7	Silver	32	
	PVX	36	Ultra Low ESR Conductive Polymer Chip	-55	+105	2000	2.5	10	100	1200	5×5.7	10×7.7	Silver	32	
	PV3	38	Super Low ESR Conductive Polymer Chip, 4.0mmL	-55	+105	1000	2.5	6.3	150	220	5×4.0		Silver	32	
	PV2	40	Super Low ESR Conductive Polymer Chip, 4.5mmL	-55	+105	2000	2.5	25	15	390	5×4.5	6.3×4.5	Silver	32	
	PVM	42	Super Low ESR Conductive Polymer Chip	-55	+105	2000	2.5	35	10	1200	5×5.7	10×7.7	Silver	32	
	PVK	44	Super Low ESR, High Temp. Conductive Polymer Chip	-55	+125	1000	2.5	25	33	1000	6.3×5.7	10×7.7	Silver	32	
	PVS	46	Super Low ESR, High Voltage Conductive	-55	+105	2000	35	63	18	100	6.3×5.7	10×7.7	Silver	32	
	PRM	48	Super Low ESR Conductive Polymer, lead terminal type	-55	+105	2000	2.5	10	220	1500	6.3×8.0	10×12.5	Silver	04	

● Chip Type Aluminum Electrolytic Capacitors

Category	Series	Page	Application	Category Temp. Range (°C)		Life time Range (hours)	Rated Voltage Range (V.DC)		Rated Capacitance Range (μF)		Size range φD x L (mm)		Outside color	JIS Configurati	Note	
				Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.				
Standard	RV4	60	4.5mm L	-40	+85	2000	6.3	50	0.22	100	4×4.5	6.3×4.5	Silver	32		
	RV5	58	High CV	-40	+85	2000	6.3	100	0.22	2200	4×5.3	12.5×13.5	Silver Brown	32		
	RVB	61	Non Polarized	-40	+85	2000	6.3	50	0.22	47	4×5.3	6.3×5.3	Silver	32		
High Reliability	RVE	85	105°C , 4.5mmL	-40	+105	1000	6.3	50	0.22	100	4×4.5	6.3×4.5	Silver	32		
	RVS	62	105°C , 5.5mm L	-55	+105	1000	6.3	50	0.22	1500	4×5.3	10×10.5	Silver	32		
	RVL	64	105°C , 5.5mm L	-55	+105	2000	6.3	50	0.22	100	4×5.7	6.3×5.7	Silver	32		
	RVJ	65	105°C, Higher Capacitance	-55	+105	2000	6.3	100	10	1000	8×6.5	12.5×13.5	Silver Brown	32		
	RVR	66	105°C, Long Life, High CV	-40	+105	2000	4	50	0.22	1500	4×5.3	10×10.5	Silver	32		
	RVI	86	105°C , Non Polarized, 2000h	-40	+105	2000	6.3	50	0.33	47	4×5.8	6.3×5.8	Silver	32		
Low Impedance, Low ESR, High Reliability	RVC	68	105°C, 3000h/5000h	-40	+105	3000	6.3	50	0.33	1000	4×5.8	10×10	Silver	32		
	RVZ	70	105°C , Low Impedance	-55	+105	1000	5000	6.3	35	4.7	2700	4×5.3	12.5×13.5	Silver Brown	32	
	RVD	72	105°C , Low Impedance, Long life	-55	+105	2000	5000	6.3	100	4.7	2200	4×5.8	12.5×13.5	Silver	32	
	RVV	74	105°C , Low Impedance, High CV	-55	+105	2000	6.3	50	4.7	1500	4×5.8	10×10	Silver	32	☆	
	RZD	76	105°C , Low Impedance, High CV	-55	+105	2000	6.3	80	22	2200	6.3×5.8	10×10	Silver	32	☆	
	RVT	78	125°C , Low ESR	-40	+125	1000	2000	10	100	4.7	1000	4×5.8	12.5×13.5	Silver	32	
For Vibration Resistance	RZF	80	125°C , Low ESR, Long Life, High CV	-40	+125	2000	4000	10	80	22	680	6.3×5.8	10×10	Silver	32	☆
	RZE	82	125°C , Low ESR, High CV	-40	+125	2000	35	35	47	100	6.3×7.7		Silver	32		
	RVX	84	135°C, Higher Reliability	-40	+135	1000	25	35	22	330	8×10	10×10	Silver	32		
	RTZ	88	105°C, Low Z, High CV, 30G Vibration resistance	-55	+105	2000	5000	6.3	35	150	8200	8×10	18×21.5	Silver	32	
	RTD	89	105°C, Low Z, High CV, 30G Vibration resistance	-55	+105	5000	6.3	100	100	8200	8×10.5	18×21.5	Silver	32		
	RTT	90	125°C, Low ESR, High CV, 30G Vibration resistance	-40	+125	2000	5000	10	100	47	4700	8×10	18×21.5	Silver	32	
	RTQ	91	150°C, Low ESR, High CV, 30G Vibration resistance	-40	+150	1000	10	35	33	470	8×10	10×10	Silver	32	★	
	RYK	92	125°C , Horizontal type	-40	+125	1000	6.3	63	56	820	9.5×19.0	9.5×24.0	Black	88		

* Be sure to "Cautions for using Aluminum Electrolytic capacitors", before using these products.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

★ : New series
☆ : Upgrade

■ Type List for Aluminum Electrolytic Capacitors

● Miniature Aluminum Electrolytic Capacitors

Category	Series	Page	Application	Category Temp. Range (°C)		Life time Range (hours)		Rated Voltage Range (V.DC)		Rated Capacitance Range (μF)		Size range φD x L (mm)		Outside color	JIS Configurati	Note
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.			
Low profile	RC3	94	5mmL, Standard	-40	+85	1000		4	50	0.33	470	4×5	8×5	Blue	04	
	R3S	95	5mmL, 105°C	-55	+105	1000		6.3	50	0.33	100	4×5	6.3×5	Black	04	
	RB3	96	5mmL, Bipolar	-40	+85	1000		6.3	50	0.33	47	4×5	6.3×5	Blue	04	
	RC2	97	7mmL, Standard	-40	+85	1000		4	100	0.33	330	4×7	8×7	Blue	04	
	R2S	98	7mmL, 105°C	-55	+105	1000		6.3	50	0.33	100	4×7	6.3×7	Black	04	
	RB2	99	7mmL, Bipolar	-40	+85	1000		6.3	50	0.33	47	4×7	6.3×7	Blue	04	
Standard	RE3	100	Miniaturized Standard	-40	+85	2000		6.3	450	0.47	22000	5×11	18×40	Blue	04	
	R2B	102	Bipolarity Standard	-40	+85	2000		6.3	100	1	4700	5×11	18×35.5	Blue	04	
	RJP	103	105°C , Bipolar	-40	+105	1000	2000	6.3	50	1	6800	5×11	18×35.5	Black	04	
	RJ5	106	105°C , Miniaturized, High CV	-55	+105	1000	1000	6.3	100	1	22000	5×11	18×40	Black	04	
				-40		1000	2000	160	450	1	470	6.3×11	18×40			
	RJ4	108	105°C , Miniaturized	-55	+105	1000	2000	6.3	100	1	22000	5×11	18×40	Black	04	
				-40		160	450	1	330	6.3×11	18×35.5					
	RJ3	110	105°C , Low Impedance	-55	+105	1000	2000	6.3	100	1	15000	5×11	18×35.5	Black	04	
				-40		160	400	1	220	6.3×11	18×40					
Special	RLB	104	Low-leakage Current	-40	+85	1000		6.3	50	1	2200	5×11	18×35.5	Blue	04	
	RJB	112	105°C , Low Impedance, Miniaturized	-55	+105	2000	5000	6.3	100	3.3	10000	5×11.5	16×31.5	Black	04	
	RJH	114	105°C , Extra Low Impedance	-55	+105	2000	5000	6.3	100	1	15000	5×11.5	18×40	Black	04	
	RJF	117	105°C , Extra Low Impedance, Miniaturized	-40	+105	1000	10000	6.3	100	5.6	6800	4×7	16×25	Black	04	
	RJL	120	105°C , Long life, Low Impedance	-40	+105	4000	10000	6.3	100	6.8	6800	5×11.5	16×25	Black	04	
	RJM	122	105°C , Long life, Low Impedance	-40	+105	5000	10000	6.3	50	27	8200	5×11.5	16×25	Black	04	
	RJD	124	105°C , Low ESR, High Ripple, Miniaturized	-55	+105	2000	8000	6.3	100	100	18000	5×11.5	20×40	Black	04	
	RKD	136	125°C , Low ESR, Miniaturized	-40	+125	2000	5000	10	100	100	8200	8×12	20×40	Black	04	
	RKB	138	135°C , Low ESR, Miniaturized	-40	+135	2000	3000	10	100	220	6800	10×12.5	18×40	Silver	04	
	RKC	140	135°C , Low ESR, Miniaturized	-40	+135	2000	3000	25	100	160	12000	12.5×20	18×40	Silver	04	★
For Air bag	RQA	142	150°C , Miniaturized	-40	+150	1000		10	63	220	4700	10×14.5	18×42.5	Silver	04	
	RJE	127	105°C , Low ESR, High Ripple, For Airbag	-55	+105	5000		25	35	830	11000	12.5×15	18×40	Black	04	
	RJK	128	105°C , High CV, Low ESR, High Ripple, For Airbag	-55	+105	5000		25	35	2500	14000	16×20	18×40	Black	04	★
	RPK	144	125°C , Low ESR, 30G Vibration resistance	-40	+125	5000		10	100	220	8200	12.5×15	20×40	Black	04	
For Vibration Resistance	RKE	146	125°C , Low ESR, 40G Vibration resistance	-40	+125	5000		25	50	1200	8200	16×31.5	22×40	Silver	04	
	RKF	148	135°C , Low ESR, 40G Vibration resistance	-40	+135	2000	3000	25	100	180	10000	12.5×25	22×40	Silver	04	★
	RKG	150	150°C , Low ESR, 40G Vibration resistance	-40	+150	1000	2000	25	80	800	4700	18×42	22×42	Silver	04	★
	RHS	130	105°C , Long Life, High Ripple, For Ballast	-40	+105	4000	5000	160	250	4.7	560	10×12.5	18×50	Black	04	
High Ripple, long Life	RHC	132	105°C , Long Life, High Ripple, For Ballast	-25	+105	5000	10000	160	450	1	680	10×12.5	18×50	Black	04	
	RHD	134	105°C , Long Life, High Ripple, For Ballast	-25	+105	8000	12000	160	450	3.3	680	10×12.5	18×50	Black	04	

* Be sure to "Cautions for using Aluminum Electrolytic capacitors", before using these products.

★ : New series
☆ : Upgrade

■ Type List for Aluminum Electrolytic Capacitors

● Large Capacitance Aluminum Electrolytic Capacitors

Category	Series	Page	Application	Category Temp. Range (°C)		Life time Range (hours)	Rated Voltage Range (V.DC)		Rated Capacitance Range (μF)		Size range φD x L (mm)		Outside color	JIS Configurati	Note				
				Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.							
Snap-in	LA5	152	Miniaturized	-40	+85	2000	10	400	82	150000	22×20	35×50	Black	692	☆				
	LAH	155	105°C , Standard	-40	+105	2000	—	450	68	820	16	100	390	82000	22×20	35×50	Black	692	☆
	LAT	158	105°C , Miniaturized	-25	+105	2000	160	450	56	2200	160	500	39	3900	22×20	35×50	Black	692	☆
	LAZ	160	High-Reliability, High Ripple, Long Life	-25	+105	3000	16	100	390	82000	160	500	39	3300	22×20	35×50	Black	692	☆
	LAX	164	105°C , Ultra Long Life	-25	+105	5000	160	500	39	3300	22×20	35×50	Black	692	☆				
	LJ6	166	105°C , Higher Capacitance, Ultra Long Life	-25	+105	5000	200	500	390	3900	35×60	40×100	Black	—					
	LJ2	166	105°C , Higher Capacitance, Ultra Long Life	-25	+105	5000	200	500	560	3900	40×60	40×100	Black	—					
Special	LPM	168	High ripple current	-25	+85	2000	250	400	45	220	35×40	35×50	Black	692					
	LM	168	High ripple current, Higher Capacitance	-25	+85	2000	250	400	90	440	35×80	40×100	Black	—					
Screw terminal	LYX	170	105°C . Ultra Long Life	-25	+105	5000	350	450	1000	15000	51×75	90×236	Black	331					
	LYL	172	Ultra Long Life	-40	+85	20000	350	450	1000	15000	51×75	90×236	Black	331					
	LY6	174	High Ripple, Miniaturized	-25	+85	5000	400	600	1000	22000	51×115	101×237	Black	331	☆				
	LY5	176	Standard	-40	+85	2000	10	250	1500	820000	36×53	101×220	Black	331	☆				
				-25	+85		350	630	470	1800	36×83	90×236	Black	331	☆				

● Aluminum Electrolytic Capacitors for Audio

Category	Series	Page	Application	Category Temp. Range (°C)		Life time Range (hours)	Rated Voltage Range (V.DC)		Rated Capacitance Range (μF)		Size range φD x L (mm)		Outside color	JIS Configurati	Note
				Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.			
For Audio	RVO	180	Chip Type (PURECAP)	-40	+85	2000	6.3	50	0.33	1000	4×5.3	10×10	Silver Brown	32	
	RVF	181	Chip Type (SILMIC)	-40	+85	2000	10	50	1	100	4×5.3	8×10	Silver	32	
	RVM	182	Chip Type 105°C , 2000h	-55	+105	2000	6.3	50	1	470	4×5.8	10×10.5	Silver	32	
	RVG	183	Chip Type	-40	+85	2000	6.3	35	3.3	470	4×5.3	10×10	Silver	32	
	RFS	184	High Grade (SILMIC II)	-55	+85	1000	6.3	100	3.3	3300	5×11	18×40	Brown	04	
	ROS	185	High Grade (SILMIC)	-40	+85	1000	16	100	10	2200	6.3×11	18×40	Brown	04	
	ROB	186	Miniaturized Standard (TONEREX)	-40	+85	1000	6.3	100	1	10000	5×11	18×40	Black	04	
	RFO	187	Standard (PURECAP)	-40	+85	1000	6.3	100	1	15000	5×11	18×35.5	Black	04	
	RA3	188	Miniaturized Standard	-40	+85	2000	6.3	100	1	22000	5×11	18×35.5	Brown	04	
	RW5	189	105°C , Miniaturized	-55	+105	1000	16	25	100	15000	5×11.5	18×40	Black	04	
	RBD	190	Miniaturized Bipolar	-40	+85	2000	6.3	100	1	4700	5×11	18×35.5	Black	04	
	LAO	191	For Audio, Higher Capacitance	-40	+85	1000	16	100	680	10000	22×20	35×50	Black	692	

* Be sure to "Cautions for using Aluminum Electrolytic capacitors", before using these products.

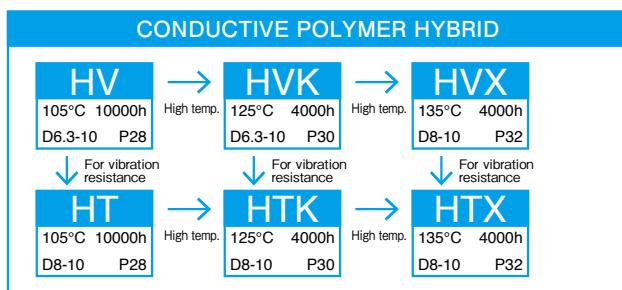
● Dis-continued & not recommended items (These are not inserted at this catalog. Please consult, when you want to newly use.)

Category	Series	Application	Category Temp. Range (°C)		Life time Range (hours)		Rated Voltage Range (V.DC)		Rated Capacitance Range (μF)		Size range φD x L (mm)		Substitute series to recomend
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Polymer	PVH	Low ESR Conductive Polymer Chip	-55	+105	2000	2.5	35	10	1000	6.3×5.7	10×7.7	PVM	
Chip	RV2	85°C , 5.5mm L, Standard	-40	+85	2000	4	50	0.1	220	3×5.3	6.3×5.3	RV5	
	RV3	85°C, High CV	-40	+85	2000	6.3	50	4.7	330	4×5.3	6.3×7.7	RV5	
	RV	85°C, Large Capacitance	-40	+85	2000	6.3	100	10	2200	8×6.5	12.5×13.5	RV5	
	RVK	125°C, Standard	-40	+125	1000 5000	10	63	10	1000	8×10	12.5×13.5	RVT	
	RTJ	105°C, Vibration resistance	-55	+105	2000	6.3	100	10	470	8×10	10×10.5	RTZ	
	RTK	125°C, Vibration resistance	-40	+125	1000 1250	10	63	10	330	8×10	10×10.5	RTT	
Miniature	RJJ	105°C , Low Impedance	-55	+105	2000 5000	6.3	100	0.47	15000	5×11.5	18×40	RJH	
	RK	125°C, Standard	-40	+125	2000 5000	10	63	47	10000	8×12	18×40	RKD	
For Audio	PVO	For Audio, Conductive Polymer Chip	-55	+105	2000	4	25	6.8	470	6.3×5.7	10×7.7		
	RWV	105°C, Chip Type (PURECAP)	-55	+105	1000	6.3	50	0.33	470	4×5.3	10×10		
	ROA	High Grade (Cerafine)	-40	+85	1000	6.3	100	0.47	6800	5×11	18×40		
	R2A	7mmL	-40	+85	1000	6.3	50	0.33	330	4×7	8×7		
	R3A	5mmL	-40	+85	1000	4	50	0.22	220	4×5	6.3×5		

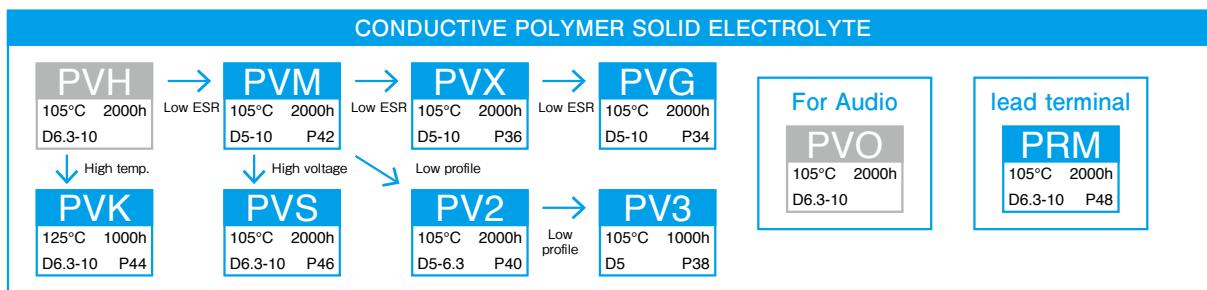
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

■ Systematized Classification of Aluminum Electrolytic Capacitors

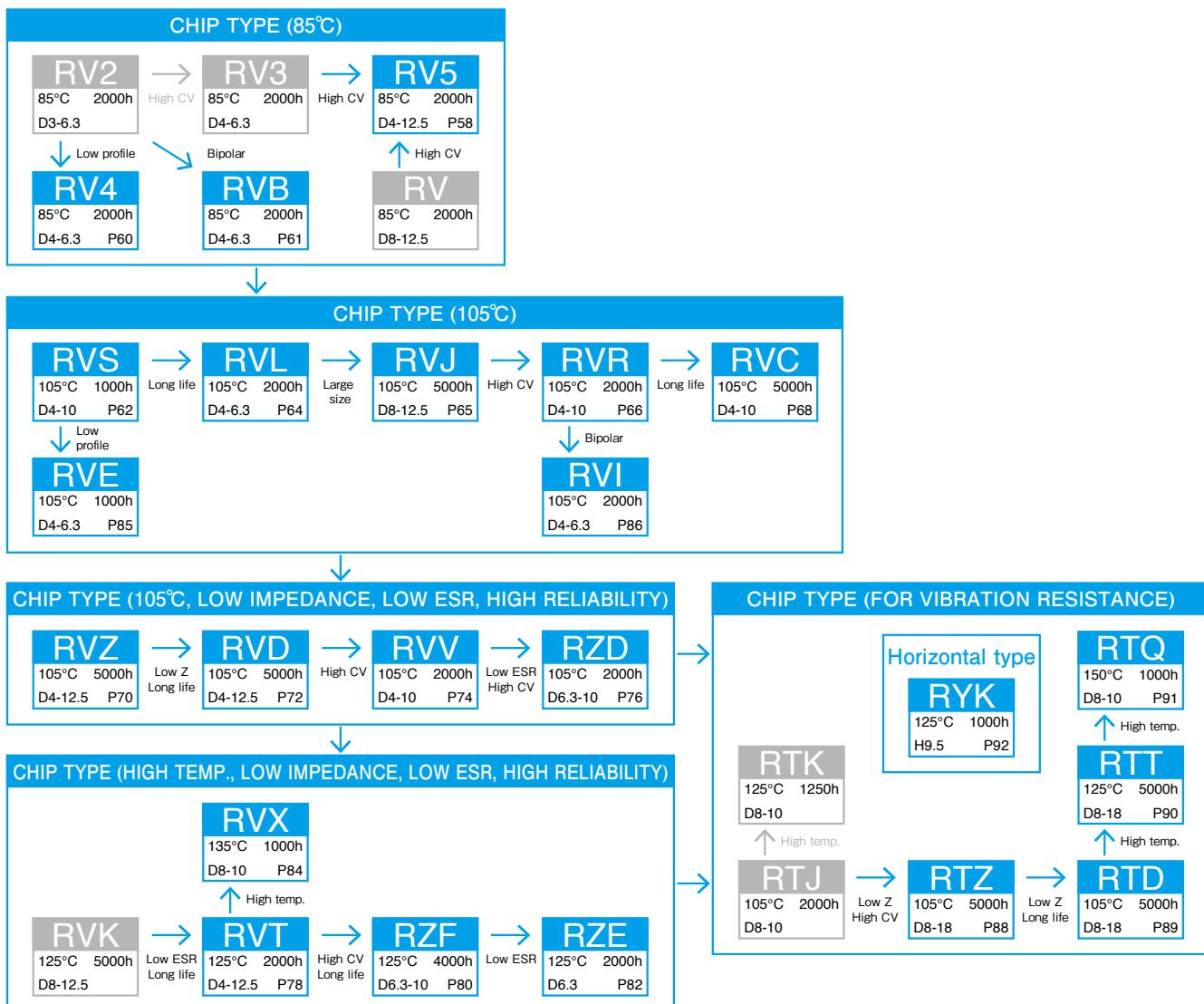
● Conductive Polymer Hybrid Aluminum Electrolytic Capacitors



● Aluminum Electrolytic Capacitors with Conductive Polymer Solid Electrolyte



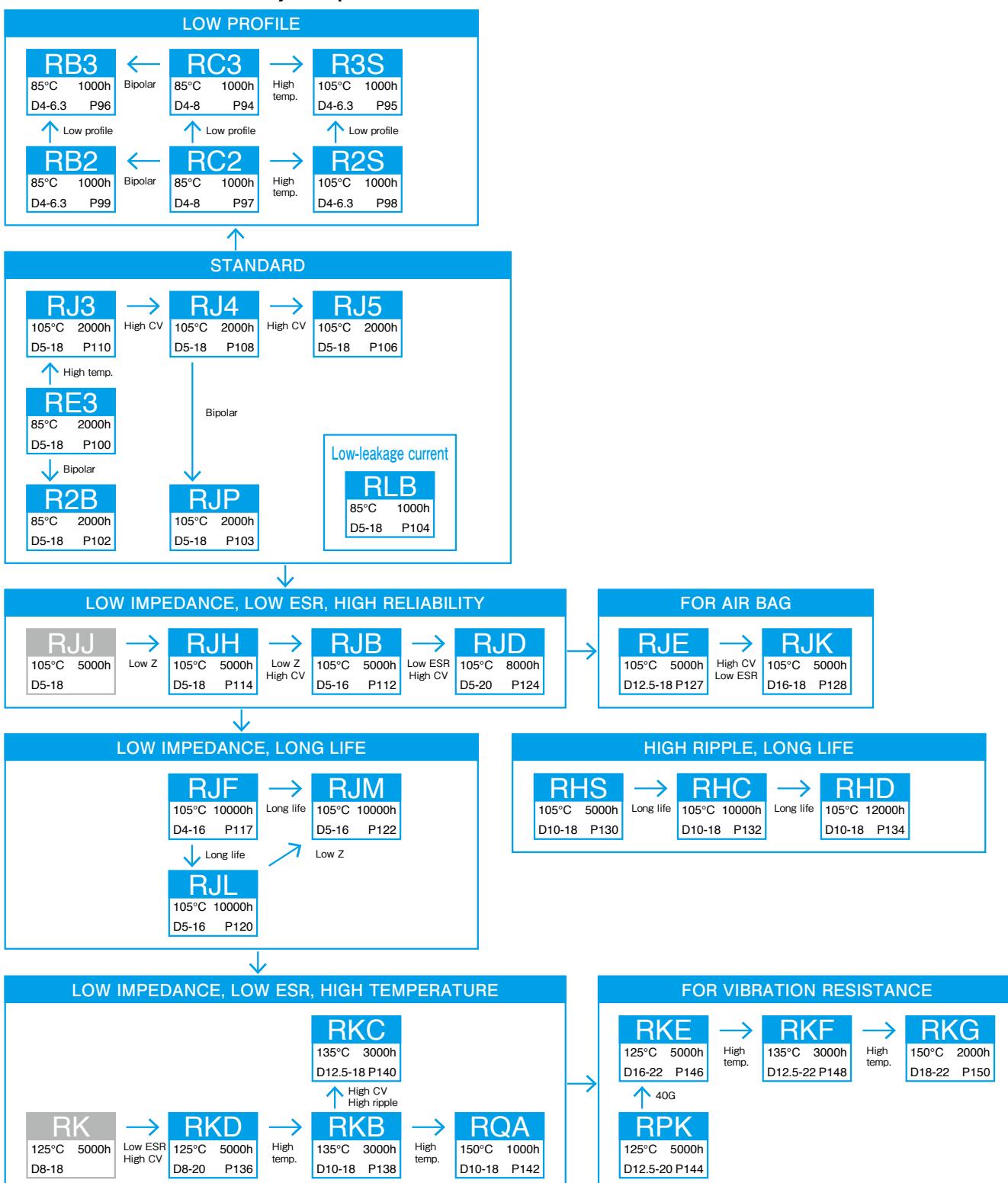
● Chip Type Aluminum Electrolytic Capacitors



NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

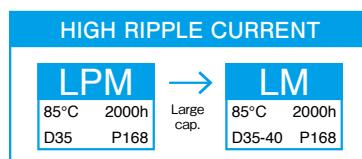
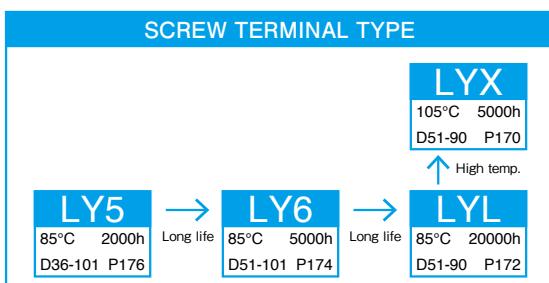
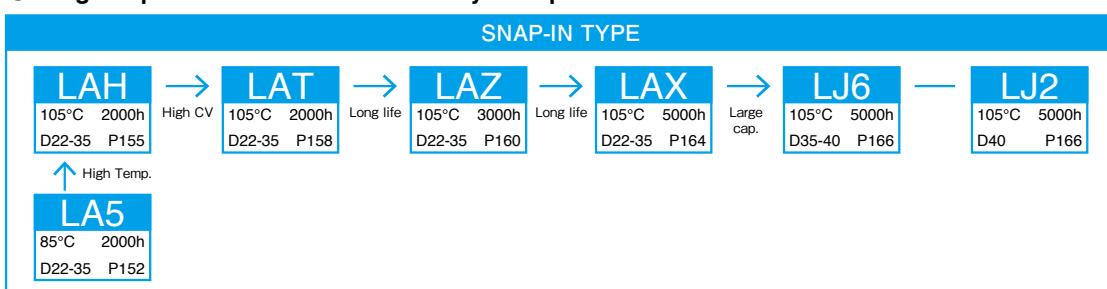
■ Systematized Classification of Aluminum Electrolytic Capacitors

● Miniature Aluminum Electrolytic Capacitors

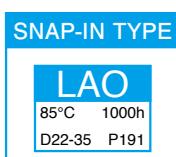
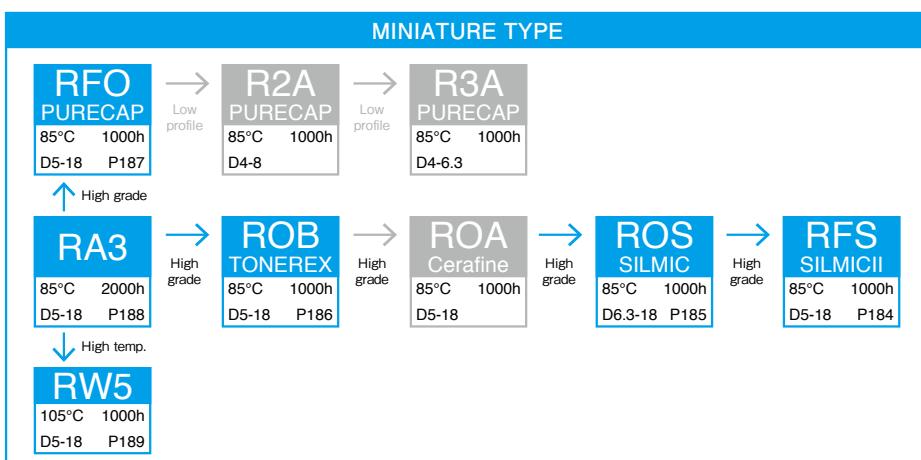
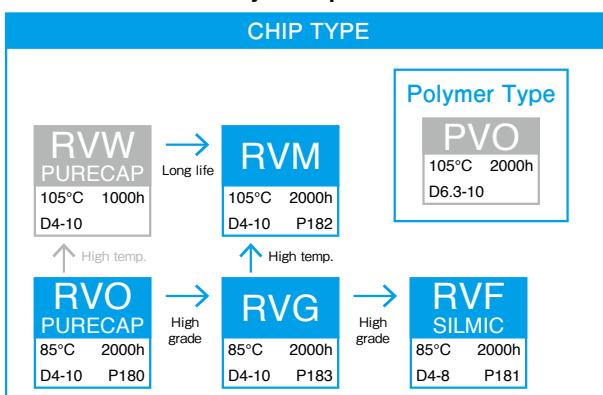


■ Systematized Classification of Aluminum Electrolytic Capacitors

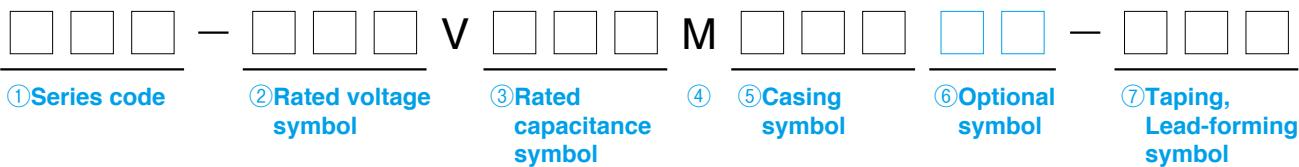
● Large Capacitance Aluminum Electrolytic Capacitors



● Aluminum Electrolytic Capacitors For Audio



■ Product Symbol System for Aluminum Electrolytic Capacitors



①Series code

Please refer to the page of each series.

②Rated voltage symbol

Write down the rated voltage itself ; however, write 2R5 for 2.5V, 6 for 6.3V.

③Rated capacitance symbol

The symbol denoting nominal capacitance shall consist of three numerals.
The first and second numerals shall represent the significant figures of nominal capacitance in the unit of microfarad (μF).
And the third numeral shall represent the number of zeros following the significant figures.
A decimal point is expressed with "R."

Example

Rated capacitance (μF)	Symbol
0.1	R10
1	010
2.2	2R2
33	330
100	101
2200	222
33000	333
470000	474

④Capacitance tolerance symbol

Example

Capacitance tolerance	Symbol
$\pm 10\%$	K
$\pm 20\%$	M
-10 to +30%	Q
-10 to +50%	T

⑤Casing symbol

Please refer to the page of each series.

⑥Optional symbol

Plating

Example

Symbol	Contents
#	Sn 100% plating +PET sleeve (lead terminal type)
U	Sn-Bi plating (chip type)
T	Sn 100% plating (chip type)

For Automotive

Example

Symbol	Contents
Q	Based on AEC-Q200
N	Based on AEC-Q200

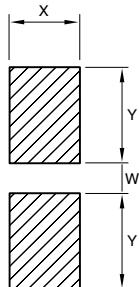
⑦Taping, Lead-forming symbol

Write down one of the forming symbols given on page 16 to 19 for taping and lead-forming capacitors.
When taping or lead-forming is not necessary, leave the boxes blank.

■ Recommended land pattern and size

(Vertical chip type)

- Standard type

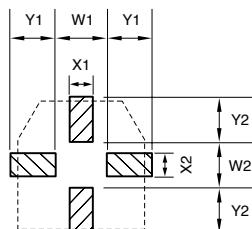


Case Size $\phi D \times L$	Land Size			Thickness of Solder paste
	X	Y	W	
4×4.5, 5.3, 5.7, 5.8	1.6	2.6	1.0	0.15
5×4.0, 4.5, 5.3, 5.7, 5.8	1.6	3.0	1.4	0.15
6.3×4.5, 5.3, 5.7, 5.8	1.6	3.6	1.9	0.15
6.3×7.7	1.6	3.6	1.9	0.15
8×6.5, 6.7, 7.7, 8.7	1.6	4.0	2.1	0.15
8×10, 10.5	2.5	*3.5	*3.0	0.15
10×7.7, 8.7, 10, 10.5, 12.5	2.5	*4.0	*4.0	0.15
12.5×13.5	3.2	6.0	4.0	0.15

*For Vibration resistance use
 $\phi 8 \times 6.5$ $Y=4.5$ $W=1.0$
 $\phi 8 \times 10$, $\phi 8 \times 10.5$ $Y=4.0$ $W=2.5$
 $\phi 10 \times 10$, $\phi 10 \times 10.5$ $Y=4.5$ $W=3.0$

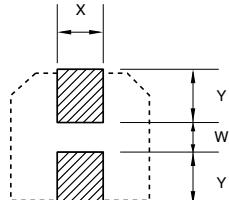
- For vibration resistance type

RTJ, RTK series



Case Size $\phi D \times L$	Land Size						Thickness of Solder paste
	X1	X2	Y1	Y2	W1	W2	
8×10	2.5	2.5	3.0	3.5	4.0	3.0	0.20
10×10.5	2.5	2.5	4.0	4.5	4.0	3.0	0.20

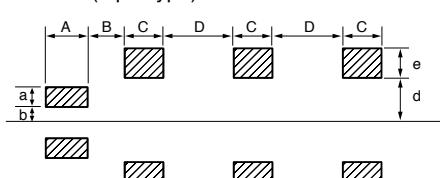
RTZ, RTD, RTT, RTQ, RTV, RMD, RMF, HT, HTK, HTX series



Case Size ϕD	Land Size			Thickness of Solder paste
	Y	W	X	
8	4.0	2.5	5.0	0.20
10	4.8	3.6	5.0	0.20
12.5	6.6	3.2	7.0	0.20
16	7.8	5.0	10.5	0.20
18	8.8	5.0	10.5	0.20

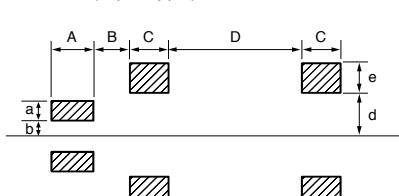
(Horizontal chip type)

- □9.5×24.0 (8 pin type)



(Unit : mm)	
	8 pin
A	4.0
B	1.0
C	3.0
D	5.5
a	1.5
b	1.0
d	3.0
e	2.0
Thickness of Solder paste	0.15

- □9.5×19.0 (6 pin type)



(Unit : mm)	
	6 pin
A	4.0
B	1.0
C	3.0
D	9.0
a	1.5
b	1.0
d	3.0
e	2.0
Thickness of Solder paste	0.15

■ Recommended soldering conditions

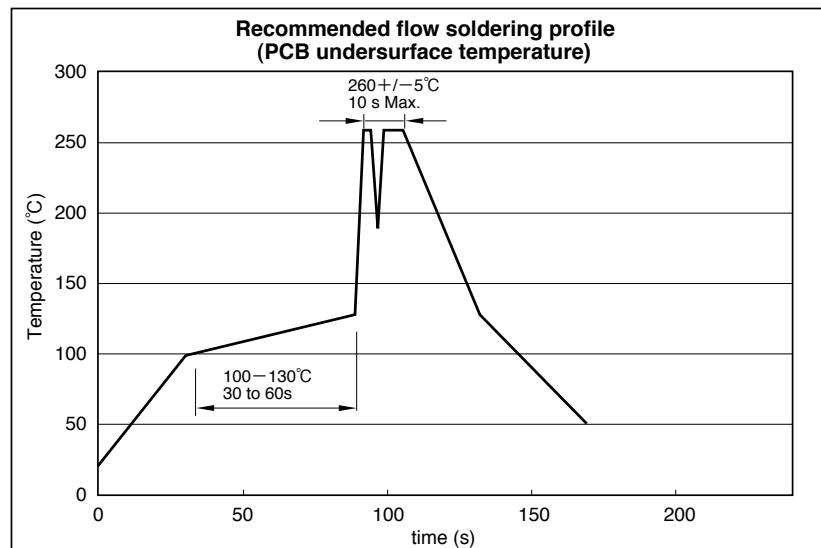
● Aluminum (Conductive Polymer) electrolytic capacitors (Lead terminal type, Snap-in type)

(1) Soldering iron conditions

Iron tip temperature shall be $400^{\circ}\text{C} \pm 5^{\circ}\text{C}$ within the duration of 3 seconds.

(2) Flow soldering conditions

The recommendation soldering conditions of the product in which flow soldering is possible are as graph.



Caution for Using aluminum Electrolytic Capacitors

- (1) Do not dip the capacitor into melted solder.
- (2) Do not flux other part than the terminals.
- (3) If there is a direct contact between the sleeve of the capacitor and the printed circuit pattern or a metal part of another component such as a lead wire, it may cause shrinkage or crack.
- (4) If the application is for extended use, understand and manage the soldering characteristics to avoid abnormal current caused by a contact failure between the capacitor and the PCB.
- (5) Please refer to cautions for using on page 24 to 27 or 52 to 55 and product specifications about other notes.

■ Recommended soldering conditions

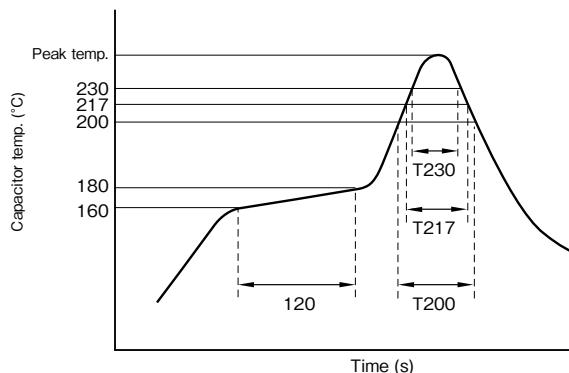
● Chip type aluminum (Conductive Polymer, Hybrid) electrolytic capacitors

(1) Soldering iron conditions

Iron tip temperature shall be $400^{\circ}\text{C} \pm 5^{\circ}\text{C}$ within the duration of 3^{+1} seconds.

(2) Reflow soldering conditions

Profile



1. Preheating shall be under 180°C within 120 seconds.
2. Peak temperature shall be within the following table.
3. For conditions exceeding the tolerances, consult with us.

T200 : Duration while capacitor head temperature exceeds 200°C (s)

T217 : Duration while capacitor head temperature exceeds 217°C (s)

T230 : Duration while capacitor head temperature exceeds 230°C (s)

The measurement temperature point is the case top.

● Chip type aluminum Conductive Polymer, Hybrid electrolytic capacitors

Series	Size	Peak temp. (5sec or less)	T230	T217	T200	Reflow cycle
HV, HVK, HVX, HT, HTK, HTX, PVG, PVX, PV3, PV2, PVM, PVK, PVS, PVH	$\phi 5$ to $\phi 6.3$	250°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less
	$\phi 8$ to $\phi 10$	240°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less

● Chip type aluminum electrolytic capacitors

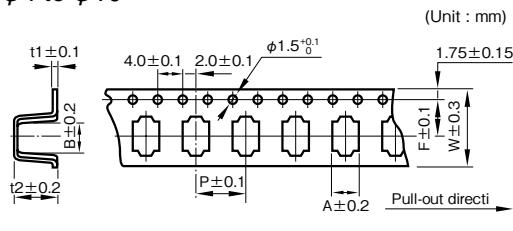
Series	Size	Peak temp. (5sec or less)	T230	T217	T200	Reflow cycle
RV2, RV3, RV5, RV, RVB, RVS, RVL, RVR, RVC, RVZ, RVD, RVV, RZD, RVT, RZF, RZE, RVX, RVE, RVI, RVO, RVF, RVM, RVW, RVG	$\phi 4$ to $\phi 6.3$	250°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less
	$\phi 8$ to $\phi 10$	240°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less
	$\phi 12.5$	240°C Max.	20 sec. max.	30 sec. max.	50 sec. max.	2 times or less
RV4	$\phi 4$ to $\phi 5$	250°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less
	$\phi 6.3$	240°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less
RVJ, RVK	$\phi 8$ to $\phi 10$	240°C Max.	40 sec. max.	50 sec. max.	60 sec. max.	2 times or less
	$\phi 12.5$	230°C Max.	—	20 sec. max.	30 sec. max.	2 times or less
RZA, RZB, RZC	$\phi 4$ to $\phi 6.3$	260°C Max.	40 sec. max.	90 sec. max.	—	2 times or less
	$\phi 8$ to $\phi 10$	250°C Max.	40 sec. max.	90 sec. max.	—	2 times or less
RTZ, RTD, RTT, RTQ, RTV, RMD, RMF	$\phi 8$ to $\phi 10$	250°C Max.	30 sec. max.	60 sec. max.	80 sec. max.	2 times or less
	$\phi 12.5$ to $\phi 18$	240°C Max.	20 sec. max.	30 sec. max.	50 sec. max.	2 times or less
RTK, RYK, RTJ	—	230°C Max.	—	20 sec. max.	30 sec. max.	2 times or less

*Please ensure that the capacitor became cold enough to the room temperature (5 to 35°C) before the second reflow.

■ Taping

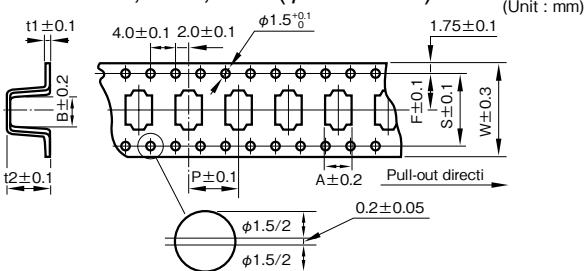
■ Carrier tape dimension (taping polarity R)

● $\phi 4$ to $\phi 10$



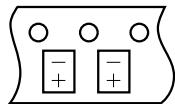
● Series RYK,

RV5, RVJ, RVZ, RVD, RVT ($\phi 12.5$),
RTZ, RTD, RTT ($\phi 12.5$ to 18)

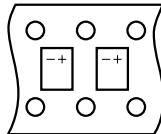


■ Taping polarity

(The all series except RVB and RYK)

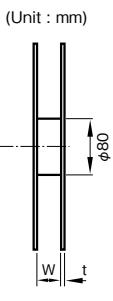


(Series RYK)



Outside size $\phi D \times L$	W	A	B	P	t2	F	t1	S
4×4.5	12	4.7	4.7	8.0	4.8	5.5	0.4	—
4×5.3	12	4.7	4.7	8.0	5.8	5.5	0.4	—
4×5.7, 5.8	12	4.7	4.7	8.0	6.2	5.5	0.4	—
5×4.0	12	5.7	5.7	12	4.3	5.5	0.4	—
5×4.5	12	5.7	5.7	12	4.8	5.5	0.4	—
5×5.3	12	5.7	5.7	12	5.8	5.5	0.4	—
5×5.7, 5.8	12	5.7	5.7	12	6.2	5.5	0.4	—
6.3×4.5	16	7.0	7.0	12	4.8	7.5	0.4	—
6.3×5.3	16	7.0	7.0	12	5.8	7.5	0.4	—
6.3×5.7, 5.8	16	7.0	7.0	12	6.2	7.5	0.4	—
6.3×7.7	16	7.0	7.0	12	8.3	7.5	0.4	—
8×6.5	16	8.7	8.7	12	6.8	7.5	0.4	—
8×6.7	24	8.7	8.7	12	7.2	11.5	0.4	—
8×8.7	24	8.7	8.7	16	9.5	11.5	0.4	—
8×10	24	8.7	8.7	16	11	11.5	0.4	—
8×10.5	24	8.7	8.7	16	11.5	11.5	0.4	—
10×7.7	24	10.7	10.7	16	8.2	11.5	0.4	—
10×8.7	24	10.7	10.7	16	9.5	11.5	0.4	—
10×10	24	10.7	10.7	16	11	11.5	0.4	—
10×10.5	24	10.7	10.7	16	11.5	11.5	0.4	—
10×12.5	24	10.7	10.7	16	13.0	11.5	0.4	—
* 12.5×13.5	32	13.4	13.4	24	14.5	14.2	0.5	28.4
* 16×16.5	44	17	17	28	17.5	20.2	0.5	40.4
* 16×21.5	44	17	17	28	22.5	20.2	0.5	40.4
* 18×16.5	44	19	19	32	17.5	20.2	0.5	40.4
* 18×21.5	44	19	19	32	22.5	20.2	0.5	40.4
* 9.5×19.0	44	9.9	22.9	16	9.5	20.2	0.4	40.4
* 9.5×24.0	44	9.9	27.9	16	9.5	20.2	0.4	40.4

■ Reel dimension



■ Reel material

Card board : symbol R
Polystyrene: symbol R2 ($\phi 10$ or less)
R5 ($\phi 12.5$ or more)

(Unit : mm)

Outside size $\phi D \times L$	Reel dimension	
	W	t
4	14	3
5	14	3
6.3	18	3
8×6.5	18	3
8×6.7	26	3
8, 10	26	3
*		
12.5	34	3
*		
16	46	3
*		
18	46	3
*		
9.5×19.0	46	3
*		
9.5×24.0	46	3

■ Packing quantity (Reel)

Outside size $\phi D \times L$	Quantity (PCS.)
4	2000
5, 6.3	1000
8×6.5, 6.7	1000
8×7.7 to 10.5	500
10×10, 10.5	500
10×12.5	400
*	
12.5×13.5	200
*	
16×16.5	125
*	
16×21.5	75
*	
18×16.5	125
*	
18×21.5	75
*	
9.5×19.0	400
*	
9.5×24.0	400

■ Lead Forming

- In order to facilitate insertion into printed circuit board, lead wires are cut or formed.

Product Size Table

Unit: mm

Forming name	Lead forming symbol	Dimension		Style	Outline drawing
		F (Lead pitch)	ϕD (Case diameter)		
Forming cut	F10	2.0	4	B	
	F1		5	A	
	F12	2.5	4 to 5	B	
	F1		6.3	A	
	F1	3.5	8	A	
	F4		4 to 8	B	
	F	5.0	4 to 8	B	
			10 to 12.5	A	
	F	7.5	16 to 18	A	
Snap-in	S1	5.0	4 to 8	B	
	S1		10 to 12.5	A	
	S1	7.5	16 to 18	A	
Forming cut (restrict series)	F49	5.0	10 to 12.5		
	F51		10 to 12.5		
	F58		10		
	F49	7.5	16 to 18		
	F51		16 to 18		

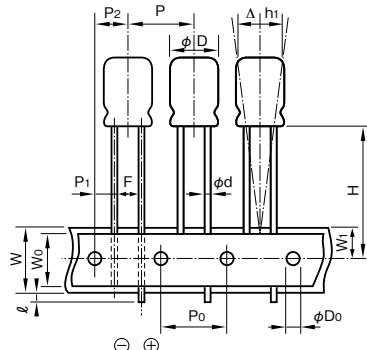
Forming name	Lead forming symbol	Dimension				Outline drawing
		F (Lead pitch)	ϕD (Case diameter)	ℓ_0	ℓ_1	
For 90° side mount of case	G9, G10	3.5	8	5.5	1.0	
	G59, G60		8	3.6	1.0	
	G9, G10	5.0	10 to 12.5	5.5	1.0	
	G55, G56		12.5	7.5	2.5	
	G59, G60		10 to 12.5	3.6	1.0	
	G95, G96	7.5	12.5	0.95	4.9	
	G99, GA0		10	1.0	1.9	
	GAS, GAT	10 to 12.5	4.5	1.0		
	G9, G10		16 to 18	5.5	1.0	
	GAS, GAT	16 to 18	4.5	1.0		

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

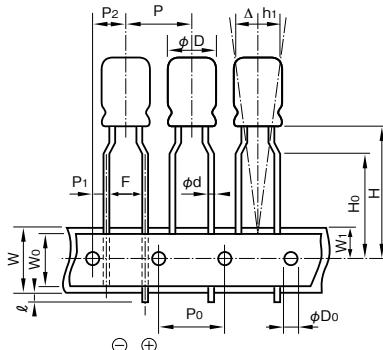
■ Taping

- For automatic insertion (radial lead type)

Processed style A



Processed style B



*The shape of a lead wire sandwiched by the mounting strips may differ from the ones shown in the figures.

Product Size Table

Unit: mm

Item	Symbol	Tolerance	5L to 8L				
			ϕ3 to ϕ8(except ϕ8×7L)		ϕ4 to ϕ8		
Lead forming symbol	—	—	T36	T58	T2		
Style	—	—	A or B		B		
Lead-wire diameter	ϕd	±0.05	0.4 or 0.45				
Lead to lead distance	F	+0.8 -0.2	2.5		5.0		
Height of component from tape center	H	+0.75 -0.5	18.5	17.5			
Lead-wire clinch height	Ho	±0.5	—	16.0			
Pitch of component	P	±1.0	12.7				
Feed hole pitch	P0	±0.3	12.7				
Hole center to lead	P1	±0.5	5.1		3.85		
Hole center to component	P2	±1.0	6.35				
Tape width	W	±0.5	18.0				
Hold down tape width	Wo	Min.	6.0				
Feed hole position	W1	±0.5	9.0				
Max. lead protrusion	ℓ	Max.	1.0				
Feed hole diameter	ϕDo	±0.2	4.0				
Alignment of component to center	Δh	±1.0	0				
Alignment of component to center	Δh1	±1.0	0				
Total tape thickness	t	±0.2	0.7				

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications
from ELNA to ensure that the component is suitable for your use.

Taping

- For automatic insertion (radial lead type)

Product Size Table

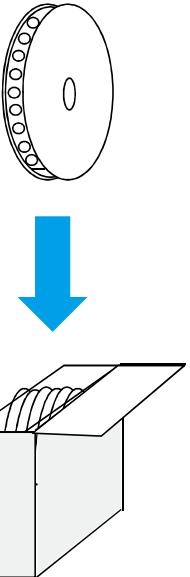
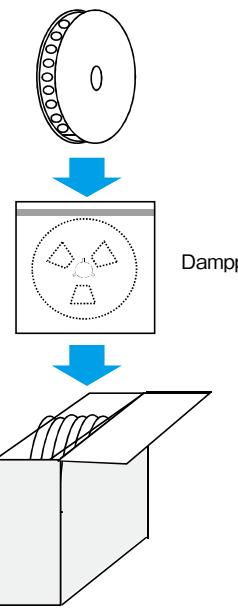
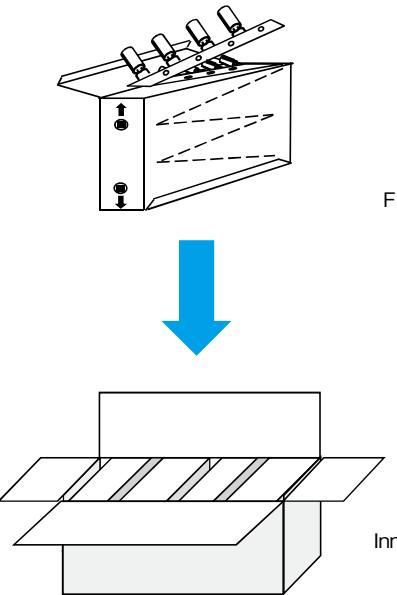
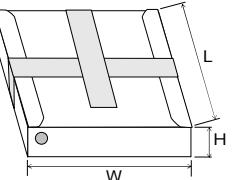
Unit: mm

Item	Symbol	Tolerance	11L to 25L						
			$\phi 5, \phi 6.3$		$\phi 8$	$\phi 10$	$\phi 12.5$		
Lead forming symbol	—	—	T36	T58	T2	T2	T4		
Style	—	—	A or B		B		A		
Lead-wire diameter	ϕd	± 0.05	0.5 or 0.6		0.6				
Lead to lead distance	F	$+0.8$ -0.2	2.5		5.0				
Height of component from tape center	H	$+0.75$ -0.5	18.5	17.5	18.5	20.0	18.5		
Lead-wire clinch height	H_0	± 0.5	—		16.0		—		
Pitch of component	P	± 1.0	12.7				15.0		
Feed hole pitch	P_0	± 0.3	12.7				15.0		
Hole center to lead	P_1	$+0.5$ (10 to $\phi 18 \pm 0.7$)	5.1		3.85		5.0		
Hole center to component	P_2	± 1.0	6.35				7.5		
Tape width	W	± 0.5	18.0						
Hold down tape width	W_0	Min.	6.0						
Feed hole position	W_1	± 0.5	9.0						
Max. lead protrusion	ℓ	Max.	1.0						
Feed hole diameter	ϕD_0	± 0.2	4.0						
Alignment of component to center	Δh	± 1.0	0						
Alignment of component to center	Δh_1	± 1.0	0						
Total tape thickness	t	± 0.2	0.7						

Part numbering system (example: Series RJB, 10V470μF, 5mm pitch taping)

RJB	—	10	V	471	M	G3	#	—	T2
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping symbol		

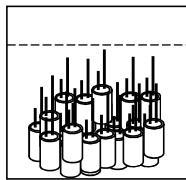
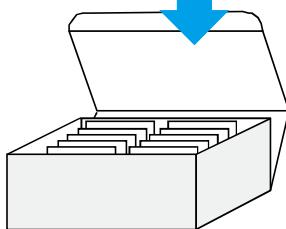
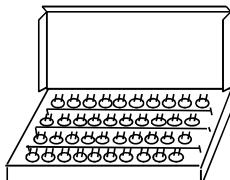
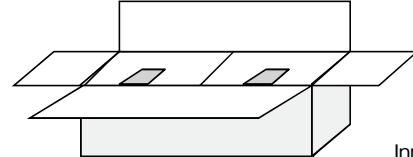
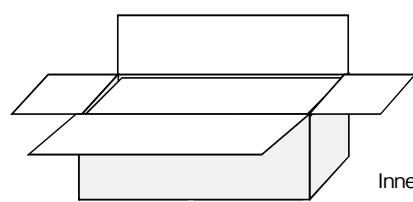
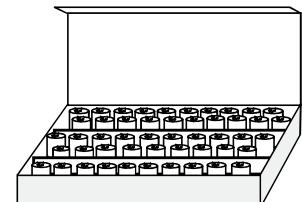
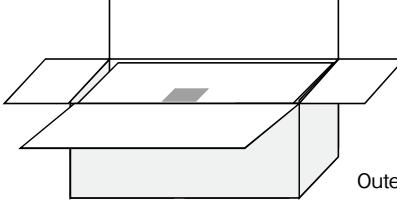
■ Standard packing specification of aluminum (Conductive Polymer, Hybrid) electrolytic capacitors (taping article)

Classification	Chip type																																																																											
	Aluminum electrolytic capacitors	Polymer hybrid type aluminum electrolytic capacitors, Aluminium electrolytic capacitors with conductive polymer solid electrolyte																																																																										
Packing style	 <p>Reel</p> <p>Inner box</p>	 <p>Reel</p> <p>Dampproof bag</p> <p>Inner box</p>																																																																										
Classification	Lead terminal type																																																																											
Packing style	 <p>Flat box</p> <p>Inner box</p>	<p>Packing size and quantity</p> <table border="1"> <thead> <tr> <th rowspan="2">Case size</th> <th colspan="3">Size (mm)</th> <th rowspan="2">Quantity (pcs)</th> </tr> <tr> <th>W</th> <th>L</th> <th>H</th> </tr> </thead> <tbody> <tr> <td>φ4×5, φ4×7</td> <td>215</td> <td>335</td> <td>50</td> <td>2,000</td> </tr> <tr> <td>φ5×5, φ5×7</td> <td>260</td> <td>335</td> <td>50</td> <td>2,000</td> </tr> <tr> <td>φ6.3×5, φ6.3×7</td> <td>300</td> <td>340</td> <td>50</td> <td>2,000</td> </tr> <tr> <td>φ8×5, φ8×7</td> <td>260</td> <td>335</td> <td>50</td> <td>1,000</td> </tr> <tr> <td>φ5×11, φ5×11.5</td> <td>265</td> <td>340</td> <td>55</td> <td>2,000</td> </tr> <tr> <td>φ6.3×11, φ6.3×11.5</td> <td>300</td> <td>340</td> <td>55</td> <td>2,000</td> </tr> <tr> <td>φ8×11.5, φ8×12</td> <td>265</td> <td>340</td> <td>55</td> <td>1,000</td> </tr> <tr> <td>φ8×15, φ8×20</td> <td>265</td> <td>335</td> <td>65</td> <td>1,000</td> </tr> <tr> <td>φ10×12.5, φ10×16</td> <td>215</td> <td>330</td> <td>55</td> <td>500</td> </tr> <tr> <td>φ10×20</td> <td>215</td> <td>330</td> <td>60</td> <td>500</td> </tr> <tr> <td>φ12.5×15</td> <td>290</td> <td>330</td> <td>50</td> <td>500</td> </tr> <tr> <td>φ12.5×20</td> <td>285</td> <td>330</td> <td>58</td> <td>500</td> </tr> <tr> <td>φ12.5×25</td> <td>280</td> <td>330</td> <td>65</td> <td>500</td> </tr> </tbody> </table> 	Case size	Size (mm)			Quantity (pcs)	W	L	H	φ4×5, φ4×7	215	335	50	2,000	φ5×5, φ5×7	260	335	50	2,000	φ6.3×5, φ6.3×7	300	340	50	2,000	φ8×5, φ8×7	260	335	50	1,000	φ5×11, φ5×11.5	265	340	55	2,000	φ6.3×11, φ6.3×11.5	300	340	55	2,000	φ8×11.5, φ8×12	265	340	55	1,000	φ8×15, φ8×20	265	335	65	1,000	φ10×12.5, φ10×16	215	330	55	500	φ10×20	215	330	60	500	φ12.5×15	290	330	50	500	φ12.5×20	285	330	58	500	φ12.5×25	280	330	65	500	
Case size	Size (mm)			Quantity (pcs)																																																																								
	W	L	H																																																																									
φ4×5, φ4×7	215	335	50	2,000																																																																								
φ5×5, φ5×7	260	335	50	2,000																																																																								
φ6.3×5, φ6.3×7	300	340	50	2,000																																																																								
φ8×5, φ8×7	260	335	50	1,000																																																																								
φ5×11, φ5×11.5	265	340	55	2,000																																																																								
φ6.3×11, φ6.3×11.5	300	340	55	2,000																																																																								
φ8×11.5, φ8×12	265	340	55	1,000																																																																								
φ8×15, φ8×20	265	335	65	1,000																																																																								
φ10×12.5, φ10×16	215	330	55	500																																																																								
φ10×20	215	330	60	500																																																																								
φ12.5×15	290	330	50	500																																																																								
φ12.5×20	285	330	58	500																																																																								
φ12.5×25	280	330	65	500																																																																								

Please inquire for details.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

**■ Standard packing specification of aluminum electrolytic capacitors
(long lead, lead forming)**

Classification	Long lead, Lead forming of $\phi 10$ or less (Standard packing)	Lead forming of $\phi 12.5$ or more (Standard packing)
Packing style	   Plastic bag	   Small box
Classification	$\phi 10$ to $\phi 22$ (Optional packing)	$\phi 22$ or more (Standard packing)
Packing style	   Tray	   Inner box Outer box

Please inquire for details.

Aluminum Electrolytic Capacitors

Polymer hybrid type Electrolytic Capacitors

Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte

Chip Type Aluminum Electrolytic Capacitors

Miniature Aluminum Electrolytic Capacitors

Large Capacitance Aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors for Audio

ALUMINUM

POLYMER
HYBRIDCHIP
ALUMINUMMINIATURE
ALUMINUMLARGE
ALUMINUMFOR AUDIO
ALUMINUM

■ Conductive Polymer Hybrid Aluminum Electrolytic Capacitors Cautions for Using Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte

Please be sure to read this specification before using this product.

Before placing an order, please inquire about the Product Specification to check details.

■ Cautions for Usage

1. Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, Solid Conductive Polymer Aluminum Electrolytic Capacitors are polarized.

- Using a capacitor with reversed polarity causes abnormal current flow, resulting in a short circuit.
- Cannot use for the circuit to which the polarity reverses by ripple voltage.

2. Prohibited Circuits

- Since leakage current problem may arise, capacitors cannot be used in the following circuits.
 - Coupling circuits
 - Circuits greatly affected by leakage current

3. Use capacitors within the rated voltage.

- The application of voltages exceeding the rated voltage can significantly increase leakage current, resulting in a short failure. Please do not apply a voltage exceeding the rated voltage.

4. Be careful of excessive rush current.

- Using capacitors in the circuit where excessive rush current passes may cause characteristic deterioration or a short. When the rush current exceeds 10 A, we recommend use of protection circuits to ensure high reliability.

5. Use the allowable ripple voltage and the rated ripple current below the specified values.

- When superimposing a ripple voltage on a DC bias voltage, exercise care that the peak voltage value does not exceed the rated voltage and does not reverse the polarity.
- The rated ripple current shall be below the specified value.

6. Changes in characteristics due to operating temperature

- The characteristics of conductive polymer hybrid aluminum electrolytic capacitors, solid conductive polymer aluminum electrolytic capacitors vary by temperature as follows. These variations are temporary and recover when the temperature goes back (except for the case of characteristic deterioration because of high temperatures over a long time). Note that using capacitors over the upper category temperature increases leakage current, resulting in a short and destruction.

Be careful of the capacitor temperature considering not only the ambient temperature where the equipment is placed and the temperature inside the equipment but also radiation heat from the heating element inside the equipment, and self-heat

generation by ripple current.

- ①Capacitance expressed in the value at 20°C, 120 Hz increases with increased temperature and decreases with decreasing temperature.
- ②Tangent of loss angle ($\tan\delta$) expressed in the value at 20°C, 120 Hz is temperature-independent.
- ③Equivalent series resistance (ESR) expressed in the value at 20°C, 100 kHz is temperature independent.
- ④Leakage current increases with increased temperature and decreases with decreasing temperature.

7. Changes in characteristics due to frequency

- The characteristics of conductive polymer hybrid aluminum electrolytic capacitors, solid conductive polymer aluminum electrolytic capacitors vary by operating frequency as follows.

- ①Capacitance expressed in the value at 20°C, 120 Hz decreases with increased frequency.
- ②Tangent of loss angle ($\tan\delta$) expressed in the value at 20°C, 120 Hz increases with increased frequency.
- ③Equivalent series resistance (ESR) expressed in the value at 20°C, 100 kHz increases with decreasing frequency.

8. Failure modes of solid conductive polymer aluminum electrolytic capacitors

- The failure modes of solid conductive polymer aluminum electrolytic capacitors are a wear-out failure by deterioration of electrical performance and a random failure by a short. The failure rate level is 0.5%/1,000h at the reliability level of 60% with the specified voltage applied at 105°C.
- If a short occurs and continues with the application of a voltage exceeding the rated voltage, increasing the internal temperature, the internal pressure increases by vaporization of the cathode material, which may cause the aluminum case to come off.

9. Operating environments

- Do not use capacitors in an environment directly exposed to water, saltwater spray, oil spill or condensation.
- Do not use capacitors in an environment filled with toxic gas such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine, ammonia, etc.
- Do not use capacitors in a place exposed to ozone, ultraviolet rays, or radiation.

10 . Fumigation Process

- Before transportation of electronic equipment to overseas, fumigation process may be subjected to wooden packing material with a halogen (compound) gas such as methyl bromide. Exercise care that this halogen gas may corrode capacitors. Also, be careful of epidemic preventive agent as corrosive component such as halogen may be contained.

11. The case of Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, Solid Conductive Polymer Aluminum Electrolytic Capacitors and the cathode terminal are not insulated.

- The case and the cathode terminal are not insulated as being connected through inconstant resistance.

12. Double-sided PCB's

- When using capacitors on a double-sided PCB, exercise care that the wiring pattern does not touch the area where the capacitors are mounted. Failure to do so may cause a short to occur to the PCB depending on the mounting conditions.

13. Regarding Connection of Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, Solid Conductive Polymer Aluminum Electrolytic Capacitors

- When connecting more than one capacitor in parallel, consider the current balance.

14. Use at a high altitude

- The use of capacitors at high altitudes such as on an airplane causes a large difference between the internal pressure of the capacitors and the atmospheric pressure. However, there is no problem in use under atmospheric pressure up to about an altitude of 10,000 meters.

If the condition is severe like space, please contact us.

15. Other Notes

- Do not use capacitors on a circuit where rapid charge and discharge are repeated.
- Electrical characteristics of capacitors vary by variations in temperature and frequency. Please consider these variations when designing a circuit.

■ Cautions for Mounting

1. Cautions for Mounting

- Do not reuse capacitors that have been assembled in a set and energized. Capacitors cannot be reused except for those which have been measured on electrical performance during periodic inspection.
- Before mounting, confirm the capacitor ratings (rated capacitance and rated voltage).
- Capacitors may generate transient recovery voltage. In this case, discharge through a resistor of about 1 kΩ.

- Before mounting, confirm the polarity of capacitor.
- Do not drop capacitors onto a floor nor use them.
- Do not mount deformed capacitors.
- Do not mount heating parts around capacitors and on the back of the PCB under or back of capacitors).

2. Do not apply excessive pressure to the capacitor or its terminals

- Be careful of the shock force that can be produced by absorbers, product checkers, and centering on automatic inserters and installers.

3. Soldering

- Do not solder capacitor body by dipping into melted solder.
- Soldering conditions (preheating, soldering temperature, terminal dipping time) should be within the ranges specified in the catalog or the delivery specification.
Please refer to page 15.
- Flux should not adhere to the parts other than the terminals.
- When using a soldering iron, avoid excessive stress to capacitor body.
- Although leakage current may increase (from a few μ A to hundreds of μ A) after soldering, it can be reduced through self-repair by applying voltage. It is advised to operate the set properly after treating with the recommended voltage.
- In case of a long-term use of equipment, control the soldering characteristics so that capacitors and PCB do not fail to connect to avoid abnormal current passage by a failure of soldering to mount.

4. Handling after Soldering

- Do not tilt, fall, raise or twist capacitor body.
- Do not pick up or move PCB by holding a capacitor.
- Do not bump capacitors against objects. When stacking PCB's, make sure that capacitors do not touch the PCB's or other components.
- Do not subject capacitors to excessive stress.

5. Cleaning after Soldering

- Recommended cleaning method
 - ① Cleaning solutions:
 - (a) CLEANTHROUGH 710M, 750H, 750L
 - (b) PINEALPHA ST-100S
 - (c) Techno Care FRW-4~17
 - (d) Isopropyl alcohol (2-propanol)
 - ② Cleaning conditions:
 - (a) The temperature of cleaning solution shall be less than 60°C.
 - (b) Use immersion or ultrasonic waves within two minutes.

- (c) After cleaning, capacitors and PCB's shall thoroughly be rinsed and dried with hot blast for more than 10 minutes. The temperature of such breeze should be less than the upper category temperature.
- (d) After cleaning, do not keep capacitors in cleaning solution atmosphere or airtight containers.
- During cleaning, control the cleaning solution against contamination.

6. Fixing adhesives and coating materials.

- Do not use halogenated fixatives and coatings.
- Before using a fixative or coating, remove flux residues and contaminants from between the PCB and the sealing section of capacitors.
- Dry the cleaning solution before using the adhesive or coating.
- Do not cover up all the sealing sections (terminal side) of capacitors with the adhesive or coating.
- Heat curing conditions of fixative and coating.

■Other Cautions

1. Do not directly touch the terminals of Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, Solid Conductive Polymer Aluminum Electrolytic Capacitors.

Failure to do so can cause electric shock or burns. Before use, allow capacitors to discharge through a $1\text{k}\Omega$ resistor (with a sufficient margin to the heat generation capacity) as needed.

2. Do not short-circuit between the terminals of the Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, Solid Conductive Polymer Aluminum Electrolytic Capacitors. Do not subject capacitors to conductive solutions such as acid and alkaline water solutions.

3. Periodic inspection should be performed on the capacitors for the industrial equipment application.

Check the following checkpoints.

- Visual inspection to check for significant defects.
- Electrical performance: leakage current, rated capacitance, tangent of loss angle, ESR, and items specified in the catalog or delivery specification.

4. Be careful of the following cases of emergency.

- In case of a short during use of capacitors in sets, producing gas, turn off the main power of the set or unplug the power cord from the outlet.
- In case of a short, producing gas, it may take a few seconds to a few minutes depending on the conditions. Therefore, ensure that the protective circuit of the power supply works during this time.
- If the gas gets in your eyes, rinse them immediately. Gargle if the gas is inhaled.

- Do not lick the electrolyte of capacitors. When the electrolyte gets on your skin, wash it off with soap immediately.

5. Storage Conditions.

- Do not store at high temperature and high humidity. Store at a temperature of 5 to 35°C and a relative humidity of less than 75%, keeping free from direct sunlight.
- During delivery, capacitors are stored in airtight moistureproof bags to ensure satisfactory soldering. Once the bag is opened right before mounting, it is better to use up the capacitors. If some are unavoidably left over, return them to the moistureproof bag, and seal the opening hermetically.
- Solid conductive polymer aluminum electrolytic capacitors may have increased leakage current when unused or stored for a long time after mounted on equipment. This phenomenon often occurs at high ambient temperatures; however, leakage current will decrease through voltage treatment. If leakage current still increases after a lapse of more than one year at ambient temperature (shorter time at high temperatures), treat with voltage as needed. In design of equipment, consider the effect of increase in initial current, and install protective circuits as needed.

Please check that recommended voltage treatment conditions are provided for each series.

- Do not store capacitors in an environment directly exposed to water, saltwater spray, oil spill or condensation.
- Do not store capacitors in an environment filled with toxic gas such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine, ammonia, etc.
- Do not store capacitors in a place exposed to ozone, ultraviolet rays, or radiation.

6. Please take the following actions when disposing of Conductive Polymer Hybrid Aluminum Electrolytic Capacitors, Solid Conductive Polymer Aluminum Electrolytic Capacitors.

- Entrust to specialists of industrial waste treatment for incineration.

7. Others

- Before using capacitors, check the details of this delivery specification and catalog as well as the following.

Technical Report of Japan Electronics and Information Technology Industries Association

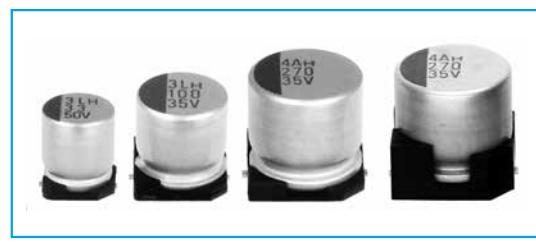
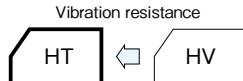
EIAJ RCR-2367B

Guideline of notabilia for fixed aluminum electrolytic capacitors for use in electronic equipment

Conductive Polymer Hybrid Capacitors

GREEN CAP **SMD** **Low ESR** **105°C 10000hours**

- Low ESR and high ripple current are realized.
- HT is resist to vibration. (30G guaranteed)
- Equivalent to conductive polymer type Aluminum Electrolytic Capacitor. (There are little characteristics change by temperature and frequency)
- Guaranteed 105°C, 10000 hours.



Marking color : Blue print

Specifications

Item	Performance									
Category temperature range (°C)	-55~+105									
Tolerance at rated capacitance (%)	±20					(20°C, 120Hz)				
Leakage current (μA)	Less than 0.01CV or 3(μA)whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V)									
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35	50	63	80				
	tanδ (max.)	0.14	0.12	0.10	0.08	0.08				
						(20°C, 120Hz)				
Characteristics at high and low temperature	<table border="1"> <tr> <td>Z-25°C/Z+20°C</td><td>1.5</td></tr> <tr> <td>Z-55°C/Z+20°C</td><td>2.0</td></tr> </table>						Z-25°C/Z+20°C	1.5	Z-55°C/Z+20°C	2.0
Z-25°C/Z+20°C	1.5									
Z-55°C/Z+20°C	2.0									
Endurance (105°C) (Applied ripple current)	Test time	10000 hours								
	Leakage current	The initial specified value or less								
	Percentage of capacitance change	Within ±30% of initial value								
	Tangent of the loss angle	200% or less of the initial specified value								
	ESR change	200% or less of the initial specified value								
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment									

Outline Drawing

Unit : mm

Series HV		Series HT	
φD±0.5	L	φD±0.5	L
0.3 max.	A±0.2	0.3 max.	A±0.2
B±0.2	C	B±0.2	C
(P)	(C)	(P)	(C)
W	W	W	W
() : Reference size			
φD	L	A	B
6.3	5.8±0.3	6.6	2.7
6.3	7.7±0.3	6.6	2.7
8	8.7±0.3	8.4	3.0
8	10±0.5	8.4	3.0
10	8.7±0.3	10.4	3.3
10	10±0.5	10.4	3.3
10	12.5±0.5	10.4	3.3
Casing symbol		Casing symbol	
F61		G10	
F80		H10	
G90		HC5	
G10			
H90			
H10			
HC5			
() : Reference size			
φD	L	A	B
8	10±0.5	8.4	8.4
10	10±0.5	10.4	10.4
10	12.5±0.5	10.4	10.4
Casing symbol		Casing symbol	
G10		H10	
H10		HC5	
() : Reference size			

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k or more
Rated voltage (V) 25 to 100	0.10	0.30	0.60	1

Part numbering system

HV (example : 35V271μF)

HV	—	35	V	271	M	H10	E —	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping symbol
HT	—	35	V	271	M	H10	E —	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping symbol

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	25			35			50			63			
	Item	Case	ESR	Rated ripple current									
		$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)	$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)	$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)	$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)
10	—	—	—	—	—	—	—	—	—	—	6.3×5.8	120	1000
22	—	—	—	—	—	—	—	6.3×5.8	80	1100	6.3×7.7	80	1500
27	—	—	—	—	—	—	—	—	—	—	8×8.7	50	1600
33	—	—	—	—	—	—	—	6.3×7.7	40	1600	8×10	40	1600
47	—	—	—	6.3×5.8	60	1300	8×8.7	35	1700	10×8.7	35	1700	
56	6.3×5.8	50	1300	—	—	—	—	—	—	10×10	30	1800	
68	—	—	—	6.3×7.7	35	2000	8×10	30	1800	—	—	—	
82	—	—	—	—	—	—	10×8.7	28	1900	—	—	—	
100	6.3×7.7	30	2000	8×8.7	30	2100	10×10	28	2000	10×12.5	26	2500	
150	8×8.7	27	2100	8×10	27	2300	10×12.5	24	3000	—	—	—	
220	8×10	27	2300	10×8.7	25	2400	—	—	—	—	—	—	
270	10×8.7	25	2400	10×10	20	2500	—	—	—	—	—	—	
330	10×10	20	2500	—	—	—	—	—	—	—	—	—	
390	—	—	—	10×12.5	18	3500	—	—	—	—	—	—	
560	10×12.5	18	3500	—	—	—	—	—	—	—	—	—	

Rated voltage (V) Rated capacitance (μF)	80			100			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
		$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)	$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)
15	—	—	—	10×10	45	1600	
22	8×10	45	1550	—	—	—	
33	10×10	36	1700	—	—	—	

(Note) Rated ripple current : 105°C , 100kHz ; ESR : 20°C , 100kHz

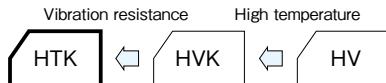
Conductive Polymer Hybrid Capacitors

GREEN CAP

SMD

Low ESR
125°C
4000hours

- Low ESR and high ripple current are realized.
- HTK is resist to vibration. (30G guaranteed)
- Equivalent to conductive polymer type Aluminum Electrolytic Capacitor. (There are little characteristics change by temperature and frequency)
- Guaranteed 125°C, 4000 hours.



Marking color : Blue print

Specifications

Item	Performance									
Category temperature range (°C)	-55~+125									
Tolerance at rated capacitance (%)	±20					(20°C, 120Hz)				
Leakage current (µA)	Less than 0.01CV or 3(µA)whichever is larger (after 2 minutes) C : Rated capacitance (µF), V : Rated voltage (V)									
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35	50	63	80				
	tanδ (max.)	0.14	0.12	0.10	0.08	0.08				
						(20°C, 120Hz)				
Characteristics at high and low temperature	<table border="1"> <tr> <td>Z-25°C/Z+20°C</td> <td>1.5</td> </tr> <tr> <td>Z-55°C/Z+20°C</td> <td>2.0</td> </tr> </table>						Z-25°C/Z+20°C	1.5	Z-55°C/Z+20°C	2.0
Z-25°C/Z+20°C	1.5									
Z-55°C/Z+20°C	2.0									
Endurance (125°C) (Applied ripple current)	Test time	4000 hours								
	Leakage current	The initial specified value or less								
	Percentage of capacitance change	Within ±30% of initial value								
	Tangent of the loss angle	200% or less of the initial specified value								
	ESR change	200% or less of the initial specified value								
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment									

Outline Drawing

Unit : mm

Series HVK		Series HTK	
φD±0.5	L	φD±0.5	L
0.3 max.	A±0.2	0.3 max.	A±0.2
B±0.2	C	B±0.2	C
W	(P)	W	(P)
() : Reference size		() : Reference size	
φD	L	A	B
6.3	5.8±0.3	6.6	2.7
6.3	7.7±0.3	6.6	2.7
8	8.7±0.3	8.4	3.0
8	10±0.5	8.4	3.0
10	8.7±0.3	10.4	3.3
10	10±0.5	10.4	3.3
10	12.5±0.5	10.4	3.3
W	P	Casing symbol	
0.5 to 0.8	2.0	F61	
0.5 to 0.8	2.0	F80	
0.5 to 0.8	3.1	G90	
0.7 to 1.1	3.1	G10	
0.7 to 1.1	4.7	H90	
0.7 to 1.1	4.7	H10	
0.7 to 1.1	4.7	HC5	

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k or more
Rated voltage (V) 25 to 100	0.10	0.30	0.60	1

Part numbering system
HVK (example : 35V270μF)

HVK	—	35	V	271	M	H10	E —	□
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping symbol
HTK	—	35	V	271	M	H10	E —	□
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping symbol

Standard Ratings

Rated voltage (V)	25			35			50			63			
	Item	Case	ESR	Rated ripple current									
		φ D × L (mm)	(mΩ max.)	(mAmps)	φ D × L (mm)	(mΩ max.)	(mAmps)	φ D × L (mm)	(mΩ max.)	(mAmps)	φ D × L (mm)	(mΩ max.)	(mAmps)
10	—	—	—	—	—	—	—	—	—	—	6.3×5.8	120	700
22	—	—	—	—	—	—	—	6.3×5.8	80	750	6.3×7.7	80	900
27	—	—	—	—	—	—	—	—	—	—	8×8.7	50	1000
33	—	—	—	—	—	—	—	6.3×7.7	40	1100	8×10	40	1100
47	—	—	—	6.3×5.8	60	900	8×8.7	35	1200	10×8.7	35	1200	
56	6.3×5.8	50	900	—	—	—	—	—	—	10×10	30	1400	
68	—	—	—	6.3×7.7	35	1400	8×10	30	1250	—	—	—	
82	—	—	—	—	—	—	10×8.7	28	1400	—	—	—	
100	6.3×7.7	30	1400	8×8.7	30	1500	10×10	28	1600	10×12.5	26	2000	
150	8×8.7	27	1500	8×10	27	1600	10×12.5	24	2500	—	—	—	
220	8×10	27	1600	10×8.7	25	1700	—	—	—	—	—	—	
270	10×8.7	25	1700	10×10	20	2000	—	—	—	—	—	—	
330	10×10	20	2000	—	—	—	—	—	—	—	—	—	
390	—	—	—	10×12.5	18	3000	—	—	—	—	—	—	
560	10×12.5	18	3000	—	—	—	—	—	—	—	—	—	

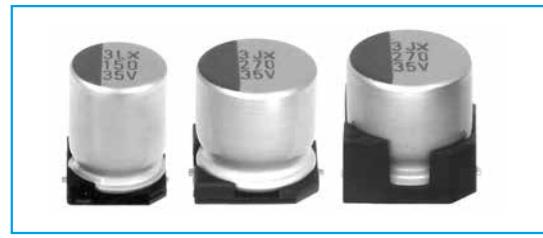
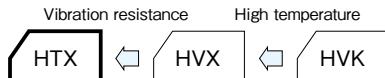
Rated voltage (V)	80			100			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
		φ D × L (mm)	(mΩ max.)	(mAmps)	φ D × L (mm)	(mΩ max.)	(mAmps)
15	—	—	—	10×10	45	1000	
22	8×10	45	1100	—	—	—	
33	10×10	36	1200	—	—	—	

(Note) Rated ripple current : 125°C , 100kHz ; ESR : 20°C , 100kHz

Conductive Polymer Hybrid Capacitors

GREEN CAP **SMD** **Low ESR** **135°C
4000hours**

- Low ESR and high ripple current are realized.
 - HTX is resist to vibration. (30G guaranteed)
 - Equivalent to conductive polymer type Aluminum Electrolytic Capacitor.
(There are little characteristics change by temperature and frequency)
 - Guaranteed 135°C, 4000 hours.



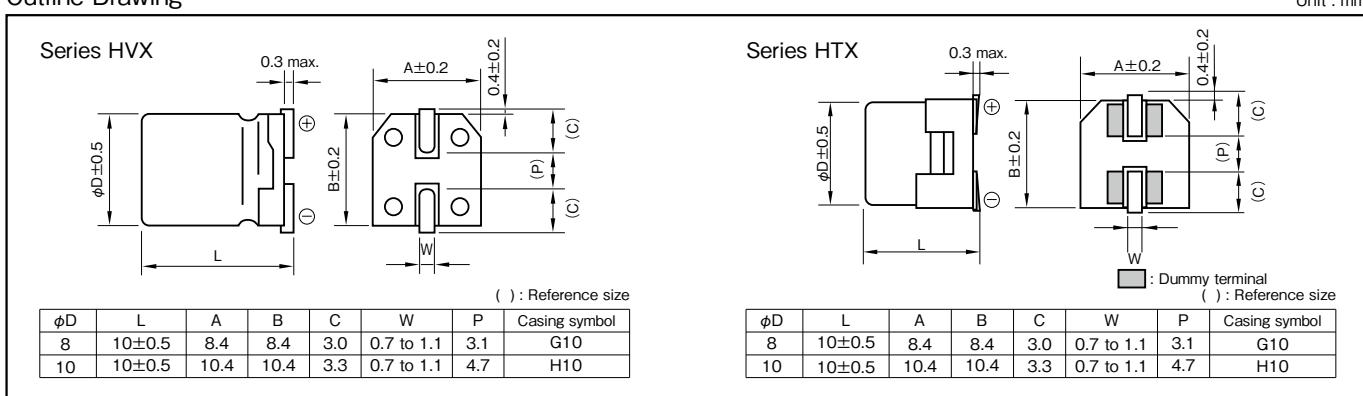
Marking color : Blue print

Specifications

Item	Performance																							
Category temperature range (°C)	-55~+135																							
Tolerance at rated capacitance (%)	± 20																							
Leakage current (μ A)	Less than $0.01CV$ or $3(\mu\text{A})$ whichever is larger (after 2 minutes) C : Rated capacitance (μF) , V : Rated voltage (V)																							
Tangent of loss angle ($\tan\delta$)	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>$\tan\delta$ (max.)</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </table>				Rated voltage (V)	16	25	35	$\tan\delta$ (max.)	0.16	0.14	0.12												
Rated voltage (V)	16	25	35																					
$\tan\delta$ (max.)	0.16	0.14	0.12																					
Characteristics at high and low temperature	<table border="1"> <tr> <td>Impedance ratio (max.)</td> <td>Z-25°C/Z+20°C</td> <td>1.5</td> <td></td> </tr> <tr> <td></td> <td>Z-55°C/Z+20°C</td> <td>2.0</td> <td></td> </tr> </table>				Impedance ratio (max.)	Z-25°C/Z+20°C	1.5			Z-55°C/Z+20°C	2.0													
Impedance ratio (max.)	Z-25°C/Z+20°C	1.5																						
	Z-55°C/Z+20°C	2.0																						
Endurance (135°C) (Applied ripple current)	<table border="1"> <tr> <td>Test time</td> <td colspan="3">4000 hours</td></tr> <tr> <td>Leakage current</td> <td colspan="3">The initial specified value or less</td></tr> <tr> <td>Percentage of capacitance change</td> <td colspan="3">Within $\pm 30\%$ of initial value</td></tr> <tr> <td>Tangent of the loss angle</td> <td colspan="3">200% or less of the initial specified value</td></tr> <tr> <td>ESR change</td> <td colspan="3">200% or less of the initial specified value</td></tr> </table>				Test time	4000 hours			Leakage current	The initial specified value or less			Percentage of capacitance change	Within $\pm 30\%$ of initial value			Tangent of the loss angle	200% or less of the initial specified value			ESR change	200% or less of the initial specified value		
Test time	4000 hours																							
Leakage current	The initial specified value or less																							
Percentage of capacitance change	Within $\pm 30\%$ of initial value																							
Tangent of the loss angle	200% or less of the initial specified value																							
ESR change	200% or less of the initial specified value																							
Shelf life (135°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment																							

Outline Drawing

| Init : mm



- Soldering conditions are described on page 15.
 - Land pattern size are described on page 13.
 - The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz) Rated voltage (V)	120	1k	10k	100k or more
16 to 35	0.10	0.30	0.60	1

Part numbering system					
HVX (example : 16V270μF)					
HVX	—	16	V	271	M
Series code	Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	G10
HTX (example : 16V270μF)					
HTX	—	16	V	271	M
Series code	Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	G10
					Taping symbol

Standard Ratings

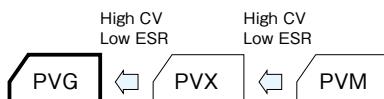
Rated voltage (V) Rated capacitance (μF)	16			25			35			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
		$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)	$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)	$\phi D \times L$ (mm)	(m Ω max.)	(mAmps)
150	—	—	—	—	—	—	—	8×10	22	1600
220	—	—	—	8×10	22	1600	—	—	—	—
270	8×10	20	1700	—	—	—	10×10	20	2000	—
330	—	—	—	10×10	20	2000	—	—	—	—
470	10×10	18	2100	—	—	—	—	—	—	—

(Note) Rated ripple current : 135°C , 100kHz ; ESR : 20°C , 100kHz

Chip Type

GREEN CAP **SMD** **Low ESR** **105°C 2000hours** **Anti-cleaning solvent**

- Super low ESR and high ripple current are realized.
- Guaranteed 105°C, 2000 hours.



Marking color : Blue print

Specifications

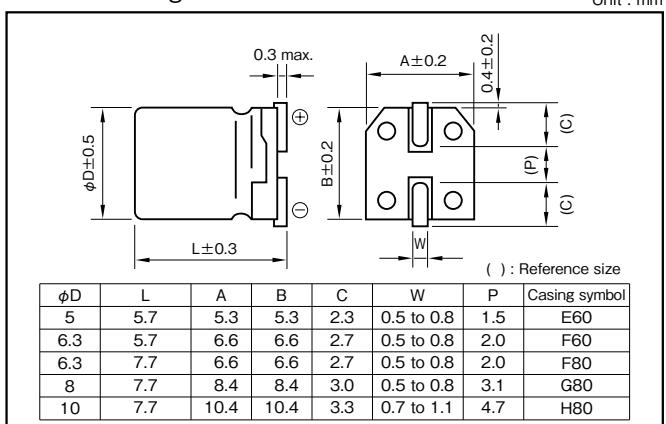
Item	Performance	
Category temperature range (°C)	−55 to +105	
Tolerance at rated capacitance (%)	±20	(20°C,120Hz)
Leakage current (µA) *Note	Less than 0.2CV (after 2 minutes) C : Rated capacitance (µF) , V : Rated voltage (V)	(20°C)
Tangent of the loss angle (tanδ)	Less than 0.12	(20°C,120Hz)
Characteristics at high and low temperature	Impedance ratio (max.)	Z−25°C/Z+20°C 1.15 Z−55°C/Z+20°C 1.25 (100kHz)
Endurance (105°C) (Applied ripple current)	Test time	2000 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within ±20% of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Bias Humidity 60°C, 90 to 95%RH	Test time	500 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within ±20% of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c=1k\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage	
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within ±20% of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)	

*Note : If any doubt arises, measure the leakage current after following voltage application treatment.

Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm



Part numbering system (example : 4V150µF)

PVG	—	4	V	151	M	E60	—	[]
Series code		Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

Standard Ratings

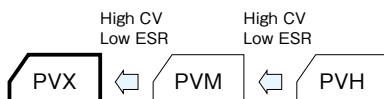
Rated voltage (V)	2.5			4			6.3			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	
		φD×L (mm)	(mΩ max.)	(mAmps)	φD×L (mm)	(mΩ max.)	(mAmps)	φD×L (mm)	(mΩ max.)	
120	—	—	—	—	—	—	—	5×5.7	8	4000
150	—	—	—	5×5.7	8	4000	—	—	—	—
220	5×5.7	8	4000	6.3×5.7	6	4500	6.3×5.7	7	4300	
270	—	—	—	6.3×5.7	6	4500	6.3×7.7	7	4600	
330	6.3×5.7	6	4500	6.3×7.7	6	4800	8×7.7	7	4700	
390	6.3×5.7	6	4500	6.3×7.7	6	4800	—	—	—	
470	6.3×7.7	6	4800	8×7.7	6	5000	8×7.7	7	4700	
560	6.3×7.7	6	4800	—	—	—	8×7.7	7	4700	
680	—	—	—	8×7.7	6	5000	—	—	—	
820	—	—	—	—	—	—	10×7.7	7	4900	
1000	8×7.7	6	5000	10×7.7	6	5200	—	—	—	
1200	10×7.7	6	5200	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 100kHz ; ESR : 20°C, 100kHz

Chip Type

GREEN CAP **SMD** **Low ESR** **105°C 2000hours** **Anti-cleaning solvent**

- Super low ESR and high ripple current are realized.
- Guaranteed 105°C, 2000 hours.



Marking color : Blue print

Specifications

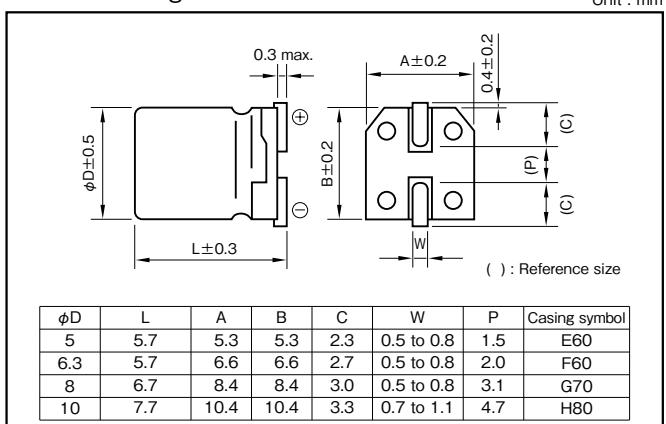
Item	Performance											
Category temperature range (°C)	−55 to +105											
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)											
Leakage current (μ A) *Note	Less than 0.2CV (after 2 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)											
Tangent of the loss angle ($\tan\delta$)	Less than 0.12 (20°C,120Hz)											
Characteristics at high and low temperature	<table border="1"> <tr> <td>Z−25°C/Z+20°C</td> <td>1.15</td> </tr> <tr> <td>Z−55°C/Z+20°C</td> <td>1.25</td> </tr> </table> (100kHz)		Z−25°C/Z+20°C	1.15	Z−55°C/Z+20°C	1.25						
Z−25°C/Z+20°C	1.15											
Z−55°C/Z+20°C	1.25											
Endurance (105°C) (Applied ripple current)	<table border="1"> <tr> <td>Test time</td> <td>2000 hours</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>150% or less of the initial specified value</td> </tr> <tr> <td>ESR change</td> <td>150% or less of the initial specified value</td> </tr> </table>		Test time	2000 hours	Leakage current	The initial specified value or less	Percentage of capacitance change	Within $\pm 20\%$ of initial value	Tangent of the loss angle	150% or less of the initial specified value	ESR change	150% or less of the initial specified value
Test time	2000 hours											
Leakage current	The initial specified value or less											
Percentage of capacitance change	Within $\pm 20\%$ of initial value											
Tangent of the loss angle	150% or less of the initial specified value											
ESR change	150% or less of the initial specified value											
Bias Humidity 60°C, 90 to 95%RH	<table border="1"> <tr> <td>Test time</td> <td>500 hours</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>150% or less of the initial specified value</td> </tr> <tr> <td>ESR change</td> <td>150% or less of the initial specified value</td> </tr> </table>		Test time	500 hours	Leakage current	The initial specified value or less	Percentage of capacitance change	Within $\pm 20\%$ of initial value	Tangent of the loss angle	150% or less of the initial specified value	ESR change	150% or less of the initial specified value
Test time	500 hours											
Leakage current	The initial specified value or less											
Percentage of capacitance change	Within $\pm 20\%$ of initial value											
Tangent of the loss angle	150% or less of the initial specified value											
ESR change	150% or less of the initial specified value											
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c=1k\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage <table border="1"> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>150% or less of the initial specified value</td> </tr> <tr> <td>ESR change</td> <td>150% or less of the initial specified value</td> </tr> </table>		Leakage current	The initial specified value or less	Percentage of capacitance change	Within $\pm 20\%$ of initial value	Tangent of the loss angle	150% or less of the initial specified value	ESR change	150% or less of the initial specified value		
Leakage current	The initial specified value or less											
Percentage of capacitance change	Within $\pm 20\%$ of initial value											
Tangent of the loss angle	150% or less of the initial specified value											
ESR change	150% or less of the initial specified value											
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)											

*Note : If any doubt arises, measure the leakage current after following voltage application treatment.

Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm



Part numbering system (example : 4V150μF)

PVX	—	4	V	151	M	E60	E —	[]
Series code		Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	2.5			4			6.3			10			
	Item	Case	ESR	Rated ripple current									
		φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)
100	—	—	—	—	—	—	—	5×5.7	15	3100	5×5.7	15	3100
120	—	—	—	—	—	—	—	—	—	—	6.3×5.7	13	3300
150	5×5.7	10	3800	5×5.7	10	3800	5×5.7	15	3100	—	—	—	—
220	5×5.7	10	3800	5×5.7	10	3800	6.3×5.7	9	4000	8×6.7	10	3800	—
270	5×5.7	10	3800	—	—	—	—	—	—	—	—	—	—
330	6.3×5.7	9	4000	6.3×5.7	9	4000	8×6.7	8	4300	8×6.7	10	3800	—
390	6.3×5.7	9	4000	—	—	—	8×6.7	8	4300	—	—	—	—
470	8×6.7	8	4300	8×6.7	8	4300	8×6.7	8	4300	10×7.7	10	4000	—
560	8×6.7	8	4300	8×6.7	8	4300	—	—	—	—	—	—	—
680	8×6.7	8	4300	10×7.7	8	4600	—	—	—	—	—	—	—
820	—	—	—	—	—	—	10×7.7	8	4600	—	—	—	—
1000	10×7.7	8	4600	10×7.7	8	4600	—	—	—	—	—	—	—
1200	10×7.7	8	4600	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz ; ESR : 20°C, 100kHz

Chip Type

GREEN CAP **SMD** **Low ESR** **105°C 1000hours** **Anti-cleaning solvent**

- 4.0mm height
- Super low ESR and high ripple current are realized.
- Guaranteed 105°C, 1000 hours.

Low Profile



Marking color : Blue print

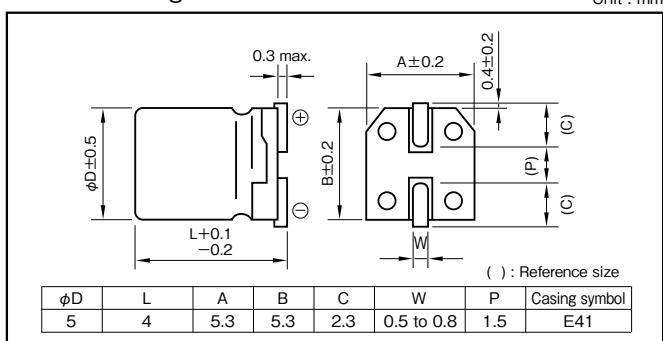
Specifications

Item	Performance	
Category temperature range (°C)	−55 to +105	
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)	
Leakage current (μ A) *Note	Less than 700 μ A (after 2 minutes) (20°C)	
Tangent of the loss angle ($\tan\delta$)	Less than 0.12 (20°C,120Hz)	
Characteristics at high and low temperature	Impedance ratio (max.)	Z−25°C/Z+20°C 1.15 Z−55°C/Z+20°C 1.25 (100kHz)
Endurance (105°C) (Applied ripple current)	Test time	1000 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within $\pm 20\%$ of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Bias Humidity 60°C, 90 to 95%RH	Test time	500 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within $\pm 20\%$ of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c = 1k\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage	
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within $\pm 20\%$ of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)	

- *Note : If any doubt arises, measure the leakage current after following voltage application treatment.
- Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm

Part numbering system (example : 2.5V220 μ F)

PV3	—	2R5	V	221	M	E41	—	[]
Series code		Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol			Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	2.5			6.3		
	Item	Case	ESR	Rated ripple current	Case	ESR
	$\phi D \times L$ (mm)	($\text{m}\Omega$ max.)	(mArms)	$\phi D \times L$ (mm)	($\text{m}\Omega$ max.)	(mArms)
150	—	—	—	5×4.0	25	2700
220	5×4.0	25	3300	—	—	—

(Note) Rated ripple current : 105°C , 100kHz ; ESR : 20°C , 100kHz

ALUMINUM

POLYMER

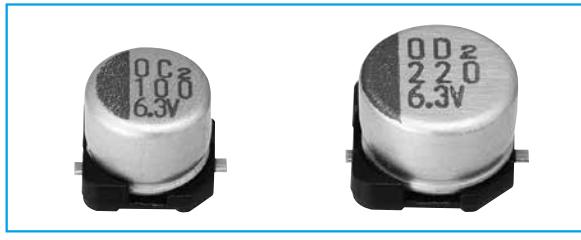
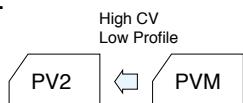
HYBRID

105°C

Chip Type

GREEN CAP **SMD** **Low ESR** **105 C 2000hours** **Anti-cleaning solvent**

- 4.5mm height
- Super low ESR and high ripple current are realized.
- Guaranteed 105°C, 2000 hours.



Marking color : Blue print

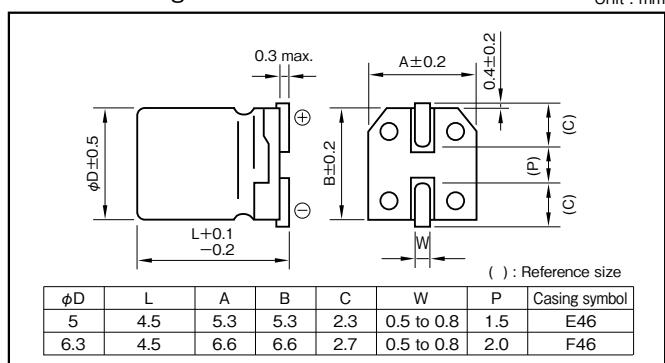
Specifications

Item	Performance	
Category temperature range (°C)	−55 to +105	
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)	
Leakage current (μA) *Note	Rated voltage (V)	2.5 to 20
	Leakage current (μA)	Less than 0.2 CV (after 2 minutes)
	C : Rated capacitance (μF), V : Rated voltage (V)	Less than 0.5 CV (after 2 minutes)
Tangent of the loss angle ($\tan\delta$)	Less than 0.12 (20°C)	
Characteristics at high and low temperature	Impedance ratio (max.)	Z−25°C/Z+20°C 1.15 Z−55°C/Z+20°C 1.25 (100kHz)
Endurance (105°C) (Applied ripple current)	Test time	2000 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within $\pm 20\%$ of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Bias Humidity 60°C, 90 to 95%RH	Test time	500 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within $\pm 20\%$ of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c = 1\text{k}\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage	
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within $\pm 20\%$ of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	150% or less of the initial specified value
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)	

- *Note : If any doubt arises, measure the leakage current after following voltage application treatment.
- Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm



Part numbering system (example : 4V120μF)

PV2	—	4	V	121	M	E46	—	[]
Series code		Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol		

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	2.5			4			6.3			10			16			
	Item	Case	ESR	Rated ripple current												
		φDXL (mm)	(mΩ max.)	(mAmps)												
39	—	—	—	—	—	—	—	—	—	—	—	—	—	6.3×4.5	40	1450
100	—	—	—	—	—	—	5×4.5	20	1300	—	—	—	—	—	—	—
120	—	—	—	5×4.5	20	1400	—	—	—	6.3×4.5	30	1750	—	—	—	—
150	—	—	—	—	—	—	6.3×4.5	16	1950	—	—	—	—	—	—	—
180	5×4.5	20	1400	—	—	—	—	—	—	—	—	—	—	—	—	—
220	—	—	—	6.3×4.5	16	2400	6.3×4.5	16	1950	—	—	—	—	—	—	—
270	6.3×4.5	16	2400	—	—	—	—	—	—	—	—	—	—	—	—	—
330	6.3×4.5	13	2400	—	—	—	—	—	—	—	—	—	—	—	—	—
390	6.3×4.5	16	2400	—	—	—	—	—	—	—	—	—	—	—	—	—

Rated voltage (V)	20			25				
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	
		φDXL (mm)	(mΩ max.)	(mAmps)	φDXL (mm)	(mΩ max.)	(mAmps)	
15	—	—	—	6.3×4.5	45	1150	—	
22	6.3×4.5	45	1250	—	—	—	—	

(Note) Rated ripple current : 105°C, 100kHz ; ESR : 20°C, 100kHz

ALUMINUM

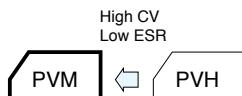
POLYMER

105°C

Chip Type

GREEN CAP SMD Low ESR 105°C 2000hours Anti-cleaning solvent

- Super low ESR and high ripple current are realized.
- Guaranteed 105°C, 2000 hours.



Marking color : Blue print

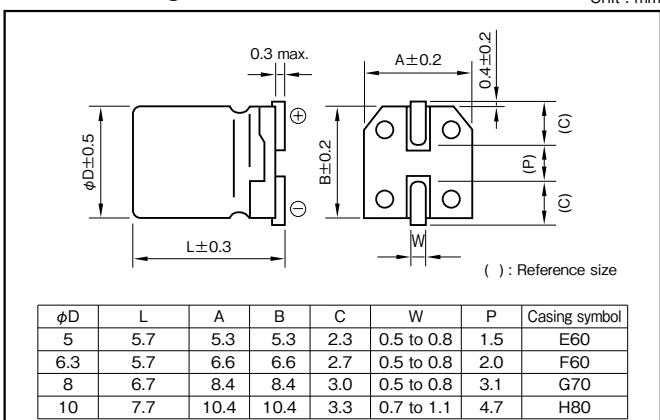
Specifications

Item	Performance						
Category temperature range (°C)	−55 to +105						
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)						
Leakage current (μ A) *Note	Rated voltage (V)	2.5 to 20	25,35				
Leakage current (μ A)			Less than 0.2 CV (after 2 minutes) Less than 0.5 CV (after 2 minutes)				
C : Rated capacitance (μ F), V : Rated voltage (V)			(20°C)				
Tangent of the loss angle ($\tan\delta$)	Less than 0.12 (20°C, 120Hz)						
Characteristics at high and low temperature	<table border="1"> <tr> <td>Z−25°C/Z+20°C</td><td>1.15</td></tr> <tr> <td>Z−55°C/Z+20°C</td><td>1.25</td></tr> </table> (100kHz)			Z−25°C/Z+20°C	1.15	Z−55°C/Z+20°C	1.25
Z−25°C/Z+20°C	1.15						
Z−55°C/Z+20°C	1.25						
Endurance (105°C) (Applied ripple current)	Test time	2000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 20\%$ of initial value					
	Tangent of the loss angle	150% or less of the initial specified value					
Bias Humidity 60°C, 90 to 95%RH	ESR change	150% or less of the initial specified value					
	Test time	500 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 20\%$ of initial value					
	Tangent of the loss angle	150% or less of the initial specified value					
Characteristics of applied surge voltage	ESR change	150% or less of the initial specified value					
	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c=1k\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage						
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 20\%$ of initial value					
	Tangent of the loss angle	150% or less of the initial specified value					
Failure rate	ESR change	150% or less of the initial specified value					
	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)						

*Note : If any doubt arises, measure the leakage current after following voltage application treatment.
Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm



Part numbering system (example : 4V150μF)

PVM	—	4	V	151	M	E60	E —	□
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	2.5			4			6.3			10			16			
	Item	Case	ESR	Rated ripple current												
		φD×L (mm)	(mΩ max.)	(mAmps)												
33	—	—	—	—	—	—	—	—	—	—	—	—	—	5×5.7	35	2070
39	—	—	—	—	—	—	—	—	—	—	—	—	—	5×5.7	35	2070
47	—	—	—	—	—	—	—	—	—	—	5×5.7	28	2310	6.3×5.7	28	2340
56	—	—	—	—	—	—	—	—	—	—	5×5.7	28	2310	—	—	—
68	—	—	—	—	—	—	—	—	—	—	5×5.7	28	2310	6.3×5.7	28	2340
100	—	—	—	5×5.7	22	2610	5×5.7	24	2500	6.3×5.7	25	2530	8×6.7	24	3010	
120	—	—	—	—	—	—	5×5.7	24	2500	6.3×5.7	25	2530	8×6.7	24	3010	
150	—	—	—	5×5.7	22	2610	—	—	—	—	—	—	—	—	—	—
180	5×5.7	21	2670	—	—	—	—	—	—	—	—	—	—	—	—	—
220	5×5.7	21	2670	5×5.7	22	2610	6.3×5.7	15	3160	8×6.7	21	3220	10×7.7	22	3450	
270	—	—	—	6.3×5.7	15	3160	—	—	—	8×6.7	21	3220	—	—	—	
330	6.3×5.7	15	3160	6.3×5.7	15	3160	8×6.7	14	3950	10×7.7	19	3800	—	—	—	
390	6.3×5.7	15	3160	—	—	—	8×6.7	14	3950	—	—	—	—	—	—	
470	8×6.7	13	3600	8×6.7	14	3950	8×6.7	14	3950	10×7.7	19	3800	—	—	—	
560	8×6.7	13	3600	8×6.7	14	3950	—	—	—	—	—	—	—	—	—	
680	8×6.7	13	3600	—	—	—	—	—	—	—	—	—	—	—	—	
820	—	—	—	—	—	—	10×7.7	14	4300	—	—	—	—	—	—	
1000	10×7.7	13	4450	10×7.7	14	4300	—	—	—	—	—	—	—	—	—	
1200	10×7.7	13	4450	—	—	—	—	—	—	—	—	—	—	—	—	

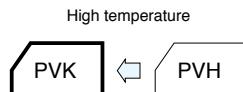
Rated voltage (V)	20			25			35			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
		φD×L (mm)	(mΩ max.)	(mAmps)	φD×L (mm)	(mΩ max.)	(mAmps)	φD×L (mm)	(mΩ max.)	(mAmps)
10	—	—	—	6.3×5.7	60	1500	—	—	—	
15	—	—	—	—	—	—	8×6.7	150	1000	
22	6.3×5.7	50	1650	8×6.7	50	1800	—	—	—	
33	—	—	—	—	—	—	10×7.7	100	1800	
39	—	—	—	10×7.7	45	2100	—	—	—	
47	8×6.7	45	2000	—	—	—	—	—	—	
82	10×7.7	40	2500	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 100kHz ; ESR : 20°C, 100kHz

Chip Type

GREEN CAP SMD Low ESR 125°C 1000hours Anti-cleaning solvent

- Super low ESR and high ripple current are realized.
- Guaranteed 125°C, 1000 hours.



Marking color : Blue print

Specifications

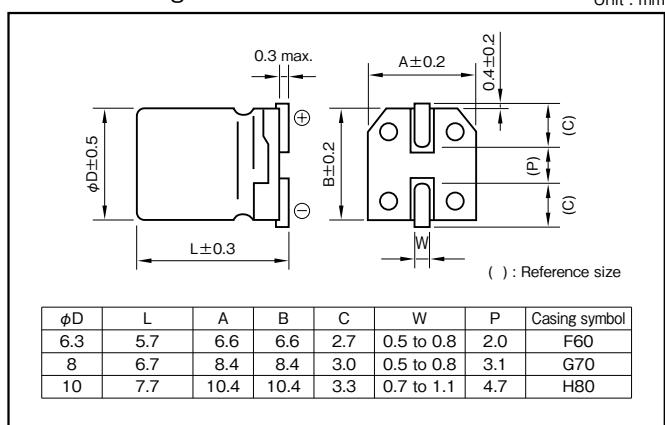
Item	Performance									
Category temperature range (°C)	−55 to +125									
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)									
Leakage current (μA) *Note	Rated voltage (V) Leakage current (μA)	2.5 to 20 Less than 0.2 CV (after 2 minutes) 25 Less than 0.5 CV (after 2 minutes)								
C : Rated capacitance (μF) , V : Rated voltage (V)		(20°C)								
Tangent of the loss angle ($\tan\delta$)	Less than 0.12 (20°C, 120Hz)									
Characteristics at high and low temperature	Impedance ratio (max.) <table border="1"> <tr> <td>Z−25°C/Z+20°C</td> <td>1.15</td> </tr> <tr> <td>Z−55°C/Z+20°C</td> <td>1.25</td> </tr> </table> (100kHz)		Z−25°C/Z+20°C	1.15	Z−55°C/Z+20°C	1.25				
Z−25°C/Z+20°C	1.15									
Z−55°C/Z+20°C	1.25									
Endurance (125°C) (Applied ripple current)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle ESR change									
Bias Humidity 60°C, 90 to 95%RH	Test time Leakage current Percentage of capacitance change Tangent of the loss angle ESR change									
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 125°C for 30 seconds through a protective resistor ($R_c=1\text{k}\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage <table border="1"> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>150% or less of the initial specified value</td> </tr> <tr> <td>ESR change</td> <td>150% or less of the initial specified value</td> </tr> </table>		Leakage current	The initial specified value or less	Percentage of capacitance change	Within $\pm 20\%$ of initial value	Tangent of the loss angle	150% or less of the initial specified value	ESR change	150% or less of the initial specified value
Leakage current	The initial specified value or less									
Percentage of capacitance change	Within $\pm 20\%$ of initial value									
Tangent of the loss angle	150% or less of the initial specified value									
ESR change	150% or less of the initial specified value									
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 125°C)									

*Note : If any doubt arises, measure the leakage current after following voltage application treatment.

Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 125°C.

Outline Drawing

Unit : mm



Part numbering system (example : 4V150μF)

PVK	—	4	V	151	M	F60	E	—	[]
Series code		Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	2.5			4			6.3			10			16			
	Item	Case	ESR	Rated ripple current												
		φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)
33	—	—	—	—	—	—	—	—	—	—	—	—	—	6.3×5.7	37	590
39	—	—	—	—	—	—	—	—	—	—	—	—	—	6.3×5.7	37	590
47	—	—	—	—	—	—	—	—	—	—	6.3×5.7	31	680	6.3×5.7	37	590
56	—	—	—	—	—	—	—	—	—	—	6.3×5.7	31	680	—	—	—
68	—	—	—	—	—	—	6.3×5.7	27	720	—	—	—	—	—	—	—
82	—	—	—	—	—	—	6.3×5.7	27	720	—	—	—	8×6.7	30	830	
100	—	—	—	6.3×5.7	26	770	6.3×5.7	27	720	8×6.7	27	880	8×6.7	30	830	
120	—	—	—	—	—	—	6.3×5.7	27	720	8×6.7	27	880	—	—	—	
150	—	—	—	6.3×5.7	26	770	8×6.7	25	960	8×6.7	27	880	10×7.7	26	930	
180	—	—	—	—	—	—	—	—	—	—	—	—	10×7.7	26	930	
220	6.3×5.7	25	770	8×6.7	25	960	8×6.7	25	960	10×7.7	24	1010	—	—	—	
270	—	—	—	—	—	—	—	—	—	10×7.7	24	1010	—	—	—	
330	8×6.7	23	960	8×6.7	25	960	10×7.7	20	1100	10×7.7	24	1010	—	—	—	
470	8×6.7	23	960	10×7.7	20	1100	10×7.7	20	1100	—	—	—	—	—	—	
560	8×6.7	23	960	—	—	—	—	—	—	—	—	—	—	—	—	
680	—	—	—	10×7.7	20	1100	—	—	—	—	—	—	—	—	—	
1000	10×7.7	19	1100	—	—	—	—	—	—	—	—	—	—	—	—	

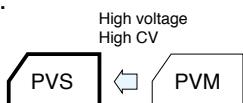
Rated voltage (V)	20			25			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
		φD×L (mm)	(mΩ max.)	(mA rms)	φD×L (mm)	(mΩ max.)	(mA rms)
10	—	—	—	6.3×5.7	65	500	
22	6.3×5.7	50	590	8×6.7	50	600	
39	8×6.7	45	780	10×7.7	45	700	
47	8×6.7	45	780	—	—	—	
82	10×7.7	40	820	—	—	—	

(Note) Rated ripple current : 125°C, 100kHz ; ESR : 20°C, 100kHz

Chip Type

GREEN CAP **SMD** **Low ESR** **105°C 2000hours** **Anti-cleaning solvent**

- High voltage (to 63V)
- High CV and low ESR and High ripple Current are realized.
- Guaranteed 105°C, 2000 hours.



Marking color : Blue print

Specifications

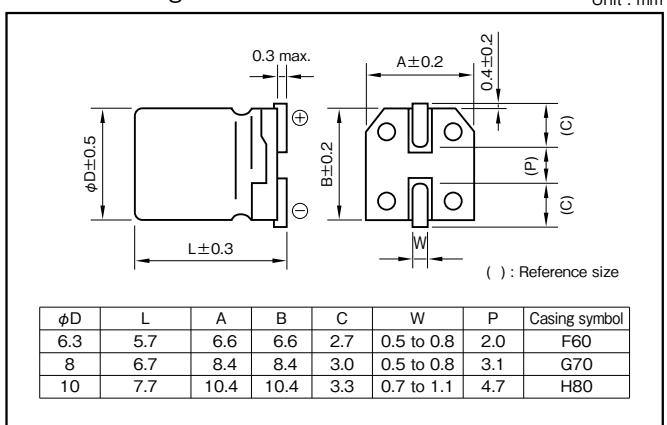
Item	Performance	
Category temperature range (°C)	−55 to +105	
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)	
Leakage current (μA) *Note	Rated voltage (V) Leakage current (μA)	35 to 63 Less than 0.5 CV (after 2 minutes)
C : Rated capacitance (μF), V : Rated voltage (V)		(20°C)
Tangent of the loss angle ($\tan\delta$)	Less than 0.12	(20°C, 120Hz)
Characteristics at high and low temperature	Impedance ratio (max.)	Z−25°C/Z+20°C 1.15 Z−55°C/Z+20°C 1.25 (100kHz)
Endurance (105°C) (Applied ripple current)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle ESR change	2000 hours The initial specified value or less Within $\pm 20\%$ of initial value 150% or less of the initial specified value 150% or less of the initial specified value
Bias Humidity 60°C, 90 to 95%RH	Test time Leakage current Percentage of capacitance change Tangent of the loss angle ESR change	500 hours The initial specified value or less Within $\pm 20\%$ of initial value 150% or less of the initial specified value 150% or less of the initial specified value
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c = 1\text{k}\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage Leakage current Percentage of capacitance change Tangent of the loss angle ESR change	The initial specified value or less Within $\pm 20\%$ of initial value 150% or less of the initial specified value 150% or less of the initial specified value
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)	

*Note : If any doubt arises, measure the leakage current after following voltage application treatment.

Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm



Part numbering system (example : 35V100μF)

PVS	—	35	V	101	M	H80	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	35			50			63			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
		φD×L (mm)	(mΩ max.)	(mAmps)	φD×L (mm)	(mΩ max.)	(mAmps)	φD×L (mm)	(mΩ max.)	(mAmps)
18	—	—	—	—	—	—	—	8×6.7	55	2300
22	—	—	—	—	—	—	—	—	—	—
27	6.3×5.7	40	2600	8×6.7	45	2600	—	—	—	—
33	—	—	—	—	—	—	—	—	—	—
39	—	—	—	—	—	—	—	10×7.7	50	3000
47	8×6.7	35	2800	—	—	—	—	—	—	—
56	—	—	—	10×7.7	40	3200	—	—	—	—
68	—	—	—	—	—	—	—	—	—	—
82	—	—	—	—	—	—	—	—	—	—
100	10×7.7	30	3500	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz ; ESR : 20°C, 100kHz

ALUMINUM

POLYMER

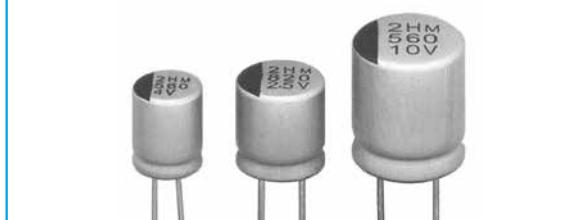
105°C

Radial lead Type

GREEN CAP **Low ESR** **105°C 2000hours** **Anti-cleaning solvent**

- Low ESR and high ripple current are realized.
- Guaranteed 105°C, 2000 hours.

PRM



Marking color : Red print

Specifications

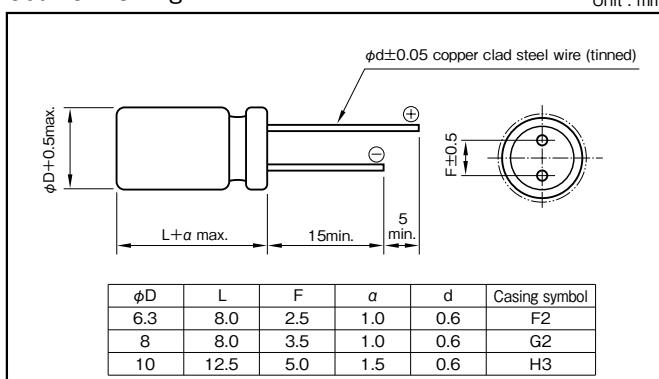
Item	Performance	
Category temperature range (°C)	−55 to +105	
Tolerance at rated capacitance (%)	±20	(20°C,120Hz)
Leakage current (µA) *Note	Less than 0.2CV or 500 whichever is larger (after 2 minutes) C : Rated capacitance (µF) , V : Rated voltage (V)	
Tangent of the loss angle (tanδ)	Less than values of standard ratings	
Characteristics at high and low temperature	Impedance ratio (max.)	Z−55°C/Z+20°C 1.25 (100kHz)
Endurance (105°C) (Applied ripple current)	Test time	2000 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within ±20% of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	200% or less of the initial specified value
Damp heat, steady state (humidity) 60°C, 90 to 95%RH	Test time	500 hours
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within ±20% of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	200% or less of the initial specified value
Characteristics of applied surge voltage	The capacitors shall be subject to 1000 cycles each consisting of charge with the surge voltage specified at 105°C for 30 seconds through a protective resistor ($R_c=1k\Omega$) in 6 minutes per cycle. Surge voltage : 1.15 times of rated voltage	
	Leakage current	The initial specified value or less
	Percentage of capacitance change	Within ±20% of initial value
	Tangent of the loss angle	150% or less of the initial specified value
	ESR change	200% or less of the initial specified value
Failure rate	0.5% per 1000 hours maximum (Confidence level 60% at 105°C)	

*Note : If any doubt arises, measure the leakage current after following voltage application treatment.

Voltage application treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

Outline Drawing

Unit : mm



Part numbering system (example : 4V560µF)

PRM	—	4	V	561	M	F2	B	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Optional symbol	Taping symbol

- Soldering conditions are described on page 14.
- The taping specifications are described on page 18,19.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	2.5				4				6.3				10				
	Item	Case	$\tan\delta$	ESR (m Ω max.)	Rated ripple current (mA rms)	Case	$\tan\delta$	ESR (m Ω max.)	Rated ripple current (mA rms)	Case	$\tan\delta$	ESR (m Ω max.)	Rated ripple current (mA rms)	Case	$\tan\delta$	ESR (m Ω max.)	Rated ripple current (mA rms)
		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)		$\phi D \times L$ (mm)	
220	—	—	—	—	—	—	—	—	—	—	—	—	—	6.3×8.0	0.10	10	4680
270	—	—	—	—	—	—	—	—	—	—	—	—	—	6.3×8.0	0.10	10	4680
330	6.3×8.0	0.10	7	5600	—	—	—	—	6.3×8.0	0.10	10	4680	8×8.0	0.08	10	5000	
390	—	—	—	—	—	—	—	—	—	—	—	—	—	8×8.0	0.08	10	5000
470	6.3×8.0	0.10	7	5600	—	—	—	—	6.3×8.0	0.10	7	5600	8×8.0	0.08	8	5700	
560	6.3×8.0	0.10	7	5600	6.3×8.0	0.10	7	5600	8×8.0	0.08	7	6100	10×12.5	0.12	12	5300	
680	—	—	—	—	8×8.0	0.08	6	6100	8×8.0	0.08	8	5700	—	—	—	—	
820	8×8.0	0.08	6	6100	8×8.0	0.08	6	6100	10×12.5	0.12	10	5500	—	—	—	—	
1000	8×8.0	0.08	6	6100	10×12.5	0.12	8	5500	10×12.5	0.12	10	5500	—	—	—	—	
1200	10×12.5	0.12	8	5500	10×12.5	0.12	8	5500	—	—	—	—	—	—	—	—	
1500	10×12.5	0.12	8	5500	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 100kHz ; ESR : 20°C, 100kHz

ALUMINUM

POLYMER

105°C

Aluminum Electrolytic Capacitors

Polymer hybrid type aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors With Conductive
Polymer Solid Electrolyte

Chip Type Aluminum Electrolytic Capacitors

Miniature Type Aluminum Electrolytic Capacitors

Large Capacitance Aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors for Audio

ALUMINUM

POLYMER
HYBRID

CHIP
ALUMINUM

MINIATURE
ALUMINUM

LARGE
ALUMINUM

FOR AUDIO
ALUMINUM

■ Cautions for Using Aluminum Electrolytic Capacitors

Please read product specifications before using ELNA products.

The following cautions should be observed when using our aluminum electrolytic capacitors to assure their maximum stability and performance. When your application design conditions or operating conditions exceed the limit of the product specification, please contact us. If used under conditions beyond the limit of our specifications, it may cause defects such as short circuit, open circuit, leakage, explosion or combustion.

■Cautions for usage

1. DC electrolytic capacitors are polarized.

- If used with a wrong polarity, it creates an abnormal current resulting in a short circuit or damage to itself. Use DC bipolar electrolytic capacitors for use with uncertain or unknown polarity. DC capacitors cannot be used in AC circuits.

2. Use within the rated voltage.

- If a voltage exceeding the rated voltage is applied, it may cause characteristic deterioration or damage due to the increased leakage current.
- When ripple current is loaded, make sure that the peak value of the ripple voltage does not exceed the rated voltage.

3. Using for power supply circuit.

- While aluminum electrolytic capacitors are operated electrolyte liquid inside dries up and E.S.R. (Equivalent Series Resistance) of the capacitor increases. In case operated longer than rated life time, the capacitance much decreases, tangent of loss angle and E.S.R. much increases. Therefore for some case the sum of bias direct voltage and the peak of ripple voltage is over the rated voltage of the capacitor.
- For any type of circuit, in case the sum of bias direct voltage and the peak of ripple voltage is over the rated voltage of the capacitors or in case the minimum voltage is lower than 0 (zero) volt, the voltage control for the capacitors shall be provided.

4. Do not use in a circuit which requires rapid charging or discharging.

- If used in a circuit requiring rapid charging or discharging, it may cause characteristic deterioration or damage to itself due to the heat generated inside the capacitor. In such cases, contact us for our rapid charging/discharging capacitors.

5. Use within the rated ripple current.

- If applied ripple current exceeds rated ripple current, the life of the capacitor may be shortened, or in an extreme case it gets destroyed due to its internal heat. Use high-ripple type capacitors for such circuits.

6. Changes in characteristics due to operating temperature.

- The characteristics of an electrolytic capacitor will change with a change in the temperature. Such changes are temporary and the original characteristics will be restored at the original temperature (if the characteristics are not deteriorated by remaining at a high temperature for a long time). If used at a

temperature exceeding the guaranteed temperature range, the capacitor may be damaged due to the increased leakage current. Pay attention to the capacitor temperature being affected by the ambient temperature of the unit, the temperature inside the appliance, the heat radiated by another hot component in the unit and the heat inside the capacitor itself due to the ripple current.

(1)The electrostatic capacitance is normally shown as the value at 20°C-120Hz. It increases as the temperature raises and decreases as it lowers.

(2)The tangent of loss angle ($\tan\delta$) is normally shown as the value at 20°C-120Hz. It decreases as the ambient temperature gets high and increases as it gets low.

(3)The leakage current increases as the temperature gets high and decreases as it gets low.

7. Changes in the characteristics due to frequency.

- The characteristics of an electrolytic capacitor will change according to the change in the operating frequency.

(1)The electrostatic capacity is normally shown as the value at 20°C-120Hz. It decreases as the frequency increases.

(2)The tangent of loss angle ($\tan\delta$) is normally shown as the value at 20°C-120Hz. It increases as the frequency gets high.

(3)The impedance is normally shown as the value at 100kHz 20°C. It increases as the frequency lowers.

8. Aluminum electrolytic capacitor life.

- The life of an aluminum electrolytic capacitor terminates when it fails due to the deterioration in its electronic characteristics. Temperature and the ripple current since they especially affect the life. See chart on page.

9. Changes in aluminum electrolytic capacitors during storage.

- After storage for a long period, whether unused or mounted on the appliance, the leakage current of an aluminum electrolytic capacitor will increase. This tendency is more prominent when the ambient temperature is high. If a capacitor has been stored for more than 2 years under normal temperature (shorter if high temperature) and it shows increased leakage current, a treatment by voltage application is recommended. Addition of a protective circuit in the design of the appliance is also recommended, considering the effect of the initial increased current.

10. Insulation between the capacitor case and the cathode terminal.

- The capacitor case and the cathode terminal are connected through the electrolyte which has uncertain resistance. If a complete insulation of the case is necessary, add an insulator at assembly.

11. NC terminal (the supplemental terminal) (series RPK, LJ6, LJ2)

- Since NC terminal is not insulated. It should be mounted at a position electronically independent from all other parts of the circuit.

12. External sleeve

- During a preheating or a hardening of mounting adhesive may cause a sleeve cracked.
The capacitors are usually sleeved with poly vinyl chloride or poly ethylene terephthalate for the indication purpose only. Please do not consider it as an insulation.

13. Fumigation Process

- When exporting electronic equipment abroad, fumigation process may be performed on wooden packaging material with a halogen (compound) gas such as methyl bromide. Exercise care as this halogen gas may corrode capacitors. Also, use caution to epidemic preventive agent as corrosive component such as halogen may be contained.

14. Specific Operating Environments

- Capacitors may corrode when stored or used in a place filled with acidic toxic gases (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, etc.)
If capacitors are used or stored in such environments, please let us know.

15. Use at a high altitude

- The use of capacitors at high altitudes such as on an airplane causes a large difference between the internal pressure of the capacitors and the atmospheric pressure. However, there is no problem in use under atmospheric pressure up to about an altitude of 10,000 meters. Please check the operation of electronic equipment at the operating environmental temperature because the temperature lowers with increased altitude.
If the condition is severe like space, please contact us.

16. Hole pitch adjustment of the PCB to the capacitors.

- Set the hole pitch of the PCB to the lead pitch (the "F" distance in the catalog) of the capacitor. Be careful since a short circuit, a cut or an increase in the leakage current etc. may be caused by the stress given to the lead wire terminals due to the difference between the hole pitch and the lead pitch.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

17. Capacitors with pressure valves.

- A part of the capacitor case is made thin to have the function as the pressure valve in order to prevent explosion due to the rise of inside pressure when a reverse or excessive voltage is applied to the capacitor. Once it has worked as a valve, the whole capacitor needs to be replaced since the valve will not restore.
- When you use a capacitor with pressure valve, provide certain space above the pressure valve as below to prevent an interference when it works as a valve.

Diameter of the capacitor (mm)	18 or less	20 to 40
Required space above the valve (mm)	2.0	3.0

18. Double-sided PCB's

- When you use electrolytic capacitors on a double sided PCB, be careful not to have the circuit pattern run under where the capacitor is mounted. Otherwise it may cause a short circuit on the PCB depending on the condition of mounting.

19. Regarding to connection of capacitors

- Aluminum electrolytic capacitor has electrolyte liquid so that the most portion of electric loss characteristics came from E.S.R(Equivalent Series Resistance) of electrolyte liquid. Therefore the capacitor is an electronic devise which can flow high ripple current in case the temperature increases and it decreases E.S.R.

In case connecting two capacitors or more, E.S.R. of the capacitors is close to the resistance of the circuit. Therefore in case current is unbalanced and some capacitors has high ripple current, temperature increase, it makes more high current and finally it is over the rated ripple current.

For parallel connection of capacitors the proper design of electric circuit such as balancing of each capacitors resistance or control of total ripple current shall be provided to avoid excess ripple current and voltage.

- When two or more capacitors are arranged in series, the voltage given to each capacitors shall be kept below the rated voltage level, by also giving consideration to the balance of the voltage impressed on the capacitors. Further, partial pressure resistor which considers leakage current shall be provided parallel to each condenser not to have over-voltage impressed on.

Balance resistance are explained on p.106 of our Catalog.

■Cautions for Mounting

1. Cautions for mounting.

- Check the ratings (electrostatic capacitance and rated voltage) of the capacitor before mounting.
- Check the polarity of the capacitor to the chassis.
- Do not drop the capacitor to the floor. Do not use

the dropped capacitor.

- Do not deform the capacitor for mounting.

2. Do not apply excessive pressure to the capacitor, its terminals or lead wires.

- Make sure that the contact path of the capacitor meets the hole pitch of the PCB before mounting.
- Transient recovery voltage may be generated in the capacitor due to dielectric absorption. If required, this voltage can be discharged with a resistor with a value of about 1 kΩ.
- A PCB self-standing (snap-in) type capacitor should be pushed to the end (till there is no space) to the PCB for mounting.
- Do not set the automatic insertion machine to clinch the capacitor lead wires too strong.
- Pay attention to the impact given by the component receptacles of the automatic insertion/mounting machines and the product checker, and from the centering operation.

3. Soldering.

- Do not dip the capacitor into melted solder.
- The soldering conditions

Chip type : Please refer to page 15.

small and large type : 260°C, 10 s (max.)

The preliminary heating and other conditions described in the catalog or product specifications.

- Do not flux other part than the terminals.
- If there is a direct contact between the sleeve of the capacitor and the printed circuit pattern or a metal part of another component such as a lead wire, it may cause shrinkage of crack.
- When you use the capacitor with its sleeve touching directly to the PCB, excessive solder temperature or excessive soldering time may cause the sleeve to shrink or crack during the heat.
- If the application is for extended use, understand and manage the soldering characteristics to avoid abnormal current caused by a contact failure between the capacitor and the PCB.

4. Handling after soldering.

- After soldering, do not tilt, push down or twist the capacitor.
- After soldering, do not hold the capacitor as a handle to carry the PCB.
- After soldering, do not hit the capacitor with any obstacle. If PCB's are piled up for storage, the capacitor should not touch another PCB or component.

5. Cleaning after Soldering

- Recommended cleaning method

(1)cleaning solutions:

- (a) CLEANTHROUGH 710M, 750H, 750L
- (b) PINEALPHA ST-100S
- (c) Techno Care FRW-4~17
- (d) Isopropyl alcohol (2-propanol)

(2)Cleaning conditions:

- (a) The temperature of cleaning solution shall be less than 60°C.
 - (b) Use immersion or ultrasonic waves within two minutes.
 - (c) After cleaning, capacitors and PCB's shall thoroughly be rinsed and dried with hot blast for more than 10 minutes. The temperature of such breeze should be less than the upper category temperature.
 - (d) After cleaning, do not keep capacitors in cleaning solution atmosphere or airtight containers.
- During cleaning, control the cleaning solution against contamination.

6. Fixing adhesives and coating materials.

- Do not use fixing adhesive or coating material containing halogen-based solvent.
- Before applying the fixing adhesive or the coating material, make sure that there is no remaining flux or stains between the PCB and the sealed part of the capacitor.
- Before applying the fixing adhesive or the coating material, make sure that the detergent etc. has dried up.
- Do not cover the whole surface of the sealed part (terminal side) of the capacitor with the fixing adhesive or the coating material.
- Observe the description in the catalog or the product specifications concerning the thermal stiffening conditions of the fixing adhesive or the coating material. (If there is no such description, contact us.) When both discrete and SMT components are on the same PCB, the fixing material for the SMT components may cause crack, tear or shrinkage on the external sleeve depending on the thermal stiffening condition.

• Recommended fixing adhesives and coating materials

Fixing adhesives : Cemedine 1500, Diabond DN83K, Bond G103

Coating materials : Taffy TF1159, HumiSeal 1B66NS, 1A27NS

■ Other Cautions

1. Do not touch capacitor terminals with bare hands.

You may get electric shock or your hand may be burnt. Discharge it with a 1 KΩ resistance before use if necessary.

2. Do not short the capacitor terminals with a conductor.

Do not spill conductive solution including acid or alkaline solution on the capacitor.

3. Periodical inspections should be established for the capacitors used in industrial appliances.

- The following items should be checked:

- (1) Appearance : Check if there is any open valve or leakage.
- (2) Electronic performance : Check the leakage current, the electrostatic capacitance, the tangent of loss angle and other items described in the catalog or the product specifications.

4. Take the following measures in case of emergency.

- If you see gas coming out of the capacitor valve when the set is in operation, turn off the power switch of the unit or unplug the power cord from the outlet.
- Keep your face away from the capacitor pressure valve, since the high temperature gas at over 100°C bursts out when the valve works. If the gas gets into your eyes or your mouth, wash your eyes or your mouth. Do not ingest the capacitor electrolyte. If the electrolyte gets on your skin, wash it out with soap.

5. Storing conditions.

- Avoid high temperature or high humidity when storing capacitors. Keep the storing temperature at 5°C to 35°C and the relative humidity not more than 75%.
- The leakage current of an aluminum electrolytic capacitor tends to increase when stored for a long time. This tendency becomes more prominent if the ambient temperature is high. The leakage current will be decreased by voltage application. If necessary, treatment by voltage application should

be made on the capacitors which have been stored for a long period (more than 2 years after production).

- Do not store capacitors at a place where there is a possibility that they may get water, salt or oil spill.
- Do not store capacitors at a place where the air contains dense hazardous gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.).
- Fumigation treatment with toxic gas covering the whole wooden container frames as moth proofing during shipment may leave residual toxic gas.
- Do not store capacitors at a place where it gets ultraviolet or radioactive rays.

6. Disposing of capacitors.

- Punch a hole or crush the capacitors (to prevent explosion) before incineration at approved facility.
- If they are not to be incinerated, bring them to a professional industrial waste disposal company.

7. Other notes.

- Please refer to the following literature for anything not described in the product specifications or the catalog.

(Technical report of Japan Electronics and Information Technology Industries Association, EIAJ RCR-2367C "Guideline of notabilia for fixed aluminum electrolytic capacitors for use in electronic equipment")

Aluminum Electrolytic Capacitors

Polymer hybrid type aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors With Conductive
Polymer Solid Electrolyte

Chip Type Aluminum Electrolytic Capacitors

Miniature Type Aluminum Electrolytic Capacitors

Large Capacitance Aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors for Audio

ALUMINUM

POLYMER
HYBRIDCHIP
ALUMINUMMINIATURE
ALUMINUMLARGE
ALUMINUMFOR AUDIO
ALUMINUM

Chip Type 85°C High CV Capacitors

GREEN CAP SMD Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours at 85°C.

High CV



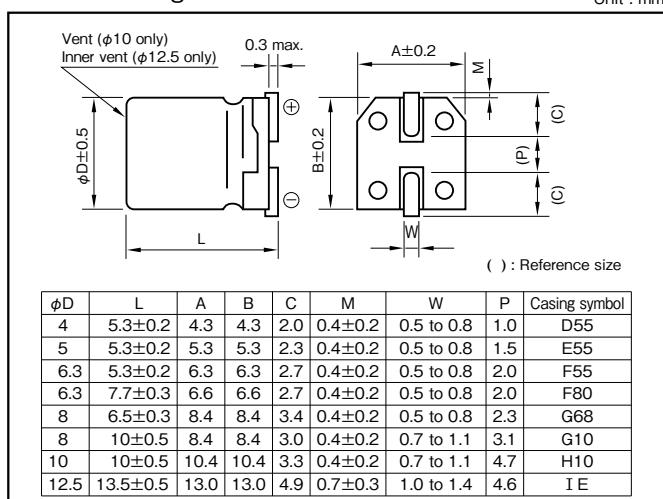
Marking color : Black print ($\phi 4 - \phi 8, \phi 12.5$)
White print on a brown sleeve ($\phi 10$)

Specifications

Item	Performance																		
Category temperature range (°C)	-40 to +85																		
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)																		
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)																		
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	4	6.3	10	16	25	35	50	63	100									
	tan δ (max.)	Refer to following page. (20°C, 120Hz)																	
Characteristics at high and low temperature	Rated voltage (V)	4	6.3	10	16	25	35	50	63	100									
	Z-25°C/Z+20°C	7	4	3	2	2	2	2	2	2									
	Impedance ratio (max.)	Z-40°C/Z+20°C	17	10	8	6	4	3	3	3									
Endurance (85°C) (Applied ripple current)	Test time	2000 hours																	
	Leakage current	The initial specified value or less																	
	Percentage of capacitance change	Within $\pm 30\%$ of initial value																	
	Tangent of the loss angle	200% or less of the initial specified value																	
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4																		
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)																		

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)			
	50 · 60	120	1k	10k · 100k
4 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50 to 63	0.80	1	1.35	1.50
100	0.70	1	1.35	1.50

Part numbering system

$\phi 10$ or less (example : 16V470 μF)

RV5 — 16 V 471 M G10 U —	Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol
$\phi 12.5$ (example : 10V1500 μF)						
RV5 — 10 V 152 M IE T — R5	Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage(V)	4				6.3				10				16				25				
	Item	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)
Rated capacitance(μF)		φD×L (mm)			φD×L (mm)			φD×L (mm)		φD×L (mm)			φD×L (mm)		φD×L (mm)		φD×L (mm)		φD×L (mm)		φD×L (mm)
10	-	-	-	-	-	-	-	-	4×5.3	D55	0.24	23	4×5.3	D55	0.20	26	4×5.3	D55	0.18	23	
22	-	-	-	-	4×5.3	D55	0.28	31	4×5.3	D55	0.24	26	4×5.3	D55	0.28	30	4×5.3	D55	0.18	24	
33	4×5.3	D55	0.42	31	4×5.3	D55	0.35	28	4×5.3	D55	0.32	32	4×5.3	D55	0.28	32	5×5.3	E55	0.18	54	
47	4×5.3	D55	0.42	37	4×5.3	D55	0.35	34	4×5.3	D55	0.32	33	5×5.3	E55	0.28	52	6.3×5.3	F55	0.20	75	
100	5×5.3	E55	0.42	63	5×5.3	E55	0.35	58	5×5.3	E55	0.32	54	6.3×5.3	F55	0.20	70	6.3×7.7	F80	0.18	124	
150	-	-	-	-	6.3×5.3	F55	0.35	83	6.3×5.3	F55	0.32	79	6.3×7.7	F80	0.28	109	-	-	-	-	
220	6.3×5.3	F55	0.42	110	6.3×5.3	F55	0.35	88	6.3×7.7	F80	0.32	173	6.3×7.7	F80	0.28	162	8×10	G10	0.14	252	
330	-	-	-	-	6.3×7.7	F80	0.35	113	8×6.5	G68	0.32	175	8×10	G10	0.20	220	8×10	G10	0.18	300	
470	-	-	-	-	8×10	G10	0.28	262	8×10	G10	0.32	310	8×10	G10	0.28	307	10×10	H10	0.20	458	
680	-	-	-	-	-	-	-	-	-	-	-	-	10×10	H10	0.28	380	-	-	-	-	
820	-	-	-	-	8×10	G10	0.35	320	-	-	-	-	-	-	-	-	12.5×13.5	I E	0.14	552	
1000	-	-	-	-	10×10	H10	0.28	458	10×10	H10	0.24	454	12.5×13.5	I E	0.20	521	-	-	-	-	
1500	-	-	-	-	10×10	H10	0.35	489	12.5×13.5	I E	0.24	560	-	-	-	-	-	-	-	-	
2200	-	-	-	-	12.5×13.5	I E	0.30	651	-	-	-	-	-	-	-	-	-	-	-	-	-

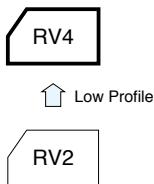
Rated voltage(V)	35				50				63				100							
	Item	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)	Case	Casing symbol	tan δ	Rated ripple current (mArms)			
Rated capacitance(μF)		φD×L (mm)			φD×L (mm)			φD×L (mm)		φD×L (mm)			φD×L (mm)		φD×L (mm)		φD×L (mm)			
0.22	-	-	-	-	4×5.3	D55	0.10	5	-	-	-	-	-	-	-	-	-			
0.33	-	-	-	-	4×5.3	D55	0.10	6	-	-	-	-	-	-	-	-	-			
0.47	-	-	-	-	4×5.3	D55	0.10	7	-	-	-	-	-	-	-	-	-			
1	-	-	-	-	4×5.3	D55	0.10	10	-	-	-	-	-	-	-	-	-			
2.2	-	-	-	-	4×5.3	D55	0.10	15	-	-	-	-	-	-	-	-	-			
3.3	-	-	-	-	4×5.3	D55	0.10	19	4×5.3	D55	0.12	12	-	-	-	-	-			
4.7	4×5.3	D55	0.12	20	4×5.3	D55	0.12	20	5×5.3	E55	0.12	20	-	-	-	-	-			
10	4×5.3	D55	0.14	27	5×5.3	E55	0.12	34	6.3×5.3	F55	0.12	32	8×10	G10	0.10	94				
22	5×5.3	E55	0.14	47	6.3×5.3	F55	0.12	47	6.3×7.7	F80	0.12	60	8×10	G10	0.12	94				
33	6.3×5.3	F55	0.14	67	6.3×7.7	F80	0.12	82	8×10	G10	0.10	139	8×10	G10	0.12	94				
47	6.3×5.3	F55	0.14	54	6.3×7.7	F80	0.12	85	8×10	G10	0.10	139	10×10	H10	0.10	189				
100	6.3×7.7	F80	0.14	120	8×10	G10	0.12	252	10×10	H10	0.12	226	12.5×13.5	I E	0.10	242				
220	8×10	G10	0.14	260	-	-	-	-	12.5×13.5	I E	0.10	343	-	-	-	-				
330	10×10	H10	0.14	360	12.5×13.5	I E	0.10	451	-	-	-	-	-	-	-	-				
470	12.5×13.5	I E	0.12	451	-	-	-	-	-	-	-	-	-	-	-	-				

(Note) Rated ripple current : 85°C, 120Hz

Chip Type 85°C Capacitors (height:4.5mm)

GREEN CAP SMD Anti-cleaning solvent

- Compatible with surface mounting for 4.5mm height capacitors.
- Supplied with carrier taping.
- Guarantees 2000 hours at 85°C.



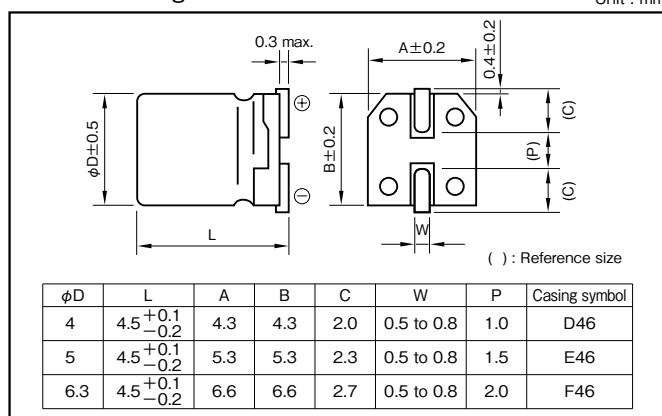
Marking color : Black print

Specifications

Item	Performance												
Category temperature range (°C)	-40 to +85												
Tolerance at rated capacitance (%)	±20												
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V)												
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50						
	tanδ (max.)	0.30	0.24	0.19	0.16	0.14	0.12						
	(20°C, 120Hz)												
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50						
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2						
		Z-40°C/Z+20°C	8	8	4	4	3						
	(120Hz)												
Endurance (85°C) (Applied ripple current)	Test time	2000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within ±20% of initial value											
	Tangent of the loss angle	300% or less of the initial specified value											
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)												

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.70	1	1.25	1.40
50	0.50	1	1.35	1.50
	4.7 to 10μF	0.70	1	1.35

Part numbering system (example : 6.3V47μF)

RV4	—	6	V	470	M	E46	U	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3			10			16			25			35			50		
	Item	Case	ESR	Rated ripple current	Case	ESR												
0.22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	905	4
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	603	5
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	423	6
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	199	8
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	90	12
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	60	15
4.7	—	—	—	—	—	—	—	—	—	4	56	17	4	49	18	5	42	21
10	—	—	—	—	—	—	4	32	22	5	27	28	5	23	30	6.3	20	35
22	4	23	26	5	18	34	5	14	38	6.3	12	49	6.3	11	52	—	—	—
33	5	15	37	5	12	42	6.3	10	55	6.3	8	60	—	—	—	—	—	—
47	5	11	45	6.3	8	59	6.3	7	76	—	—	—	—	—	—	—	—	—
100	6.3	5	76	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

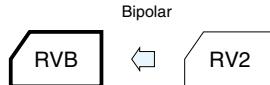
(Note) Rated ripple current : 85°C, 120Hz ; ESR : 20°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type Bipolar Capacitors (height:5.5mm)

GREEN CAP **SMD** **Anti-cleaning solvent**

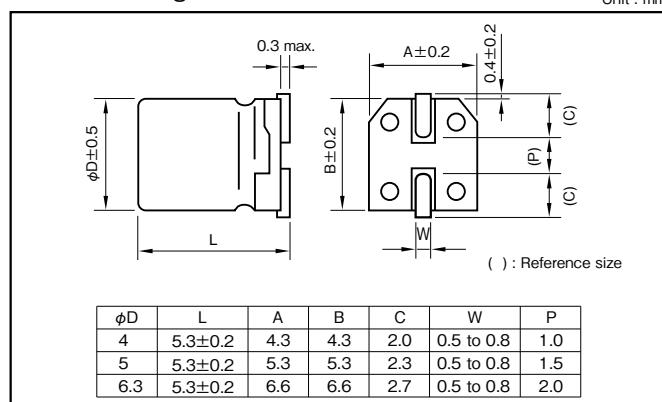
- Compatible with surface mounting for 5.5mm height capacitors.
- Supplied with carrier taping.
- Guarantees 2000 hours at 85°C.



Specifications

Item	Performance						
Category temperature range (°C)	-40 to +85						
Tolerance at rated capacitance (%)	± 20						(20°C, 120Hz)
Leakage current (μ A)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)						
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	50
	$\tan\delta$ (max.)	$\phi 4$	0.35	0.30	0.25	0.25	0.25
Characteristics at high and low temperature	$\phi 5, 6.3$	0.30	0.25	0.20	0.15	0.15	0.15
							(20°C, 120Hz)
Endurance (85°C) (Applied ripple current)	Rated voltage (V)	6.3	10	16	25	35	50
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	3	2	2	2
Shelf life (85°C)	Z-40°C/Z+20°C	8	5	4	3	3	3
							(120Hz)
Applicable standards	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4						

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz) Rated voltage (V)	50 · 60	120	1k	10k · 100k
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.80	1	1.35	1.50

Part numbering system (example : 6.3V47μF)

RVB	—	6	V	470	M	U	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol				Taping symbol	

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Item Rated capacitance (μ F)	6.3			10			16			25			35			50			
	Case	ESR	Rated ripple current																
	ϕD (mm)	(Ω)	(mAmps)	ϕD (mm)	(Ω)	(mAmps)	ϕD (mm)	(Ω)	(mAmps)	ϕD (mm)	(Ω)	(mAmps)	ϕD (mm)	(Ω)	(mAmps)	ϕD (mm)	(Ω)	(mAmps)	
0.22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	1510	3.3
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	1010	4.1
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	706	4.9
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	332	7.2
2.2	—	—	—	—	—	—	—	—	—	—	—	—	4	151	10	5	113	14	
3.3	—	—	—	—	—	—	—	—	—	4	101	13	5	75	17	5	75	17	
4.7	—	—	—	—	—	—	4	88	14	5	53	20	5	53	21	6.3	53	24	
10	—	—	—	4	50	18	5	33	26	6.3	25	35	6.3	25	35	—	—	—	
22	5	23	27	6.3	19	40	6.3	15	45	—	—	—	—	—	—	—	—	—	
33	6.3	15	45	6.3	13	50	6.3	10	55	—	—	—	—	—	—	—	—	—	
47	6.3	11	54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

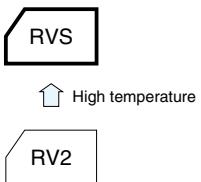
(Note) Rated ripple current : 85°C, 120Hz ; ESR : 20°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type 105°C Standard Capacitors

GREEN CAP SMD 105°C 1000hours Anti-cleaning solvent

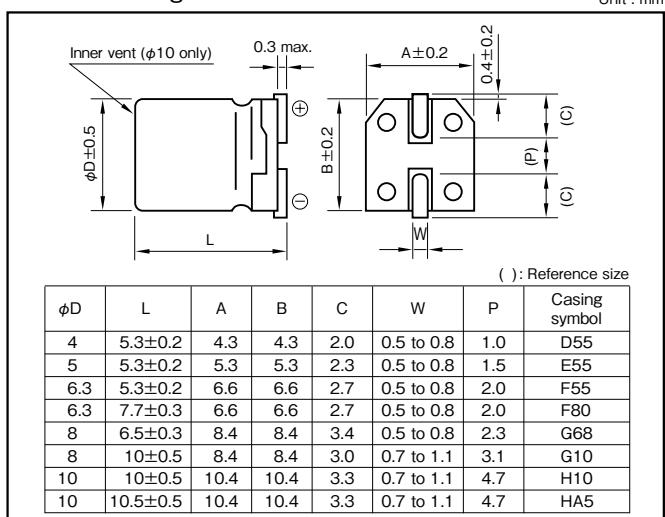
- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 1000 hours at 105°C.



Specifications

Item	Performance												
Category temperature range (°C)	-55 to +105												
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)												
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)												
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50						
	tanδ (max.)	0.30	0.26	0.22	0.16	0.13	0.12						
		(20°C, 120Hz)											
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50						
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2						
		Z-40°C/Z+20°C	8	5	4	3	3						
		(120Hz)											
Endurance (105°C) (Applied ripple current)	Test time	1000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within $\pm 20\%$ of initial value											
	Tangent of the loss angle	200% or less of the initial specified value											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)												

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.80	1	1.35	1.50

Part numbering system (example : 16V47μF)

RVS	—	16	V	470	M	F55	U —	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	6.3			10			16			25			35			50			
	Item	Case	ESR	Rated ripple current															
		φD × L(mm)	(Ω)	(mArms)															
0.22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.3	905	3
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.3	603	4
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.3	424	5
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.3	199	7
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.3	91	10
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.3	60	12
4.7	—	—	—	—	—	—	—	—	—	4 × 5.3	57	12	4 × 5.3	46	14	5 × 5.3	42	17	
10	—	—	—	4 × 5.3	43	15	4 × 5.3	36	16	5 × 5.3	27	21	5 × 5.3	22	23	6.3 × 5.3	20	26	
22	4 × 5.3	23	21	5 × 5.3	20	25	5 × 5.3	17	28	6.3 × 5.3	12	36	6.3 × 5.3	10	50	8 × 6.5	9.0	51	
33	5 × 5.3	15	30	5 × 5.3	13	31	6.3 × 5.3	11	40	6.3 × 5.3	8.0	44	8 × 6.5	6.5	59	6.3 × 7.7	6.0	60	
47	5 × 5.3	11	36	6.3 × 5.3	9.2	43	6.3 × 5.3	7.8	47	8 × 6.5	5.6	66	—	—	—	6.3 × 7.7	4.2	63	
100	6.3 × 5.3	5.0	61	6.3 × 5.3	4.3	60	6.3 × 5.3	3.6	60	6.3 × 7.7	2.7	91	6.3 × 7.7	2.2	84	8 × 10	2.0	140	
150	—	—	—	—	—	—	6.3 × 7.7	2.4	105	8 × 10	1.8	140	8 × 10	1.4	155	10 × 10	1.3	180	
220	8 × 6.5	2.3	102	6.3 × 7.7	2.0	105	6.3 × 7.7	1.7	105	8 × 10	1.2	155	8 × 10	0.98	190	10 × 10.5	0.91	220	
330	6.3 × 7.7	1.5	105	8 × 10	1.3	195	8 × 10	1.1	195	8 × 10	0.80	190	10 × 10.5	0.65	300	—	—	—	
470	8 × 10	1.1	210	8 × 10	0.92	210	8 × 10	0.78	230	10 × 10	0.57	300	—	—	—	—	—	—	
680	8 × 10	0.73	210	10 × 10	0.63	310	10 × 10	0.54	310	—	—	—	—	—	—	—	—	—	
1000	8 × 10	0.50	210	10 × 10	0.43	310	—	—	—	—	—	—	—	—	—	—	—	—	
1500	10 × 10	0.33	310	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C , 120Hz ; ESR : 20°C , 120Hz

Chip Type 105°C Capacitors (height:6.0mm)

GREEN CAP SMD 105°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting for 6.0mm height capacitors.
- Supplied with carrier taping.
- Guarantees 2000 hours at 105°C.

Long life

RVL



RVS



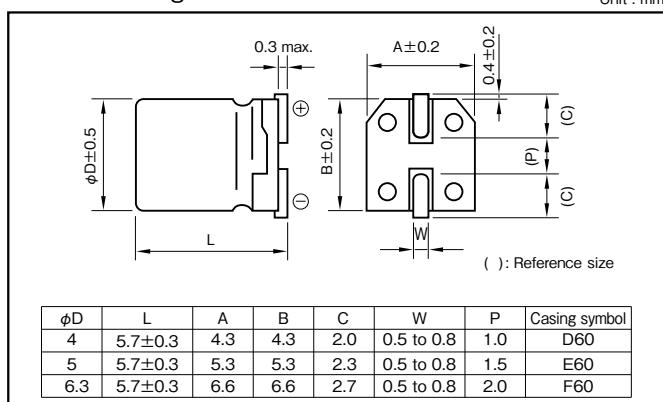
Marking color : Black print

Specifications

Item	Performance												
Category temperature range (°C)	-55 to +105												
Tolerance at rated capacitance (%)	±20												
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C, 120Hz)												
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50						
	tanδ (max.)	0.32	0.28	0.24	0.18	0.15	0.14						
	(20°C, 120Hz)												
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50						
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2						
		Z-40°C/Z+20°C	8	5	4	3	3						
	(120Hz)												
Endurance (105°C) (Applied ripple current)	Test time	2000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within ±30% of initial value											
	Tangent of the loss angle	300% or less of the initial specified value											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)												

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.80	1	1.15	1.25
25 · 35	0.80	1	1.25	1.40
50	0.22 to 3.3μF	0.50	1	1.35
	4.7 to 10μF	0.70	1	1.35

Part numbering system (example : 16V47μF)

RVL	—	16	V	470	M	F60	U —	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3			10			16			25			35			50			
	Item	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current
0.22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.7	1055	5
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.7	703	6
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.7	494	7
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.7	232	12
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.7	105	19
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 × 5.7	70	22
4.7	—	—	—	—	—	—	—	—	—	—	4 × 5.7	63	21	4 × 5.7	53	23	5 × 5.7	49	29
10	—	—	—	—	—	—	4 × 5.7	40	27	5 × 5.7	30	36	5 × 5.7	25	39	6.3 × 5.7	23	47	
22	—	—	—	—	—	—	5 × 5.7	18	46	6.3 × 5.7	14	62	6.3 × 5.7	11	65	—	—	—	—
33	—	—	—	—	—	—	6.3 × 5.7	12	66	6.3 × 5.7	9.0	76	—	—	—	—	—	—	—
47	—	—	—	6.3 × 5.7	9.9	74	6.3 × 5.7	8.5	78	—	—	—	—	—	—	—	—	—	—
100	6.3 × 5.7	5.3	99	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 120Hz ; ESR : 20°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type, 105°C Use, Large Capacitance Capacitors

GREEN CAP SMD 105°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours at 105°C.
($\phi 12.5 \times 13.5L$: 5000 hours at 105°C)



High temperature

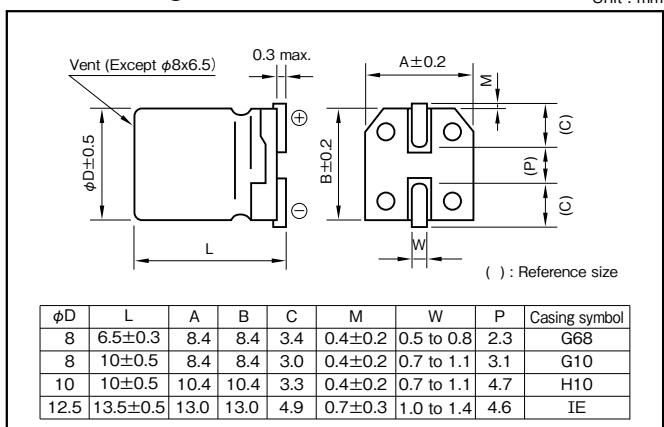
Marking color : Black print ($\phi 8 \times 6.5L$)White print on a brown sleeve ($\phi 8 \times 10L$ - $\phi 12.5 \times 13.5L$)

Specifications

Item	Performance													
Category temperature range (°C)	-55 to +105													
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)													
Leakage current (μA) Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)														
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)		6.3	10	16	25	35	50						
	$\tan\delta$ (max.)		0.30	0.24	0.22	0.16	0.13	0.12						
	(20°C, 120Hz)													
Characteristics at high and low temperature	Rated voltage (V)		6.3	10	16	25	35	50						
	Impedance ratio (max.) Z-25°C/Z+20°C		4	3	2	2	2	2						
	Z-40°C/Z+20°C		8	5	4	3	3	3						
	(120Hz)													
Endurance (105°C) (Applied ripple current)	Test time		2000 hours ($\phi 12.5 \times 13.5L$: 5000 hours)											
	Leakage current		The initial specified value or less											
	Percentage of capacitance change		Within $\pm 20\%$ of initial value											
	Tangent of the loss angle		200% or less of the initial specified value											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4													
Applicable standards	JIS C 5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)													

Outline Drawing

Unit : mm



- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

 $\phi 8, \phi 10$

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)	0.80	1	1.15	1.25
6.3 to 16	0.80	1	1.25	1.40
25 to 35	0.80	1	1.35	1.50
50 to 63	0.80	1	1.35	1.50
100	0.70	1	1.35	1.50

 $\phi 12.5$

Frequency (Hz)	120	1k	10k	100k
Rated capacitance (μF)	0.50	0.76	0.87	1
47	0.70	0.85	0.90	1
100 to 220	0.80	0.93	0.98	1
330 to 1000	0.80	0.93	0.98	1

Part numbering system

 $\phi 8, \phi 10$ (example : 16V470 μF)

RVJ — 16 V 471 M H10 U —

Series code Rated voltage symbol Rated capacitance symbol Capacitance tolerance symbol Casing symbol Taping symbol

 $\phi 12.5$ (example : 10V1000 μF)

RVJ — 10 V 102 M IE T — R5

Series code Rated voltage symbol Rated capacitance symbol Capacitance tolerance symbol Casing symbol Taping symbol

Standard Ratings

Item	6.3		10		16		25		35		50		63		100	
	Case	Casing symbol														
	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)	Rated voltage (V)	Rated ripple current (mA rms)
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8x10	G10 67
33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8x10	G10 133
47	—	—	—	—	—	—	—	—	8x6.5 G68 110	8x6.5 G68 110	8x10 G10 178	8x10 G10 178	10x10 H10 160	10x10 H10 160	12.5x13.5 IE 475*	12.5x13.5 IE 475*
100	—	—	8x6.5 G68 110	8x10 G10 178	8x6.5 G68 110	8x10 G10 178	10x10 H10 324	10x10 H10 324	8x10 G10 178	8x10 G10 178	10x10 H10 324	10x10 H10 324	12.5x13.5 IE 577*	12.5x13.5 IE 577*	—	—
220	8x10	G10 178	8x10	G10 178	10x10	H10 324	10x10	H10 324	10x10	H10 324	12.5x13.5 IE 655*	12.5x13.5 IE 655*	—	—	—	—
330	8x10	G10 178	10x10	H10 324	10x10	H10 324	10x10	H10 324	12.5x13.5 IE 747*	12.5x13.5 IE 747*	—	—	—	—	—	—
470	10x10	H10 324	10x10	H10 324	10x10	H10 324	12.5x13.5 IE 747*	12.5x13.5 IE 747*	—	—	—	—	—	—	—	—
1000	10x10	H10 324	12.5x13.5 IE 747*	12.5x13.5 IE 747*	—	—	—	—	—	—	—	—	—	—	—	—

NOTE : Design, Specifications are subject to change without notice.

It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip type, 105°C Use, Long Life, High CV Capacitors

GREEN CAP SMD 105°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours 105°C.

High CV



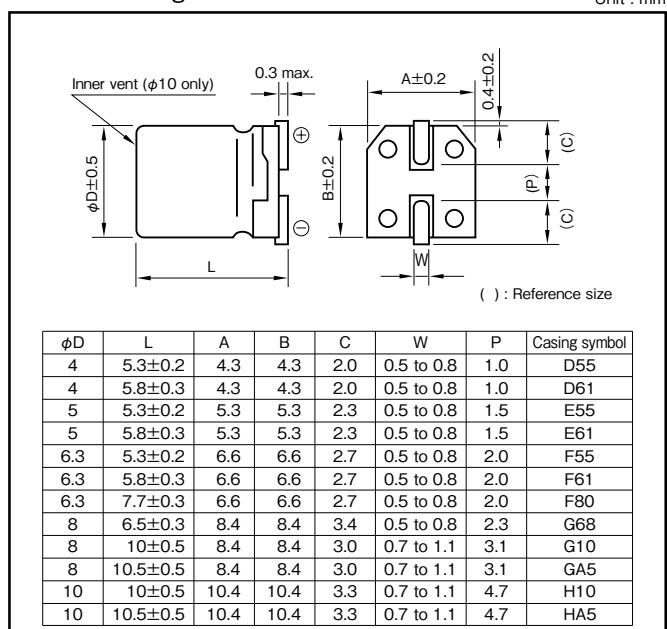
Marking color : Black print

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +105														
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)														
Leakage current (µA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (µF), V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	4	6.3	10	16	25	35	50							
	tanδ (max.)	0.50	0.30	0.22	0.16	0.14	0.12	0.12							
		(20°C, 120Hz)													
Characteristics at high and low temperature	Rated voltage (V)	4	6.3	10	16	25	35	50							
	Impedance ratio (max.)	Z-25°C/Z+20°C	7	4	3	2	2	2							
		Z-40°C/Z+20°C	15	8	6	4	3	3							
		(120Hz)													
Endurance (105°C)	Test time	2000 hours													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within ±20% of initial value (d5 or Smaller & 16V or less: ±30%)													
	Tangent of loss angle	200% or less of the initial specified value													
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1 1998, -18 1999(IEC 60384-1 1992, -18 1993)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)\ Rated voltage (V)	50 · 60	120	1k	10k · 100k
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.50	1	1.35	1.50

Part numbering system (example : 16V100µF)

RVR	—	16	V	101	M	F61	U	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage(V)	4			6.3			10			16			25			
	Item Rated capacitance(μF)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)
4.7	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.3	D55	22
6.8	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.3	D55	25
10	—	—	—	—	—	—	—	—	—	—	4×5.3	D55	25	4×5.8	D61	36
22	—	—	—	4×5.3	D55	26	4×5.8	D61	33	4×5.8	D61	41	4×5.8	E61	48	
				4×5.8	D61	28				5×5.3	E55	39	5×5.8	E61	59	
33	—	—	—	5×5.8	E61	40	5×5.8	E61	47	5×5.3	E55	43	5×5.8	F61	65	
				4×5.8	D61	42				5×5.8	E61	47	5×5.8	F61	69	
47	4×5.8	D61	42	5×5.3	E55	46	6.3×5.8	F61	74	5×5.8	E61	66	5×5.8	E61	82	
				5×5.8	E61	48				6.3×5.3	F55	70	6.3×5.8	F61	132	
100	5×5.8	E61	70	5×5.8	E61	70	6.3×5.8	F61	95	6.3×5.8	F61	112	6.3×7.7	F80	146	
				6.3×5.3	F55	71				6.3×5.8	F61	99	8×6.5	G68	156	
150	—	—	—	—	—	—	6.3×5.8	F61	117	8×6.5	G68	151	—	—	—	
220	6.3×5.8	F61	121	6.3×5.8	F61	121	6.3×7.7	F80	156	6.3×7.7	F80	183	8×10	G10	320	
				6.3×7.7	F80	163	6.3×7.7	F80	163	8×6.5	G68	173	8×6.5	G68	157	
330	8×6.5	G68	181	8×6.5	G68	181	8×10	G10	296	8×10	G10	291	8×10.5	GA5	340	
				8×10	G10	320	8×10	G10	326	8×10	G10	348	10×10.5	HA5	490	
470	—	—	—	8×10.5	GA5	320	8×10.5	GA5	326	8×10.5	GA5	348	—	—	—	
				8×10.5	GA5	340	10×10	H10	440	10×10	H10	484	—	—	—	
680	—	—	—	8×10.5	GA5	340	10×10.5	HA5	440	10×10.5	HA5	484	—	—	—	
				8×10.5	GA5	370	10×10.5	HA5	500	—	—	—	—	—	—	
1000	—	—	—	10×10	H10	495				—	—	—	—	—	—	
				10×10.5	HA5	495				—	—	—	—	—	—	
1200	—	—	—	—	—	—	10×10.5	HA5	500	—	—	—	—	—	—	
1500	—	—	—	—	10×10.5	HA5	550	—	—	—	—	—	—	—	—	

Rated voltage(V)	35			50			
	Item Rated capacitance(μF)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)	Case ϕD×L (mm)	Casing symbol	Rated ripple current (mAmps)
0.22	—	—	—	4×5.3	D55	2	
0.33	—	—	—	4×5.3	D55	3	
0.47	—	—	—	4×5.3	D55	5	
1	—	—	—	4×5.3	D55	10	
2.2	—	—	—	4×5.3	D55	16	
3.3	—	—	—	4×5.3	D55	16	
4.7	4×5.8	D61	23	4×5.8	D61	22	
6.8	—	—	—	5×5.3	E55	23	
10	—	4×5.8	D61	30	5×5.8	E61	35
		5×5.3	E55	28	6.3×5.3	F55	35
22	—	5×5.8	E61	39	6.3×5.8	F61	47
		6.3×5.3	F55	55	6.3×5.8	F61	61
33	—	6.3×5.8	F61	74	6.3×7.7	F80	82
		8×6.5	G68	91	8×6.5	G68	91
47	—	6.3×5.8	F61	89	6.3×7.7	F80	97
		8×6.5	G68	130	8×6.5	G68	108
68	—	6.3×7.7	F80	117	—	—	—
		8×6.5	G68	130	—	—	—
100	—	6.3×7.7	F80	142	8×10.5	GA5	230
		8×6.5	G68	158	10×10.5	HA5	262
150	—	8×10	G10	283	10×10.5	HA5	300
		8×10.5	GA5	283	—	—	—
220	—	8×10.5	GA5	302	10×10.5	HA5	375
		10×10	H10	450	—	—	—
330	—	10×10.5	HA5	450	—	—	—

(Note) Rated ripple current : 105°C, 120Hz

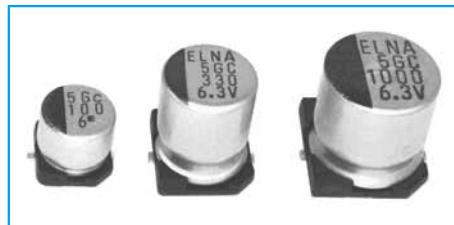
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type, 105°C Use, Long Life Capacitors

GREEN CAP SMD 105°C 3000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 3000 hours at 105°C.
(10L:5000 hours).

Long life



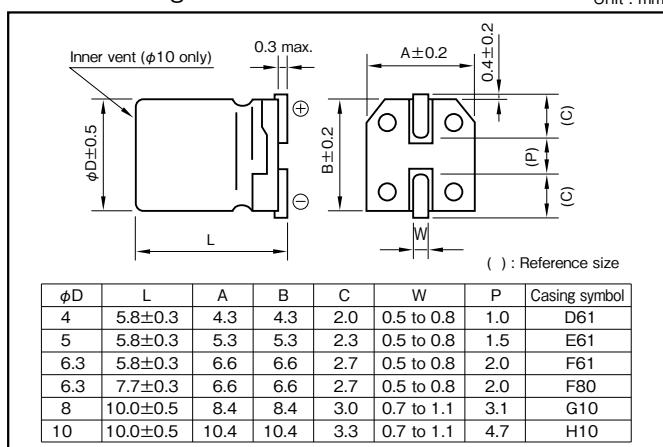
Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +105										
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)										
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)										
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35					
	tanδ (max.)	0.28	0.24	0.20	0.16	0.13					
		(20°C, 120Hz)									
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35					
	Impedance ratio (max.) Z-25°C/Z+20°C	4	3	2	2	2					
	Z-40°C/Z+20°C	10	7	5	3	3					
		(120Hz)									
Endurance (105°C)	Test time	3000 hours (10L : 5000 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of the loss angle	300% or less of initial specified value									
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)										

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)			
	50 · 60	120	1k	10k · 100k
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.1 to 3.3μF	0.50	1	1.35
	4.7 or more	0.70	1	1.35
				1.50

Part numbering system (example : 16V47μF)

RVC	—	16	V	470	M	F61	U —	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	6.3				10				16				25				35				50			
	Item	Case φD×L(mm)	Casing symbol	Rated ripple current mAmps																				
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.8	D61	3.2		
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.8	D61	5.0		
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.8	D61	10		
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.8	D61	16		
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.8	D61	17		
4.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4×5.8	D61	16	5×5.8	E61	23		
10	—	—	—	—	—	—	—	4×5.8	D61	28	—	—	—	—	5×5.8	E61	28	6.3×5.8	F61	35	6.3×7.7	F80	58	
22	4×5.8	D61	26	—	—	—	5×5.8	E61	39	—	—	—	—	—	6.3×5.8	F61	55	6.3×7.7	F80	58	8×10	G10	91	
33	—	—	—	5×5.8	E61	43	—	—	—	6.3×5.8	F61	60	6.3×7.7	F80	57	8×10	G10	91	—	—	—	—	—	
47	5×5.8	E61	46	—	—	—	6.3×5.8	F61	70	6.3×7.7	F80	65	—	—	—	—	—	—	—	8×10	G10	100		
100	6.3×5.8	F61	71	—	—	—	6.3×7.7	F80	81	8×10	G10	130	—	—	—	—	—	—	—	10×10	H10	160		
220	6.3×7.7	F80	101	8×10	G10	160	—	—	—	—	—	—	—	—	10×10	H10	220	—	—	—	—	—	—	
330	8×10	G10	230	—	—	—	—	—	—	10×10	H10	238	—	—	—	—	—	—	—	—	—	—	—	
470	—	—	—	—	—	—	10×10	H10	340	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1000	10×10	H10	313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 120Hz

ALUMINUM

CHIP ALUMINUM

105°C

Chip Type, 105°C Use, Low Impedance Capacitors

GREEN CAP SMD Low z 105°C 200hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours at 105°C.
($\phi 8 \times 6.5L$ or less : 1000hours)
($\phi 12.5 \times 13.5L$: 5000hours)

Miniaturized Low impedance Low impedance



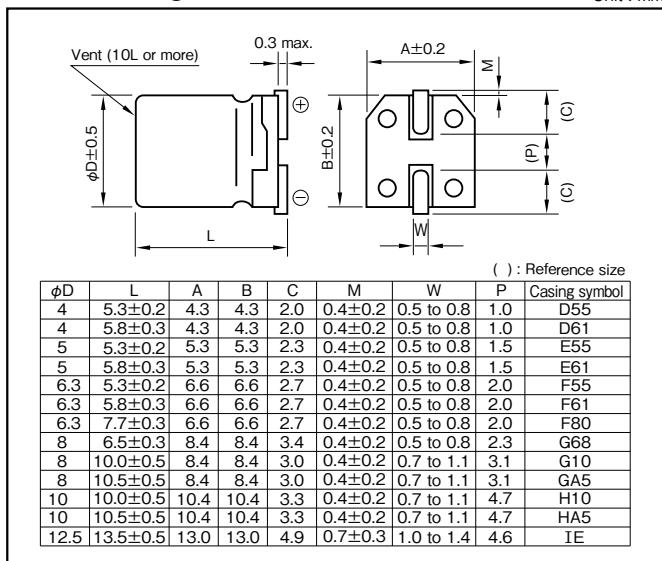
Marking color : Black print ($\phi 4 \times 5.3L - \phi 8 \times 6.5L, \phi 12.5 \times 13.5L$)
: White print on a brown sleeve ($\phi 8 \times 10L - \phi 10 \times 10.5L$)

Specifications

Item	Performance								
Category temperature range (°C)	−55 to +105								
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)								
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)								
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25				
	tanδ (max.)	0.28	0.24	0.20	0.16				
	0.02 is added to every 1000μF increase over 1000μF. (20°C, 120Hz)								
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25				
	Impedance ratio (max.) Z−25°C/Z+20°C	4	3	2	2				
	Z−55°C/Z+20°C	8	5	4	3				
	(120Hz)								
Endurance (105°C) (Applied ripple current)	Test time	1000 hours ($\phi 8 \times 6.5L$ or less) 2000 hours ($\phi 8 \times 10L$ to $\phi 10 \times 10.5L$) 5000 hours ($\phi 12.5 \times 13.5L$)							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within $\pm 25\%$ of initial value							
	Tangent of the loss angle	200% or less of initial specified value							
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4								
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)								

Outline Drawing

Unit : mm



- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage (V) 6.3 to 35	0.50	0.75	0.90	1

Part numbering system

φ 10 × 10.5L or less (example : 6.3V1500μF)

RVZ	—	6	V	152	M	HA5	U	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping symbol

In the case of "for High Temperature Reflow" type, a series name is "RZA".

φ 12.5 × 13.5L (example : 6.3V2700μF)

RVZ	—	6	V	272	M	IE	T	—	R5
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping symbol

If "For Vibration Resistance" type is required, please see the series RTZ of page 88.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	6.3				10				16				25				35			
	Case φDXL (mm)	Casing symbol	Impedance (Ω)	Rated ripple current (mArms)	Case φDXL (mm)	Casing symbol	Impedance (Ω)	Rated ripple current (mArms)	Case φDXL (mm)	Casing symbol	Impedance (Ω)	Rated ripple current (mArms)	Case φDXL (mm)	Casing symbol	Impedance (Ω)	Rated ripple current (mArms)	Case φDXL (mm)	Casing symbol	Impedance (Ω)	Rated ripple current (mArms)
4.7	—	—	—	—	—	—	—	—	—	—	—	—	4×5.3	D55	3.20	65	4×5.3	D55	3.20	65
10	—	—	—	—	4×5.3	D55	3.20	65	4×5.3	D55	3.20	65	4×5.8	D61	1.80	80	5×5.3	E55	1.50	110
													5×5.3	E55	1.50	110	5×5.8	E61	0.76	150
15	—	—	—	—	—	—	—	—	4×5.8	D61	1.80	80	5×5.8	E61	0.76	150	5×5.8	E61	0.76	150
22	4×5.3	D55	3.20	65	4×5.8	D61	1.80	80	5×5.3	E55	1.50	110	5×5.8	E61	0.76	150	5×5.8	E61	0.76	150
	4×5.8	D61	1.80	80	5×5.3	E55	1.50	110	5×5.8	E61	0.76	150	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170
33	5×5.3	E55	1.50	110	5×5.3	E55	1.50	110	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170
	5×5.8	E61	0.76	150	5×5.8	E61	0.76	150	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230
47	5×5.3	E55	1.50	110	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170	6.3×5.8	F61	0.44	230
	5×5.8	E61	0.76	150	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230	6.3×7.7	F80	0.34	280
68	6.3×5.8	F61	0.44	230	6.3×7.7	F80	0.34	280												
	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170	6.3×5.3	F55	0.85	170	6.3×7.7	F80	0.34	280	8×6.5	G68	0.34	280
100	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230	8×6.5	G68	0.34	280	8×6.5	G68	0.34	280	8×10.5	GA5	0.17	450
	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230	6.3×7.7	F80	0.34	280	8×10	G10	0.20	450	8×10.5	GA5	0.17	450
150	6.3×5.8	F61	0.44	230	6.3×5.8	F61	0.44	230	8×6.5	G68	0.34	280	8×10.5	GA5	0.17	450	10×10	H10	0.10	670
	6.3×7.7	F80	0.34	280	8×10.5	GA5	0.17	450												
220	6.3×5.8	F61	0.44	230	6.3×7.7	F80	0.34	280	6.3×7.7	F80	0.34	280	8×10.5	GA5	0.17	450	8×10.5	GA5	0.17	450
	6.3×7.7	F80	0.34	280	8×6.5	G68	0.34	280	8×10	G10	0.20	450	10×10	H10	0.10	670	10×10	H10	0.10	670
330	6.3×7.7	F80	0.34	280	8×10.5	GA5	0.17	450	8×10.5	GA5	0.17	450	8×10.5	GA5	0.17	450	10×10.5	HA5	0.09	670
	8×6.5	G68	0.34	280	10×10	H10	0.10	670	10×10	H10	0.10	670	10×10	H10	0.10	670				
470	8×10.5	GA5	0.17	450	8×10.5	GA5	0.17	450	8×10.5	GA5	0.17	450	10×10.5	HA5	0.09	670	12.5×13.5	IE	0.06	1100
	10×10	H10	0.10	670	10×10	H10	0.10	670	10×10	H10	0.10	670					12.5×13.5	IE	0.06	1100
680	8×10.5	GA5	0.17	450	10×10.5	HA5	0.09	670	10×10.5	HA5	0.09	670	12.5×13.5	IE	0.06	1100	12.5×13.5	IE	0.06	1100
1000	8×10.5	GA5	0.17	450	10×10.5	HA5	0.09	670	12.5×13.5	IE	0.06	1100	12.5×13.5	IE	0.06	1100	—	—	—	—
	10×10	H10	0.10	670																
1500	10×10.5	HA5	0.09	670	12.5×13.5	IE	0.06	1100	12.5×13.5	IE	0.06	1100	—	—	—	—	—	—	—	—
2200	12.5×13.5	IE	0.06	1100	12.5×13.5	IE	0.06	1100	—	—	—	—	—	—	—	—	—	—	—	—
2700	12.5×13.5	IE	0.06	1100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz ; Impedance : 20°C, 100kHz

ALUMINUM

CHIP ALUMINUM

105°C

Chip Type, 105°C Use, Low Impedance, Long Life Capacitors

GREEN CAP SMD Low Z 105°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours at 105°C.
(6.3 to 50V 10.0L,10.5L:5000 hours)
(ϕ 12.5x13.5L: 5000 hours)

Low Z, Long life

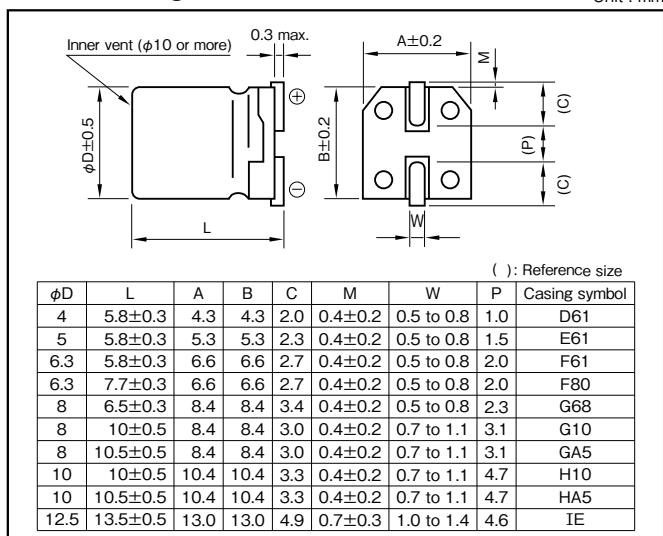


Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-55 to +105										
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)										
Leakage current (μ A)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F), V : Rated voltage (V) (20°C)										
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	
	$\tan\delta$ (max.)	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07	
	0.02 is added to every 1000 μ F increase over 1000 μ F. (20°C,120Hz)										
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	
	Z=25°C/Z+20°C	2	2	2	2	2	2	2	2	2	
	Z=40°C/Z+20°C	3	3	3	3	3	3	3	3	3	
	Z=55°C/Z+20°C	8	4	4	3	3	3	3	3	3	
	(120Hz)										
Endurance (105°C)	Test time	2000 hours (6.3 to 50V 10.0L,10.5L, ϕ 12.5x13.5L : 5000 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within $\pm 30\%$ of initial value									
	Tangent of the loss angle	200% or less of the initial specified value (6.3 to 50V 10.0L,10.5L, ϕ 12.5x13.5L : 300% or less)									
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C 5101-1 1998, -18 1999(IEC 60384-1 1992, -18 1993)										

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50・60	120	1k	10k・100k
Rated voltage (V)	6.3 to 100	0.50	0.50	0.75

Part numbering system $\phi 10X10.5$ or less (example : 16V100 μ F)

RVD — 16 V 101 M F61 U —	Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol
In the case of "for High Temperature Reflow" type, a series name is "RZB".						
$\phi 12.5X13.5$ (example : 16V1000 μ F)	Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol

If "For Vibration Resistance" type is required, please see the series RTD of page 89.

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3				10				16			
	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)
Item	φDXL (mm)				φDXL (mm)				φDXL (mm)			
10	—	—	—	—	—	—	—	—	4x58	D61	1.35	90
22	4x58	D61	1.35	90	4x58	D61	1.35	90	4x58	D61	1.35	90
									5x58	E61	0.70	170
33	—	—	—	—	4x58	D61	1.35	90	—	—	—	—
	—	—	—	—	5x58	E61	0.70	170	—	—	—	—
47	4x58	D61	1.35	90	—	—	—	—	5x58	E61	0.70	170
	5x58	E61	0.70	170	—	—	—	—	63x58	F61	0.36	250
100	5x58	E61	0.70	170	—	—	—	—	63x58	F61	0.36	250
	63x58	F61	0.36	250	63x7.7	F80	0.30	300	63x7.7	F80	0.30	300
220	63x58	F61	0.36	250	8x65	G68	0.30	300	8x65	G68	0.30	300
					8x10	G10	0.16	600	8x10	G10	0.16	600
330	63x7.7	F80	0.30	300	8x10	G10	0.16	600	8x10	G10	0.16	600
470	8x10	G10	0.16	600	8x10	G10	0.16	600	8x10	G10	0.16	600
680	—	—	—	—	8x10	G10	0.16	600	10x10	H10	0.090	850
	—	—	—	—	8x10	G10	0.16	600	10x105	HA5	0.080	850
1000	8x10	G10	0.16	600	10x10	H10	0.090	850	125x135	IE	0.054	1160
					10x105	HA5	0.080	850	125x135	IE	0.054	1160
1500	10x10	H10	0.090	850	125x135	IE	0.054	1160	—	—	—	—
	10x105	HA5	0.080	850	125x135	IE	0.054	1160	—	—	—	—
2200	125x135	IE	0.054	1160	125x135	IE	0.054	1160	—	—	—	—

Rated voltage (V)	25				35				50			
	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)
Item	φDXL (mm)				φDXL (mm)				φDXL (mm)			
4.7	—	—	—	—	4x58	D61	1.35	90	4x58	D61	2.7	60
10	4x58	D61	1.35	90	4x58	D61	1.35	90	5x58	E61	1.5	90
					5x58	E61	0.70	170	63x58	F61	0.86	170
22	5x58	E61	0.70	170	5x58	E61	0.70	170	63x58	F61	0.86	170
33	5x58	E61	0.70	170	63x58	F61	0.36	250	63x7.7	F80	0.66	195
	63x58	F61	0.36	250	63x7.7	F80	0.36	250	8x65	G68	0.63	200
47	63x58	F61	0.36	250	63x7.7	F80	0.36	250	63x7.7	F80	0.66	195
100	63x7.7	F80	0.30	300	63x7.7	F80	0.30	300	8x10	G10	0.34	350
	8x65	G68	0.30	300	8x10	G10	0.16	600	8x105	GA5	0.32	350
220	8x10	G10	0.16	600	8x10	G10	0.16	600	10x10	H10	0.20	700
	8x10	G68	0.16	600	8x10	G10	0.16	600	10x105	HA5	0.18	700
330	8x10	G10	0.16	600	10x10	H10	0.090	850	125x135	IE	0.12	900
	8x10	G10	0.16	600	10x105	HA5	0.080	850	—	—	—	—
470	10x10	H10	0.090	850	125x135	IE	0.054	1160	—	—	—	—
	10x105	HA5	0.080	850	125x135	IE	0.054	1160	—	—	—	—
680	125x135	IE	0.054	1160	125x135	IE	0.054	1160	—	—	—	—
1000	125x135	IE	0.054	1160	—	—	—	—	—	—	—	—

Rated voltage (V)	63				80				100			
	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)
Item	φDXL (mm)				φDXL (mm)				φDXL (mm)			
4.7	5x5.8	E61	3.0	50	—	—	—	—	—	—	—	—
10	6.3x5.8	F61	1.5	80	6.3x7.7	F80	2.4	60	—	—	—	—
22	6.3x7.7	F80	1.2	120	8x10	G10	0.90	130	8x10	G10	1.30	130
33	8x10	G10	0.65	250	8x10	G10	0.90	130	10x10	H10	0.70	200
47	8x10	G10	0.65	250	10x10	H10	0.50	200	—	—	—	—
68	8x10	G10	0.65	250	—	—	—	—	—	—	—	—
100	10x10	H10	0.35	400	125x135	IE	0.18	550	—	—	—	—
	125x135	IE	0.16	600					—	—	—	—
220	125x135	IE	0.16	600	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz
Impedance : 20°C, 100kHzNOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type, 105°C Use, Low Impedance Capacitors

GREEN CAP

SMD

Low Z

105°C
2000hours

Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours at 105°C.

Low impedance

RVV



RVD

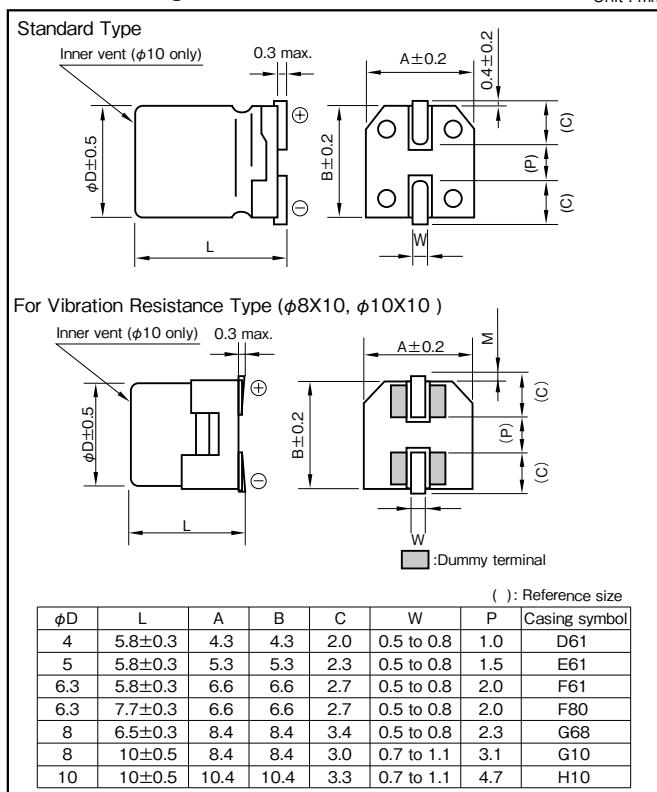


Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-55 to +105										
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)										
Leakage current (μA)											
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35					
	tanδ (max.)	0.26	0.19	0.16	0.14	0.12					
	(20°C, 120Hz)										
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35					
	Z-25°C/Z+20°C	2	2	2	2	2					
	Z-40°C/Z+20°C	3	3	3	3	3					
	Z-55°C/Z+20°C	4	4	4	3	3					
	(120Hz)										
Endurance (105°C)	Test time	2000 hours									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
Shelf life (105°C)	Tangent of the loss angle	200% or less of initial specified value									
	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C 5101-4										
	Applicable standards										
JIS C 5101-1 1998, -18 1999(IEC 60384-1 1992, -18 1993)											

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50・60	120	1k	10k・100k
Rated voltage (V)	6.3 to 50	0.50	0.50	0.75

Part numbering system

Standard Type (example : 16V100μF)	RVV	—	16	V	101	M	F61	U	—	[]
Series code	Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol			Taping symbol	

For Vibration Resistance Type (example : 25V470μF)

For Vibration Resistance Type (example : 25V470μF)	RTV	—	25	V	471	M	H10	U	—	[]
Series code	Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol			Taping symbol	

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage (V) Rated capacitance (μ F)	6.3				10				16							
	Item	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mA rms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mA rms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mA rms)			
		$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)			
10	—	—	—	—	—	—	—	—	—	4 × 5.8	D61	0.85	160			
22	4 × 5.8	D61	0.85	160	4 × 5.8	D61	0.85	160	4 × 5.8	D61	0.85	160				
									5 × 5.8	E61	0.36	240	—	—	—	—
33	—	—	—	—	4 × 5.8	D61	0.85	160	5 × 5.8	E61	0.36	240	—	—	—	—
47	4 × 5.8	D61	0.85	160	—	—	—	—	5 × 5.8	E61	0.36	240	6.3 × 5.8	F61	0.26	300
100	5 × 5.8	E61	0.36	240	—	—	—	—	6.3 × 7.7	F80	0.26	300	6.3 × 5.8	F61	0.26	300
220	6.3 × 5.8	F61	0.26	300	6.3 × 7.7	F80	0.16	600	8 × 6.5	G68	0.18	500	6.3 × 7.7	F80	0.16	600
330	6.3 × 7.7	F80	0.16	600	8 × 10	G10	0.09	850	8 × 10	G10	0.09	850	8 × 10	G10	0.09	850
470	8 × 10	G10	0.09	850	8 × 10	G10	0.09	850	8 × 10	G10	0.09	850	8 × 10	G10	0.09	850
680	—	—	—	—	8 × 10	G10	0.09	850	10 × 10	H10	0.07	1190	10 × 10	H10	0.07	1190
1000	8 × 10	G10	0.09	850	10 × 10	H10	0.07	1190	—	—	—	—	—	—	—	—
1500	10 × 10	H10	0.07	1190	—	—	—	—	—	—	—	—	—	—	—	—

Rated voltage (V) Rated capacitance (μ F)	25				35				50							
	Item	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mA rms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mA rms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mA rms)			
		$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)	$\phi D \times L$ (mm)			
4.7	—	—	—	—	4 × 5.8	D61	0.85	160	—	—	—	—	—			
10	4 × 5.8	D61	0.85	160	4 × 5.8	D61	0.85	160	5 × 5.8	E61	0.36	240	—	—	—	—
22	5 × 5.8	E61	0.36	240	5 × 5.8	E61	0.36	240	—	—	—	—	—	—	—	—
33	5 × 5.8	E61	0.36	240	6.3 × 5.8	F61	0.26	300	—	—	—	—	—	—	—	—
47	6.3 × 5.8	F61	0.26	300	6.3 × 5.8	F61	0.26	300	—	—	—	—	—	—	—	—
100	6.3 × 7.7	F80	0.16	600	6.3 × 7.7	F80	0.16	600	8 × 6.5	G68	0.09	850	8 × 10	G10	0.18	670
220	8 × 10	G10	0.09	850	8 × 10	G10	0.09	850	10 × 10	H10	0.07	1190	10 × 10	H10	0.12	900
330	8 × 10	G10	0.09	850	10 × 10	H10	0.07	1190	—	—	—	—	—	—	—	—
470	10 × 10	H10	0.07	1190	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C , 100kHz

Impedance : 20°C , 100kHz

Chip Type, 105°C Use, Low ESR, High CV Capacitors

GREEN CAP

SMD

Low ESR

105°C
2000hours

Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guaranteed 2000 hours at 105°C.

High CV

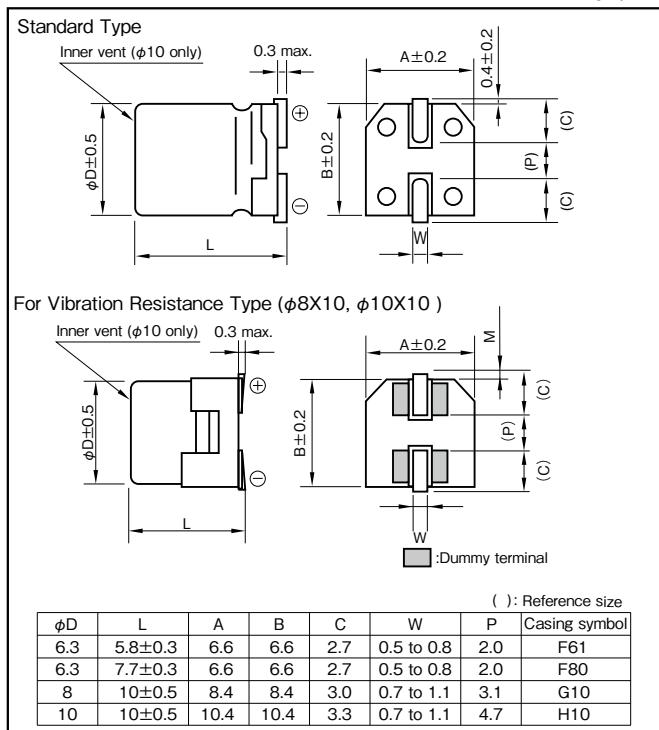


Marking color : Black print

Specifications

Item	Performance								
Category temperature range (°C)	-55 to +105								
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)								
Leakage current (μA)									
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63	
	tanδ (max.)	0.26	0.19	0.16	0.14	0.12	0.10	0.08	
	0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)								
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	
	Z=25°C/Z+20°C	2	2	2	2	2	2	2	
	Z=40°C/Z+20°C	3	3	3	3	3	3	3	
Endurance (105°C)	Z=55°C/Z+20°C	4	4	4	3	3	3	3	
	(120Hz)								
	Test time	2000 hours							
Leakage current		The initial specified value or less							
Percentage of capacitance change		Within ±30% of initial value							
Tangent of the loss angle		200% or less of the initial specified value							
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C 5101-4								
Applicable standards	JIS C 5101-1 1998, -18 1999(IEC 60384-1 1992, -18 1993)								

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50・60	120	1k	10k・100k
Rated voltage (V)	6.3 to 80	0.50	0.50	0.75

Part numbering system

RZD	—	35	V	151	M	F80	U	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

For Vibration Resistance Type (example : 25V820μF)

RMD	—	25	V	821	M	H10	U	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage (V) Item Rated capacitance (μF)	6.3				10				16			
	Case ϕD × L (mm)	Casing symbol	ESR	Rated ripple current	Case ϕD × L (mm)	Casing symbol	ESR	Rated ripple current	Case ϕD × L (mm)	Casing symbol	ESR	Rated ripple current
			(Ω max.)	(mAmps)			(Ω max.)	(mAmps)			(Ω max.)	(mAmps)
150	—	—	—	—	—	—	—	—	6.3 × 5.8	F61	0.26	300
220	—	—	—	—	6.3 × 5.8	F61	0.26	300	6.3 × 5.8	F61	0.26	300
330	6.3 × 5.8	F61	0.26	300	6.3 × 7.7	F80	0.16	600	6.3 × 7.7	F80	0.16	600
470	6.3 × 7.7	F80	0.16	600	6.3 × 7.7	F80	0.16	600	—	—	—	—
680	6.3 × 7.7	F80	0.16	600	—	—	—	—	8 × 10	G10	0.08	850
1000	—	—	—	—	8 × 10	G10	0.08	850	10 × 10	H10	0.06	1190
1500	8 × 10	G10	0.08	850	10 × 10	H10	0.06	1190	—	—	—	—
2200	10 × 10	H10	0.06	1190	—	—	—	—	—	—	—	—

Rated voltage (V) Item Rated capacitance (μF)	25				35				50			
	Case ϕD × L (mm)	Casing symbol	ESR	Rated ripple current	Case ϕD × L (mm)	Casing symbol	ESR	Rated ripple current	Case ϕD × L (mm)	Casing symbol	ESR	Rated ripple current
			(Ω max.)	(mAmps)			(Ω max.)	(mAmps)			(Ω max.)	(mAmps)
47	—	—	—	—	—	—	—	—	6.3 × 5.8	F61	0.68	195
100	—	—	—	—	6.3 × 5.8	F61	0.26	300	6.3 × 7.7	F80	0.34	350
150	6.3 × 5.8	F61	0.26	300	6.3 × 7.7	F80	0.16	600	—	—	—	—
220	6.3 × 7.7	F80	0.16	600	—	—	—	—	8 × 10	G10	0.18	670
330	—	—	—	—	8 × 10	G10	0.08	850	10 × 10	H10	0.12	900
470	8 × 10	G10	0.08	850	—	—	—	—	—	—	—	—
560	—	—	—	—	10 × 10	H10	0.06	1190	—	—	—	—
820	10 × 10	H10	0.06	1190	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C , 100kHz
ESR : 20°C , 100kHz

Chip Type, 125°C Use, Low ESR, Long Life Capacitors

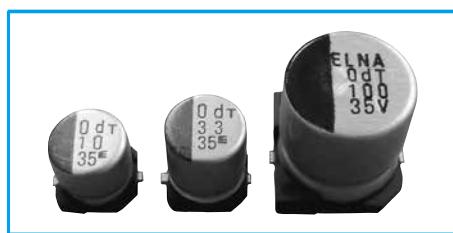
GREEN CAP SMD Low ESR 125°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours at 125°C.
($\phi 4$ to $\phi 8 \times 6.5L$: 1000 hours)
($\phi 12.5 \times 13.5L$: 5000 hours)

Low ESR, Long Life

RVT

RVK

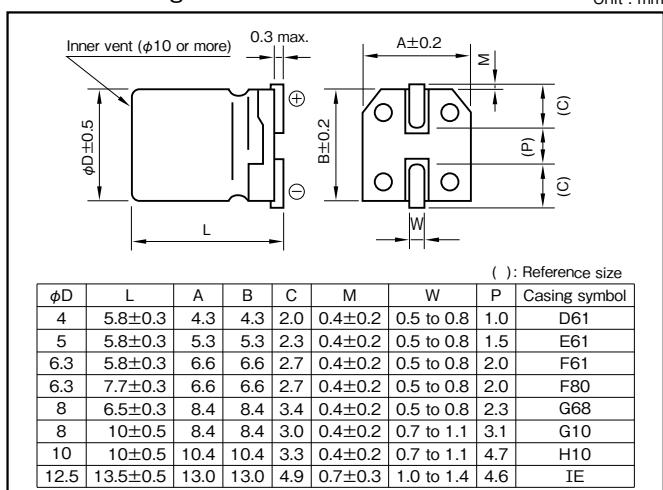


Specifications

Item	Performance														
Category temperature range (°C)	-40 to +125														
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)														
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)														
Tangent of loss angle	Rated voltage (V)	10	16	25	35	50	63	80							
	Tangent of loss angle	0.24	0.20	0.16	0.14	0.14	0.12	0.12							
		(20°C, 120Hz)													
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63	80							
	Impedance Ratio (max.)	Z-25°C/Z+20°C	3	2	2	2	2	2							
		Z-40°C/Z+20°C	4	3	3	3	3	3							
		(120Hz)													
Endurance (125°C)	Test time	2000 hours ($\phi 4$ to $\phi 8 \times 6.5L$: 1000 hours, $\phi 12.5 \times 13.5L$: 5000 hours)													
	Leakage current	The initial specified value or less													
	Capacitance change	Within $\pm 30\%$ of initial value													
	Tangent of loss angle	300% or less of the initial specified value													
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage(V)	0.77	0.88	0.96	1.00

Part numbering system

φ10X10L or less (example : 16V100μF)

RV	—	35	V	221	M	H10	U	—
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

In the case of "for High Temperature Reflow" type, a series name is "RZC".

φ12.5X13.5 (example : 35V330μF)

RV	—	35	V	331	M	IE	T	—	R5
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

If "For Vibration Resistance" type is required, please see the series RTT of page 90.

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage(V) Rated capacitance(μF)	10					16					25				
	Item	Case	ESR(Ω max.)		Rated ripple current	Case	ESR(Ω max.)		Rated ripple current	Case	ESR(Ω max.)		Rated ripple current		
		φD×L(mm)	20°C	-40°C	(mAmps)	φD×L(mm)	20°C	-40°C	(mAmps)	φD×L(mm)	20°C	-40°C	(mAmps)		
10	—	—	—	—	—	4×5.8	3.0	45	50	5×5.8	1.5	23	23	81	81
22	4×5.8	3.0	45	50	—	5×5.8	1.5	23	81	6.3×5.8	1.0	15	15	114	114
33	5×5.8	1.5	23	81	—	6.3×5.8	1.0	15	114	6.3×5.8	1.0	15	15	114	114
47	—	—	—	—	—	6.3×5.8	1.0	15	114	6.3×7.7	0.60	9.0	165	—	—
100	—	—	—	—	—	—	—	—	—	6.3×7.7	0.60	9.0	165	—	—
220	6.3×7.7	0.60	9.0	165	—	8×10	0.20	2.0	340	8×10	0.20	2.0	340	—	—
	8×6.5	0.60	9.0	180	—	10×10	0.15	1.5	500	10×10	0.15	1.5	500	—	—
330	8×10	0.20	2.0	340	—	10×10	0.15	1.5	500	10×10	0.15	1.5	500	—	—
	10×10	0.15	1.5	500	—	12.5×13.5	0.086	1.29	750	12.5×13.5	0.086	1.29	750	—	—
470	10×10	0.15	1.5	500	—	12.5×13.5	0.086	1.29	750	—	—	—	—	—	—
680	12.5×13.5	0.086	1.29	750	—	—	—	—	—	—	—	—	—	—	—
1000	12.5×13.5	0.086	1.29	750	—	—	—	—	—	—	—	—	—	—	—

Rated voltage(V) Rated capacitance(μF)	35					50					63				
	Item	Case	ESR(Ω max.)		Rated ripple current	Case	ESR(Ω max.)		Rated ripple current	Case	ESR(Ω max.)		Rated ripple current		
		φD×L(mm)	20°C	-40°C	(mAmps)	φD×L(mm)	20°C	-40°C	(mAmps)	φD×L(mm)	20°C	-40°C	(mAmps)		
4.7	4×5.8	3.0	45	50	—	—	—	—	—	—	—	—	—	—	—
10	5×5.8	1.5	23	81	6.3×5.8	3.2	48	58	6.3×7.7	1.8	36	95			
	6.3×5.8	1.0	15	114											
22	6.3×5.8	1.0	15	114	6.3×7.7	1.2	18	95	8×10	0.70	14	140	—	—	—
33	6.3×7.7	0.60	9.0	165	6.3×7.7	1.2	18	95	8×10	0.70	14	140	—	—	—
	8×6.5	0.60	9.0	180	8×10	0.50	7.5	180	10×10	0.50	10	200	—	—	—
47	6.3×7.7	0.60	9.0	165	8×10	0.50	7.5	180	8×10	0.70	14	140			
	8×6.5	0.60	9.0	180											
100	8×10	0.20	2.0	340	10×10	0.30	4.5	280	12.5×13.5	0.25	3.75	400			
	10×10	0.15	1.5	500	12.5×13.5	0.18	2.7	550							
220	10×10	0.15	1.5	500	12.5×13.5	0.18	2.7	550	—	—	—	—	—	—	—
330	12.5×13.5	0.086	1.29	750	—	—	—	—	—	—	—	—	—	—	—

Rated voltage(V) Rated capacitance(μF)	80					100						
	Item	Case	ESR(Ω max.)		Rated ripple current	Case	ESR(Ω max.)		Rated ripple current			
		φD×L(mm)	20°C	-40°C	(mAmps)	φD×L(mm)	20°C	-40°C	(mAmps)			
10	8×10	0.75	15	110	8×10	0.75	15	110	—	—		
22	8×10	0.75	15	110	10×10	0.55	11	110	10×10	0.50		
	10×10	0.55	11	150								
33	8×10	0.75	15	110	10×10	0.55	11	150				
	10×10	0.55	11	150								
47	—	—	—	—	12.5×13.5	0.32	4.8	300	—	—		

(Note) Rated ripple current : 125°C, 100kHz
ESR : 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications
from ELNA to ensure that the component is suitable for your use.

Chip Type, 125°C Use, High CV, Long Life Capacitors

GREEN CAP **SMD** **Low ESR** **125°C 4000hours** **Anti-cleaning solvent**

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guaranteed 4000 hours at 125°C.
($\phi 6.3$: 2000 hours)

High CV, Long Life

RZF



RVT



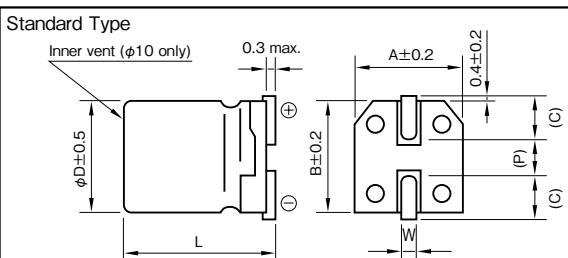
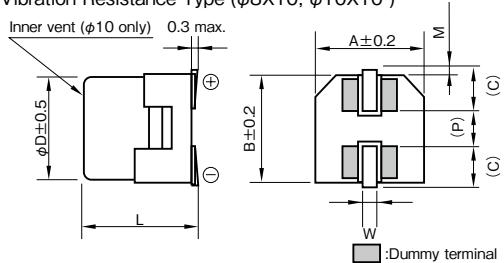
Marking color : Black print

Specifications

Item	Performance												
Category temperature range (°C)	-40 to +125												
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)												
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)												
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	10	16	25	35	50	63						
	$\tan\delta$ (max.)	0.24	0.20	0.16	0.14	0.14	0.12						
		(20°C, 120Hz)											
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63						
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	2	2	2	2						
		Z-40°C/Z+20°C	6	4	4	3	3						
		(120Hz)											
Endurance (125°C)	Test time	4000 hours ($\phi 6.3$: 2000 hours)											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within $\pm 30\%$ of initial value											
	Tangent of the loss angle	300% or less of the initial specified value											
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)												

Outline Drawing

Unit : mm

For Vibration Resistance Type ($\phi 8 \times 10$, $\phi 10 \times 10$)

(): Reference size

ϕD	L	A	B	C	W	P	Casing symbol
6.3	5.8 ± 0.3	6.6	6.6	2.7	0.5 to 0.8	2.0	F61
6.3	7.7 ± 0.3	6.6	6.6	2.7	0.5 to 0.8	2.0	F80
8	10 ± 0.5	8.4	8.4	3.0	0.7 to 1.1	3.1	G10
10	10 ± 0.5	10.4	10.4	3.3	0.7 to 1.1	4.7	H10

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k	
	Rated voltage(V)	10 to 80	0.77	0.88	0.96

Part numbering system

Standard Type (example : 35V100μF)

RZF	—	35	V	101	M	F80	U —	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

For Vibration Resistance Type (example : 25V330μF)

RMF	—	25	V	331	M	H10	U —	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage (V) Item Rated capacitance (μF)	10						16						25					
	Case	ESR (Ω max.)		Rated ripple current (mA rms)	Case	ESR (Ω max.)		Rated ripple current (mA rms)	Case	ESR (Ω max.)		Rated ripple current (mA rms)	Case	ESR (Ω max.)		Rated ripple current (mA rms)		
		φD × L (mm)	20°C			φD × L (mm)	20°C			φD × L (mm)	20°C			φD × L (mm)	20°C			
47	—	—	—	—	6.3 × 5.8	1.2	22	110	6.3 × 5.8	1.2	22	110	6.3 × 7.7	0.60	12	220		
100	6.3 × 5.8	1.2	22	110	6.3 × 5.8	1.2	22	110	8 × 10	0.30	5.5	296	8 × 10	0.30	5.5	296		
220	6.3 × 7.7	0.60	12	220	6.3 × 7.7	0.60	12	220	10 × 10	0.20	3.6	440	10 × 10	0.20	3.6	440		
330	8 × 10	0.30	5.5	296	8 × 10	0.30	5.5	296	—	—	—	—	—	—	—	—	—	
470	8 × 10	0.30	5.5	296	10 × 10	0.20	3.6	440	10 × 10	0.20	3.6	440	—	—	—	—	—	
680	10 × 10	0.20	3.6	440	—	—	—	—	—	—	—	—	—	—	—	—	—	

Rated voltage (V) Item Rated capacitance (μF)	35						50						63					
	Case	ESR (Ω max.)		Rated ripple current (mA rms)	Case	ESR (Ω max.)		Rated ripple current (mA rms)	Case	ESR (Ω max.)		Rated ripple current (mA rms)	Case	ESR (Ω max.)		Rated ripple current (mA rms)		
		φD × L (mm)	20°C			φD × L (mm)	20°C			φD × L (mm)	20°C			φD × L (mm)	20°C			
22	—	—	—	—	6.3 × 5.8	3.2	48	58	6.3 × 7.7	1.8	36	80	—	—	—	—	—	
33	—	—	—	—	6.3 × 5.8	3.2	48	58	—	—	—	—	—	—	—	—	—	
47	6.3 × 5.8	1.2	22	110	6.3 × 7.7	1.2	18	95	8 × 10	0.70	14	140	8 × 10	0.70	14	140	—	
100	6.3 × 7.7	0.60	12	220	8 × 10	0.50	7.5	180	10 × 10	0.50	10	200	10 × 10	0.50	10	200	—	
220	8 × 10	0.30	5.5	296	10 × 10	0.30	4.5	280	—	—	—	—	—	—	—	—	—	
330	10 × 10	0.20	3.6	440	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 125°C , 100kHz
ESR : 100kHz

Rated voltage (V) Item Rated capacitance (μF)	80					
	Case	ESR (Ω max.)		Rated ripple current (mA rms)		
		φD × L (mm)	20°C		-40°C	
47	8 × 10	0.75	15	110		
68	10 × 10	0.55	11	150		

Chip Type, 125°C Use, High CV, Long Life Capacitors

GREEN CAP SMD Low ESR 125°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guaranteed 2000 hours at 125°C.

High CV, Long Life



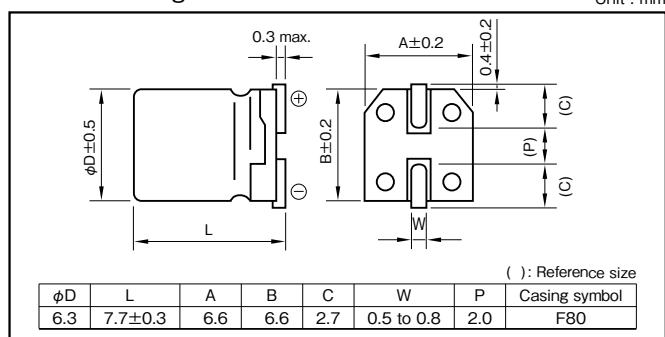
Marking color : Black print

Specifications

Item	Performance	
Category temperature range (°C)	−40 to +125	
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)	
Leakage current (μ A)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)	
Tangent of loss angle ($\tan\delta$)	Rated voltage (V) $\tan\delta$ (max.)	35 0.16 (20°C, 120Hz)
Characteristics at high and low temperature	Rated voltage (V) Impedance Ratio (max.) Z−25°C/Z+20°C Z−40°C/Z+20°C	35 2 3 (120Hz)
Endurance (125°C)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	2000 hours The initial specified value or less Within $\pm 30\%$ of initial value 300% or less of the initial specified value
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4	
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)	

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage(V) 35	0.77	0.88	0.96	1

Part numbering system (example : 35V47μF)

RZE	—	35	V	470	M	F80	U	—	□
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping spesifications are described on page 16.

Standard Ratings

Rated voltage (V) Rated capacitance (μ F)	Item	35			
		Case $\phi D \times L$ (mm)	ESR (Ω max.)		Rated ripple current (mAmps)
			20°C	-40°C	
47		6.3 × 7.7	0.30	3	6
100		6.3 × 7.7	0.30	3	6

(Note) Rated ripple current : 125°C , 100kHz
ESR : 100kHz

ALUMINUM

CHIP ALUMINUM

125°C

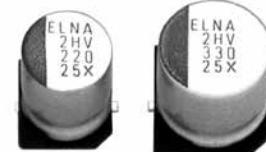
Chip Type, 135°C Capacitors

GREEN CAP SMD 135°C 1000hours Anti-cleaning solvent

RVK

High temperature ↑

RVT



Marking color : Black print

Specifications

Item	Performance				
Category temperature range (°C)	-40 to +135				
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)				
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V)		(20°C)		
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35		
	tanδ (max.)	0.24	0.20		
		(20°C, 120Hz)			
Characteristics at high and low temperature	Rated voltage (V)	25	35		
	Impedance Ratio (max.)	2	2		
	Z=25°C/Z+20°C	3	3		
	Z=40°C/Z+20°C	(120Hz)			
Endurance (135°C)	Test time	1000 hours			
	Leakage current	The initial specified value or less			
	Percentage of Capacitance change	Within ±30% of initial value			
	Tangent of loss angle	300% or less of the initial specified value			
Shelf life (135°C)	Test time : 500hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4				
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)				

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage(V)	120	1k	10k	100k

25 to 35	0.77	0.88	0.96	1
----------	------	------	------	---

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

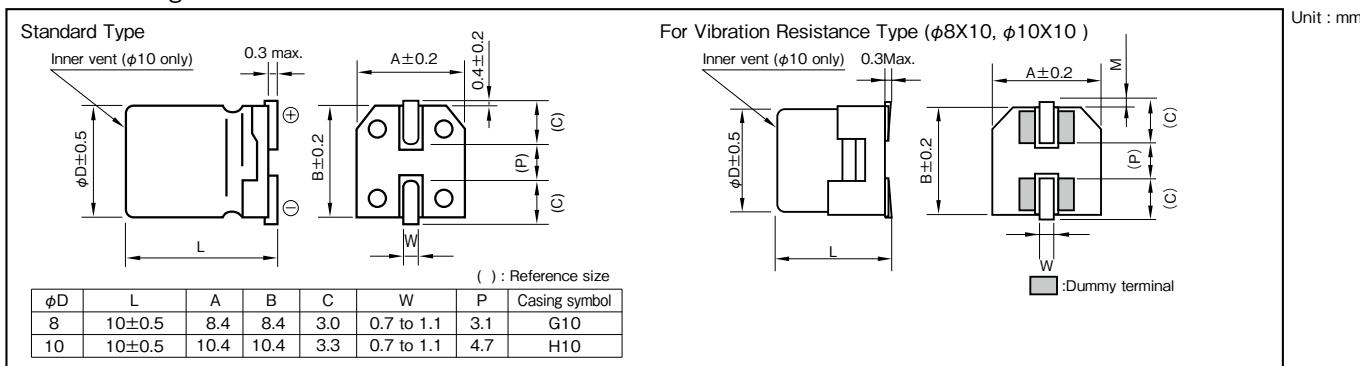
Part numbering system (example : 25V330 μF)

Standard Type					
RVX	—	25	V	331	M
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol

For Vibration Resistance Type

For Vibration Resistance Type					
RTX	—	25	V	331	M
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol

Outline Drawing



Standard Ratings

Rated voltage (V) Item Rated capacitance (μF)	25				35			
	Case φD × L (mm)	Casing symbol	ESR	Rated ripple current	Case φD × L (mm)	Casing symbol	ESR	Rated ripple current
			(Ω max.)	(mArms)			(Ω max.)	(mArms)
22	—	—	—	—	8 × 10	G10	0.70	115
33	8 × 10	G10	0.70	115	8 × 10	G10	0.70	115
	10 × 10	H10	0.50	155				
47	8 × 10	G10	0.70	115	8 × 10	G10	0.70	115
	10 × 10	H10	0.50	155	10 × 10	H10	0.50	155
100	8 × 10	G10	0.70	115	8 × 10	G10	0.70	115
	10 × 10	H10	0.50	155	10 × 10	H10	0.50	155
220	8 × 10	G10	0.70	115	10 × 10	H10	0.50	155
	10 × 10	H10	0.50	155				
330	10 × 10	H10	0.50	155	—	—	—	—

(Note) Rated ripple current : 135°C , 100kHz
ESR : 20°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

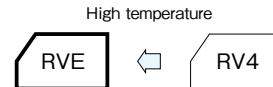
Chip type 105°C Capacitors(height:4.5mm)

GREEN CAP

SMD

105°C
1000hoursAnti-cleaning
solvent

- Compatible with surface mounting for 4.5mm height capacitors.
- Supplied with carrier taping.
- Guarantees 1000 hours 105°C.

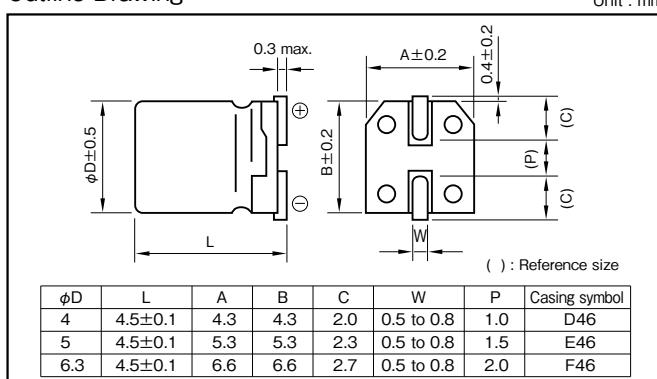


Marking color : Black print

Specifications

Item	Performance												
Category temperature range (°C)	-40 to +105												
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)												
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)												
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50						
	tanδ (max.)	0.38	0.32	0.20	0.16	0.14	0.14						
	(20°C,120Hz)												
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50						
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2						
		Z-40°C/Z+20°C	10	8	6	4	3						
	(120Hz)												
Endurance (105°C)	Test time	1000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within ±20% of initial value (16WV or less:±25%)											
	Tangent of loss angle	300% or less of the initial specified value											
Shelf life (105°C)	Test time : 500hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)												

Outline Drawing



- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.22 to 3.3μF	0.50	1	1.35
	4.7μF to 10μF	0.70	1	1.35
				1.50

Part numbering system (example : 16V10μF)

RVE	—	16	V	100	M	D46	U —	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Casing symbol	Taping symbol		

Standard Ratings

Rated voltage (V)	6.3			10			16			25			35			50		
	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)
0.22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	D46	2.2
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	D46	2.8
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	D46	3.3
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	D46	5.4
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	D46	9.6
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	D46	12
4.7	—	—	—	—	—	—	—	—	—	4	D46	11	4	D46	13	5	E46	16
10	—	—	—	—	—	—	4	D46	16	5	E46	20	5	E46	22	6.3	F46	26
22	4	D46	19	5	E46	24	5	E46	26	6.3	F46	33	6.3	F46	36	—	—	—
33	5	E46	26	5	E46	30	6.3	F46	35	6.3	F46	42	—	—	—	—	—	—
47	5	E46	32	6.3	F46	40	6.3	F46	44	—	—	—	—	—	—	—	—	—
100	6.3	F46	52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type 105°C Use, Long Life Bipolar Capacitors

GREEN CAP SMD 105°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- Supplied with carrier taping.
- Guarantees 2000 hours 105°C.

Long life

RVI

RVP



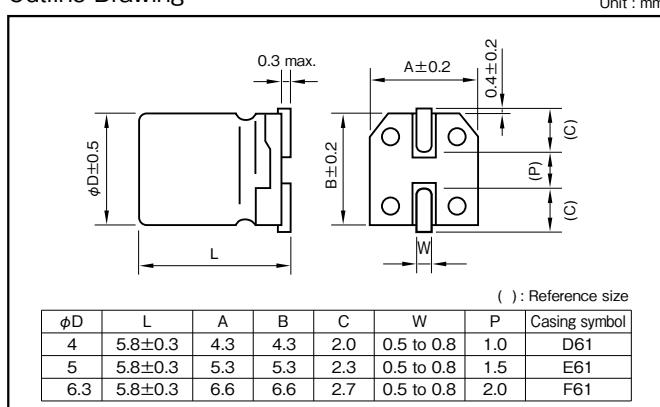
Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +105										
Tolerance at rated capacitance (%)	±20										
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) , V : Rated voltage (V) (20°C)										
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35					
	tanδ (max.)	0.30	0.22	0.16	0.14	0.12					
		(20°C,120Hz)									
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35					
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2					
		Z-40°C/Z+20°C	8	6	4	3					
		(120Hz)									
Endurance (105°C)	Test time	2000 hours (with the polarity inverted every 250 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±20% of initial value									
	Tangent of loss angle	200% or less of the initial specified value									
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)										

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.33 to 3.3μF	0.50	1	1.35
	4.7μF	0.70	1	1.50

Part numbering system (example : 6.3V47μF)

RVI	—	6	V	470	M	F61	U	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

Standard Ratings

Item Rated capacitance (μF)	6.3		10		16		25		35		50	
	Rated voltage (V)	Case φD (mm)	Rated ripple current (mAmps)	Case φD (mm)								
0.33	—	—	—	—	—	—	—	—	—	—	4	3
0.47	—	—	—	—	—	—	—	—	—	—	4	5
1	—	—	—	—	—	—	—	—	—	—	4	10
2.2	—	—	—	—	—	—	—	—	4	10	—	—
3.3	—	—	—	—	—	—	4	12	—	—	5	17
											6.3	20
4.7	—	—	—	—	—	—	4	12	—	—	6.3	23
10	—	—	4	20	5	25	6.3	28	—	—	—	—
22	—	—	—	—	—	—	6.3	55	—	—	—	—
33	—	—	6.3	41	—	—	—	—	—	—	—	—
47	6.3	45	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

For Vibration Resistance, Chip Type Aluminum Electrolytic Capacitors



Series RTZ	30G	105°C, Low Impedance	...Page 88
Series RTD	30G	105°C, Low Impedance, Long Life	...Page 89
Series RTT	30G	125°C, Low ESR, Long Life	...Page 90
Series RTQ	30G	150°C, Low ESR, Long Life	...Page 91
Series RYK	Horizontal	125°C	...Page 92

Chip Type 105°C Use, Low Z, For Vibration Capacitors

GREEN CAP SMD Vibration Resistance Low Z 105°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- For Vibration resistance. (30G guaranteed)
- Supplied with carrier taping.
- Guarantees 2000 hours at 105°C.
($\phi 12.5$ to $\phi 18$: 5000hours)

Vibration resistance

RTZ

RVZ



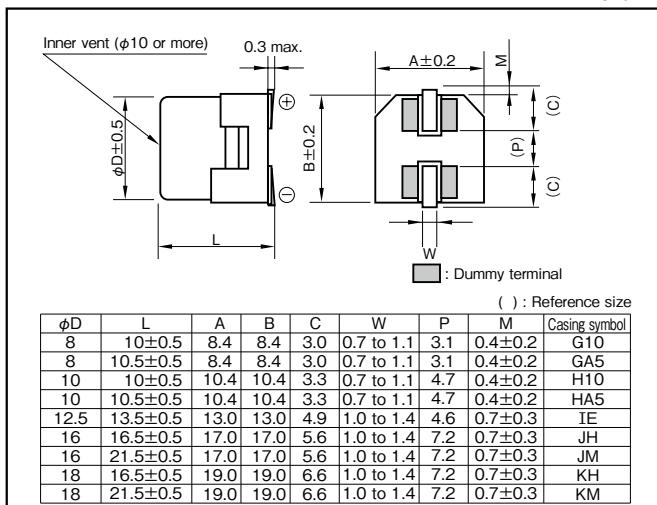
Marking color : Black print

Specifications

Item	Performance						
Category temperature range (°C)	-55 to +105						
Tolerance at rated capacitance (%)	± 20						
Leakage current (μ A)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F), V : Rated voltage (V)						
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	
	$\tan\delta$ (max.)	0.28	0.24	0.20	0.16	0.14	
	0.02 is added to every 1000 μ F increase over 1000 μ F						
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	
	Z-55°C/Z+20°C	8	5	4	3	3	
	(20°C, 120Hz)						
Endurance (105°C) (Applied ripple current)	Test time		2000 hours ($\phi 8, 10$) 5000 hours ($\phi 12.5$ to 18)				
	Leakage current		The initial specified value or less				
	Percentage of capacitance change		Within $\pm 25\%$ of initial value				
	Tangent of loss angle		200% or less of the initial specified value				
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4						
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)						

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage (V)	0.50	0.75	0.90	1

Part numbering system

phi 8, phi 10 (example : 6.3V1500 μ F)

RTZ — 6 V 152 M HA5 SU — []

Series code Rated voltage symbol Rated capacitance symbol Capacitance tolerance symbol Casing symbol Taping symbol

phi 12.5 or more (example : 6.3V2200 μ F)

RTZ — 6 V 222 M IE T — []

Series code Rated voltage symbol Rated capacitance symbol Capacitance tolerance symbol Casing symbol Taping symbol

If "Standard (terminal)" type is required, please see the series RVZ of page 70.

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3				10				16				25				35			
	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)
150	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 x 10.5	GA5	0.17	450
220	—	—	—	—	—	—	—	—	8 x 10	G10	0.20	450	8 x 10.5	GA5	0.17	450	8 x 10.5	GA5	0.17	670
330	—	—	—	—	8 x 10.5	GA5	0.17	450	8 x 10.5	G10	0.17	450	8 x 10.5	GA5	0.17	450	10 x 10	H10	0.10	670
470	8 x 10.5	GA5	0.17	450	8 x 10.5	GA5	0.17	450	8 x 10.5	GA5	0.17	450	10 x 10.5	HA5	0.090	670	12.5 x 13.5	IE	0.060	1100
	10 x 10	H10	0.10	670	10 x 10	H10	0.10	670	10 x 10	H10	0.10	670	10 x 10.5	JH	0.046	1540	12.5 x 13.5	JH	0.060	1100
680	8 x 10.5	GA5	0.17	450	10 x 10.5	HA5	0.090	670	10 x 10.5	HA5	0.090	670	12.5 x 13.5	IE	0.060	1100	12.5 x 13.5	JH	0.046	1540
	8 x 10.5	GA5	0.17	450	10 x 10.5	HA5	0.090	670	12.5 x 13.5	IE	0.060	1100	12.5 x 13.5	IE	0.060	1100	16 x 16.5	JH	0.046	1540
1000	10 x 10	H10	0.10	670	10 x 10.5	HA5	0.090	670	16 x 16.5	JH	0.046	1540	16 x 16.5	JH	0.046	1540	18 x 16.5	KH	0.042	1760
1500	10 x 10.5	HA5	0.090	670	12.5 x 13.5	IE	0.060	1100	12.5 x 13.5	IE	0.060	1100	16 x 16.5	JH	0.042	1760	16 x 16.5	JH	0.042	1760
2200	12.5 x 13.5	IE	0.060	1100	12.5 x 13.5	IE	0.060	1100	16 x 16.5	JH	0.046	1540	16 x 21.5	JM	0.040	1840	16 x 21.5	JM	0.040	1840
3300	16 x 16.5	JH	0.046	1540	16 x 16.5	JH	0.046	1540	16 x 21.5	JM	0.040	1840	18 x 21.5	KM	0.038	1960	18 x 21.5	KM	0.038	1960
4700	16 x 21.5	JM	0.040	1840	16 x 21.5	JM	0.040	1840	18 x 21.5	KM	0.038	1960	—	—	—	—	—	—	—	
6800	18 x 21.5	KM	0.038	1960	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
8200	18 x 21.5	KM	0.038	1960	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 100kHz, Impedance : 20°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type 105°C Use, Low Z, Long Life, For Vibration Capacitors

GREEN CAP **SMD** **Vibration Resistance** **Low Z** **105°C 5000hours** **Anti-cleaning solvent**

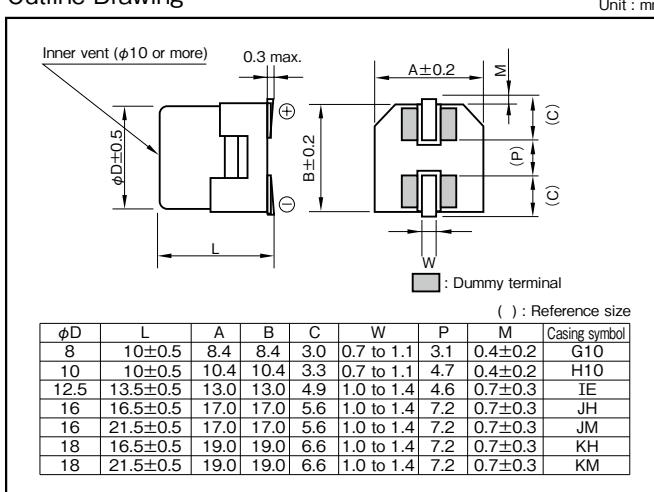
- Compatible with surface mounting.
- For Vibration resistance. (30G guaranteed)
- Supplied with carrier taping.
- Guarantees 5000 hours at 105°C.



Specifications

Item	Performance										
Category temperature range (°C)	-55 to +105										
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)										
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)										
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	
	tanδ (max.)	0.26	0.19	0.16	0.14	0.12	0.1	0.08	0.08	0.07	
	0.02 is added to every 1000μF increase over 1000μF (20°C, 120Hz)										
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	
	Z-25°C/Z+20°C	2	2	2	2	2	2	2	2	2	
	Impedance ratio (max.)	3	3	3	3	3	3	3	3	3	
	Z-40°C/Z+20°C	8	4	4	3	3	3	3	3	3	
	Z-55°C/Z+20°C	8	4	4	3	3	3	3	3	3	
Endurance (105°C)	Test time	5000 hours									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of loss angle	300% or less of the initial specified value									
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)										

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz) Rated voltage (V)	50 · 60	120	1k	10k · 100k
6.3 to 100	0.50	0.50	1.00	1

Part numbering system
φ 6, φ 10 (example : 6.3V1500μF)

RTD —	6	V	152	M	HA5	SU —	
Series code	Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol

φ 12.5 or more (example : 6.3V2200μF)	RTD —	6	V	222	M	IE	T —	
Series code	Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol	

If "Standard (terminal)" type is required, please see the series RVD of page 72.

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3			10			16			25			35		
	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)
100	—	—	—	—	—	—	—	—	—	—	—	—	8x10	G10	0.16
220	—	—	—	—	—	—	—	—	—	—	—	—	8x10	G10	0.16
330	—	—	—	—	8x10	G10	0.16	600	8x10	G10	0.16	600	8x10	G10	0.090
470	8x10	G10	0.16	600	8x10	G10	0.16	600	8x10	G10	0.16	600	10x10	H10	0.090
680	8x10	G10	0.16	600	10x10	H10	0.090	850	10x10	H10	0.090	850	12.5x13.5	IE	0.054
1000	8x10	G10	0.16	600	10x10	H10	0.090	850	12.5x13.5	IE	0.054	1160	12.5x13.5	IE	0.054
1500	10x10	H10	0.090	850	12.5x13.5	IE	0.054	1160	12.5x13.5	IE	0.054	1160	12.5x13.5	IE	0.054
2200	12.5x13.5	IE	0.054	1160	12.5x13.5	IE	0.054	1160	16x16.5	JH	0.044	1620	16x16.5	JM	0.038
3300	16x16.5	JH	0.044	1620	16x16.5	JH	0.044	1620	16x16.5	JM	0.038	1920	18x21.5	KM	0.036
4700	18x16.5	KH	0.040	1840	18x21.5	KM	0.036	2080	—	—	—	—	—	—	—
6800	18x16.5	KH	0.040	1840	—	—	—	—	—	—	—	—	—	—	—
8200	18x21.5	KM	0.036	2080	—	—	—	—	—	—	—	—	—	—	—

Rated voltage (V)	50				63				80				100			
	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)	Rated ripple current (mArms)
100	8x10	G10	0.32	350	12.5x13.5	IE	0.16	600	12.5x13.5	IE	0.18	550	16x16.5	JH	0.17	700
220	10x10	H10	0.18	700	12.5x13.5	IE	0.16	600	16x16.5	JH	0.16	720	18x16.5	KH	0.15	800
330	12.5x13.5	IE	0.12	900	16x16.5	JH	0.14	800	18x16.5	KH	0.13	830	18x21.5	KM	0.13	940
470	16x16.5	JH	0.080	1000	18x16.5	KH	0.12	900	18x21.5	KM	0.11	1000	—	—	—	—
680	16x16.5	JH	0.080	1000	18x21.5	KM	0.10	1050	—	—	—	—	—	—	—	—
1000	18x16.5	KH	0.076	1100	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz, Impedance : 20°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.

It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type 125°C Use, Low ESR, For Vibration Capacitors

GREEN CAP SMD Vibration Resistance Low ESR 125°C 2000hours Anti-cleaning solvent

- Compatible with surface mounting.
- For Vibration resistance. (30G guaranteed)
- Supplied with carrier taping.
- Guarantees 2000 hours at 125°C.
(ϕ 12.5 or more : 5000h)



Vibration resistance

RTT

RVT

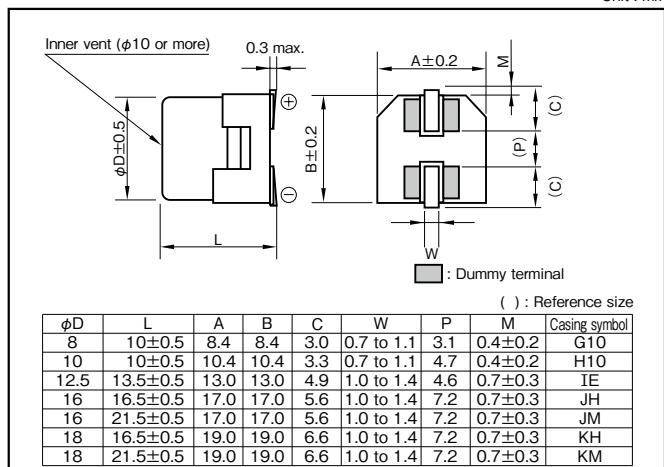
Marking color : Black print

Specifications

Item	Performance									
Category temperature range (°C)	-40 to +125									
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)									
Leakage current (μ A)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F), V : Rated voltage (V) (20°C)									
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	10	16	25	35	50	63	80	100	
	Tangent of loss angle	0.24	0.20	0.16	0.14	0.14	0.12	0.12	0.10	
	0.02 is added to every 1000 μ F increase over 1000 μ F (20°C, 120Hz)									
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63	80	100	
	Z-25°C/Z+20°C	3	2	2	2	2	2	2	2	
	Z-40°C/Z+20°C	4	3	3	3	3	3	3	3	
	(120Hz)									
Endurance (125°C)	Test time	2000 hours (ϕ 12.5 or more : 5000h)								
	Leakage current	The initial specified value or less								
	Percentage of capacitance change	Within $\pm 30\%$ of initial value								
	Tangent of loss angle	300% or less of the initial specified value								
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4									
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)									

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage (V) 10 to 100	0.77	0.88	0.96	1

Part numbering system

 ϕ 8, ϕ 10 (example : 35V1000 μ F)

RTT	—	35	V	101	M	H10	SU	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

 ϕ 12.5 or more (example : 35V1000 μ F)

RTT	—	35	V	102	M	KM	T	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

If "Standard (terminal)" type is required, please see the series RVT of page 78.

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	10				16				25				35				50							
	Case		ESR (Ω max.)		Rated ripple current		Case		ESR (Ω max.)		Rated ripple current		Case		ESR (Ω max.)		Rated ripple current		Case		ESR (Ω max.)		Rated ripple current	
	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)
100	—	—	—	—	—	—	—	—	—	—	—	—	8X10	0.20	2.0	340	10X10	0.50	7.5	250	—	—	—	
220	—	—	—	—	8X10	0.20	2.0	340	8X10	0.20	2.0	340	10X10	0.15	1.5	500	12.5X13.5	0.18	2.7	550	—	—	—	
330	8X10	0.20	2.0	340	10X10	0.15	1.5	500	10X10	0.15	1.5	500	12.5X13.5	0.086	1.29	750	16X16.5	0.060	0.90	1000	16X16.5	0.12	1.8	850
470	10X10	0.15	1.5	500	12.5X13.5	0.086	1.29	750	12.5X13.5	0.086	1.29	750	16X16.5	0.060	0.90	1000	16X16.5	0.060	0.90	1000	18X16.5	0.10	1.5	920
680	12.5X13.5	0.086	1.29	750	16X16.5	0.060	0.90	1000	18X16.5	0.050	0.75	1200	18X16.5	0.050	0.75	1200	—	—	—	—	—	—	—	
1000	12.5X13.5	0.086	1.29	750	18X16.5	0.050	0.75	1200	18X21.5	0.042	0.63	1550	18X21.5	0.042	0.63	1550	—	—	—	—	—	—	—	
2200	16X16.5	0.060	0.90	1000	18X16.5	0.050	0.75	1200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
3300	18X16.5	0.050	0.75	1200	18X21.5	0.042	0.63	1550	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4700	18X21.5	0.042	0.63	1550	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

Rated voltage (V)	63				80				100			
	Case		ESR (Ω max.)		Rated ripple current		Case		ESR (Ω max.)		Rated ripple current	
	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)	$\phi D \times L$ (mm)	20°C	-40°C	(mArms)
47	—	—	—	—	—	—	—	—	12.5X13.5	0.32	4.8	300
100	12.5X13.5	0.25	3.75	400	16X16.5	0.24	3.6	480	16X16.5	0.24	3.6	480
220	16X16.5	0.22	3.3	500	16X21.5	0.18	2.7	600	18X21.5	0.16	2.4	700
330	16X16.5	0.22	3.3	500	18X21.5	0.12	1.8	1000	—	—	—	—
470	16X21.5	0.16	2.4	650	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz, ESR : 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type 150°C Use, Low ESR, For Vibration Capacitors

GREEN CAP SMD Vibration Resistance Low ESR 150°C 1000hours Anti-cleaning solvent

- Compatible with surface mounting.
- For Vibration resistance. (30G guaranteed)
- Supplied with carrier taping.
- Guaranteed 1000 hours at 150°C.



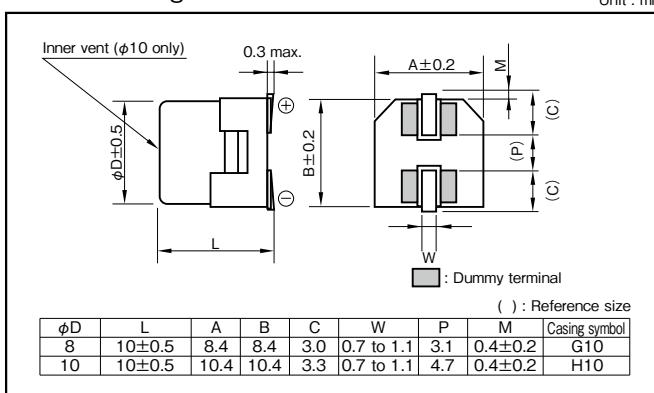
Marking color : Black print

Specifications

Item	Performance								
Category temperature range (°C)	-40 to +150								
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)								
Leakage current (μ A)	Less than 0.02CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F), V : Rated voltage (V) (20°C)								
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	10	16	25	35				
	$\tan\delta$ (max.)	0.26	0.20	0.16	0.14				
	0.02 is added to every 1000 μ F increase over 1000 μ F (20°C, 120Hz)								
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35				
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	2	2				
		Z-40°C/Z+20°C	7	5	3				
	(120Hz)								
Endurance (150°C)	Test time	1000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within $\pm 30\%$ of initial value							
	Tangent of loss angle	300% or less of the initial specified value							
Shelf life (150°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4								
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)								

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage (V) 10 to 35	0.77	0.88	0.96	1

Part numbering system
φ10X10L (example : 35V100μF)

RTQ	—	35	V	101	M	H10	U	Q	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Rated ripple current symbol	Casing symbol	Capacitance tolerance symbol	Casing symbol	Additional symbol	Taping symbol		

• Soldering conditions are described on page 15.

• Land pattern size are described on page 13.

• The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	10				16				25				
	Item	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current
		φD×L (mm)	Ω (max.)	(mArms)	φD×L (mm)	Ω (max.)	(mArms)	φD×L (mm)	Ω (max.)	(mArms)	φD×L (mm)	Ω (max.)	(mArms)
47	—	—	—	—	8 × 10	G10	0.70	120	8 × 10	G10	0.70	120	
68	—	—	—	—	8 × 10	G10	0.70	120	8 × 10	G10	0.70	120	
100	8 × 10	G10	0.70	120	8 × 10	G10	0.70	120	8 × 10	G10	0.70	120	
150	—	—	—	—	10 × 10	H10	0.40	160	10 × 10	H10	0.40	160	
220	8 × 10	G10	0.70	120	10 × 10	H10	0.40	160	10 × 10	H10	0.40	160	
330	10 × 10	H10	0.40	160	10 × 10	H10	0.40	160	—	—	—	—	
470	10 × 10	H10	0.40	160	—	—	—	—	—	—	—	—	

Rated voltage (V)	35				
	Item	Case	Casing symbol	ESR	Rated ripple current
		φD×L (mm)	Ω (max.)	(mArms)	
33	8 × 10	G10	0.70	120	
47	8 × 10	G10	0.70	120	
68	8 × 10	G10	0.70	120	
100	10 × 10	H10	0.40	160	
150	10 × 10	H10	0.40	160	

(Note) Rated ripple current : 150°C, 100kHz ; ESR : 20°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Horizontal Type, 125°C Use, For Vibration Capacitors

SMD Vibration Resistance 125°C 1000hours Anti-cleaning solvent

- 125°C high temperature surface mount.
- Highly resistant to vibration.
- Available in horizontal configurations only.
- Supplied with carrier taping.
- Guarantees 1000 hours at 125°C.

Horizontal type
Large capacitance



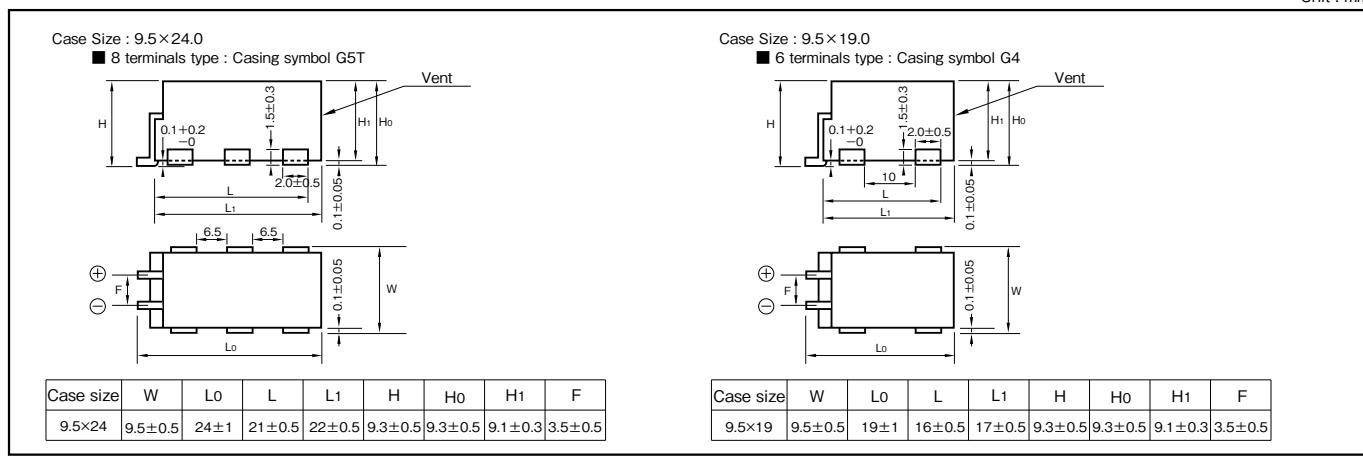
Marking color : White print on a black case

Specifications

Item	Performance							
Category temperature range (°C)	-40 to +125							
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)							
Leakage current (μA)	Less than 0.02CV (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)							
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63
	tanδ (max.)	0.30	0.28	0.26	0.24	0.20	0.19	0.18
	(20°C, 120Hz)							
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	3	3	3	3	3
		Z-40°C/Z+20°C	5	5	5	5	5	5
	(120Hz)							
Endurance (125°C) (Applied ripple current)	Test time	1000 hours						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within ±30% of initial value						
	Tangent of the loss angle	300% or less of the initial specified value						
Shelf life (125°C)	Test time	500 hours						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within ±20% of initial value						
	Tangent of the loss angle	200% or less of the initial specified value						
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)							

Outline Drawing

Unit : mm



• Soldering conditions are described on page 15. • Land pattern size are described on page 13. • The taping specifications are described on page 16.

Part numbering system (example: 10V560μF)

RYK	—	10	V	561	M	G5T	T	—	FL
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping polarity symbol				

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage (V)	120	1k	10k	100k

Standard Ratings

Rated voltage (V)	6.3			10			16			25			35			50			63			
	Case	Impedance	Rated ripple current	Case	Impedance	Rated ripple current	Case	Impedance	Rated ripple current	Case	Impedance	Rated ripple current	Case	Impedance	Rated ripple current	Case	Impedance	Rated ripple current	Case	Impedance	Rated ripple current	
Rated capacitance (μF)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)	W×L (mm)	(Ω max.) (mArms)		
56	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.5x19.0	0.52	204	
82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.5x24.0	0.37	272	
100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
220	—	—	—	—	—	—	—	—	—	9.5x19.0	0.40	232	9.5x24.0	0.30	302	—	—	—	—	—	—	
270	—	—	—	—	—	—	9.5x19.0	0.40	232	9.5x24.0	0.30	302	—	—	—	—	—	—	—	—	—	
470	—	—	—	9.5x19.0	0.40	232	9.5x24.0	0.30	302	—	—	—	—	—	—	—	—	—	—	—	—	
560	9.5x19.0	0.40	232	9.5x24.0	0.30	302	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
820	9.5x24.0	0.30	302	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 125°C, 100kHz ; Impedance : 20°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Aluminum Electrolytic Capacitors

Polymer hybrid type aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors With Conductive
Polymer Solid Electrolyte

Chip Type Aluminum Electrolytic Capacitors

Miniature Type Aluminum Electrolytic Capacitors

Large Capacitance Aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors for Audio

ALUMINUM

POLYMER
HYBRID

CHIP
ALUMINUM

MINIATURE
ALUMINUM

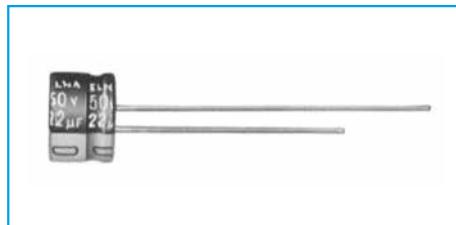
LARGE
ALUMINUM

FOR AUDIO
ALUMINUM

5mm, L Standard Capacitors

GREEN CAP

- Diameters from $\phi 4$ to $\phi 8$ mm and a height of 5mm.



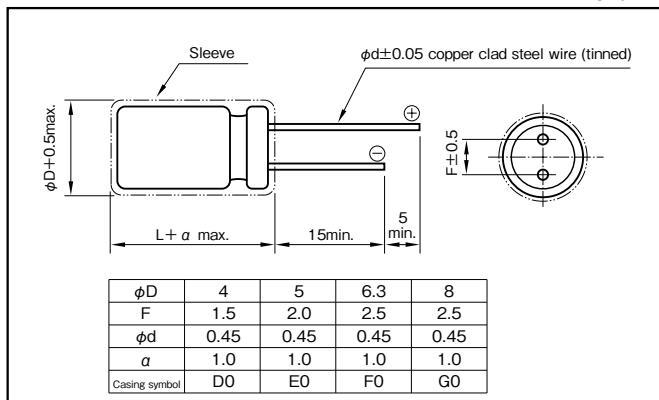
Marking color : White print on a blue sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +85														
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)														
Leakage current (μ A)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F); V : Rated voltage (V) (20°C)														
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	4	6.3	10	16	25	35	50							
	$\tan\delta$ (max.)	$\phi 4$ to $\phi 6.3$	0.35	0.24	0.20	0.16	0.14	0.12							
		$\phi 8$	0.39	0.28	0.24	0.16	0.14	0.12							
Characteristics at high and low temperature	Rated voltage (V)	4	6.3	10	16	25	35	50							
	Impedance ratio (max.)	Z-25°C/Z+20°C	6	4	3	2	2	2							
		Z-40°C/Z+20°C	16	10	8	6	4	4							
Endurance (85°C) (Applied ripple current)	Test time	1000 hours													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within $\pm 20\%$ of initial value													
Shelf life (85°C)	Tangent of the loss angle Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)			
	50 · 60	120	1k	10k · 100k
4 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50	0.8	1	1.6	1.9

Part numbering system (example : 6.3V100μF)

RC3	—	6	V	101	M	F0	#	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping (Forming) symbol				

Standard Ratings

Rated voltage (V)	4		6.3		10		16		25		35		50			
	Item	Case	Rated ripple current (mA rms)													
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4x5	6
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4x5	7
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4x5	10
2.2	—	—	—	—	—	—	—	—	—	—	—	—	4x5	14	4x5	15
3.3	—	—	—	—	—	—	—	—	4x5	15	4x5	17	4x5	18		
4.7	—	—	—	—	—	—	4x5	17	4x5	18	4x5	20	5x5	25		
10	—	—	4x5	20	4x5	22	4x5	25	5x5	30	5x5	30	6.3x5	40		
22	4x5	25	4x5	30	5x5	35	5x5	40	6.3x5	50	6.3x5	55	8x5	75		
33	4x5	30	5x5	40	5x5	45	6.3x5	60	6.3x5	65	8x5	80	8x5	90		
47	4x5	35	5x5	50	6.3x5	65	6.3x5	70	8x5	95	8x5	100	—	—		
100	5x5	60	6.3x5	85	6.3x5	95	8x5	125	8x5	135	—	—	—	—		
220	6.3x5	105	8x5	145	8x5	155	—	—	—	—	—	—	—	—		
330	8x5	150	8x5	175	—	—	—	—	—	—	—	—	—	—		
470	8x5	180	—	—	—	—	—	—	—	—	—	—	—	—		

(Note) Rated ripple current : 85°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

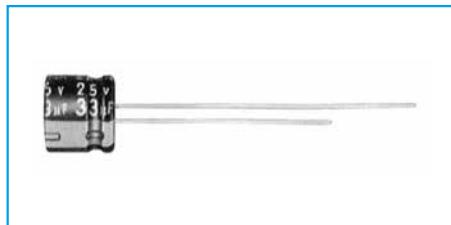
5mm L, 105°C Use Capacitors

GREEN CAP 105°C
1000hours Anti-cleaning solvent

- Diameters from $\phi 4$ to $\phi 6.3$ mm and a height of 5mm.
- Guarantees 1000 hours at 105°C.



High temperature



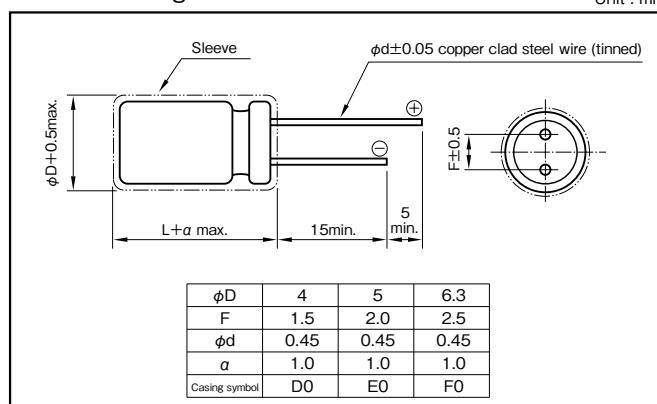
Marking color : White print on a black sleeve

Specifications

Item	Performance												
Category temperature range (°C)	−55 to +105												
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)												
Leakage current (μ A)													
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	50						
	tan δ (max.)	0.28	0.24	0.20	0.14	0.12	0.10						
	(20°C, 120Hz)												
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50						
	Impedance ratio (max.)	Z−25°C/Z+20°C	3	3	2	2	2						
		Z−40°C/Z+20°C	8	5	4	3	3						
	(120Hz)												
Endurance (105°C) (Applied ripple current)	Test time	1000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within $\pm 20\%$ of initial value											
	Tangent of the loss angle	200% or less of the initial specified value											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)												

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
6.3 to 16	0.64	0.80	0.92	1
25 to 35	0.57	0.71	0.89	1
50	0.53	0.67	0.90	1

Part numbering system (example : 16V47μF)

R3S	—	16	V	470	M	F0	#	—	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol				

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50	
	Item	Case	Rated ripple current	Case								
		$\phi D \times L$ (mm)	(mArms)	$\phi D \times L$ (mm)								
0.33	—	—	—	—	—	—	—	—	—	—	—	4x5
0.47	—	—	—	—	—	—	—	—	—	—	—	4x5
1	—	—	—	—	—	—	—	—	—	—	—	4x5
2.2	—	—	—	—	—	—	—	—	—	—	—	4x5
3.3	—	—	—	—	—	—	—	—	4x5	17	4x5	20
4.7	—	—	—	—	4x5	15	4x5	18	4x5	20	5x5	27
10	—	—	4x5	20	4x5	23	5x5	31	5x5	34	6.3x5	45
22	4x5	26	5x5	34	5x5	38	6.3x5	53	6.3x5	57	—	—
33	5x5	33	5x5	43	6.3x5	56	6.3x5	66	—	—	—	—
47	5x5	45	6.3x5	58	6.3x5	65	—	—	—	—	—	—
100	6.3x5	78	—	—	—	—	—	—	—	—	—	—

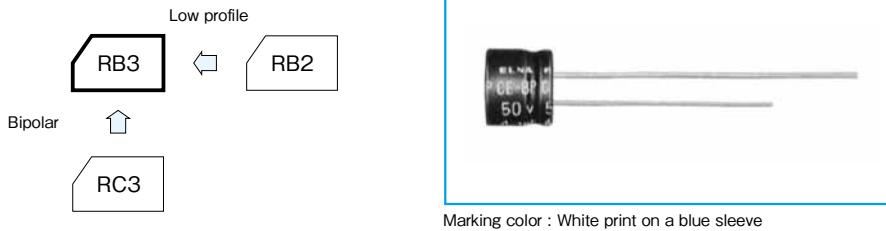
(Note) Rated ripple current : 105°C, 100kHz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

5mm L, Bipolar Capacitors

GREEN CAP

- Diameters from $\phi 4$ to $\phi 6.3$ mm and a height of 5mm.

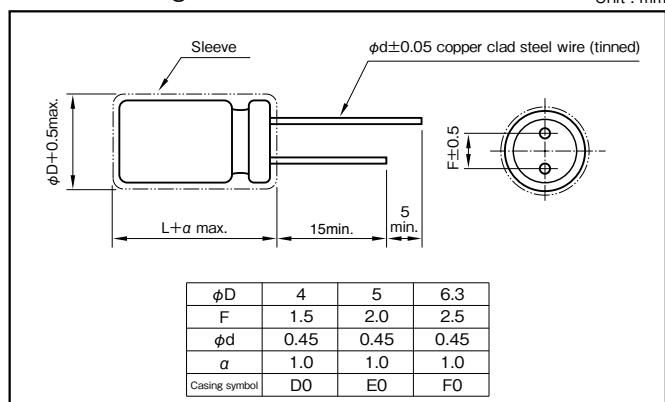


Marking color : White print on a blue sleeve

Specifications

Item	Performance						
Category temperature range (°C)	-40 to +85						
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)						
Leakage current (μ A) Less than $0.03CV + 3$ (after 5 minutes) C : Rated capacitance (μ F); V : Rated voltage (V) (20°C)							
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)		6.3	10	16	25	35
	$\tan\delta$ (max.)		$\phi 4$	0.35	0.30	0.25	0.20
Endurance (85°C)	$\phi 5, 6.3$		0.30	0.25	0.20	0.15	0.15
	Test time		1000 hours (with the polarity inverted every 250 hours)				
	Leakage current		The initial specified value or less				
	Percentage of capacitance change		Within $\pm 20\%$ of initial value				
Applicable standards JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)							

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V) 6.3 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50	0.8	1	1.6	1.9

Part numbering system (example : 10V47μF)

RB3	—	10	V	470	M	F0	# —	□
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping(Forming) symbol	

Standard Ratings

Item	6.3		10		16		25		35		50	
	Case	Rated ripple current (mAmps)										
Rated voltage (V)	$\phi D \times L$ (mm)	(mAmps)										
0.33	—	—	—	—	—	—	—	—	—	—	4x5	4
0.47	—	—	—	—	—	—	—	—	—	—	4x5	5
1	—	—	—	—	—	—	—	—	—	—	4x5	7
2.2	—	—	—	—	—	—	—	—	4x5	11	5x5	14
3.3	—	—	—	—	—	—	4x5	13	5x5	17	6.3x5	20
4.7	—	—	—	—	4x5	14	5x5	21	6.3x5	24	6.3x5	24
10	—	—	4x5	18	5x5	26	6.3x5	35	6.3x5	35	—	—
22	5x5	31	6.3x5	40	6.3x5	45	—	—	—	—	—	—
33	6.3x5	45	6.3x5	49	—	—	—	—	—	—	—	—
47	6.3x5	54	6.3x5	59	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz.

7mm L, Standard Capacitors

GREEN CAP
Anti-cleaning solvent

- Diameters from $\phi 4$ to $\phi 8$ mm and a height of 7mm.
- Guarantees 1000 hours at 85°C.

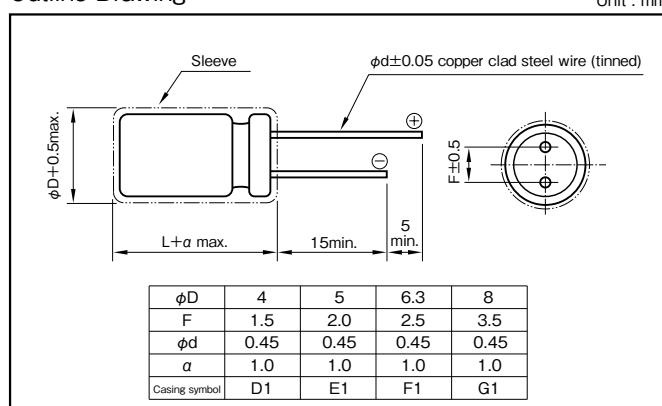


Marking color : White print on a blue sleeve

Specifications

Item	Performance										
Category temperature range (°C)	−40 to +85										
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)										
Leakage current (μ A)											
Tangent of loss angle (tan δ)		Rated voltage (V)	4	6.3	10	16	25	35	50	63	100
		tan δ (max.)	0.35	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.08
(20°C, 120Hz)											
Characteristics at high and low temperature		Rated voltage (V)	4	6.3	10	16	25	35	50	63	100
		Impedance ratio (max.)	Z−25°C/Z+20°C	6	4	3	2	2	2	2	2
(120Hz)											
Endurance (85°C) (Applied ripple current)		Test time	1000 hours								
		Leakage current	The initial specified value or less								
		Percentage of capacitance change	Within $\pm 20\%$ of initial value								
		Tangent of the loss angle	200% or less of the initial specified value								
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)										

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
4 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50 to 100	0.8	1	1.6	1.9

Part numbering system (example : 10V220μF)

RC2	—	10	V	221	M	G1	#	□	—	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol	Taping(Forming) symbol				

Standard Ratings

Rated voltage (V)	4		6.3		10		16		25		35		50		63		100		
	Item	Case	Rated ripple current (mArms)	Case	Rated ripple current (mArms)	Case	Rated ripple current (mArms)												
0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	4x7	7	4x7	7	—	—
0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	4x7	8	4x7	8	—	—
1	—	—	—	—	—	—	—	—	—	—	—	—	—	4x7	10	4x7	10	4x7	12
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	4x7	15	4x7	15	5x7	20
3.3	—	—	—	—	—	—	—	—	4x7	15	4x7	15	4x7	20	4x7	23	6.3x7	30	
4.7	—	—	—	—	—	—	—	4x7	20	4x7	20	4x7	24	5x7	30	6.3x7	35		
10	—	—	—	—	—	—	4x7	25	4x7	30	4x7	30	5x7	40	6.3x7	50	—	—	
22	—	—	4x7	35	4x7	35	4x7	40	5x7	50	5x7	55	6.3x7	70	—	—	—	—	
33	4x7	35	4x7	40	4x7	45	5x7	55	6.3x7	70	6.3x7	75	8x7	100	—	—	—	—	
47	4x7	40	4x7	50	5x7	60	5x7	70	6.3x7	85	8x7	110	—	—	—	—	—	—	
100	5x7	70	5x7	80	6.3x7	105	6.3x7	120	8x7	145	—	—	—	—	—	—	—	—	
220	6.3x7	120	6.3x7	140	8x7	185	8x7	205	—	—	—	—	—	—	—	—	—	—	
330	8x7	170	8x7	205	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 85°C, 120Hz.

7mm L, 105°C Use Capacitors

GREEN CAP **105°C**
1000hours **Anti-cleaning solvent**

- Diameters from $\phi 4$ to $\phi 6.3$ mm and a height of 7mm.
- Guarantees 1000 hours at 105°C.



High temperature



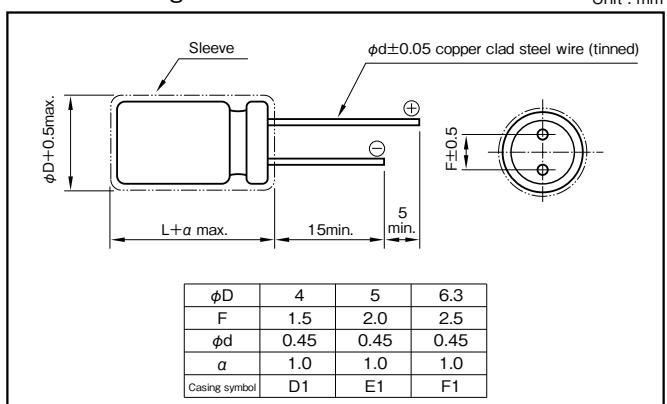
Marking color : White print on a black sleeve

Specifications

Item	Performance												
Category temperature range (°C)	-55 to +105												
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)												
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF); V : Rated voltage (V) (20°C)												
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50						
	tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10						
	(20°C, 120Hz)												
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50						
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	3	2	2	2						
		Z-40°C/Z+20°C	8	5	4	3	3						
	(120Hz)												
Endurance (105°C) (Applied ripple current)	Test time	1000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within $\pm 20\%$ of initial value											
	Tangent of the loss angle	200% or less of the initial specified value											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)												

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)			
	50 · 60	120	1k	10k · 100k
6.3 to 16	0.68	0.72	0.92	1
25 to 35	0.48	0.63	0.80	1
50	0.45	0.50	0.70	1

Part numbering system (example : 25V33μF)

R2S	—	25	V	330	M	F1	#	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol			

Standard Ratings

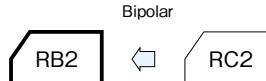
Rated voltage (V)	6.3		10		16		25		35		50		
	Item	Case	Rated ripple current										
0.33	—	—	—	—	—	—	—	—	—	—	—	4x7	10
0.47	—	—	—	—	—	—	—	—	—	—	—	4x7	12
1	—	—	—	—	—	—	—	—	—	—	—	4x7	16
2.2	—	—	—	—	—	—	—	—	—	—	—	4x7	25
3.3	—	—	—	—	—	—	—	4x7	21	4x7	23	4x7	28
4.7	—	—	—	—	—	—	4x7	25	4x7	25	5x7	48	
10	—	—	—	—	4x7	39	5x7	47	5x7	48	6.3x7	75	
22	4x7	42	4x7	49	5x7	54	6.3x7	87	6.3x7	90	—	—	
33	5x7	53	5x7	60	6.3x7	83	6.3x7	90	—	—	—	—	
47	5x7	64	6.3x7	95	6.3x7	95	—	—	—	—	—	—	
100	6.3x7	96	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 100kHz.

7mm L, Bipolar Capacitors

GREEN CAP
Anti-cleaning solvent

- Diameters from $\phi 4$ to $\phi 6.3$ mm and a height of 7mm.



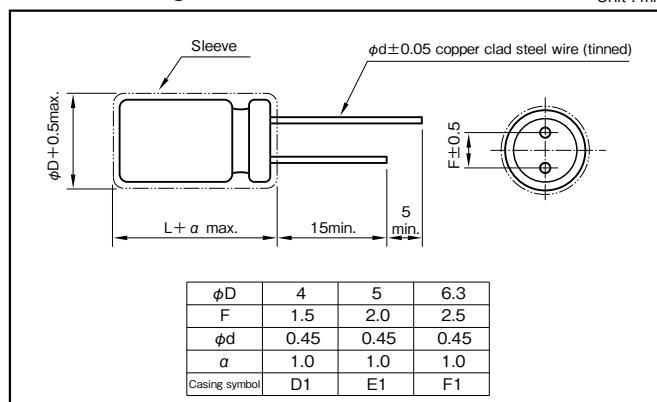
Marking color : White print on a blue sleeve

Specifications

Item	Performance						
Category temperature range (°C)	−40 to +85						
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)						
Leakage current (μ A)	Less than $0.03CV + 3$ (after 5 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)						
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	50
	tan δ (max.)	0.30	0.25	0.20	0.15	0.15	0.15
		(20°C, 120Hz)					
Endurance (85°C)	Test time	1000 hours (with the polarity inverted every 250 hours)					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 20\%$ of initial value					
	Tangent of the loss angle	200% or less of the initial specified value					
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)						

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz) Rated voltage (V)	50 · 60	120	1k	10k · 100k
6.3 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50	0.8	1	1.6	1.9

Part numbering system (example: 16V47μF)

RB2	—	16	V	470	M	F1	#	—	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol				

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50	
	Item	Case	Rated ripple current	Case								
		$\phi D \times L$ (mm)	(mArms)	$\phi D \times L$ (mm)								
0.33	—	—	—	—	—	—	—	—	—	—	—	4x7
0.47	—	—	—	—	—	—	—	—	—	—	—	4x7
1	—	—	—	—	—	—	—	—	—	—	—	4x7
2.2	—	—	—	—	—	—	—	—	4x7	14	5x7	16
3.3	—	—	—	—	—	—	4x7	17	5x7	19	5x7	19
4.7	—	—	—	—	4x7	17	5x7	23	5x7	23	6.3x7	27
10	—	—	4x7	23	5x7	29	6.3x7	39	6.3x7	39	—	—
22	5x7	35	5x7	39	6.3x7	50	6.3x7	58	—	—	—	—
33	5x7	43	6.3x7	55	6.3x7	61	6.3x7	71	—	—	—	—
47	6.3x7	60	6.3x7	66	6.3x7	73	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Capacitors

GREEN CAP
Anti-cleaning solvent
250V Max.

- Guarantees 2000 hours at 85°C.



High temperature



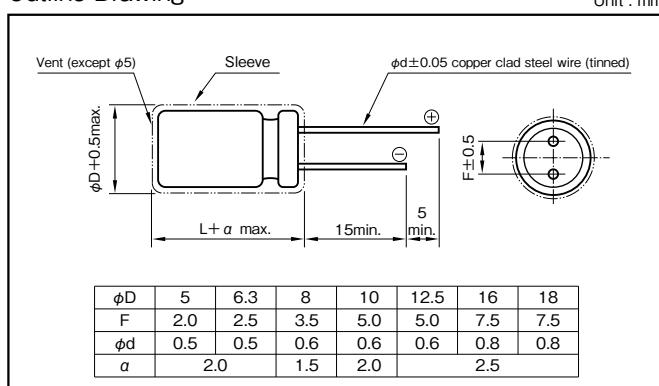
Marking color : White print on a blue sleeve

Specifications

Item	Performance																													
Category temperature range (°C)	-40 to +85																													
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)																													
Leakage current (μ A)	Rated voltage (V)		6.3 to 100										160 to 450																	
	Leakage current (μ A)		Less than 0.03CV or 4 whichever is larger (after 1 minute) Less than 0.01CV or 3 whichever is larger (after 2 minutes)										CV \leq 1000 : Less than 0.1CV+40 (after 1 minute) CV > 1000 : Less than 0.04CV+100 (after 1 minute)																	
	C : Rated capacitance (μ F) V: Rated voltage (V) (20°C)																													
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)		6.3	10	16	25	35	50	63	100	160	200	250	315	350	400	450													
	$\tan\delta$ (max.)		0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.20	0.20	0.24	0.24	0.24	0.24													
	0.02 is added to every 1000 μ F increase over 1000 μ F. (20°C, 120Hz)																													
Characteristics at high and low temperature	Rated voltage (V)		6.3	10	16	25	35	50	63	100	160	200	250	315	350	400	450													
	Impedance ratio (max.)	Z-25°C/Z+20°C		5	4	3	2	2	2	2	4	4	4	4	4	4	4													
		Z-40°C/Z+20°C		12	10	8	5	4	3	3	15	15	15	10	10	10	10													
	(120Hz)																													
Endurance (85°C) (Applied ripple current)	Test time				2000 hours																									
	Leakage current				The initial specified value or less																									
	Percentage of capacitance change				Within $\pm 20\%$ of initial value																									
	Tangent of the loss angle				200% or less of the initial specified value																									
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4																													
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)																													

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz) CV (μ F×WV)	50 ~ 60	120	1k	10k	100k
		All CV value	0.8	1	1.1	1.2
6.3 to 16	≤ 1000	0.8	1	1.5	1.7	1.7
	1000 <	0.8	1	1.2	1.3	1.3
	≤ 1000	0.8	1	1.6	1.9	1.9
25 to 35	1000 <	0.8	1	1.2	1.3	1.3
	≤ 1000	0.8	1	1.6	1.9	1.9
50 to 100	1000 <	0.8	1	1.2	1.3	1.3
	≤ 1000	0.8	1	1.6	1.9	1.9
	All CV value	0.8	1	1.3	1.5	1.6
160 to 450	≤ 1000	0.8	1	1.2	1.3	1.3
	All CV value	0.8	1	1.3	1.5	1.6

Part numbering system (example : 16V1000 μ F)

RE3	—	16	V	102	M	H4	#	□	—	□
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol			Taping(Forming) symbol

Casing symbol

Size $\phi D \times L$ (mm)	Casing Symbol	Size $\phi D \times L$ (mm)	Casing Symbol
5x11	E3	12.5x25	I6
6.3x11	F3	16x25	J6
8x11.5	G3	16x31.5	J7
10x12.5	H3	16x35.5	J8
10x16	H4	18x31.5	K7
10x20	H5	18x35.5	K8
12.5x20	I5	18x40	K9

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Item Rated capacitance (μF)	6.3			10			16			25			35			50			63			100		
	Case	ESR	Rated ripple current																					
	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5x11	199	21	—	—	—	5x11	133	21
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5x11	90.5	31	—	—	—	5x11	60.3	30
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5x11	60.3	38	—	—	—	5x11	40.2	40
4.7	—	—	—	—	—	—	—	—	—	5x11	56.5	38	5x11	49.4	40	5x11	42.3	45	5x11	35.3	45	5x11	28.2	45
10	—	—	—	—	—	—	5x11	33.2	50	5x11	26.5	55	5x11	23.2	59	5x11	19.9	66	5x11	16.6	66	6.3x11	13.3	75
22	—	—	—	—	—	—	5x11	15.1	75	5x11	12.1	82	5x11	10.6	87	5x11	9.1	98	5x11	7.5	100	6.3x11	6.0	130
33	—	—	—	—	—	—	5x11	10.1	92	5x11	8.0	100	5x11	7.0	107	5x11	6.0	126	6.3x11	5.0	140	8x11.5	4.0	180
47	—	—	—	5x11	8.5	99	5x11	7.1	110	5x11	5.7	118	5x11	4.9	130	6.3x11	4.2	155	6.3x11	3.5	170	10x12.5	2.8	230
100	—	—	—	5x11	3.8	146	5x11	3.3	160	6.3x11	2.7	199	6.3x11	2.3	214	8x11.5	2.0	298	8x11.5	1.7	298	10x20	1.3	370
220	5x11	2.1	200	6.3x11	1.8	240	6.3x11	1.5	264	8x11.5	1.2	349	10x12.5	1.1	443	10x12.5	0.75	443	10x16	0.75	470	12.5x20	0.60	620
330	6.3x11	1.4	270	6.3x11	1.2	290	8x11.5	1.0	383	10x12.5	0.81	510	10x12.5	0.70	542	10x16	0.60	595	10x20	0.50	710	12.5x25	0.40	760
470	6.3x11	0.99	322	8x11.5	0.85	417	8x11.5	0.71	457	10x12.5	0.57	545	10x16	0.49	664	12.5x20	0.42	887	12.5x20	0.35	900	16x25	0.28	1000
1000	8x11.5	0.47	546	10x12.5	0.40	650	10x16	0.33	791	10x20	0.27	996	12.5x20	0.23	1210	12.5x25	0.20	1400	16x25	0.17	1300	18x40	0.13	1380
2200	10x20	0.23	1010	10x20	0.20	1080	12.5x20	0.17	1350	12.5x25	0.14	1660	16x25	0.12	1950	16x35.5	0.11	2340	—	—	—	—	—	—
3300	10x20	0.16	1230	12.5x20	0.14	1430	12.5x25	0.12	1690	16x25	0.10	2030	16x35.5	0.090	2510	18x35.5	0.080	2810	—	—	—	—	—	—
4700	12.5x20	0.12	1710	12.5x25	0.11	1780	16x25	0.092	2100	16x31.5	0.078	2650	18x35.5	0.071	2990	—	—	—	—	—	—	—	—	—
6800	12.5x25	0.093	1930	16x25	0.083	2200	16x35.5	0.073	2580	18x35.5	0.063	3290	—	—	—	—	—	—	—	—	—	—	—	—
10000	16x25	0.076	2450	16x35.5	0.070	2700	18x35.5	0.063	3130	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15000	16x35.5	0.062	2860	18x35.5	0.058	3100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22000	18x40	0.053	3340	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Item Rated capacitance (μF)	160			200			250			315			350			400			450					
	Case	ESR	Rated ripple current	Case	ESR	Rated ripple current																		
	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)	$\phi D \times L$ (mm)	(Ω)	(mA rms)			
0.47	6.3x11	706	15	6.3x11	706	15	6.3x11	706	15	6.3x11	847	15	8x11.5	847	18									
1	6.3x11	332	22	6.3x11	332	22	6.3x11	332	22	6.3x11	398	22	8x11.5	398	25									
2.2	6.3x11	151	32	6.3x11	151	32	6.3x11	151	32	8x11.5	181	38	10x12.5	181	43									
3.3	6.3x11	101	40	6.3x11	101	40	8x11.5	101	48	10x12.5	121	53	10x12.5	121	53	10x12.5	121	53	10x12.5	121	54	10x16	121	59
4.7	6.3x11	70.6	48	8x11.5	70.6	56	8x11.5	70.6	56	10x12.5	84.7	65	10x12.5	84.7	65	10x16	84.7	71	10x20	84.7	76	—	—	—
10	8x11.5	33.2	81	10x12.5	33.2	94	10x16	33.2	101	10x20	39.8	115	10x20	39.8	115	12.5x20	39.8	123	12.5x20	39.8	123	—	—	—
22	10x16	15.1	151	10x20	15.1	170	12.5x20	15.1	182	12.5x25	18.1	182	12.5x25	18.1	197	12.5x25	18.1	197	16x25	18.1	226	—	—	—
33	10x20	10.1	202	12.5x20	10.1	223	12.5x25	10.1	243	16x25	12.1	277	16x25	12.1	277	16x25	12.1	277	16x31.5	12.1	304	—	—	—
47	12.5x20	7.06	266	12.5x25	7.06	265	12.5x25	7.06	295	16x25	8.47	330	16x25	8.47	330	16x31.5	8.47	361	16x35.5	8.47	380	—	—	—
100	12.5x25	3.32	422	16x25	3.32	483	16x31.5	3.32	528	18x31.5	3.98	567	18x31.5	3.98	567	—	—	—	—	—	—	—	—	—
220	16x31.5	1.51	783	18x35.5	1.51	882	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
330	18x35.5	1.01	1080	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz ; ESR. : 20°C, 120Hz

ALUMINUM

MINIATURE ALUMINUM
85°C

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Bipolar Capacitors

GREEN CAP
Anti-cleaning solvent

- Guarantees 2000 hours at 85°C.



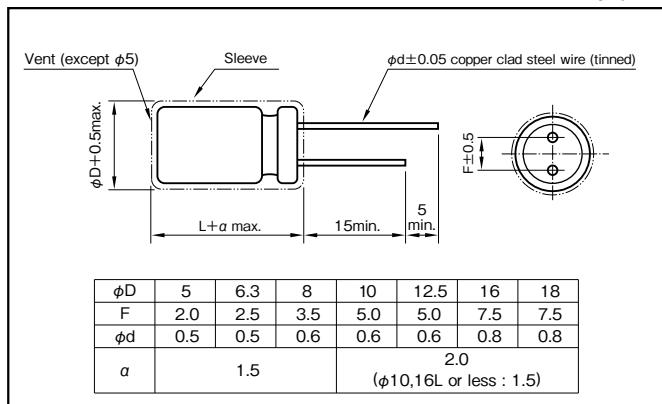
Marking color : White print on a blue sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +85														
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)														
Leakage current (μA)	Less than 0.03CV + 3 (after 5 minutes) C : Rated capacitance (μF); V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63							
	tan δ (max.)	0.24	0.24	0.20	0.20	0.16	0.14	0.12							
	0.02 is added to every 1000μF increase over 1000μF (20°C, 120Hz)														
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63							
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2	2							
	Z-40°C/Z+20°C														
	10 8 6 4 3 3 3 3 (0.5 for -25°C, 1 for -40°C are added to every 1000μF increase over 1000μF) (120Hz)														
Endurance (85°C) (Applied ripple current)	Test time	2000 hours (with the polarity inverted every 250 hours)													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within ±20% of initial value													
	Tangent of the loss angle	150% or less of the initial specified value													
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50 to 100	0.8	1	1.6	1.9

Part numbering system (example : 10V1000μF)

R2B	—	10	V	102	M	I5	#	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping(Forming) symbol		

Casing symbol

Case φDXL (mm)	Casing Symbol						
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	16×35.5	J8
8×11.5	G3	10×20	H5	16×25	J6	18×35.5	K8

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50		63		100	
	Item	Case	Rated ripple current (mAmps)	Case	Rated ripple current (mAmps)	Case	Rated ripple current (mAmps)	Case								
1	—	—	—	—	—	—	—	—	—	5×11	14	—	—	—	5×11	16
2.2	—	—	—	—	—	—	—	—	—	5×11	21	5×11	23	5×11	24	
3.3	—	—	—	—	—	—	—	—	—	5×11	26	5×11	28	6.3×11	34	
4.7	—	—	—	—	—	—	5×11	28	5×11	28	5×11	31	5×11	34	6.3×11	41
10	—	—	—	5×11	39	5×11	40	5×11	42	5×11	45	6.3×11	57	8×11.5	70	
22	—	—	5×11	52	5×11	58	5×11	60	6.3×11	71	6.3×11	77	8×11.5	89	10×16	136
33	5×11	58	5×11	63	5×11	71	6.3×11	84	6.3×11	87	8×11.5	111	10×12.5	144	10×20	181
47	5×11	69	5×11	75	6.3×11	97	6.3×11	100	8×11.5	122	10×12.5	157	10×16	188	12.5×20	248
100	6.3×11	115	6.3×11	126	8×11.5	167	10×12.5	204	10×12.5	212	10×20	273	12.5×20	343	16×25	458
220	8×11.5	202	8×11.5	221	10×12.5	294	10×16	332	10×20	375	12.5×25	506	16×25	645	18×35.5	837
330	8×11.5	247	10×12.5	322	10×16	394	10×20	444	12.5×20	526	12.5×25	620	—	—	—	—
470	10×12.5	350	10×16	420	10×20	513	12.5×20	607	12.5×25	685	16×25	861	—	—	—	—
1000	10×20	611	12.5×20	767	12.5×25	935	16×25	1120	16×31.5	1270	—	—	—	—	—	—
2200	12.5×25	1090	16×25	1380	16×31.5	1660	—	—	—	—	—	—	—	—	—	—
3300	16×25	1490	16×31.5	1760	—	—	—	—	—	—	—	—	—	—	—	—
4700	16×31.5	1880	18×35.5	2280	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz

105°C Bipolar Capacitors

GREEN CAP
Anti-cleaning solvent

- Guarantees 2000 hours at 105°C.

RJP

High temperature

R2B

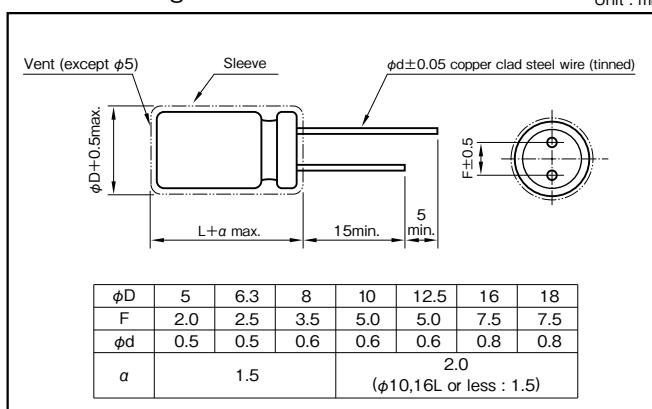


Marking color : White print on a black sleeve

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +105										
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)										
Leakage current (µA)	Less than 0.03CV + 3 (after 5 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V) (20°C)										
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35					
	tanδ (max.)	0.4	0.3	0.2	0.2	0.16					
	0.02 is added to every 1000µF increase over 1000µF (20°C, 120Hz)										
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35					
	Impedance ratio (max.)	Z-25°C/Z+20°C	5	4	3	2					
		Z-40°C/Z+20°C	10	8	6	4					
	0.5 for -25°C, 1 for -40°C are added to every 1000µF increase over 1000µF (120Hz)										
Endurance (105°C) (Applied ripple current)	Test time	2000 hours (ϕ5 to ϕ8 : 1000 hours) with the polarity inverted every 250 hours									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±20% of initial value									
	Tangent of the loss angle	200% or less of the initial specified value									
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)										

Outline Drawing



Unit : mm

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50	0.8	1	1.6	1.9

Part numbering system (example : 10V1000µF)

RJP	—	10	V	102	M	I5	#	—	□
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping(Forming) symbol		

Casing symbol

Case	Casing Symbol	Case	Casing Symbol	Case	Casing Symbol	Case	Casing Symbol
ϕDXL (mm)		ϕDXL (mm)		ϕDXL (mm)		ϕDXL (mm)	
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11.5	F3	10×16	H4	12.5×25	J6	18×35.5	K8
8×11.5	G3	10×20	H5	16×25			

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50			
	Item	Case	Rated ripple current	Case	Rated ripple current	Case	Rated ripple current	Case	Rated ripple current	Case	Rated ripple current	Case	Rated ripple current	
		ϕD × L (mm)	(mArms)		ϕD × L (mm)	(mArms)	ϕD × L (mm)	(mArms)	ϕD × L (mm)	(mArms)	ϕD × L (mm)	(mArms)		
1	—	—	—	—	—	—	—	—	—	—	—	5 × 11	12	
2.2	—	—	—	—	—	—	—	—	—	—	—	5 × 11	18	
3.3	—	—	—	—	—	—	—	—	—	—	—	5 × 11	22	
4.7	—	—	—	—	—	—	—	—	—	5 × 11	22	5 × 11	22	
10	—	—	—	5 × 11	30	5 × 11	34	5 × 11	30	6.3 × 11.5	37	6.3 × 11.5	37	
22	—	—	5 × 11	42	5 × 11	40	6.3 × 11.5	55	6.3 × 11.5	51	8 × 11.5	63	8 × 11.5	63
33	5 × 11	46	5 × 11	45	5 × 11	49	6.3 × 11.5	56	8 × 11.5	72	8 × 11.5	77	8 × 11.5	77
47	5 × 11	54	5 × 11	54	6.3 × 11.5	67	6.3 × 11.5	67	8 × 11.5	86	10 × 12.5	105	10 × 12.5	105
100	6.3 × 11.5	90	6.3 × 11.5	96	8 × 11.5	110	8 × 11.5	110	10 × 16	160	10 × 20	190	10 × 20	190
220	8 × 11.5	150	8 × 11.5	150	10 × 12.5	195	10 × 16	215	12.5 × 20	290	12.5 × 25	340	12.5 × 25	340
330	8 × 11.5	185	10 × 16	240	10 × 16	265	12.5 × 20	320	12.5 × 20	350	16 × 25	460	16 × 25	460
470	10 × 12.5	260	10 × 16	290	10 × 20	345	12.5 × 20	380	12.5 × 25	465	16 × 31.5	590	16 × 31.5	590
1000	10 × 20	460	12.5 × 20	510	12.5 × 25	605	16 × 25	670	16 × 31.5	805	—	—	—	—
2200	12.5 × 25	820	16 × 25	910	16 × 31.5	1070	18 × 35.5	1140	—	—	—	—	—	—
3300	16 × 25	1110	16 × 31.5	1200	18 × 35.5	1400	—	—	—	—	—	—	—	—
4700	16 × 31.5	1430	18 × 35.5	1520	—	—	—	—	—	—	—	—	—	—
6800	18 × 35.5	1830	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 120Hz

ALUMINUM

MINIATURE ALUMINUM

105°C

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Low Leakage Current Capacitors

GREEN
CAP

- Low leakage current (after 1 minute) : 0.006CV or 0.5 (μA).

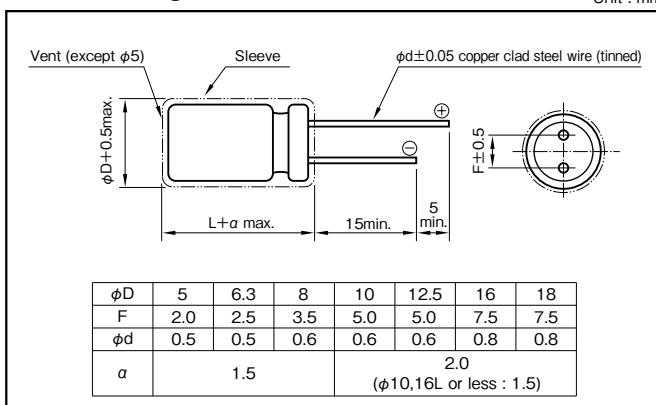


Marking color : White print on a blue sleeve

Specifications

Item	Performance													
Category temperature range (°C)	-40 to +85													
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)													
Leakage current (μA)	Less than 0.006CV or 0.5 whichever is larger (after 1 minute) Less than 0.002CV or 0.3 whichever is larger (after 2 minutes), C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)													
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)		6.3	10	16	25	35							
	$\tan\delta$ (max.)	More than 1 μF	0.20	0.17	0.13	0.10	0.10							
		1 μF or less	0.06	0.06	0.06	0.06	0.06							
(20°C, 120Hz)														
Characteristics at high and low temperature	Rated voltage (V)		6.3	10	16	25	35							
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2							
		Z-40°C/Z+20°C	8	6	4	4	3							
(120Hz)														
Endurance (85°C) (Applied ripple current)	Test time		1000 hours											
	Leakage current		The initial specified value or less											
	Percentage of capacitance change		Within $\pm 20\%$ of initial value											
Tangent of the loss angle														
150% or less of the initial specified value														
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4													
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)													

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)	CV ($\mu\text{F} \times \text{V}$)			
		50 · 60	120	1k	10k · 100k
6.3 to 10	All CV value	0.8	1	1.1	1.2
	≤ 1000	0.8	1	1.5	1.7
	1000 <	0.8	1	1.2	1.3
16 to 25	All CV value	0.8	1	1.6	1.9
35 to 50	All CV value	0.8	1	1.6	1.9

Part numbering system (example : 10V1000μF)

RLB	—	10	V	102	M	I6	#	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol		Casing symbol	Taping/Forming symbol

Casing symbol

Case	Casing symbol	Case	Casing symbol	Case	Casing symbol	Case	Casing symbol
$\phi D \times L$ (mm)							
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	16×35.5	J8
8×11.5	G3	10×20	H5	16×25	J6	18×35.5	K8
						18×40	K9

Standard Ratings

Item	6.3		10		16		25		35		50	
	Case	Rated ripple current										
	$\phi D \times L$ (mm)	(mArms)										
1	—	—	—	—	—	—	—	—	—	—	5×11	20
2.2	—	—	—	—	—	—	—	—	—	—	5×11	26
3.3	—	—	—	—	—	—	—	—	—	—	5×11	32
4.7	—	—	—	—	—	—	5×11	34	5×11	34	6.3×11	43
10	—	—	—	—	5×11	543	6.3×11	57	6.3×11	57	8×11.5	75
22	—	—	5×11	56	6.3×11	74	8×11.5	99	8×11.5	99	10×12.5	131
33	—	—	6.3×11	79	6.3×11	90	8×11.5	121	10×12.5	144	10×16	176
47	—	—	6.3×11	94	8×11.5	127	10×12.5	172	10×12.5	172	10×16	210
100	—	—	8×11.5	160	10×12.5	220	10×16	270	10×20	300	12.5×20	380
220	10×12.5	260	10×16	350	10×20	390	12.5×20	510	12.5×25	550	16×25	720
330	10×16	350	10×20	460	12.5×20	550	12.5×25	680	16×25	790	16×31.5	970
470	10×20	460	12.5×20	570	12.5×25	650	16×25	940	16×25	940	16×35.5	1210
1000	12.5×25	840	12.5×25	910	16×25	1210	16×35.5	1580	18×35.5	1690	—	—
2200	16×25	1440	16×31.5	1710	18×35.5	2200	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz

RJ5 MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

ELNA®

105°C Miniature Capacitors

GREEN CAP 105°C 1000hours Anti-cleaning solvent 250V Max.

- Case size is one rank smaller than Series RJ4.



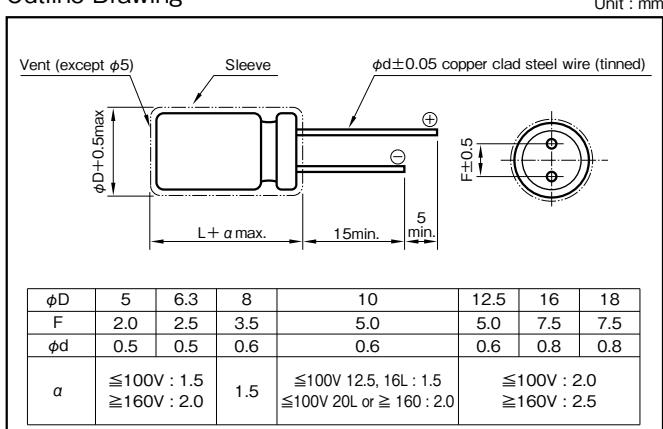
Marking color : White print on a black sleeve

Specifications

Item	Performance																								
Category temperature range (°C)	-55~+105										-40~+105														
Rated voltage (V)	6.3~100										160~450														
Tolerance at rated capacitance (%)	±20										(20°C, 120Hz)														
Leakage current (μA)														CV ≤ 1000 : Less than 0.1CV+40 (after 1 minute) CV > 1000 : Less than 0.04CV+100 (after 1 minute)											
Tangent of loss angle (tanδ)														C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)											
Characteristics at high and low temperature														Rated voltage (V) 6.3 10 16 25 35 50 63 100 160 200 250 315 350 400 450 tanδ (max.) 0.34 0.26 0.20 0.16 0.14 0.12 0.10 0.08 0.20 0.20 0.20 0.24 0.24 0.24 0.02 is added to every 1000μF increase over 1000μF. (20°C, 120Hz)											
Endurance (105°C) (Applied ripple current)														Test time 2000 hours (φ5 to φ8, 100V or less : 1000 hours) Leakage current The initial specified value or less Percentage of capacitance change Within ±20% of initial value Tangent of the loss angle 200% or less of the initial specified value											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4																								
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)																								

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)	Rated capacitance (μF)				
		50 · 60	120	1k	10k	100k
6.3 to 100	1 to 47	0.8	1	1.5	1.7	2.0
	100 to 220	0.8	1	1.2	1.3	1.4
	330 to 1000	0.8	1	1.2	1.2	1.3
	2200 to 22000	0.8	1	1.1	1.1	1.1
160 to 450	1 to 470	0.8	1	1.3	1.4	1.6

Part numbering system (example : 10V1000μF)

RJ5	—	10	V	102	M	H3	#	—	—
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Optional symbol	Taping/Forming symbol		

In the case of 160V or beyond, should put in optional symbol "B".

Casing symbol

Size φD×L (mm)	Casing Symbol						
5×11	E3	10×12.5	H3	16×20	J5	18×20	K5
6.3×11	F3	10×16	H4	16×25	J6	18×25	K6
8×11.5	G3	10×20	H5	16×31.5	J7	18×31.5	K7
—	—	12.5×20	I5	16×35.5	J8	18×35.5	K8
—	—	12.5×25	I6	—	—	18×40	K9

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50		63		100		
	Item	Case	Rated ripple current														
		φDXL (mm)	mArms														
1	—	—	—	—	—	—	—	—	—	—	—	5x11	15	—	—	5x11	15
2.2	—	—	—	—	—	—	—	—	—	—	—	5x11	22	—	—	5x11	21
3.3	—	—	—	—	—	—	—	—	—	—	—	5x11	27	—	—	5x11	29
4.7	—	—	—	—	—	—	—	—	—	—	—	5x11	32	—	—	5x11	32
10	—	—	—	—	—	—	—	—	—	—	—	5x11	47	—	—	5x11	50
22	—	—	—	—	—	—	—	—	—	—	—	5x11	70	5x11	71	6.3x11	93
33	—	—	—	—	—	—	—	—	—	—	—	5x11	90	6.3x11	100	8x11.5	130
47	—	—	—	—	—	—	—	—	—	6.3x11	93	6.3x11	115	6.3x11	120	8x11.5	140
68	—	—	—	—	—	—	—	—	6.3x11	110	6.3x11	150	8x11.5	155	10x12.5	190	
100	—	—	—	—	—	—	5x11	125	6.3x11	151	8x11.5	190	8x11.5	200	10x16	240	
220	—	—	5x11	155	6.3x11	190	6.3x11	200	8x11.5	270	10x12.5	314	10x16	335	12.5x20	390	
330	—	—	6.3x11	210	6.3x11	225	8x11.5	310	10x12.5	384	10x16	421	10x20	510	—	—	
470	—	—	6.3x11	250	8x11.5	323	10x12.5	429	10x16	470	10x20	540	12.5x20	640	16x25	715	
1000	8x11.5	398	10x12.5	460	10x12.5	500	10x16	610	12.5x20	857	12.5x25	1000	16x25	930	18x35.5	960	
2200	10x16	635	10x16	705	10x20	710	12.5x25	1180	16x25	1380	16x31.5	1410	18x35.5	1650	—	—	
3300	10x20	882	12.5x20	1010	12.5x25	1200	16x25	1440	16x31.5	1500	18x35.5	1990	—	—	—	—	
4700	12.5x20	1120	12.5x25	1260	16x25	1500	16x25	1570	16x35.5	1780	—	—	—	—	—	—	
6800	12.5x25	1380	16x25	1570	16x25	1600	16x35.5	1850	18x40	2000	—	—	—	—	—	—	
10000	16x25	1750	16x31.5	1820	16x35.5	1930	18x40	2000	—	—	—	—	—	—	—	—	
15000	16x31.5	1820	16x35.5	2050	18x40	2210	—	—	—	—	—	—	—	—	—	—	
22000	18x35.5	2280	18x40	2420	—	—	—	—	—	—	—	—	—	—	—	—	

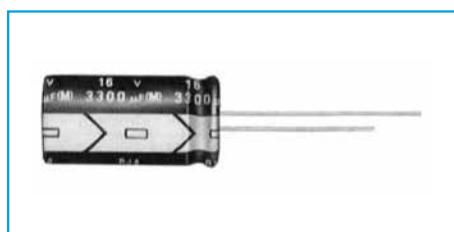
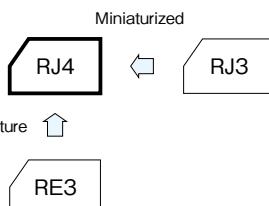
Rated voltage (V)	160		200		250		315		350		400		450				
	Item	Case	Rated ripple current														
		φDXL (mm)	(mArms)														
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.3x11	12	
2.2	—	—	—	—	—	—	6.3x11	21	6.3x11	21	—	—	8x11.5	20	—	—	
3.3	—	—	—	—	6.3x11	35	6.3x11	26	6.3x11	26	—	—	10x12.5	41	—	—	
4.7	—	—	6.3x11	42	6.3x11	42	8x11.5	35	8x11.5	35	8x11.5	35	8x11.5	35	10x12.5	49	
10	6.3x11	61	8x11.5	72	8x11.5	72	10x16	74	10x16	67	10x16	67	10x20	86	—	—	
22	10x12.5	125	10x16	135	10x16	135	12.5x20	135	12.5x20	140	12.5x20	140	12.5x25	170	—	—	
33	10x16	170	10x20	185	12.5x20	210	12.5x25	195	12.5x25	195	12.5x25	195	16x20	240	—	—	
47	10x20	220	—	—	12.5x20	250	—	—	—	—	16x25	350	16x25	296	18x20	286	
68	12.5x25	330	12.5x20	305	16x20	355	18x20	350	16x31.5	390	16x31.5	460	16x31.5	390	18x20	380	
100	16x20	430	12.5x25	400	16x25	465	16x35.5	500	16x35.5	500	18x31.5	505	18x35.5	540	18x25	460	
120	16x25	510	16x25	510	16x31.5	560	18x31.5	560	18x31.5	560	18x35.5	588	18x40	615	18x35.5	540	
150	16x25	570	16x31.5	625	16x35.5	655	18x35.5	648	18x40	688	—	—	—	—	—	—	
180	18x25	675	16x31.5	685	18x31.5	735	18x40	750	—	—	—	—	—	—	—	—	
220	18x25	745	16x35.5	790	18x35.5	855	—	—	—	—	—	—	—	—	—	—	
330	—	—	18x40	1090	—	—	—	—	—	—	—	—	—	—	—	—	
470	18x40	1300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C, 120Hz ; ESR. : 20°C, 120Hz

105°C Miniature Capacitors

GREEN CAP 105°C 2000hours Anti-cleaning solvent 250V Max.

- Case size is one rank smaller than Series RJ3.
- Guarantees 2000 hours at 105°C.
($\phi 5$ to $\phi 8$: 1000 hours)



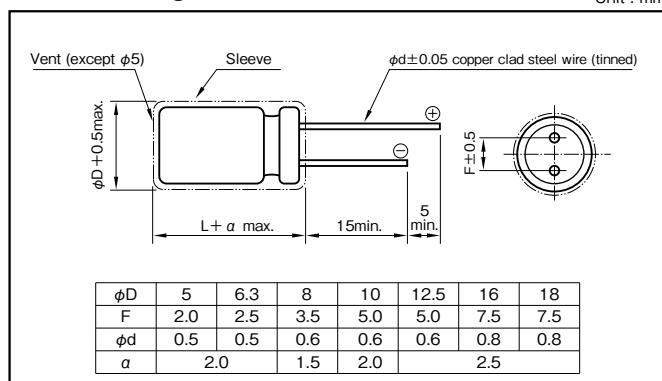
Marking color : White print on a black sleeve

Specifications

Item	Performance																															
Category temperature range (°C)	-55 to +105																															
Rated voltage (V)	6.3 to 100																															
Tolerance at rated capacitance (%)	± 20																															
Leakage current (μ A)	Less than 0.03CV or 4 whichever is larger (after 1 minute) Less than 0.01CV or 3 whichever is larger (after 2 minutes)																															
Tangent of loss angle ($\tan\delta$)	C : Rated capacitance (μ F) ; V : Rated voltage (V)																															
	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160	200	250	315	350	400	450																
	$\tan\delta$ (max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.20	0.20	0.24	0.24	0.24	0.24																
	0.02 is added to every 1000 μ F increase over 1000 μ F.															(20°C, 120Hz)																
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 to 250			315 to 450																			
	Impedance ratio (max.)	Z-25°C/Z+20°C	5	4	3	2	2	2	2	4			4																			
		Z-40°C/Z+20°C	10	8	6	4	3	3	3	15			10																			
	(120Hz)																															
Endurance (105°C) (Applied ripple current)	Test time				2000 hours ($\phi 5$ to $\phi 8$: 1000 hours)																											
	Leakage current				The initial specified value or less																											
	Percentage of capacitance change				Within $\pm 20\%$ of initial value																											
	Tangent of the loss angle				200% or less of the initial specified value																											
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4																															
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)																															

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)	50 · 60	120	1k	10k	100k
		1 to 47	0.8	1	1.5	1.7
6.3 to 100	100 to 220	0.8	1	1.2	1.3	1.4
	330 to 1000	0.8	1	1.2	1.2	1.3
	2200 to 22000	0.8	1	1.1	1.1	1.1
	160 to 450	1 to 330	0.8	1	1.3	1.4

Part numbering system (example : 16V2200μF)

RJ4	—	16	V	222	M	I5	#	□	—	□
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol		Casing symbol		Optional symbol

Casing symbol

Size	Casing Symbol	Size	Casing Symbol
$\phi D \times L$ (mm)		$\phi D \times L$ (mm)	
5×11	E3	12.5×25	I6
6.3×11	F3	16×25	J6
8×11.5	G3	16×31.5	J7
10×12.5	H3	16×35.5	J8
10×16	H4	18×31.5	K7
10×20	H5	18×35.5	K8
12.5×20	I5	18×40	K9

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	6.3			10			16			25			35			50			63			100					
	Item	Case	ESR	Rated ripple current																							
		φDXL (mm)	(Ω)	(mAms)																							
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5x11	199	15	—	—	—	5x11	133	15
2.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5x11	90.5	22	—	—	—	5x11	60.3	21
3.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5x11	60.3	27	—	—	—	5x11	40.2	29
4.7	—	—	—	—	—	—	—	—	—	5x11	56.5	27	5x11	49.4	30	5x11	42.4	32	—	—	—	—	—	—	5x11	28.2	32
10	—	—	—	—	—	—	—	5x11	33.2	37	5x11	26.5	39	5x11	23.2	43	5x11	19.9	47	5x11	16.6	46	6.3x11	13.3	54		
22	—	—	—	—	—	—	—	5x11	15.1	54	5x11	12.1	58	5x11	10.6	64	5x11	9.05	70	5x11	7.54	71	6.3x11	6.03	93		
33	—	—	—	—	—	—	—	5x11	10.1	67	5x11	8.04	71	5x11	7.04	78	5x11	6.03	90	6.3x11	5.03	100	8x11.5	4.02	130		
47	—	—	—	5x11	8.47	72	5x11	7.06	79	5x11	5.65	84	5x11	4.94	90	6.3x11	4.24	115	6.3x11	3.53	120	10x12.5	2.82	165			
100	—	—	—	5x11	3.98	105	5x11	3.32	115	6.3x11	2.65	141	6.3x11	2.32	151	8x11.5	1.99	190	10x12.5	1.66	215	10x20	1.33	265			
220	5x11	2.11	140	6.3x11	1.81	166	6.3x11	1.51	190	8x11.5	1.21	247	10x12.5	1.06	314	10x12.5	0.91	314	10x16	0.75	335	12.5x25	0.60	440			
330	6.3x11	1.41	195	6.3x11	1.21	210	8x11.5	1.01	271	10x12.5	0.81	360	10x12.5	0.70	384	10x16	0.60	421	10x20	0.50	510	12.5x25	0.40	540			
470	6.3x11	0.99	232	8x11.5	0.85	325	8x11.5	0.71	323	10x12.5	0.57	429	10x16	0.50	470	12.5x20	0.42	628	12.5x20	0.35	640	16x25	0.28	715			
1000	8x11.5	0.47	398	10x12.5	0.40	457	10x16	0.33	560	10x20	0.27	705	12.5x20	0.23	857	12.5x25	0.20	1000	16x25	0.17	930	18x40	0.13	985			
2200	10x20	0.23	720	10x20	0.20	761	12.5x20	0.17	961	12.5x25	0.14	1180	16x25	0.12	1380	16x35.5	0.11	1660	—	—	—	—	—	—			
3300	10x20	0.16	882	12.5x20	0.14	1010	12.5x25	0.12	1200	16x25	0.10	1440	16x35.5	0.09	1780	18x35.5	0.08	1990	—	—	—	—	—	—			
4700	12.5x20	0.12	1120	12.5x25	0.11	1250	16x25	0.09	1490	16x31.5	0.08	1880	18x35.5	0.07	2120	—	—	—	—	—	—	—	—	—			
6800	12.5x25	0.09	1380	16x25	0.08	1570	16x35.5	0.07	1830	18x35.5	0.06	2330	—	—	—	—	—	—	—	—	—	—	—	—			
10000	16x25	0.07	1750	16x35.5	0.07	1910	18x35.5	0.06	2220	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
15000	16x35.5	0.06	2040	18x35.5	0.06	2190	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
22000	18x40	0.05	2390	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			

ALUMINUM

Rated voltage (V) Rated capacitance (μF)	160			200			250			315			350			400			450					
	Item	Case	ESR	Rated ripple current																				
		φDXL (mm)	(Ω)	(mAms)																				
1	6.3x11	332	16	6.3x11	332	16	6.3x11	332	16	6.3x11	398	16	8x11.5	398	18									
2.2	6.3x11	151	23	6.3x11	151	23	6.3x11	151	23	8x11.5	181	27	10x12.5	181	31									
3.3	6.3x11	101	28	6.3x11	101	28	8x11.5	101	34	10x12.5	121	38	10x12.5	121	38	10x12.5	121	38	10x16	121	42	10x20	121	42
4.7	6.3x11	70.6	34	8x11.5	70.6	40	8x11.5	70.6	40	10x12.5	84.7	45	10x12.5	84.7	45	10x16	84.7	50	10x20	84.7	54	12.5x20	84.7	54
10	8x11.5	33.2	58	10x12.5	33.2	66	10x16	33.2	74	10x20	39.8	79	10x20	39.8	79	12.5x20	39.8	87	12.5x20	39.8	87	16x25	39.8	87
22	10x16	15.1	107	10x20	15.1	120	12.5x20	15.1	130	12.5x20	18.1	129	12.5x25	18.1	140	12.5x25	18.1	140	16x25	18.1	160	16x25	18.1	160
33	10x20	10.1	143	12.5x20	10.1	160	12.5x25	10.1	172	16x25	12.1	196	16x25	12.1	196	16x25	12.1	196	16x31.5	12.1	215	16x31.5	12.1	215
47	12.5x20	7.06	188	12.5x20	7.06	188	12.5x25	7.06	205	16x25	8.47	234	16x25	8.47	234	16x31.5	8.47	256	16x35.5	8.47	269	16x35.5	8.47	269
100	12.5x25	3.32	299	16x25	3.32	342	16x31.5	3.32	374	18x31.5	3.98	401	18x31.5	3.98	401	—	—	—	—	—	—	—	—	—
220	16x31.5	1.51	554	18x35.5	1.51	624	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
330	18x35.5	1.01	764	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

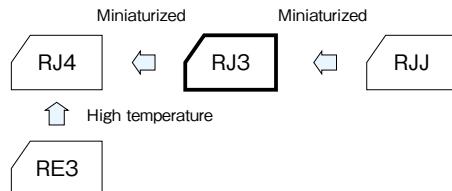
MINIATURE
ALUMINUM
105°C

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

105°C Use, Standard Capacitors

GREEN CAP 105°C
2000hours Anti-cleaning solvent
250V Max.

- Guarantees 2000 hours at 105°C ($\phi 5$ to $\phi 8$: 1000 hours).



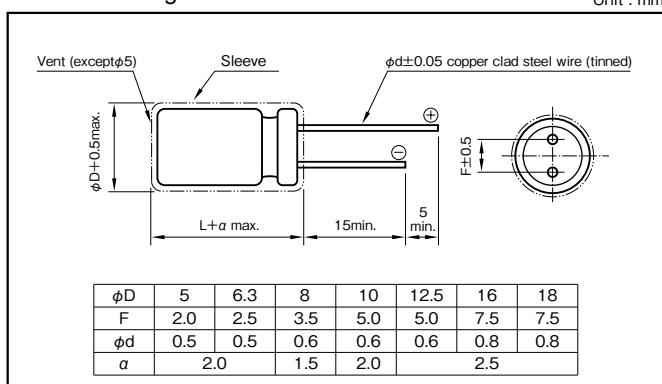
Marking color : White print on a black sleeve

Specifications

Item	Performance																	
Category temperature range (°C)	−55 to +105										−40 to +105							
Rated voltage (V)	6.3 to 100										160 to 400							
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)																	
Leakage current (μ A)	Less than 0.03CV or 4 whichever is larger (after 1 minute) Less than 0.01CV or 3 whichever is larger (after 2 minutes)																	
Tangent of loss angle ($\tan\delta$)	C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)																	
Characteristics at high and low temperature	Rated voltage (V) 6.3 10 16 25 35 50 63 100 160 200 250 315 350 400 $\tan\delta$ (max.) 0.22 0.19 0.16 0.14 0.12 0.10 0.09 0.08 0.15 0.15 0.15 0.20 0.20 0.20 0.02 is added to every 1000 μ F increase over 1000 μ F. (20°C,120Hz)																	
Endurance (105°C) (Applied ripple current)	Test time 2000 hours ($\phi 5$ to $\phi 8$: 1000 hours) Leakage current The initial specified value or less Percentage of capacitance change Within ±20% of initial value Tangent of the loss angle 200% or less of the initial specified value																	
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4																	
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)																	

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)	Rated capacitance (μ F)				
		50 · 60	120	1k	10k	100k
6.3 to 100	1 to 4.7	—	0.4	0.7	0.8	1
	10 to 47	—	0.5	0.8	0.9	1
	100 to 220	—	0.7	0.9	0.9	1
	330 to 1000	—	0.8	0.9	1.0	1
	2200 to 15000	—	0.9	1.0	1.0	1
160 to 400	1 to 220	0.8	1	1.3	1.4	1.6

Part numbering system (example : 63V1000μF)

RJ3	—	63	V	102	M	J7	#	□	—	□	
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol		Casing symbol		Optional symbol	Taping(Forming) symbol

Casing symbol

Size $\phi D \times L$ (mm)	Casing Symbol	Size $\phi D \times L$ (mm)	Casing Symbol
5×11	E3	12.5×25	I6
6.3×11	F3	16×25	J6
8×11.5	G3	16×31.5	J7
10×12.5	H3	16×35.5	J8
10×16	H4	18×35.5	K8
10×20	H5	18×40	K9
12.5×20	I5		

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Item Rated Capacitance (μF)	6.3				10				16				25			
	Case	ESR	Impedance	Rated ripple current	Case	ESR	Impedance	Rated ripple current	Case	ESR	Impedance	Rated ripple current	Case	ESR	Impedance	Rated ripple current
	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)
4.7	—	—	—	—	—	—	—	—	—	—	—	—	5x11	49.4	3.0	85
10	—	—	—	—	—	—	—	—	5x11	26.5	2.5	92	5x11	23.2	2.5	92
22	—	—	—	—	5x11	14.3	2.5	92	5x11	12.1	1.9	105	5x11	10.6	1.9	105
33	5x11	11.1	2.5	105	5x11	9.55	1.9	105	5x11	8.04	1.5	120	5x11	7.04	1.5	120
47	5x11	7.77	1.5	120	5x11	6.71	1.5	120	5x11	5.65	1.2	130	5x11	4.94	1.2	130
100	5x11	3.65	1.2	130	5x11	3.15	1.2	130	6.3x11	2.65	0.58	220	6.3x11	2.32	0.58	220
220	6.3x11	1.66	0.87	180	6.3x11	1.43	0.58	220	8x11.5	1.21	0.47	290	8x11.5	1.06	0.39	315
330	6.3x11	1.11	0.58	220	8x11.5	0.96	0.47	265	8x11.5	0.81	0.39	315	10x12.5	0.70	0.23	500
470	8x11.5	0.78	0.39	315	8x11.5	0.67	0.39	315	10x12.5	0.57	0.23	500	10x16	0.50	0.18	615
1000	10x12.5	0.37	0.23	500	10x16	0.32	0.18	615	10x20	0.27	0.12	825	12.5x20	0.23	0.090	1050
2200	12.5x20	0.18	0.095	1000	12.5x20	0.16	0.090	1050	12.5x25	0.14	0.068	1300	16x25	0.12	0.056	1740
3300	12.5x20	0.13	0.090	1050	12.5x25	0.12	0.068	1300	16x25	0.10	0.056	1740	16x31.5	0.09	0.045	2110
4700	16x25	0.10	0.061	1670	16x25	0.09	0.056	1740	16x31.5	0.08	0.045	2110	18x35.5	0.07	0.036	2580
6800	16x25	0.08	0.056	1740	16x31.5	0.07	0.045	2110	18x35.5	0.06	0.036	2580	—	—	—	—
10000	16x31.5	0.06	0.045	2110	18x35.5	0.06	0.036	2580	—	—	—	—	—	—	—	—
15000	18x35.5	0.05	0.036	2580	—	—	—	—	—	—	—	—	—	—	—	—

Item Rated Capacitance (μF)	35				50				63				100			
	Case	ESR	Impedance	Rated ripple current	Case	ESR	Impedance	Rated ripple current	Case	ESR	Impedance	Rated ripple current	Case	ESR	Impedance	Rated ripple current
	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)	φDXL (mm)	(Ω)	(Ω max.)	(mA rms)
1	—	—	—	—	5x11	166	4.9	35	—	—	—	—	5x11	133	11	45
2.2	—	—	—	—	5x11	75.4	4.2	53	—	—	—	—	5x11	60.3	9.2	60
3.3	—	—	—	—	5x11	50.3	3.9	65	—	—	—	—	5x11	40.2	7.2	67
4.7	5x11	42.4	2.5	92	5x11	35.3	3.6	82	5x11	31.8	5.8	74	5x11	28.2	6.3	75
10	5x11	19.9	1.9	105	5x11	16.6	2.7	100	5x11	14.9	3.6	95	6.3x11	13.3	3.3	110
22	5x11	9.05	1.5	120	5x11	7.54	1.9	125	6.3x11	6.79	2.1	130	8x11.5	6.03	1.4	165
33	5x11	6.03	1.2	130	6.3x11	5.03	1.1	195	6.3x11	4.52	1.7	160	10x12.5	4.02	0.94	305
47	6.3x11	4.24	0.58	220	6.3x11	3.53	0.90	245	8x11.5	3.18	1.2	305	10x16	2.82	0.68	320
100	8x11.5	1.99	0.39	315	8x11.5	1.66	0.50	385	10x12.5	1.49	0.65	395	12.5x20	1.33	0.28	585
220	10x12.5	0.91	0.23	500	10x16	0.75	0.27	505	10x20	0.68	0.32	505	16x25	0.60	0.16	1120
330	10x16	0.60	0.18	615	10x20	0.50	0.18	675	12.5x20	0.45	0.22	660	16x25	0.40	0.13	1290
470	10x20	0.42	0.12	825	12.5x20	0.35	0.12	895	12.5x25	0.32	0.16	850	16x31.5	0.28	0.11	1350
1000	12.5x25	0.20	0.068	1300	16x25	0.17	0.076	1495	16x31.5	0.15	0.098	1430	—	—	—	—
2200	16x31.5	0.11	0.045	2110	18x35.5	0.09	0.050	2190	—	—	—	—	—	—	—	—
3300	18x35.5	0.08	0.036	2580	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz ; ESR. : 20°C, 120Hz ; Impedance : 20°C, 100kHz

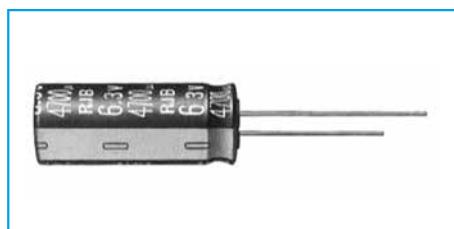
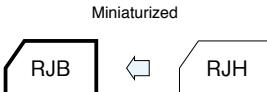
Item Rated Capacitance (μF)	160			200			250			315			350			400		
	Case	ESR	Rated ripple current															
	φDXL (mm)	(Ω)	(mA rms)															
1	6.3x11	248	18	6.3x11	248	18	6.3x11	248	18	6.3x11	331	16	6.3x11	331	18	8x11.5	331	18
2.2	6.3x11	113	26	6.3x11	113	26	8x11.5	113	30	8x11.5	150	27	8x11.5	150	30	10x12.5	150	30
3.3	8x11.5	75.4	37	8x11.5	75.4	37	10x12.5	75.4	43	10x12.5	100	36	10x12.5	100	36	10x16	100	40
4.7	8x11.5	52.9	44	10x12.5	52.9	50	10x12.5	52.9	50	10x16	70.6	47	10x16	70.6	47	10x20	70.6	52
10	10x12.5	24.9	75	10x16	24.9	80	10x20	24.9	90	10x20	33.2	75	12.5x20	33.2	79	12.5x20	33.2	79
22	10x20	11.3	135	10x20	11.3	135	12.5x25	11.3	155	12.5x25	15.1	130	12.5x25	15.1	130	16x25	15.1	130
33	12.5x20	7.54	175	12.5x25	7.54	190	12.5x25	7.54	190	16x25	10.1	160	16x25	10.1	160	16x31.5	10.1	175
47	12.5x25	5.29	230	12.5x25	5.29	230	16x25	5.29	225	16x31.5	7.06	210	16x31.5	7.06	210	18x35.5	7.06	220
100	16x25	2.49	330	16x31.5	2.49	360	18x35.5	2.49	340	18x40	3.32	335	18x40	3.32	335	—	—	—
220	18x35.5	1.13	500	18x40	1.13	525	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 120Hz ; ESR. : 20°C, 120Hz

105°C Use, Miniature, High-Reliability, Low Impedance Capacitors

GREEN CAP Low Impedance 105°C 5000hours Anti-cleaning solvent

- Smaller and higher ripple current than RJH Series.
- Guarantees 5000 hours at 105°C.
(ϕ 5 to 6.3 : 2000 hours ; ϕ 8 to 10 : 3000 hours)



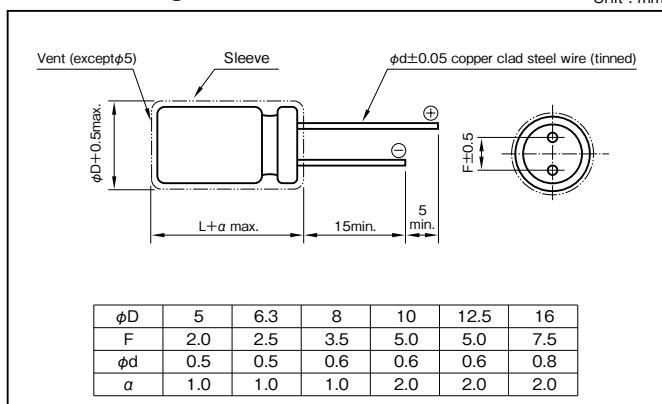
Marking color : White print on a black sleeve

Specifications

Item	Performance							
Category temperature range (°C)	−55 to +105							
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)							
Leakage current (μ A)	Less than $0.01CV + 1$ (after 2 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)							
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	50	63
	$\tan\delta$ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09
	0.02 is added to every 1000 μ F increase over 1000 μ F. (20°C,120Hz)							
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63
	Impedance ratio (max.)	Z−55°C/Z+20°C	3	3	3	3	3	3
	(120Hz)							
Endurance (105°C) (Applied ripple current)	Test time	5000 hours (ϕ 5 to 6.3 : 2000 hours) (ϕ 8 to 10 : 3000 hours)						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within $\pm 20\%$ of initial value						
	Tangent of the loss angle	200% or less of the initial specified value						
Shelf life (105°C)	Test time	1000 hours						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within $\pm 15\%$ of initial value						
	Tangent of the loss angle	150% or less of the initial specified value						
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)							

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μ F)	Frequency (Hz)	120	1k	10k	100k
3.3 to 180	0.40	0.75	0.90	1	
220 to 390	0.50	0.85	0.95	1	
470 to 1800	0.60	0.88	0.96	1	
2200 to 3900	0.75	0.90	0.98	1	
4700 to 10000	0.85	0.95	1.00	1	

Part numbering system (example : 10V1000μF)

RJB	—	10	V	102	M	H4	#	—	□
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol	Taping/Forming symbol			

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V) Rated capacitance (μF)	6.3						10						16					
	Item	Case $\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	$\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	$\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)		
				20°C	-10°C				20°C	-10°C				20°C	-10°C			
100	—	—	—	—	—	—	5×11.5	E3	0.65	1.3	181	—	—	—	—	—	—	
220	—	—	—	—	—	—	6.3×11.5	F3	0.32	0.64	290	—	—	—	—	—	—	
330	6.3×11.5	F3	0.32	0.64	290	8×12	G3	0.17	0.34	555	8×12	G3	0.17	0.34	555	—	—	—
470	8×12	G3	0.17	0.34	555	8×12	G3	0.17	0.34	555	10×12.5	H3	0.12	0.24	760	—	—	—
680	8×12	G3	0.17	0.34	555	10×12.5	H3	0.12	0.24	760	10×16	H4	0.080	0.16	1050	—	—	—
1000	10×12.5	H3	0.12	0.24	760	10×16	H4	0.080	0.16	1050	10×20	H5	0.062	0.124	1220	—	—	—
2200	10×25	H6	0.052	0.104	1440	12.5×20	I5	0.042	0.084	1690	12.5×25	I6	0.034	0.068	1950	—	—	—
3300	12.5×20	I5	0.042	0.084	1690	12.5×25	I6	0.034	0.068	1950	16×25	J6	0.028	0.056	2560	—	—	—
4700	12.5×30	I7	0.030	0.060	2310	16×25	J6	0.028	0.056	2560	16×31.5	J7	0.025	0.050	3010	—	—	—
6800	16×25	J6	0.028	0.056	2560	16×31.5	J7	0.025	0.050	3010	—	—	—	—	—	—	—	
10000	16×31.5	J7	0.025	0.050	3010	—	—	—	—	—	—	—	—	—	—	—	—	

Rated voltage (V) Rated capacitance (μF)	25						35						50						
	Item	Case $\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	$\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	$\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)			
				20°C	-10°C				20°C	-10°C				20°C	-10°C				
22	—	—	—	—	—	—	—	—	—	—	—	—	—	5×11.5	E3	0.95	1.9	170	
33	—	—	—	—	—	—	5×11.5	E3	0.65	1.3	181	6.3×11.5	F3	0.46	0.92	260	—	—	—
47	5×11.5	E3	0.65	1.3	181	6.3×11.5	F3	0.32	0.64	290	6.3×11.5	F3	0.46	0.92	260	—	—	—	
100	6.3×11.5	F3	0.32	0.64	290	8×12	G3	0.17	0.34	555	8×12	G3	0.21	0.42	485	—	—	—	
150	—	—	—	—	—	—	—	—	—	—	—	—	—	10×12.5	H3	0.19	0.38	615	
220	8×12	G3	0.17	0.34	555	10×12.5	H3	0.12	0.24	760	10×16	H4	0.16	0.32	850	—	—	—	
330	10×12.5	H3	0.12	0.24	760	10×16	H4	0.080	0.16	1050	10×20	H5	0.085	0.17	1050	—	—	—	
470	10×16	H4	0.080	0.16	1050	10×20	H5	0.062	0.124	1220	12.5×20	I5	0.060	0.12	1500	—	—	—	
680	10×20	H5	0.062	0.124	1220	12.5×20	I5	0.042	0.084	1690	12.5×25	I6	0.045	0.090	1832	—	—	—	
1000	12.5×20	I5	0.042	0.084	1690	12.5×25	I6	0.034	0.068	1950	16×25	J6	0.038	0.076	2240	—	—	—	
2200	16×25	J6	0.028	0.056	2560	16×31.5	J7	0.025	0.050	3010	—	—	—	—	—	—	—	—	
3300	16×31.5	J7	0.025	0.050	3010	—	—	—	—	—	—	—	—	—	—	—	—	—	

Rated voltage (V) Rated capacitance (μF)	63						100										
	Item	Case $\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	$\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)						
				20°C	-10°C				20°C	-10°C							
3.3	—	—	—	—	—	—	5×11.5	E3	1.9	7.6	57	—	—	—	—	—	—
4.7	5×11.5	E3	1.2	3.6	120	5×11.5	E3	1.9	7.6	57	—	—	—	—	—	—	—
10	5×11.5	E3	1.2	3.6	120	6.3×11.5	F3	1.1	4.4	78	—	—	—	—	—	—	—
22	6.3×11.5	F3	0.55	1.7	148	8×12	G3	0.53	2.1	275	—	—	—	—	—	—	—
33	6.3×11.5	F3	0.55	1.7	148	10×12.5	H3	0.47	1.9	319	—	—	—	—	—	—	—
47	8×12	G3	0.32	0.96	360	10×16	H4	0.32	1.3	424	—	—	—	—	—	—	—
100	10×12.5	H3	0.23	0.69	448	12.5×20	I5	0.13	0.52	805	—	—	—	—	—	—	—
220	10×20	H5	0.12	0.36	676	16×25	J6	0.081	0.32	1290	—	—	—	—	—	—	—
330	12.5×20	I5	0.075	0.23	979	16×25	J6	0.081	0.32	1290	—	—	—	—	—	—	—
470	12.5×25	I6	0.065	0.20	1180	16×31.5	J7	0.059	0.23	1630	—	—	—	—	—	—	—
1000	16×31.5	J7	0.042	0.13	1890	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 100kHz ; Impedance : 100kHz

105°C

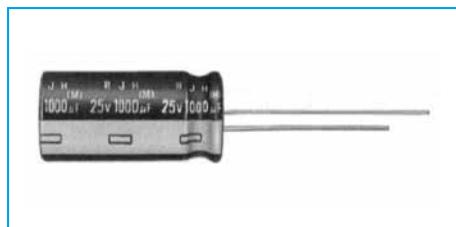
MINIATURE
ALUMINUM

105°C Use, High-Reliability, Low Impedance Capacitors

GREEN CAP Low Impedance 105°C 5000hours Anti-cleaning solvent

- Guarantees 5000 hours at 105°C.
(φ5 to 6.3 : 2000 hours ; φ8 to 10 : 3000 hours)

Long life
RJH RJ3



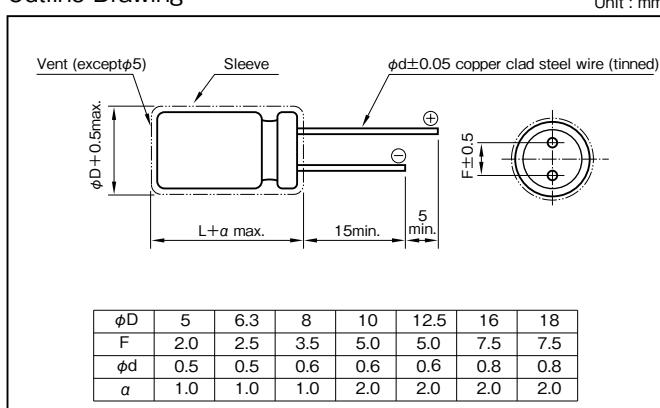
Marking color : White print on a black sleeve

Specifications

Item	Performance								
Category temperature range (°C)	−55 to +105								
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)								
Leakage current (µA)	Less than 0.01CV + 2 (after 2 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V) (20°C)								
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63	
	tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.08	
	0.02 is added to every 1000µF increase over 1000µF. (20°C,120Hz)								
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	
	Impedance ratio (max.)	Z-25°C/Z+20°C	2	2	2	2	2	2	
		Z-55°C/Z+20°C	3	3	3	3	3	3	
	(120Hz)								
Endurance (105°C) (Applied ripple current)	Test time	5000 hours (φ5 to 6.3 : 2000 hours) (φ8 to 10 : 3000 hours)							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within ±20% of initial value							
	Tangent of the loss angle	200% or less of the initial specified value							
Shelf life (105°C)	Test time	1000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within ±15% of initial value							
	Tangent of the loss angle	150% or less of the initial specified value							
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)								

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (µF)	Frequency (Hz)	120	1k	10k	100k
1 to 4.7	0.40	0.68	0.78	1	
5.6 to 47	0.50	0.76	0.87	1	
56 to 270	0.70	0.85	0.90	1	
330 to 1000	0.80	0.93	0.98	1	
1200 to 15000	0.90	0.95	1.00	1	

Part numbering system (example : 10V5600µF)

RJH	—	10	V	562	M	J7	#	—	□
Series code	Rated voltage symbol	Rated capacitance symbol		Capacitance tolerance symbol	Casing symbol		Taping/Forming symbol		

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Case ΦD×L (mm)	Casing symbol	Item	6.3				10			
			Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.) 20°C	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.) 20°C	Rated ripple current (mA rms)
					-10°C				-10°C	
5×11.5	E3	100	3.65	0.65	1.46	175	82	3.84	0.65	1.46
6.3×11.5	F3	220	1.66	0.31	0.70	290	180	1.75	0.31	0.70
8×12	G3	470	0.777	0.17	0.38	488	330	0.956	0.17	0.38
8×15	G4	680	0.537	0.13	0.29	617	470	0.671	0.13	0.29
8×20	G5	1000	0.365	0.095	0.21	800	680	0.464	0.095	0.21
10×12.5	H3	680	0.537	0.10	0.23	625	470	0.671	0.10	0.23
10×16	H4	820	0.446	0.080	0.18	825	560	0.563	0.080	0.18
10×20	H5	1200	0.305	0.062	0.14	1010	1000	0.316	0.062	0.14
10×25	H6	1500	0.244	0.052	0.12	1190	1200	0.263	0.052	0.12
10×30	H7	2200	0.181	0.044	0.099	1440	1500	0.211	0.044	0.099
12.5×15	I4	• 1200	0.305	0.062	0.14	1010	• 1000	0.316	0.062	0.14
12.5×20	I5	2200	0.181	0.042	0.095	1400	1800	0.176	0.042	0.095
12.5×25	I6	2700	0.148	0.034	0.076	1690	2200	0.159	0.034	0.076
12.5×30	I7	3900	0.111	0.030	0.068	1950	2700	0.130	0.030	0.068
12.5×35	I8	4700	0.099	0.024	0.054	2220	3300	0.116	0.024	0.054
12.5×40	I9	5600	0.089	0.021	0.047	2390	3900	0.098	0.021	0.047
16×16	J4	• 2700	0.148	0.046	0.10	1310	• 1800	0.176	0.046	0.10
16×20	J5	• 4700	0.099	0.034	0.077	1660	• 3300	0.116	0.034	0.077
16×25	J6	5600	0.089	0.028	0.063	2070	3900	0.098	0.028	0.063
16×31.5	J7	6800	0.079	0.025	0.056	2350	5600	0.080	0.025	0.056
16×35.5	J8	8200	0.073	0.022	0.050	2550	6800	0.071	0.022	0.050
16×40	J9	12000	0.059	0.018	0.041	2970	8200	0.067	0.018	0.041
18×16	K4	• 3300	0.131	0.043	0.097	1460	• 2200	0.159	0.043	0.097
18×20	K5	• 5600	0.089	0.030	0.068	1850	• 3900	0.098	0.030	0.068
18×25	K6	• 6800	0.079	0.027	0.061	2120	• 4700	0.089	0.027	0.061
18×31.5	K7	10000	0.064	0.023	0.052	2410	6800	0.071	0.023	0.052
18×35.5	K8	12000	0.059	0.019	0.043	2680	8200	0.067	0.019	0.043
18×40	K9	15000	0.054	0.017	0.038	3010	10000	0.059	0.017	0.038

Case ΦD×L (mm)	Casing symbol	Item	16				25			
			Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.) 20°C	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.) 20°C	Rated ripple current (mA rms)
					-10°C				-10°C	
5×11.5	E3	56	4.74	0.65	1.46	175	39	5.96	0.65	1.46
6.3×11.5	F3	120	2.21	0.31	0.70	290	82	2.83	0.31	0.70
8×12	G3	270	0.983	0.17	0.38	488	180	1.29	0.17	0.38
8×15	G4	330	0.805	0.13	0.29	617	220	1.06	0.13	0.29
8×20	G5	470	0.565	0.095	0.21	800	330	0.704	0.095	0.21
10×12.5	H3	330	0.805	0.10	0.23	625	220	1.06	0.10	0.23
10×16	H4	390	0.681	0.080	0.18	825	270	0.861	0.080	0.18
10×20	H5	680	0.391	0.062	0.14	1010	470	0.495	0.062	0.14
10×25	H6	820	0.324	0.052	0.12	1190	560	0.415	0.052	0.12
10×30	H7	1200	0.222	0.044	0.099	1440	820	0.284	0.044	0.099
12.5×15	I4	• 680	0.391	0.062	0.14	1010	• 470	0.495	0.062	0.14
12.5×20	I5	1200	0.222	0.042	0.095	1400	820	0.284	0.042	0.095
12.5×25	I6	1500	0.177	0.034	0.076	1690	1000	0.233	0.034	0.076
12.5×30	I7	2200	0.136	0.030	0.068	1950	1500	0.155	0.030	0.068
12.5×35	I8	2700	0.111	0.024	0.054	2220	1800	0.130	0.024	0.054
12.5×40	I9	3300	0.101	0.021	0.047	2390	2200	0.121	0.021	0.047
16×16	J4	• 1500	0.177	0.046	0.10	1310	• 820	0.284	0.046	0.10
16×20	J5	• 2200	0.136	0.034	0.077	1660	• 1500	0.155	0.034	0.077
16×25	J6	2700	0.111	0.028	0.063	2070	1800	0.130	0.028	0.063
16×31.5	J7	3900	0.086	0.025	0.056	2350	2700	0.099	0.025	0.056
16×35.5	J8	4700	0.078	0.022	0.050	2550	3300	0.091	0.022	0.050
16×40	J9	5600	0.072	0.018	0.041	2970	3900	0.077	0.018	0.041
18×16	K4	• 1500	0.177	0.043	0.097	1460	• 1200	0.194	0.043	0.097
18×20	K5	• 2700	0.111	0.030	0.068	1850	• 1800	0.130	0.030	0.068
18×25	K6	• 3900	0.086	0.027	0.061	2120	• 2700	0.099	0.027	0.061
18×31.5	K7	4700	0.078	0.023	0.052	2410	3300	0.091	0.023	0.052
18×35.5	K8	6800	0.064	0.019	0.043	2680	3900	0.077	0.019	0.043
18×40	K9	8200	0.061	0.017	0.038	3010	4700	0.071	0.017	0.038

(Note) Rated ripple current : 105°C, 100kHz ; ESR. : 20°C, 120Hz ; Impedance : 100kHz

• : The black circles in the capacitance column denote semi-standard products.

• The standard ratings follow the next page.

Standard Ratings

Case φDXL (mm)	Casing Item symbol	35				50					
		Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.)		Rated ripple current (mAmps)	Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.)		
5×11.5	E3	—	—	—	—	—	1	166	3.5	7.0	36
5×11.5	F3	56	3.56	0.31	0.70	290	39	4.25	0.43	0.86	148
8×12	G3	120	1.66	0.17	0.38	488	68	2.44	0.20	0.40	360
8×15	G4	180	1.11	0.13	0.29	617	82	2.02	0.18	0.36	460
8×20	G5	220	0.905	0.095	0.21	800	120	1.38	0.13	0.26	670
10×12.5	H3	150	1.33	0.10	0.23	625	82	2.02	0.18	0.36	443
10×16	H4	180	1.11	0.080	0.18	825	100	1.66	0.15	0.30	553
10×20	H5	330	0.604	0.062	0.14	1010	180	0.922	0.085	0.17	676
10×25	H6	390	0.511	0.052	0.12	1190	220	0.754	0.075	0.15	876
10×30	H7	560	0.356	0.044	0.099	1440	330	0.503	0.055	0.11	1010
12.5×15	I4	• 330	0.604	0.062	0.140	1010	• 180	0.922	0.095	0.19	745
12.5×20	I5	560	0.356	0.042	0.095	1400	330	0.503	0.060	0.12	979
12.5×25	I6	680	0.293	0.034	0.076	1690	470	0.353	0.044	0.088	1180
12.5×30	I7	1000	0.200	0.030	0.068	1950	560	0.297	0.040	0.080	1310
12.5×35	I8	1200	0.166	0.024	0.054	2220	680	0.244	0.036	0.072	1470
12.5×40	I9	1500	0.133	0.021	0.047	2390	820	0.203	0.034	0.068	1590
16×16	J4	• 560	0.356	0.046	0.10	1310	• 330	0.503	0.065	0.13	982
16×20	J5	• 1000	0.200	0.034	0.077	1660	• 680	0.244	0.045	0.090	1210
16×25	J6	1200	0.166	0.028	0.063	2070	820	0.203	0.038	0.076	1490
16×31.5	J7	1800	0.111	0.025	0.056	2350	1000	0.166	0.032	0.064	1890
16×35.5	J8	2200	0.106	0.022	0.050	2550	1200	0.139	0.028	0.056	2140
16×40	J9	2700	0.087	0.018	0.041	2970	1500	0.111	0.026	0.052	2410
18×16	K4	• 680	0.293	0.043	0.097	1460	• 470	0.353	0.048	0.096	1180
18×20	K5	• 1200	0.166	0.030	0.068	1850	• 820	0.203	0.036	0.072	1450
18×25	K6	• 1800	0.111	0.027	0.061	2120	• 1000	0.166	0.032	0.064	1720
18×31.5	K7	2200	0.106	0.023	0.052	2410	1500	0.111	0.026	0.052	1970
18×35.5	K8	2700	0.087	0.019	0.043	2680	1800	0.074	0.025	0.050	2310
18×40	K9	3300	0.081	0.017	0.038	3010	2200	0.073	0.024	0.048	2530

Case φDXL (mm)	Casing Item symbol	63				100					
		Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.)		Rated ripple current (mAmps)	Rated capacitance (μF)	ESR (Ω)	Impedance (Ω max.)		
5×11.5	E3	12	11.1	1.2	3.6	120	5.6	20.7	1.9	7.6	57
6.3×11.5	F3	27	4.92	0.55	1.7	148	12	9.68	1.1	4.4	78
8×12	G3	47	2.82	0.32	0.96	360	22	5.28	0.53	2.1	275
8×15	G4	68	1.95	0.24	0.72	469	33	3.52	0.35	1.4	360
8×20	G5	82	1.62	0.17	0.51	682	39	2.98	0.27	1.1	490
10×12.5	H3	56	2.37	0.23	0.69	448	27	4.30	0.47	1.9	319
10×16	H4	68	1.95	0.17	0.51	553	33	3.52	0.32	1.3	424
10×20	H5	120	1.11	0.12	0.36	676	56	2.07	0.25	1.0	499
10×25	H6	150	0.885	0.10	0.30	876	68	1.71	0.18	0.72	634
10×30	H7	180	0.738	0.085	0.26	1020	100	1.16	0.15	0.60	739
12.5×15	I4	• 150	0.885	0.11	0.33	745	• 68	1.71	0.20	0.80	613
12.5×20	I5	220	0.604	0.075	0.23	979	100	1.16	0.13	0.52	805
12.5×25	I6	270	0.492	0.065	0.20	1180	120	0.968	0.11	0.44	857
12.5×30	I7	390	0.341	0.055	0.17	1310	180	0.646	0.090	0.36	1120
12.5×35	I8	470	0.283	0.048	0.14	1470	220	0.528	0.075	0.30	1240
12.5×40	I9	560	0.237	0.042	0.13	1590	270	0.431	0.060	0.24	1330
16×16	J4	• 220	0.604	0.080	0.24	982	• 120	0.968	0.13	0.52	706
16×20	J5	• 390	0.341	0.057	0.17	1210	• 180	0.646	0.11	0.44	916
16×25	J6	470	0.283	0.052	0.16	1490	220	0.528	0.081	0.32	1290
16×31.5	J7	680	0.196	0.042	0.13	1890	330	0.352	0.059	0.23	1630
16×35.5	J8	820	0.162	0.036	0.11	2140	390	0.298	0.052	0.21	1750
16×40	J9	1000	0.133	0.032	0.096	2410	470	0.248	0.045	0.18	1920
18×16	K4	• 330	0.403	0.065	0.20	1200	• 150	0.775	0.12	0.48	871
18×20	K5	• 560	0.237	0.058	0.17	1460	• 270	0.431	0.085	0.34	1170
18×25	K6	• 680	0.196	0.050	0.15	1740	• 330	0.352	0.071	0.28	1500
18×31.5	K7	820	0.162	0.042	0.13	1990	390	0.298	0.058	0.23	1630
18×35.5	K8	1000	0.133	0.035	0.11	2340	560	0.208	0.054	0.22	1920
18×40	K9	1200	0.111	0.032	0.096	2560	680	0.171	0.041	0.16	2100

(Note) Rated ripple current : 105°C, 100kHz ; ESR. : 20°C, 120Hz ; Impedance : 100kHz

• : The black circles in the capacitance column denote semi-standard products.

105°C Use, Miniature, High-Reliability, Extra Low Impedance Capacitors

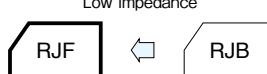
GREEN CAP

Low Impedance

105°C
5000hours

Anti-cleaning solvent

- Higher ripple current and Lower impedance than RJB series.



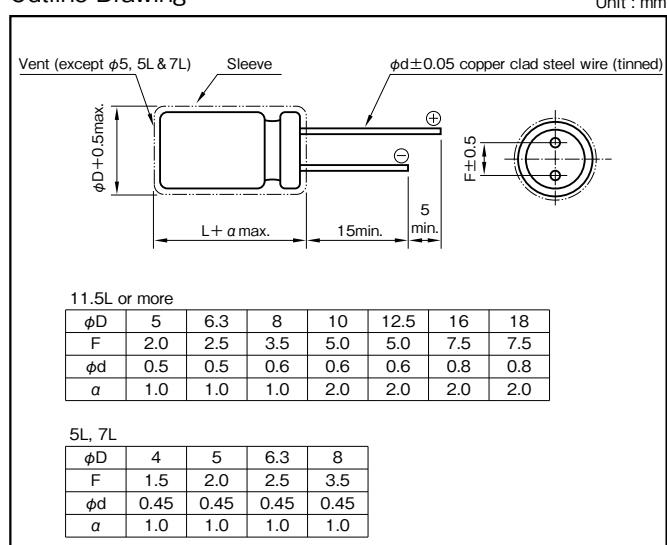
Marking color : White print on a black sleeve

Specifications

Item	Performance									
Category temperature range (°C)	-40 to +105									
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)									
Leakage current (µA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V) (20°C)									
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100
	tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08
	0.02 is added to every 1000µF increase over 1000µF. (20°C, 120Hz)									
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100
	Impedance ratio (max.)	Z-25°C/Z+20°C	2	2	2	2	2	2	2	2
		Z-40°C/Z+20°C	3	3	3	3	3	3	3	3
	(120Hz)									
Endurance (105°C) (Applied ripple current)	Test time	5L & 7L : 1000 hours φ5 & φ6.3 : 2000 hours (63 to 100WV:5000 hours) φ8 & φ10 : 3000 hours (63 to 100WV:7000 hours) φ12.5 to φ18 : 5000 hours (63 to 100WV:10000 hours)								
	Leakage current	The initial specified value or less								
	Percentage of capacitance change	Within $\pm 25\%$ of initial value								
	Tangent of the loss angle	200% or less of the initial specified value								
Shelf life (105°C)	Test time	1000 hours								
	Leakage current	The initial specified value or less								
	Percentage of capacitance change	Within $\pm 25\%$ of initial value								
	Tangent of the loss angle	200% or less of the initial specified value								
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)									

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated Frequency (Hz) capacitance (µF)	120	1k	10k	100k
5.6 to 180	0.40	0.75	0.90	1
220 to 390	0.50	0.85	0.94	1
470 to 1800	0.60	0.87	0.95	1
2200 to 3900	0.75	0.90	0.95	1
4700 to 6800	0.85	0.95	0.98	1

Part numbering system (example : 10V1000µF)

RJF	—	10	V	102	M	H4	# —	□
Series code								
	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol			

- The standard ratings are described on the next page.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	6.3						10						16					
	Item	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)		
				20°C	-10°C				20°C	-10°C				20°C	-10°C			
18	—	—	—	—	—	—	—	—	—	—	—	4x7	D1	0.92	2.8	130		
27	—	—	—	—	—	—	4x7	D1	0.89	2.7	130	6.3x5	F0	0.30	0.95	210		
33	—	—	—	—	—	—	—	—	—	—	—	5x7	E1	0.45	1.4	210		
39	4x7	D1	0.85	2.6	130	—	—	—	—	—	—	6.3x5	F0	0.30	0.95	210		
47	—	—	—	—	—	6.3x5	F0	0.29	0.93	210	—	—	—	—	—	—		
56	—	—	—	—	—	5x7	E1	0.44	1.4	210	5x11.5	E3	0.22	0.80	345			
68	5x7	E1	0.43	1.3	210	—	—	—	—	—	—	6.3x7	F1	0.24	0.72	300		
100	6.3x5	F0	0.28	0.91	210	5x11.5	E3	0.22	0.8	345	—	—	—	—	—	—		
120	—	—	—	—	—	6.3x7	F1	0.23	0.69	300	8x7	G1	0.15	0.45	380			
											6.3x11.5	F3	0.094	0.35	540			
150	5x11.5	E3	0.22	0.80	345	—	—	—	—	—	—	—	—	—	—	—		
	6.3x7	F1	0.23	0.69	300													
180	—	—	—	—	—	8x7	G1	0.15	0.45	380	—	—	—	—	—	—		
220	8x7	G1	0.15	0.45	380	6.3x11.5	F3	0.094	0.35	540	—	—	—	—	—	—		
330	6.3x11.5	F3	0.094	0.35	540	—	—	—	—	—	8x12	G3	0.056	0.19	945			
470	—	—	—	—	—	8x12	G3	0.056	0.19	945	8x15	G4	0.045	0.15	1250			
560	8x12	G3	0.056	0.19	945	—	—	—	—	—	10x16	H4	0.028	0.10	1760			
680	—	—	—	—	—	10x12.5	H3	0.039	0.14	1330	—	—	—	—	—	—		
820	8x15	G4	0.045	0.15	1250	—	—	—	—	—	—	—	—	—	—	—		
1000	10x12.5	H3	0.039	0.14	1330	10x16	H4	0.028	0.10	1760	10x20	H5	0.020	0.060	1960			
1200	10x16	H4	0.028	0.10	1760	10x20	H5	0.020	0.060	1960	10x25	H6	0.018	0.054	2250			
1500	10x20	H5	0.020	0.060	1960	10x25	H6	0.018	0.054	2250	12.5x20	I5	0.017	0.043	2480			
2200	10x25	H6	0.018	0.054	2250	12.5x20	I5	0.017	0.043	2480	12.5x25	I6	0.015	0.038	2900			
2700	—	—	—	—	—	—	—	—	—	—	16x20	J5	0.015	0.038	3250			
3300	12.5x20	I5	0.017	0.043	2480	12.5x25	I6	0.015	0.038	2900	16x25	J6	0.013	0.035	3630			
3900	12.5x25	I6	0.015	0.038	2900	16x20	J5	0.015	0.038	3250	16x25	J6	0.013	0.035	3630			
4700	12.5x30	I7	0.013	0.033	3450	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—		
5600	16x20	J5	0.015	0.038	3570	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—		
6800	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—	—	—	—	—	—		

Rated voltage (V)	25						35						50					
	Item	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)		
				20°C	-10°C				20°C	-10°C				20°C	-10°C			
5.6	—	—	—	—	—	—	—	—	—	—	—	4x7	D1	1.0	3.0	130		
10	5x5	E0	0.61	1.5	130	—	5x5	E0	0.63	1.5	130	5x7	E1	0.50	1.5	210		
15		4x7	D1	0.94	2.9	130	—	4x7	D1	0.96	2.9	130	—	—	—	—	—	
18	—	—	—	—	—	5x7	E1	0.47	1.5	210	—	—	—	—	—	—		
22	6.3x5	F0	0.31	0.97	210	6.3x5	F0	0.32	1.0	210	6.3x7	F1	0.26	0.78	300			
27	5x7	E1	0.46	1.4	210	—	—	—	—	—	—	—	—	—	—	—	—	
33	—	—	—	—	—	5x11.5	E3	0.22	0.80	345	8x7	G1	0.17	0.51	380			
39	—	—	—	—	—	6.3x7	F1	0.25	0.75	300	—	—	—	—	—	—		
47	5x11.5	E3	0.22	0.80	345	—	—	—	—	—	—	—	—	—	—	—	—	
56	6.3x7	F1	0.24	0.72	300	8x7	G1	0.16	0.48	380	6.3x11.5	F3	0.14	0.50	385			
100												8x12	G3	0.074	0.22	724		
120	—	—	—	—	—	—	—	—	—	—	—	8x15	G4	0.061	0.18	950		
150	—	—	—	—	—	8x12	G3	0.056	0.19	945	10x12.5	H3	0.061	0.18	979			
180	—	—	—	—	—	—	—	—	—	—	—	8x20	G5	0.046	0.14	1190		
220	8x12	G3	0.056	0.19	945	10x12.5	H3	0.039	0.14	1330	10x16	H4	0.042	0.12	1370			
270	—	—	—	—	—	8x20	G5	0.029	0.11	1500	10x20	H5	0.030	0.090	1580			
330	10x12.5	H3	0.039	0.14	1330	10x16	H4	0.028	0.10	1760	10x25	H6	0.028	0.085	1870			
470	10x16	H4	0.028	0.10	1760	10x20	H5	0.020	0.060	1960	12.5x20	I5	0.027	0.068	2050			
560	—	—	—	—	—	10x25	H6	0.018	0.054	2250	12.5x25	I6	0.023	0.059	2410			
680	10x20	H5	0.020	0.060	1960	12.5x25	I5	0.017	0.043	2480	16x20	J5	0.023	0.059	2730			
820	10x25	H6	0.018	0.054	2250	—	—	—	—	—	16x20	J5	0.023	0.059	2730			
1000	12.5x20	I5	0.017	0.043	2480	12.5x25	I6	0.015	0.038	2900	16x25	J6	0.021	0.056	3010			
1200	—	—	—	—	—	16x20	J5	0.015	0.038	3250	—	—	—	—	—	—		
1500	12.5x25	I6	0.015	0.038	2900	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—		
1800	16x20	J5	0.015	0.038	3250	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—		
2200	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—	—	—	—	—	—		
2700	16x25	J6	0.013	0.035	3630	—	—	—	—	—	—	—	—	—	—	—		

(Note) Rated ripple current : 105°C, 100kHz ; Impedance : 100kHz

Standard Ratings

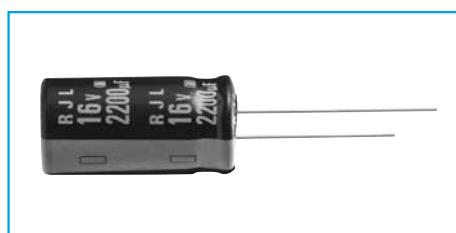
Rated voltage (V)	Item Rated capacitance (μF)	63					80					100				
		Case $\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mA rms)	Case $\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mA rms)	Case $\phi D \times L$ (mm)	Casing symbol	Impedance (Ω max.)		Rated ripple current (mA rms)
				20°C	-10°C				20°C	-10°C				20°C	-10°C	
6.8	—	—	—	—	—	—	—	—	—	—	—	5 × 11.5	E3	1.4	5.6	125
15	5 × 11.5	E3	0.88	3.5	165	—	—	—	—	—	—	6.3 × 11.5	F3	0.57	2.3	205
27	—	—	—	—	—	—	—	—	—	—	—	8 × 12	G3	0.36	1.4	335
33	6.3 × 11.5	F3	0.35	1.4	265	—	—	—	—	—	—	—	—	—	—	—
39	—	—	—	—	—	—	—	—	—	—	—	8 × 15	G4	0.25	1.0	450
47	—	—	—	—	—	—	—	—	—	—	—	10 × 12.5	H3	0.17	0.66	480
56	8 × 12	G3	0.22	0.88	500	—	—	—	—	—	—	8 × 20	G5	0.19	0.76	565
68	—	—	—	—	—	10 × 12.5	H3	0.17	0.66	480	10 × 16	H4	0.11	0.47	600	
82	10 × 12.5	H3	0.11	0.44	690	—	—	—	—	—	10 × 20	H5	0.084	0.34	800	
100	—	—	—	—	—	10 × 16	H4	0.11	0.47	600	12.5 × 15	I4	0.11	0.34	750	
120	8 × 20	G5	0.12	0.48	820	10 × 20	H5	0.084	0.34	800	10 × 25	H6	0.069	0.28	900	
	10 × 16	H4	0.076	0.31	950											
150	—	—	—	—	—	10 × 25	H6	0.069	0.28	900	12.5 × 20	I5	0.062	0.18	1100	
180	10 × 20	H5	0.056	0.23	1150	—	—	—	—	—	—	—	—	—	—	—
220	10 × 25	H6	0.046	0.19	1350	12.5 × 20	I5	0.062	0.18	1100	16 × 20	J5	0.048	0.15	1350	
270	12.5 × 20	I5	0.041	0.13	1500	—	—	—	—	—	12.5 × 30	I7	0.042	0.13	1500	
330	—	—	—	—	—	12.5 × 25	I6	0.047	0.14	1250	12.5 × 35	I8	0.036	0.11	1650	
						16 × 20	J5	0.048	0.15	1350	16 × 25	J6	0.038	0.12	1700	
						18 × 20	K5	0.045	0.14	1500	18 × 20	K5	0.045	0.14	1500	
390	12.5 × 25	I6	0.031	0.093	1900	12.5 × 30	I7	0.042	0.13	1500	12.5 × 40	I9	0.032	0.095	1800	
470	12.5 × 30	I7	0.028	0.084	2300	12.5 × 35	I8	0.036	0.11	1650	16 × 31.5	J7	0.032	0.095	1850	
	16 × 20	J5	0.032	0.096	2000	16 × 25	J6	0.038	0.12	1700	18 × 25	K6	0.036	0.11	1750	
	18 × 20	K5	0.030	0.090	2500	18 × 20	K5	0.045	0.14	1500	16 × 35.5	J8	0.029	0.086	2000	
680	12.5 × 40	I9	0.021	0.063	2800	16 × 31.5	J7	0.032	0.095	1850	18 × 31.5	K7	0.030	0.090	1900	
	16 × 25	J6	0.025	0.075	2600						16 × 40	J9	0.027	0.081	2480	
	18 × 20	K5	0.030	0.090	2500						18 × 35.5	K8	0.027	0.081	2200	
820	16 × 31.5	J7	0.021	0.063	2850	16 × 35.5	J8	0.029	0.086	2000	18 × 40	K9	0.026	0.077	2700	
	18 × 25	K6	0.024	0.072	2800	18 × 31.5	K7	0.030	0.090	1900						
1000	16 × 35.5	J8	0.019	0.057	2900	—	—	—	—	—	—	—	—	—	—	—
1200	16 × 40	J9	0.018	0.054	3400	18 × 40	K9	0.026	0.077	2700	—	—	—	—	—	—
	18 × 31.5	K7	0.020	0.060	3300						—	—	—	—	—	—
1500	18 × 35.5	K8	0.018	0.054	3400	—	—	—	—	—	—	—	—	—	—	—
1800	18 × 40	K9	0.017	0.051	3500	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 105°C , 100kHz ; Impedance : 100kHz

105°C Use, Miniature, Long Life, extra Low Impedance Capacitors

GREEN CAP
Low Impedance
105°C 1000hours
Anti-cleaning solvent

- Long life than RJJ series.
- Guarantees 4000 to 10000 hours at 105°C.



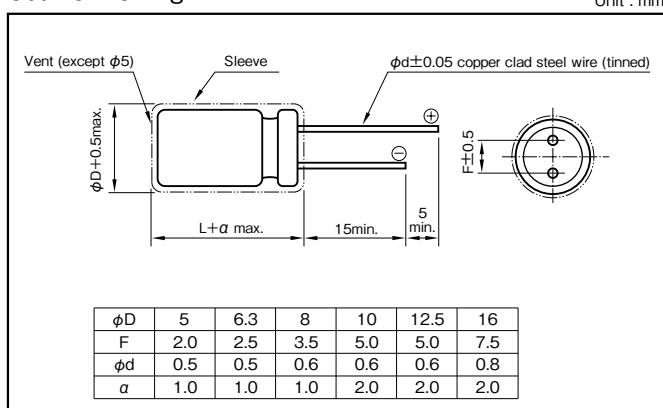
Marking color : White print on a black sleeve

Specifications

Item	Performance								
Category temperature range (°C)	-40 to +105								
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)								
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)								
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63	100
	tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
	0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)								
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	100
	Z-25°C/Z+20°C	4	3	2	2	2	2	2	2
	Z-40°C/Z+20°C	8	6	4	3	3	3	3	3
	(120Hz)								
Endurance (105°C) (Applied ripple current)	Test time	$\phi 5 \& \phi 6.3$: 5000 hours (6.3~10WV : 4000 hours) $\phi 8 \& \phi 10$: 7000 hours (6.3~10WV : 6000 hours) $\phi 12.5 \& \phi 16$: 10000 hours (6.3~10WV : 8000 hours)							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within ±25% of initial value							
	Tangent of the loss angle	200% or less of the initial specified value							
Shelf life (105°C)	Test time	1000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within ±25% of initial value							
	Tangent of the loss angle	200% or less of initial specified value							
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)								

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	120	1k	10k	100k
to 33	0.42	0.70	0.90	1
47 to 270	0.50	0.73	0.92	1
330 to 680	0.55	0.77	0.94	1
820 to 1800	0.60	0.80	0.96	1
2200 to 6800	0.70	0.85	0.98	1

Part numbering system (example : 10V1000μF)

RJL	—	10	V	102	M	H4	#	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol			

NOTE : Design, Specifications are subject to change without notice.

It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	Item	6.3						10						16					
		Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)			
				20°C	-10°C				20°C	-10°C				20°C	-10°C				
56	—	—	—	—	—	—	—	—	—	—	—	5×11.5	E3	0.58	2.3	210			
100	—	—	—	—	—	—	5×11.5	E3	0.58	2.3	210	—	—	—	—	—			
120	—	—	—	—	—	—	—	—	—	—	—	6.3×11.5	F3	0.22	0.87	340			
150	5×11.5	E3	0.58	2.3	210	—	—	—	—	—	—	—	—	—	—	—			
220	—	—	—	—	—	—	6.3×11.5	F3	0.22	0.87	340	—	—	—	—	—			
330	6.3×11.5	F3	0.22	0.87	340	—	—	—	—	—	—	8×12	G3	0.13	0.52	640			
470	—	—	—	—	—	—	8×12	G3	0.13	0.52	640	8×15	G4	0.087	0.35	840			
560	8×12	G3	0.13	0.52	640	8×15	G4	0.087	0.35	840	—	—	—	—	—	—			
680	8×12	G3	0.13	0.52	640	10×12.5	H3	0.080	0.32	865	10×16	H4	0.060	0.24	1210				
820	10×12.5	H3	0.080	0.32	865	10×16	H4	0.060	0.24	1210	10×20	H5	0.046	0.18	1400				
1000	8×15	G4	0.087	0.35	840	10×16	H4	0.060	0.24	1210	10×20	H5	0.046	0.18	1400				
1200	10×16	H4	0.060	0.24	1210	10×20	H5	0.046	0.18	1400	10×25	H6	0.042	0.17	1650				
1500	10×20	H5	0.046	0.18	1400	10×25	H6	0.042	0.17	1650	12.5×20	I5	0.035	0.12	1900				
1800	10×25	H6	0.042	0.17	1650	12.5×20	I5	0.035	0.12	1900	12.5×25	I6	0.027	0.089	2230				
2200	10×25	H6	0.042	0.17	1650	12.5×20	I5	0.035	0.12	1900	12.5×25	I6	0.027	0.089	2230				
2700	—	—	—	—	—	—	—	—	—	—	16×20	J5	0.027	0.078	2530				
3300	12.5×20	I5	0.035	0.12	1900	12.5×25	I6	0.027	0.089	2230	12.5×35	I8	0.020	0.065	2880				
3900	—	—	—	—	—	—	—	—	—	—	16×25	J6	0.021	0.060	2930				
4700	12.5×30	I7	0.024	0.078	2650	12.5×35	I8	0.020	0.065	2880	—	—	—	—	—				
5600	16×20	J5	0.027	0.078	2530	16×25	J6	0.021	0.060	2930	—	—	—	—	—				
6800	16×25	J6	0.021	0.060	2930	—	—	—	—	—	—	—	—	—	—				

Rated voltage (V)	Item	25						35						50					
		Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)			
				20°C	-10°C				20°C	-10°C				20°C	-10°C				
10	—	—	—	—	—	—	—	—	—	—	—	5×11.5	E3	1.50	6.0	100			
22	—	—	—	—	—	—	—	—	—	—	—	5×11.5	E3	0.70	2.8	180			
33	—	—	—	—	—	—	5×11.5	E3	0.58	2.3	210	—	—	—	—	—			
47	5×11.5	E3	0.58	2.3	210	—	—	—	—	—	—	—	—	—	—	—			
56	—	—	—	—	—	—	6.3×11.5	F3	0.22	0.87	340	6.3×11.5	F3	0.30	1.2	295			
100	6.3×11.5	F3	0.22	0.87	340	—	—	—	—	—	—	8×12	G3	0.17	0.68	555			
120	—	—	—	—	—	—	—	—	—	—	—	8×15	G4	0.12	0.48	730			
150	—	—	—	—	—	—	8×12	G3	0.13	0.52	640	10×12.5	H3	0.12	0.48	760			
180	—	—	—	—	—	—	8×15	G4	0.087	0.35	870	8×20	G5	0.091	0.36	910			
220	8×12	G3	0.13	0.52	640	8×15	G4	0.087	0.35	870	10×16	H4	0.084	0.34	1050				
270	—	—	—	—	—	8×20	G5	0.069	0.27	1050	10×20	H5	0.060	0.24	1220				
330	8×15	G4	0.087	0.35	840	10×16	H4	0.060	0.24	1210	10×25	H6	0.055	0.22	1440				
470	10×16	H4	0.060	0.24	1210	10×20	H5	0.046	0.18	1400	12.5×20	I5	0.045	0.15	1660				
560	—	—	—	—	—	10×25	H6	0.042	0.17	1650	12.5×25	I6	0.034	0.11	1950				
680	10×20	H5	0.046	0.18	1400	12.5×20	I5	0.035	0.12	1900	12.5×25	I6	0.034	0.11	1950				
820	10×25	H6	0.042	0.17	1650	12.5×25	I6	0.027	0.089	2230	12.5×30	I7	0.030	0.10	2310				
1000	12.5×20	I5	0.035	0.12	1900	12.5×25	I6	0.027	0.089	2230	16×25	J6	0.025	0.075	2555				
1200	12.5×25	I6	0.027	0.089	2230	16×20	J5	0.027	0.078	2530	—	—	—	—	—				
1500	12.5×25	I6	0.027	0.089	2230	12.5×35	I8	0.020	0.065	2880	—	—	—	—	—				
1800	16×20	J5	0.027	0.078	2530	16×25	J6	0.021	0.060	2930	—	—	—	—	—				
2200	12.5×35	I8	0.020	0.065	2880	—	—	—	—	—	—	—	—	—	—				
2700	16×25	J6	0.021	0.060	2930	—	—	—	—	—	—	—	—	—	—				

Rated voltage (V)	Item	63						100							
		Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mAmps)				
				20°C	-10°C				20°C	-10°C					
6.8	—	—	—	—	—	—	5×11.5	E3	2.3	9.3	55	—	—	—	—
15	5×11.5	E3	2.3	9.3	55	—	6.3×11.5	F3	1.2	5.0	115	—	—	—	—
27	6.3×11.5	F3	1.2	5.0	115	—	8×12	G3	0.63	2.8	232	—	—	—	—
47	—	—	—	—	—	—	10×12.5	H3	0.43	1.8	288	—	—	—	—
56	8×12	G3	0.63	2.8	232	—	8×20	G5	0.33	1.6	362	—	—	—	—
68	—	—	—	—	—	—	10×16	H4	0.31	1.5	357	—	—	—	—
82	8×15	G4	0.45	2.1	300	—	10×20	H5	0.21	0.94	466	—	—	—	—
100	—	—	—	—	—	—	10×25	H6	0.20	0.84	531	—	—	—	—
120	10×16	H4	0.31	1.5	357	—	12.5×20	I5	0.16	0.64	690	—	—	—	—
180	10×20	H5	0.21	0.94	466	—	12.5×25	I6	0.120	0.45	784	—	—	—	—
220	10×25	H6	0.20	0.84	531	—	16×20	J5	0.091	0.38	1040	—	—	—	—
270	12.5×20	I5	0.16	0.64	690	—	16×25	J6	0.073	0.27	1250	—	—	—	—
330	12.5×25	I6	0.12	0.45	784	—	—	—	—	—	—	—	—	—	—
390	16×20	J5	0.091	0.38	1040	—	—	—	—	—	—	—	—	—	—
470	16×20	J5	0.091	0.38	1040	—	—	—	—	—	—	—	—	—	—
560	16×25	J6	0.073	0.27	1250	—	—	—	—	—	—	—	—	—	—

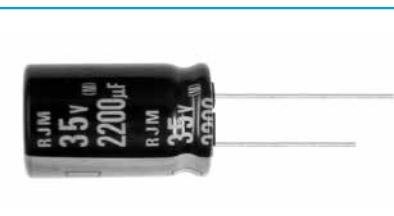
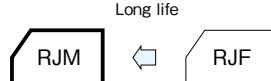
(Note) Rated ripple current : 105°C, 100kHz ; Impedance : 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

105°C Use, Miniature, Long Life, Extra Low Impedance Capacitors

GREEN CAP Low Impedance 105°C 1000hours Anti-cleaning solvent

- Long life than RJJ series.
- Guarantees 10000 hours at 105°C.
($\phi 5$: 5000 hours, $\phi 6.3$: 6000 hours, $\phi 8$: 8000 hours)



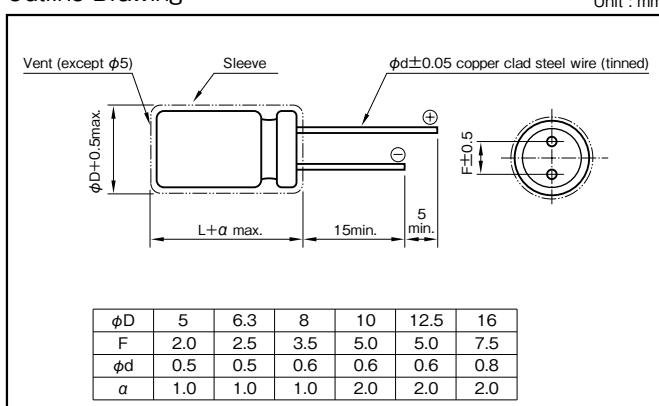
Marking color : White print on a black sleeve

Specifications

Item	Performance						
Category temperature range (°C)	-40 to +105						
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)						
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)						
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35	50
	$\tan\delta$ (max.)	0.22	0.19	0.16	0.14	0.12	0.10
	0.02 is added to every 1000 μF increase over 1000 μF . (20°C,120Hz)						
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50
	Z-25°C/Z+20°C	2	2	2	2	2	2
	Impedance ratio (max.)	3	3	3	3	3	3
	(120Hz)						
Endurance (105°C) (Applied ripple current)	Test time	$\phi 5$: 5000 hours $\phi 6.3$: 6000 hours $\phi 8$: 8000 hours $\phi 10$ or more : 10000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 25\%$ of initial value ($\phi 6.3$ or less : $\pm 30\%$)					
	Tangent of the loss angle	200% or less of the initial specified value ($\phi 6.3$ or less : 300%)					
Shelf life (105°C)	Test time	1000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 25\%$ of initial value ($\phi 6.3$ or less : $\pm 30\%$)					
	Tangent of the loss angle	200% or less of the initial specified value ($\phi 6.3$ or less : 300%)					
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)						

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	120	1k	10k	100k
27 to 33	0.42	0.70	0.90	1
39 to 270	0.50	0.73	0.92	1
330 to 680	0.55	0.77	0.94	1
820 to 1800	0.60	0.80	0.96	1
2200 to 8200	0.70	0.85	0.98	1

Part numbering system (example : 10V1000μF)

RJM	—	10	V	102	M	G4	# —	□
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping(Forming) symbol

Standard Ratings

Rated voltage(V) Rated capacitance (μ F)	6.3						10						16					
	Item	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)		
				20°C	-10°C				20°C	-10°C				20°C	-10°C			
82	—	—	—	—	—	—	—	—	—	—	—	5×11.5	E3	0.22	0.80	345		
100	—	—	—	—	—	—	5×11.5	E3	0.22	0.80	345	5×11.5	E3	0.22	0.80	345		
120	—	—	—	—	—	—	5×11.5	E3	0.22	0.80	345	—	—	—	—	—		
150	5×11.5	E3	0.22	0.80	345	5×11.5	E3	0.22	0.80	345	—	—	—	—	—	—		
180	—	—	—	—	—	—	—	—	—	—	6.3×11.5	F3	0.094	0.35	540			
220	5×11.5	E3	0.22	0.80	345	6.3×11.5	F3	0.094	0.35	540	6.3×11.5	F3	0.094	0.35	540			
270	—	—	—	—	—	6.3×11.5	F3	0.094	0.35	540	—	—	—	—	—	—		
330	6.3×11.5	F3	0.094	0.35	540	6.3×11.5	F3	0.094	0.35	540	—	—	—	—	—	—		
470	6.3×11.5	F3	0.094	0.35	540	—	—	—	—	—	8×12	G3	0.056	0.19	945			
680	—	—	—	—	—	8×12	G3	0.056	0.19	945	8×15	G4	0.045	0.15	1250			
820	8×12	G3	0.056	0.19	945	—	—	—	—	—	10×12.5	H3	0.039	0.14	1560			
1000	—	—	—	—	—	8×15	G4	0.045	0.15	1250	8×20	G5	0.029	0.11	1500			
1200	8×15	G4	0.045	0.15	1250	10×12.5	H3	0.039	0.14	1560	10×16	H4	0.028	0.10	2000			
1200	10×12.5	H3	0.039	0.14	1560	—	—	—	—	—	—	—	—	—	—			
1500	8×20	G5	0.029	0.11	1500	8×20	G5	0.029	0.11	1500	10×20	H5	0.020	0.060	2500			
1800	10×16	H4	0.028	0.10	2000	10×20	H5	0.020	0.060	2500	10×25	H6	0.017	0.051	2900			
2200	10×20	H5	0.020	0.060	2500	10×25	H6	0.017	0.051	2900	12.5×20	I5	0.017	0.043	2600			
2700	10×25	H6	0.017	0.051	2900	—	—	—	—	—	12.5×25	I6	0.015	0.038	3200			
3300	—	—	—	—	—	12.5×20	I5	0.017	0.043	2600	12.5×30	I7	0.013	0.033	3795			
3900	12.5×20	I5	0.017	0.043	2600	12.5×25	I6	0.015	0.038	3200	12.5×35	I8	0.012	0.031	4120			
4700	12.5×25	I6	0.015	0.038	3200	12.5×30	I7	0.013	0.033	3795	16×25	J6	0.013	0.035	3810			
5600	12.5×30	I7	0.013	0.033	3795	16×20	J5	0.015	0.038	3575	—	—	—	—				
6800	12.5×35	I8	0.012	0.031	4120	12.5×35	I8	0.012	0.031	4120	—	—	—	—				
6800	16×20	J5	0.015	0.038	3575	16×25	J6	0.013	0.035	3810	—	—	—	—				
8200	16×25	J6	0.013	0.035	3810	—	—	—	—	—	—	—	—	—				

Rated voltage(V) Rated capacitance (μ F)	25						35						50					
	Item	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)	Case	Casing symbol	Impedance (Ω max.)		Rated ripple current (mArms)		
				20°C	-10°C				20°C	-10°C				20°C	-10°C			
27	—	—	—	—	—	—	—	—	—	—	—	5×11.5	E3	0.34	1.18	238		
39	5×11.5	E3	0.22	0.80	345	5×11.5	E3	0.22	0.80	345	6.3×11.5	F3	0.14	0.50	385			
47	—	—	—	—	—	5×11.5	E3	0.22	0.80	345	—	—	—	—	—	—		
56	5×11.5	E3	0.22	0.80	345	—	—	—	—	—	6.3×11.5	F3	0.14	0.50	385			
68	5×11.5	E3	0.22	0.80	345	—	—	—	—	—	—	—	—	—	—	—		
82	5×11.5	E3	0.22	0.80	345	6.3×11.5	F3	0.094	0.35	540	—	—	—	—	—	—		
100	6.3×11.5	F3	0.094	0.35	540	6.3×11.5	F3	0.094	0.35	540	8×12	G3	0.074	0.22	724			
120	6.3×11.5	F3	0.094	0.35	540	—	—	—	—	—	8×15	G4	0.061	0.18	950			
150	6.3×11.5	F3	0.094	0.35	540	—	—	—	—	—	10×12.5	H3	0.061	0.18	1250			
180	—	—	—	—	—	—	—	—	—	—	8×20	G5	0.046	0.14	1190			
220	—	—	—	—	—	8×12	G3	0.056	0.19	945	10×16	H4	0.042	0.12	1650			
270	—	—	—	—	—	8×15	G4	0.045	0.15	1250	10×20	H5	0.030	0.090	2060			
330	8×12	G3	0.056	0.19	945	10×12.5	H3	0.039	0.14	1560	10×25	H6	0.028	0.084	2420			
390	8×15	G4	0.045	0.15	1250	8×20	G5	0.029	0.11	1500	—	—	—	—	—			
470	10×12.5	H3	0.039	0.14	1560	10×16	H4	0.028	0.10	2000	12.5×20	I5	0.027	0.068	2300			
560	8×20	G5	0.029	0.11	1500	10×20	H5	0.020	0.060	2500	12.5×25	I6	0.023	0.059	2800			
680	10×16	H4	0.028	0.10	2000	10×25	H6	0.017	0.051	2900	12.5×30	I7	0.021	0.052	3500			
820	10×20	H5	0.020	0.060	2500	—	—	—	—	—	12.5×35	I8	0.019	0.051	3810			
1000	10×25	H6	0.017	0.051	2900	12.5×20	I5	0.017	0.043	2600	16×25	J6	0.021	0.056	3270			
1200	—	—	—	—	—	12.5×25	I6	0.015	0.038	3200	—	—	—	—	—			
1500	12.5×20	I5	0.017	0.043	2600	12.5×30	I7	0.013	0.033	3795	—	—	—	—	—			
1800	12.5×25	I6	0.015	0.038	3200	12.5×35	I8	0.012	0.031	4120	—	—	—	—	—			
2200	12.5×30	I7	0.013	0.033	3795	16×25	J6	0.013	0.035	3810	—	—	—	—	—			
2200	16×20	J5	0.015	0.038	3575	—	—	—	—	—	—	—	—	—	—			
2700	12.5×35	I8	0.012	0.031	4120	—	—	—	—	—	—	—	—	—	—			
3300	16×25	J6	0.013	0.035	3810	—	—	—	—	—	—	—	—	—	—			

(Note) Rated ripple current : 105°C , 100kHz ; Impedance : 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

105°C Use,miniature,Hi-Reliability, Low ESR Capacitors

GREEN CAP Low ESR 105°C 8000hours Anti-cleaning solvent

- Smaller and higher ripple current than RJB series.
- Guarantees 8000 hours at 105°C.
($\phi 5$ to 6.3: 2000 hours; $\phi 8$: 3000 hours; $\phi 10$: 5000 hours)

Miniaturized
Low ESR

RJD

RJB



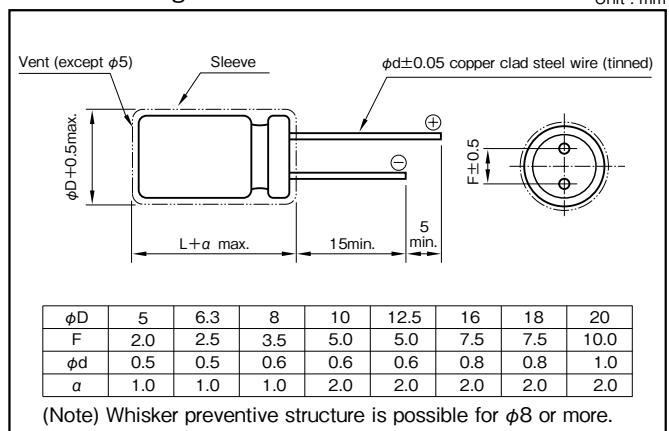
Marking color : White print on a black sleeve

Specifications

Item	Performance																													
Category temperature range (°C)	-55 to +105																													
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)																													
Leakage current (μ A)	Less than $0.01CV$ or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F), V : Rated voltage (V) (20°C)																													
Tangent of loss angle ($\tan\delta$)	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>$\tan\delta$ (max.)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> </tr> </table> 0.02 is added to every 1000 μ F increase over 1000 μ F. (20°C,120Hz)										Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	$\tan\delta$ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.08	0.08
Rated voltage (V)	6.3	10	16	25	35	50	63	80	100																					
$\tan\delta$ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.08	0.08																					
Characteristics at high and low temperature	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Impedance ratio (max.)</td> <td>Z-55°C/Z+20°C</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> (120Hz)										Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	Impedance ratio (max.)	Z-55°C/Z+20°C	3	3	3	3	3	3	3	3
Rated voltage (V)	6.3	10	16	25	35	50	63	80	100																					
Impedance ratio (max.)	Z-55°C/Z+20°C	3	3	3	3	3	3	3	3																					
Endurance (105°C) (Applied ripple current)	Test time			$\phi 5$ & 6.3 : 2000 hours $\phi 8$: 3000 hours $\phi 10$: 5000 hours $\phi 12.5$ to $\phi 20$: 8000 hours																										
	Leakage current			The initial specified value or less																										
	Percentage of capacitance change			Within $\pm 20\%$ of initial value																										
	Tangent of the loss angle			200% or less of the initial specified value																										
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4																													
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)																													

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated Capacitance (μ F)	Frequency (Hz)	50 · 60	120	300	1k	10k · 100k
56 or less	0.20	0.30	0.50	0.80	1	
68 to 330	0.55	0.65	0.75	0.85	1	
390 to 1000	0.70	0.75	0.80	0.90	1	
1200 to 18000	0.80	0.85	0.90	0.95	1	

Part numbering system (example : 6.3V10000 μ F)

RJD	—	6	V	103	M	J7	#	—	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping/Forming symbol				

If it is whisker preventive structure, should change "#" into "G".

NOTE : Design, Specifications are subject to change without notice.

It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage(V) Rated capacitance (μ F)	6.3					10					16					
	Item	Case	Casing symbol	ESR (Ω max.)		Rated ripple current	Case	Casing symbol	ESR (Ω max.)		Rated ripple current	Case	Casing symbol	ESR (Ω max.)		
		$\phi D \times L$ (mm)		20°C	-10°C	(mAmps)	$\phi D \times L$ (mm)		20°C	-10°C	(mAmps)	$\phi D \times L$ (mm)		20°C	-10°C	(mAmps)
22	—	—	—	—	—	—	—	—	—	—	—	5 × 11.5	E3	0.50	1.0	182
33	—	—	—	—	—	—	—	—	—	—	—	5 × 11.5	E3	0.50	1.0	182
47	—	—	—	—	—	—	—	—	—	—	—	5 × 11.5	E3	0.50	1.0	182
82	—	—	—	—	—	—	—	—	—	—	—	5 × 11.5	E3	0.50	1.0	182
100	—	—	—	—	—	—	5 × 11.5	E3	0.50	1.0	182	6.3 × 11.5	F3	0.25	0.50	295
150	5 × 11.5	E3	0.50	1.0	182	—	—	—	—	—	—	6.3 × 11.5	F3	0.25	0.50	295
180	—	—	—	—	—	6.3 × 11.5	F3	0.25	0.50	295	8 × 12	G3	0.117	0.234	567	
220	—	—	—	—	—	6.3 × 11.5	F3	0.25	0.50	295	8 × 12	G3	0.117	0.234	567	
330	6.3 × 11.5	F3	0.25	0.50	295	8 × 12	G3	0.117	0.234	567	8 × 12	G3	0.117	0.234	567	
390	—	—	—	—	—	—	—	—	—	—	8 × 12	G3	0.117	0.234	567	
470	8 × 12	G3	0.117	0.234	567	8 × 12	G3	0.117	0.234	567	8 × 15	G4	0.085	0.170	733	
											10 × 12.5	H3	0.090	0.180	764	
560	8 × 12	G3	0.117	0.234	567	8 × 12	G3	0.117	0.234	567	8 × 20	G5	0.065	0.130	996	
680	8 × 12	G3	0.117	0.234	567	—	—	—	—	—	8 × 15	G4	0.085	0.170	733	
											10 × 12.5	H3	0.090	0.180	764	
820	—	—	—	—	—	8 × 15	G4	0.085	0.170	733	8 × 20	G5	0.065	0.130	996	
						10 × 12.5	H3	0.090	0.180	764	10 × 16	H4	0.068	0.136	1060	
1000	8 × 15	G4	0.085	0.170	733	8 × 20	G5	0.065	0.130	996	10 × 16	H4	0.068	0.136	1060	
						10 × 12.5	H3	0.090	0.180	764	10 × 20	H5	0.052	0.104	1230	
1200	10 × 12.5	H3	0.090	0.180	764	10 × 16	H4	0.068	0.136	1060	10 × 20	H5	0.052	0.104	1230	
						10 × 16	H4	0.068	0.136	1060	10 × 25	H6	0.045	0.090	1450	
1500	8 × 20	G5	0.065	0.130	996	10 × 20	H5	0.052	0.104	1230	10 × 25	H6	0.045	0.090	1450	
						10 × 16	H4	0.068	0.136	1060	10 × 30	H7	0.035	0.070	1830	
1800	12.5 × 15	I4	0.062	0.124	1210	10 × 20	H5	0.052	0.104	1230	—	—	—	—	—	
						10 × 25	H6	0.045	0.090	1450	10 × 30	H7	0.035	0.070	1830	
2200	10 × 20	H5	0.052	0.104	1230	10 × 25	H6	0.045	0.090	1450	12.5 × 20	I5	0.038	0.076	1700	
						12.5 × 20	I5	0.038	0.076	1700	16 × 16	J4	0.043	0.086	1700	
2700	10 × 25	H6	0.045	0.090	1450	10 × 30	H7	0.035	0.070	1830	12.5 × 25	I6	0.030	0.060	1950	
						12.5 × 20	I5	0.038	0.076	1700	18 × 16	K4	0.038	0.076	2010	
3300	10 × 30	H7	0.035	0.070	1830	12.5 × 25	I6	0.030	0.060	1950	12.5 × 30	I7	0.025	0.050	2330	
						12.5 × 20	I5	0.038	0.076	1950	16 × 20	J5	0.029	0.058	2230	
3900	12.5 × 25	I6	0.030	0.060	1950	12.5 × 25	I6	0.030	0.060	1950	12.5 × 35	I8	0.022	0.044	2620	
						18 × 16	K4	0.038	0.076	2010	16 × 20	J5	0.029	0.058	2230	
4700	12.5 × 25	I6	0.030	0.060	1950	12.5 × 30	I7	0.025	0.050	2330	12.5 × 40	I9	0.017	0.034	3160	
						16 × 20	J5	0.029	0.058	2230	16 × 25	J6	0.022	0.044	2650	
5600	12.5 × 30	I7	0.025	0.050	2330	16 × 20	J5	0.029	0.058	2230	18 × 20	K5	0.028	0.056	2500	
						16 × 20	J5	0.029	0.058	2230	16 × 25	J6	0.022	0.044	2650	
6800	12.5 × 35	I8	0.022	0.044	2620	12.5 × 40	I9	0.017	0.034	3160	16 × 25	J6	0.020	0.040	3000	
						16 × 25	J6	0.022	0.044	2650	18 × 25	K6	0.020	0.040	3000	
8200	12.5 × 40	I9	0.017	0.034	3160	16 × 31.5	J7	0.018	0.036	3210	18 × 35.5	K8	0.015	0.030	3960	
						18 × 25	K6	0.020	0.040	3000	18 × 35.5	K8	0.015	0.030	3960	
10000	16 × 31.5	J7	0.018	0.036	3210	16 × 40	J9	0.015	0.030	3880	18 × 40	K9	0.014	0.028	4300	
						18 × 35.5	K8	0.015	0.030	3960	—	—	—	—	—	
12000	18 × 25	K6	0.020	0.040	3000	—	—	—	—	—	—	—	—	—	—	
15000	18 × 35.5	K8	0.015	0.030	3960	18 × 40	K9	0.014	0.028	4300	—	—	—	—	—	
18000	18 × 40	K9	0.014	0.028	4300	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C , 100kHz ; ESR : 100kHz

NOTE : Design, Specifications are subject to change without notice.
 It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage(V)	Item	25				35				50						
		Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)
				20°C	-10°C				20°C	-10°C				20°C	-10°C	
10	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.90	1.8	173	
22	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.90	1.8	173	
27	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.90	1.8	173	
33	5 × 11.5	E3	0.50	1.0	182	5 × 11.5	E3	0.50	1.0	182	6.3 × 11.5	F3	0.40	0.80	285	
47	5 × 11.5	E3	0.50	1.0	182	6.3 × 11.5	F3	0.25	0.50	295	6.3 × 11.5	F3	0.40	0.80	285	
56	5 × 11.5	E3	0.50	1.0	182	6.3 × 11.5	F3	0.25	0.50	295	6.3 × 11.5	F3	0.40	0.80	285	
82	6.3 × 11.5	F3	0.25	0.50	295	6.3 × 11.5	F3	0.25	0.50	295	8 × 12	G3	0.19	0.38	508	
100	6.3 × 11.5	F3	0.25	0.50	295	8 × 12	G3	0.117	0.234	567	8 × 15	G4	0.155	0.31	636	
150	8 × 12	G3	0.117	0.234	567	8 × 12	G3	0.117	0.234	567	10 × 12.5	H3	0.17	0.34	628	
180	—	—	—	—	—	8 × 12	G3	0.117	0.234	567	10 × 12.5	H3	0.17	0.34	628	
220	8 × 12	G3	0.117	0.234	567	8 × 15	G4	0.085	0.170	733	10 × 16	H4	0.119	0.238	850	
270	8 × 12	G3	0.117	0.234	567	8 × 15	G4	0.085	0.170	733	10 × 20	H5	0.081	0.162	1120	
330	8 × 12	G3	0.117	0.234	567	8 × 20	G5	0.065	0.130	996	10 × 20	H5	0.081	0.162	1120	
390	8 × 15	G4	0.085	0.170	733	8 × 20	G5	0.065	0.130	996	10 × 16	H4	0.068	0.136	1060	
470	10 × 12.5	H3	0.090	0.180	764	10 × 20	H5	0.052	0.104	1230	12.5 × 20	I5	0.057	0.114	1540	
560	8 × 20	G5	0.065	0.130	996	10 × 20	H5	0.052	0.104	1230	12.5 × 25	I6	0.042	0.084	1910	
680	10 × 16	H4	0.068	0.136	1060	12.5 × 15	I4	0.062	0.124	1210	18 × 20	K5	0.034	0.068	2420	
820	10 × 20	H5	0.052	0.104	1230	10 × 25	H6	0.045	0.090	1450	12.5 × 30	I7	0.038	0.076	2290	
1000	10 × 25	H6	0.045	0.090	1450	12.5 × 20	I5	0.038	0.076	1700	18 × 20	K5	0.031	0.062	2450	
1200	12.5 × 20	I5	0.038	0.076	1700	12.5 × 25	I6	0.030	0.060	1950	18 × 20	K6	0.029	0.058	2750	
1500	10 × 30	H7	0.035	0.070	1830	12.5 × 30	I7	0.025	0.050	2330	18 × 31.5	J7	0.027	0.054	3100	
1600	16 × 16	J4	0.043	0.086	1700	16 × 20	J5	0.029	0.058	2230	18 × 25	K6	0.029	0.058	2750	
1800	12.5 × 25	I6	0.030	0.060	1950	12.5 × 35	I8	0.022	0.044	2620	16 × 35.5	J8	0.023	0.046	3530	
2200	12.5 × 30	I7	0.025	0.050	2330	12.5 × 40	I9	0.017	0.034	3160	18 × 40	J9	0.020	0.040	3830	
2700	16 × 20	J5	0.029	0.058	2230	16 × 25	J6	0.022	0.044	2650	18 × 35.5	K8	0.022	0.044	3670	
3300	12.5 × 35	I8	0.022	0.044	2620	16 × 31.5	J7	0.018	0.036	3210	18 × 40	K9	0.018	0.036	4160	
3900	16 × 25	J6	0.022	0.044	2650	18 × 25	K6	0.020	0.040	3000	—	—	—	—	—	
4700	18 × 25	K6	0.020	0.040	3000	18 × 31.5	K7	0.016	0.032	3660	—	—	—	—	—	
5600	18 × 35.5	K8	0.015	0.030	3960	18 × 35.5	K8	0.015	0.030	3960	—	—	—	—	—	
6800	20 × 25	L6	0.019	0.038	3920	18 × 40	K9	0.014	0.028	4300	—	—	—	—	—	
8200	18 × 35.5	K8	0.015	0.030	3960	20 × 40	L9	0.013	0.026	5680	—	—	—	—	—	
10000	18 × 40	K9	0.014	0.028	4300	18 × 40	L9	0.013	0.026	5680	—	—	—	—	—	
	20 × 40	L9	0.013	0.026	5680	—	—	—	—	—	—	—	—	—	—	

Rated voltage(V)	Item	63				80				100						
		Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)
				20°C	-10°C				20°C	-10°C				20°C	-10°C	
10	5 × 11.5	E3	1.1	2.2	162	5 × 11.5	E3	1.90	3.8	123	6.3 × 11.5	F3	1.1	2.2	186	
22	6.3 × 11.5	F3	0.54	1.1	265	8 × 12	G3	0.53	1.1	315	8 × 12	G3	0.53	1.1	315	
27	6.3 × 11.5	F3	0.54	1.1	265	—	—	—	—	—	—	—	—	—	—	
33	6.3 × 11.5	F3	0.54	1.1	265	8 × 12	G3	0.53	1.1	315	8 × 15	G4	0.35	0.70	423	
47	8 × 12	G3	0.32	0.64	406	8 × 15	G4	0.35	0.70	423	10 × 12.5	H3	0.47	0.94	392	
56	8 × 12	G3	0.32	0.64	406	10 × 12.5	H3	0.47	0.94	392	10 × 16	H4	0.32	0.64	520	
82	8 × 20	G5	0.17	0.34	682	10 × 16	H4	0.32	0.64	520	10 × 20	H5	0.25	0.50	640	
100	10 × 16	H4	0.17	0.34	710	10 × 20	H5	0.25	0.50	640	10 × 25	H6	0.155	0.31	636	
150	10 × 20	H5	0.12	0.24	920	12.5 × 20	I5	0.13	0.26	1010	12.5 × 25	I6	0.11	0.22	1200	
180	10 × 25	H6	0.10	0.20	1110	—	—	—	—	—	—	—	—	—	—	
220	12.5 × 20	I5	0.075	0.15	1340	12.5 × 25	I6	0.11	0.22	1200	12.5 × 30	I7	0.090	0.18	1440	
330	12.5 × 25	I6	0.065	0.13	1730	12.5 × 30	I7	0.090	0.18	1440	16 × 25	J6	0.090	0.18	1440	
470	12.5 × 30	I7	0.055	0.11	2110	16 × 31.5	J7	0.059	0.118	2100	16 × 35.5	J8	0.052	0.104	2340	
560	16 × 25	J6	0.052	0.104	2180	18 × 25	K6	0.064	0.128	1980	18 × 31.5	K7	0.054	0.108	2350	
680	18 × 20	K5	0.058	0.116	2290	18 × 25	K6	0.064	0.128	1980	16 × 40	J9	0.045	0.090	2650	
820	16 × 31.5	J7	0.042	0.084	2710	16 × 35.5	J8	0.052	0.104	2340	16 × 40	J9	0.045	0.090	2650	
1000	16 × 35.5	J8	0.036	0.072	2820	18 × 40	K9	0.039	0.078	3050	18 × 35.5	K8	0.044	0.088	2730	
1500	18 × 31.5	K7	0.042	0.084	3080	—	—	—	—	—	—	—	—	—	—	
1800	18 × 40	K9	0.032	0.064	3880	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 105°C , 100kHz ; ESR : 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

For SRS AirBag

GREEN CAP **105°C
5000hours** **Anti-cleaning
solvent** **For AirBag**

- For SRS AirBag application
- High capacitance, low impedance, and good low temperature behavior
- Guarantees 5000 hours at 105°C.

For SAS AirBag

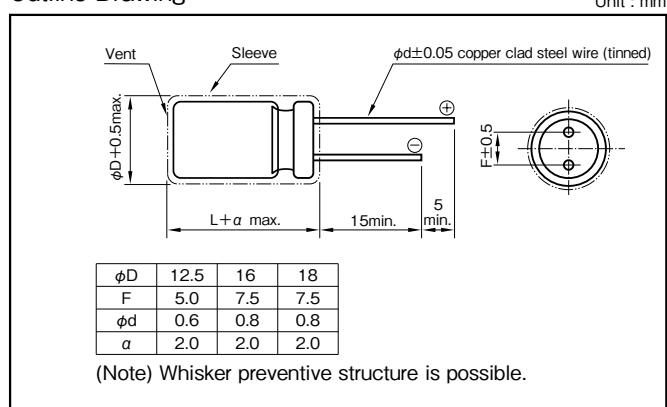


Marking color : White print on a black sleeve

Specifications

Item	Performance		
Category temperature range (°C)	-55 to +105		
Tolerance at rated capacitance (%)	0 to +30		(20°C, 120Hz)
Leakage current (μA)	Less than 0.01CV (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V)		(20°C)
Tangent of loss angle (tanδ)	Rated voltage (V) tanδ (max.)	25 0.20	35 0.16
	0.02 is added to every 1000μF increase over 1000μF (20°C, 120Hz)		
Characteristics at high and low temperature	Rated voltage (V) Impedance ratio (max.)	25 3	35 3
	(120Hz)		
Endurance (105°C)	Test time Leakage current Percentage of capacitance change Tangent of loss angle	5000 hours The initial specified value or less Within ±30% of initial value 300% or less of the initial specified value	
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4		
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)		

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k·100k
Rated capacitance (μF)				
830 to 1100	0.70	0.75	0.90	1
1200 to 11000	0.80	0.85	0.95	1

Part numbering system (example : 25V4200μF)

RJE	—	25	V	422	A	I9	(#)Q	—	□
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol		Casing symbol	Optional symbol

If it is whisker preventive structure, should change "#" into "G".

Standard Ratings

Case size φDXL (mm)	Item Casing symbol	Rated voltage(V)	25			35		
			Capacitance (μF)	ESR Ω (max.) / 100kHz	Rated ripple current (mA rms)	Capacitance (μF)	ESR Ω (max.) / 100kHz	Rated ripple current (mA rms)
12.5×15	I4	1100	0.174	0.52	1210	830	0.174	0.52
12.5×20	I5	1800	0.107	0.27	1670	1300	0.107	0.27
12.5×25	I6	2400	0.084	0.21	1950	1600	0.084	0.21
12.5×30	I7	3200	0.070	0.18	2330	2200	0.070	0.18
12.5×35	I8	3700	0.062	0.16	2620	2500	0.062	0.16
12.5×40	I9	4200	0.048	0.12	3160	2900	0.048	0.12
16×16	J4	2100	0.121	0.36	1700	1500	0.121	0.36
16×20	J5	3100	0.082	0.21	2230	2100	0.082	0.21
16×25	J6	4300	0.062	0.16	2650	3000	0.062	0.16
16×31.5	J7	5800	0.051	0.13	3210	4000	0.051	0.13
16×35.5	J8	6800	0.045	0.11	3570	4600	0.045	0.11
16×40	J9	7800	0.042	0.11	3880	5300	0.042	0.11
18×16	K4	3000	0.107	0.32	2010	2100	0.107	0.32
18×20	K5	4300	0.079	0.20	2500	3000	0.079	0.20
18×25	K6	6000	0.056	0.14	3000	4200	0.056	0.14
18×31.5	K7	8000	0.045	0.11	3660	5600	0.045	0.11
18×35.5	K8	9300	0.042	0.11	3960	6500	0.042	0.11
18×40	K9	11000	0.040	0.10	4300	7400	0.040	0.10

(Note) Rated ripple current : 105°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

For SRS AirBag

GREEN CAP

105°C
5000hoursAnti-cleaning
solvent

For AirBag

- For SRS AirBag application
- High capacitance, low impedance, and good low temperature behavior.
- Guarantees 5000 hours at 105°C.

Miniaturized
Low ESR

RJK



RJE



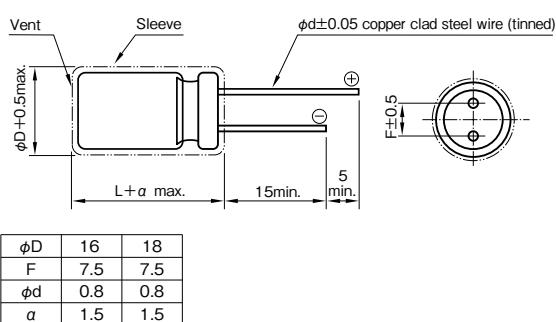
Marking color : White print on a black sleeve

Specifications

Item	Performance				
Category temperature range (°C)	−55 to +105				
Tolerance at rated capacitance (%)	0 to +30 (20°C, 120Hz)				
Leakage current (µA)	Less than 0.01CV (after 2 minutes) C : Rated capacitance (mF), V : Rated voltage (V) (20°C)				
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35		
	tanδ (max.)	0.20	0.16		
	0.02 is added to every 1000µF increase over 1000µF (20°C, 120Hz)				
Characteristics at high and low temperature	Rated voltage (V)	25	35		
	Impedance ratio (max.) Z−55°C/Z+20°C	3	3		
	(120Hz)				
Endurance (105°C) (Applied ripple current)	Test time	5000 hours			
	Leakage current	The initial specified value or less			
	Percentage of capacitance change	Within ±30% of initial value			
	Tangent of loss angle	300% or less of the initial specified value			
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4				
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)				

Outline Drawing

Unit : mm



(Note) Whisker preventive structure is possible.

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
Rated voltage (V) 25, 35	0.80	0.85	0.95	1

Part numbering system (example : 25V4200μF)

RJK	—	25	V	422	A	J5	#Q	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol	Taping(Forming) symbol			

If it is whisker preventive structure, should change "#" into "G".

Standard Ratings

Case φD × L (mm)	Item Casing symbol	25			35		
		Capacitance (μF)	ESR (Ω max. / 100kHz)		Capacitance (μF)	ESR (Ω max. / 100kHz)	
			20°C	- 40°C		20°C	- 40°C
16 × 20	J5	4200	0.033	0.095	2250	2500	0.033
18 × 20	K5	5300	0.029	0.082	2500	3100	0.029
16 × 25	J6	5900	0.024	0.073	2600	3500	0.024
18 × 25	K6	7500	0.022	0.063	2800	4500	0.022
16 × 31.5	J7	8000	0.021	0.052	3200	4700	0.021
18 × 31.5	K7	9500	0.019	0.046	3500	5600	0.019
16 × 35.5	J8	10000	0.019	0.045	3500	6000	0.019
18 × 35.5	K8	11000	0.017	0.040	3800	6600	0.017
16 × 40	J9	11000	0.017	0.040	3700	7100	0.017
18 × 40	K9	14000	0.015	0.035	4000	8400	0.015

(Note) Rated ripple current : 105°C, 100kHz

105°C Use, Miniature, High-Ripple, Long Life Capacitors

GREEN CAP 105°C
5000hours

- Higher ripple current.
- Guarantees 4000 to 5000 hours at 105°C.
- Best-suited to electronic ballast.

High ripple, Long life

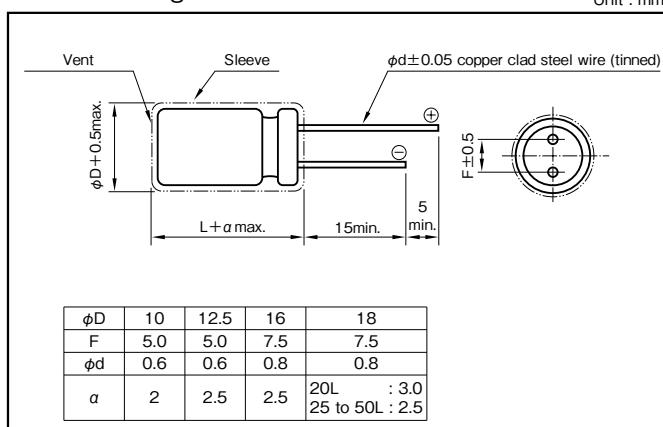


Marking color : White print on a black sleeve

Specifications

Item	Performance			
Category temperature range (°C)	-40 to +105 (-25 to +105 at 350V or more)			
Rated Voltage (V)	160 to 450			
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)			
Leakage current (μA)	CV≤1000 : Less than 0.06CV+40 (after 1 minutes) CV>1000 : Less than 0.03CV+70 (after 1 minutes) C : Rated capacitance (μF), V : Rated voltage (V)			
Tangent of loss angle (tanδ)	Rated voltage (V)	160 to 250	350 to 400	450
	Tangent of loss angle	0.12	0.15	0.20
		(20°C, 120Hz)		
Characteristics at high and low temperature	Rated voltage (V)	160 to 250	350 to 450	
	Impedance ratio	Z-25°C/Z+20°C	3	6
		Z-40°C/Z+20°C	4	—
		(120Hz)		
Endurance (105°C) (Applied ripple current)	Test time	φ10 : 4000 hours φ12.5 to φ18 : 5000 hours		
	Leakage current	The initial specified value or less		
	Capacitance change	Within -20% to +20% of initial value		
	Tangent of loss angle	300% or less of the initial specified value		
Shelf life (105°C)	Test time	1000 hours		
	Leakage current	The initial specified value or less		
	Capacitance change	Within -20% to +20% of initial value		
	Tangent of loss angle	200% or less of the initial specified value		
Applicable Standards	JIS C 5101-01, -04 1998 (IEC 60384-1 1992, 60384-4 1985)			

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz) Rated capacitance (μF)	50 · 60	120	1k	10k	100k
		4.7 to 10	0.80	1	1.75	2.00
160 to 250	12 to 47	0.80	1	1.60	1.80	2.00
	56 to 560	0.80	1	1.30	1.40	1.40
	1 to 10	0.80	1	1.75	2.00	2.50
	12 to 18	0.80	1	1.60	1.80	2.00
350 to 450	22 to 220	0.80	1	1.40	1.50	1.50

Part numbering system (example : 400V10μF)

RHS	—	400	V	100	M	I5	#	B	—	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol	Taping(Forming) symbol				

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Case φD × L(mm)	Casing symbol	Item	160			200			250			350		
			Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)
10 × 12.5	H3		27	5.9	145	4.7	34	60	4.7	34	60	3.3	60	50
						18	8.8	105	10	16	82	4.7	42	55
10 × 16	H4		10	16	96	10	16	95	10	16	90	12	17	120
			39	4.1	185	22	7.2	110						
10 × 20	H5		22	7.2	145	22	7.2	145	10	16	105	15	13	145
			56	2.8	270	33	4.8	170	22	7.2	150			
10 × 25	H6		68	2.3	290	47	3.4	245	39	4.1	240	22	9.0	175
10 × 30	H7		100	1.6	315	68	2.3	350	47	3.4	270	27	7.4	210
12.5 × 20	I5		33	4.8	190	33	4.8	190	47	3.4	260	10	20	120
			82	1.9	270	56	2.8	240				27	7.4	200
12.5 × 25	I6		47	3.4	280	47	3.4	280	22	7.2	180	22	9.0	180
			100	1.6	325	82	1.9	320	33	4.8	250	39	5.1	225
12.5 × 30	I7		150	1.1	435	120	1.3	420	82	1.9	420	56	3.6	290
12.5 × 40	I9		220	0.7	500	—	—	—	120	1.3	580	68	2.9	370
16 × 20	J5		47	3.4	280	47	3.4	280	33	4.8	250	22	9.0	180
			120	1.3	375	100	1.6	370	68	2.3	275	47	4.2	270
16 × 25	J6		180	0.9	505	150	1.1	500	47	3.4	300	33	6.0	210
						100	1.6	410	120	1.3	405	68	2.9	365
16 × 31.5	J7		270	0.6	685	220	0.7	665	150	1.1	510	82	2.4	445
												47	4.2	300
16 × 35.5	J8		330	0.5	800	—	—	—	180	0.9	590	100	2.0	520
16 × 40	J9		390	0.4	915	270	0.6	820	220	0.7	685	120	1.7	600
18 × 20	K5		100	1.6	380	120	1.3	430	47	3.4	300	56	3.6	325
			180	0.9	490				100	1.6	360			
18 × 25	K6		270	0.6	660	100	1.6	410	100	1.6	410	82	2.4	430
						180	0.9	580	150	1.1	485			
18 × 31.5	K7		330	0.5	810	270	0.6	790	180	0.9	590	47	4.2	300
			220	0.7	630	—	—	—	220	0.7	690	100	2.0	520
18 × 35.5	K8		390	0.4	925	—	—	—				120	1.7	600
18 × 40	K9		470	0.3	1050	330	0.5	970	270	0.6	810	150	1.3	715
18 × 45	KA		560	0.3	1230	390	0.4	1100	330	0.5	945	180	1.1	730
18 × 50	KB		—	—	—	470	0.3	1200	—	—	—	220	0.9	960

Case φD × L(mm)	Casing symbol	Item	400			450		
			Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)
10 × 12.5	H3		2.2	90	40	1.0	265	30
			6.8	29	70	5.6	47	60
10 × 16	H4		3.3	60	50	2.2	121	45
			10	20	95	4.7	56	68
10 × 20	H5		4.7	42	70	3.3	80	65
						12	22	120
10 × 25	H6		18	11	160	15	18	150
10 × 30	H7		22	9.0	200	22	12	190
12.5 × 20	I5		10	20	120	18	15	170
			22	9.0	200	10	27	140
12.5 × 25	I6		27	7.4	220	27	9.8	210
12.5 × 30	I7		39	5.1	310	33	8.0	280
12.5 × 40	I9		56	3.6	440	47	5.6	400
16 × 20	J5		33	6.0	220	27	9.8	220
			22	9.0	200	22	12	220
16 × 25	J6		47	4.2	340	33	8.0	280
			68	2.9	465	47	5.6	380
16 × 31.5	J7		33	6.0	245	47	5.6	420
			68	2.9	465	56	4.7	520
16 × 35.5	J8		82	2.4	500	68	3.9	520
16 × 40	J9		100	2.0	525	82	3.2	680
18 × 20	K5		22	9.0	200	39	6.8	330
			47	4.2	335			
18 × 25	K6		33	6.0	245	68	3.9	420
			68	2.9	450			
18 × 31.5	K7		47	4.2	300	82	3.2	580
			82	2.4	500			
18 × 35.5	K8		—	—	—	100	2.7	750
18 × 40	K9		120	1.7	785	120	2.2	800
18 × 45	KA		150	1.3	865	150	1.8	920
18 × 50	KB		—	—	—	180	1.5	1100

(Note) Rated ripple current : 105°C, 120Hz ; ESR. : 20°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

105°C Use, Miniature, High-Ripple, Long Life Capacitors

GREEN CAP 105°C
10000hours

- Higher ripple current.
- Guarantees 5000 to 10000 hours at 105°C.
- Best-suited to electronic ballast.



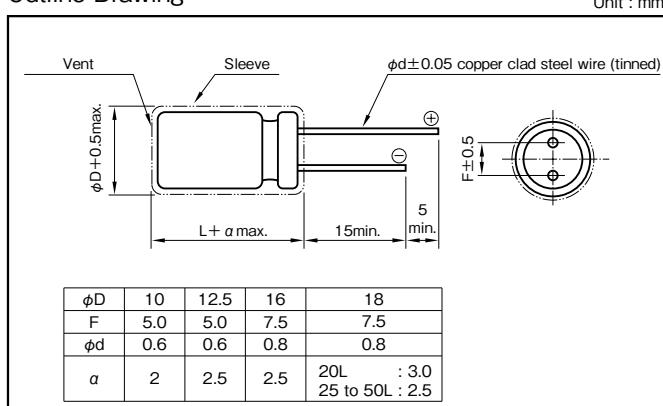
Marking color : White print on a black sleeve

Specifications

Item	Performance		
Category temperature range (°C)	-25 to +105		
Rated Voltage (V)	160 to 450		
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)		
Leakage current (μ A)	Less than $0.04CV + 100$ (after 1 minutes)	C : Rated capacitance (μ F), V : Rated voltage (V)	(20°C)
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	160 to 250	350 to 450
	Tangent of loss angle	0.10 (0.15*)	0.12 (0.20*)
* The black circles in the capacitance column correspond. (20°C, 120Hz)			
Characteristics at high and low temperature	Rated voltage (V)	160 to 250	350 to 450
	Impedance ratio Z-25°C/Z+20°C	3	6
(120Hz)			
Endurance (105°C) (Applied ripple current)	Test time	$\phi 10 \times 12.5$: 5000 hours $\phi 10 \times 16L$ to 25L : 8000 hours $\phi 10 \times 30L$, $\phi 12.5$ to $\phi 18$: 10000 hours	
	Leakage current	The initial specified value or less	
	Capacitance change	Within -30% to + 30% of initial value	
	Tangent of loss angle	300% or less of the initial specified value	
Shelf life (105°C)	Test time	1000 hours	
	Leakage current	The initial specified value or less	
	Capacitance change	Within -20% to + 20% of initial value	
	Tangent of loss angle	200% or less of the initial specified value	
Voltage application treatment			
Applicable standards	JIS C 5101-01, -04 1998 (IEC 60384-1 1992, 60384-4 1985)		

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	120	1k	10k	100k
1 to 5.6	0.20	0.40	0.80	1
6.8 to 18	0.30	0.60	0.90	1
22 to 82	0.40	0.70	0.90	1
100 to 680	0.45	0.75	0.90	1

Part numbering system (example : 400V10uF)

RHC	—	400	V	100	M	H5	#	B	—	□
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol		Casing symbol		Optional symbol

Standard Ratings

Rated voltage(V)		160			200			250			350			
Case φD × L(mm)	Casing symbol	Item	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)
10 × 12.5	H3	● 27	7.4	350	4.7	28	200	4.7	28	200	1.5	106	100	
		● 12	17	340	● 12	17	340	● 8.2	24	300	2.2	72	140	
10 × 16	H4	10	13	320	6.8	20	220	6.8	20	250	3.3	48	180	
		● 39	5.1	600	10	13	320	10	13	320	4.7	34	220	
10 × 20	H5	22	6.0	500	22	6.0	500	22	6.0	500	5.6	28	250	
		33	4.0	650	33	4.0	650	● 33	6.0	525	● 12	22	360	
		47	2.8	750	33	4.0	650	33	4.0	720	6.8	23	280	
10 × 25	H6	● 68	2.9	910	● 56	3.6	860	● 39	5.1	660	● 22	12	525	
10 × 30	H7	● 82	2.4	1110	● 68	2.9	1010	● 47	4.2	775	● 27	9.8	585	
12.5 × 20	I5	68	2.0	1180	47	2.8	980	33	4.0	800	22	7.2	650	
12.5 × 25	I6	● 100	2.0	1275	● 68	2.9	1120	● 68	2.9	1260	● 27	9.8	700	
12.5 × 30	I7	100	1.3	1420	68	2.0	1300	47	2.8	980	● 39	6.8	825	
12.5 × 35	I8	● 120	1.7	1500	● 100	2.0	1375	● 68	2.9	1260	● 56	4.7	1050	
12.5 × 40	I9	120	1.1	1500	● 120	1.7	1540	● 82	2.4	1410	● 68	3.9	1210	
16 × 20	J5	● 150	1.3	1700	● 150	1.3	1840	● 100	2.0	1465	● 82	3.2	1375	
16 × 25	J6	160	0.9	1890	● 100	2.0	1420	● 82	2.4	1410	● 47	5.6	1080	
16 × 31.5	J7	● 220	0.9	2265	● 150	1.3	1890	100	1.3	1530	● 68	3.9	1400	
16 × 35.5	J8	● 330	0.6	3000	● 180	1.1	2200	● 150	1.3	1740	● 82	3.2	1560	
16 × 40	J9	● 390	0.5	3330	● 270	0.7	2710	● 180	1.1	2210	● 100	2.7	1640	
18 × 20	K5	● 470	0.4	3775	● 330	0.6	3120	● 220	0.9	2530	● 120	2.2	1830	
18 × 25	K6	● 180	1.1	1900	—	—	—	● 100	2.0	1530	● 68	3.9	1375	
18 × 30	K7	● 270	0.6	2370	● 220	0.9	2380	● 150	1.3	1940	● 82	3.2	1510	
18 × 35.5	K8	● 330	0.6	2865	● 270	0.7	2750	● 220	0.9	2200	● 100	2.7	1650	
18 × 40	K9	● 470	0.4	3810	● 330	0.6	3100	● 270	0.7	2460	● 120	2.2	1760	
18 × 45	KA	● 560	0.4	4230	● 390	0.5	3275	● 330	0.6	2660	● 180	1.5	2265	
18 × 50	KB	● 680	0.3	4365	● 470	0.4	3475	—	—	—	● 220	1.2	2530	
18 × 50	KB	—	—	—	● 560	0.4	3900	● 390	0.5	3555	—	—	—	

Rated voltage(V)		400			450			
Case φD × L(mm)	Casing symbol	Item	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)
10 × 12.5	H3	● 3.3	80	160	● 3.9	68	200	
		● 1.5	106	100	● 2.2	72	140	
10 × 16	H4	● 10	27	315	● 6.8	39	280	
		● 3.3	48	180	● 3.3	48	180	
10 × 20	H5	● 15	18	420	● 10	27	330	
		● 5.6	28	250	● 4.7	34	220	
10 × 25	H6	● 18	15	445	● 15	18	500	
		● 22	12	525	● 22	12	535	
12.5 × 20	I5	● 22	12	650	● 18	15	525	
		● 22	7.2	760	15	11	600	
12.5 × 25	I6	● 27	9.8	760	● 27	9.8	635	
		● 33	4.8	720	● 33	8.0	725	
12.5 × 30	I7	● 47	5.6	920	● 39	6.8	850	
		● 47	3.4	960	● 33	8.0	800	
12.5 × 40	I9	● 56	4.7	1260	● 47	5.6	1010	
		● 22	7.2	760	22	7.2	730	
16 × 20	J5	● 33	8.0	900	● 27	9.8	775	
		● 47	5.6	1180	33	4.8	980	
16 × 25	J6	● 100	2.7	1720	● 39	6.8	935	
		● 68	3.9	1350	● 56	4.7	1125	
16 × 35.5	J8	● 100	2.7	1550	● 68	3.9	1250	
		● 120	2.2	1740	● 82	3.2	1650	
18 × 20	K5	● 56	4.7	1350	● 39	6.8	935	
		● 68	3.9	1470	47	3.4	1200	
18 × 25	K6	● 100	2.7	1720	● 68	3.9	1260	
		● 82	1.9	1600	● 82	3.2	1360	
18 × 35.5	K8	● 120	2.2	1760	● 100	2.7	1685	
		● 150	1.8	1930	● 120	2.2	1865	
18 × 40	K9	● 150	1.8	2215	—	—	—	
		● 150	1.8	2215	● 150	1.8	2040	

(Note) Rated ripple current : 105°C , 100kHz ; ESR. : 20°C , 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

105°C Use, Miniature, High-Ripple, Long Life Capacitors

GREEN CAP 105°C 12000hours

- Higher ripple current.
- Guarantees 8000 to 12000 hours at 105°C.
- Best-suited to electronic ballast.



High ripple, Long life



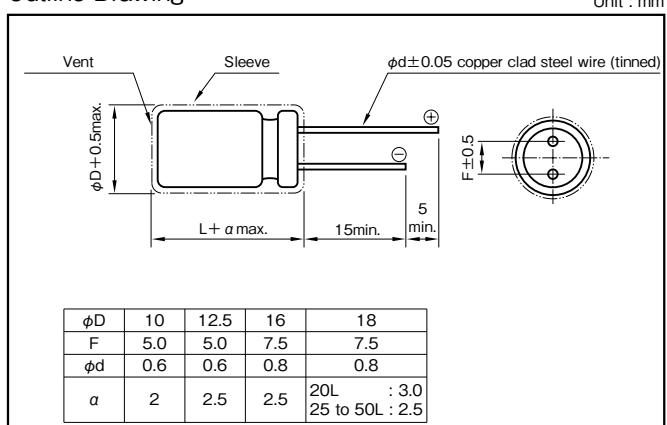
Marking color : White print on a black sleeve

Specifications

Item	Performance		
Category temperature range (°C)	−25 to +105		
Rated Voltage (V)	160 to 450		
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)		
Leakage current(μA)	Less than $0.04CV + 100$ (after 1 minutes) C:Rated capacitance (μF), V:Rated Voltage (V) (20°C)		
Tangent of loss angle (tanδ)	Rated voltage (V)	160 to 250	350 to 450
	Tangent of loss angle	0.15	0.20
		(20°C, 120Hz)	
Characteristics at high and low temperature	Rated voltage (V)	160 to 250	350 to 450
	Impedance ratio Z−25°C/Z+20°C	3	6
		(120Hz)	
Endurance (105°C) (Applied ripple current)	Test time	$\phi 10 \times 12.5L$: 8000hours $\phi 10 \times 16L$ to 25L : 10000hours $\phi 10 \times 30L$, $\phi 12.5$ to $\phi 18$: 12000hours	
	Leakage current	The initial specified value or less	
	Capacitance change	Within −30% to +30% of initial value	
	Tangent of loss angle	300% or less of the initial specified value	
Shelf life (105°C)	Test time	1000hours	
	Leakage current	The initial specified value or less	
	Capacitance change	Within −20% to +20% of initial value	
	Tangent of loss angle	200% or less of the initial specified value	
Applicable Standards	JIS C 5101-01, -04 1998 (IEC 60384-1 1992, 60384-4 1985)		

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz)	50	120	1k	10k	100k
160 to 450		0.30	0.50	0.80	0.90	1

Part numbering system (example : 400V47μF)

RHD —	400	V	470	M	K6	#	B	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol	Taping(Forming) symbol			

Standard Ratings

Case φD × L(mm)	Casing symbol	Item	Rated voltage(V)			160			200			250			350		
			Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)
10 × 12.5	H3	—	—	—	—	10	20	250	12	17	310	6.8	29	250	4.7	56	200
10 × 16	H4	10	20	250	—	10	20	250	39	5.1	490	22	9.0	360	5.6	47	220
10 × 20	H5	22	9.0	500	—	22	9.0	500	33	6.0	500	10	20	280	6.8	39	220
10 × 25	H6	33	6.0	500	—	33	6.0	600	56	3.6	620	33	6.0	500	12	22	280
10 × 30	H7	68	2.9	760	—	47	4.2	660	56	3.6	700	39	5.1	570	15	18	360
12.5 × 20	I5	68	2.9	760	—	56	3.6	680	100	2.0	980	68	2.9	800	47	4.2	670
12.5 × 25	I6	100	2.0	1260	—	100	2.0	1240	47	4.2	660	22	9.0	600	68	2.9	1020
12.5 × 30	I7	—	—	—	—	120	1.7	1430	56	3.6	700	33	6.0	600	27	9.8	600
12.5 × 35	I8	180	1.1	1880	—	150	1.3	1700	180	1.1	2170	100	2.0	1400	68	3.9	1160
12.5 × 40	I9	220	0.9	2170	—	180	1.1	1950	220	0.9	3090	—	—	—	82	3.2	1300
16 × 20	J5	68	2.9	760	—	68	2.9	760	150	1.3	1560	47	4.2	720	100	2.0	1260
16 × 25	J6	100	2.0	1120	—	100	2.0	1260	180	1.1	1850	82	2.4	1150	68	2.9	920
16 × 31.5	J7	270	0.7	2500	—	220	0.9	2220	150	1.3	1680	120	1.7	1260	100	2.0	1800
16 × 35.5	J8	330	0.6	2730	—	270	0.7	2480	390	0.5	3090	180	1.1	2040	82	3.2	1350
16 × 40	J9	390	0.5	3090	—	330	0.6	2840	220	0.9	390	220	0.9	2330	120	2.2	1750
18 × 20	K5	100	2.0	1120	—	100	2.0	1120	180	1.1	1800	68	2.9	920	100	2.0	1330
18 × 25	K6	150	1.3	1360	—	150	1.3	1300	220	0.9	1400	150	1.3	1730	82	3.2	1290
18 × 31.5	K7	220	0.9	1400	—	270	0.7	2340	330	0.6	2580	220	0.9	2240	100	2.7	1420
18 × 35.5	K8	390	0.5	3000	—	270	0.7	2530	470	0.4	3420	390	0.5	3170	120	2.2	1710
18 × 40	K9	560	0.4	3780	—	390	0.5	3170	680	0.3	4240	470	0.4	3500	150	1.8	2115
18 × 45	KA	680	0.3	4240	—	560	0.4	3880	100	2.7	1510	—	—	—	220	1.2	2400
18 × 50	KB	—	—	—	—	560	0.4	3880	120	2.2	1740	390	0.5	3240	—	—	—

Case φD × L(mm)	Casing symbol	Item	400			450		
			Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)	Rated capacitance (μF)	ESR (Ω max.)	Rated ripple current (mA rms)
10 × 12.5	H3	4.7	56	220	—	3.9	68	120
10 × 16	H4	3.3	80	200	—	4.7	56	130
10 × 20	H5	6.8	39	220	—	6.8	39	140
10 × 25	H6	10	27	280	—	4.7	56	140
10 × 30	H7	18	15	500	—	6.8	39	150
12.5 × 20	I5	18	15	540	—	10	27	320
12.5 × 25	I6	27	9.8	710	—	15	18	380
12.5 × 30	I7	47	5.6	910	—	18	15	500
12.5 × 35	I8	—	—	—	—	27	9.8	690
12.5 × 40	I9	56	4.7	1090	—	33	8.0	700
16 × 20	J5	22	12	430	—	47	5.6	1050
16 × 25	J6	33	8.0	790	—	27	12	700
16 × 31.5	J7	47	5.6	1180	—	47	5.6	560
16 × 35.5	J8	68	3.9	1250	—	56	4.7	1000
16 × 40	J9	82	3.2	1380	—	68	3.9	1300
18 × 20	K5	100	2.7	1510	—	82	3.2	1480
18 × 25	K6	120	2.2	1740	—	—	—	—
18 × 31.5	K7	133	8.0	640	—	12	560	—
18 × 35.5	K8	147	5.6	910	—	39	6.8	870
18 × 40	K9	168	3.9	1250	—	33	8.0	700
18 × 45	KA	180	1.5	2100	—	56	4.7	1120
18 × 50	KB	—	—	—	150	1.8	1450	—

(Note) Rated ripple current : 105°C , 100kHz ; ESR. : 20°C , 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

125°C Use, Miniature, Low ESR Capacitors

GREEN CAP Low ESR 125°C 5000hours Anti-cleaning solvent

- Smaller and low ESR than RK series.
- Guarantees 5000 hours at 125°C ($\phi 8 : 2000h, \phi 10 : 3000h$)

Miniaturized, Low ESR



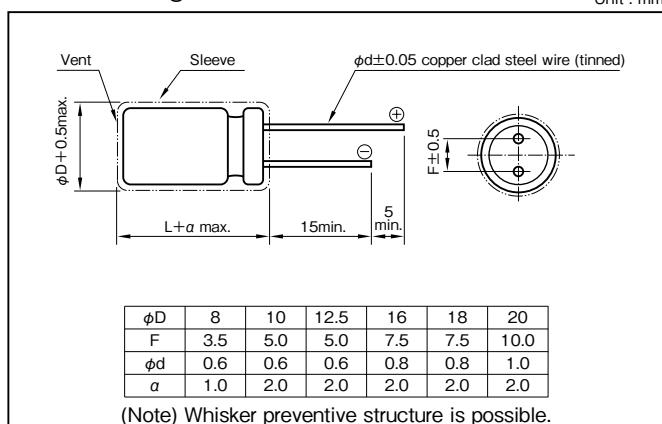
Marking color : White print on a black sleeve

Specifications

Item	Performance														
Category temperature range (°C)	−40 to +125														
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)														
Leakage current (μA)	Less than 0.01CV or 4 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	10	16	25	35	50	63	80							
	tanδ (max.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08							
0.02 is added to every 1000μF increase over 1000μF. (20°C, 120Hz)															
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63	80							
	Impedance ratio (max.) Z−40°C/Z+20°C	4	3	3	3	3	3	3							
(120Hz)															
Endurance (125°C) (Applied ripple current)	Test time	5000 hours ($\phi 8 : 2000$ hours) ($\phi 10 : 3000$ hours)													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within $\pm 30\%$ of initial value													
	Tangent of the loss angle	300% or less of the initial specified value													
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	Frequency (Hz)	50 · 60	120	1k	10k · 100k
100 to 330	0.55	0.65	0.85	1	
390 to 1000	0.70	0.75	0.90	1	
1200 to 8200	0.80	0.85	0.95	1	

Part numbering system (example : 10V1000μF)

RKD	—	10	V	102	M	H5	# —	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol			

If it is whisker preventive structure, should change “#” into “G”.

Standard Ratings

Rated voltage (V)	10				16				25				35			
	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current
Item	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)
100	—	—	—	—	8×12	G3	0.153	501	8×12	G3	0.153	501	8×12	G3	0.153	501
220	8×12	G3	0.153	501	8×12	G3	0.153	501	8×12	G3	0.153	501	10×12.5	H3	0.098	732
330	8×12	G3	0.153	501	8×12	G3	0.153	501	10×12.5	H3	0.098	732	10×16	H4	0.075	953
470	10×12.5	H3	0.098	732	10×16	H4	0.075	953	10×16	H4	0.075	953	10×20	H5	0.057	1140
1000	10×20	H5	0.057	1140	10×20	H5	0.057	1140	12.5×20	I5	0.040	1820	12.5×25	I6	0.032	2400
12.5×15	I4	0.059	1380	12.5×20	I5	0.040	1820	12.5×25	I6	0.032	2400	16×16	J4	0.044	1930	
1200	—	—	—	—	—	—	—	—	12.5×20	I5	0.040	1820	12.5×30	I7	0.029	2560
1500	—	—	—	—	—	—	—	—	—	—	—	—	16×20	J5	0.032	2280
1800	—	—	—	—	—	—	—	—	12.5×25	I6	0.032	2400	12.5×35	I8	0.023	2970
2200	12.5×25	I6	0.032	2400	12.5×25	I6	0.032	2400	12.5×30	I7	0.029	2560	16×31.5	J7	0.020	3160
16×20	J5	0.032	2280	16×25	J6	0.024	3100	16×25	J6	0.024	3100	16×35.5	J8	0.019	3590	
18×16	K4	0.041	2170	18×20	K5	0.029	2490	18×20	K5	0.029	2490	18×25	K6	0.022	3200	
2700	—	—	—	—	—	—	—	—	12.5×35	I8	0.023	2970	16×35.5	J8	0.019	3590
3300	16×25	J6	0.024	3100	16×31.5	J7	0.020	3160	12.5×40	I9	0.020	3600	16×40	J9	0.017	4300
18×20	K5	0.029	2490	18×25	K6	0.022	3200	16×31.5	J7	0.020	3160	18×35.5	K8	0.017	4200	
3900	—	—	—	—	—	—	—	—	16×35.5	J8	0.019	3590	20×30	L7	0.019	4000
4700	16×31.5	J7	0.020	3160	16×35.5	J8	0.019	3590	18×35.5	K8	0.017	4200	18×40	K9	0.016	4600
18×25	K6	0.022	3200	18×31.5	K7	0.018	3410	20×25	L6	0.022	3500	20×35.5	L8	0.016	4700	
5600	—	—	—	—	—	—	—	—	16×40	J9	0.017	4300	20×40	L9	0.015	5100
6800	—	—	—	—	—	—	—	—	18×35.5	K8	0.016	4600	—	—	—	—
8200	—	—	—	—	—	—	—	—	20×40	L9	0.015	5100	—	—	—	—

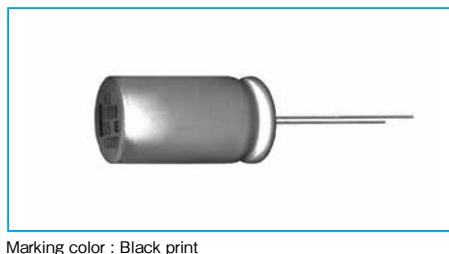
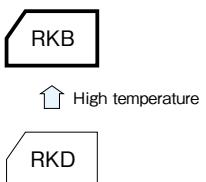
(Note) Rated ripple current : 125°C , 100kHz ; ESR : 20°C , 100kHz

Rated voltage (V)	50				63				80				100			
	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current
Item	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)
220	10×20	H5	0.081	960	—	—	—	—	—	—	—	—	16×20	J5	0.11	1580
330	—	—	—	—	—	—	—	—	16×20	J5	0.11	1790	16×25	J6	0.079	1690
470	12.5×20	I5	0.057	1500	16×20	J5	0.085	1790	16×25	J6	0.079	2030	16×35.5	J8	0.052	2500
560	—	—	—	—	—	—	—	—	18×25	K6	0.064	2280	16×40	J9	0.045	2700
820	12.5×30	I7	0.038	2150	16×31.5	J7	0.053	2330	18×35.5	K8	0.044	2890	18×40	K9	0.039	2880
1000	16×25	J6	0.031	2620	16×35.5	J8	0.044	2580	18×40	K9	0.039	3210	—	—	—	—
1800	18×31.5	K7	0.025	3140	18×40	K9	0.032	3210	—	—	—	—	—	—	—	—
2200	18×35.5	K8	0.022	3510	—	—	—	—	—	—	—	—	—	—	—	—

135°C Use, Miniature, Low ESR Capacitors

GREEN CAP Low ESR 135°C 3000hours Anti-cleaning solvent

- High temperature guaranteed and low ESR series for automotive.
- Guarantees 3000 hours at 135°C. (φ10 : 2000 hours)



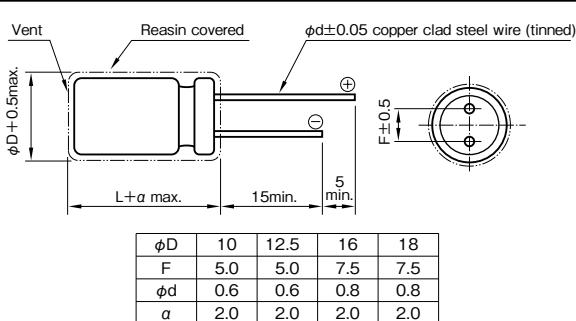
Marking color : Black print

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +135														
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)														
Leakage current (µA)	Less than 0.01CV or 4 whichever is larger (after 2 minutes) C : Rated capacitance (µF), V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	10	16	25	35	50	63	80							
	tanδ (max.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08							
	0.02 is added to every 1000µF increase over 1000µF. (20°C,120Hz)														
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63	80							
	Impedance ratio (max.) Z-40°C/Z+20°C	4	3	3	3	3	3	3							
	(120Hz)														
Endurance (135°C) (Applied ripple current)	Test time	3000 hours (φ10 : 2000 hours)													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within ±30% of initial value													
	Tangent of the loss angle	300% or less of the initial specified value													
Shelf life (135°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (µF)	50 · 60	120	1k	10k · 100k
220 to 330	0.55	0.65	0.85	1
470 to 1000	0.70	0.75	0.90	1
1200 to 6800	0.80	0.85	0.95	1

Part numbering system (example : 10V1000µF)

RKB	—	10	V	102	M	H5	# —	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol			

Standard Ratings

Rated voltage (V)	Item	10				16				25				35			
		Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)	Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)	Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)	Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)
220	—	—	—	—	10×12.5	H3	0.098	725	10×12.5	H3	0.098	725	10×12.5	H3	0.098	725	
330	10×12.5	H3	0.098	725	10×12.5	H3	0.098	725	10×12.5	H3	0.098	725	10×16	H4	0.075	951	
470	10×12.5	H3	0.098	725	10×16	H4	0.075	951	10×16	H4	0.075	951	10×20	H5	0.057	1130	
1000	10×20	H5	0.057	1130	10×20	H5	0.057	1130	12.5×20	I5	0.040	1550	12.5×20	I5	0.040	1550	
	12.5×15	I4	0.059	1130	12.5×20	I5	0.040	1550	12.5×25	I6	0.032	1880	12.5×25	I6	0.032	1880	
1200	—	—	—	—	—	—	—	—	12.5×20	I5	0.040	1550	12.5×30	I7	0.029	2160	
1500	—	—	—	—	—	—	—	—	—	—	—	—	16×20	J5	0.032	2020	
1800	—	—	—	—	—	—	—	—	12.5×25	I6	0.032	1880	12.5×40	I9	0.020	2920	
2200	12.5×25	I6	0.032	1880	12.5×25	I6	0.032	1880	12.5×30	I7	0.029	2160	16×31.5	J7	0.020	3040	
	16×20	J5	0.032	2020	16×25	J6	0.024	2550	16×25	J6	0.024	2550	16×35.5	J8	0.019	3280	
2700	—	—	—	—	—	—	—	—	12.5×35	I8	0.023	2580	16×35.5	J8	0.019	3280	
3300	16×25	J6	0.024	2550	16×31.5	J7	0.020	3040	12.5×40	I9	0.020	2920	16×40	J9	0.017	3630	
	18×20	K5	0.029	2320	18×25	K6	0.022	2880	16×31.5	J7	0.020	3040	18×35.5	K8	0.017	3710	
4700	16×31.5	J7	0.020	3040	16×35.5	J8	0.019	3280	16×35.5	J8	0.019	3280	18×40	K9	0.016	4000	
5600	—	—	—	—	—	—	—	—	16×40	J9	0.017	3630	—	—	—	—	
6800	—	—	—	—	—	—	—	—	18×40	K9	0.016	4000	—	—	—	—	

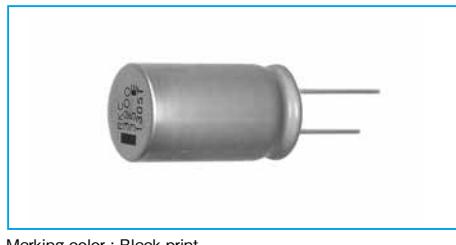
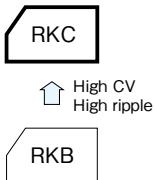
Rated voltage (V)	Item	50				63				80				100			
		Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)	Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)	Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)	Case φD × L (mm)	Casing symbol	ESR (Ω max.)	Rated ripple current (mA rms)
220	10×20	H5	0.098	930	—	—	—	—	—	—	—	—	—	16×20	J5	0.131	1070
330	—	—	—	—	—	—	—	—	16×20	J5	0.131	1070	16×25	J6	0.097	1350	
470	12.5×20	I5	0.070	1170	16×20	J5	0.099	1230	16×25	J6	0.097	1350	16×35.5	J8	0.077	1740	
560	—	—	—	—	—	—	—	—	18×25	K6	0.088	1530	16×40	J9	0.069	1940	
820	12.5×30	I7	0.047	1680	16×31.5	J7	0.062	1850	18×35.5	K8	0.069	1980	18×40	K9	0.066	2120	
1000	16×25	J6	0.039	1990	16×35.5	J8	0.058	2010	18×40	K9	0.066	2120	—	—	—	—	
1800	18×31.5	K7	0.030	2670	18×40	K9	0.053	2350	—	—	—	—	—	—	—	—	
2200	18×35.5	K8	0.028	2900	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 135°C , 100kHz ; ESR : 20°C , 100kHz

135°C Use, High CV, Low ESR Capacitors

GREEN CAP
Low ESR
135°C
3000hours
Anti-cleaning solvent

- High temperature guaranteed for automotive.
- Guaranteed 3000 hours at 135°C.
(63V to 100V : 2000 hours)
- High CV, high ripple current.
- For ECU of Direct injection engine, ESP etc.



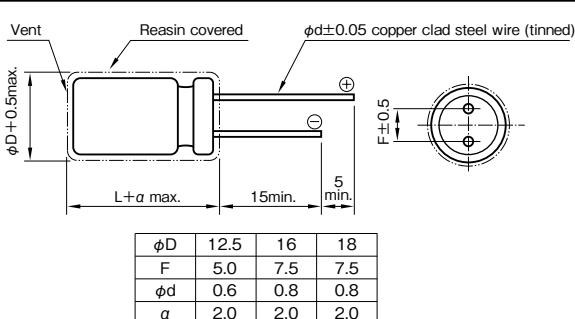
Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +135										
Tolerance at rated capacitance (%)	± 20 (20°C,120Hz)										
Leakage current (μA)	Less than 0.01CV or 4 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)										
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	25	35	50	63	80					
	$\tan\delta$ (max.)	0.14	0.12	0.10	0.10	0.08					
	0.02 is added to every 1000 μF increase over 1000 μF . (20°C,120Hz)										
Characteristics at high and low temperature	Rated voltage (V)	25	35	50	63	80					
	Impedance ratio (max.) Z-40°C/Z+20°C	3	3	3	3	3					
	(120Hz)										
Endurance 1 (135°C) (Applied ripple current)	Test time	3000 hours (63V to 100V : 2000 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within $\pm 30\%$ of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Endurance 2 (135°C) (Applied ripple current)	Test time	3000 hours (63V to 100V : 2000 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within $\pm 30\%$ of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Shelf life (135°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)										

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	Frequency (Hz)	50 · 60	120	1k	10k · 100k
	160 to 330	0.55	0.65	0.85	1
390 to 1000	0.70	0.75	0.90	1	
1100 to 12000	0.80	0.85	0.95	1	

Part numbering system (example : 25V2000 μF)

RKC	—	25	V	202	M	I5	#	—	[]
Series code	Rating voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping/Forming symbol				

Standard Ratings

(Note) Rated ripple current : 135°C, 100kHz ; ESR : 20°C, 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

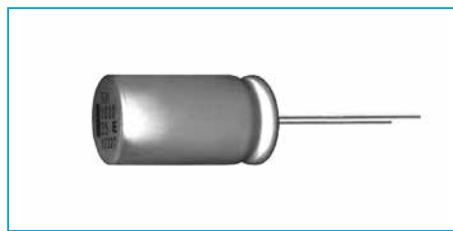
150°C Miniature Capacitors

GREEN CAP Low Impedance 150°C 1000hours Anti-cleaning solvent

- 150°C, High temperature guaranteed.
- Guarantees 1000 hours at 150°C.



High temperature



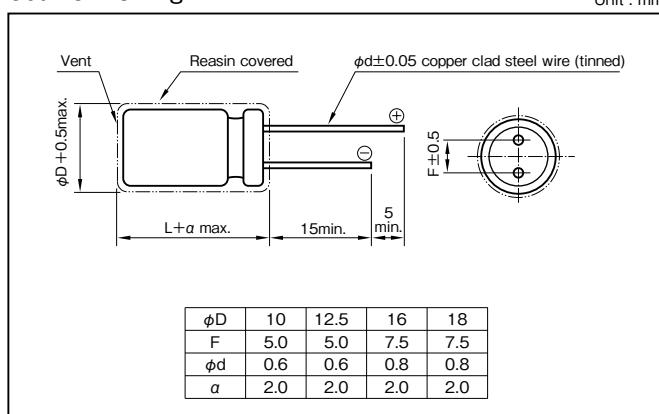
Marking color : Black print

Specifications

Item	Performance												
Category temperature range (°C)	-40 to +150												
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)												
Leakage current (μA)	Less than 0.01CV or 4 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)												
Tangent of loss angle (tanδ)	Rated voltage (V)	10	16	25	35	50	63						
	tanδ (max.)	0.20	0.16	0.14	0.12	0.10	0.10						
0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)													
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63						
	Impedance ratio (max.) Z-40°C/Z+20°C	4	3	3	3	3	3						
(120Hz)													
Endurance (150°C) (Applied ripple current)	Test time	1000 hours											
	Leakage current	The initial specified value or less											
	Percentage of capacitance change	Within ±30% of initial value											
	Tangent of the loss angle	300% or less of the initial specified value											
Shelf life (150°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4												
Applicable standards	JIS C5101 - 1, - 4 1998 (IEC 60384 - 1 1992, - 4 1985)												

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	Frequency (Hz)	50 · 60	120	1k	10k · 100k
220 to 330	0.55	0.65	0.85	1	
470 to 1000	0.70	0.75	0.90	1	
1500 to 4700	0.80	0.85	0.95	1	

Part numbering system (example : 35V1000μF)

RQA	—	35	V	102	M	I 6	#	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping(Forming) symbol			

Standard Ratings

Rated voltage (V)	10			16			25			35		
	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)
220	—	—	—	—	—	—	10×14.5	H3	300	10×14.5	H3	300
330	—	—	—	—	—	—	10×18	H4	510	10×18	H4	510
470	—	—	—	10×18	H4	510	10×22	H5	820	10×22	H5	820
1000	10×22	H5	820	10×22	H5	820	12.5×26	I6	1000	12.5×26	I6	1000
2200	12.5×26	I6	1000	12.5×26	I6	1000	16×26.5	J6	1200	16×33	J7	1370
3300	16×26.5	J6	1200	16×33	J7	1370	16×37	J8	1720	18×34	K7	1670
4700	16×33	J7	1370	16×37	J8	1720	18×38	K8	1790	18×42.5	K9	1870

Rated voltage (V)	50			63		
	Case	Casing symbol	Rated ripple current (mAmps)	Case	Casing symbol	Rated ripple current (mAmps)
470	12.5×21	I5	1070	16×26.5	J6	750
1000	16×33	J7	1250	18×34	K7	1200
1500	18×34	K7	1500	18×42.5	K9	1550
2200	18×38	K8	1700	—	—	—

(Note) Rated ripple current : 150°C , 100kHz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

ALUMINUM

POLYMER
HYBRIDCHIP
ALUMINUMMINIATURE
ALUMINUMLARGE
ALUMINUMFOR AUDIO
ALUMINUM

For Vibration, Resistance Miniature Aluminum Electrolytic Capacitors



Series RPK	30G	125°C, Long Life, with NC terminal	...Page 144
Series RKE	40G	125°C, Miniature, Low ESR	...Page 146
Series RKF	40G	135°C, Miniature, Low ESR	...Page 148
Series RKG	40G	150°C, Miniature, Low ESR	...Page 150

125°C Use, Long Life Capacitors

GREEN CAP Vibration Resistance Low ESR 125°C 5000hours Anti-cleaning solvent

- Guarantees 5000 hours at 125°C.
- Best-suited to smoothing circuits and control circuits for industrial equipment power supplies of which long life and high reliability are required.
- NC terminal added items are lineup for vibration resistance.
(30G guaranteed : 20mmL or less)



For vibration



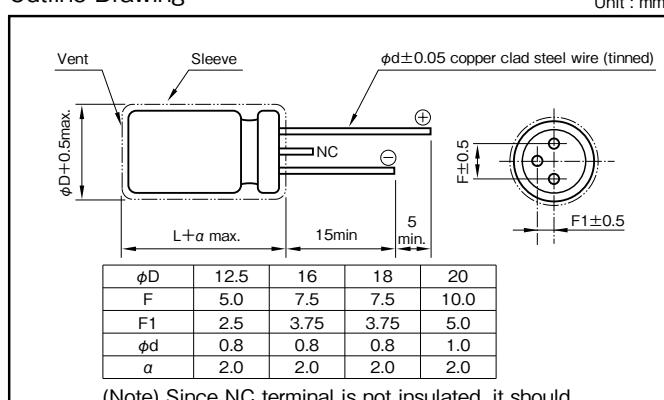
Marking color : White print on a black sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +125														
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)														
Leakage current (μA)	Less than 0.01CV or 4 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	10	16	25	35	50	63	80							
	tanδ (max.)	0.20	0.16	0.14	0.12	0.10	0.10	0.08							
0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)															
Characteristics at high and low temperature	Rated voltage (V)	10	16	25	35	50	63	80							
	Impedance ratio (max.) Z-40°C/Z+20°C	4	3	3	3	3	3	3							
(120Hz)															
Endurance (125°C) (Applied ripple current)	Test time	5000 hours													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within ±30% of initial value													
	Tangent of the loss angle	300% or less of the initial specified value													
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



(Note) Since NC terminal is not insulated, it should be mounted at a position electronically independent from all other parts of the circuit.

(Note) Whisker preventive structure is possible.

Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	50 · 60	120	1k	10k · 100k
220 to 330	0.55	0.65	0.85	1
390 to 1000	0.70	0.75	0.90	1
1200 to 8200	0.80	0.85	0.95	1

Part numbering system (example : 16V2200μF)

RPK	—	16	V	222	M	J6	D#	—	□
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping(Forming) symbol	

If it is whisker preventive structure, should change “#” into “G”.

Standard Ratings

Rated voltage (V)	10				16				25				35			
	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current
Item Rated capacitance (μF)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)
470	—	—	—	—	—	—	—	—	—	—	—	—	12.5×20	I5	0.040	1820
1000	12.5×15	I4	0.059	1380	12.5×20	I5	0.040	1820	12.5×20	I5	0.040	1820	12.5×25	I6	0.032	2400
					16×16	J4	0.044	1930	12.5×25	I6	0.032	2400	16×25	J6	0.024	3100
					16×16	J4	0.044	1930	16×16	J4	0.044	1930	18×20	K5	0.029	2490
1200	—	—	—	—	—	—	—	—	12.5×20	I5	0.040	1820	12.5×30	I7	0.029	2560
1500	—	—	—	—	—	—	—	—	—	—	—	—	16×20	J5	0.032	2280
													12.5×35	I8	0.023	2970
													16×31.5	J7	0.020	3160
1800	—	—	—	—	—	—	—	—	12.5×25	I6	0.032	2400	18×25	K6	0.022	3200
2200	12.5×25	I6	0.032	2400	12.5×25	I6	0.032	2400	12.5×30	I7	0.029	2560	16×31.5	J7	0.020	3160
	16×20	J5	0.032	2280	16×25	J6	0.024	3100	16×25	J6	0.024	3100	16×35.5	J8	0.019	3590
	18×16	K4	0.041	2170	18×20	K5	0.029	2490	18×20	K5	0.029	2490	18×25	K6	0.022	3200
2700	—	—	—	—	—	—	—	—	12.5×35	I8	0.023	2970	16×35.5	J8	0.019	3590
									16×25	J6	0.024	3100	18×31.5	K7	0.018	3410
									18×20	K5	0.029	2490	20×25	L6	0.022	3500
3300	16×25	J6	0.024	3100	16×31.5	J7	0.020	3160	12.5×40	I9	0.020	3600	16×40	J9	0.017	4300
	18×20	K5	0.029	2490	18×25	K6	0.022	3200	16×31.5	J7	0.020	3160	18×35.5	K8	0.017	4200
3900	—	—	—	—	—	—	—	—	16×35.5	J8	0.019	3590	20×30	L7	0.019	4000
4700	16×31.5	J7	0.020	3160	16×35.5	J8	0.019	3590	18×35.5	K8	0.017	4200	18×40	K9	0.016	4600
	18×25	K6	0.022	3200	18×31.5	K7	0.018	3410	20×25	L6	0.022	3500	20×35.5	L8	0.016	4700
5600	—	—	—	—	—	—	—	—	16×40	J9	0.017	4300	20×40	L9	0.015	5100
									18×35.5	K8	0.017	4200				
									20×30	L7	0.019	4000				
6800	—	—	—	—	—	—	—	—	18×40	K9	0.016	4600	—	—	—	—
									20×35.5	L8	0.016	4700				
									20×40	L9	0.015	5100				

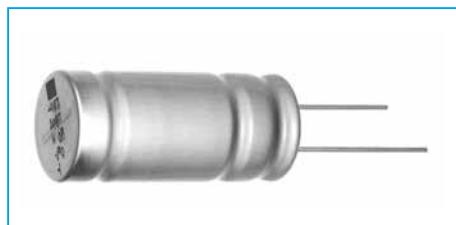
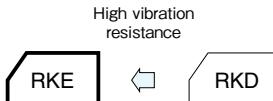
(Note) Rated ripple current : 125°C , 100kHz ; ESR : 20°C , 100kHz

Rated voltage (V)	50				63				80				100			
	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current	Case	Casing symbol	ESR	Rated ripple current
Item Rated capacitance (μF)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)	(Ω max.)	(mArms)	φD × L (mm)
220	—	—	—	—	—	—	—	—	—	—	—	—	16×20	J5	0.11	1580
330	—	—	—	—	—	—	—	—	16×20	J5	0.11	1790	16×25	J6	0.079	1690
470	12.5×20	I5	0.057	1500	16×20	J5	0.085	1790	16×25	J6	0.079	2030	16×35.5	J8	0.052	2500
560	—	—	—	—	—	—	—	—	18×25	K6	0.064	2280	16×40	J9	0.045	2700
820	12.5×30	I7	0.038	2150	16×31.5	J7	0.053	2330	18×35.5	K8	0.044	2890	18×40	K9	0.039	2880
1000	16×25	J6	0.031	2620	16×35.5	J8	0.044	2580	18×40	K9	0.039	3210	—	—	—	—
1800	18×31.5	K7	0.025	3140	18×40	K9	0.032	3210	—	—	—	—	—	—	—	—
2200	18×35.5	K8	0.022	3510	—	—	—	—	—	—	—	—	—	—	—	—

125°C Use, Miniature, Low ESR, High Vibration Resistance Capacitors

- Vibration resistance (40G, 10 to 2000Hz, X,Y,Z = per 2hours).
- For Automotive application (ABS and electric power steering etc.)
- Guaranteed 5000 hours at 125°C

GREEN CAP High Vibration Resistance Low ESR 125°C 5000hours Anti-cleaning solvent

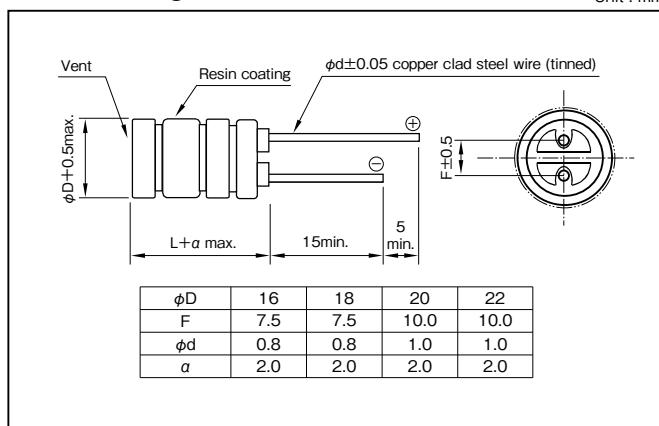


Specifications

Item	Performance						
Category temperature range (°C)	−40 to +125						
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)						
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)						
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35	50			
	tanδ (max.)	0.14	0.12	0.10			
0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)							
Characteristics at high and low temperature	Rated voltage (V)	25	35	50			
	Impedance ratio (max.) Z−40°C/Z+20°C	3	3	3			
(120Hz)							
Endurance (125°C) (Applied ripple current)	Test time	5000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within ±30% of initial value					
	Tangent of the loss angle	300% or less of the initial specified value					
Shelf life (125°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4						
Vibration	Vibration test condition						
	Frequency range	10 to 2000Hz					
	Displacement amplitude	1.5 mm max.					
	Acceleration	40G (392m/s ²) max.					
	Sweep rate	0.5 octave/min.					
	Vibration axis and duration	X, Y, Z per 2 hours, total 6 hours					
	Fixation	Capacitor mounted by its body which is rigidly clamped to the work surface.					
	Specification after test						
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within ±30% of initial value					
	Tangent of the loss angle	300% or less of the initial specified value					
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)						

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	120	1k	10k	100k
1200 to 82000	0.85	0.95	1.00	1

Part numbering system (example : 35V2700μF)

RKE	35	V	272	M	K7	#	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Forming symbol		

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

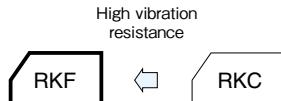
Rated voltage(V) Rated capacitance (μ F)	25						35						50					
	Item	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)	Case	Casing symbol	ESR (Ω max.)		Rated ripple current (mAmps)		
				20°C	-40°C				20°C	-40°C				20°C	-40°C			
1200	—	—	—	—	—	—	—	—	—	—	—	16×31.5	J7	0.048	0.20	2940		
1500	—	—	—	—	—	—	16×31.5	J7	0.024	0.14	3160	16×35.5	J8	0.039	0.16	3300		
2200	—	—	—	—	—	—	16×35.5	J8	0.023	0.13	3590	18×35.5	K8	0.033	0.15	3520		
2700	16×31.5	J7	0.024	0.14	3160	18×31.5	K7	0.020	0.11	3410	—	—	—	—	—	—		
3300	16×35.5	J8	0.023	0.13	3590	18×35.5	K8	0.019	0.10	3840	20×40	L9	0.027	0.12	3930			
4700	18×31.5	K7	0.020	0.11	3410	18×40	K9	0.017	0.094	4250	—	—	—	—	—	—		
5600	18×35.5	K8	0.019	0.10	3840	20×40	L9	0.017	0.094	4500	—	—	—	—	—	—		
6800	18×40	K9	0.017	0.094	4250	—	—	—	—	—	—	—	—	—	—	—		
7800	20×40	L9	0.017	0.094	4500	—	—	—	—	—	—	—	—	—	—	—		
8200	22×40	N9	0.017	0.094	4750	—	—	—	—	—	—	—	—	—	—	—		

(Note) Rated ripple current : 125°C , 100kHz ; ESR : 100kHz

135°C Use, Miniature, Low ESR, High Vibration Resistance Capacitors

- Vibration resistance (40G, 10 to 2000Hz, X,Y,Z = per 2hours).
- For Automotive application (ABS and electric power steering etc.)
- Guaranteed 3000 hours at 135°C
(63V to 100V : Guaranteed 2000 hours)

GREEN CAP **High Vibration Resistance** **Low ESR** **135°C 3000hours** **Anti-cleaning solvent**

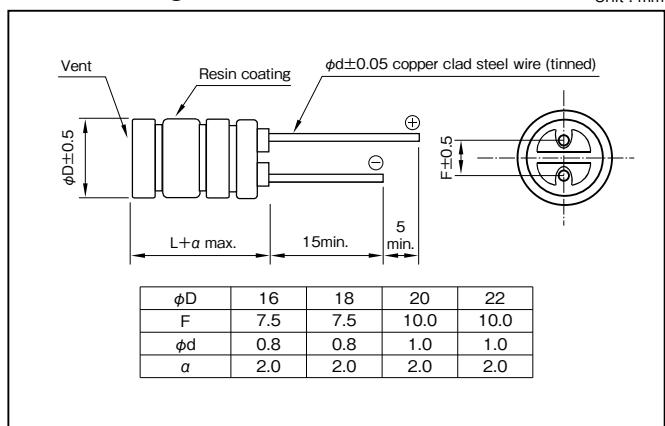


Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +135										
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)										
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)										
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35	50	63	80					
	tanδ (max.)	0.14	0.12	0.10	0.10	0.08					
0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)											
Characteristics at high and low temperature	Rated voltage (V)	25	35	50	63	80					
	Impedance ratio (max.) Z-40°C/Z+20°C	3	3	3	3	3					
(120Hz)											
Endurance (135°C or 125°C) (Applied ripple current)	Test time	3000 hours (63V to 100V : 2000 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Shelf life (135°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Vibration	Vibration test condition										
	Frequency range	10 to 2000Hz									
	Displacement amplitude	1.5 mm max.									
	Acceleration	40G (392m/s²) max.									
	Sweep rate	0.5 octave/min.									
	Vibration axis and duration	X, Y, Z per 2 hours, total 6 hours									
	Fixation	Capacitor mounted by its body which is rigidly clamped to the work surface.									
	Specification after test										
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)										

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	Frequency (Hz)	120	1k	10k	100k
180 to 330	0.65	0.85	1.00	1	
390 to 1000	0.75	0.90	1.00	1	
1100 to 10000	0.85	0.95	1.00	1	

Part numbering system (example : 35V3600μF)

RKF	—	35	V	362	M	K7	#	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Forming symbol	

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage (V)	Rated capacitance $\phi D \times L$ (mm)	Case	Casing symbol	ESR (Ω max. / 100kHz)		Rated ripple current (mA rms / 100kHz)	
				20°C	-40°C	135°C	125°C
25	1800	12.5 × 25	I6	0.033	0.30	2010	3480
	2200	12.5 × 30	I7	0.028	0.24	2900	4490
	2700	12.5 × 35	I8	0.025	0.21	3190	5140
	3300	12.5 × 40	I9	0.024	0.19	3470	5810
	4700	16 × 31.5	J7	0.023	0.18	3400	5480
	5400	16 × 35.5	J8	0.020	0.14	3630	6070
	6200	16 × 40	J9	0.019	0.12	3930	6810
	6200	18 × 31.5	K7	0.022	0.16	3470	5600
	7800	18 × 35.5	K8	0.019	0.12	3750	6280
	8200	18 × 40	K9	0.018	0.10	4080	7070
	9500	20 × 40	L9	0.016	0.090	4570	7950
	10000	22 × 40	N9	0.016	0.090	5000	8700
	1100	12.5 × 25	I6	0.033	0.30	2010	3480
	1500	12.5 × 30	I7	0.028	0.24	2900	4490
35	1800	12.5 × 35	I8	0.025	0.21	3190	5140
	2000	12.5 × 40	I9	0.024	0.19	3470	5810
	2700	16 × 31.5	J7	0.023	0.18	3400	5480
	3100	16 × 35.5	J8	0.020	0.14	3630	6070
	3600	16 × 40	J9	0.019	0.12	3930	6810
	3600	18 × 31.5	K7	0.022	0.16	3470	5600
	4700	18 × 35.5	K8	0.019	0.12	3750	6280
	5400	18 × 40	K9	0.018	0.10	4080	7070
	5900	20 × 40	L9	0.016	0.090	4570	7950
	6200	22 × 40	N9	0.016	0.090	5000	8700
	560	12.5 × 25	I6	0.079	0.39	2260	3350
	750	12.5 × 30	I7	0.065	0.30	2520	4220
	900	12.5 × 35	I8	0.057	0.25	2780	4810
	1000	12.5 × 40	I9	0.050	0.22	3020	5240
50	1300	16 × 31.5	J7	0.048	0.20	2960	5130
	1600	16 × 35.5	J8	0.039	0.15	3160	5480
	1900	16 × 40	J9	0.034	0.14	3420	5930
	2000	18 × 31.5	K7	0.038	0.15	3020	5240
	2400	18 × 35.5	K8	0.033	0.12	3390	5870
	2600	18 × 40	K9	0.031	0.11	3700	6420
	3300	20 × 40	L9	0.027	0.10	4200	7260
	3300	22 × 40	N9	0.027	0.10	4420	7660

Rated voltage (V)	Rated capacitance $\phi D \times L$ (mm)	Case	Casing symbol	ESR (Ω max. / 100kHz)		Rated ripple current (mA rms / 100kHz)	
				20°C	-40°C	135°C	125°C
63	390	12.5 × 25	I6	0.076	0.39	2050	2520
	560	12.5 × 30	I7	0.061	0.30	2630	3110
	650	12.5 × 35	I8	0.051	0.25	2970	3760
	750	12.5 × 40	I9	0.045	0.22	3260	4610
	1000	16 × 31.5	J7	0.049	0.20	3050	3860
	1300	16 × 35.5	J8	0.039	0.15	3420	4590
	1300	18 × 31.5	K7	0.041	0.15	3220	4080
	1500	16 × 40	J9	0.036	0.14	3670	5190
	1800	18 × 35.5	K8	0.032	0.12	3690	5220
	2000	18 × 40	K9	0.031	0.11	3820	5660
	2500	20 × 40	L9	0.026	0.10	4580	6480
	2500	22 × 40	N9	0.026	0.10	4830	6830
	290	12.5 × 25	I6	0.076	0.39	2050	2520
	420	12.5 × 30	I7	0.061	0.30	2630	3110
80	490	12.5 × 35	I8	0.051	0.25	2970	3760
	570	12.5 × 40	I9	0.045	0.22	3260	4610
	750	16 × 31.5	J7	0.049	0.20	3050	3860
	820	16 × 35.5	J8	0.039	0.15	3420	4590
	820	18 × 31.5	K7	0.041	0.15	3220	4080
	950	16 × 40	J9	0.036	0.14	3670	5190
	1200	18 × 35.5	K8	0.032	0.12	3690	5220
	1300	18 × 40	K9	0.031	0.11	3820	5660
	1500	20 × 40	L9	0.026	0.10	4580	6480
	1500	22 × 40	N9	0.026	0.10	4830	6830
	180	12.5 × 25	I6	0.099	0.55	1960	2140
	250	12.5 × 30	I7	0.076	0.41	2330	2950
	290	12.5 × 35	I8	0.065	0.35	2630	3530
	330	12.5 × 40	I9	0.055	0.29	2920	4140
100	420	16 × 31.5	J7	0.060	0.27	2720	3440
	510	18 × 31.5	K7	0.054	0.20	2920	3920
	510	16 × 35.5	J8	0.052	0.23	2960	4190
	570	16 × 40	J9	0.041	0.18	3380	5020
	680	18 × 35.5	K8	0.044	0.16	3330	4710
	820	18 × 40	K9	0.038	0.14	3560	5280
	950	20 × 40	L9	0.033	0.13	3820	5410
	1000	22 × 40	N9	0.033	0.13	4030	5700

150°C Use, Miniature, Low ESR, High Vibration Resistance Capacitors

- Vibration resistance (40G, 10 to 2000Hz, X,Y,Z = per 2hours).
- For Automotive application (ABS and electric power steering etc.)
- Guaranteed 2000 hours at 150°C
(63V, 80V : 1000 hours)

GREEN CAP
High Vibration Resistance
Low ESR
150°C 2000hours
Anti-cleaning solvent


High vibration resistance

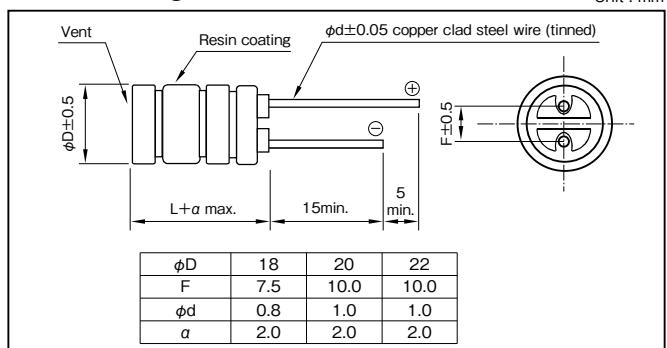
RKG

RQA

Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +150										
Tolerance at rated capacitance (%)	±20										
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V) (20°C)										
Tangent of loss angle (tanδ)	Rated voltage (V)	25	35	50	63	80					
	tanδ (max.)	0.14	0.12	0.10	0.10	0.08					
	0.02 is added to every 1000μF increase over 1000μF.										
Characteristics at high and low temperature	Rated voltage (V)	25	35	50	63	80					
	Impedance ratio (max.) Z-40°C/Z+20°C	3	3	3	3	3					
	(120Hz)										
Endurance (150°C or 125°C) (Applied ripple current)	Test time	2000 hours (63V, 80V : 1000 hours)									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Shelf life (150°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Vibration	Vibration test condition										
	Frequency range	10 to 2000Hz									
	Displacement amplitude	1.5 mm max.									
	Acceleration	40G (392m/s ²) max.									
	Sweep rate	0.5 octave/min.									
	Vibration axis and duration	X, Y, Z per 2 hours, total 6 hours									
	Fixation	Capacitor mounted by its body which is rigidly clamped to the work surface.									
	Specification after test										
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)										

Outline Drawing

Unit : mm

Coefficient of Frequency for Rated Ripple Current

Rated capacitance (μF)	Frequency (Hz)	120	1k	10k	100k
800 to 1000	0.75	0.90	1.00	1	
1100 to 4700	0.85	0.95	1.00	1	

Part numbering system (example : 35V2700μF)

Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Forming symbol		

Standard Ratings

Rated voltage (V)	25						35						50						ESR (Ω max. / 100kHz)						Rated ripple current (mA rms / 100kHz)		
	Item	Case	Casing symbol	ESR (Ω max. / 100kHz)			Rated ripple current (mA rms / 100kHz)			Case	Casing symbol	ESR (Ω max. / 100kHz)			Rated ripple current (mA rms / 100kHz)			Case	Casing symbol	ESR (Ω max. / 100kHz)			Rated ripple current (mA rms / 100kHz)				
				20°C	-40°C	150°C	125°C	20°C	-40°C			20°C	-40°C	150°C	125°C	20°C	-40°C	150°C	125°C	20°C	-40°C	150°C	125°C				
1800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 × 42	K9	0.034	0.12	2800	7000			
2400	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 × 42	L9	0.030	0.11	3200	9000			
2700	—	—	—	—	—	—	—	18 × 42	K9	0.020	0.11	3100	8000	—	—	—	—	—	22 × 42	N9	0.030	0.11	3400	9500			
3300	—	—	—	—	—	—	—	20 × 42	L9	0.018	0.10	3500	10000	—	—	—	—	—	22 × 42	N9	0.018	0.10	3700	10500			
3900	18 × 42	K9	0.020	0.11	3100	8000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
4700	20 × 42	L9	0.018	0.10	3500	10000	—	—	—	—	—	—	—	—	—	—	—	—	22 × 42	N9	0.018	0.10	3700	10500			

Rated voltage (V)	63						80						ESR (Ω max. / 100kHz)				
	Item	Case	Casing symbol	ESR (Ω max. / 100kHz)			Rated ripple current (mA rms / 100kHz)			Case	Casing symbol	ESR (Ω max. / 100kHz)			Rated ripple current (mA rms / 100kHz)		
				20°C	-40°C	150°C	125°C	20°C	-40°C			20°C	-40°C	150°C	125°C		
800	—	—	—	—	—	—	—	18 × 42	K9	0.034	0.12	2900	7300	—	—	—	—
1000	—	—	—	—	—	—	—	20 × 42	L9	0.029	0.11	3300	9300	—	—	—	—
1100	—	—	—	—	—	—	—	22 × 42	N9	0.029	0.11	3500	9800	—	—	—	—
1200	18 × 42	K9	0.034	0.12	2900	7300	—	—	—	—	—	—	—	—	—	—	—
1500	20 × 42	L9	0.029	0.11	3300	9300	—	—	—	—	—	—	—	—	—	—	—
1800	22 × 42	N9	0.029	0.11	3500	9800	—	—	—	—	—	—	—	—	—	—	—

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Aluminum Electrolytic Capacitors

Polymer hybrid type aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors With Conductive Polymer Solid Electrolyte

Chip Type Aluminum Electrolytic Capacitors

Miniature Type Aluminum Electrolytic Capacitors

Large Capacitance Aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors for Audio

ALUMINUM

POLYMER HYBRID

CHIP ALUMINUM

MINIATURE ALUMINUM

LARGE ALUMINUM

FOR AUDIO ALUMINUM

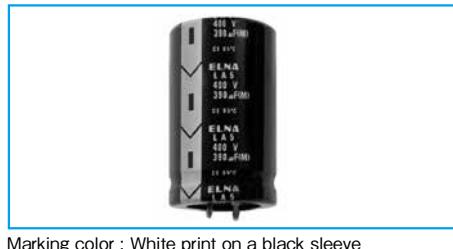
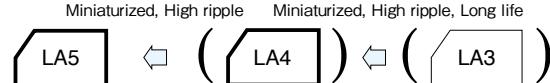
LA5 LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

ELNA®

PCB Snap-In Miniaturized Capacitors

GREEN CAP

- 20mm-tall products for every diameter of ϕ 22 to ϕ 35 are now offered in series.
- As many as 4 case sizes available for the same rating.

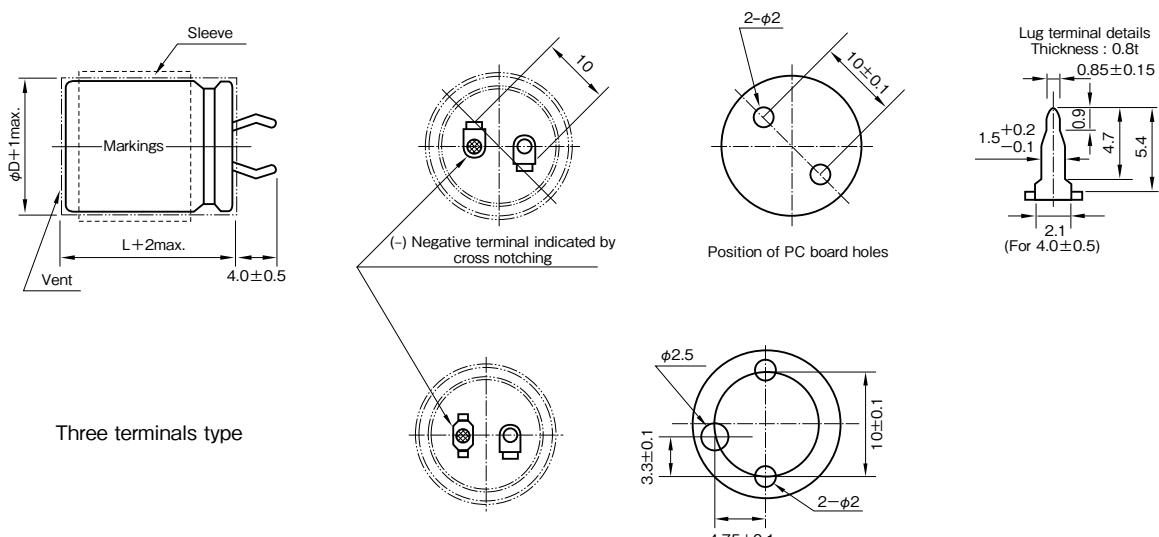


Specifications

Item	Performance						
Category temperature range (°C)	-40 to $+85$ (450V is at -25 to $+85$)						
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)						
Leakage current (μ A)	Less than $3\sqrt{CV}$ (after 5 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)						
	Rated voltage (V)	10	16	25	35	50	63 to 100
	$\tan\delta$ (max.)	0.80	0.60	0.50	0.40	0.30	0.20
Tangent of loss angle ($\tan\delta$)	tan δ (max.)	Rated voltage (V)		160 to 250	315 to 450	(20°C, 120Hz)	
	ϕD (mm)	22 to 30		0.10	0.15		
		35		0.15	0.15		
Characteristics at high and low temperature	Rated voltage (V)	10	16 to 35	50 to 100	160 to 200	250 to 400	450
	Impedance ratio (max.)	Z-25°C/Z+20°C	5	4	3	4	4
		Z-40°C/Z+20°C	18	15	10	6	8
		(120Hz)					
Endurance (85°C) (Applied ripple current)	Test time	2000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 20\%$ of initial value					
	Tangent of the loss angle	200% or less of the initial specified value					
Shelf life (85°C)	Test time	1000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within $\pm 15\%$ of initial value					
	Tangent of the loss angle	150% or less of the initial specified value					
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)						

Outline Drawing

Unit : mm



Part numbering system series LA5, standard terminal type : 400V330μF

LA5	400	V	331	M	S43	#	B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol		
series LT5, three terminals type : 400V330μF							
LT5	—	400	V	331	M	S43	#
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol		

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)\ Rated voltage (V)	50	120	1k	10k	20k
100 or less	0.95	1	1.10	1.15	1.15
160 to 250	0.81	1	1.32	1.45	1.50
315 or more	0.77	1	1.30	1.41	1.43

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Case φDXL (mm)	Item Casing Symbol	Rated voltage (V)		10			16			25			35			50			63			80			100			
		Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)
		(μF)	(Ω)	(Arms)																								
22×20	S21	8200	0.161	2.00	5600	0.177	1.90	3900	0.212	1.80	2700	0.245	1.60	1800	0.276	1.60	1500	0.221	1.70	1000	0.331	1.50	560	0.592	1.30			
		10000	0.132	2.21	6800	0.146	2.09	4700	0.176	1.98	3300	0.201	1.77	2200	0.226	1.77	1800	0.184	1.86	1200	0.276	1.64	680	0.487	1.43			
		12000	0.110	2.42	8200	0.121	2.20	5600	0.148	2.16	3900	0.170	1.92	2700	0.184	1.96	2200	0.150	2.06	—	—	—	820	0.404	1.57			
22×25	S22	12000	0.110	2.50	8200	0.121	2.40	5600	0.148	2.30	3900	0.170	2.10	2700	0.184	2.10	2200	0.150	2.20	1500	0.221	1.90	820	0.404	1.70			
		15000	0.088	2.80	10000	0.099	2.65	6800	0.121	2.53	4700	0.141	2.31	3300	0.150	2.32	2700	0.122	2.28	1800	0.184	2.08	1000	0.331	1.88			
		18000	0.073	3.29	15000	0.066	3.35	10000	0.082	3.09	5600	0.118	2.62	4700	0.105	2.85	3300	0.100	2.76	2200	0.150	2.43	1500	0.221	2.35			
22×30	S23	15000	0.088	3.00	12000	0.082	3.00	8200	0.101	2.80	4700	0.141	2.40	3900	0.127	2.60	2700	0.122	2.50	1800	0.184	2.20	1200	0.276	2.10			
		18000	0.073	3.29	15000	0.066	3.35	10000	0.082	3.09	5600	0.118	2.62	4700	0.105	2.85	3300	0.100	2.76	2200	0.150	2.43	1500	0.221	2.35			
		22000	0.060	3.63	18000	0.055	3.67	12000	0.069	3.39	6800	0.097	2.89	5600	0.088	3.12	3900	0.085	3.00	2700	0.122	2.69	—	—	—			
22×35	S24	22000	0.060	3.70	15000	0.066	3.40	10000	0.082	3.20	6800	0.097	2.90	4700	0.105	3.10	3300	0.100	2.90	2200	0.150	2.50	1500	0.221	2.50			
		27000	0.049	4.00	18000	0.055	3.72	12000	0.069	3.51	8200	0.080	3.18	5600	0.088	3.38	3900	0.085	3.15	2700	0.122	2.77	1800	0.184	2.74			
		33000	0.040	4.53	22000	0.045	4.12	15000	0.055	3.92	10000	0.066	3.52	6800	0.073	3.73	4700	0.070	3.46	3300	0.100	3.06	—	—	—			
22×40	S25	27000	0.049	4.10	22000	0.045	4.31	15000	0.055	4.14	8200	0.080	3.30	6800	0.073	3.75	4700	0.070	3.62	3300	0.100	3.10	1800	0.184	2.80			
		33000	0.040	4.54	27000	0.036	4.78	18000	0.046	4.53	10000	0.066	3.64	8200	0.060	4.11	5600	0.059	3.95	3900	0.085	3.37	2200	0.150	3.10			
		39000	0.034	4.93	—	—	—	—	—	—	12000	0.055	3.99	—	—	—	—	—	—	—	—	—	—	—	—	—		
22×45	S26	39000	0.034	5.17	27000	0.036	4.90	18000	0.046	4.62	12000	0.055	4.09	8200	0.060	4.21	5600	0.059	4.04	3900	0.085	3.48	2200	0.150	3.20			
		—	—	—	33000	0.030	5.41	22000	0.037	5.11	15000	0.044	4.58	10000	0.049	4.64	6800	0.048	4.45	4700	0.070	3.82	2700	0.122	3.55			
		47000	0.028	5.85	33000	0.030	5.51	22000	0.037	5.21	15000	0.044	4.78	10000	0.049	4.73	6800	0.048	4.52	4700	0.070	3.95	2700	0.122	3.70			
22×50	S27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8200	0.040	4.96	—	—	—	3300	0.100	4.09	
		12000	0.110	2.50	8200	0.121	2.30	5600	0.148	2.20	3900	0.170	2.00	2700	0.184	2.10	1800	0.184	2.00	1200	0.276	1.70	820	0.404	1.70			
		15000	0.088	2.80	10000	0.099	2.54	6800	0.121	2.42	4700	0.141	2.20	3300	0.150	2.32	2200	0.150	2.21	1500	0.221	1.90	1000	0.331	1.88			
25×20	S31	15000	0.088	2.80	12000	0.082	2.78	8200	0.101	2.66	5600	0.118	2.40	3900	0.127	2.52	2700	0.122	2.28	1800	0.184	2.08	1200	0.276	2.06			
		18000	0.073	3.20	12000	0.082	2.90	8200	0.101	2.80	5600	0.118	2.60	3900	0.127	2.60	2700	0.122	2.30	1800	0.184	2.20	1200	0.276	2.10			
		22000	0.060	3.54	15000	0.066	3.24	10000	0.082	3.09	6800	0.097	2.87	4700	0.105	2.85	3300	0.100	2.54	2200	0.150	2.43	1500	0.221	2.35			
25×25	S32	22000	0.049	3.92	18000	0.055	3.55	12000	0.069	3.39	8200	0.080	3.15	5600	0.088	3.12	3900	0.085	2.76	2700	0.122	2.69	—	—	—			
		22000	0.060	3.70	15000	0.066	3.40	10000	0.082	3.20	6800	0.097	2.90	4700	0.105	3.00	3900	0.085	3.20	2200	0.150	2.50	1500	0.221	2.50			
		27000	0.049	4.10	18000	0.055	3.72	12000	0.069	3.51	8200	0.080	3.18	5600	0.088	3.27	4700	0.105	3.51	2700	0.122	2.77	1800	0.184	2.74			
25×30	S33	27000	0.049	4.10	22000	0.045	4.31	15000	0.055	4.14	10000	0.066	3.64	6800	0.073	3.75	4700	0.105	3.60	3300	0.100	3.10	1800	0.184	2.80			
		33000	0.040	4.53	22000	0.045	4.31	15000	0.055	4.14	10000	0.066	3.64	6800	0.073	3.75	4700	0.105	3.60	3300	0.100	3.06	2200	0.150	3.03			
		33000	0.040	4.64	22000	0.045	4.31	15000	0.055	4.14	10000	0.066	3.64	6800	0.073	3.75	4700	0.105	3.60	3300	0.100	3.10	1800	0.184	2.80			
25×35	S34	33000	0.040	5.05	27000	0.036	4.78	18000	0.046	4.53	12000	0.055	3.99	8200	0.060	4.11	12000	0.041	5.37	10000	0.033	5.82	5600	0.059	4.37	3900	0.085	4.46
		39000	0.034	5.05	27000	0.036	4.78	18000	0.046	4.53	12000	0.055	3.99	8200	0.060	4.11	6800	0.048	4.33	—	—	—	2700	0.122	3.43			
		47000	0.028	5.73	33000	0.030	5.39	22000	0.037	5.09	15000	0.044	4.65	10000	0.049	4.61	8200	0.040	4.84	4700	0.070	3.84	3300	0.100	3.92			
25×40	S35	47000	0.028	5.93	27000	0.036	5.00	22000	0.037	5.20	15000	0.044	4.81	10000	0.049	4.75	8200	0.040	5.05	4700	0.070	4.19	3300	0.100	3.98			
		56000	0.023	6.47	33000	0.030	5.53	27000	0.030	5.76	18000	0.036	5.27	12000	0.041	5.20	10000	0.033	5.58	5600	0.059	4.30	3900	0.085	4.33			
		56000	0.023	6.66	39000	0.025	6.31	27000	0.030	6.09	18000	0.036	5.48	12000	0.041	5.48	10000	0.033	5.74	5600	0.059	4.50	3900	0.085	4.57			
30×20	S41	56000	0.023	6.66	39000	0.025																						

LA5 LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

ELNA®

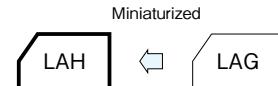
Standard Ratings

Case d×D×L (mm) Item Casing Symbol	Rated voltage (V)			160			180			200			250			315			350			400			
				Rated capacitance (μF)	ESR (Ω)	Rated ripple current (Arms)																			
				(μF)	(Ω)	(Arms)																			
22×20	S21	270	0.614	1.49	220	0.753	1.34	220	0.753	1.34	150	1.105	1.10	100	2.488	0.90	82	3.034	0.81	82	3.034	0.90	68	3.658	0.82
		330	0.502	1.65	270	0.614	1.49	270	0.614	1.44	180	0.921	1.17	120	2.073	0.99	100	2.488	0.90	100	2.488	0.97	82	3.034	0.89
		390	0.425	1.72	330	0.502	1.57	330	0.502	1.60	220	0.753	1.30	150	1.658	1.08	120	2.073	0.97	120	2.073	1.07	100	2.488	0.97
22×25	S22	390	0.425	1.93	330	0.502	1.77	330	0.502	1.77	220	0.753	1.44	150	1.658	1.20	120	2.073	1.07	100	2.488	1.07	82	3.034	0.97
		470	0.352	2.12	390	0.425	1.92	390	0.425	1.92	270	0.614	1.60	180	1.382	1.31	150	1.658	1.20	120	2.073	1.17	100	2.488	1.07
		560	0.296	2.31	470	0.352	2.11	470	0.352	2.11	330	0.502	1.77	220	1.130	1.45	180	1.382	1.31	150	1.658	1.31	120	2.073	1.17
22×30	S23	560	0.296	2.43	470	0.352	2.23	470	0.352	2.23	330	0.502	1.87	180	1.382	1.38	150	1.658	1.26	150	1.658	1.39	120	2.073	1.23
		680	0.243	2.68	560	0.296	2.43	560	0.296	2.43	390	0.425	2.03	220	1.130	1.53	180	1.382	1.37	180	1.382	1.52	150	1.658	1.38
		820	0.202	2.94	680	0.243	2.68	680	0.243	2.68	470	0.352	2.23	270	0.921	1.69	220	1.130	1.68	180	1.382	1.52	120	2.073	1.23
22×35	S24	680	0.243	2.70	560	0.296	2.45	560	0.296	2.44	390	0.425	2.04	270	0.921	1.70	220	1.130	1.53	180	1.382	1.53	150	1.658	1.42
		820	0.202	2.96	680	0.243	2.70	680	0.243	2.69	470	0.352	2.24	330	0.753	1.88	270	0.921	1.70	220	1.130	1.69	180	1.382	1.56
		1000	0.165	3.27	820	0.202	2.96	820	0.202	2.96	560	0.296	2.44	390	0.637	2.04	—	—	—	270	0.921	1.87	220	1.130	1.72
22×40	S25	1000	0.165	3.43	820	0.202	3.11	820	0.202	3.11	560	0.296	2.57	330	0.753	1.97	270	0.921	1.78	270	0.921	1.96	220	1.130	1.77
		1200	0.138	3.76	—	—	—	1000	0.165	3.43	680	0.243	2.83	390	0.637	2.14	330	0.753	1.97	330	0.753	2.17	270	0.921	1.96
		—	—	—	—	—	—	—	—	—	—	—	—	470	0.529	2.35	—	—	—	—	—	—	—	—	—
22×45	S26	1200	0.138	3.96	1000	0.165	3.61	1000	0.165	3.61	680	0.243	2.98	470	0.529	2.48	390	0.637	2.26	270	0.921	2.06	270	0.921	2.07
		—	—	—	1200	0.138	3.96	—	—	—	820	0.202	3.27	560	0.444	2.70	—	—	—	330	0.753	2.28	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	390	0.637	2.48	—	—	—	
22×50	S27	1500	0.110	4.60	1200	0.138	4.11	1200	0.138	4.11	820	0.202	3.40	560	0.444	2.81	330	0.753	2.15	390	0.637	2.58	330	0.753	2.37
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
		—	—	—	—	—	—	—	—	—	—	—	—	470	0.529	2.57	—	—	—	—	—	—	—	—	—
25×20	S31	390	0.425	1.76	330	0.502	1.62	270	0.614	1.47	180	0.921	1.20	150	1.658	1.10	120	2.073	0.98	100	2.488	0.99	82	3.034	0.90
		470	0.352	1.93	390	0.425	1.76	330	0.502	1.62	220	0.753	1.33	180	1.382	1.20	150	1.658	1.09	120	2.073	1.08	100	2.488	0.97
		560	0.296	2.05	470	0.352	1.93	390	0.425	1.76	270	0.614	1.47	220	1.130	1.32	180	1.382	1.17	150	1.658	1.20	120	2.073	1.07
25×25	S32	560	0.296	2.43	470	0.352	2.23	390	0.425	2.03	330	0.502	1.87	180	1.382	1.38	180	1.382	1.38	150	1.658	1.39	120	2.073	1.24
		680	0.243	2.68	560	0.296	2.43	470	0.352	2.23	390	0.425	2.03	220	1.130	1.53	220	1.130	1.53	180	1.382	1.52	150	1.658	1.39
		820	0.202	2.95	680	0.243	2.68	560	0.296	2.43	470	0.352	2.23	270	0.921	1.69	220	1.130	1.68	180	1.382	1.52	120	2.073	1.24
25×30	S33	680	0.243	2.70	560	0.296	2.45	560	0.296	2.45	390	0.425	2.04	270	0.921	1.70	220	1.130	1.54	180	1.382	1.53	150	1.658	1.40
		820	0.202	2.96	680	0.243	2.70	680	0.243	2.70	470	0.352	2.24	330	0.753	1.88	270	0.921	1.70	220	1.130	1.69	180	1.382	1.53
		1000	0.165	3.27	820	0.202	2.96	820	0.202	2.96	560	0.296	2.44	390	0.637	2.04	330	0.753	1.88	270	0.921	1.87	220	1.130	1.69
25×35	S34	1000	0.165	3.47	820	0.202	3.14	680	0.243	2.86	560	0.296	2.60	330	0.753	1.96	330	0.753	2.00	270	0.921	1.98	220	1.130	1.79
		1200	0.138	3.80	1000	0.165	3.47	820	0.202	3.14	680	0.243	2.86	390	0.637	2.14	390	0.637	2.17	330	0.753	2.19	270	0.921	1.98
		—	—	—	—	—	—	1000	0.165	3.47	—	—	470	0.529	2.34	—	—	—	—	—	—	—	—	—	
25×40	S35	1500	0.110	4.41	1000	0.165	3.60	1000	0.165	3.60	680	0.243	2.97	470	0.529	2.46	390	0.637	2.25	330	0.753	2.27	270	0.921	2.05
		—	—	—	1200	0.138	3.94	1200	0.138	3.94	820	0.202	3.26	560	0.444	2.69	470	0.529	2.47	390	0.637	2.27	330	0.753	2.27
		1200	0.138	4.13	1200	0.138	4.13	1200	0.138	4.13	820	0.202	3.42	680	0.365	3.11	470	0.529	2.58	390	0.637	2.59	330	0.753	2.38
25×45	S36	1800	0.092	5.06	1500	0.110	4.62	1500	0.110	4.62	1000	0.165	3.77	—	—	—	560	0.444	2.82	470	0.529	2.84	390	0.637	2.59
		1500	0.110	4.80	1500	0.110	4.80	1500	0.110	4.80	1000	0.165	3.92	680	0.444	2.93	470	0.529	2.96	390	0.637	2.69	330	0.753	2.69
		1800	0.092	5.26	—	—	—	—	—	—	1200	0.138	4.29	680	0.365	3.23	680	0.365	3.23	560	0.444	3.23	—	—	—
30×20	S41	560	0.296	2.11	470	0.352	1.94	470	0.352	1.94	330	0.502	1.63	220	1										

Miniaturized, High-Reliability, High-Ripple Capacitors

GREEN CAP 105°C
2000hours

- High-reliability, high-ripple capacitors.
- Guarantees 2000 hours at 105°C.



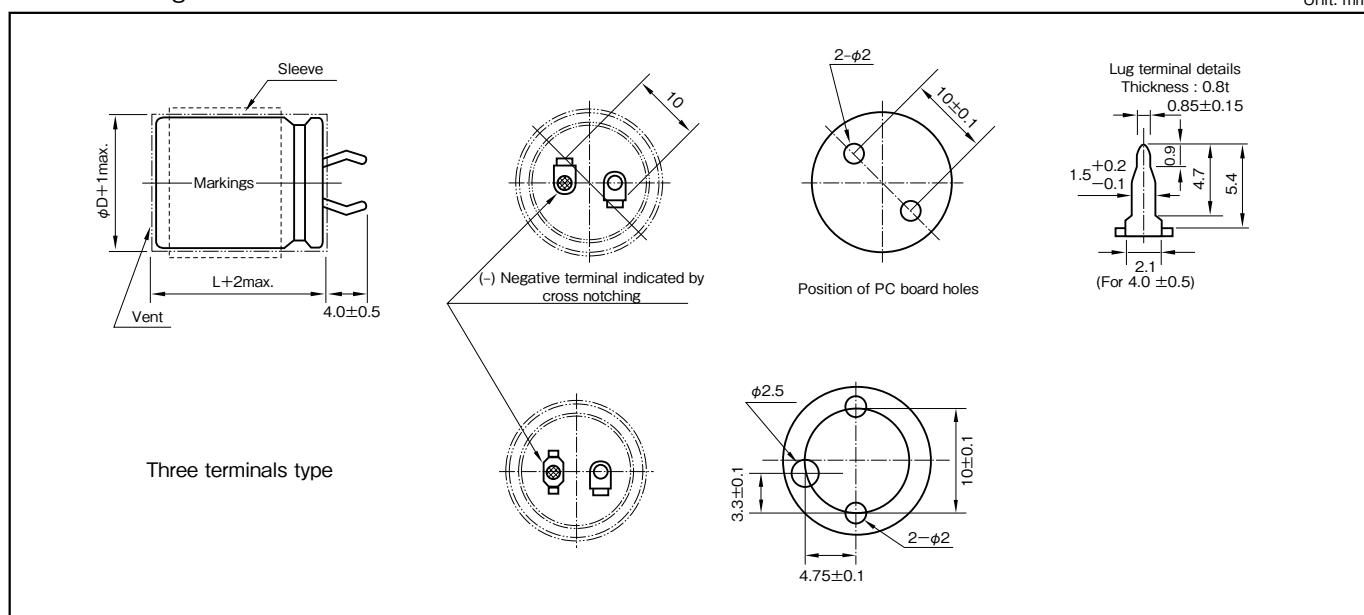
Marking color : White print on a black sleeve

Specifications

Item	Performance								
Category temperature range (°C)	-40 to +105 (-25 to +105 at 160V or more)								
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)								
Leakage current (µA)	Less than $3/\sqrt{CV}$ (after 5 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V) (20°C)								
Tangent of loss angle (tanδ)	Rated voltage (V)	16	25	35	50	63 to 100	160 to 250 400 to 450		
	tanδ (max.)	0.50	0.40	0.35	0.30	0.20	0.15 0.20		
Characteristics at high and low temperature	Rated voltage (V)	16 to 100		160 to 200		250 to 400			
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	4	4	(120Hz)			
		Z-40°C/Z+20°C	15	—	—				
Endurance (105°C) (Applied ripple current)	Test time	2000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within $\pm 20\%$ of initial value							
	Tangent of the loss angle	200% or less of the initial specified value							
Shelf life (105°C)	Test time	1000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within $\pm 15\%$ of initial value							
	Tangent of the loss angle	150% or less of the initial specified value							
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)								

Outline Drawing

Unit: mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz) Rated voltage (V)	50	120	1k	10k	30k
100 or less	0.95	1	1.10	1.15	1.15
160 to 250	0.81	1	1.32	1.45	1.50
315 or more	0.77	1	1.30	1.41	1.43

Part numbering system					
series LAH, standard terminal type :400V330µF					
LAH	—	400	V	331	M S54 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol
series LTH, three terminals type :400V330µF					
LTH	—	400	V	331	M S54 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol

• The standard ratings are described on next page.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Case ϕDXL (mm)	Item Casing Symbol	Rated voltage (V)		16		25		35		50		63		80		100	
		Rated capacitance (μF)	Rated ripple current (Arms)														
22×20	S21	4700	1.23	3300	1.21	2200	1.08	1200	0.99	820	0.96	560	0.85	390	0.83		
		5600	1.35	3900	1.31	2700	1.20	1500	1.11	1000	1.06	680	0.94	470	0.91		
		6800	1.48	4700	1.44	3300	1.33	1800	1.22	1200	1.14	820	1.03	560	0.99		
22×25	S22	6800	1.60	4700	1.55	3300	1.43	1800	1.31	1200	1.25	820	1.11	560	1.07		
		8200	1.76	5600	1.69	3900	1.55	2200	1.45	1500	1.40	1000	1.23	680	1.18		
		10000	1.94	6800	1.86	4700	1.71	2700	1.60	1800	1.50	1200	1.34	820	1.29		
22×30	S23	10000	1.99	6800	1.91	3900	1.65	2700	1.70	1800	1.60	1200	1.39	820	1.35		
		12000	2.18	8200	2.10	4700	1.81	3300	1.88	2200	1.68	1500	1.55	1000	1.49		
		15000	2.44	10000	2.32	5600	1.98	3900	2.04	2700	1.86	1800	1.70	1200	1.63		
22×35	S24	12000	2.28	8200	2.14	5600	2.02	3300	1.98	2200	1.73	1500	1.61	1000	1.54		
		15000	2.55	10000	2.36	6800	2.23	3900	2.15	2700	1.92	1800	1.76	1200	1.69		
		18000	2.79	12000	2.59	8200	2.44	4700	2.36	3300	2.12	2200	1.95	1500	1.89		
22×40	S25	18000	2.89	12000	2.63	6800	2.28	4700	2.47	3300	2.18	2200	2.02	1500	1.95		
		22000	3.20	15000	2.94	8200	2.50	5600	2.70	3900	2.37	2700	2.24	1800	2.13		
		—	—	—	—	10000	2.76	—	—	—	—	—	—	—	—	—	—
22×45	S26	22000	3.29	15000	3.01	10000	2.83	5600	2.79	3900	2.42	2700	2.32	1800	2.18		
		27000	3.65	18000	3.29	12000	3.09	6800	3.08	4700	2.65	3300	2.56	2200	2.41		
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22×50	S27	27000	3.81	18000	3.44	12000	3.23	6800	3.18	4700	2.77	3300	2.67	2200	2.52		
		33000	4.15	22000	3.80	—	—	8200	3.50	—	—	3900	2.90	2700	2.79		
		6800	1.53	4700	1.48	3300	1.39	1800	1.29	1200	1.16	820	1.07	560	1.04		
25×20	S31	8200	1.68	5600	1.61	3900	1.51	2200	1.43	1500	1.29	1000	1.18	680	1.14		
		10000	1.85	6800	1.78	4700	1.66	2700	1.58	1800	1.42	1200	1.29	820	1.26		
		10000	1.99	6800	1.91	4700	1.78	2700	1.70	1800	1.52	1200	1.39	820	1.35		
25×25	S32	12000	2.18	8200	2.10	5600	1.94	3300	1.88	2200	1.68	1500	1.55	1000	1.49		
		15000	2.44	10000	2.32	6800	2.14	3900	2.04	2700	1.86	1800	1.70	1200	1.63		
		12000	2.30	8200	2.16	5600	2.04	3300	2.00	2200	1.75	1500	1.62	1000	1.56		
25×30	S33	15000	2.57	10000	2.39	6800	2.25	3900	2.17	2700	1.94	1800	1.77	1200	1.71		
		18000	2.82	12000	2.61	8200	2.47	4700	2.39	3300	2.14	2200	1.96	1500	1.91		
		18000	2.94	12000	2.67	8200	2.54	4700	2.50	3300	2.20	2200	2.01	1500	1.97		
25×35	S34	22000	3.25	15000	2.99	10000	2.80	5600	2.73	3900	2.39	2700	2.23	1800	2.16		
		—	—	—	—	—	—	—	—	—	—	3300	2.46	—	—	—	—
		22000	3.36	15000	3.06	10000	2.87	5600	2.81	3900	2.47	2700	2.32	1800	2.22		
25×40	S35	27000	3.72	18000	3.36	12000	3.15	6800	3.10	4700	2.71	3300	2.57	2200	2.46		
		—	—	—	—	—	—	8200	3.40	—	—	3900	2.79	—	—	—	—
		27000	3.77	18000	3.45	12000	3.20	6800	3.24	4700	2.79	3900	2.92	2200	2.52		
25×45	S36	33000	4.16	22000	3.81	15000	3.58	8200	3.56	5600	3.04	—	—	2700	2.79		
		—	—	—	—	—	—	10000	3.93	—	—	—	—	—	—	—	—
		33000	4.21	22000	3.91	15000	3.64	10000	4.09	5600	3.14	3900	3.00	2700	2.85		
25×50	S37	39000	4.58	27000	4.34	18000	3.99	—	—	6800	3.46	4700	3.29	3300	3.15		
		8200	1.84	5600	1.74	3900	1.65	2700	1.73	1800	1.47	1200	1.38	820	1.32		
		10000	2.03	6800	1.92	4700	1.82	3300	1.91	2200	1.63	1500	1.55	1000	1.46		
30×25	S42	12000	2.23	8200	2.10	5600	1.98	3900	2.08	2700	1.81	1800	1.69	1200	1.60		
		15000	2.66	10000	2.48	6800	2.34	4700	2.44	3300	2.13	2200	2.00	1500	1.91		
		18000	2.91	12000	2.65	8200	2.50	5600	2.66	3900	2.32	2700	2.22	1800	2.09		
30×30	S43	18000	3.00	12000	2.70	8200	2.56	4700	2.58	3300	2.24	2200	2.10	1500	2.00		
		22000	3.32	15000	3.02	10000	2.83	5600	2.82	3900	2.44	2700	2.33	1800	2.19		
		27000	3.67	18000	3.31	12000	3.10	6800	3.10	4700	2.67	3300	2.57	2200	2.42		
30×35	S44	22000	3.39	15000	3.13	10000	2.92	6800	3.25	4700	2.80	3300	2.69	2200	2.51		
		27000	3.76	18000	3.43	12000	3.20	8200	3.57	5600	3.06	3900	2.92	2700	2.78		
		33000	4.15	22000	3.79	15000	3.58	—	—	—	—	—	—	—	—	—	—
30×40	S45	33000	4.23	22000	3.91	15000	3.67	8200	3.72	5600	3.17	3900	3.02	2700	2.87		
		39000	4.60	27000	4.34	18000	4.02	10000	4.11	6800	3.49	4700	3.32	3300	3.17		
		39000	4.67	27000	4.70	18000	4.10	10000	4.30	6800	3.61	4700	3.43	3300	3.25		
30×45	S46	47000	5.13	33000	5.19	22000	4.53	12000	4.50	8200	3.97	5600	3.74	3900	3.53		
		47000	5.20	33000	5.40	22000	4.71	12000	4.68	8200	4.10	5600	3.89	3900	3.61		
		56000	5.68	39000	5.88	27000	5.22	15000	5.23	10000	4.52	6800	4.28	4700	3.96		
35×20	S51	12000	2.38	8200	2.17	5600	2.16	3300	2.10	2200	1.85	1500	1.68	1000	1.59		
		15000	2.66	10000	2.40	6800	2.38	3900	2.28	2700	2.05	1800	1.84	1200	1.74		
		18000	2.91	12000	2.63	8200	2.61	4700	2.51	3300	2.26	2200	2.04	1500	1.94		
35×25	S52	18000	3.10	12000	2.80	8200	2.78	4700	2.67	3300	2.41	2200	2.17	1500	2.07		
		22000	3.43	15000	3.13	10000	3.07	5600	2.91	3900	2.62	2700					

Standard Ratings

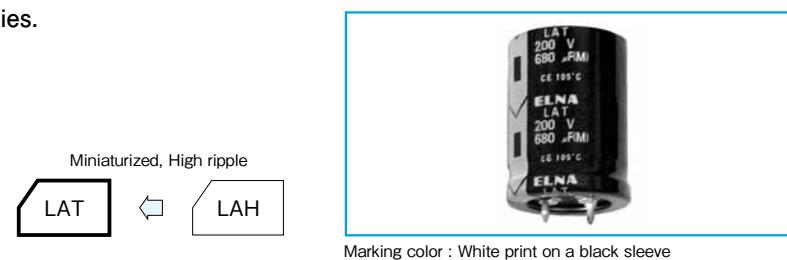
Case φDXL (mm)	Item Casing Symbol	Rated voltage (V)		160		180		200		250		400		450	
		Rated capacitance (μF)	Rated ripple current (Arms)												
22×25	S22	330	1.16	270	1.08	220	1.08	180	0.94	68	0.47	56	0.47		
22×30	S23	390	1.43	330	1.30	330	1.30	220	1.10	82	0.56	68	0.56		
22×35	S24	470	1.52	470	1.50	390	1.41	270	1.13	120	0.64	82	0.64		
22×40	S25	560	1.62	560	1.62	470	1.50	330	1.20	150	0.70	100	0.70		
22×45	S26	680	1.70	—	—	560	1.58	390	1.26	—	—	120	0.73		
22×50	S27	820	1.81	680	1.76	680	1.68	470	1.37	180	0.78	150	0.78		
25×25	S32	470	1.55	390	1.35	330	1.35	220	1.15	82	0.65	68	0.65		
25×30	S33	560	1.73	470	1.62	470	1.47	330	1.30	120	0.70	100	0.70		
25×35	S34	680	1.81	560	1.69	560	1.65	390	1.41	150	0.73	120	0.73		
25×40	S35	820	1.98	680	1.72	680	1.80	470	1.52	180	0.82	150	0.82		
25×45	S36	1000	2.04	820	1.78	—	—	560	1.59	220	0.87	180	0.87		
25×50	S37	1200	2.12	1000	1.91	820	1.87	680	1.66	270	0.94	220	0.94		
30×25	S42	680	1.82	560	1.67	470	1.56	330	1.30	120	0.78	100	0.78		
30×30	S43	820	1.98	680	1.74	680	1.82	470	1.36	180	0.83	150	0.83		
30×35	S44	1000	2.14	820	1.85	820	1.99	560	1.57	220	0.86	180	0.86		
30×40	S45	1200	2.22	1000	2.01	—	—	680	1.76	270	0.95	220	0.95		
30×45	S46	1500	2.46	1200	2.19	1000	2.17	820	1.83	330	1.11	270	1.11		
30×50	S47	—	—	1500	2.36	1200	2.22	1000	1.87	390	1.15	330	1.15		
35×25	S52	820	1.93	680	1.92	680	1.96	470	1.40	180	0.86	150	0.86		
35×30	S53	1200	2.40	1000	2.16	820	2.07	560	1.56	270	0.91	220	0.91		
35×35	S54	1500	2.53	1200	2.34	1000	2.22	820	1.82	330	1.13	270	1.13		
35×40	S55	—	—	1500	2.56	1200	2.42	1000	1.99	390	1.26	330	1.26		
35×45	S56	1800	2.98	1800	2.67	1500	2.59	1200	2.10	470	1.31	390	1.31		
35×50	S57	2200	3.10	—	—	1800	2.70	—	—	560	1.50	470	1.50		

(Note) Rated ripple current : 105°C, 120Hz

Ultra Miniaturized, High-Reliability, High-Ripple Capacitors

GREEN CAP
105°C
2000hours

- Best suited as input filters for various power supplies.
- Guarantees 2000 hours at 105°C.

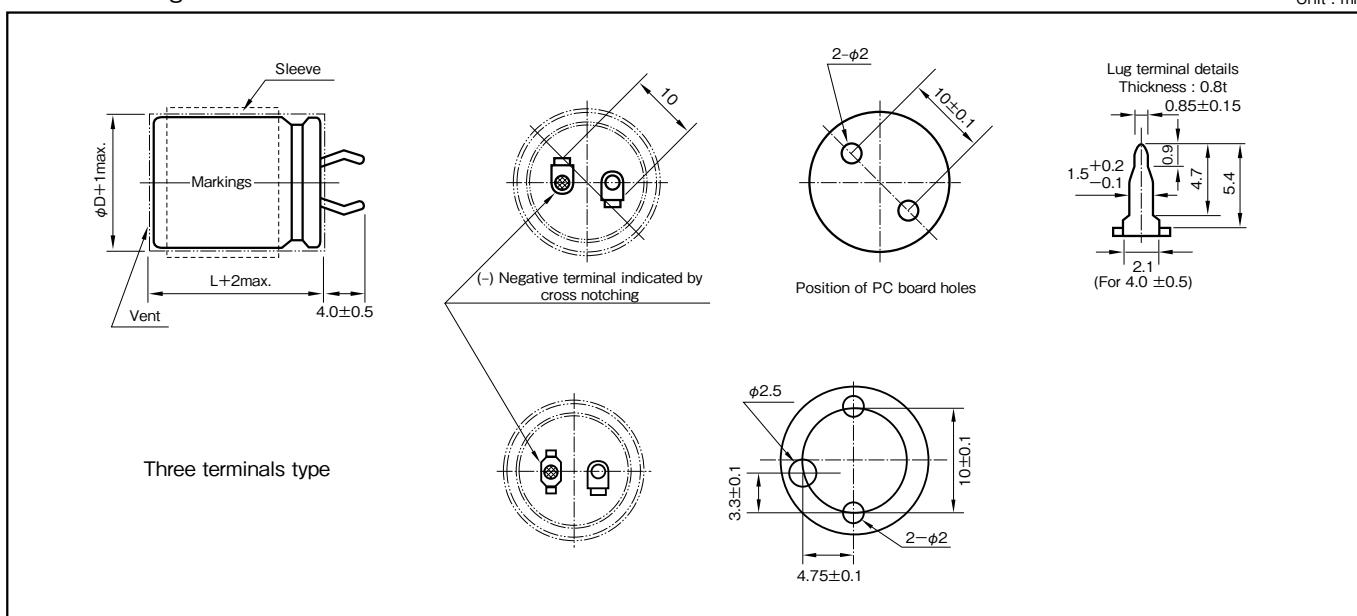


Specifications

Item	Performance		
Category temperature range (°C)	-25 to +105		
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)		
Leakage current (μA)	Less than $3/\sqrt{\text{CV}}$ (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)		
Tangent of loss angle ($\tan\delta$)	Rated voltage (V) $\tan\delta$ (max.)	160 to 250 0.15	350 to 500 0.20
Characteristics at high and low temperature	Percentage of capacitance change (%) Impedance ratio (max.)	-25°C Z-25°C/Z+20°C	Within $\pm 30\%$ of the value at 20°C 4 (120Hz)
Endurance (105°C) (Applied ripple current)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	2000 hours The initial specified value or less Within $\pm 20\%$ of initial value 200% or less of the initial specified value	
Shelf life (105°C)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	1000 hours The initial specified value or less Within $\pm 15\%$ of initial value 150% or less of the initial specified value	
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)		

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k	30k
Rated voltage (V)					
160 to 250	0.81	1	1.32	1.45	1.50
315 or more	0.77	1	1.30	1.41	1.43

Part numbering system					
series LAT, standard terminal type :400V220μF					
LAT	—	400	V	221	M S52 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol
series LTT, three terminals type :400V220μF					
LTT	—	400	V	221	M S52 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol

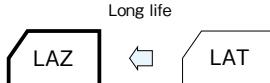
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Case φDXL (mm)	Item Casing Symbol	160		180		200		250		350		400		450		500	
		Rated capacitance (μF)	Rated ripple current (Arms)														
22×20	S21	270	1.00	220	0.91	180	0.82	150	0.75	82	0.55	68	0.58	56	0.53	39	0.44
		330	1.10	270	1.00	220	0.91	180	0.82	100	0.61	82	0.64	68	0.58	47	0.48
		390	1.20	330	1.11	270	1.00	220	0.91	120	0.67	100	0.70	82	0.64	56	0.53
22×25	S22	390	1.35	330	1.25	330	1.29	220	1.11	100	0.69	82	0.71	68	0.65	56	0.59
		470	1.48	390	1.35	390	1.35	270	1.13	120	0.75	100	0.79	82	0.71	68	0.65
		560	1.61	470	1.49	470	1.49	—	—	150	0.84	120	0.81	120	0.86	82	0.71
22×30	S23	470	1.56	470	1.55	390	1.57	270	1.33	150	0.88	120	0.90	100	0.82	68	0.68
		560	1.68	560	1.69	470	1.67	330	1.47	180	0.96	150	1.00	150	1.01	82	0.74
		680	1.85	680	1.86	560	1.69	390	1.49	220	1.06	180	1.10	—	—	100	0.82
22×35	S24	680	1.93	560	1.73	560	1.73	330	1.50	180	0.98	150	1.03	120	0.92	100	0.84
		820	2.08	680	1.90	680	1.90	390	1.52	220	1.08	180	1.13	180	1.13	120	0.92
		—	—	820	2.09	—	—	470	1.58	270	1.20	220	1.25	—	—	—	—
22×40	S25	820	2.17	820	2.17	680	1.97	470	1.64	270	1.24	220	1.29	150	1.07	120	0.95
		1000	2.38	1000	2.39	820	2.17	560	1.79	330	1.37	270	1.43	220	1.29	150	1.07
22×45	S26	1000	2.42	1000	2.44	820	2.21	560	1.82	270	1.27	220	1.32	180	1.19	150	1.09
		1200	2.66	1200	2.67	1000	2.44	680	2.01	330	1.40	270	1.46	270	1.46	180	1.19
		—	—	—	—	—	—	—	—	390	1.52	330	1.61	—	—	—	—
22×50	S27	1200	2.84	1200	2.74	1200	2.74	680	2.06	390	1.56	270	1.50	220	1.35	180	1.22
		1500	3.05	—	—	—	—	820	2.27	—	—	—	—	—	—	220	1.35
		330	1.25	270	1.14	270	1.14	180	1.01	100	0.69	82	0.72	68	0.66	47	0.55
25×20	S31	390	1.36	330	1.26	330	1.26	220	1.10	120	0.76	100	0.80	82	0.72	56	0.60
		470	1.49	470	1.48	390	1.35	270	1.12	150	0.83	120	0.84	100	0.79	68	0.65
		470	1.59	470	1.56	390	1.52	270	1.33	150	0.88	120	0.86	100	0.84	68	0.68
25×25	S32	560	1.74	560	1.70	470	1.65	330	1.44	180	0.97	150	0.98	120	0.91	82	0.75
		680	1.83	680	1.84	560	1.68	390	1.46	220	1.04	180	1.08	150	0.98	100	0.81
		680	1.91	560	1.74	560	1.70	390	1.55	180	0.99	150	1.01	120	0.93	82	0.77
25×30	S33	820	2.09	680	1.91	680	1.87	470	1.61	220	1.09	180	1.11	150	1.03	100	0.85
		1000	2.35	820	2.10	—	—	—	—	270	1.18	220	1.23	180	1.13	120	0.93
		820	2.17	820	2.14	680	1.95	470	1.68	270	1.23	220	1.28	180	1.16	120	0.95
25×35	S34	1000	2.40	1000	2.37	820	2.14	560	1.77	330	1.36	270	1.42	220	1.28	150	1.05
		1200	2.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		1200	2.84	1000	2.43	820	2.20	560	1.82	330	1.40	270	1.45	220	1.31	150	1.08
25×40	S35	—	—	1200	2.67	1000	2.43	680	2.01	390	1.52	330	1.61	270	1.45	180	1.19
		1500	3.25	1200	2.73	1000	2.49	680	2.06	390	1.56	330	1.65	220	1.37	180	1.22
25×45	S36	—	—	1500	3.06	1200	2.73	820	2.26	470	1.71	390	1.79	270	1.49	220	1.35
		—	—	—	—	—	—	—	—	—	—	—	—	330	1.65	—	—
		1500	3.38	1500	3.26	1200	2.92	820	2.42	470	1.83	390	1.91	270	1.59	220	1.44
25×50	S37	1800	3.70	—	—	1500	3.26	1000	2.66	560	1.99	470	2.10	—	—	270	1.59
		470	1.50	470	1.50	390	1.37	270	1.14	150	0.85	120	0.87	100	0.80	68	0.66
		560	1.63	560	1.64	470	1.50	330	1.26	180	0.93	150	0.98	120	0.87	82	0.72
30×25	S42	680	1.80	680	1.81	560	1.64	390	1.37	220	1.03	180	1.07	150	0.98	100	0.80
		820	2.03	820	2.04	680	1.92	470	1.61	270	1.17	220	1.18	180	1.10	120	0.90
		1000	2.24	1000	2.25	820	2.04	560	1.69	330	1.29	270	1.35	220	1.22	150	1.00
30×30	S43	1000	2.60	820	2.17	820	2.17	560	1.80	270	1.24	220	1.27	180	1.15	120	0.95
		1200	2.84	1000	2.39	1000	2.39	680	1.98	330	1.37	270	1.43	220	1.27	150	1.07
		1500	2.91	1200	2.62	—	—	—	—	390	1.49	330	1.50	270	1.43	180	1.14
30×35	S44	1200	2.96	1200	2.66	1000	2.43	680	2.04	390	1.52	330	1.61	270	1.45	180	1.19
		1500	3.10	1500	2.98	1200	2.66	820	2.24	470	1.67	390	1.68	330	1.61	220	1.31
		1800	3.40	—	—	—	—	1000	2.43	—	—	—	—	—	—	—	—
30×40	S45	1800	3.52	1500	3.01	1200	2.69	1000	2.60	470	1.69	390	1.77	330	1.62	220	1.33
		2200	3.89	1800	3.30	1500	3.01	1200	2.61	560	1.84	470	1.94	390	1.77	270	1.47
30×45	S46	2200	4.32	1800	3.42	1500	3.12	1200	2.90	560	1.91	470	2.01	330	1.68	270	1.52
		—	—	—	—	—	—	—	—	—	—	—	—	470	2.01	—	—
		2700	4.59	2200	3.91	1800	3.54	1200	3.00	680	2.18	560	2.27	390	2.07	330	1.74
30×50	S47	680	2.01	560	1.66	560	1.82	390	1.41	180	0.94	150	0.99	120	0.89	100	0.81
		820	2.20	680	1.83	680	1.96	470	1.55	220	1.04	180	1.08	150	0.99	120	0.89
		1000	2.21	820	2.01	820	2.01	560	1.66	270	1.15	220	1.20	180	1.08	150	0.99
35×25	S52	1000	2.60	820	2.11	820	2.42	560	1.80	270	1.19	220	1.22	180	1.12	150	1.02
		1200	2.76	1000	2.33	1000	2.48	680	1.98	330	1.31	270	1.37	220	1.23	180	1.12
		1500	2.78	1200	2.55	1200	2.50	820	2.07	390	1.43	330	1.46	270	1.37	220	1.23
35×30	S53	1500	3.06	1200	2.65	1000	2.65	680	2.04	390	1.51	330	1.51	270	1.50	180	1.15
		1800	3.35	1500	2.96	1200	2										

High-Reliability, High-Ripple, Long Life Capacitors
GREEN CAP 105°C
3000hours

- High-reliability, high-ripple, long life capacitors.
- Guarantees 3000 hours at 105°C.



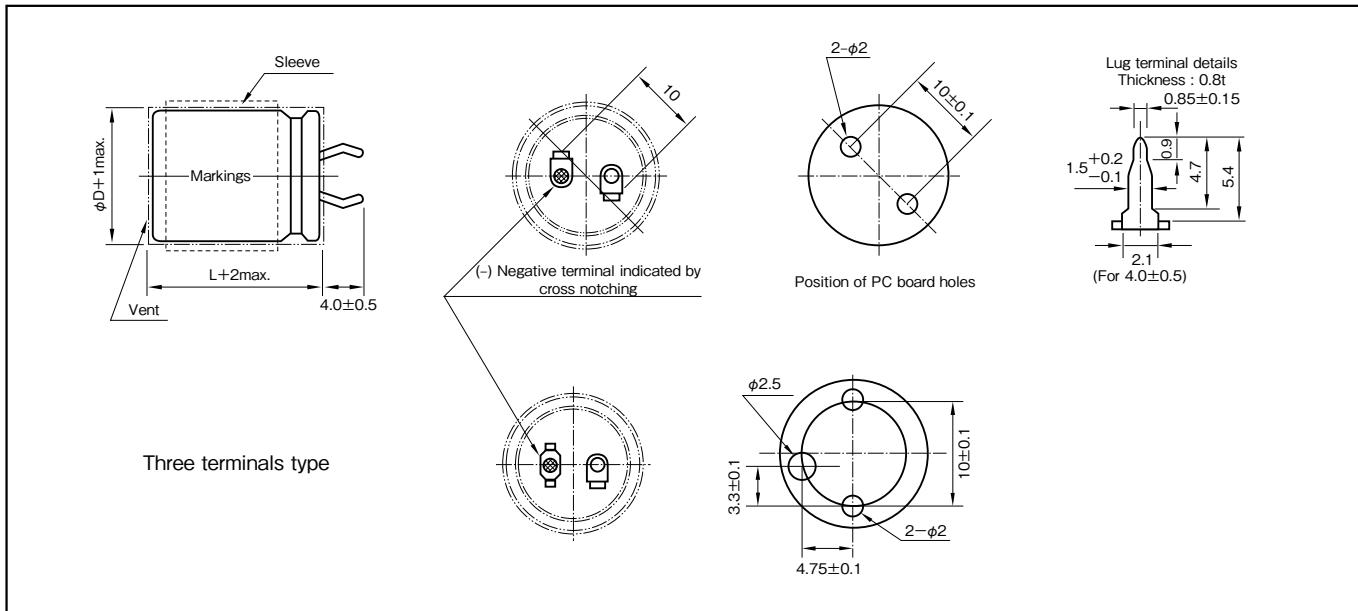
Marking color : White print on a black sleeve

Specifications

Item	Performance								
Category temperature range (°C)	−40 to +105 (−25 to +105 at 160V or more)								
Tolerance at rated capacitance (%)	±20 (20°C, 120Hz)								
Leakage current (µA)	Less than $3\sqrt{CV}$ (after 5 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V) (20°C)								
Tangent of loss angle (tanδ)	Rated voltage (V)	16	25	35	50	63 to 100	160 to 250		
	tanδ (max.)	0.50	0.40	0.35	0.30	0.20	0.15		
		(20°C, 120Hz)							
Characteristics at high and low temperature	Rated voltage (V)	16 to 100		160 to 250		350 to 500			
	Impedance ratio (max.)	Z=25°C/Z+20°C	4	4	4	(120Hz)			
		Z=40°C/Z+20°C	15	—	—				
Endurance (105°C) (Applied ripple current)	Test time	3000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within ±20% of initial value							
	Tangent of the loss angle	200% or less of the initial specified value							
Shelf life (105°C)	Test time	1000 hours							
	Leakage current	The initial specified value or less							
	Percentage of capacitance change	Within ±15% of initial value							
	Tangent of the loss angle	150% or less of the initial specified value							
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)								

Outline Drawing

Unit: mm



Part numbering system					
series LAZ, standard terminal type :400V470µF					
LAZ	—	400	V	471	M S54 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol
series LTZ, three terminals type :400V470µF					
LTZ	—	400	V	471	M S54 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k	30k
Rated voltage (V)					
100 or less	0.95	1	1.10	1.15	1.15
160 to 250	0.81	1	1.32	1.45	1.50
315 or more	0.77	1	1.30	1.41	1.43

Standard Ratings

Case φDXL (mm)	Item Casing Symbol	Rated voltage (V)		16		25		35		50		63		80		100	
		Rated capacitance (μF)	Rated ripple current (Arms)														
22×20	S21	4700	1.23	3300	1.21	2200	1.08	1200	0.99	820	0.96	560	0.85	390	0.83		
		5600	1.35	3900	1.31	2700	1.20	1500	1.11	1000	1.06	680	0.94	470	0.91		
		6800	1.48	4700	1.44	3300	1.33	1800	1.22	1200	1.12	820	1.03	560	0.99		
22×25	S22	6800	1.60	4700	1.55	3300	1.43	1800	1.31	1200	1.25	820	1.11	560	1.07		
		8200	1.76	5600	1.69	3900	1.55	2200	1.45	1500	1.40	1000	1.23	680	1.18		
		10000	1.94	6800	1.86	4700	1.71	2700	1.60	1800	1.50	1200	1.34	820	1.29		
22×30	S23	10000	1.99	6800	1.91	3900	1.65	2700	1.70	1800	1.60	1200	1.39	820	1.35		
		12000	2.18	8200	2.10	4700	1.81	3300	1.88	2200	1.68	1500	1.55	1000	1.49		
		15000	2.44	10000	2.32	5600	1.98	3900	2.04	2700	1.86	1800	1.70	1200	1.63		
22×35	S24	12000	2.28	8200	2.14	5600	2.02	3300	1.98	2200	1.73	1500	1.61	1000	1.54		
		15000	2.55	10000	2.36	6800	2.23	3900	2.15	2700	1.92	1800	1.76	1200	1.69		
		18000	2.79	12000	2.59	8200	2.44	4700	2.36	3300	2.12	2200	1.95	1500	1.89		
22×40	S25	18000	2.89	12000	2.63	6800	2.28	4700	2.47	3300	2.18	2200	2.02	1500	1.95		
		22000	3.20	15000	2.94	8200	2.50	5600	2.70	3900	2.37	2700	2.24	1800	2.13		
		—	—	—	10000	2.76	—	—	—	—	—	—	—	—	—	—	—
22×45	S26	22000	3.29	15000	3.01	10000	2.83	5600	2.79	3900	2.42	2700	2.32	1800	2.18		
		27000	3.65	18000	3.29	12000	3.09	6800	3.08	4700	2.65	3300	2.56	2200	2.41		
		27000	3.81	18000	3.44	12000	3.23	6800	3.18	4700	2.77	3300	2.67	2200	2.52		
22×50	S27	33000	4.10	22000	3.80	—	—	8200	3.50	—	—	3900	2.90	—	—		
		6800	1.53	4700	1.48	3300	1.39	1800	1.29	1200	1.16	820	1.07	560	1.04		
		8200	1.68	5600	1.61	3900	1.51	2200	1.43	1500	1.29	1000	1.18	680	1.14		
25×20	S31	10000	1.85	6800	1.78	4700	1.66	2700	1.58	1800	1.42	1200	1.29	820	1.26		
		10000	1.99	6800	1.91	4700	1.78	2700	1.70	1800	1.52	1200	1.39	820	1.35		
		12000	2.18	8200	2.10	5600	1.94	3300	1.88	2200	1.68	1500	1.55	1000	1.49		
25×25	S32	15000	2.44	10000	2.32	6800	2.14	3900	2.04	2700	1.86	1800	1.70	1200	1.63		
		12000	2.30	8200	2.16	5600	2.04	3300	2.00	2200	1.75	1500	1.62	1000	1.56		
		15000	2.57	10000	2.39	6800	2.25	3900	2.17	2700	1.94	1800	1.77	1200	1.71		
25×30	S33	18000	2.82	12000	2.61	8200	2.47	4700	2.39	3300	2.14	2200	1.96	1500	1.91		
		18000	2.94	12000	2.67	8200	2.54	4700	2.50	3300	2.20	2200	2.01	1500	1.97		
		22000	3.25	15000	2.99	10000	2.80	5600	2.73	3900	2.39	2700	2.23	1800	2.16		
25×40	S34	22000	3.36	15000	3.06	10000	2.87	5600	2.81	3900	2.47	2700	2.32	1800	2.22		
		27000	3.72	18000	3.36	12000	3.15	6800	3.10	4700	2.71	3300	2.57	2200	2.46		
		—	—	—	—	—	—	8200	3.40	—	—	3900	2.79	—	—		
25×45	S35	27000	3.77	18000	3.45	12000	3.20	6800	3.24	4700	2.79	3900	2.92	2200	2.52		
		33000	4.16	22000	3.81	15000	3.58	8200	3.56	5600	3.04	—	—	2700	2.79		
		—	—	—	—	—	—	10000	3.93	—	—	—	—	—	—		
25×50	S36	33000	4.21	22000	3.91	15000	3.64	10000	4.09	5600	3.14	4700	3.29	2700	2.85		
		39000	4.58	27000	4.34	18000	3.99	—	—	6800	3.46	—	—	3300	3.15		
		8200	1.84	5600	1.74	3900	1.65	2700	1.73	1800	1.47	1200	1.38	820	1.32		
30×20	S41	10000	2.03	6800	1.92	4700	1.82	3300	1.91	2200	1.63	1500	1.55	1000	1.46		
		12000	2.23	8200	2.10	5600	1.98	3900	2.08	2700	1.81	1800	1.69	1200	1.60		
		12000	2.38	8200	2.25	5600	2.12	3900	2.22	2700	1.93	1800	1.81	1200	1.71		
30×25	S42	15000	2.66	10000	2.48	6800	2.34	4700	2.44	3300	2.13	2200	2.00	1500	1.91		
		18000	2.91	12000	2.65	8200	2.52	5600	2.66	3900	2.32	2700	2.22	1800	2.09		
		18000	3.00	12000	2.70	8200	2.56	4700	2.58	3300	2.24	2200	2.10	1500	2.00		
30×30	S43	22000	3.32	15000	3.02	10000	2.83	5600	2.82	3900	2.44	2700	2.33	1800	2.19		
		27000	3.67	18000	3.31	12000	3.10	6800	3.10	4700	2.67	3300	2.57	2200	2.42		
		22000	3.39	15000	3.13	10000	2.92	6800	3.25	4700	2.80	3300	2.69	2200	2.51		
30×35	S44	27000	3.76	18000	3.43	12000	3.20	8200	3.57	5600	3.06	3900	2.92	2700	2.78		
		33000	4.15	22000	3.79	15000	3.58	—	—	—	—	—	—	—	—		
		33000	4.23	22000	3.91	15000	3.67	8200	3.72	5600	3.17	3900	3.02	2700	2.87		
30×40	S45	39000	4.60	27000	4.34	18000	4.02	10000	4.11	6800	3.49	4700	3.32	3300	3.17		
		39000	4.67	27000	4.70	18000	4.10	10000	4.30	6800	3.61	4700	3.43	3300	3.25		
		47000	5.13	33000	5.19	22000	4.53	12000	4.60	8200	3.97	5600	3.74	3900	3.53		
30×50	S47	47000	5.20	33000	5.40	22000	4.71	12000	4.68	8200	4.10	5600	3.89	3900	3.61		
		56000	5.68	39000	5.88	27000	5.22	15000	5.23	10000	4.52	6800	4.28	4700	3.96		
		12000	2.38	8200	2.17	5600	2.16	3300	2.10	2200	1.85	1500	1.68	1000	1.59		
35×20	S51	15000	2.66	10000	2.40	6800	2.38	3900	2.28	2700	2.05	1800	1.84	1200	1.74		
		18000	2.91	12000	2.63	8200	2.61	4700	2.51	3300	2.26	2200	2.04	1500	1.94		
		18000	3.10	12000	2.80	8200	2.78	4700	2.67	3300	2.41	2200	2.17	1500	2.07		
35×25	S52	22000	3.43	15000	3.13	10000	3.07	5600	2.91	3900	2.62	2700	2.40	1800	2.27		
		27000	3.80	18000	3.43	12000	3.30	6800	3.21								

Standard Ratings

Case φ×L (mm)	Item Casing Symbol	160		180		200		250		350		400		450		500	
		Rated capacitance (μF)	Rated ripple current (Arms)														
22×20	S21	220	0.90	220	0.91	180	0.82	120	0.67	82	0.55	56	0.53	56	0.53	39	0.44
		270	1.00	270	1.00	220	0.91	150	0.75	100	0.61	68	0.58	68	0.58	47	0.48
		330	1.10	330	1.11	270	1.00	180	0.82	120	0.67	82	0.64	—	—	56	0.53
22×25	S22	330	1.24	330	1.25	270	1.17	180	1.00	100	0.69	82	0.71	68	0.65	56	0.59
		390	1.35	390	1.35	330	1.29	220	1.11	120	0.75	100	0.79	82	0.71	68	0.65
		470	1.48	470	1.49	390	1.35	270	1.13	150	0.84	120	0.86	100	0.79	82	0.71
22×30	S23	470	1.56	390	1.41	390	1.57	270	1.33	150	0.88	120	0.90	100	0.82	68	0.68
		560	1.68	470	1.55	470	1.65	330	1.47	180	0.96	150	0.99	120	0.90	82	0.74
		680	1.85	560	1.69	560	1.69	390	1.49	220	1.06	180	1.10	150	1.01	100	0.82
22×35	S24	560	1.75	560	1.73	470	1.70	330	1.50	180	0.98	150	1.03	120	0.92	100	0.84
		680	1.93	680	1.90	560	1.73	390	1.52	220	1.08	180	1.13	150	1.03	120	0.92
		820	2.08	—	—	680	1.90	470	1.58	270	1.20	220	1.25	180	1.13	—	—
22×40	S25	820	2.17	680	1.97	680	1.97	470	1.64	270	1.24	220	1.29	180	1.17	120	0.95
		1000	2.38	820	2.17	820	2.17	560	1.79	330	1.37	270	1.43	220	1.29	150	1.07
22×45	S26	1000	2.42	820	2.21	820	2.21	560	1.82	330	1.40	270	1.46	220	1.32	150	1.09
		1200	2.66	1000	2.44	—	—	680	2.01	390	1.52	—	—	—	—	180	1.19
22×50	S27	1200	2.84	1000	2.50	1000	2.50	680	2.06	390	1.56	330	1.65	270	1.50	180	1.22
		—	—	1200	2.74	—	—	—	—	—	—	—	—	—	—	—	—
25×20	S31	330	1.25	270	1.14	220	1.03	150	0.92	100	0.69	82	0.72	68	0.66	47	0.55
		390	1.36	330	1.26	270	1.14	180	1.01	120	0.76	100	0.80	82	0.72	56	0.60
		470	1.49	390	1.35	330	1.26	220	1.12	150	0.82	120	0.85	100	0.79	68	0.65
25×25	S32	470	1.59	390	1.42	330	1.40	270	1.33	150	0.88	120	0.91	100	0.84	68	0.68
		560	1.70	470	1.56	390	1.52	330	1.47	180	0.97	150	0.98	120	0.91	82	0.75
		680	1.82	560	1.66	470	1.60	390	1.48	220	1.04	180	1.08	150	0.98	100	0.80
25×30	S33	560	1.73	560	1.74	470	1.67	330	1.51	180	0.99	150	1.01	120	0.93	82	0.77
		680	1.91	680	1.91	560	1.70	390	1.55	220	1.09	180	1.11	150	1.03	100	0.85
		820	2.09	820	2.10	680	1.87	470	1.61	270	1.18	220	1.23	180	1.13	120	0.93
25×35	S34	820	2.17	680	1.95	560	1.77	470	1.68	270	1.23	220	1.28	180	1.16	120	0.95
		1000	2.40	820	2.14	680	1.95	560	1.77	330	1.36	270	1.42	220	1.28	150	1.05
		—	—	1000	2.37	820	2.14	—	—	—	—	—	—	—	—	—	—
25×40	S35	1000	2.60	1000	2.43	820	2.20	560	1.82	330	1.40	270	1.45	220	1.31	150	1.08
		1200	2.84	1200	2.67	1000	2.43	680	2.01	390	1.52	330	1.61	270	1.45	180	1.19
25×45	S36	1200	2.90	1200	2.73	1000	2.49	680	2.06	390	1.56	330	1.65	270	1.49	180	1.22
		1500	3.25	—	—	1200	2.73	820	2.26	470	1.71	390	1.79	330	1.65	220	1.35
25×50	S37	1500	3.38	1500	3.26	1200	2.92	820	2.42	470	1.83	390	1.91	330	1.76	220	1.44
		—	—	—	—	—	—	1000	2.66	560	1.99	—	—	—	—	270	1.59
30×20	S41	470	1.50	390	1.37	390	1.37	270	1.14	150	0.85	120	0.87	100	0.80	68	0.66
		560	1.63	470	1.50	470	1.50	330	1.26	180	0.93	150	0.98	120	0.87	82	0.72
		680	1.80	560	1.64	560	1.64	390	1.37	220	1.03	180	1.07	150	0.98	100	0.80
30×25	S42	680	1.85	560	1.69	560	1.75	390	1.50	220	1.06	180	1.10	150	1.00	100	0.82
		820	2.03	680	1.86	680	1.92	470	1.61	270	1.17	220	1.22	180	1.10	120	0.90
		1000	2.24	820	2.04	820	2.04	560	1.69	330	1.29	270	1.35	220	1.22	150	1.00
30×30	S43	820	2.35	820	2.17	680	1.97	470	1.65	270	1.24	220	1.29	180	1.15	120	0.95
		1000	2.60	1000	2.39	820	2.17	560	1.80	330	1.37	270	1.43	220	1.27	150	1.07
		1200	2.84	1200	2.62	1000	2.39	680	1.98	390	1.49	330	1.54	270	1.43	180	1.13
30×35	S44	1200	2.96	1000	2.43	1000	2.43	680	2.04	390	1.52	330	1.61	270	1.45	180	1.19
		1500	3.10	1200	2.66	1200	2.60	820	2.24	470	1.67	390	1.75	330	1.61	220	1.31
		—	—	1500	2.98	—	—	—	—	560	1.82	—	—	—	—	—	—
30×40	S45	1500	3.21	1500	3.01	1200	2.69	820	2.42	470	1.69	390	1.77	330	1.62	220	1.33
		1800	3.52	1800	3.30	1500	3.01	1000	2.60	560	1.84	470	1.94	390	1.77	270	1.47
30×45	S46	1800	3.91	1800	3.42	1500	3.12	1000	2.76	680	2.10	470	2.01	390	1.83	270	1.52
		2200	4.32	—	—	1800	3.42	1200	2.90	—	—	560	2.19	470	2.01	330	1.68
30×50	S47	2200	4.50	2200	3.91	1800	3.54	1200	3.00	680	2.18	560	2.27	470	2.22	330	1.74
		—	—	—	—	—	—	—	820	2.39	680	2.50	560	2.27	390	1.90	
35×20	S51	560	1.82	560	1.66	470	1.67	330	1.30	180	0.94	150	0.99	120	0.89	100	0.81
		680	2.01	680	1.83	560	1.82	390	1.41	220	1.04	180	1.08	150	0.99	120	0.89
		820	2.20	820	2.01	680	2.01	470	1.55	270	1.15	220	1.20	180	1.08	150	0.99
35×25	S52	820	2.35	820	2.11	680	2.20	470	1.65	270	1.19	220	1.23	180	1.12	150	1.02
		1000	2.60	1000	2.33	820	2.38	560	1.80	330	1.31	270	1.37	220	1.23	180	1.12
		1200	2.84	1200	2.55	1000	2.60	680	1.98	390	1.43	330	1.51	270	1.37	220	1.23
35×30	S53	1200	2.95	1000	2.42	820	2.40	680	2.04	390	1.51	330	1.56	270	1.50	180	1.15

Ultra Long Life, High-Reliability Capacitors

GREEN CAP

**105°C
5000hours**

- Ultra Long Life, high-reliability capacitors.
- Guarantees 5000 hours at 105°C.

Long life



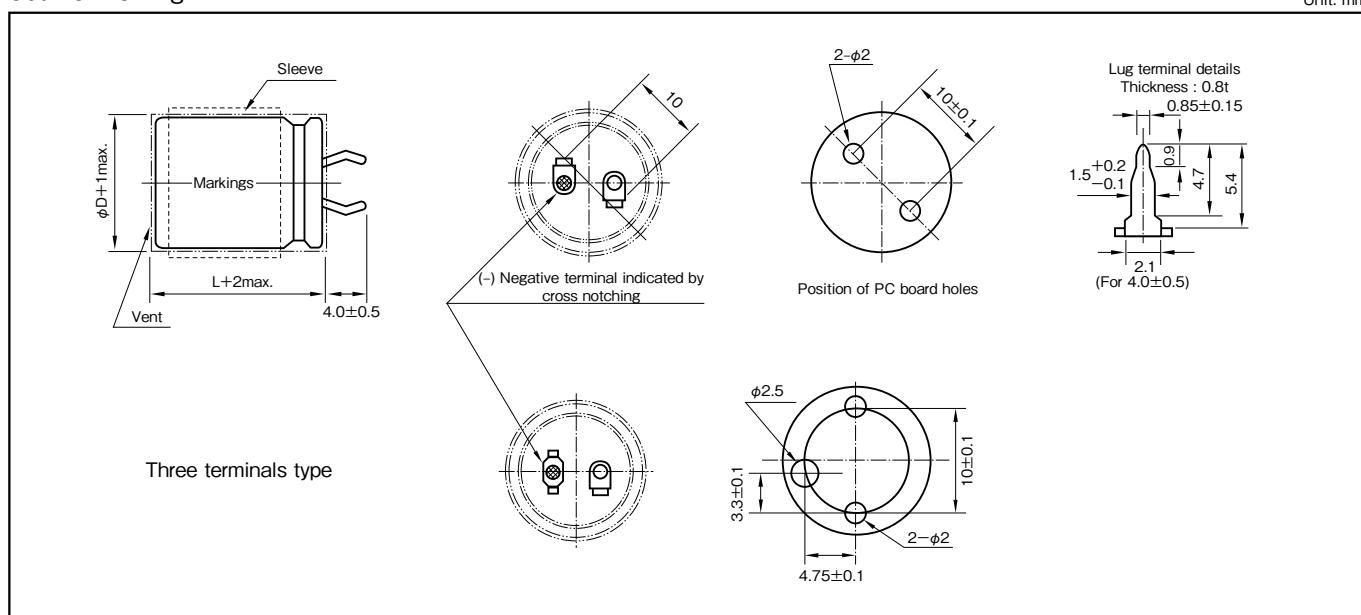
Marking color : White print on a black sleeve

Specifications

Item	Performance		
Category temperature range (°C)	−25 to +105		
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)		
Leakage current (μA)	Less than $3\sqrt{CV}$ (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)		
Tangent of loss angle (tanδ)	Rated voltage (V)	160 to 250	350 to 500 (20°C, 120Hz)
	tanδ (max.)	0.15	0.20
Characteristics at high and low temperature	Percentage of capacitance change (%)	−25°C	Within $\pm 30\%$ of the value at 20°C (120Hz)
	Impedance ratio (max.)	Z−25°C/Z+20°C	4
Endurance (105°C) (Applied ripple current)	Test time	5000 hours	
	Leakage current	The initial specified value or less	
	Percentage of capacitance change	Within $\pm 20\%$ of initial value	
	Tangent of the loss angle	200% or less of the initial specified value	
Shelf life (105°C)	Test time	1000 hours	
	Leakage current	The initial specified value or less	
	Percentage of capacitance change	Within $\pm 15\%$ of initial value	
	Tangent of the loss angle	150% or less of the initial specified value	
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)		

Outline Drawing

Unit: mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k	30k
Rated voltage (V)					
160 to 250	0.81	1	1.32	1.45	1.50
400 to 500	0.77	1	1.30	1.41	1.43

Part numbering system					
series LAX, standard terminal type :200V680μF					
LAX	—	200	V	681	M S34 # B
Series code Rated voltage symbol Rated capacitance symbol Capacitance tolerance symbol Casing symbol Optional symbol					
series LTX, three terminals type :400V330μF					
LTX	—	400	V	331	M S53 # B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

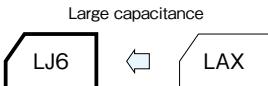
Standard Ratings

Case φDXL (mm)	Item Casing Symbol	160		180		200		250		350		400		450		500	
		Rated capacitance (μF)	Rated ripple current (Arms)														
22×20	S21	220	0.90	180	0.82	180	0.82	120	0.67	82	0.55	56	0.53	56	0.53	39	0.44
		270	1.00	220	0.91	220	0.91	150	0.75	100	0.61	68	0.58	68	0.58	47	0.48
		330	1.10	270	1.00	270	1.00	180	0.82	120	0.67	82	0.64	—	—	56	0.53
22×25	S22	330	1.24	270	1.13	270	1.17	180	1.00	120	0.75	82	0.71	68	0.65	56	0.59
		390	1.35	330	1.25	330	1.29	220	1.11	150	0.84	100	0.79	82	0.71	68	0.65
		470	1.48	390	1.35	390	1.35	270	1.13	180	0.92	120	0.86	100	0.79	82	0.71
22×30	S23	470	1.56	390	1.41	330	1.40	270	1.33	150	0.88	120	0.90	82	0.74	68	0.68
		560	1.68	470	1.55	390	1.57	330	1.47	180	0.96	150	0.96	100	0.82	82	0.74
		680	1.85	560	1.69	470	1.60	390	1.49	220	1.06	180	1.10	120	0.90	100	0.82
22×35	S24	560	1.75	470	1.58	470	1.70	330	1.50	220	1.08	150	1.03	120	0.92	100	0.84
		680	1.93	560	1.73	560	1.73	390	1.52	270	1.20	180	1.13	150	1.03	120	0.92
		820	2.08	680	1.90	680	1.90	470	1.58	—	—	220	1.25	—	—	—	—
22×40	S25	820	2.17	680	1.97	560	1.79	470	1.64	270	1.24	220	1.29	150	1.07	120	0.95
		1000	2.38	820	2.17	680	1.97	560	1.79	330	1.37	270	1.43	180	1.17	150	1.07
22×45	S26	1000	2.42	820	2.21	820	2.21	560	1.82	330	1.40	270	1.46	180	1.19	150	1.09
22×50	S27	1200	2.84	1000	2.50	820	2.27	680	2.06	390	1.56	330	1.65	220	1.35	180	1.22
		—	—	—	—	1000	2.50	—	—	—	—	—	—	270	1.50	—	—
25×20	S31	270	1.13	270	1.14	220	1.03	150	0.92	100	0.69	82	0.72	56	0.60	47	0.55
		330	1.25	330	1.26	270	1.14	180	1.01	120	0.76	100	0.80	68	0.66	56	0.60
		390	1.36	390	1.34	330	1.23	220	1.12	150	0.82	120	0.84	82	0.69	68	0.64
25×25	S32	390	1.45	390	1.42	330	1.40	270	1.33	150	0.88	120	0.91	82	0.75	68	0.68
		470	1.59	470	1.56	390	1.50	330	1.42	180	0.97	150	0.96	100	0.84	82	0.75
		560	1.70	560	1.65	470	1.52	390	1.45	220	1.03	180	1.06	120	0.87	100	0.79
25×30	S33	560	1.73	470	1.59	470	1.62	330	1.51	180	0.99	150	1.01	120	0.93	82	0.77
		680	1.91	560	1.74	560	1.70	390	1.55	220	1.09	180	1.11	150	1.03	100	0.85
		820	2.09	680	1.91	680	1.87	470	1.61	270	1.21	220	1.23	180	1.13	120	0.93
25×35	S34	680	1.98	680	1.95	560	1.77	470	1.68	270	1.23	220	1.28	150	1.05	120	0.95
		820	2.17	820	2.14	680	1.95	560	1.77	330	1.36	270	1.42	180	1.16	150	1.05
		1000	2.40	—	—	820	2.14	—	—	—	—	—	—	220	1.28	—	—
25×40	S35	1000	2.60	820	2.20	820	2.20	560	1.82	330	1.40	270	1.45	220	1.31	150	1.08
		1200	2.84	1000	2.43	1000	2.43	680	2.01	390	1.52	330	1.61	270	1.45	180	1.19
25×45	S36	1200	2.90	1000	2.49	1000	2.49	680	2.06	390	1.56	330	1.65	270	1.49	180	1.22
		1500	3.25	1200	2.73	1200	2.73	820	2.26	470	1.71	390	1.79	—	—	220	1.35
25×50	S37	1500	3.38	1200	2.92	1200	2.92	820	2.42	470	1.83	390	1.91	330	1.76	220	1.44
		—	—	1500	3.26	—	—	1000	2.66	560	1.99	—	—	—	—	270	1.59
30×20	S41	470	1.50	390	1.37	330	1.26	270	1.14	150	0.85	120	0.87	82	0.72	68	0.66
		560	1.63	470	1.50	390	1.37	330	1.26	180	0.93	150	0.98	100	0.80	82	0.72
		680	1.80	560	1.64	470	1.50	390	1.37	220	1.03	180	1.07	120	0.87	100	0.80
30×25	S42	680	1.85	560	1.69	470	1.60	390	1.47	220	1.06	180	1.10	120	0.90	100	0.82
		820	2.03	680	1.86	560	1.75	470	1.61	270	1.17	220	1.22	150	1.00	120	0.90
		1000	2.24	820	2.04	680	1.92	560	1.69	330	1.29	270	1.35	180	1.10	150	1.00
30×30	S43	820	2.35	680	1.97	680	1.97	470	1.65	270	1.24	220	1.29	150	1.05	120	0.95
		1000	2.60	820	2.17	820	2.17	560	1.80	330	1.37	270	1.43	180	1.15	150	1.07
		1200	2.84	1000	2.39	1000	2.39	680	1.98	390	1.49	330	1.53	220	1.27	180	1.13
30×35	S44	1200	2.96	1000	2.43	820	2.20	680	2.04	390	1.52	330	1.61	220	1.31	180	1.19
		1500	3.10	1200	2.66	1000	2.43	820	2.24	470	1.67	390	1.75	270	1.45	220	1.31
		—	—	—	—	1200	2.66	—	—	560	1.82	—	—	—	—	—	—
30×40	S45	1500	3.21	1200	2.69	1200	2.69	820	2.42	470	1.69	390	1.77	270	1.47	220	1.33
		1800	3.52	1500	3.01	1500	3.01	1000	2.60	560	1.84	470	1.94	330	1.62	270	1.47
30×45	S46	1800	3.91	1500	3.12	1500	3.12	1000	2.76	680	2.10	470	2.01	330	1.68	270	1.52
		2200	4.32	1800	3.42	—	—	1200	2.90	—	—	560	2.19	390	1.83	330	1.68
30×50	S47	2200	4.50	1800	3.54	1800	3.54	1200	3.00	680	2.18	560	2.27	390	2.07	330	1.74
		—	—	2200	3.91	—	—	—	—	820	2.39	—	—	470	2.22	390	1.90
35×20	S51	560	1.82	560	1.66	470	1.67	330	1.30	180	0.94	150	0.99	120	0.89	100	0.81
		680	2.01	680	1.83	560	1.82	390	1.41	220	1.04	180	1.08	150	0.99	120	0.89
		820	2.20	820	2.01	680	2.01	470	1.55	270	1.15	220	1.20	180	1.08	150	0.99
35×25	S52	820	2.35	820	2.11	680	2.20	470	1.65	270	1.19	220	1.23	180	1.12	150	1.02
		1000	2.60	1000	2.33	820	2.35	560	1.80	330	1.31	270	1.37	220	1.23	180	1.12
		1200	2.84	1200	2.55	1000	2.60	680	1.98	390	1.43	330	1.51	270	1.37	220	1.23
35×30	S53	1200	2.95	1000	2.42	820	2.40	680	2.04	390	1.51	330	1.56	220	1.35	180	1.15
		1500	3.06	1200	2.65	1000	2.65	820	2.24	470	1.66	390	1.69	270	1.50	220</	

Large-Capacitance, Long-Life, High-Reliability Capacitors

GREEN CAP
105°C
5000hours

- Large-capacitance, Long-life, High-reliability capacitors.
- Guarantees 5000 hours at 105°C.



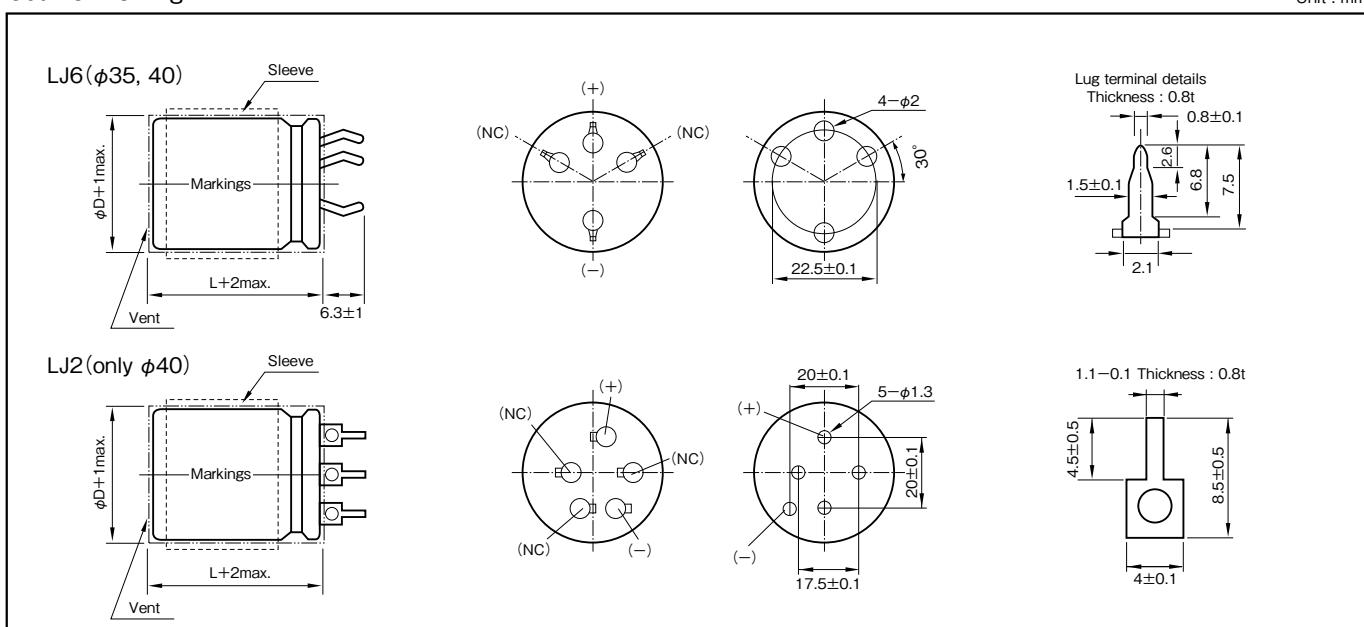
Marking color : White print on a black sleeve

Specifications

Item	Performance		
Category temperature range (°C)	−25~+105		
Tolerance at rated capacitance (%)	±20		(20°C, 120Hz)
Leakage current (μA)	Less than 0.02CV or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V)		
Tangent of loss angle (tanδ)	Rated voltage (V) tanδ (max.)	200 to 500 0.15	(20°C, 120Hz)
Characteristics at high and low temperature	Percentage of capacitance change (%) Impedance ratio (max.)	−25°C Z−25°C/Z+20°C	Within ±30% of the value at 20°C 4
Endurance (105°C) (Applied ripple current)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	5000 hours The initial specified value or less Within ±20% of initial value 200% or less of the initial specified value	
Shelf life (105°C)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	1000 hours The initial specified value or less Within ±15% of initial value 150% or less of the initial specified value	
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)		

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Part numbering system (example : 350V1500μF)	
LJ6	— 350 V 152 M S6D # B
Series code	Rated voltage symbol
Rating	Rated capacitance symbol
Capacitance tolerance	Capacitance tolerance symbol
Casing	Casing symbol
Optional	Optional symbol

Frequency (Hz)	50	120	1k	10k	30k
Rated voltage (V)					
200 to 250	0.87	1	1.11	1.18	1.20

315 to 500	0.80	1	1.14	1.19	1.20
------------	------	---	------	------	------

Standard Ratings

Case φDXL(mm)	Rated voltage(V)	200			250			315			350		
		Item Casing symbol	Rated capacitance (μF)	ESR (Ω Max.)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω Max.)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω Max.)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω Max.)
35×60	S59	2200	0.090	4.05	1500	0.13	3.17	820	0.24	2.23	820	0.24	2.10
35×70	S5B	2700	0.073	4.77	1800	0.11	3.69	1000	0.20	2.62	1000	0.20	2.46
35×80	S5C	3300	0.060	5.56	2200	0.090	4.31	1200	0.17	3.03	1200	0.17	2.84
35×90	S5D	—	—	—	—	—	—	1500	0.13	3.55	1500	0.13	3.34
35×100	S5E	3900	0.051	6.64	2700	0.073	5.24	1800	0.11	4.07	1800	0.11	3.82
40×60	S69	2200	0.090	4.40	1800	0.11	3.77	1000	0.20	2.68	1000	0.20	2.50
40×70	S6B	2700	0.073	5.17	2200	0.090	4.43	1200	0.17	3.11	1200	0.17	2.90
40×80	S6C	3300	0.060	6.02	—	—	—	1500	0.13	3.67	1500	0.13	3.40
40×90	S6D	3900	0.051	7.00	2700	0.073	5.42	1800	0.11	4.21	1800	0.11	3.95

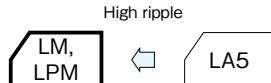
Case φDXL(mm)	Rated voltage(V)	400			450			500					
		Item Casing symbol	Rated capacitance (μF)	ESR (Ω Max.)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω Max.)	Rated ripple current (Arms)	Rated capacitance (μF)	ESR (Ω Max.)	Rated ripple current (Arms)		
35×60	S59	820	0.24	2.49	560	0.36	2.16	390	0.51	1.65			
35×70	S5B	1000	0.20	2.93	680	0.29	2.53	470	0.42	1.92			
35×80	S5C	—	—	—	820	0.24	2.94	560	0.36	2.22			
35×90	S5D	1200	0.17	3.55	1000	0.20	3.41	680	0.29	2.57			
35×100	S5E	1500	0.13	4.15	1200	0.17	3.90	—	—	—			
40×60	S69	—	—	—	680	0.29	2.45	560	0.36	2.15			
40×70	S6B	1000	0.20	3.10	820	0.24	2.84	680	0.29	2.51			
40×80	S6C	—	—	—	1000	0.20	3.33	—	—	—			
40×90	S6D	1200	0.17	3.65	1200	0.17	3.65	820	0.24	3.05			
40×100	S6E	1500	0.13	4.30	—	—	—	1000	0.20	3.51			

(Note) Rated ripple current : 105°C , 120Hz ; ESR. : 20°C , 120Hz

For-Inverter, High-Ripple Capacitors

GREEN CAP **85°C**
2000hours

- Withstands high-ripple current generated by the voltage doubler rectifier system.
- Guarantees 2000 hours at 85°C.



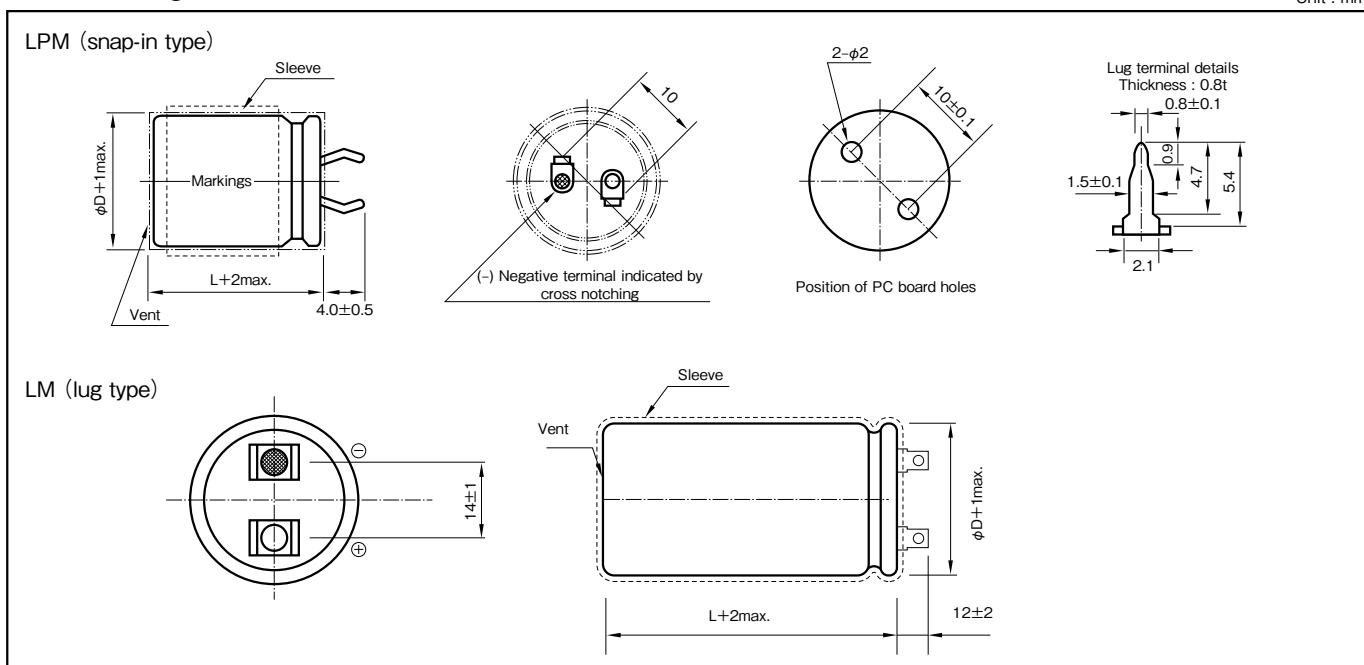
Marking color : White print on a black sleeve

Specifications

Item	Performance	
Category temperature range (°C)	-25 to +85	
Tolerance at rated capacitance (%)	± 10 (20°C, 120Hz)	
Leakage current (μ A)	Less than $0.01CV$ or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)	
Tangent of loss angle ($\tan\delta$)	Rated voltage (V) $\tan\delta$ (max.)	250, 400 0.05 (20°C, 120Hz)
Characteristics at high and low temperature	Rated voltage (V) Impedance ratio (max.)	250, 400 Z-25°C/Z+20°C 4 (120Hz)
Endurance (85°C) (Applied ripple current)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	2000 hours The initial specified value or less Within $\pm 20\%$ of initial value 200% or less of the initial specified value
Shelf life (85°C)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	500 hours The initial specified value or less Within $\pm 15\%$ of initial value 150% or less of the initial specified value
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)	

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Part numbering system (example : 250V440μF)					
LM	—	250	V	441	K
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol

Frequency (Hz)	50	120	400	1k	10k
Rated voltage (V)	0.80	1	1.32	1.46	1.61

LM series Standard Ratings

Rated capacitance (μF)	Case (mm)		Casing symbol	ESR (Ω max.)	Rated ripple current (Arms)
	ϕD	L			
200	40	100	S6E	0.33	3.80
220	40	100	S6E	0.30	4.00
330	40	100	S6E	0.20	4.85
360	40	100	S6E	0.18	5.10
390	40	100	S6E	0.17	5.30
420	40	100	S6E	0.16	5.50
440	40	100	S6E	0.15	5.60

250V

Rated capacitance (μF)	Case (mm)		Casing symbol	ESR (Ω max.)	Rated ripple current (Arms)
	ϕD	L			
90	35	80	S5C	0.74	3.00
	40	80	S6C	0.74	3.00
100	35	90	S5D	0.66	3.20
	40	90	S6D	0.66	3.20
110	35	100	S5E	0.60	3.30
	40	100	S6E	0.60	3.30
150	35	100	S5E	0.44	3.90
	40	100	S6E	0.44	3.90
165	40	100	S6E	0.40	4.10
220	40	100	S6E	0.30	4.10

400V

LPM series Standard Ratings

Rated capacitance (μF)	Case (mm)		Casing symbol	ESR (Ω max.)	Rated ripple current (Arms)
	ϕD	L			
100	35	40	S55	0.66	1.90
110	35	40	S55	0.60	2.00
165	35	45	S56	0.40	2.45
180	35	50	S57	0.37	2.58
195	35	50	S57	0.34	2.68
210	35	50	S57	0.32	2.78
220	35	50	S57	0.30	2.80

250V

Rated capacitance (μF)	Case (mm)		Casing symbol	ESR (Ω max.)	Rated ripple current (Arms)
	ϕD	L			
45	35	50	S57	1.47	1.50
55	35	40	S55	1.21	1.70
75	35	50	S57	0.88	1.98
82	35	50	S57	0.81	2.00

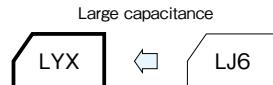
(Note) Rated ripple current : 85°C , 120Hz ; ESR. : 20°C , 120Hz

(Note) Rated ripple current : 85°C , 120Hz ; ESR. : 20°C , 120Hz

Screw Terminal, Long Life, High Temperature capacitors

GREEN CAP **105°C**
2000hours

- Screw Terminal, Long Life, High Temperature capacitors.
- Guarantees 5000 hours at 105°C.



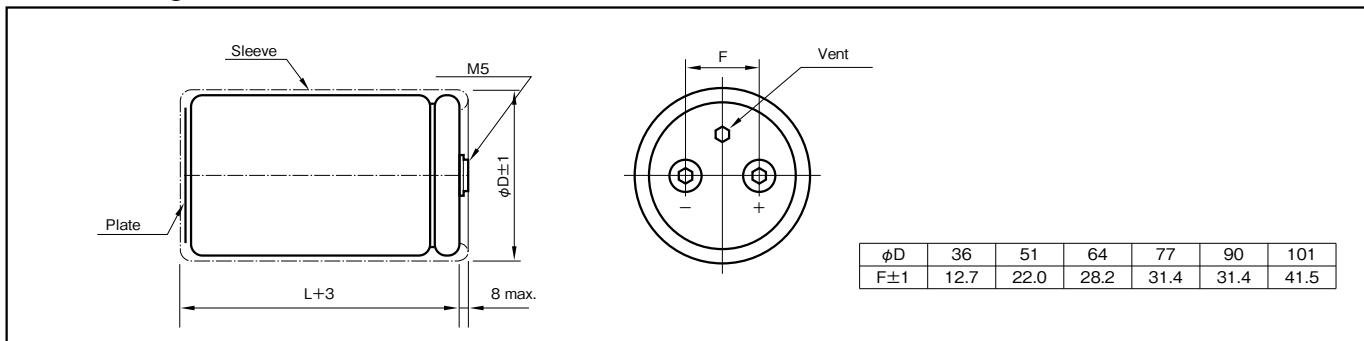
Marking color : Silver print on a black sleeve

Specifications

Item	Performance	
Category temperature range (°C)	−40 to +105	
Tolerance at rated capacitance (%)	±20	(20°C,120Hz)
Leakage current (µA)	Less than 0.01CV or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V)	(20°C)
Tangent of loss angle (tanδ)	0.20	(20°C,120Hz)
Endurance (105°C) (Applied ripple current)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	5000 hours The initial specified value or less Within ±20% of initial value 200% or less of the initial specified value
Shelf life (105°C)	Test time Leakage current Percentage of capacitance change Tangent of the loss angle	1000 hours The initial specified value or less Within ±20% of initial value 200% or less of the initial specified value
Voltage application treatment		
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1995)	

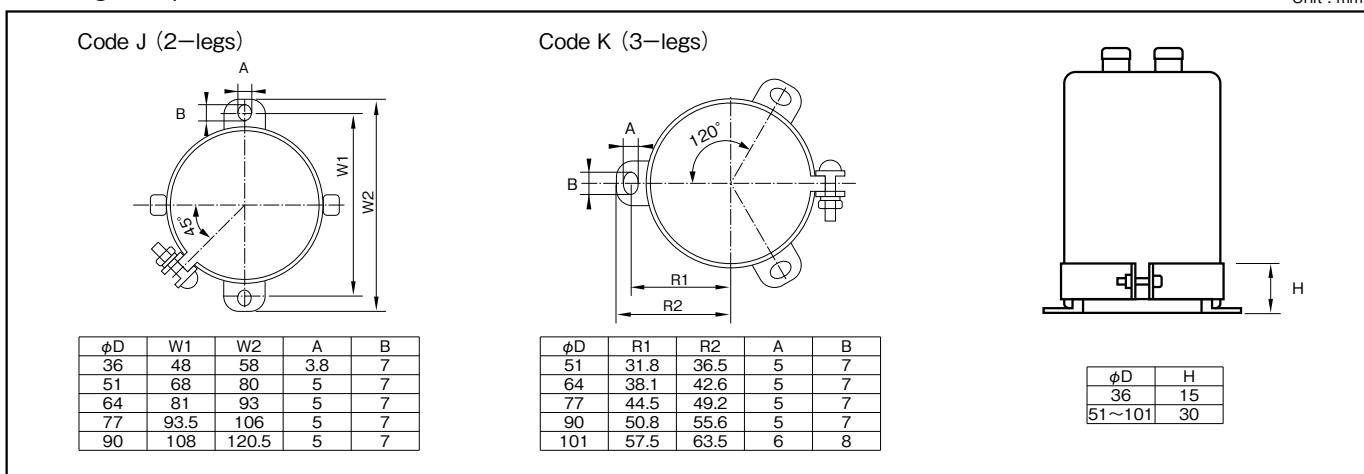
Outline Drawing

Unit : mm



Mounting Clamp

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Part numbering system (example : 400V3300µF)	
LYX	— 400 V 332 M DDO B
Series code	Rated voltage symbol
Rated capacitance symbol	Capacitance tolerance symbol
Casing symbol	Optional symbol
Clamp code	

Frequency (Hz)	50	120	300	1k	10k
Rated voltage (V)	350 to 450	0.80	1	1.10	1.30

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

350V					400V						
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mAmps)	Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mAmps)
	φD	L		(mΩ max.)	(mAmps)		φD	L		(mΩ max.)	(mAmps)
1000	51	75	C75	259	3.9	1000	51	75	C75	215	3.9
1200	51	75	C75	215	4.2	1200	51	96	C96	179	4.6
1500	51	96	C96	172	5.2	1500	51	115	CB5	143	5.6
1800	51	96	C96	143	5.7	1800	51	130	CD0	119	6.4
2200	51	130	CD0	117	7.1	2200	64	96	D96	98	6.9
2700	64	96	D96	96	7.7	2700	64	115	DB5	80	8.2
3300	64	115	DB5	78	9.1	3300	64	130	DD0	65	9.5
3900	64	130	DD0	66	10.4	3900	64	155	DF5	55	11.1
4700	64	155	DF5	55	12.2		77	115	EB5	55	10.4
	77	115	EB5	55	11.5	4700	64	195	DJ5	46	13.4
5600	64	195	DJ5	46	14.6		77	130	ED0	46	12.0
	77	130	ED0	46	13.1	5600	64	195	DJ5	39	14.6
6800	77	155	EF5	38	15.5		77	155	EF5	39	14.0
8200	90	157	FF7	31	18.1	6800	90	157	FF7	32	16.5
10000	90	157	FF7	26	19.9	8200	90	157	FF7	26	18.1
12000	90	196	FJ6	22	23.8	10000	90	196	FJ6	22	21.7
15000	90	236	FN6	17	28.8	12000	90	236	FN6	18	25.8

450V					
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mAmps)
	φD	L		(mΩ max.)	(mAmps)
1000	51	96	C96	215	4.2
1200	51	115	CB5	179	5.0
1500	51	130	CD0	143	5.9
1800	64	96	D96	119	6.3
2200	64	115	DB5	98	7.4
2700	64	130	DD0	80	8.6
	77	115	EB5	80	8.7
3300	64	155	DF5	65	10.2
	77	130	ED0	65	10.1
3900	64	195	DJ5	55	12.3
4700	77	155	EF5	46	12.9
5600	77	195	EJ5	38	15.4
	90	157	FF7	38	14.9
6800	90	196	FJ6	32	18.0
8200	90	196	FJ6	27	19.8
10000	90	236	FN6	22	23.6

(Note) Rated ripple current : 105°C , 120Hz ; ESR. : 20°C , 120Hz

Screw Terminal, Long Life capacitors

GREEN CAP
85°C
20000hours

- Screw Terminal, Long Life capacitors.
- Guarantees 20000 hours at 85°C.

Long life



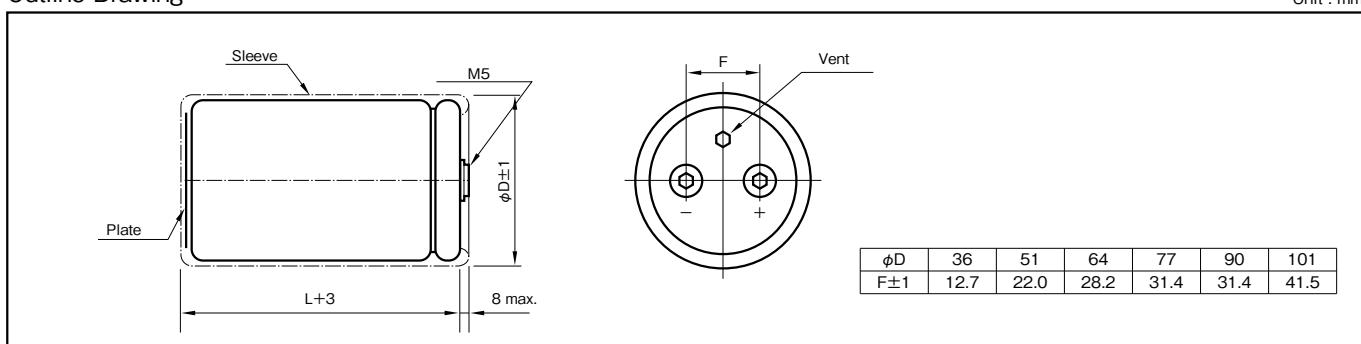
Marking color : Silver print on a black sleeve

Specifications

Item	Performance									
Category temperature range (°C)	−40 to +85									
Tolerance at rated capacitance (%)	±20	(20°C,120Hz)								
Leakage current (µA)	Less than 0.01CV or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V)	(20°C)								
Tangent of loss angle (tanδ)	0.20	(20°C,120Hz)								
Endurance (85°C) (Applied ripple current)	<table border="1"> <tr> <td>Test time</td> <td>20000 hours</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>200% or less of the initial specified value</td> </tr> </table>	Test time	20000 hours	Leakage current	The initial specified value or less	Percentage of capacitance change	Within ±20% of initial value	Tangent of the loss angle	200% or less of the initial specified value	
Test time	20000 hours									
Leakage current	The initial specified value or less									
Percentage of capacitance change	Within ±20% of initial value									
Tangent of the loss angle	200% or less of the initial specified value									
Shelf life (85°C)	<table border="1"> <tr> <td>Test time</td> <td>1000 hours</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>200% or less of the initial specified value</td> </tr> </table>	Test time	1000 hours	Leakage current	The initial specified value or less	Percentage of capacitance change	Within ±20% of initial value	Tangent of the loss angle	200% or less of the initial specified value	
Test time	1000 hours									
Leakage current	The initial specified value or less									
Percentage of capacitance change	Within ±20% of initial value									
Tangent of the loss angle	200% or less of the initial specified value									
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1995)									

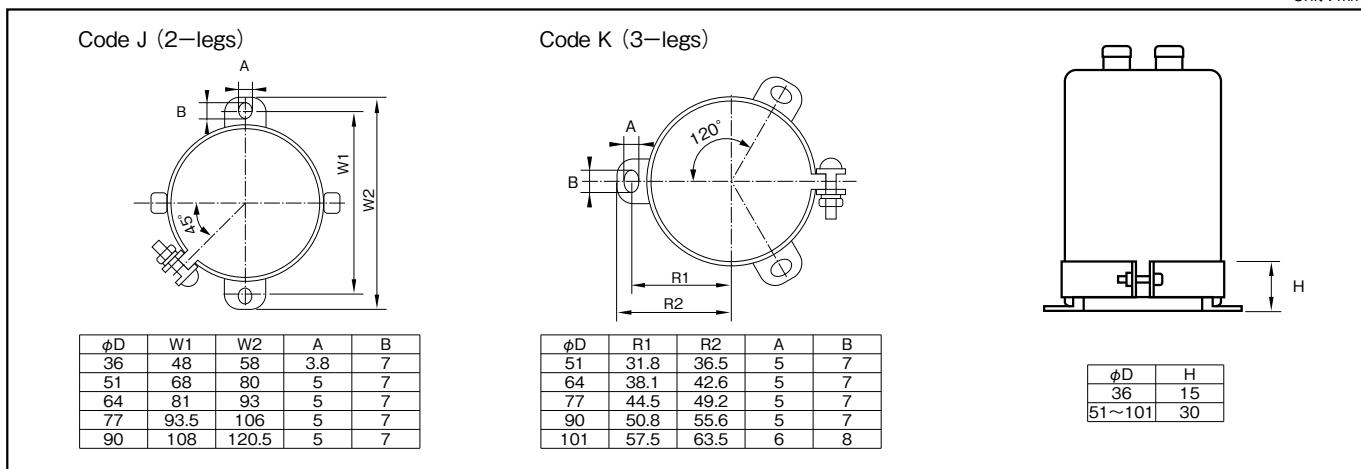
Outline Drawing

Unit : mm



Mounting Clamp

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Part numbering system (example : 450V4700µF)	
LYL	— 450 V 472 M EF5 B
Series code	Rated voltage symbol
Rated capacitance symbol	Capacitance tolerance symbol
Casing symbol	Optional symbol
Clamp code	

Frequency (Hz) Rated voltage (V)	50	120	300	1k	10k
350 to 450	0.80	1	1.10	1.30	1.40

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

350V					400V						
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)	Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)
	ϕD	L		($\text{m}\Omega$ max.)	(mArms)		ϕD	L		($\text{m}\Omega$ max.)	(mArms)
1000	51	75	C75	259	3.9	1000	51	75	C75	215	3.9
1200	51	75	C75	215	4.2	1200	51	96	C96	179	4.6
1500	51	96	C96	172	5.2	1500	51	115	CB5	143	5.6
1800	51	96	C96	143	5.7	1800	51	130	CD0	119	6.4
2200	51	130	CD0	117	7.1	2200	64	96	D96	98	6.9
2700	64	96	D96	96	7.7	2700	64	115	DB5	80	8.2
3300	64	115	DB5	78	9.1	3300	64	130	DD0	65	9.5
3900	64	130	DD0	66	10.4	3900	64	155	DF5	55	11.1
4700	64	155	DF5	55	12.2		77	115	EB5	55	10.4
	77	115	EB5	55	11.5	4700	64	195	DJ5	46	13.4
5600	64	195	DJ5	46	14.6		77	130	ED0	46	12.0
	77	130	ED0	46	13.1	5600	64	195	DJ5	39	14.6
6800	77	155	EF5	38	15.5		77	155	EF5	39	14.0
8200	90	157	FF7	31	18.1	6800	90	157	FF7	32	16.5
10000	90	157	FF7	26	19.9	8200	90	157	FF7	26	18.1
12000	90	196	FJ6	22	23.8	10000	90	196	FJ6	22	21.7
15000	90	236	FN6	17	28.8	12000	90	236	FN6	18	25.8

450V					
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)
	ϕD	L		($\text{m}\Omega$ max.)	(mArms)
1000	51	96	C96	215	4.2
1200	51	115	CB5	179	5.0
1500	51	130	CD0	143	5.9
1800	64	96	D96	119	6.3
2200	64	115	DB5	98	7.4
2700	64	130	DD0	80	8.6
	77	115	EB5	80	8.7
3300	64	155	DF5	65	10.2
	77	130	ED0	65	10.1
3900	64	195	DJ5	55	12.3
4700	77	155	EF5	46	12.9
5600	77	195	EJ5	38	15.4
	90	157	FF7	38	14.9
6800	90	196	FJ6	32	18.0
8200	90	196	FJ6	27	19.8
10000	90	236	FN6	22	23.6

(Note) Rated ripple current : 85°C , 120Hz ; ESR. : 20°C , 120Hz

LY6 LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

ELNA®

Screw Terminal, Miniaturized, High Ripple capacitors

GREEN CAP
85°C
5000hours

- Screw Terminal, Miniaturized, High Ripple capacitors.
- Guarantees 5000 hours at 85°C.

Miniaturized
High ripple

LY6



LY5



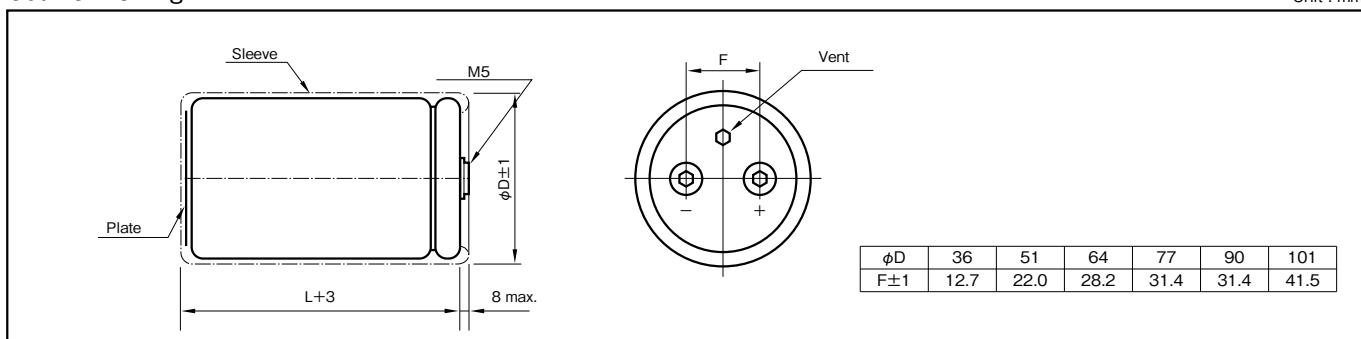
Marking color : Silver print on a black sleeve

Specifications

Item	Performance						
Category temperature range (°C)	-25 to +85						
Tolerance at rated capacitance (%)	±20						
Leakage current (μA)	Less than 0.01CV or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V)						
Tangent of loss angle (tanδ)	Rated voltage (V)	400, 450	500, 550	600			
	tanδ (max.)	0.15	0.20	0.25			
		(20°C, 120Hz)					
Endurance (85°C) (Applied ripple current)	Test time	5000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within ±20% of initial value					
	Tangent of the loss angle	200% or less of the initial specified value					
Shelf life (85°C)	Test time	1000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within ±20% of initial value					
	Tangent of the loss angle	200% or less of the initial specified value					
Voltage application treatment							
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1995)						

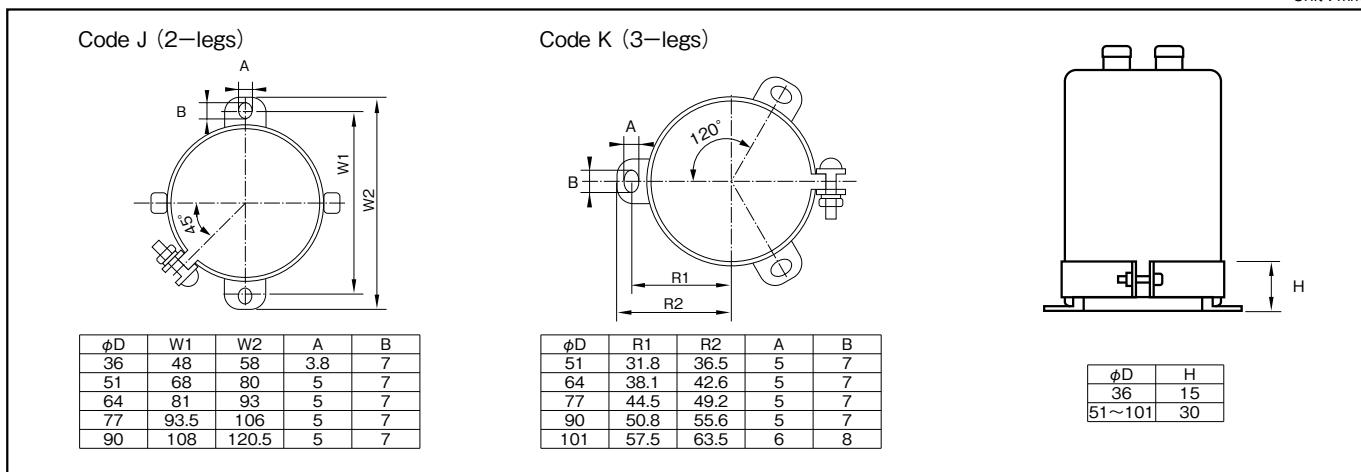
Outline Drawing

Unit : mm



Mounting Clamp

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Part numbering system (example : 400V12000μF)	Frequency (Hz)	50	120	300	1k	10k
LY6 — 400 V 123 M FF7 B	Rated voltage (V)	400 to 600	0.80	1	1.10	1.30

Frequency (Hz)	50	120	300	1k	10k
Rated voltage (V)	400 to 600	0.80	1	1.10	1.30

400

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

400V					450V						
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)	Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)
	ϕD	L		(m Ω max.)	(mArms)		ϕD	L		(m Ω max.)	(mArms)
2200	51	115	CB5	98	8.8	1800	51	115	CB5	119	7.6
2700	51	130	CD0	80	10.2	2200	51	130	CD0	98	8.8
3300	64	96	D96	65	11.0	2700	64	96	D96	80	9.5
3900	64	115	DB5	55	12.8	3300	64	115	DB5	65	11.2
4700	64	130	DD0	46	14.8	3900	64	130	DD0	55	12.8
5600	77	115	EB5	38	16.2	4700	77	115	EB5	46	14.1
6800	77	130	ED0	32	18.7	5600	77	130	ED0	38	16.2
8200	77	155	EF5	26	22.0	6800	77	155	EF5	32	19.1
10000	77	195	EJ5	22	26.7	8200	77	195	EJ5	26	23.0
	90	131	FD1	22	24.2		90	131	FD1	26	21.0
12000	90	157	FF7	18	28.5	10000	90	171	FH1	22	25.7
15000	90	196	FJ6	14	34.8	12000	90	196	FJ6	18	29.7
18000	90	236	FN6	12	41.2		101	175	GH5	18	29.3
22000	101	237	GN7	10	47.0	15000	90	236	FN6	14	35.9
—	—	—	—	—	—		101	195	GJ5	14	24.2
—	—	—	—	—	—	18000	101	237	GN7	12	40.5
500V					550V						
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)	Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)
	ϕD	L		(m Ω max.)	(mArms)		ϕD	L		(m Ω max.)	(mArms)
1200	51	115	CB5	215	6.2	1000	51	130	CD0	258	5.9
	64	96	D96	215	6.3	1200	64	115	DB5	215	6.8
1500	51	130	CD0	172	7.3	1500	64	130	DD0	172	8.0
	64	96	D96	172	7.1	1800	77	115	EB5	143	8.7
1800	64	115	DB5	143	8.3	2200	77	130	ED0	117	10.1
2200	64	130	DD0	117	9.6	2700	77	155	EF5	96	12.0
2700	77	115	EB5	96	10.7	3300	77	155	EF5	78	13.3
3300	77	130	ED0	78	12.4	3900	90	157	FF7	66	15.5
3900	77	155	EF5	66	14.4	4700	90	171	FH1	55	17.6
4700	77	171	EH1	55	16.5	5600	90	196	FJ6	46	20.3
	90	131	FD1	55	15.8	6800	90	236	FN6	38	24.1
5600	77	195	EJ5	46	19.0	8200	101	237	GN7	31	27.3
	90	157	FF7	46	18.6						
6800	90	171	FH1	38	21.2						
8200	90	196	FJ6	31	24.5						
	101	175	GH5	31	24.2						
10000	90	236	FN6	26	29.3						
	101	195	GJ5	26	27.9						
12000	101	237	GN7	22	33.1						
600V											
Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)	Rated capacitance (μF)	Case (mm)		Casing symbol	ESR	Rated ripple current (mArms)
	ϕD	L		(m Ω max.)	(mArms)		ϕD	L		(m Ω max.)	(mArms)
1000	64	130	DD0	323	5.4						
1200	77	115	EB5	269	6.1						
1500	77	130	ED0	214	7.3						
1800	77	155	EF5	179	8.9						
2200	90	131	FD1	146	9.7						
2700	90	157	FF7	120	11.6						
3300	90	171	FH1	98	13.4						
3900	90	196	FJ6	83	16.2						
4700	90	196	FJ6	69	19.5						
5600	101	220	FM0	58	22.5						

(Note) Rated ripple current : 85°C , 120Hz ; ESR. : 20°C , 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

LY5 LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

ELNA®

Screw Terminal, Standard capacitors

GREEN CAP	85°C
	2000hours

- Screw Terminal, Standard capacitors.
- Guarantees 2000 hours at 85°C.

Large capacitance



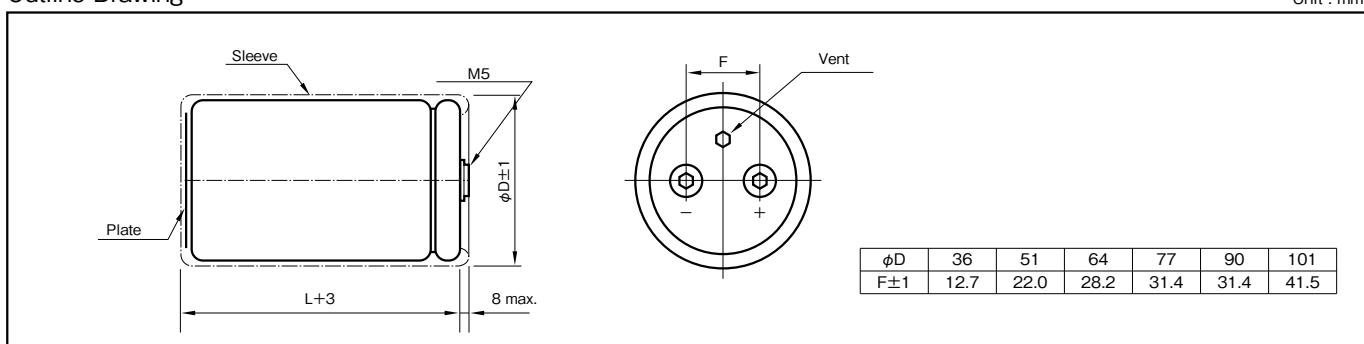
Marking color : Silver print on a black sleeve

Specifications

Item	Performance									
Category temperature range (°C)	-40 to +85	-25 to +85								
Rated voltage (V)	10 to 250	350 to 630								
Tolerance at rated capacitance (%)	±20	(20°C,120Hz)								
Leakage current (μA)	Less than 0.01CV or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V)	(20°C)								
Tangent of loss angle (tanδ)	Refer to the following pages	(20°C,120Hz)								
Endurance (85°C) (Applied ripple current)	<table border="1"> <tr> <td>Test time</td> <td>2000 hours</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>200% or less of the initial specified value</td> </tr> </table>	Test time	2000 hours	Leakage current	The initial specified value or less	Percentage of capacitance change	Within ±20% of initial value	Tangent of the loss angle	200% or less of the initial specified value	
Test time	2000 hours									
Leakage current	The initial specified value or less									
Percentage of capacitance change	Within ±20% of initial value									
Tangent of the loss angle	200% or less of the initial specified value									
Shelf life (85°C)	<table border="1"> <tr> <td>Test time</td> <td>1000 hours</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>200% or less of the initial specified value</td> </tr> </table>	Test time	1000 hours	Leakage current	The initial specified value or less	Percentage of capacitance change	Within ±20% of initial value	Tangent of the loss angle	200% or less of the initial specified value	
Test time	1000 hours									
Leakage current	The initial specified value or less									
Percentage of capacitance change	Within ±20% of initial value									
Tangent of the loss angle	200% or less of the initial specified value									
Voltage application treatment										
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1995)									

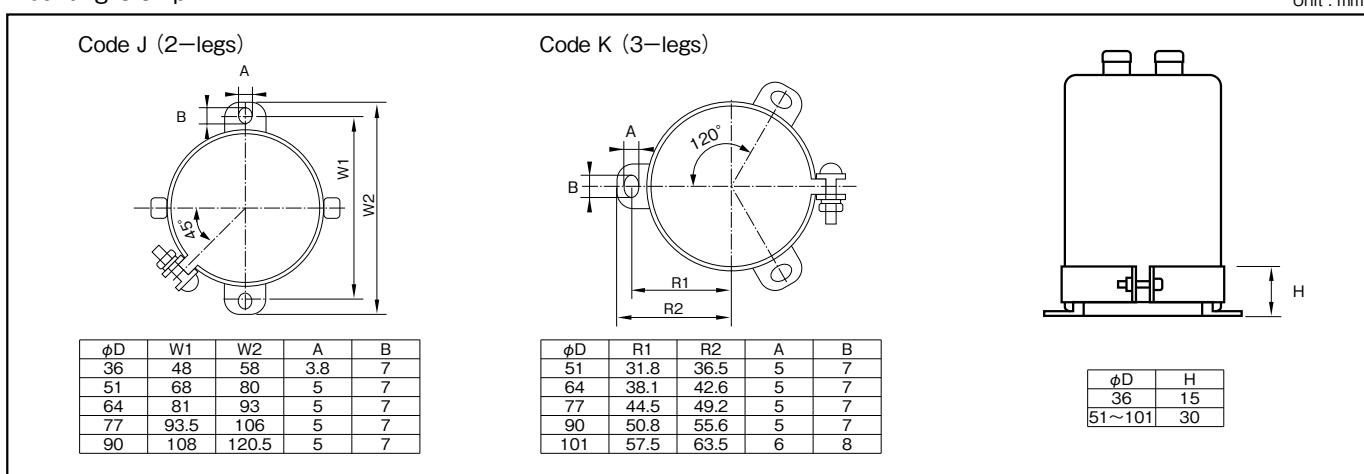
Outline Drawing

Unit : mm



Mounting Clamp

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Part numbering system (example : 50V47000μF)	LY5	—	50	V	473	M	CB5	B	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol	Clamp code			

Frequency (Hz)	50	120	300	1k	10k
Rated voltage (V)					
10 to 50	0.95	1	1.04	1.10	1.15
63 to 160	0.95	1	1.06	1.16	1.30
200 to 500	0.80	1	1.10	1.25	1.50
600 to 630	0.80	1	1.10	1.30	1.40

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated capacitance (μF)	tan δ	10V				16V				25V			
		Case (mm)		Casing symbol	Rated ripple current (mArms)	Case (mm)		Casing symbol	Rated ripple current (mArms)	Case (mm)		Casing symbol	Rated ripple current (mArms)
		ϕD	L			ϕD	L			ϕD	L		
33,000	0.80	36	53	A53	4.3	22,000	0.60	36	53	A53	4.1	15,000	0.50
39,000	0.80	36	53	A53	4.7	27,000	0.60	36	53	A53	4.5	18,000	0.50
47,000	0.80	36	65	A65	5.2	33,000	0.60	36	53	A53	5.0	22,000	0.50
56,000	0.80	36	83	A83	6.1	39,000	0.60	36	65	A65	5.9	27,000	0.50
68,000	0.80	36	83	A83	6.7	47,000	0.60	36	83	A83	6.4	33,000	0.50
82,000	0.80	36	100	AA0	7.7	56,000	0.60	36	83	A83	7.3	39,000	0.50
100,000	0.80	36	101	AA1	8.8	68,000	0.60	36	100	AA0	8.4	47,000	0.50
120,000	0.80	36	121	AC1	10.0	82,000	0.80	36	100	AA0	8.3	56,000	0.60
150,000	1.00	36	121	AC1	10.8	100,000	0.80	36	121	AC1	9.5	68,000	0.60
180,000	1.00	51	96	C96	12.0	120,000	0.80	36	121	AC1	10.9	82,000	0.60
220,000	1.50	51	121	CC1	11.2	150,000	1.00	51	96	C96	11.3	100,000	0.60
270,000	1.50	51	122	CC2	12.8	180,000	1.00	51	115	CB5	12.8	120,000	0.80
330,000	1.50	64	96	D96	15.3	220,000	1.00	51	130	CDO	15.3	150,000	0.80
390,000	1.50	64	115	DB5	17.3	270,000	1.00	64	96	D96	17.6	180,000	0.80
470,000	2.00	64	130	DD0	16.7	330,000	1.50	64	115	DB5	16.8	220,000	1.00
560,000	2.00	77	115	EB5	19.0	390,000	1.50	64	130	DD0	18.3	270,000	1.00
680,000	2.00	77	130	ED0	21.7	470,000	1.50	77	115	EB5	21.3	330,000	1.00
820,000	2.00	77	155	EF5	24.7	560,000	1.50	77	130	ED0	23.6	390,000	1.20
—	—	—	—	—	—	680,000	1.50	77	155	EF5	27.6	470,000	1.20
—	—	—	—	—	—	820,000	2.00	90	157	FF7	27.1	560,000	1.20
—	—	—	—	—	—	—	—	—	—	—	—	680,000	1.20
—	—	—	—	—	—	—	—	—	—	—	—	157	FF7
—	—	—	—	—	—	—	—	—	—	—	—	32.5	—

Rated capacitance (μF)	tan δ	35V				50V				63V			
		Case (mm)		Casing symbol	Rated ripple current (mArms)	Case (mm)		Casing symbol	Rated ripple current (mArms)	Case (mm)		Casing symbol	Rated ripple current (mArms)
		ϕD	L			ϕD	L			ϕD	L		
10,000	0.40	36	53	A53	3.4	5,600	0.30	36	53	A53	3.0	3,900	0.25
12,000	0.40	36	53	A53	3.7	6,800	0.30	36	53	A53	3.3	4,700	0.25
15,000	0.40	36	65	A65	4.2	8,200	0.30	36	53	A53	3.6	5,600	0.25
18,000	0.40	36	83	A83	4.7	10,000	0.30	36	65	A65	4.0	6,800	0.25
22,000	0.40	36	83	A83	5.7	12,000	0.30	36	83	A83	4.7	8,200	0.25
27,000	0.40	36	100	AA0	6.3	15,000	0.30	36	83	A83	5.5	10,000	0.25
33,000	0.40	36	100	AA0	7.2	18,000	0.30	36	100	AA0	6.2	12,000	0.25
39,000	0.50	36	121	AC1	8.3	22,000	0.40	36	121	AC1	6.3	15,000	0.30
47,000	0.50	51	96	C96	8.7	27,000	0.40	36	121	AC1	7.1	18,000	0.30
56,000	0.60	51	96	C96	8.6	33,000	0.40	51	96	C96	8.2	22,000	0.30
68,000	0.60	51	115	CB5	9.8	39,000	0.50	51	96	C96	8.1	27,000	0.40
82,000	0.60	64	96	D96	11.6	47,000	0.50	51	115	CB5	9.3	33,000	0.40
100,000	0.60	64	115	DB5	13.3	56,000	0.50	64	96	D96	10.5	39,000	0.40
120,000	0.80	64	121	DC1	14.8	68,000	0.50	64	96	D96	12.0	47,000	0.40
150,000	0.80	64	130	DD0	14.9	82,000	0.50	64	115	DB5	13.7	56,000	0.40
180,000	0.80	77	115	EB5	17.0	100,000	0.60	77	115	EB5	14.7	68,000	0.50
220,000	0.80	77	130	ED0	20.0	120,000	0.60	77	115	EB5	16.7	82,000	0.50
270,000	1.00	77	155	EF5	20.3	150,000	0.60	77	130	ED0	19.3	100,000	0.50
330,000	1.00	90	131	FD1	23.5	180,000	0.60	77	155	EF5	21.9	120,000	0.50
390,000	1.00	90	157	FF7	26.4	220,000	0.60	90	131	FD1	21.4	150,000	0.50
470,000	1.00	90	157	FF7	29.6	270,000	0.60	90	157	FF7	24.6	180,000	0.60
—	—	—	—	—	—	—	—	—	—	—	—	220,000	0.60
—	—	—	—	—	—	—	—	—	—	—	—	90	157
—	—	—	—	—	—	—	—	—	—	—	—	FF7	26.2

Rated capacitance (μF)	tan δ	80V				100V			
		Case (mm)		Casing symbol	Rated ripple current (mArms)	Case (mm)		Casing symbol	Rated ripple current (mArms)
		ϕD	L			ϕD	L		
3,300	0.25	36	53	A53	2.5	1,800	0.25	36	53
3,900	0.25	36	53	A53	2.8	2,200	0.25	36	53
4,700	0.25	36	65	A65	3.0	2,700	0.25	36	53
5,600	0.25	36	83	A83	3.6	3,300	0.25	36	65
6,800	0.25	36	83	A83	3.9	3,900	0.25	36	83
8,200	0.25	36	83	A83	4.5	4,700	0.25	36	83
10,000	0.25	36	100	AA0	5.2	5,600	0.25	36	100
12,000	0.25	36	100	AA0	5.9	6,800	0.25	36	100
15,000	0.25	36	121	AC1	6.8	8,200	0.25	36	121
18,000	0.25	36	121	AC1	7.8	10,000	0.25	36	121
22,000	0.30	51	96	C96	8.0	12,000	0.25	51	75
27,000	0.30	51	96	C96	9.2	15,000	0.25	51	96
33,000	0.30	51	115	CB5	10.5	18,000	0.25	51	115
39,000	0.30	51	130	CDO	12.0	22,000	0.25	51	130
47,000	0.30	64	115	DB5	13.6	27,000	0.25	64	115
56,000	0.40	64	130	DD0	13.4	33,000	0.25	64	130
68,000	0.40	77	115	EB5	15.4	39,000	0.25	77	115
82,000	0.40	77	130	ED0	17.5	47,000	0.35	77	130
100,000	0.40	77	155	EF5	20.5	56,000	0.35	77	155
120,000	0.40	90	131	FD1	22.4	68,000	0.35	90	131
150,000	0.40	90	157	FF7	26.5	82,000	0.35	90	157
—	—	—	—	—	—	100,000	0.35	90	171
—	—	—	—	—	—	—	—	—	FH1
—	—	—	—	—	—	—	—	—	24.0

(Note) Rated ripple current : 85°C, 120Hz ; ESR. : 20°C, 120Hz

• The standard ratings follow the next page.

NOTE : Design, Specifications are subject to change without notice.
 It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

160V				200V				250V								
Rated capacitance (μF)	tan δ	Case (mm)		Rated ripple current (mA rms)	Rated capacitance (μF)	tan δ	Case (mm)		Rated ripple current (mA rms)	Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)	
		φD	L				φD	L				φD	L			
3,300	0.25	36	121	AC1	5.2	2,200	0.25	36	100	AA0	3.9	1,500	0.25	36	100	AA0 3.2
4,700	0.25	51	75	C75	5.9	3,300	0.25	51	75	C75	4.9	2,200	0.25	51	75	C75 4.0
5,600	0.25	51	96	C96	7.0	4,700	0.25	51	96	C96	6.4	3,300	0.25	51	96	C96 5.4
6,800	0.25	51	96	C96	7.8	5,600	0.25	51	115	CB5	7.6	4,700	0.25	64	96	D96 7.1
10,000	0.25	64	96	D96	10.4	6,800	0.25	51	130	CD0	8.8	6,800	0.25	64	115	DB5 9.1
12,000	0.25	51	120	CC0	11.3	8,200	0.25	64	96	D96	9.4	8,200	0.25	64	115	DB5 10.0
15,000	0.25	64	130	DD0	14.3	10,000	0.25	64	96	D96	10.4	10,000	0.25	64	130	DD0 11.7
18,000	0.25	64	130	DD0	15.6	15,000	0.25	77	96	E96	14.4	15,000	0.25	77	130	ED0 15.1
22,000	0.25	77	130	ED0	18.3	18,000	0.25	77	130	ED0	16.5	18,000	0.25	77	155	EF5 17.7
33,000	0.25	90	131	FD1	23.8	22,000	0.25	77	150	EF0	19.6	22,000	0.25	90	157	FF7 20.9
39,000	0.25	90	157	FF7	27.9	33,000	0.25	90	157	FF7	25.3	—	—	—	—	—

350V				400V				450V									
Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)	Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)	Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)
		φD	L					φD	L					φD	L		
470	0.20	36	83	A83	2.2	470	0.20	36	83	A83	2.2	470	0.20	36	83	A83 2.2	
680	0.20	36	83	A83	2.6	680	0.20	36	100	AA0	2.8	680	0.20	36	100	AA0 2.8	
1,000	0.20	36	100	AA0	3.4	1,000	0.20	51	75	C75	3.5	820	0.20	51	75	C75 3.2	
1,500	0.20	51	75	C75	4.3	1,200	0.20	51	75	C75	3.8	1,000	0.20	51	75	C75 3.5	
1,800	0.20	51	96	C96	5.1	1,500	0.20	51	96	C96	4.7	1,200	0.20	51	96	C96 4.2	
2,200	0.20	51	96	C96	5.7	1,800	0.20	51	96	C96	5.2	1,500	0.20	51	115	CB5 5.0	
2,700	0.20	51	130	CD0	7.1	2,200	0.20	51	120	CC0	6.4	1,800	0.20	51	130	CD0 5.9	
3,300	0.20	51	130	CD0	7.9	2,700	0.20	64	96	D96	7.0	2,200	0.20	64	96	D96 6.3	
3,900	0.20	64	115	DB5	9.0	3,300	0.20	64	115	DB5	8.2	2,700	0.20	64	115	DB5 7.5	
4,700	0.20	64	130	DD0	10.3	3,900	0.20	64	130	DD0	9.4	3,300	0.20	64	130	DD0 8.7	
5,600	0.20	77	115	EB5	11.4	4,700	0.20	77	115	EB5	10.4	3,900	0.20	77	115	EB5 9.5	
6,800	0.20	77	130	ED0	13.1	5,600	0.20	77	130	ED0	11.9	4,700	0.20	77	130	ED0 10.9	
8,200	0.20	77	155	EF5	15.4	6,800	0.20	77	155	EF5	14.1	5,600	0.20	77	155	EF5 12.8	
10,000	0.20	90	157	FF7	18.1	8,200	0.20	90	157	FF7	16.4	6,800	0.20	90	157	FF7 15.0	
12,000	0.20	90	157	FF7	20.0	10,000	0.20	90	157	FF7	18.3	8,200	0.20	90	157	FF7 16.5	
15,000	0.20	90	196	FJ6	24.5	12,000	0.20	90	196	FJ6	21.8	10,000	0.20	90	196	FJ6 20.0	
18,000	0.20	90	236	FN6	28.8	15,000	0.20	90	236	FN6	26.3	12,000	0.20	90	236	FN6 23.6	

500V				600V				630V									
Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)	Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)	Rated capacitance (μF)	tan δ	Case (mm)		Casing symbol	Rated ripple current (mA rms)
		φD	L					φD	L					φD	L		
1,000	0.25	51	115	CB5	4.6	1,200	0.25	64	96	D96	7.7	1,000	0.30	64	130	DD0 6.0	
1,500	0.25	64	96	D96	5.7	1,500	0.25	64	115	DB5	9.3	1,200	0.30	77	115	EB5 6.7	
2,200	0.25	64	130	DD0	6.9	1,800	0.25	77	96	E96	10.1	1,500	0.30	77	130	ED0 8.1	
2,700	0.25	77	115	EB5	8.1	2,200	0.25	77	115	EB5	12.0	1,800	0.30	77	155	EF5 9.8	
3,300	0.25	77	130	ED0	9.6	2,700	0.25	77	130	ED0	14.0	2,200	0.30	90	131	FD1 10.7	
3,900	0.25	77	130	ED0	10.8	3,300	0.25	77	155	EF5	16.4	2,700	0.30	90	157	FF7 12.8	
4,700	0.25	77	155	EF5	12.1	3,300	0.25	90	131	FD1	16.4	3,300	0.30	90	171	FH1 14.7	
5,600	0.25	90	157	FF7	13.8	3,900	0.25	90	131	FD1	17.8	3,900	0.30	90	196	FJ6 17.9	
6,800	0.25	90	171	FH1	15.8	4,700	0.25	90	157	FF7	21.0	4,700	0.30	90	196	FJ6 21.6	
8,200	0.25	77	220	EM0	17.2	5,600	0.25	90	196	FJ6	24.5	5,600	0.30	101	220	FMO 24.9	
10,000	0.25	90	236	FN6	22.1												

(Note) Rated ripple current : 85°C, 120Hz ; ESR. : 20°C, 120Hz

Aluminum Electrolytic Capacitors

Polymer hybrid type aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors With Conductive
Polymer Solid Electrolyte

Chip Type Aluminum Electrolytic Capacitors

Miniature Type Aluminum Electrolytic Capacitors

Large Capacitance Aluminum Electrolytic Capacitors

Aluminum Electrolytic Capacitors for Audio

ALUMINUM

POLYMER
HYBRIDCHIP
ALUMINUMMINIATURE
ALUMINUMLARGE
ALUMINUMFOR AUDIO
ALUMINUM

Chip Type Audio Use Capacitors

GREEN CAP SMD For Audio

- Audio grade surface mount product with completely new components using synthetic mica paper for the separator.
- Both quality sense and sound field that could not be realized by the surface mount products are reproducible.

For higher grade

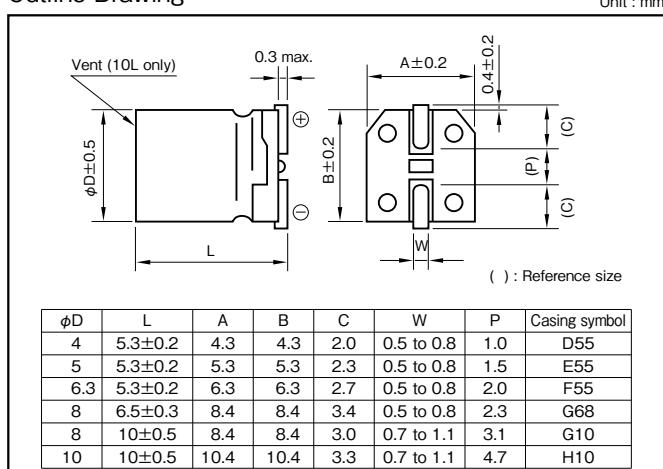
Marking color : Black print (except height : 10mm)
White print on a brown sleeve ($\phi 8 \times 10L, \phi 10 \times 10L$)

Specifications

Item	Performance							
Category temperature range (°C)	-40 to +85							
Tolerance at rated capacitance (%)	± 20							
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V: Rated voltage (V)							
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	
	tanδ (max.)	0.28	0.24	0.20	0.14	0.12	0.10	
	(20°C, 120Hz)							
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	3	2	2	2	
		Z-40°C/Z+20°C	8	5	4	3	3	
	(20°C, 120Hz)							
Endurance (85°C) (Applied ripple current)	Test time	2000 hours						
	Leakage current	The initial specified value or less						
	Percentage of capacitance change	Within $\pm 20\%$ of initial value						
	Tangent of the loss angle	200% or less of the initial specified value						
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4							
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)							

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k·100k
Rated voltage (V)				
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.80	1	1.35	1.50

Part numbering system (example : 16V470μF)

RVO	—	16	V	471	M	H10	P2 U —	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

• Soldering conditions are described on page 15. • Land pattern size are described on page 13. • The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50		
	Rated capacitance (μF)	Case	Rated ripple current										
		φDXL (mm)	(mArms)										
0.33	—	—	—	—	—	—	—	—	—	—	—	4×5.3	6
0.47	—	—	—	—	—	—	—	—	—	—	—	4×5.3	7
1	—	—	—	—	—	—	—	—	—	—	—	4×5.3	10
2.2	—	—	—	—	—	—	—	—	—	—	—	4×5.3	15
3.3	—	—	—	—	—	—	—	—	—	4×5.3	17	4×5.3	19
4.7	—	—	—	—	—	4×5.3	18	4×5.3	19	4×5.3	20	5×5.3	26
10	—	—	4×5.3	23	4×5.3	26	5×5.3	32	5×5.3	34	6.3×5.3	44	
22	4×5.3	31	5×5.3	40	5×5.3	44	6.3×5.3	55	6.3×5.3	59	8×6.5	124	
33	5×5.3	44	5×5.3	49	6.3×5.3	63	6.3×5.3	67	8×6.5	124	8×6.5	124	
47	5×5.3	53	6.3×5.3	68	6.3×5.3	76	8×6.5	124	8×6.5	124	8×10	200	
100	6.3×5.3	90	6.3×5.3	99	8×6.5	124	8×6.5	137	8×10	200	10×10	366	
220	8×6.5	149	8×6.5	149	8×10	200	8×10	235	10×10	366	—	—	
330	8×6.5	160	8×10	226	8×10	245	10×10	366	—	—	—	—	
470	8×10	251	10×10	366	10×10	366	—	—	—	—	—	—	
1000	10×10	423	—	—	—	—	—	—	—	—	—	—	

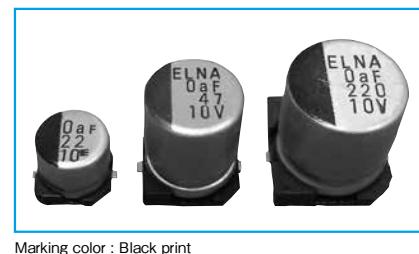
(Note) Rated ripple current : 85°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type,For Audio,High Grade(SILMIC) Capacitors

- Silk fiber paper products used surface mount device.
- Completely new audio products for the high-grade paper using silk fiber paper.
- Silk "flexibility" to reduce the vibration energy of the music, in the sense of high-frequency peak, a significant decrease in roughness of the midrange and bass increase.

GREEN CAP **SMD** **For Audio**



SILMIC SMD

RVF



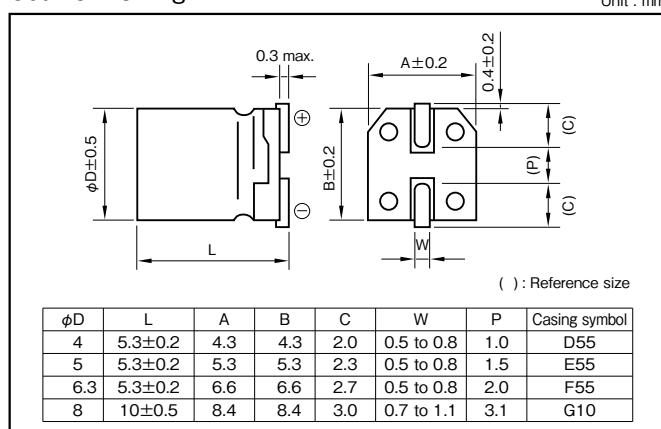
ROS

Marking color : Black print

Specifications

Item	Performance						
Category temperature range (°C)	-40 to +85						
Tolerance at rated capacitance (%)	±20						
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V : Rated voltage (V)						
Tangent of loss angle (tanδ)	Rated voltage (V)	10	16	50			
	tanδ (max.)	0.32	0.26	0.12			
Characteristics at high and low temperature	Rated voltage (V)	10	16	50			
	Impedance ratio (max.)	Z-25°C/Z+20°C	3	2			
		Z-40°C/Z+20°C	8	4			
Endurance (85°C)	Test time	2000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within ±20% of initial value					
	Tangent of the loss angle	200% or less of the initial specified value					
Shelf life (85°C)	Test time : 500hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4						
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)						

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k · 100k
Rated voltage (V)				
10 to 16	0.80	1	1.15	1.25
50	0.80	1	1.35	1.50

Part numbering system (example : 16V10μF)

RVF	—	16	V	100	M	E55	U —	[]
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol	

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	10		16		50		
	Item	Case	Rated ripple current	Case	Rated ripple current	Case	Rated ripple current
		φD×L (mm)	(mArms)	φD×L (mm)	(mArms)	φD×L (mm)	(mArms)
1	—	—	—	—	4×5.3	7	
2.2	—	—	—	—	5×5.3	11	
3.3	—	—	—	—	6.3×5.3	16	
4.7	—	—	4×5.3	10	6.3×5.3	19	
10	5×5.3	15	5×5.3	16	8×10	41	
22	6.3×5.3	25	6.3×5.3	28	—	—	
33	6.3×5.3	31	8×10	50	—	—	
47	8×10	54	8×10	60	—	—	
100	8×10	79	8×10	87	—	—	

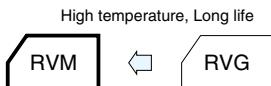
(Note) Rated ripple current : 85°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type,For Audio,High Grade Capacitors

GREEN CAP SMD 105°C 2000hours For Audio

- New developed Al-Foil and Electrolyte for Audio grade allow lower distortion.
- New range of bright and smooth sound is achieved in SMD area.
- Guarantees 2000 hours 105°C.

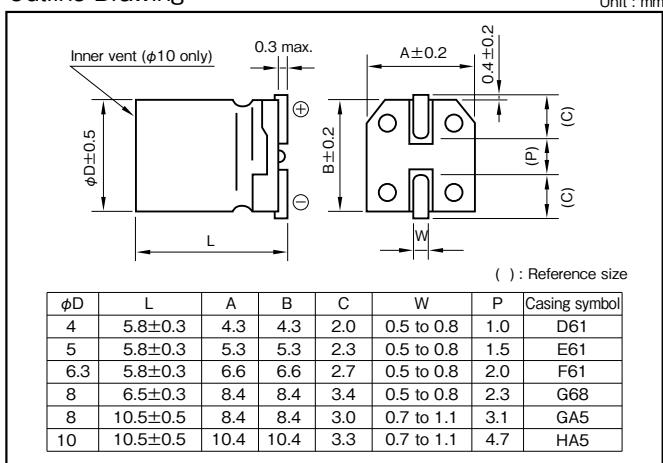


Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-55 to +105										
Tolerance at rated capacitance (%)	±20										
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF), V: Rated voltage (V)										
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35					
	tanδ (max.)	0.28	0.24	0.20	0.16	0.13					
		(20°C,120Hz)									
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35					
	Z-25°C/Z+20°C	2	2	2	2	2					
	Impedance ratio (max.)	8	4	4	3	3					
	Z-55°C/Z+20°C	(120Hz)									
Endurance (105°C)	Test time	2000 hours									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±30% of initial value									
	Tangent of the loss angle	300% or less of the initial specified value									
Shelf life (105°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)										

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V) \ Frequency (Hz)	50	120	1k	10k·100k
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40
50	0.50 4.7μF or more	1 0.70	1.35 1 1.35	1.50 1.50

Part numbering system (example : 6.3V220μF)

RVM	—	6	V	221	M	G68	P	U	—	R2
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol		Taping symbol		

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Item Rated capacitance (μF)	6.3		10		16		25		35		50	
	Case	Rated ripple current (mA rms)										
	φDXL (mm)		φDXL (mm)		φDXL (mm)		φDXL (mm)		φDXL (mm)		φDXL (mm)	
1	—	—	—	—	—	—	—	—	—	—	4×5.8	7
2.2	—	—	—	—	—	—	—	—	—	—	4×5.8	10
3.3	—	—	—	—	—	—	—	—	—	—	4×5.8	12
4.7	—	—	—	—	4×5.8	11	4×5.8	13	4×5.8	14	5×5.8	17
10	—	—	4×5.8	15	4×5.8	17	5×5.8	21	5×5.8	24	6.3×5.8	29
22	4×5.8	21	5×5.8	26	5×5.8	28	6.3×5.8	37	6.3×5.8	41	8×6.5	52
33	5×5.8	29	5×5.8	32	6.3×5.8	41	6.3×5.8	45	8×6.5	62	8×10.5	75
47	5×5.8	35	6.3×5.8	44	6.3×5.8	48	8×6.5	66	8×10.5	86	8×10.5	90
100	6.3×5.8	60	8×6.5	79	8×6.5	86	8×10.5	113	10×10.5	145	10×10.5	151
					8×10.5	101						
220	8×10.5	127	8×10.5	137	8×10.5	150	10×10.5	194	10×10.5	216	—	—
					10×10.5	174						
330	8×10.5	156	10×10.5	194	10×10.5	213	—	—	—	—	—	—
470	10×10.5	215	10×10.5	232	10×10.5	254	—	—	—	—	—	—

(Note) Rated ripple current : 105°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Chip Type Audio Use Capacitors

GREEN CAP SMD For Audio

- New developed Al-Foil and Electrolyte for Audio grade allow lower distortion.
- New range of bright and smooth sound is achieved in SMD area.



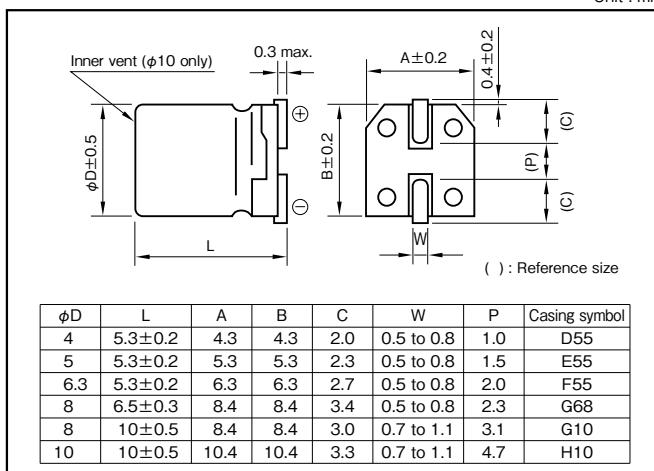
Marking color : Black print

Specifications

Item	Performance										
Category temperature range (°C)	-40 to +85										
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)										
Leakage current (μ A)											
	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μ F) ; V : Rated voltage (V) (20°C)										
Tangent of loss angle ($\tan\delta$)	Rated voltage (V)	6.3	10	16	25	35					
	$\tan\delta$ (max.)	0.28	0.24	0.20	0.16	0.14					
	(20°C, 120Hz)										
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35					
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2					
	Z-40°C/Z+20°C	8	5	4	3	3					
	(120Hz)										
Endurance (85°C) (Applied ripple current)	Test time	2000 hours									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within $\pm 20\%$ of initial value									
	Tangent of the loss angle	200% or less of the initial specified value									
Shelf life (85°C)	Test time : 500hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1 1998, -18 1999 (IEC 60384-1 1992, -18 1993)										

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.80	1	1.15	1.25
25 to 35	0.80	1	1.25	1.40

Part numbering system (example : 16V47 μ F)

RVG	—	16	V	470	M	F55	U	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping symbol			

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35	
	Item	Case	Rated ripple current	Case						
3.3	—	—	—	—	—	—	—	—	—	4x5.3
4.7	—	—	—	—	4x5.3	11	4x5.3	12	4x5.3	13
10	—	—	—	—	5x5.3	19	5x5.3	21	5x5.3	22
22	4x5.3	20	—	—	5x5.3	28	6.3x5.3	36	6.3x5.3	39
33	5x5.3	29	5x5.3	31	6.3x5.3	40	6.3x5.3	44	8x6.5	60
47	5x5.3	34	6.3x5.3	43	6.3x5.3	47	8x6.5	66	8x10	82
100	6.3x5.3	58	8x6.5	79	8x6.5	87	8x10	112	10x10	139
220	8x6.5	107	8x10	136	8x10	149	10x10	192	—	—
330	8x10	153	8x10	166	10x10	221	—	—	—	—
470	8x10	183	10x10	229	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.

It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

SILMIC series Silk fiber using audio purpose capacitor

- ELNA developed new raw material for the separate paper which use a silk fibers. Therefore, this capacitor can give you high grade sound for your audio design.
- Due to the silk fiber's pliability, the capacitor makes a dream of the high quality sound.

For examples ;

- To relieve the music's vibration energy.
- To decrease the peak feeling sound at high compass and rough quality sound at middle compass.
- To increase massive sound at low compass.
- For bipolar capacitors, consult with us.



Marking color : White print on a brown sleeve

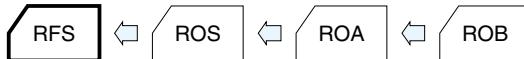
Miniature High Grade Capacitors for Audio(SILMIC II)

GREEN CAP **For Audio**

- All lead wires oxygen-free copper for extremely low distortion.
(Third high frequency distortion 10kHz, 0.1A, -120dB or less)

- "SILMIC II" mark on sleeve.

For higher grade For higher grade For higher grade

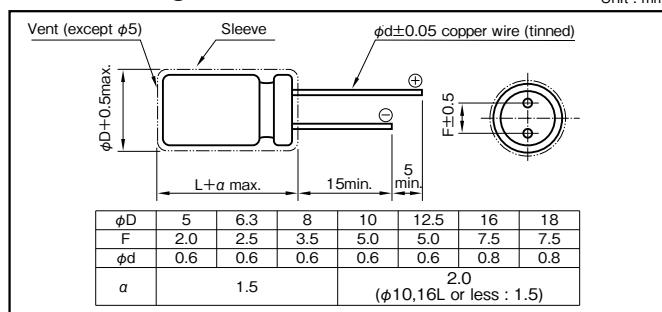


Specifications

Item	Performance														
Category temperature range (°C)	-40 to +85														
Tolerance at rated capacitance (%)	±20														
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V)														
Tangent of loss angle (tanδ)	Rated voltage (V)			6.3	10	16	25	35	50						
	tanδ (max.)			0.20	0.17	0.13	0.10	0.08	0.08						
	0.02 is added to every 1000μF increase over 1000μF														
	(20°C, 120Hz)														
Endurance (85°C) (Applied ripple current)	Test time			1000 hours											
	Leakage current			The initial specified value or less											
	Percentage of capacitance change			Within ±20% of initial value											
	Tangent of the loss angle			150% or less of the initial specified value											
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz) CV (μF×WV)	50 · 60	120	1k	10k	100k
		6.3 to 16	All CV value	0.8	1	1.1
25 to 35	≤1000	0.8	1	1.5	1.7	1.7
	1000<	0.8	1	1.2	1.3	1.3
50 to 100	≤1000	0.8	1	1.6	1.9	1.9
	1000<	0.8	1	1.2	1.3	1.3

Part numbering system (example : 25V100μF)

RFS	—	25	V	101	M	H4	#5	—	□
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping (Forming) symbol				

Case symbol

Case	Casing	Case	Casing	Case	Casing	Case	Casing
φDXL (mm)	Symbol						
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	16×35.5	J8
8×11.5	G3	10×20	H5	16×25	J6	18×35.5	K8
						18×40	K9

Standard Ratings

Rated voltage (V)	6.3	10	16	25	35	50	63	100		
	Item	Case	Rated ripple current							
3.3	—	—	—	—	—	—	—	—	—	
4.7	—	—	—	—	—	5x11	25	5x11	30	
10	—	—	—	5x11	35	5x11	35	5x11	35	
22	—	—	5x11	50	5x11	60	8x11.5	95	10x12.5	130
33	5x11	55	5x11	65	5x11	70	8x11.5	120	10x12.5	140
47	5x11	65	5x11	75	8x11.5	125	8x11.5	140	10x12.5	170
100	8x11.5	135	8x11.5	145	10x12.5	215	10x16	270	12.5x20	295
220	10x12.5	240	10x16	260	10x20	385	12.5x20	505	12.5x25	550
330	10x16	290	10x20	350	12.5x20	545	12.5x25	675	16x25	785
470	10x20	390	12.5x20	455	12.5x25	710	16x25	940	16x31.5	1030
1000	12.5x20	710	16x25	835	16x31.5	1315	16x35.5	1575	18x35.5	1690
2200	—	—	16x35.5	1500	18x40	2150	—	—	18x40	1985
3300	—	—	18x40	1980	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz

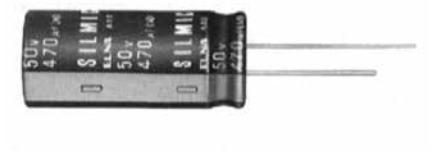
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

■ SILMIC series Silk fiber using audio purpose capacitor

High Grade Capacitors for Audio(SILMIC)

GREEN CAP For Audio

- All lead wires oxygen-free copper for extremely low distortion. (Third high frequency distortion 10kHz, 0.1A, -120dB or less)
- "SILMIC" mark on sleeve.



Marking color : White print on a brown sleeve

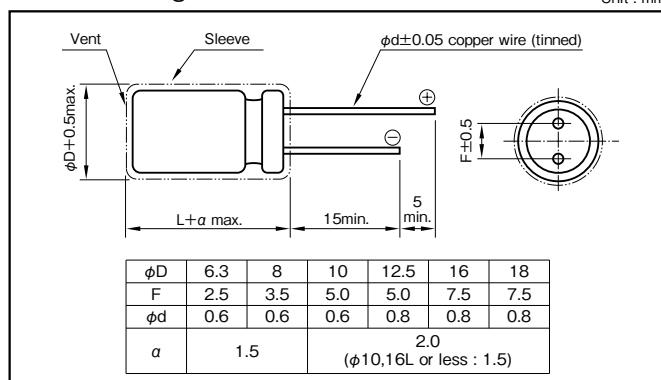
For higher grade For higher grade



Specifications

Item	Performance										
Category temperature range (°C)	-40 to +85										
Tolerance at rated capacitance (%)	±20					(20°C, 120Hz)					
Leakage current (µA)	Less than 0.01CV or 3 whichever is larger (after 5 minutes) C : Rated capacitance (µF) ; V : Rated voltage (V)										
Tangent of loss angle (tanδ)	Rated voltage (V)	16	25	35	50	63					
	tanδ (max.)	0.13	0.10	0.10	0.08	0.08					
	0.02 is added to every 1000µF increase over 1000µF										
Endurance (85°C) (Applied ripple current)	Test time	1000 hours									
	Leakage current	The initial specified value or less									
	Percentage of capacitance change	Within ±20% of initial value									
	Tangent of the loss angle	150% or less of the initial specified value									
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4										
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)										

Outline Drawing



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz) CV(µF×WV)	50 · 60	120	1k	10k	100k
		All CV value	0.8	1	1.1	1.2
16	≤1000	0.8	1	1.5	1.7	1.7
	1000<	0.8	1	1.2	1.3	1.3
	≤1000	0.8	1	1.6	1.9	1.9
25 to 35	1000<	0.8	1	1.2	1.3	1.3
	50 to 100	0.8	1	1.6	1.9	1.9
	1000<	0.8	1	1.2	1.3	1.3

Part numbering system (example : 25V100µF)

ROS	—	25	V	101	M	H4	#5	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping (Forming) symbol			

Case symbol

Case φDXL (mm)	Casing Symbol						
6.3x11	F3	10x16	H4	12.5x25	I6	16x35.5	J8
8x11.5	G3	10x20	H5	16x25	J6	18x35.5	K8
10x12.5	H3	12.5x20	I5	16x31.5	J7	18x40	K9

Standard Ratings

Rated voltage (V)	16		25		35		50		63		100		
	Item	Case φDXL (mm)	Rated ripple current (mA rms)										
10		—	—	—	—	6.3x11	55	8x11.5	75	8x11.5	75	10x16	95
22		6.3x11	70	6.3x11	80	8x11.5	95	10x12.5	130	10x16	140	10x20	155
33		6.3x11	90	8x11.5	120	10x12.5	140	10x16	175	10x20	190	12.5x20	220
47		8x11.5	125	8x11.5	140	10x12.5	170	10x16	210	10x20	225	12.5x25	285
100		10x12.5	215	10x16	270	10x20	295	12.5x20	380	12.5x25	415	16x25	485
220		10x20	385	12.5x20	505	12.5x25	550	16x25	720	16x31.5	785	18x40	930
330		12.5x20	545	12.5x25	675	16x25	785	16x31.5	965	16x35.5	1010	—	—
470		12.5x25	710	16x25	940	16x31.5	1030	16x35.5	1210	18x35.5	1295	—	—
1000		16x31.5	1315	16x35.5	1575	18x35.5	1690	18x40	1985	—	—	—	—
2200		18x40	2150	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz.

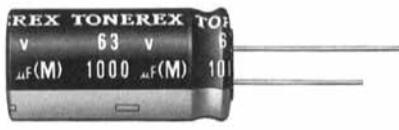
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Miniature Standard Capacitors for Audio

GREEN CAP
For Audio

TONEREX

- Adopting the newly developed formation method and composite electrolytic paper for audio application has reduced distortion, achieving high-quality sound.
- All lead wires are oxygen-free copper wires to reduce distortion.



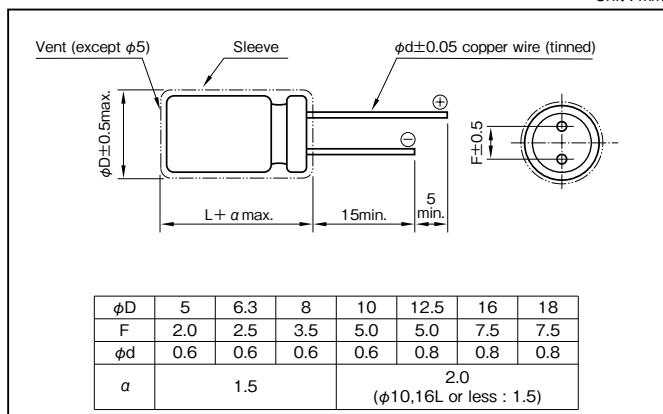
Marking color : Gold print on a black sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +85														
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)														
Leakage current (μA)	Less than 0.01CV or 4 whichever is larger (after 5 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63							
	tanδ (max.)	0.24	0.20	0.16	0.14	0.12	0.10	0.09							
	0.02 is added to every 1000μF increase over 1000μF (20°C,120Hz)														
Endurance (85°C) (Applied ripple current)	Test time	1000 hours													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within ±20% of initial value													
	Tangent of the loss angle	150% or less of the initial specified value													
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage (V)	Frequency (Hz) CV (μF × WV)	50 · 60	120	1k	10k	100k
		All CV value	1	1.1	1.2	1.2
6.3 to 16	≤1000	0.8	1	1.5	1.7	1.7
	1000 <	0.8	1	1.2	1.3	1.3
25 to 35	≤1000	0.8	1	1.6	1.9	1.9
	1000 <	0.8	1	1.2	1.3	1.3
50 to 100	≤1000	0.8	1	1.6	1.9	1.9
	1000 <	0.8	1	1.2	1.3	1.3

Part numbering system (example : 25V100μF)

ROB	—	25	V	101	M	G3	#	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping (Forming) symbol			

Case symbol

Case φDXL (mm)	Casing Symbol						
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	16×35.5	J8
8×11.5	G3	10×20	H5	16×25	J6	18×35.5	K8
						18×40	K9

Standard Ratings

Rated voltage (V)	6.3		10		16		25		35		50		63		100		
	Item	Case φDXL (mm)	Rated ripple current (mArms)														
1	—	—	—	—	—	—	—	—	—	—	—	5×11	10	—	—	5×11	15
2.2	—	—	—	—	—	—	—	—	—	—	—	5×11	20	—	—	5×11	25
3.3	—	—	—	—	—	—	—	—	—	—	—	5×11	25	—	—	5×11	30
4.7	—	—	—	—	—	—	—	5×11	25	—	—	5×11	35	5×11	35	6.3×11	40
10	—	—	—	—	5×11	35	5×11	40	5×11	45	5×11	50	6.3×11	60	8×11.5	70	
22	—	—	5×11	50	5×11	60	5×11	60	6.3×11	75	6.3×11	80	8×11.5	100	10×12.5	120	
33	5×11	55	5×11	65	5×11	70	6.3×11	80	6.3×11	90	8×11.5	110	8×11.5	115	10×16	160	
47	5×11	65	5×11	75	6.3×11	95	6.3×11	100	8×11.5	120	8×11.5	130	10×12.5	165	10×20	210	
100	6.3×11	110	6.3×11	120	8×11.5	150	8×11.5	165	10×12.5	210	10×16	250	10×20	285	12.5×20	340	
220	8×11.5	185	8×11.5	200	10×12.5	265	10×16	310	10×20	365	12.5×20	440	12.5×20	470	16×25	620	
330	10×12.5	265	10×12.5	290	10×16	350	10×20	410	12.5×20	500	12.5×20	540	12.5×25	620	16×31.5	820	
470	10×12.5	315	10×16	380	10×20	460	12.5×20	550	12.5×25	640	16×25	800	16×25	840	18×35.5	1000	
1000	10×20	550	12.5×20	670	12.5×25	810	16×25	1000	16×25	1050	16×31.5	1200	18×35.5	1500	—	—	
2200	12.5×25	980	16×25	1200	16×25	1350	16×35.5	1650	18×35.5	1900	—	—	—	—	—	—	
3300	16×25	1300	16×31.5	1600	16×35.5	1800	18×40	2100	—	—	—	—	—	—	—	—	
4700	16×31.5	1700	16×35.5	1900	18×35.5	2400	—	—	—	—	—	—	—	—	—	—	
6800	16×35.5	2100	18×40	2600	—	—	—	—	—	—	—	—	—	—	—	—	
10000	18×40	2800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 85°C, 120Hz

Miniature Capacitors for Audio (PURECAP)

GREEN CAP

For Audio



Marking color : Gold print on a black sleeve

- A standard capacitor utilizing a newly developed material for a high grade of audio reproduction.
- Copper clad steel wire is used for leads.
- New type miniaturized capacitor for audio, using synthetic mica paper for the separator.

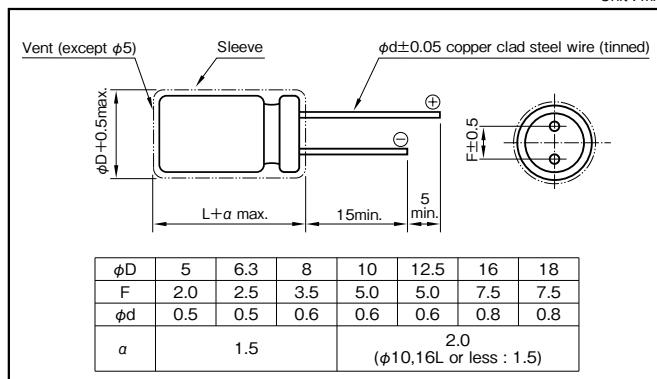


Specifications

Item	Performance														
Category temperature range (°C)	-40 to +85														
Tolerance at rated capacitance (%)	± 20 (20°C, 120Hz)														
Leakage current (pA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63							
	tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09							
	0.02 is added to every 1000μF increase over 1000μF (20°C, 120Hz)														
Endurance (85°C) (Applied ripple current)	Test time	1000 hours													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within $\pm 20\%$ of initial value													
	Tangent of the loss angle	150% or less of the initial specified value													
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage(V)	Frequency(Hz)	50 · 60	120	1k	10k	100k
		CV(μFxVW)	CV(μFxVW)	CV(μFxVW)	CV(μFxVW)	CV(μFxVW)
6.3 to 16	All CV value	0.8	1	1.1	1.2	1.2
	≤ 1000	0.8	1	1.5	1.7	1.7
25 to 35	$1000 <$	0.8	1	1.2	1.3	1.3
	≤ 1000	0.8	1	1.6	1.9	1.9
50 to 100	$1000 <$	0.8	1	1.2	1.3	1.3

Part numbering system (example : 25V100μF)

RFO	—	25	V	101	M	F3	P#	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol			Taping (Forming) symbol	

Case symbol

Case	Casing	Case	Casing	Case	Casing	Case	Casing
φDXL (mm)	Symbol						
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	18×35.5	K8
8×11.5	G3	10×20	H5	16×25	J6		

Standard Ratings

Rated capacitance (μF)	Item	6.3		10		16		25		35		50		63		100	
		Case	Rated ripple current														
1		—	—	—	—	—	—	—	—	5×11	15	—	—	5×11	15	—	—
2.2		—	—	—	—	—	—	—	—	5×11	20	—	—	5×11	25	—	—
3.3		—	—	—	—	—	—	—	—	5×11	25	—	—	5×11	30	—	—
4.7		—	—	—	—	—	—	—	—	5×11	30	5×11	30	5×11	35	5×11	35
10		—	—	—	—	—	—	—	—	5×11	45	5×11	45	5×11	50	6.3×11	60
22		—	—	—	—	5×11	50	5×11	55	5×11	60	5×11	70	6.3×11	85	8×11.5	110
33		—	—	5×11	55	5×11	60	5×11	70	5×11	80	6.3×11	100	6.3×11	100	10×12.5	160
47		—	—	5×11	65	5×11	75	5×11	85	6.3×11	110	6.3×11	120	8×11.5	150	10×16	210
100		5×11	85	5×11	95	6.3×11	120	6.3×11	140	8×11.5	190	8×11.5	210	10×12.5	260	12.5×20	380
220		6.3×11	150	6.3×11	165	8×11.5	220	8×11.5	250	10×12.5	330	10×16	400	10×20	460	16×25	720
330		6.3×11	180	8×11.5	240	8×11.5	270	10×12.5	370	10×16	450	10×20	540	12.5×20	650	16×25	880
470		8×11.5	260	8×11.5	280	10×12.5	390	10×16	480	10×20	590	12.5×20	740	12.5×25	850	16×31.5	1150
1000		10×12.5	450	10×16	540	10×20	680	12.5×20	880	12.5×25	1050	16×25	1350	16×31.5	1550	—	—
2200		12.5×20	890	12.5×20	970	12.5×25	1200	16×25	1550	16×31.5	1750	18×35.5	2100	—	—	—	—
3300		12.5×20	1050	12.5×25	1250	16×25	1600	16×31.5	1950	18×35.5	2250	—	—	—	—	—	—
4700		16×25	1550	16×25	1650	16×31.5	2050	18×35.5	2500	—	—	—	—	—	—	—	—
6800		16×25	1750	16×31.5	2050	18×35.5	2550	—	—	—	—	—	—	—	—	—	—
10000		16×31.5	2150	18×35.5	2550	—	—	—	—	—	—	—	—	—	—	—	—
15000		18×35.5	2700	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Miniature Capacitors for Audio

GREEN CAP For Audio

- With the same size as that for Series RE3 miniaturized standard capacitors, a high resolution sound quality grade has been realized.
- The newly developed audio use material makes clear sound a reality.
- All lead wires are copper clad steel.



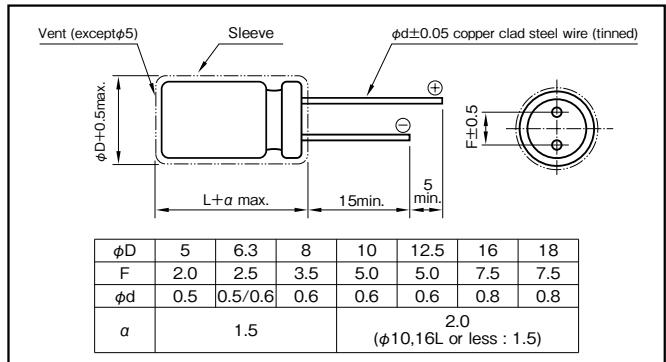
Marking color : White print on a brown sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-40 to +85														
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)														
Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) ; V : Rated voltage (V) (20°C)														
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63							
	tanδ (max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.11							
	0.02 is added to every 1000μF increase over 1000μF (20°C,120Hz)														
Endurance (85°C) (Applied ripple current)	Test time	2000 hours													
	Leakage current	The initial specified value or less													
	Percentage of capacitance change	Within ±20% of initial value													
	Tangent of the loss angle	200% or less of the initial specified value													
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4														
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)														

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated voltage(V)	Frequency (Hz) CV (μF×WV)	50 · 60	120	1k	10k	100k	
		6.3 to 16	All CV value	0.8	1	1.1	1.2
25 to 35	≤1000	0.8	1	1.5	1.7	1.7	1.7
	1000<	0.8	1	1.2	1.3	1.3	1.3
50 to 100	≤1000	0.8	1	1.6	1.9	1.9	1.9
	1000<	0.8	1	1.2	1.3	1.3	1.3

Part numbering system (example : 25V100μF)

RA3	—	25	V	101	M	F3	#8	—
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping (Forming) symbol			

Case symbol

Case φDXL (mm)	Casing Symbol						
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	18×35.5	K8
8×11.5	G3	10×20	H5	16×25	J6	—	—

Standard Ratings

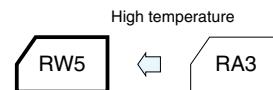
Item	6.3		10		16		25		35		50		63		100		
	Rated voltage (V)	Case φDXL (mm)	Rated ripple current (mArms)														
1	—	—	—	—	—	—	—	—	—	—	—	5×11	21	—	—	5×11	21
2.2	—	—	—	—	—	—	—	—	—	—	—	5×11	31	—	—	5×11	31
3.3	—	—	—	—	—	—	—	—	—	—	—	5×11	38	—	—	5×11	40
4.7	—	—	—	—	—	—	—	—	—	—	—	5×11	45	—	—	5×11	50
10	—	—	—	—	—	5×11	50	5×11	55	5×11	60	5×11	66	5×11	70	5×11	70
22	—	—	—	—	—	5×11	75	5×11	90	5×11	95	5×11	100	5×11	105	6.3×11	115
33	—	—	—	—	—	5×11	110	5×11	110	5×11	110	5×11	110	6.3×11	130	8×11.5	158
47	—	—	—	—	—	5×11	130	5×11	130	5×11	130	6.3×11	155	6.3×11	160	8×11.5	188
100	5×11	130	5×11	150	5×11	180	6.3×11	199	6.3×11	214	8×11.5	250	8×11.5	270	10×16	358	
220	5×11	240	6.3×11	250	6.3×11	280	8×11.5	349	8×11.5	350	10×12.5	429	10×16	505	12.5×20	663	
330	6.3×11	300	6.3×11	330	8×11.5	383	8×11.5	383	10×12.5	542	10×16	595	10×20	676	12.5×25	886	
470	6.3×11	380	8×11.5	417	8×11.5	480	10×12.5	545	10×16	664	12.5×20	887	12.5×20	924	16×25	1230	
1000	8×11.5	580	10×12.5	650	10×16	791	10×20	996	12.5×20	1210	12.5×25	1400	16×25	1710	18×35.5	2210	
2200	10×16	939	10×20	1080	12.5×20	1350	12.5×25	1660	16×25	1950	16×31.5	2340	18×35.5	2870	—	—	
3300	10×20	1230	12.5×20	1430	12.5×25	1690	16×25	2030	16×31.5	2320	18×35.5	2810	—	—	—	—	
4700	12.5×20	1710	12.5×25	1780	16×25	2100	16×31.5	2650	18×35.5	2290	—	—	—	—	—	—	
6800	12.5×25	1930	16×25	2270	16×31.5	2480	18×35.5	3290	—	—	—	—	—	—	—	—	
10000	16×25	2450	16×31.5	2500	18×35.5	3130	—	—	—	—	—	—	—	—	—	—	
15000	16×31.5	2580	18×35.5	3100	—	—	—	—	—	—	—	—	—	—	—	—	
22000	18×35.5	3150	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 85°C, 120Hz

105°C Miniature Capacitors for Audio

GREEN CAP 105°C 1000hours For Audio

- With the same size as that for Series RJ5 miniaturized standard capacitors, a high resolution sound quality grade has been realized.
- Guarantees 1000 hours at 105°C



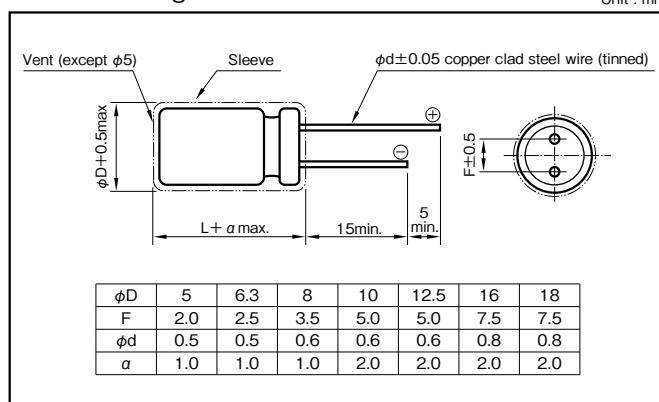
Marking color : Gold print on a black sleeve

Specifications

Item	Performance				
Category temperature range (°C)	–55 to +105				
Tolerance at rated capacitance (%)	±20		(20°C, 120Hz)		
Leakage current (µA)	Less than 0.03CV or 4 whichever is larger (after 1 minutes) C : Rated capacitance (µF) , V : Rated voltage (V)				
Tangent of loss angle (tanδ)	Rated voltage (V)	16	25		
	tanδ (max.)	0.24	0.20		
0.02CV is added to every 1000µF increase over 1000µF			(20°C, 120Hz)		
Characteristics at high and low temperature	Rated voltage (V)	16	25		
	Impedance ratio (max.) Z=25°C/Z+20°C	3	2		
Endurance (105°C) (Applied ripple current)	Z=40°C/Z+20°C	6	4		
	Test time	1000 hours			
	Leakage current	The initial specified value or less			
	Percentage of capacitance change	Within ±20% of initial value			
Shelf life (105°C) Applicable standards	Tangent of the loss angle	200% or less of the initial specified value			
	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4				
	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)				

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Rated Capacitance (µF)	Frequency (Hz)	50 · 60	120	1k	10k	100k
100 to 220	0.8	1	1.2	1.3	1.4	
330 to 1000	0.8	1	1.2	1.2	1.3	
2200 to 15000	0.8	1	1.1	1.1	1.1	

Part numbering system (example : 16V3300µF)

RW5	—	16	V	332	M	I6	#	—	[]
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Taping (Forming) symbol				

Standard Ratings

Rated voltage (V)	Item	16			25		
		Case	Casing symbol	Rated ripple current (mArms)	Case	Casing symbol	Rated ripple current (mArms)
100		—	—	—	5×11.5	E3	125
220		6.3×11.5	F3	190	6.3×11.5	F3	200
330		6.3×11.5	F3	225	8×12	G3	310
470		8×12	G3	323	10×12.5	H3	429
1000		10×12.5	H3	500	10×16	H4	610
2200	H5	710		12.5×25	I6	1180	
				16×20	J5	1230	
				18×16	K4	1200	
3300	12.5×25	I6	1200	16×25	J6	1440	
	16×20	J5	1250	18×20	K5	1400	
4700	16×25	J6	1500	16×25	J6	1570	
	18×20	K5	1460	18×20	K5	1530	
6800	16×25	J6	1600	16×35.5	J8	1850	
	18×20	K5	1560	18×31.5	K7	1870	
10000	16×35.5	J8	1930	18×40	K9	2000	
15000	18×40	K9	2210	—	—	—	

(Note) Rated ripple current : 105°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Miniature Bipolar Capacitors for Audio

GREEN CAP For Audio

- The newly developed audio use foil and special electrolyte makes clear and far-carrying sound a reality.
- All lead wires are copper clad steel.

Tone quality improvements

RBD

R2B



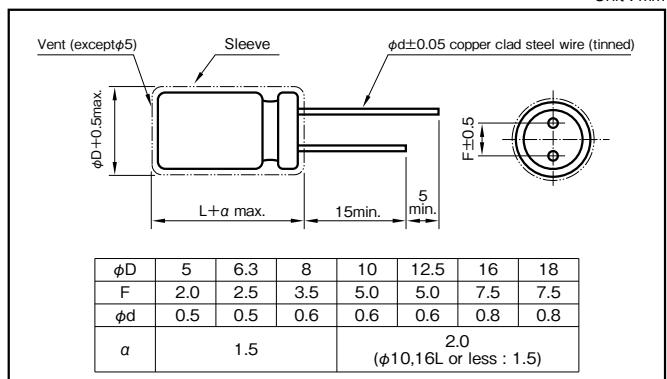
Marking color : Gold print on a black sleeve

Specifications

Item	Performance									
Category temperature range (°C)	-40 to +85									
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)									
Leakage current (μA)	Less than 0.03CV + 3 (after 5 minutes) C : Rated capacitance (μF); V : Rated voltage (V) (20°C)									
Tangent of loss angle (tanδ)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	
	tanδ (max.)	0.24	0.20	0.16	0.15	0.14	0.12	0.10	0.09	
	0.02 is added to every 1000μF increase over 1000μF. (20°C,120Hz)									
Characteristics at high and low temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	100	
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3	2	2	2	2	2	
		Z-40°C/Z+20°C	10	8	6	4	3	3	3	
	0.5 for -25°C, 1 for -40°C are added to every 1000μF increase over 1000μF. (120Hz)									
Endurance (85°C) (Applied ripple current)	Test time	2000 hours (with the polarity inverted every 250 hours)								
	Leakage current	The initial specified value or less								
	Percentage of capacitance change	Within ±20% of initial value								
	Tangent of the loss angle	150% or less of the initial specified value								
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)									

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50 · 60	120	1k	10k · 100k
Rated voltage (V)				
6.3 to 16	0.8	1	1.1	1.2
25 to 35	0.8	1	1.5	1.7
50 to 100	0.8	1	1.6	1.9

Part numbering system (example : 10V1000μF)

RBD	—	10	V	102	M	I5	#	—	[]
Series code		Rated voltage symbol		Rated capacitance symbol		Capacitance tolerance symbol		Casing symbol	Taping (Forming) symbol

Case symbol

Case	Casing	Case	Casing	Case	Casing	Case	Casing
φDXL (mm)	Symbol						
5×11	E3	10×12.5	H3	12.5×20	I5	16×31.5	J7
6.3×11	F3	10×16	H4	12.5×25	I6	18×35.5	K8
8×11.5	G3	10×20	H5	16×25	J6	—	—

Standard Ratings

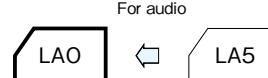
Rated voltage (V)	6.3		10		16		25		35		50		63		100		
	Item	Case	Rated ripple current (mAmps)	Case	Rated ripple current (mAmps)												
1	—	—	—	—	—	—	—	—	—	—	—	5×11	14	—	—	5×11	16
2.2	—	—	—	—	—	—	—	—	—	—	—	5×11	21	5×11	23	5×11	24
3.3	—	—	—	—	—	—	—	—	—	—	—	5×11	26	5×11	28	6.3×11	34
4.7	—	—	—	—	—	—	5×11	28	5×11	28	5×11	31	5×11	34	6.3×11	41	
10	—	—	—	—	5×11	39	5×11	40	5×11	42	5×11	45	6.3×11	57	8×11.5	70	
22	—	—	5×11	52	5×11	58	5×11	60	6.3×11	71	6.3×11	77	8×11.5	89	10×16	136	
33	5×11	58	5×11	63	5×11	71	6.3×11	84	6.3×11	87	8×11.5	111	10×12.5	144	10×20	181	
47	5×11	69	5×11	75	6.3×11	97	6.3×11	100	8×11.5	122	10×12.5	157	10×16	188	12.5×20	248	
100	6.3×11	115	6.3×11	126	8×11.5	167	10×12.5	204	10×12.5	212	10×20	273	12.5×20	343	16×25	458	
220	8×11.5	202	8×11.5	221	10×12.5	294	10×16	332	10×20	375	12.5×25	506	16×25	645	18×35.5	837	
330	8×11.5	247	10×12.5	322	10×16	394	10×20	444	12.5×20	526	12.5×25	620	—	—	—	—	
470	10×12.5	350	10×16	420	10×20	513	12.5×20	607	12.5×25	685	16×25	861	—	—	—	—	
1000	10×20	611	12.5×20	767	12.5×25	935	16×25	1120	16×31.5	1270	—	—	—	—	—	—	
2200	12.5×25	1090	16×25	1380	16×31.5	1660	—	—	—	—	—	—	—	—	—	—	
3300	16×25	1490	16×31.5	1760	—	—	—	—	—	—	—	—	—	—	—	—	
4700	16×31.5	1880	18×35.5	2280	—	—	—	—	—	—	—	—	—	—	—	—	

(Note) Rated ripple current : 85°C, 120Hz

Power Supply Smoothing Use, Standard Capacitors for Audio

GREEN CAP For Audio

- Best suited as power supply filters for sound quality priority audio equipment.
- Printed circuit board terminal snap-in type.



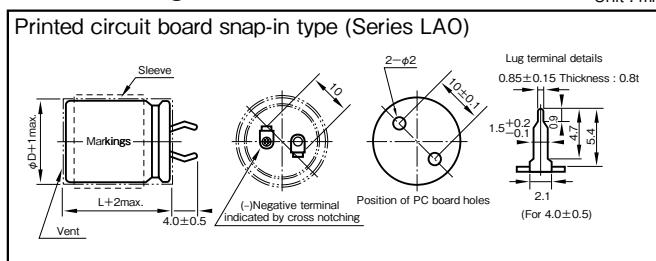
Marking color : Gold print on a black sleeve

Specifications

Item	Performance						
Category temperature range (°C)	-40 to +85						
Tolerance at rated capacitance (%)	±20						
Leakage current (µA)	Less than 0.03CV or 5mA whichever is smaller (after 5 minutes) C : Rated capacitance (µF), V : Rated voltage (V)						
Tangent of loss angle (tanδ)	Rated voltage (V)	16, 25	35	50 to 100			
	tanδ (max.)	0.40	0.35	0.30			
		(20°C, 120Hz)					
Characteristics at high and low temperature	Rated voltage (V)	16 to 35	50 to 100				
	Impedance ratio (max.)	Z-25°C/Z+20°C	4	3			
		Z-40°C/Z+20°C	15	10			
		(120Hz)					
Endurance (85°C) (Applied ripple current)	Test time	1000 hours					
	Leakage current	The initial specified value or less					
	Percentage of capacitance change	Within ±20% of initial value					
	Tangent of the loss angle	150% or less of the initial specified value					
Shelf life (85°C)	Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4						
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)						

Outline Drawing

Unit : mm



Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k	20k
Rated voltage (V)					
16 to 50	0.95	1	1.10	1.15	1.15
63 to 100	0.95	1	1.16	1.30	1.33

Part numbering system (example : 63V6800µF)

LAO	63	V	682	M	S57	PX	#	B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Optional symbol			

Standard Ratings

Case φDXL (mm)	Item Casing symbol	Rated voltage (V)		16		25		35		50		63		80		100	
		Rated capacitance (µF)	Rated ripple current (Arms)														
22×20	S21	3300	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22×25	S22	4700	1.5	2200	1.0	1500	0.8	1000	0.8	680	0.7	—	—	—	—	—	—
22×30	S23	—	—	3300	1.3	2200	1.3	1500	1.1	1000	0.9	680	0.7	—	—	—	—
22×35	S24	6800	2.0	4700	1.7	3300	1.7	—	—	2200	1.5	1500	1.2	1000	1.0	680	0.8
22×40	S25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22×45	S26	10000	2.7	6800	2.2	4700	2.3	—	—	2200	1.6	—	—	—	—	—	—
22×50	S27	—	—	—	—	—	—	3300	2.0	—	—	1500	1.3	1000	1.2	—	—
25×25	S32	—	—	3300	1.7	2200	1.7	1500	1.4	1000	1.2	680	1.0	—	—	—	—
25×30	S33	6800	2.5	4700	2.1	3300	2.2	2200	1.8	1500	1.5	1000	1.2	680	1.1	—	—
25×35	S34	10000	3.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25×40	S35	—	—	6800	2.7	4700	2.8	3300	2.3	2200	1.9	1500	1.6	1000	1.4	—	—
25×45	S36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25×50	S37	—	—	10000	3.0	6800	2.6	4700	2.4	3300	2.0	2200	2.0	1500	1.8	—	—
30×25	S42	6800	2.6	4700	2.2	3300	2.3	2200	1.9	1500	1.6	1000	1.3	680	1.1	—	—
30×30	S43	10000	3.3	6800	2.7	4700	2.8	3300	2.4	2200	1.9	1500	1.6	1000	1.4	—	—
30×35	S44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30×40	S45	—	—	10000	3.1	6800	2.7	4700	2.4	3300	2.1	2200	2.1	1500	1.8	—	—
30×45	S46	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30×50	S47	—	—	—	—	10000	3.4	6800	3.1	4700	2.6	3300	2.2	2200	2.0	1500	1.8
35×25	S52	10000	3.4	6800	2.8	4700	2.9	3300	2.4	2200	2.0	1500	1.7	1000	1.5	—	—
35×30	S53	—	—	10000	3.1	6800	2.7	4700	2.5	3300	2.1	2200	2.1	1500	1.8	—	—
35×35	S54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35×40	S55	—	—	—	—	10000	3.5	6800	3.1	4700	2.6	3300	2.2	2200	2.0	1500	1.8
35×45	S56	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35×50	S57	—	—	—	—	—	—	—	—	6800	3.3	4700	2.7	—	—	—	—

(Note) Rated ripple current : 85°C, 120Hz.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications
from ELNA to ensure that the component is suitable for your use.

1 General Description of Aluminum Electrolytic Capacitors

1-1 The Principle of Capacitor

The principle of capacitor can be presented by the principle drawing as in Fig.1-1.

When a voltage is applied between the metal electrodes placed opposite on both surfaces of a dielectric, electric charge can be stored proportional to the voltage.

$$Q = C \cdot V$$

Q : Quantity of electricity (C)

V : Voltage (V)

C : Capacitance (F)

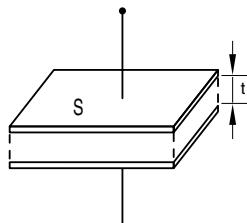


Fig.1-1

C, called the capacitance of capacitor, is expressed by the following expression with the electrode area $S[m^2]$, the electrode spacing $t [m]$ and the dielectric constant of dielectric "ε":

$$C[F] = \epsilon_0 \cdot \epsilon \cdot \frac{S}{t}$$

ϵ_0 : Dielectric constant in vacuum ($= 8.85 \times 10^{-12} F/m$)

The dielectric constant of an aluminum oxide film is 7 to 8. Larger capacitances can be obtained by enlarging the electrode area S or reducing t .

Table 1-1 shows the dielectric constants of typical dielectrics used in the capacitor. In many cases, capacitor names are determined by the dielectric material used, for example, aluminum electrolytic capacitor, tantalum capacitor, etc.

Table 1

Dielectric	Dielectric Constant	Dielectric	Dielectric Constant
Aluminum oxide film	7 to 8	Porcelain (ceramic)	10 to 120
Mylar	3.2	Polystyrene	2.5
Mica	6 to 8	Tantalum oxide film	10 to 20

Although the aluminum electrolytic capacitor is small, it has a large capacitance. It is because the electrode area is roughened by electrochemical etching, enlarging the electrode area and also because the dielectric is very thin.

The schematic cross section of the aluminum electrolytic capacitor is as in Fig.1-2.

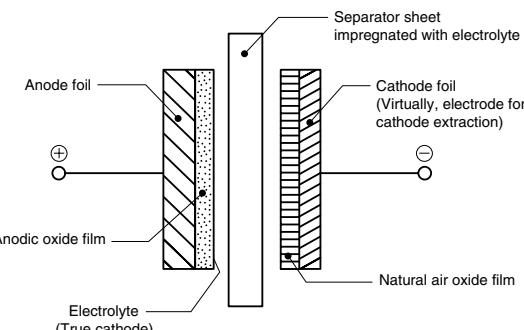
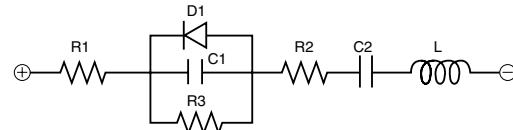


Fig.1-2

1-2 Equivalent Circuit of the Capacitor

The electrical equivalent circuit of the aluminum electrolytic capacitor is as presented in the following figure.



R1 : Resistance of terminal and electrode

R2 : Resistances of anodic oxide film and electrolyte

R3 : Insulation resistance because of defective anodic oxide film

D1 : Oxide semiconductor of anode foil

C1 : Capacity of anode foil

C2 : Capacity of cathode foil

L : Inductance caused by terminals, electrodes, etc.

2 About the Life of an Aluminum Electrolytic Capacitor

2-1 Estimation of life with minimal ripple current (negligible).

Generally, the life of an aluminum electrolytic capacitor is closely related with its ambient temperature and the life will be approximately the same as the one obtained by Arrhenius' equation.

$$L = L_0 \times 2^{\left(\frac{T_0 - T}{10} \right)} \quad \dots \dots \dots (1)$$

Where L : Life at temperature T

L_0 : Life at temperature T_0

The effects to the life by derating of the applied voltage etc. are neglected because they are small compared to that by the temperature.

2-2 Estimation of life considering the ripple current.

The ripple current affects the life of a capacitor because the internal loss (ESR) generates heat. The generated heat will be :

$$P = I^2 R \dots\dots\dots(2)$$

Where I : Ripple current (Arms)

R : ESR (Ω)

With increase in the temperature of the capacitor:

$$\Delta T = \frac{I^2 \times R}{A \times H} \dots\dots\dots(3)$$

Where ΔT : Temperature increase in the capacitor core(deg.)

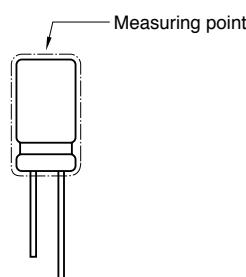
I : Ripple current (Arms)

R : ESR (Ω)

A : Surface area of the capacitor (cm^2)

H : Radiation coefficient (Approx. 1.5 to 2.0 $\times 10^{-3} \text{W/cm}^2 \times ^\circ\text{C}$)

The above equation (3) shows that the temperature of a capacitor increases in proportion to the square of the applied ripple current and ESR, and in inverse proportion to the surface area. Therefore, the amount of the ripple current determines the heat generation, which affects the life. The value of ΔT varies depending on the capacitor types and operating conditions. The usage is generally desirable if ΔT remains less than 5°C . The measuring point for temperature increase due to ripple current is shown below ;



Test results:

(1) The life equation considering the ambient temperature and the ripple current will be :

$$L = L_d \times 2 \left(\frac{T_0 - T}{10} \right) \times K \left(\frac{-\Delta T}{10} \right) \dots\dots\dots(4)$$

Where L_d : Life at DC operation (h)

K : Ripple acceleration factor

($K=2$, within allowable ripple current)

($K=4$, if exceeding allowable ripple current)

T_0 : Upper category temperature ($^\circ\text{C}$)

T : Operating temperature ($^\circ\text{C}$)

ΔT : Temperature increase at capacitor core (deg.)

(2) The life equation based on the life with the rated ripple current applied under the maximum guaranteed temperature will be a conversion of the above equation (4), as below :

$$L = L_r \times 2 \left(\frac{T_0 - T}{10} \right) \times K \left(\frac{\Delta T_0 - \Delta T}{10} \right) \dots\dots\dots(5)$$

Where L_r : Life at the upper category temperature with the rated ripple current (h)

ΔT_0 : Temperature increase at capacitor core, at the upper category temperature ($^\circ\text{C}$)

(3) The life equation considering the ambient temperature and the ripple current will be a conversion of the above equation (5), as below :

$$L = L_r \times 2 \left(\frac{T_0 - T}{10} \right) \times K \left\{ 1 - \left(\frac{I}{I_0} \right)^2 \right\} \times \frac{\Delta T_0}{10} \dots\dots\dots(6)$$

Where I_0 : Rated ripple current at the upper category temperature (Arms)

I : Applied ripple current (Arms)

ΔT_0 of each category highest temperature

Aluminum Electrolytic Capacitors	85	: 10deg
	105 to 135	: 5deg
	150	: 3deg
Polymer hybrid type aluminum Electrolytic Capacitors	105	: 15deg
	125	: 10deg
	135	: 10deg

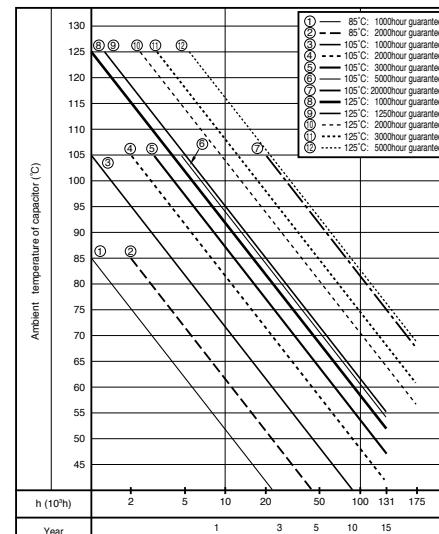
Since it is actually difficult to measure the temperature increase at the capacitor core, the following table is provided for conversion from the surface temperature increase to the core temperature increase.

Table 2-1

Case diameter	~10	12.5~16	18	22	25	30	35
Core / Surface	1.1	1.2	1.25	1.3	1.4	1.6	1.65

The life expectancy formula shall in principle be applied to the temperature range between the ambient temperature of $+40^\circ\text{C}$ and upper category temperature. The expected life time shall be about fifteen years at maximum as a guide in terms of deterioration of the sealant.

(Fig. 2-1 Life Expectancy Chart)



TECHNICAL NOTE

ALUMINUM ELECTROLYTIC
CAPACITORS

ELNA®

2-3 Practical Examples of Life Expectancy

As practical examples of life expectancy, we introduce 250V 560 μ F in the LAT Series considering the effect of high-frequency component. Figures 2-2 to 2-4 show the simulated ripple current waveforms when the high-frequency component for switching is superimposed on the commercial frequency component.



Fig.2-2 Ripple Current Waveform of Capacitor

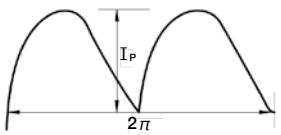


Fig.2-3 Low-frequency component

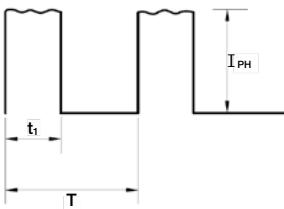


Fig.2-4 High-frequency component

Each of the above may be obtained as the effective ripple current value. Assuming that the ripple current waveform of the low-frequency component is generally approximated to the full-wave rectification waveform as shown in Fig.2-3, we obtain the effective ripple current value I_L as follows:

$$I_L = \frac{I_{PL}}{\sqrt{2}} = 0.707 \times I_{PL}$$

Since the ripple current waveform of the high-frequency component is approximated to the rectangular as shown in Fig.2-4, the effective current value of high-frequency component I_H is given by

$$I_H = \sqrt{\frac{1}{T} \int_0^{t_1} I_{PH}^2 dt_1} = I_{PH} \sqrt{\frac{t_1}{T}}$$

The reason why the ripple current affects the life is due to the heat generated by the ESR (R) of capacitor. That is, ΔT by heat generation can be expressed by

$$\Delta T \propto I^2 \times R \text{ from Expression (2).}$$

Therefore, when ripple currents with different frequencies are handled, each current value must first be squared and then summed. That is:

$$I = \sqrt{(I_L)^2 + (I_H)^2}$$

Now, we proceed to specific examples assuming that the effective ripple current values of low-and high-frequencies have been obtained by the above methods.

Data A (Test piece and basic data)

Product name : 250V 560 μ F ϕ 30x30 L, Series LAT

L_r = 2000 hours

K = 4

T_0 = 105°C

ΔT_0 = 5deg

I_0 = 1.80Arms at 105°C, 120Hz

Data B

$I_L = 2.4$ Arms at 120Hz, $T=45^\circ\text{C}$

$I_{H1} = 0.36$ Arms at 1kHz (corresponding to 15% of the commercial frequency component)

$I_{H2} = 0.72$ Arms at 10kHz (corresponding to 30% of the commercial frequency component)

$I_{H3} = 1.2$ Arms at 30kHz (corresponding to 50% of the commercial frequency component)

For Data B, the currents are converted to 120Hz by the frequency conversion factor for the cases of ignorance of the high-frequency component, and each high-frequency component condition.

$$I = 2.4/1 = 2.4\text{A}$$

$$I_1 = \sqrt{(2.4)^2 + (0.36/1.32)^2} \approx 2.42\text{A}$$

$$I_2 = \sqrt{(2.4)^2 + (0.72/1.45)^2} \approx 2.45\text{A}$$

$$I_3 = \sqrt{(2.4)^2 + (1.2/1.50)^2} \approx 2.53\text{A}$$

Explained here is about the frequency conversion factor. As described above, the heat generation (or temperature rise = ΔT) affecting the life is proportional to the ESR of capacitor. In addition, the fundamental frequency is 120Hz in measurement of capacitor characteristics, and the ripple current is also specified with this frequency; it is thus more convenient to calculate by converting the current value to that with the same temperature rise at 120Hz.

The ESR of aluminum electrolytic capacitor is frequency dependent.

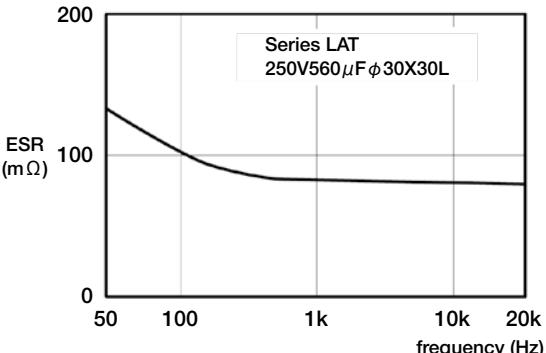


Fig.2-5 Frequency Characteristics of ESR

Figure 2-5 shows a typical example of frequency characteristics of ESR, indicating that the ESR decreases with increasing frequencies. Therefore, the high-frequency component has less effect on the heat generation of capacitor than low-frequency component.

Next, we calculate the expected life according to each condition to compare with the case with no high-frequency component.

For the case with no high-frequency component:

$$L = 2000 \times 2 \left(\frac{105-45}{10} \right) \times 4 \left[1 - \left(\frac{2.4}{1.80} \right)^2 \right] \times \frac{5}{10} \approx 74,658 \text{ hours}$$

For the case with high-frequency component:

$$L = 2000 \times 2 \left(\frac{105-45}{10} \right) \times 4 \left[1 - \left(\frac{2.42}{1.80} \right)^2 \right] \times \frac{5}{10} \approx 73,479 \text{ hours}$$

$$73,479/74,658=0.984, \text{ about a 1.6\% reduction in life}$$

$$L = 2000 \times 2 \left(\frac{105-45}{10} \right) \times 4 \left[1 - \left(\frac{2.48}{1.80} \right)^2 \right] \times \frac{5}{10} \approx 70,822 \text{ hours}$$

$$70,822/74,658=0.949, \text{ about a 5.1\% reduction in life}$$

$$L = 2000 \times 2 \left(\frac{105-45}{10} \right) \times 4 \left[1 - \left(\frac{2.61}{1.80} \right)^2 \right] \times \frac{5}{10} \approx 65,105 \text{ hours}$$

$$65,105/74,658=0.872, \text{ about a 12.8\% reduction in life}$$

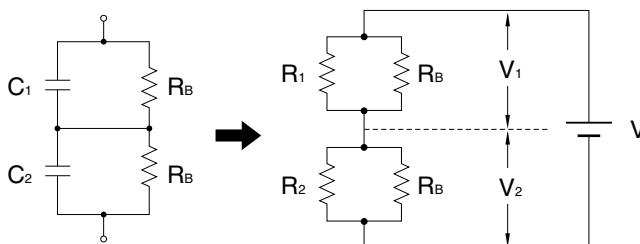
As described above, there may be cases where the effect of larger high-frequency component on the life cannot be ignored; thus high-frequency component exceeding 30% with respect to the current with fundamental frequency should be considered.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

3 To calculate Balance when connecting in series

3-1 Circuit layout

Circuit for connecting two capacitors (C_1, C_2) in series and equivalent circuit can be illustrated as below figure. Formula to calculate a balance resistance R_B of below figure is shown as follows.



Following are the preconditions of the circuit.

- ① V_2 shall be the rated voltage ($=V_0$). ($V_1 < V_2$)
- ② V shall be a times $V_0 \times 2$. $V = 2aV_0$ ($a < 1$)
- ③ R_2 shall equal $R_1 \times b$. ($b < 1$) (1)

3-2 Formulas to calculate [R_B]

3-2-1 Following formula can be established from balanced condition.

$$V_1 \left[\frac{1}{R_1} + \frac{1}{R_B} \right] = V_2 \left[\frac{1}{R_2} + \frac{1}{R_B} \right] \quad (2)$$

3-2-2 Following formula can be established from preconditions.

$$V_2 \leq V_0 \quad (3)$$

$$V_1 = V - V_2 \quad (4)$$

$$= 2aV_0 - V_2 \quad (4')$$

3-2-3 Put formulas (1), (3) and (4') in formula (2).

$$\begin{aligned} (2aV_0 - V_2) \left[\frac{R_1 + R_B}{R_1 \times R_B} \right] &= V_2 \left[\frac{bR_1 + R_B}{bR_1 \times R_B} \right] \\ 2abV_0(R_1 + R_B) &= V_2 \{b(R_1 + R_B) + bR_1 + R_B\} \\ 2ab(R_1 + R_B) &\leq 2bR_1 + (1+b)R_B \end{aligned}$$

Accordingly, balance resistance R_B shall be the following formula.

$$R_B \leq 2bR_1 \frac{(1-a)}{(2a-1) \times b - 1} \quad (5)$$

3-3 Calculation Example

Calculate the value of the balance resistance in the case of connecting two 400V 470μF (LC standard value : 1.88mA) capacitors in series.

$$R_1 = \frac{400(V)}{1.88(mA)} = 213(k\Omega)$$

If $a=0.8$, $400(V) \times 2 \times 0.8 = 640(V)$ as an impressed voltage.

If $b=2$, $R_2=b R_1=426(k\Omega)$, $LC=0.94(mA)$.

Balance resistance R_B will be.

$$R_B \leq 2 \times 2 \times 213(k\Omega) \frac{(1-0.8)}{(2 \times 0.8) \times 2 - 1} = 852(k\Omega)$$

4 Regarding Recovery Voltage

• After charging and then discharging the aluminum electrolytic capacitor, and further causing short-circuit to the terminals and leave them alone, the voltage between the two terminals will rise again after some interval. Voltage caused in such case is called recovery voltage. Following is the process that causes this phenomenon :

• When the voltage is impressed on a dielectric, electrical transformation will be caused inside the dielectric due to dielectric action, and electrification will occur in positive-negative opposite to the voltage impressed on the surface of the dielectric. This phenomenon is called polarization action.

• After the voltage is impressed with this polarization action, and if the terminals are discharged till the terminal voltage reaches 0 and are left open for a while, an electric potential will arise between the two terminals and thus causes recovery voltage.

• Recovery voltage comes to a peak around 10 to 20 days after the two terminals are left open, and then gradually declines. Recovery voltage has a tendency to become bigger as the component (stand-alone base type) becomes bigger.

• If the two terminals are short-circuited after the recovery voltage is generated, a spark may scare the workers working in the assembly line, and may put low-voltage driven components (CPU, memory, etc.) in danger of being destroyed. Measures to prevent this is to discharge the accumulated electric charge with resistor of about 100 to $1k\Omega$ before using, or ship out by making the terminals in short-circuit condition by covering them with an aluminum foil at the production stage. Please consult us for adequate procedures.

5 Electrode Foil Development Technology

5-1 Corrosion inhibition of cathode foil

Inactive treatment is implemented to ensure long life by inhibiting natural corrosion of the cathode foil. Fig. 3-1 shows its effects with values of the polarization resistance inversely proportional to the corrosion rate using the AC impedance method (FRA). This indicates that the cathode foil used in the High reliability capacitors has the polarization resistance higher than that of the conventional capacitors owing to corrosion inhibition.

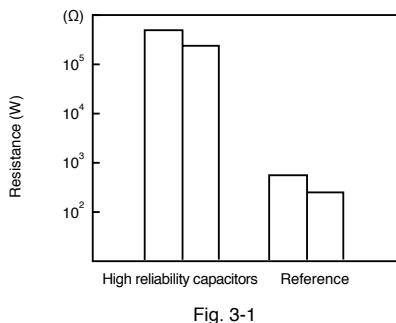


Fig. 3-1

5-2 Sealing material permeability of electrolyte

To ensure long life, a low permeable lactone solvent for the sealing material is used as the main solvent of the electrolyte of the High reliability capacitor. Fig. 3-2 shows the test results on the permeability obtained by changing the weight of the capacitors produced with different types of electrolytes at a high temperature.

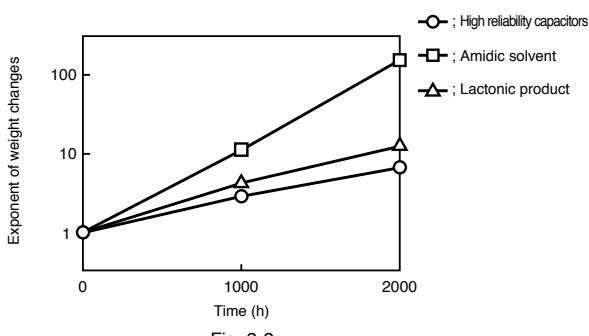


Fig. 3-2

5-3 Airtightness of sealing material

Since the electrolyte is stable for hours, the key element for capacitor's life is the sealing material. By optimizing the crosslinking density of the sealing material polymer, the sealing material of the High reliability capacitor attains its long life with electrolyte permeability less than that of the conventional capacitors.

Fig. 3-3 shows the test results on the airtightness of the sealing material obtained by changing the weight of the capacitors at a high temperature, producing capacitors with the conventional sealing material and improved one both containing the electrolyte used in the High reliability capacitor.

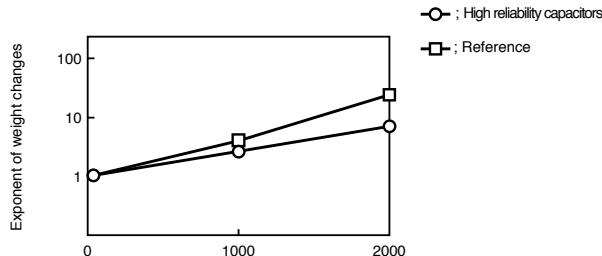


Fig. 3-3

5-4 Long-time stability of electrolyte

The electrolyte used in the High reliability capacitor is stable with low initial resistivity and small secular changes at a high temperature. Fig. 3-4 shows change in resistivity at 105°C.

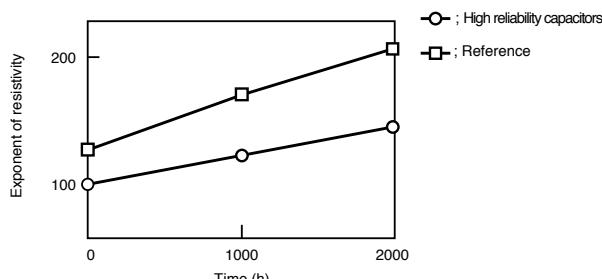


Fig. 3-4

5-5 Dielectric formation voltage and leakage current characteristics of anode foil

To increase the operating life by controlling the gas generation inside capacitor because of 1.5 to 2 times the rated voltage, while that of the previous capacitor is about 1.3 times the rated voltage.

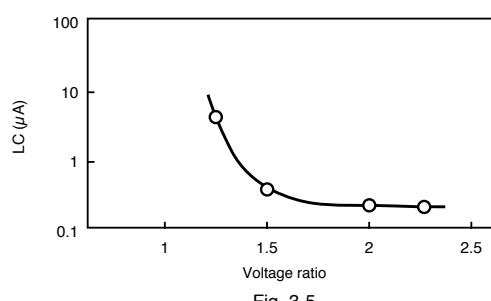


Fig. 3-5

5-6 Lowered ESR of Electrode Foil

To reduce the ESR of electrolytic capacitor, we have improved our chemical conversion technology for anode foil to develop lower ESR electrode foil compared to the conventional product as shown in Fig. 3-6

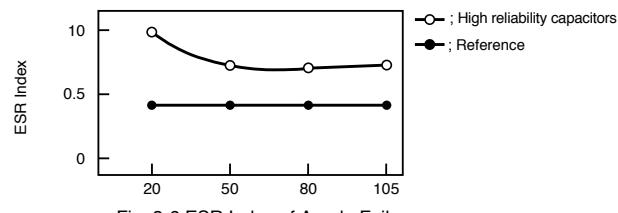
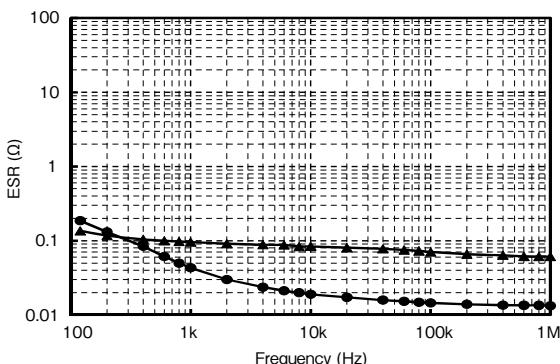


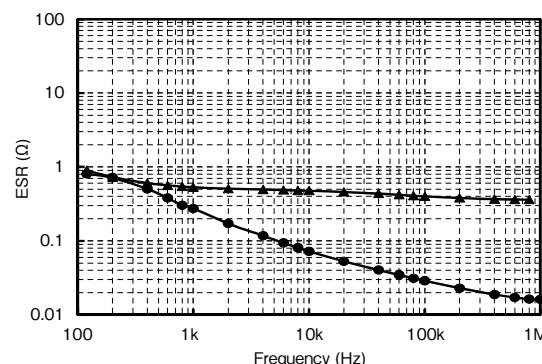
Fig. 3-6 ESR Index of Anode Foil

Electric Characteristics Data**1. CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS****Series HV (guaranteed 105°C)****Frequency characteristics at 20°C**

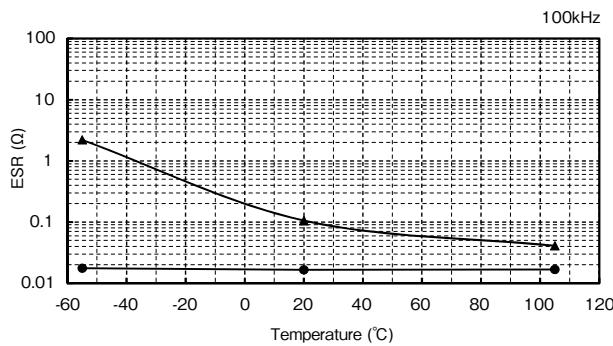
	Series	Ratings	Case size
●	HV	25V330μF	φ10×10 L
▲	RVD	25V470μF	φ10×10 L

**Series HVK (guaranteed 125°C)****Frequency characteristics at 20°C**

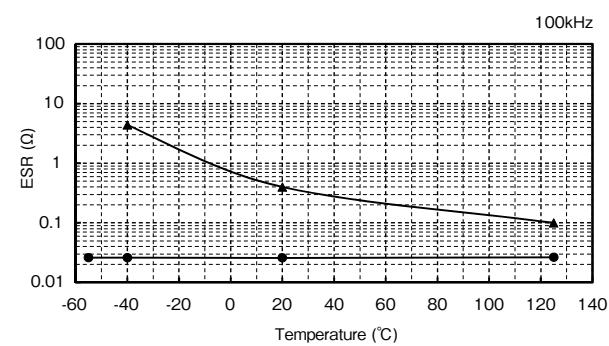
	Series	Ratings	Case size
●	HVK	35V68μF	φ6.3×7.7 L
▲	RVT	35V100μF	φ6.3×7.7 L

**Temperature Characteristics**

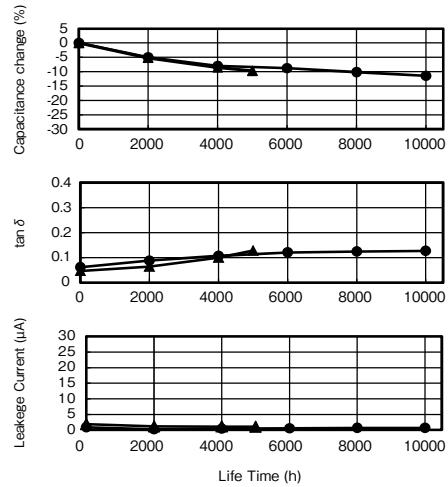
	Series	Ratings	Case size
●	HV	25V330μF	φ10×10 L
▲	RVD	25V470μF	φ10×10 L

**Temperature Characteristics**

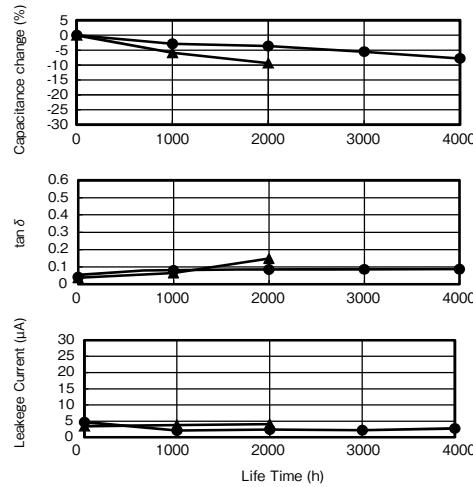
	Series	Ratings	Case size
●	HVK	35V68μF	φ6.3×7.7 L
▲	RVT	35V100μF	φ6.3×7.7 L

**Endurance (Applied ripple current) at 105°C**

	Series	Ratings	Case size	Rated ripple current (100kHz)
●	HV	25V220μF	φ8×10 L	2300mArms
▲	RVD	25V220μF	φ8×10 L	600mArms

**Endurance (Applied ripple current) at 125°C**

	Series	Ratings	Case size	Rated ripple current (100kHz)
●	HVK	35V270μF	φ10×10 L	2000mArms
▲	RVT	35V220μF	φ10×10 L	500mArms



Notice : The measurement values are not guaranteed values, but measurements.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

TECHNICAL DATA

CHIP TYPE ALUMINUM
ELECTROLYTIC CAPACITORS

ELNA®

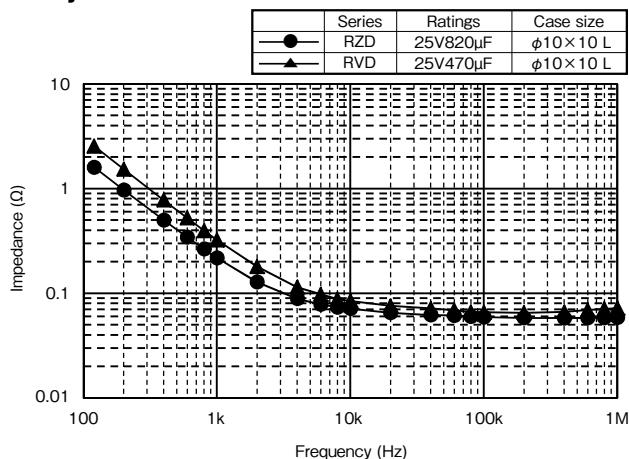
ALUMINUM

CHIP ALUMINUM

2.CHIP TYPE ALUMINUM ELECTROLYTIC CAPACITORS

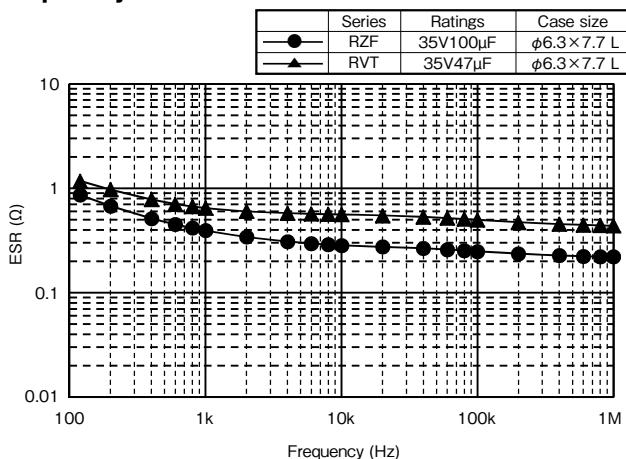
Series RZD (guaranteed 105°C)

Frequency characteristics at 20°C

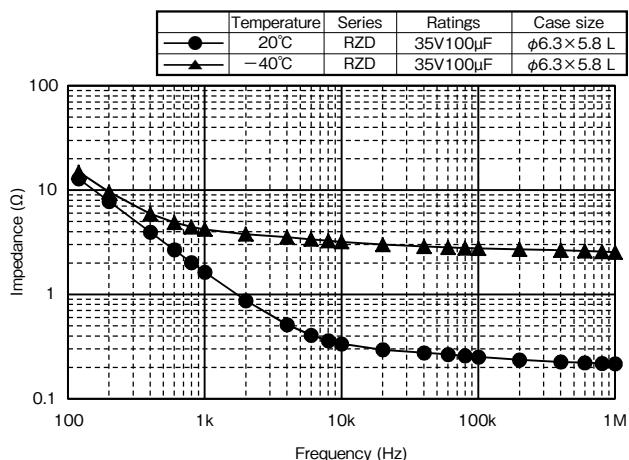


Series RZF (guaranteed 125°C)

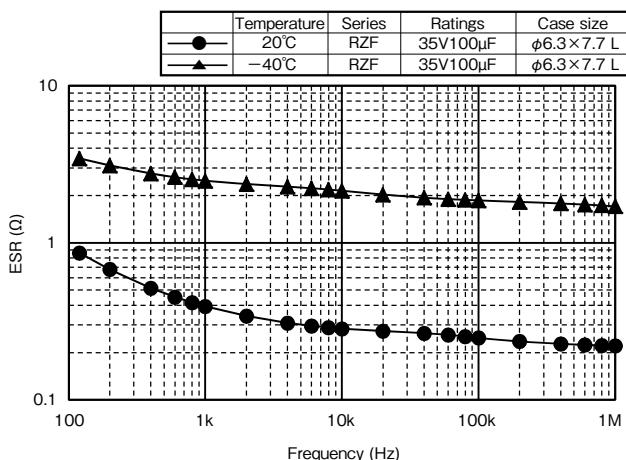
Frequency characteristics at 20°C



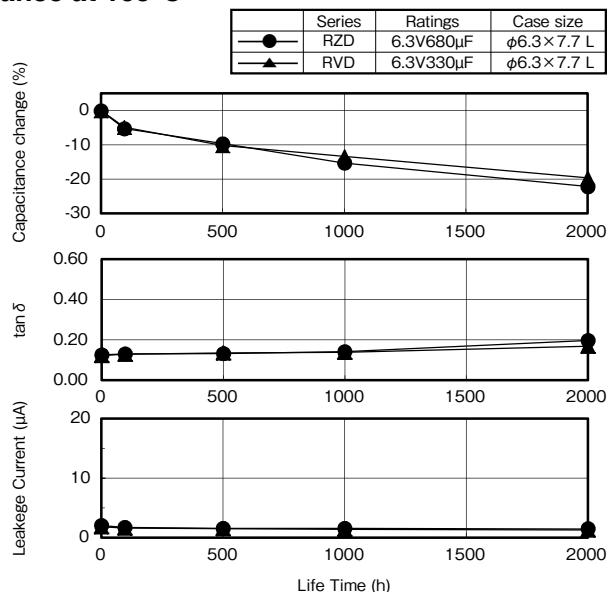
Temperature Characteristics (20°C, -40°C)



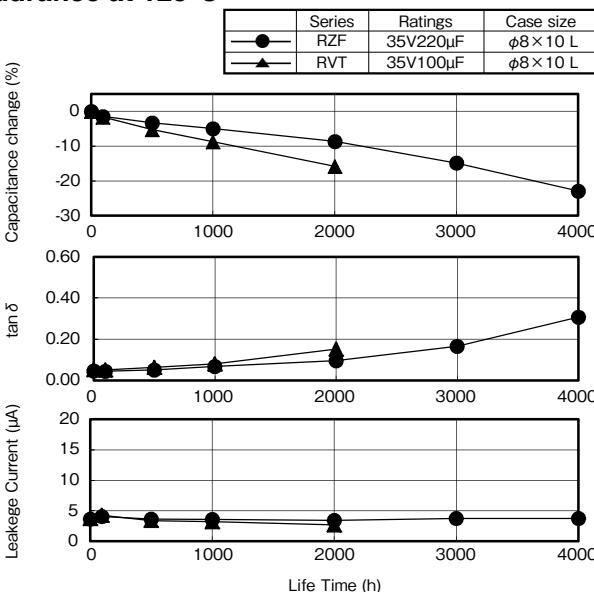
Temperature Characteristics (20°C, -40°C)



Endurance at 105°C



Endurance at 125°C



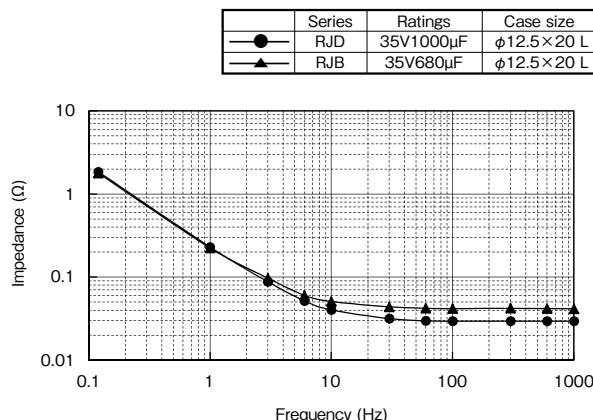
Notice : The measurement values are not guaranteed values, but measurements.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

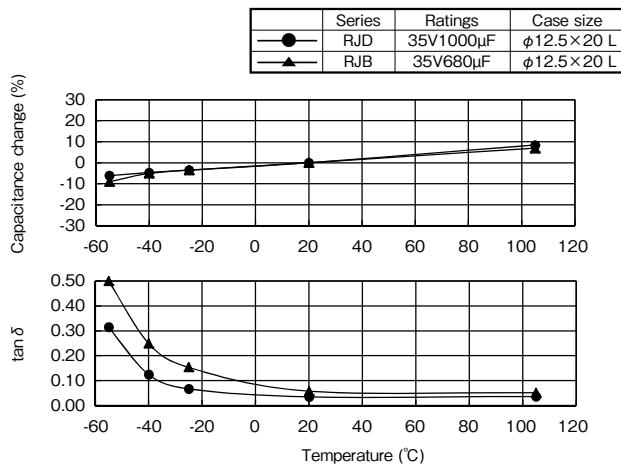
3.MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS (1)

Series RJD (guaranteed 105°C)

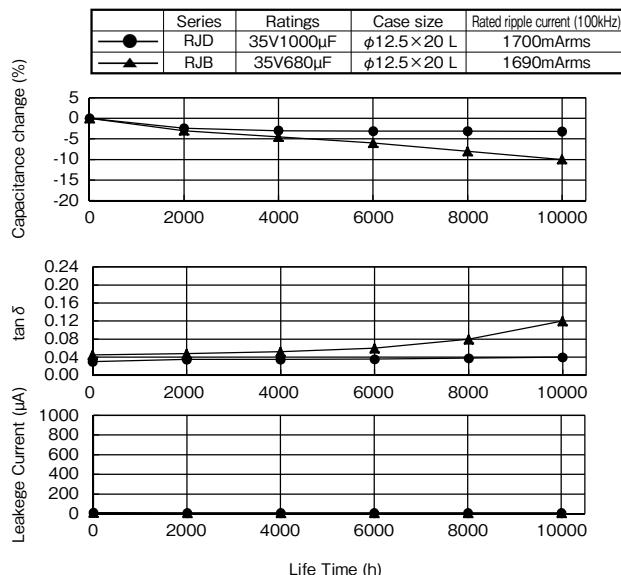
Frequency characteristics at 20°C



Temperature Characteristics

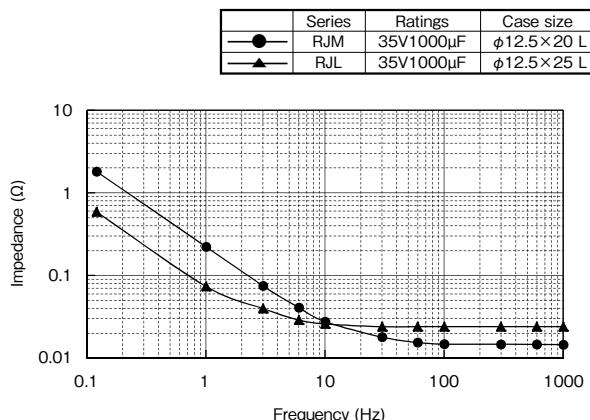


Endurance (Applied ripple current) at 105°C

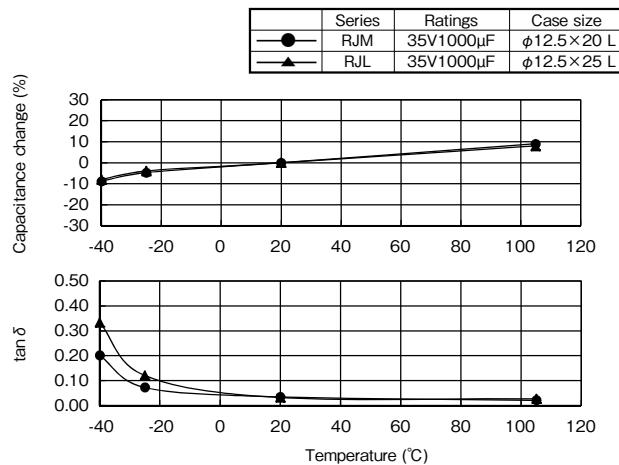


Series RJM (guaranteed 105°C)

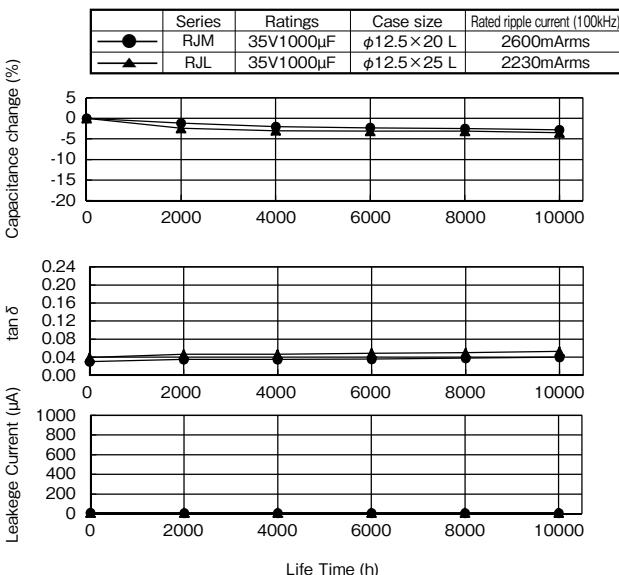
Frequency characteristics at 20°C



Temperature Characteristics



Endurance (Applied ripple current) at 105°C



Notice : The measurement values are not guaranteed values, but measurements.

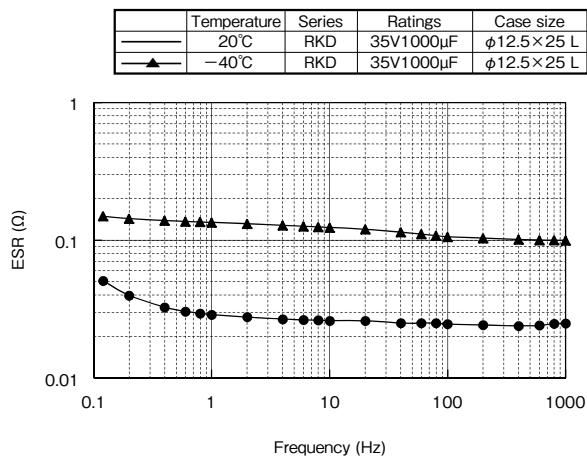
TECHNICAL DATA

MINIATURE ALUMINUM
ELECTROLYTIC CAPACITORS

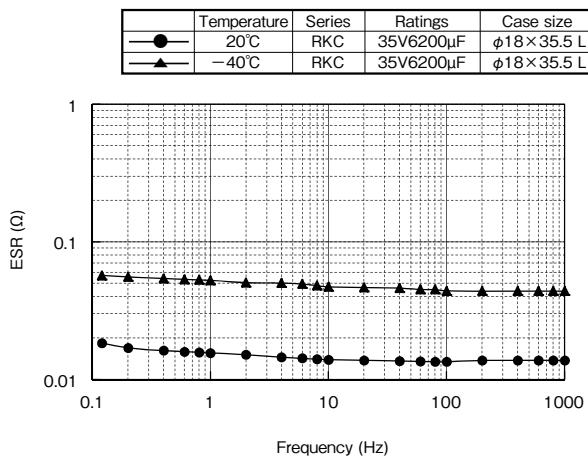
ELNA®

4. MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS (2)

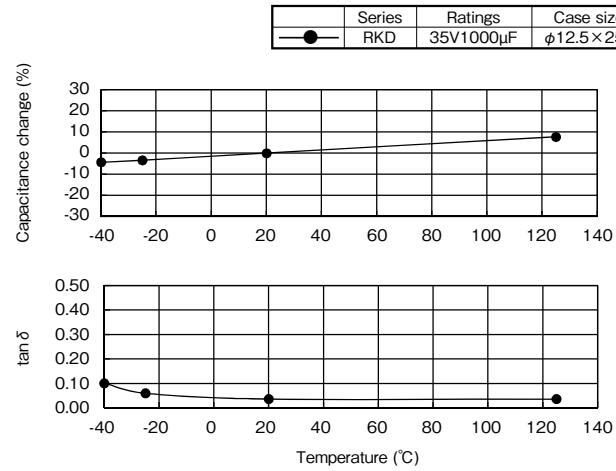
Series RKD (guaranteed 125°C) Frequency characteristics at 20°C



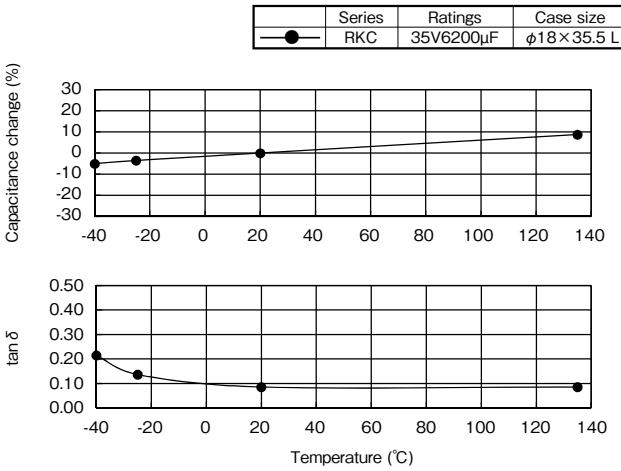
Series RKC (guaranteed 135°C) Frequency characteristics at 20°C



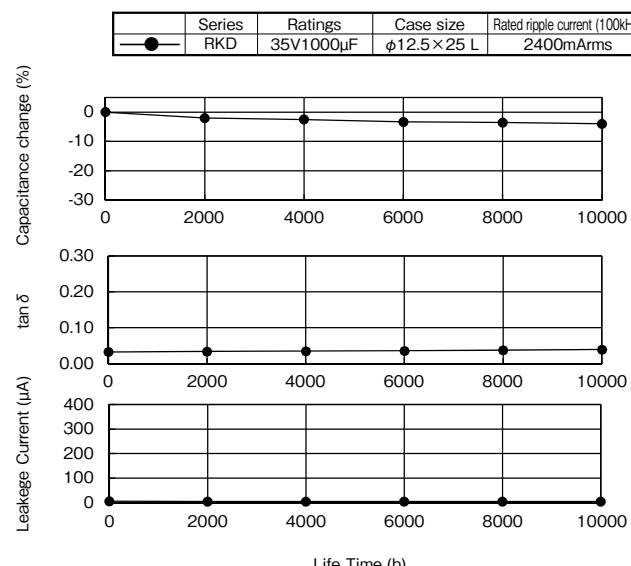
Temperature Characteristics



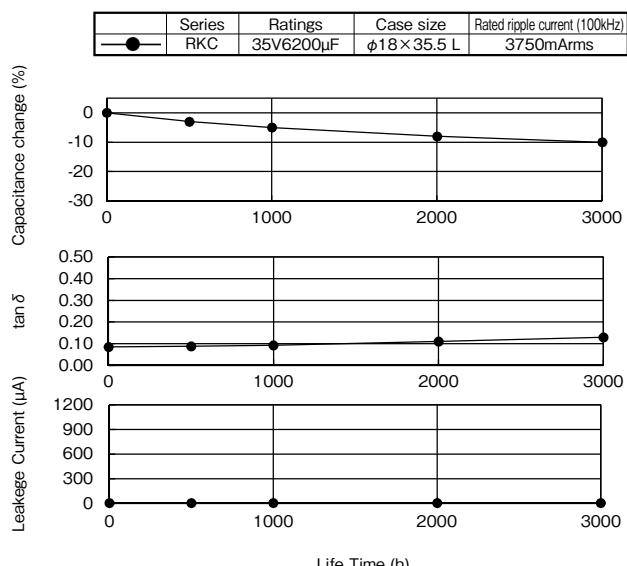
Temperature Characteristics



Endurance (Applied ripple current) at 125°C



Endurance (Applied ripple current) at 135°C

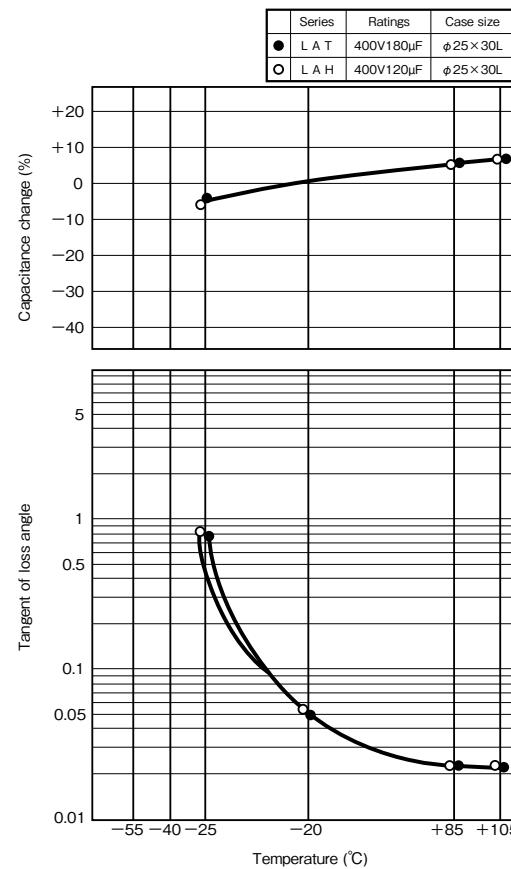
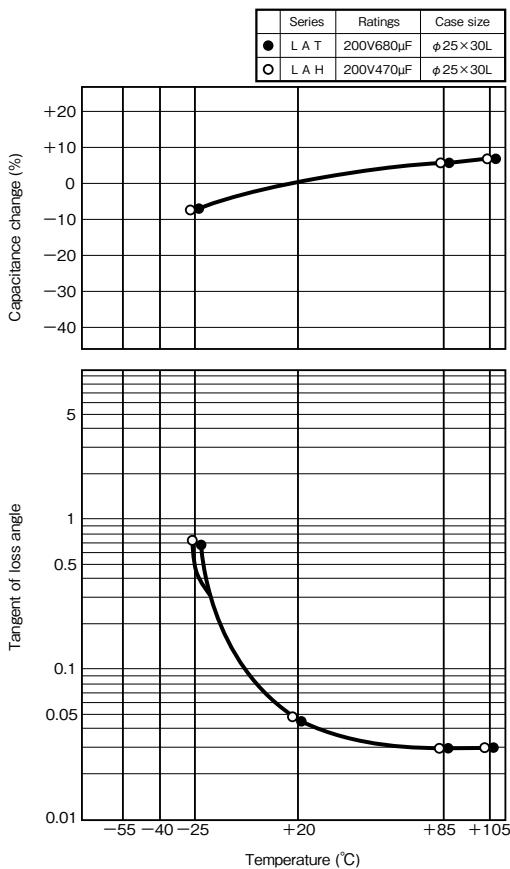


Notice : The measurement values are not guaranteed values, but measurements.

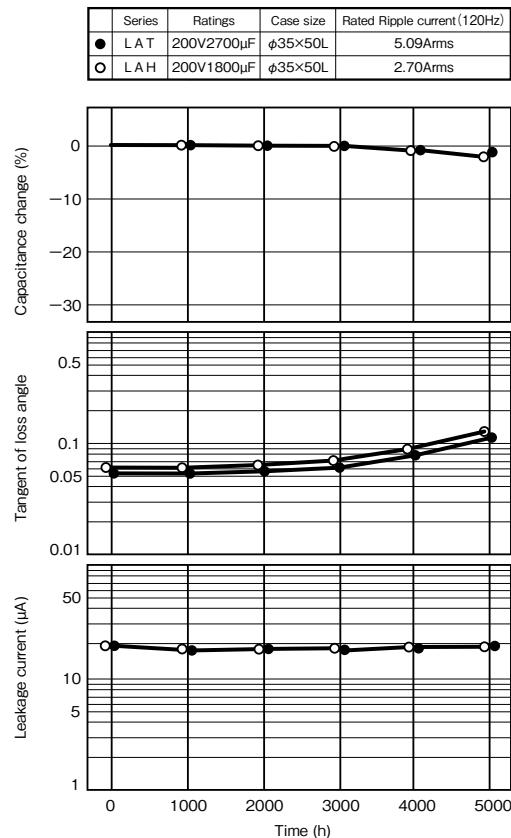
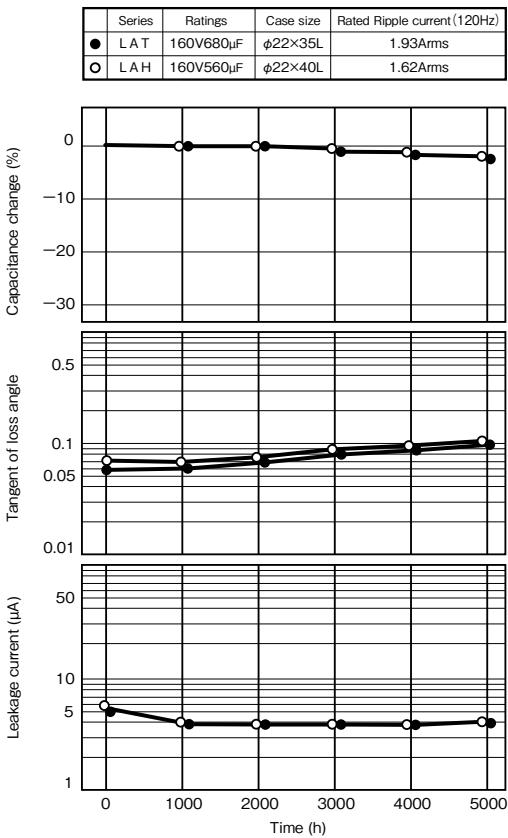
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

5. LARGE CAPACITANCE ALUMINUM ELECTROLYTIC CAPACITORS

Temperature characteristics, Series LAT · LAH



Endurance (Applied ripple current) at 105°C of Series LAT · LAH



Notice : The measurement values are not guaranteed values, but measurements.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications
from ELNA to ensure that the component is suitable for your use.



Electric Double Layer Capacitors

“DYNACAP”, “POWERCAP”

List of Contents

1. Type List and Systematized Classification for Electric Double Layer Capacitors	204
2. Taping	209
3. Cautions for Using Electric Double Layer Capacitors	211
4. Specifications for Electric Double Layer Capacitors by Series	213
5. Technical Note for Electric Double Layer Capacitors	238
6. Presentation of Series and Parallel Connection Pack	241
7. Technical data for Electric Double Layer Capacitors	242



■ Type List for DYNACAP

★ : New series
☆ : Upgrade

Category	Series	Category temp. range °C		Max.operating voltage V.DC	Capacitance range F	Color of sleeve	Page	Applications	Remarks
		Max.	Min.						
For memory backup	Reflow soldering type	DVN	+ 70	- 25	5.5	0.047 to 0.33	Brown	213	
	Reflow soldering type	DVL	+ 85	- 40	5.5	0.047 to 0.22	Brown	214	
	Reflow soldering type	DVS	+ 85	- 25	3.6	0.047 to 0.22	Brown	215	★
	Standard type	DB	+ 70	- 25	5.5	0.047 to 1.5	Indigo	216	
	Low profile Low ESR type	DBN	+ 70	- 25	5.5	0.047 to 1.5	Indigo	216	
	Low profile High temperature type	DBJ	+ 85	- 10	5.5	0.047 to 1	Black	217	
	Low profile Low ESR High temperature	DBS	+ 85	- 25	3.6	0.047 to 1	Black	218	Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.
	Miniaturized Standard type	DX	+ 70	- 25	5.5	0.047 to 1.5	Indigo	219	
	Miniaturized Low ESR type	DXN	+ 70	- 25	5.5	0.047 to 1.5	Indigo	220	
	Miniaturized High temperature type	DXJ	+ 85	- 10	5.5	0.047 to 1	Black	221	Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.
	Miniaturized Low ESR High temperature type	DXS	+ 85	- 25	3.6	0.047 to 1	Black	222	
	High voltage tolerance type	DK	+ 70	- 25	6.3	0.047 to 1	Indigo	223	Ideal for backing up of Li-battery-backed equipment such as cameras, video, medical and telephone sets.
	High temperature type	DH	+ 85	- 25	5.5	0.047 to 1	Indigo	224	Ideal for backing up of RTC's for smart meter, outdoor equipment, industrial, momentary power assistance of a battery, automotive etc.
	Wide temperature range type	DHL	+ 85	- 40	5.5	0.047 to 1	Indigo	225	
	High temperature long life type	DHC	+ 85	- 25	5.5	0.047 to 1	Black	226	Ideal for backing up of CMOS IC's, microcomputers, RAM's, RTC's for smart meter, outdoor equipment, auto motive and industrial.
For power	Coin type	DC (614)	+ 70	- 25	2.5	0.2	Silver	227	
		DCK (614)	+ 60	- 10	3.3	0.2			
		DC (621)	+ 70	- 25	2.5	0.33			
		DCK (621)	+ 60	- 10	3.3	0.4			
	Reflow soldering Coin type	DSK (414)	+ 70	- 10	3.3	0.07	Silver	228	
		DS (614)	+ 70	- 25	2.5	0.2			
		DSK (614)	+ 60	- 10	3.3	0.2			
		DS (621)	+ 70	- 25	2.5	0.33			
		DSK (621)	+ 60	- 10	3.3	0.33			
	Standard type	DZ	+ 70	- 25	2.5 / 2.7	1 to 200	Black	230	
	Large capacitance type	DZH	+ 60	- 25	2.5	22 to 300	Black		
	High power type	DZN	+ 70	- 25	2.5 / 2.7	1 to 200	Blue	232	Ideal for actuator of moters and electromagnetic coil drives.
	High power Low temperature type	DU	+ 65	- 40	2.7	1 to 33	Brown	234	Ideal for actuator of moters and electromagnetic coil drives.
	Low temperature type	DY	+ 70	- 40	2.5	1 to 40	Brown	235	Ideal for power supplies of LED displays, personal wireless items, backup for power supplies, and the storage battery of solar battery.
	Packed type	DZP	+ 70	- 25	5.0	0.47 to 4.7	Blue	236	☆

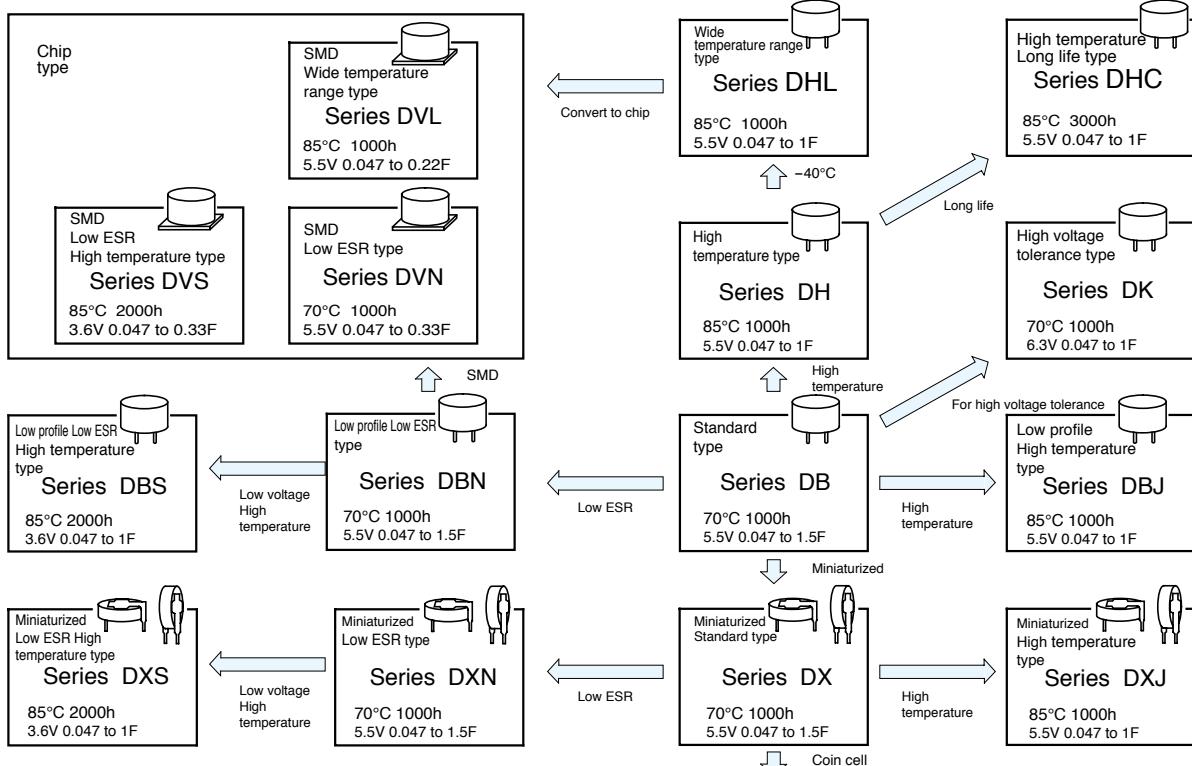
■ Type List for POWERCAP

Category	Series	Category temp. range °C		Max.operating voltage V.DC	Capacitance range F	Color of sleeve	Page	Applications	Remarks
		Max.	Min.						
For energy	Large capacitance High power type	DW	+ 65	- 40	2.7	650 to 3000	Black	237	Ideal for boost charge, such as energy regeneration, and a large current discharge use. ☆

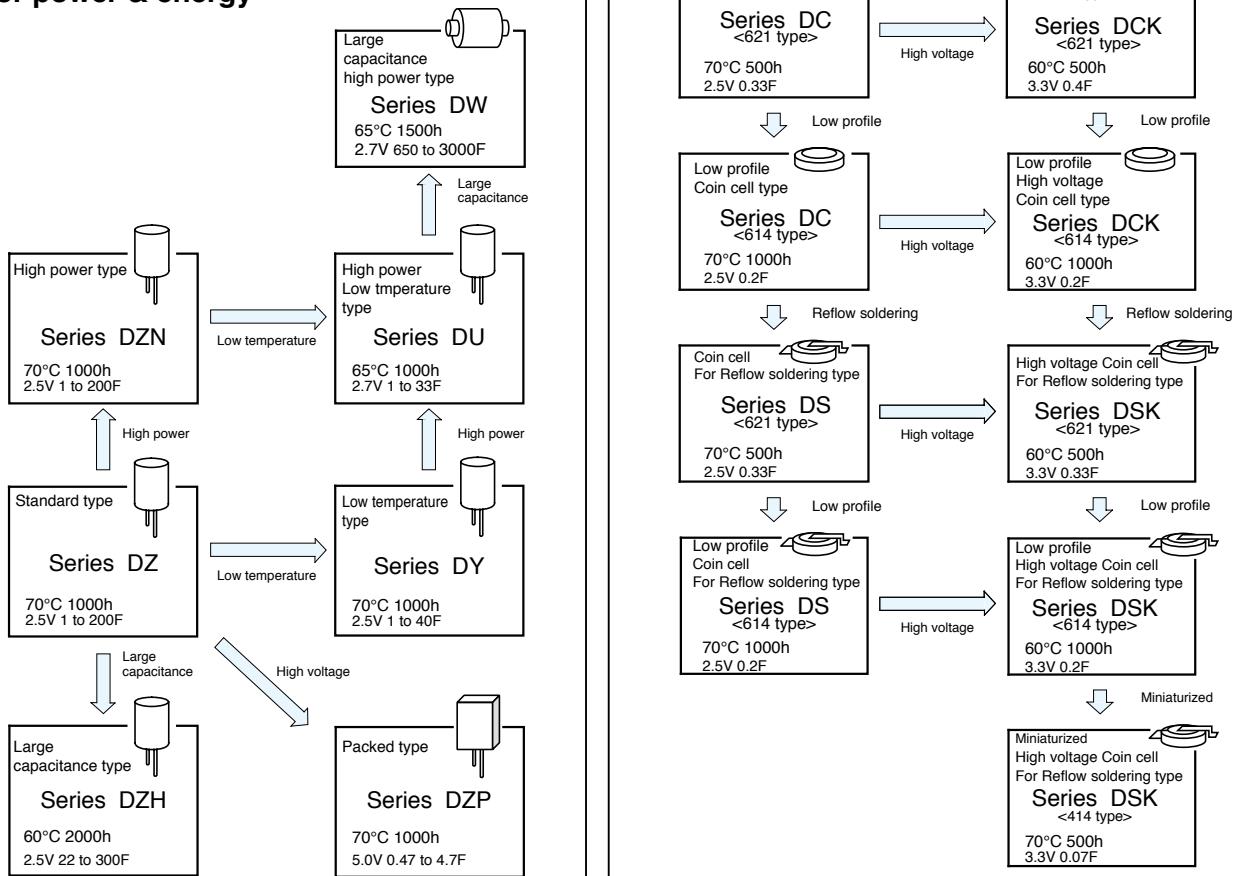
■ Systematized Classification of Electric Double Layer Capacitors

DYNACAP & POWERCAP

For memory backup

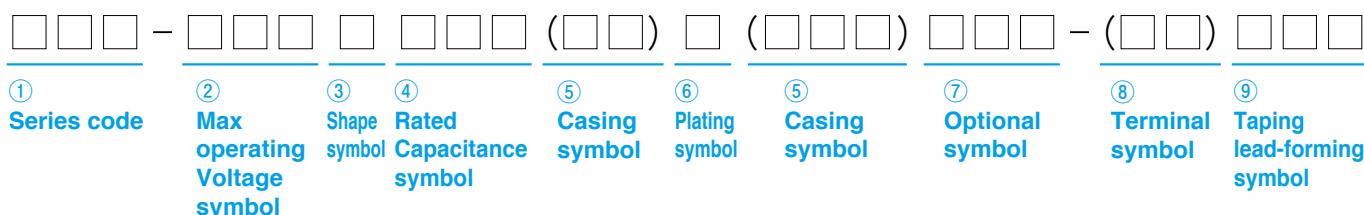


For power & energy



NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications
from ELNA to ensure that the component is suitable for your use.

■ Product Symbol System for Electric Double Layer Capacitors



① Series code

Please refer to the page of each series.

② Max operating voltage symbol

Example

Max operating voltage (V)	Voltage symbol
2.5	2R5
2.7	2R7
3.3	3R3
3.6	3R6
5.0	5
5.5	5R5
6.3	6R3

④ Rated capacitance symbol

Example

Capacitance (F)	Capacitance symbol	Capacitance (F)	Capacitance symbol
0.047	473	10	106
0.07	703	15	156
0.1	104	20	206
0.2	204	22	226
0.22	224	25	256
0.33	334	30	306
0.4	404	33	336
0.47	474	40	406
0.68	684	50	506
0.9	904	100	107
1	105	200	207
1.5	155	300	307
2.7	275	500	507
3.3	335	600	607
4.7	475	1200	128
5.6	565	1500	158
6.8	685	3000	308

③ Shape symbol

Please refer to the page of each series.

⑤ Casing symbol

Please refer to the page of each series.

⑥ Plating symbol

Example

Symbol	Contents
U	Sn 100% plating or Sn+Cu plating
T	Sn 100% plating

⑦ Optional symbol

Example (For Automotive)

Symbol	Contents
Q	Based on AEC-Q200
M	Based on AEC-Q200

⑧ Terminal symbol

Please refer to the page of each series.

⑨ Taping, Lead-forming symbol

DZ,DZH,DZN,DY,DU : Write down one of the forming symbols given on page 15 to 19 for taping and lead-forming capacitors.

DVN,DVL,DVS,DS,DSK : Write down one of the forming symbols given on page 209 for taping capacitors.

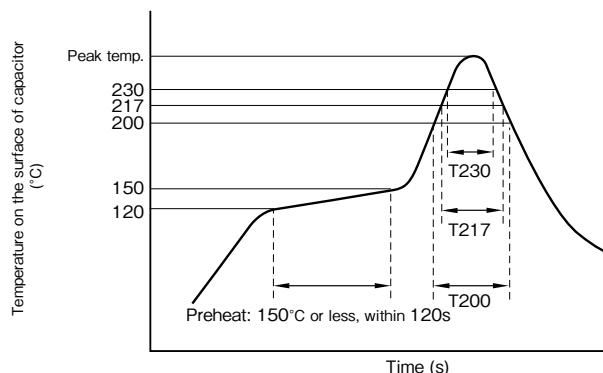
When taping or lead-forming is not necessary, leave the boxes blank.

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

■ Recommended soldering conditions (series DS, DSK, DVN, DVL, DVS)

Reflow soldering conditions.

Profile



T200 : Duration while capacitor head temperature exceeds 200°C (s).

T217 : Duration while capacitor head temperature exceeds 217°C (s).

T230 : Duration while capacitor head temperature exceeds 230°C (s).

The measurement temperature point is the case top.

Series	Size	Peak temp. (5s Max)	T230	T217	T200	Times
DS DSK	φ4.8 to φ6.8	250°C Max	Within 20s	Within 30s	Within 40s	2 Max
DVN DVL DVS	φ12.5	260°C Max	Within 20s	Within 30s	Within 50s	2 Max

Attention : Carry out soldering work at low temperature and in the shortest time within above conditions.

Do NOT reflow solder, when cell voltage is above 0.3V.

* Please consult with us about reflow soldering conditions other than the above.

■ Recommended soldering conditions

● Electric Double Layer capacitors (Lead free type)

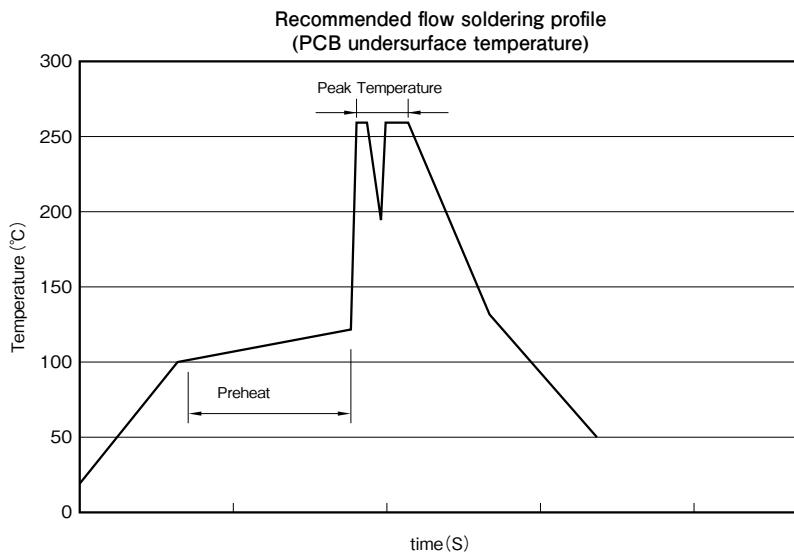
(1) Soldering iron conditions

Iron tip temperature should be $400^{\circ}\text{C} \pm 5^{\circ}\text{C}$ within the duration of 4 seconds.

However, if it is series DC or DCK, iron tip temperature should be $360^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and the time should be 4 seconds or less.

(2) Flow soldering conditions

The recommendation soldering conditions of the product in which flow soldering is possible are as graph.

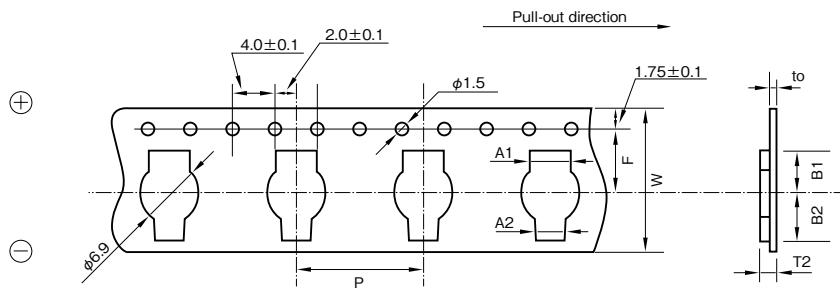


Type	Series	Size	Preheat		Peak	
			Temperature	Time	Temperature	Time
Coin cell	DB,DBN,DBJ DBS,DX,DXN DXJ,DXS,DK DH,DHL,DHC	φ11.5 to φ21.5	100 to 110	Within 30s	260°C Max	Within 5s
Large capacitance	DZ,DZH,DZN DU,DY,DZP	φ6.3 to φ35	100 to 130	30 to 60s	260°C ± 5°C	Within 10s

Cautions when soldering

- (1) Do not dip the capacitor into melted solder.
- (2) Do not flux other part than the terminals.
- (3) If there is a direct contact between the sleeve of the capacitor and the printed circuit pattern or a metal part of another component such as a lead wire, it may cause shrinkage or crack.
- (4) If it is a coin type, please manage so that main part temperature including preheating does not exceed 90°C.
- (5) Please refer to cautions for using on page 211 to 212 and product specifications about other notes.

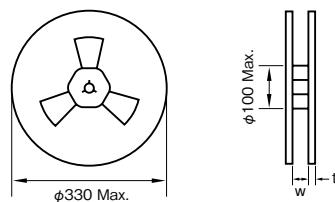
■ Carrier tape dimensions (Series DS, DSK) polarity L



(Unit : mm)

Outside size	W	P	F	A1	A2	B1	B2	T2	to	φD
φ6.8×1.4 to 2.1L	24±0.2	12.0	11.5	4.4	3.4	5.9	6.5	3.2	0.3	6.9
φ4.8×1.4L (Terminal shaped : HL)	16±0.2	8.0	7.5	2.4	3.6	5.0	5.1	2.45	0.3	4.9
φ4.8×1.4L (Terminal shaped : HR)	↑	↑	↑	3.6	2.4	5.1	5.0	↑	↑	↑

■ Reel dimensions

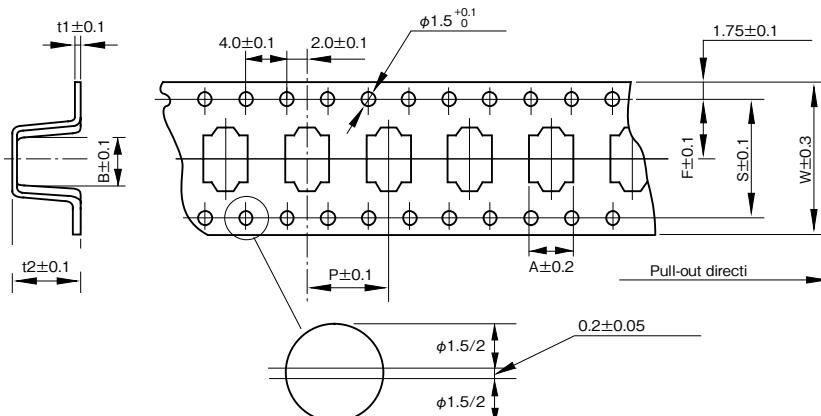


(Unit : mm)		
Outside size	W	t
φ6.8×1.4 to 2.1L	26	3
φ4.8×1.4L	18	3

■ Packing quantity

Outside size	Quantity
φ6.8×2.1L	1500PCS.
φ6.8×1.4L	1500PCS. to 2000PCS.
φ4.8×1.4L	2000PCS.

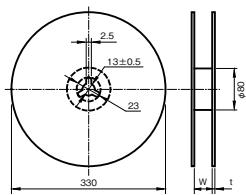
■ Carrier tape dimensions (Series DVN, DVL, DVS) polarity R



(Unit : mm)

Outside size	W	A	B	P	t2	F	t1	S
φ12.5×10.5L	32	13.4	13.4	24	11	14.2	0.5	28.4
φ12.5× 8.5L	32	13.4	13.4	24	9.5	14.2	0.5	28.4

■ Reel dimensions

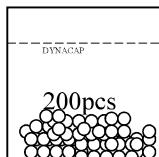
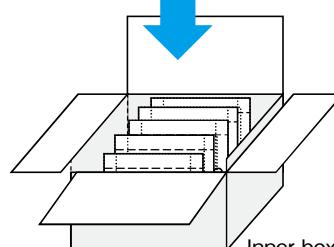
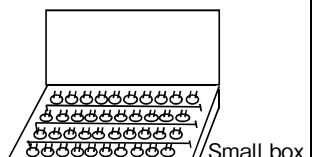
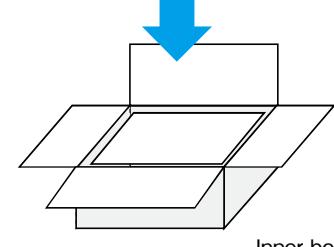
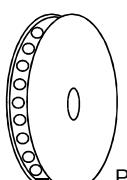
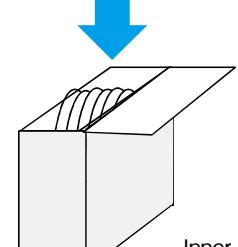


(Unit : mm)		
Outside size	W	t
φ12.5×10.5L	34	3
φ12.5× 8.5L	34	3

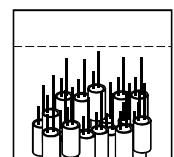
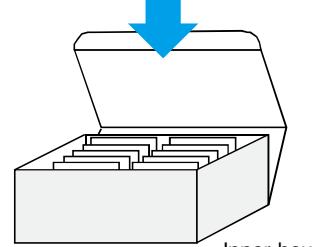
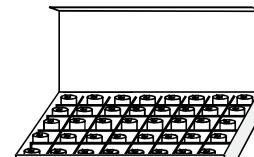
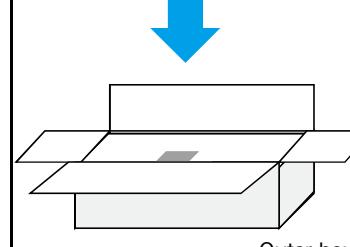
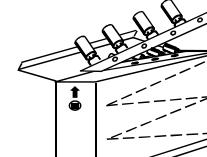
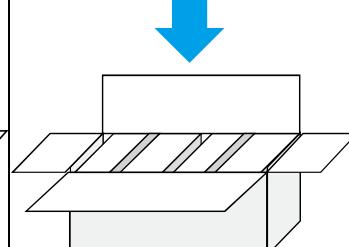
■ Packing quantity

Outside size	Quantity
φ12.5×10.5L	250pcs.
φ12.5× 8.5L	300pcs.

■ Standard packing specification of Coin cell type

Series	<ul style="list-style-type: none"> • DC, DCK (614, 621) • DX, DXJ, DXN, DXS • DB, DBN, DBJ, DBS, DK, DH, DHL, DHC (ϕ13.5) 	<ul style="list-style-type: none"> • DB, DBN, DBJ, DBS, DK, DH, DHL, DHC (ϕ21.5) 	<ul style="list-style-type: none"> • DS, DSK (414, 614, 621) • DVN, DVL, DVS
Packing style	  <p>* DC, DCK : Vacuum packing</p>	 	 

■ Standard packing specification of large type

Series	<ul style="list-style-type: none"> • DU, DY, DZ, DZN, DZH (ϕ6.3 to ϕ18) • DZP 	<ul style="list-style-type: none"> • DZ, DZN, DZH (ϕ22 or more) 	<ul style="list-style-type: none"> • DU, DY, DZ, DZN, DZH (ϕ6.3 to ϕ12.5) Taping
Packing style	 	 	  <p>Box size are described on page 20.</p>

Please inquire for details.

Cautions for Using Electric Double Layer Capacitors (DYNACAP , POWERCAP)

■ Usage

1. Electric double layer capacitors (EDLC) use a conductive organic electrolyte.

The use at excessive mounting temperature or exceeding the upper category temperature can cause the electrolyte to leak. Especially, coin and multilayer coin types for the memory backup excluding the DZ, DZH, DZN, DU, DY, DZP, DW series use a low elastic plastic as the sealant in the cell construction like coin batteries; therefore, avoid using such capacitors in the Vicinity of automotive equipment with steep temperature change, and heating element such as motor, relay, transformer, power IC, etc. because of the risk of leakage of electrolyte.

2. Since EDLC is polarized, do not apply a reversed voltage.

EDLC is polarized. If a reversed voltage is applied for a long time, the leakage current will increase abruptly, which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

3. Do not apply any voltage higher than the operating maximum voltage (this means the surge voltage in the case of short-time charge).

If an overvoltage is applied to the product, the leakage current will increase abruptly and the product will become overheated, which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

4. Do not use smoothing a power supply (for absorbing its ripple).

Since the internal resistance of EDLC is high, the product will be overheated if it is used for smoothing a power supply (for absorbing its ripple), which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases .

5. Do not use in a circuit where quick charge and discharge are repeated Very often.

In a circuit where quick charge and discharge are repeated very often , the product will become overheated, which may cause a decrease in the capacity, an increase in the internal resistance, and causing leakage or damage to the product in some cases.

Reduce the charge and discharge currents while selecting a product with low internal resistance, and make sure that the product surface temperature does not rise.

6. EDLC life depends heavily on the ambient temperature.

①The lifetime of EDLC is seriously affected by change in ambient temperature. If the temperature is lowered by 10°C, the lifetime will be approximately doubled. Therefore, the product should be used at a temperature lower than the guaranteed maximum value for maximum life.

②If the capacitor is used at a temperature exceeding its maximum guaranteed temperature, not only is its life shortened, but increased vapor pressure of electrolyte or electrochemical reactions may increase the internal pressure, and causing leakage or damage to the product in some cases.

7. Do not use the product in an ambient atmosphere containing waterdrops (condensation) or toxic gases.

Although EDLC is sealed, water droplets or toxic gases may do degradation characteristics, a leakage and corrode the lead wires and the case, which may cause a breaking of the wires.

Avoid abrupt temperature changes, which may cause water droplets, resulting in product deterioration and electrolyte leakage.

8. Contact us before connecting the products in series.

A series connection will cause imbalance in the voltage, charged to the capacitors and an overvoltage may be charged to one or more them. This may cause a decrease in the capacity, an increase in the internal resistance and causing leakage or damage to the product in some cases. When using series connection for several capacitors, please derate the applied voltage from the operating maximum voltage or use balancing circuits (bleeder resistor, etc.) to compensate for the imbalance in the applied voltage for each capacitor. Moreover, please ensure the arrangement does not cause temperature fluctuation between capacitors.

9. About vibration.

A terminal blank, a terminal bend, and a crease may occur by adding too much vibration to a capacitor.

Moreover, depending on the case, an EDLC may do degradation of the characteristic, breakage, and a leakage.

When you become too much vibration, please contact us.

10. When used on a double sided printed circuit board, do not overlap the wiring patterns on the mounted part.

A short circuit may be created by certain wiring conditions. Should the electrolyte leaks, the circuit pattern may cause a short circuit, resulting in tracking or migration.

11. Do not keep In high temperature and high humidity atmospheres.

①Avoid high temperature or high humidity or direct rays when storing capacitors.

②Keep the product in a place where the temperature is 5°C to 30°C and the humidity is lower than 60%. Avoid an abrupt temperature change, which may cause condensation or deterioration of the product or liquid leakage.

③Do not store EDLC at a place where there is a possibility that they may get water, salt or oil spill.

④Do not store EDLC at place where the air contains dense hazardous gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine ammonia, etc.).

⑤Do not store EDLC at a place where it gets ultraviolet ray or radioactive ray.

12. Capacitors fitted with a relief valve

①The relief valve is provided with a valve function with part of the case made thin to avoid explosion by increased internal pressure when the capacitor is under abnormal load such as overvoltage or reverse voltage. After activation of the relief valve, the capacitor must be replaced as it does not restore.

②For the capacitors with a case relief valve (series DZ,DZH,DZN,DZP,DU,DY), provide a void on the top of the relief valve so as not to hamper its activation. Make a void of 2 mm or more for the product of φ18 or less in diameter, and a void of 3 mm or more for the product of φ20 to φ35 mm in diameter on the top.

13. Use at a high altitude

The use of capacitors at high altitudes such as on an airplane causes a large difference between the internal pressure of the capacitors and the atmospheric pressure.

However, there is no problem in use under atmospheric pressure up to about an altitude of 10,000 meters.

If the condition is severe like space, please contact us.

■Mounting

1. Do not overheat when soldered.

Depending on the type and size of the board, the product may be subjected to overheat, leading to loss of airtightness. This may greatly shorten the product life or cause liquid leakage.

In case of a 1.6mm-thick and single side printed board. for example, keep the following soldering conditions: temperature lower than 260°C, time within 6.5 to 10 seconds.

When a board thinner than 1.6 mm or multi-layer printed board is used, contact us.

In the case of hand soldering, the iron tip temperature is lower than 400°C, time is shorter than 4 seconds.

The coin types and multilayer coin types excluding the DZ and reflow-compatible coin types use polypropylene as the packing material for sealing and therefore susceptible to excessive heat. Note that the component body temperature shall be controlled so as not to exceed 90°C including preheating.

2. When soldering the capacitor to the wiring board, do not attach the body of the capacitor to the circuit board.

If the body of the capacitor is attached directly to the circuit board, the flux or solder can blow through the through holes in the circuit board, negatively

impacting the capacitor.

Moreover, the heat influence at the time of soldering can be reduced by floating the body.

3. Contact us when cleaning is necessary after soldering.

Certain types of solvents are not compatible and may cause damage.

4. Contact us when the product is attached by adhesive bonding.

Certain types of adhesives are not compatible. Paste bond partially between the product and the board so that the product will not adhere completely to the board.

Do not raise the temperature over the guaranteed value while the bond is hardening.

5. Heating conditions of adhesive curing oven

During heating of the adhesive curing oven, application of excessive heat may significantly shorten the product life or cause liquid leakage. Control the body temperature so as not to exceed 90°C during work while setting the allowable atmospheric temperature below 110°C, and allowable heating time within 30 seconds.

For the heating conditions deviating from the above, consult with us providing your temperature profile conditions.

6. Be careful not to apply an excessive force to the capacitor body, terminals or lead wires.

①Mount the capacitor while making sure that the terminal spacing of the capacitor and the spacing of the holes in the printed wiring board are aligned.
②If the capacitor body is subjected to stress such as grabbing, falling, bend, pushing or twisting after mounted, its terminals may come off, leading to open, short or liquid leakage.

■Other cautions

1. Emergency procedures

If the EDLC overheats or starts to smell, immediately switch off the units main power supply to stop operation.

Keep your face and hands away from the EDLC, since the temperature may be high enough to cause the EDLC to ignite and burn.

2. Periodical inspections should be established for the EDLC used in industrial appliances.

The following items should be checked:

- ①Appearance : Check if there is leakage.
- ②Electronic performance : Check the leakage current, the electrostatic, the internal resistance and other items described in the catalog or the product specifications.

3. Disposing of EDLC

- ①Punch a hole or crush the EDLC (to prevent explosion) before incineration at approved facility.
- ②If they are not to be incinerated, bring them to a professional industrial waste disposal company.

4. Other notes

Please refer to the following literature for anything not described in the product specifications or the catalog. (Technical Report of Japan Electronics and Information Technology Industries Association #EIAJ RCR-2370B "Guideline of notabilia for fixed electric double layer capacitors")

5.5V SMD, Low Resistance Capacitors

GREEN CAP

SMD

70°C

- Size : $\phi 12.5 \times 8.5$ Lmm, compatible with surface mounting and low ESR.
- Unlike batteries, safe and high reliability without containing active and hazardous substance.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
- Responds to temperature 260°C during the reflow peak.
- Ideal for industrial, smart meter, backing up of RTC's for surveillance camera, momentary power assistance of a battery etc.



Marking color : White print on an brown sleeve

Convert to chip

DVN

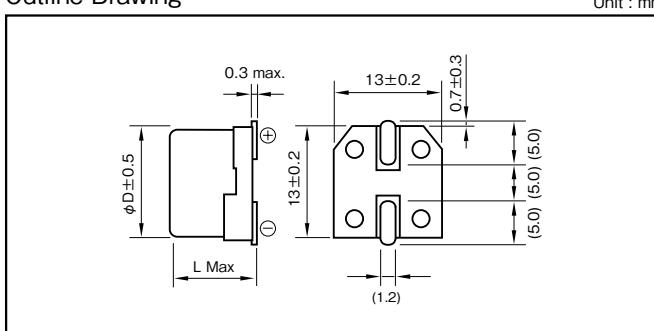
DBN

Specifications

Item	Performance								
Category temperature range (°C)	-25 to +70								
Tolerance at rated capacitance (%)	-20 to +80								
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33				
	Internal resistance (Ω Max.)	30	30	30	30				
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 30\%$ of the value at 20°C							
	Internal resistance	Less than five times of the value at 20°C							
Endurance (70°C)	Test time	1000 hours							
	Percentage of capacitance change	Within $\pm 30\%$ of the initial measured value							
	Internal resistance	Less than four times of the initial specified value							
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.								
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)								

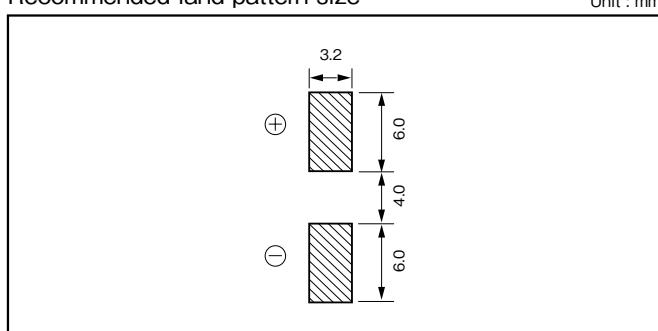
Outline Drawing

Unit : mm



Recommended land pattern size

Unit : mm



Part numbering system (example : 5.5V0.22F)

DVN	—	5R5	D	224	T — R5
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Taping symbol	

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	$\phi D \times L$ (mm)
5.5	0.047	DVN-5R5D473T-R5	12.5 × 8.5
5.5	0.1	DVN-5R5D104T-R5	12.5 × 8.5
5.5	0.22	DVN-5R5D224T-R5	12.5 × 8.5
5.5	0.33	DVN-5R5D334T-R5	12.5 × 8.5

*soldering conditions are described on page 207.

*It can charge and discharge with 1.5 times as much current (mA) as rated capacitance.

5.5V SMD, Wide Temperature range Capacitors

GREEN
CAP

SMD

85°C

- Size : $\phi 12.5 \times 10.5$ Lmm, compatible with surface mounting.
- Wide temperature range (-40 to 85°C), Low ESR.
- Unlike batteries, safe and high reliability without containing active and hazardous substance.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
- Responds to temperature 260°C during the reflow peak.
- Ideal for industrial, smart meter, backing up of RTC's for surveillance camera, momentary power assistance of a battery, automotive etc.



Marking color : White print on an brown sleeve

Convert to chip

DVL

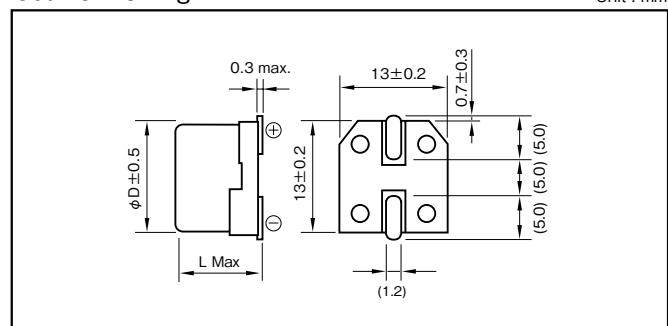
DHL

Specifications

Item	Performance						
Category temperature range (°C)	-40 to +85						
Tolerance at rated capacitance (%)	-20 to +80						
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22			
	Internal resistance (Ω Max.)	45	45	45			
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C					
	Internal resistance	-40°C : Less than seven times of the value at 20°C 85°C : Less than five times of the value at 20°C					
Endurance (85°C)	Test time	1000 hours					
	Percentage of capacitance change	Within ±30% of the initial measured value					
	Internal resistance	Less than four times of the initial specified value					
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.						
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)						

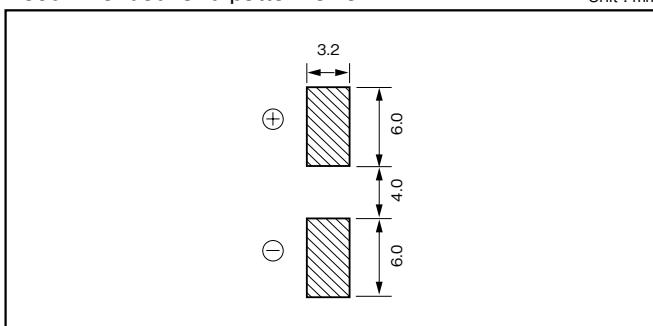
Outline Drawing

Unit : mm



Recommended land pattern size

Unit : mm



Part numbering system (example : 5.5V0.22F)

DVL	—	5R5	D	224	T — R5
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Taping symbol	

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DVL-5R5D473T-R5	12.5×10.5
5.5	0.1	DVL-5R5D104T-R5	12.5×10.5
5.5	0.22	DVL-5R5D224T-R5	12.5×10.5

*soldering conditions are described on page 207.

3.6V SMD, Wide Temperature range Capacitors

GREEN CAP SMD 85°C

- Size : ϕ 12.5×8.5Lmm, compatible with surface mounting.
 - Wide temperature range (-25 to 85°C), Low ESR.
 - Unlike batteries, safe and high reliability without containing active and hazardous substance.
 - Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
 - Responds to temperature 260°C during the reflow peek.
 - Ideal for industrial, smart meter, backing up of RTC's for surveillance camera, momentary power assistance of a battery, automotive etc.



Marking color : White print on a brown sleeve

Convert to chip

Specifications

DVS

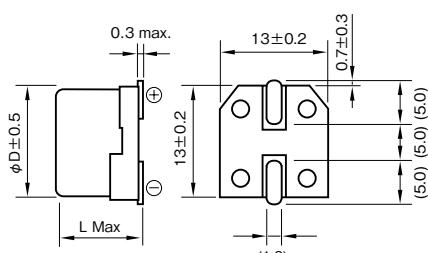
←

DBS

Item	Performance								
Category temperature range (°C)	- 25 to +85								
Tolerance at rated capacitance (%)	- 20 to +80								
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33				
	Internal resistance (Ω Max.)	30	30	30	30				
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C							
	Internal resistance	Less than five times of the value at 20°C							
Endurance (85°C)	Test time	2000 hours							
	Percentage of capacitance change	Within ±30% of the initial measured value							
	Internal resistance	Less than four times of the initial specified value							
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.								
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 6239-1 2006)								

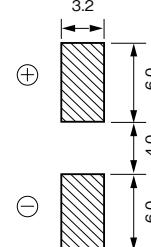
Outline Drawing

Unit : mm



Recommended land pattern size

| Init : mm



Part numbering system (example : 3.6V0.22F)

DVS	—	3R6	D	224	T —	R5
Series code		Max. operating voltage symbol	Terminal code	Rated capacitance symbol		Taping symbol

Part number is refer to following table

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	ϕ D×L (mm)
3.6	0.047	DVS-3R6D473T-R5	12.5×8.5
3.6	0.1	DVS-3R6D104T-R5	12.5×8.5
3.6	0.22	DVS-3R6D224T-R5	12.5×8.5
3.6	0.33	DVS-3R6D334T-R5	12.5×8.5

*soldering conditions are described on page 207.

*It can charge and discharge with 1.5 times as much current (mA) as rated capacitance.

5.5V Standard Capacitors

Series DB

GREEN CAP

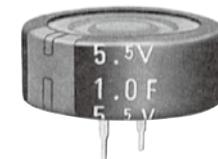
70°C

- Small-sized, large capacity, excellent voltage holding.
- For all ratings, uniform 5mm pitch of terminal spacing.
- Wider temperature range (-25 to +70°C) than battery.
- φ21.5×7.5Lmm size can encase up to 1.5F.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.

Low resistance

DBN

DB



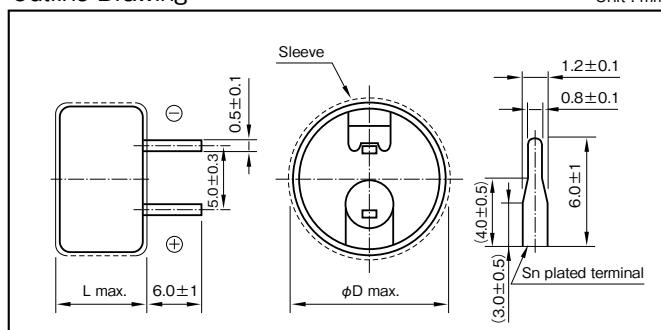
Marking color : White print on an indigo sleeve

Specifications

Item	Performance																
Category temperature range (°C)	-25 to +70																
Tolerance at rated capacitance (%)	-20 to +80																
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	0.47	1	1.5								
	Internal resistance (Ω Max.)	120	75	75	75	75(φ13.5)	30(φ21.5)	30	30								
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C															
	Internal resistance	Less than five times of the value at 20°C															
Endurance (70°C)	Test time	1000 hours															
	Percentage of capacitance change	Within ±30% of the initial measured value															
	Internal resistance	Within four times of the initial specified value															
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.																
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)																

Outline Drawing

Unit : mm



Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DBN-5R5D473T	13.5×7.5
5.5	0.1	DBN-5R5D104T	13.5×7.5
5.5	0.22	DBN-5R5D224T	13.5×7.5
5.5	0.33	DBN-5R5D334T	13.5×7.5
5.5	0.47	DBN-5R5D474ST	13.5×7.5
5.5	0.47	DBN-5R5D474T	21.5×8.0
5.5	1	DBN-5R5D105T	21.5×8.0
5.5	1.5	DBN-5R5D155T	21.5×8.0

Part numbering system (example : 5.5V0.22F)

DB	—	5R5	D	224	<input type="checkbox"/>	T
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Additional symbol		

Part number is refer to above table.

5.5V Low Resistance Series DBN

GREEN CAP

70°C

Low ESR

- Internal resistance was reduced to 85% to DB series.
- It excels in rapid charge.

Specifications

Item	Performance																
Category temperature range (°C)	-25 to +70																
Tolerance at rated capacitance (%)	-20 to +80																
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	0.47	1	1.5								
	Internal resistance (Ω)	25	25	25	25	25(φ13.5)	20(φ21.5)	20	20								
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C															
	Internal resistance	Less than five times of the value at 20°C															
Endurance (70°C)	Test time	1000 hours															
	Percentage of capacitance change	Within ±30% of the initial measured value															
	Internal resistance	Within four times of the initial specified value															
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.																
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)																

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DBN-5R5D473T	13.5×7.5
5.5	0.1	DBN-5R5D104T	13.5×7.5
5.5	0.22	DBN-5R5D224T	13.5×7.5
5.5	0.33	DBN-5R5D334T	13.5×7.5
5.5	0.47	DBN-5R5D474ST	13.5×7.5
5.5	0.47	DBN-5R5D474T	21.5×8.0
5.5	1	DBN-5R5D105T	21.5×8.0
5.5	1.5	DBN-5R5D155T	21.5×8.0

Part numbering system (example : 5.5V0.22F)

DBN	—	5R5	D	224	<input type="checkbox"/>	T
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Additional symbol		

Part number is refer to left table.

NOTE : Design, Specifications are subject to change without notice.

It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

5.5V Low Profile and High Temperature Capacitors

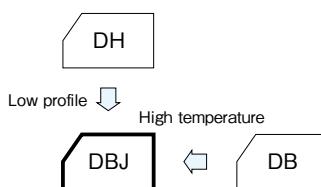
GREEN CAP

85°C



Marking color : White print on a black sleeve

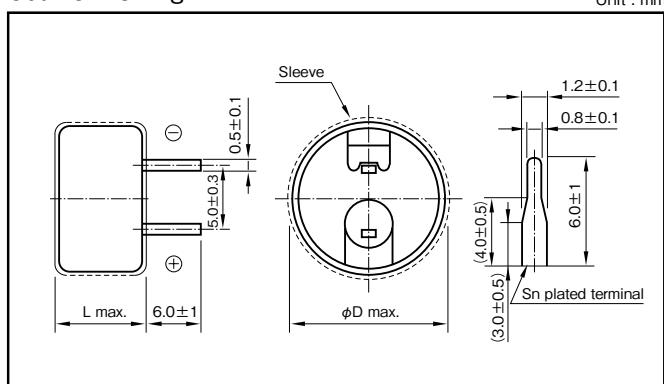
- High temperature type of series DB.
- Small-sized, large capacity, excellent voltage holding.
- For all ratings, uniform 5mm pitch of terminal spacing.
- $\phi 13.5 \times 7.5$ Lmm size can encase up to 0.33F.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.



Specifications

Item	Performance												
Category temperature range (°C)	-10 to +85												
Tolerance at rated capacitance (%)	-20 to +80												
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	1						
	Internal resistance (Ω Max.)	200	150	150	150	100	75						
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C											
	Internal resistance	Less than four times of the initial specified value.											
Endurance (85°C)	Test time	1000 hours											
	Percentage of capacitance change	Within ±30% of the initial measured value											
	Internal resistance	Less than four times of the initial specified value											
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.												
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)												

Outline Drawing



Unit : mm

Part numbering system (example : 5.5V0.22F)

DBJ	—	5R5	D	224	T
Series code	—	Max.operating voltage symbol	D	224	Rated capacitance symbol

Part number is refer to following table.

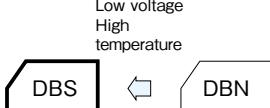
Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φDXL (mm)
5.5	0.047	DBJ-5R5D473T	13.5×7.5
5.5	0.1	DBJ-5R5D104T	13.5×7.5
5.5	0.22	DBJ-5R5D224T	13.5×7.5
5.5	0.33	DBJ-5R5D334T	13.5×7.5
5.5	0.47	DBJ-5R5D474T	21.5×8.0
5.5	1	DBJ-5R5D105T	21.5×8.0

3.6V Low Profile and Low ESR High Temperature Capacitors

GREEN CAP
85°C

- Long life of 3.6V 2000 hours in small size low ESR.
- For all ratings, uniform 5mm pitch of terminal spacing.
- Wider temperature range (-25 to +85°C) than battery.
- φ13.5×7.5Lmm size can encase up to 0.47F.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, smart meter, general electronic device, and others.
- It excels in rapid charge.



Low voltage
High temperature



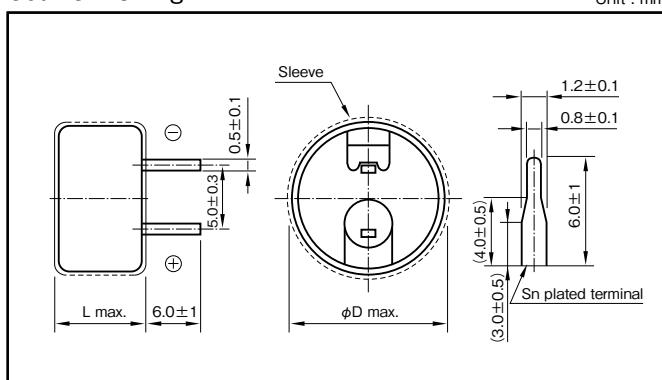
Marking color : White print on a black sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-25 to +85														
Tolerance at rated capacitance (%)	-20 to +80														
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	0.47	1							
	Internal resistance (Ω Max.)	25	25	25	25	25 (φ13.5)	20 (φ21.5)	20							
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C													
	Internal resistance	Less than five times of the value at 20°C													
Endurance (85°C)	Test time	2000 hours (φ13.5 0.47F : 1000 hours)													
	Percentage of capacitance change	Within ±30% of the initial measured value													
	Internal resistance	Within four times of the initial specified value													
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.														
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)														

Outline Drawing

Unit : mm



Part numbering system (example : 3.6V0.22F)

DBS	—	3R6	D	224		T
Series code		Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Additional symbol	

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
3.6	0.047	DBS-3R6D473T	13.5×7.5
3.6	0.1	DBS-3R6D104T	13.5×7.5
3.6	0.22	DBS-3R6D224T	13.5×7.5
3.6	0.33	DBS-3R6D334T	13.5×7.5
3.6	0.47	DBS-3R6D474ST	13.5×7.5
3.6	0.47	DBS-3R6D474T	21.5×8.0
3.6	1	DBS-3R6D105T	21.5×8.0

*It can charge and discharge with 1.5 times as much current (mA) as rated capacitance.

5.5V Miniaturized Standard Capacitors

GREEN CAP
70°C

- Smaller and lighter than Series DB.
- 5mm tall. Max. thin profile (H-shaped).
- Miniaturized but can encase up to 0.47F in 11.5×5Lmm case, and 1.5F in ϕ 19.0×20.5Lmm case.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.

Miniaturized



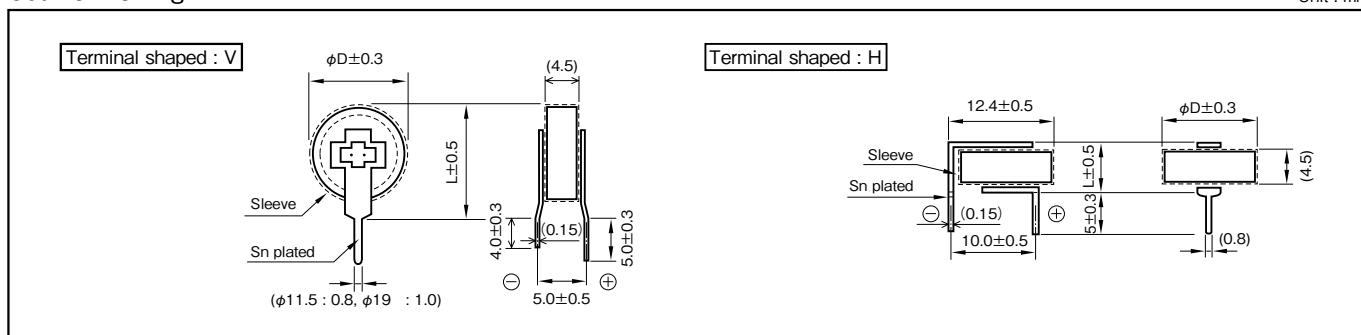
Marking color : White print on an indigo sleeve

Specifications

Item	Performance																
Category temperature range (°C)	-25 to +70																
Tolerance at rated capacitance (%)	-20 to +80																
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	0.47	1	1.5								
	Internal resistance (Ω Max.)	120	75	75	75	75 (ϕ 11.5)	30 (ϕ 19.0)	30	30								
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 30\%$ of the value at 20°C															
	Internal resistance	Less than five times of the value at 20°C															
Endurance (70°C)	Test time	1000 hours															
	Percentage of capacitance change	Within $\pm 30\%$ of the initial measured value															
	Internal resistance	Less than four times of the initial specified value															
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.																
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)																

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.22F)

DX	—	5R5	<input type="checkbox"/>	224	<input type="checkbox"/>	U
Series code	Max.operating voltage symbol	Terminal code	Rated capacitance symbol	Additional symbol		

Part number is refer to following table.

Note

Do not apply external force to products or terminals as stress such as twisting, bending, pushing, or falling of such products or terminals may remove the terminals, resulting in an open/short circuit or liquid leakage.
Avoid applying excessive heat to capacitors during heating of an adhesive curing oven. For details, refer to the precautions in use of DYNACAP.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	ϕ D×L (mm)
5.5	0.047	DX-5R5V473U	11.5×13.0
		DX-5R5H473U	11.5× 5.0
5.5	0.1	DX-5R5V104U	11.5×13.0
		DX-5R5H104U	11.5× 5.0
5.5	0.22	DX-5R5V224U	11.5×13.0
		DX-5R5H224U	11.5× 5.0
5.5	0.33	DX-5R5V334U	11.5×13.0
		DX-5R5H334U	11.5× 5.0
5.5	0.47	DX-5R5V474SU	11.5×13.0
		DX-5R5H474SU	11.5× 5.0
		DX-5R5V474U	19.0×20.5
5.5	1	DX-5R5V105U	19.0×20.5
5.5	1.5	DX-5R5V155U	19.0×20.5

5.5V Miniaturized Low Resistance Capacitors

GREEN CAP

70°C

- Internal resistance was reduced to 85% to DX series and this size.
- 5mm tall. Max. thin profile (H-shaped).
- Miniaturized but can encase up to 0.47F in 11.5×5Lmm case, and 1.5F in $\phi 19.0 \times 20.5$ Lmm case.
- It excels in rapid charge.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.

Low resistance

DXN

DX



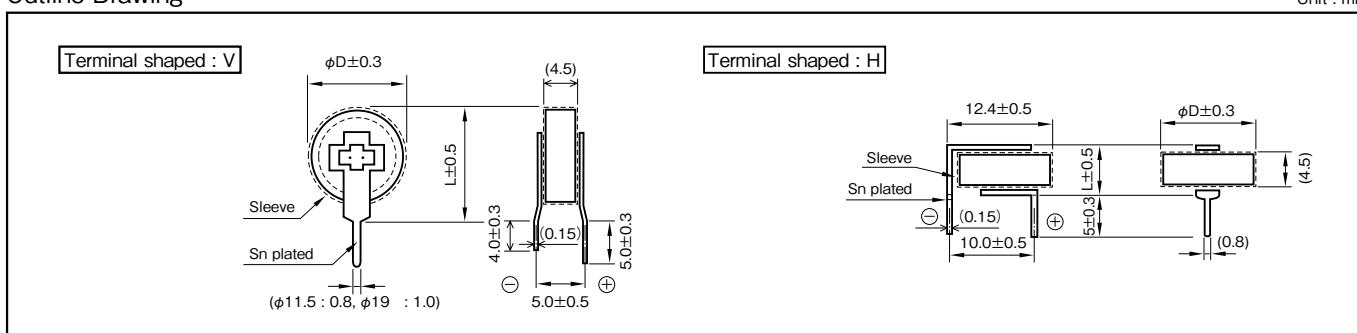
Marking color : White print on an indigo sleeve

Specifications

Item	Performance																
Category temperature range (°C)	-25 to +70																
Tolerance at rated capacitance (%)	-20 to +80																
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	0.47	1	1.5								
	Internal resistance (Ω Max.)	25	25	25	25	25 ($\phi 11.5$)	20 ($\phi 19.0$)	20	20								
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 30\%$ of the value at 20°C															
	Internal resistance	Less than five times of the value at 20°C															
Endurance (70°C)	Test time	1000 hours															
	Percentage of capacitance change	Within $\pm 30\%$ of the initial measured value															
	Internal resistance	Less than four times of the initial specified value															
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.																
Applicable standards	Conforms to JIS C5160-1 2009(IEC 62391-1 2006)																

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.22F)

DXN	—	5R5	<input type="checkbox"/>	224	<input type="checkbox"/>	U
Series code	Max.operating voltage symbol	Terminal code	Rated Capacitance symbol	Additional symbol		

Part number is refer to following table.

Note

Do not apply external force to products or terminals as stress such as twisting, bending, pushing, or falling of such products or terminals may remove the terminals, resulting in an open/short circuit or liquid leakage.
Avoid applying excessive heat to capacitors during heating of an adhesive curing oven. For details, refer to the precautions in use of DYNACAP.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	$\phi D \times L$ (mm)
5.5	0.047	DXN-5R5V473U	11.5×13.0
		DXN-5R5H473U	11.5× 5.0
5.5	0.1	DXN-5R5V104U	11.5×13.0
		DXN-5R5H104U	11.5× 5.0
5.5	0.22	DXN-5R5V224U	11.5×13.0
		DXN-5R5H224U	11.5× 5.0
5.5	0.33	DXN-5R5V334U	11.5×13.0
		DXN-5R5H334U	11.5× 5.0
5.5	0.47	DXN-5R5V474SU	11.5×13.0
		DXN-5R5H474SU	11.5× 5.0
		DXN-5R5V474U	19.0×20.5
5.5	1	DXN-5R5V105U	19.0×20.5
5.5	1.5	DXN-5R5V155U	19.0×20.5

*It can charge and discharge with 1.5 times as much current (mA) as rated capacitance.

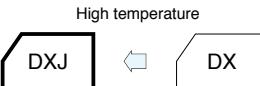
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

5.5V Miniaturized High Temperature Capacitors

GREEN CAP

85°C

- High temperature type of Series DX.
- 5mm tall. Max. thin profile (H-shaped).
- Miniaturized but can encase up to 0.33F in 11.5×5Lmm case, and 1.0F in φ19.0×20.5Lmm case.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.



Marking color : White print on a black sleeve

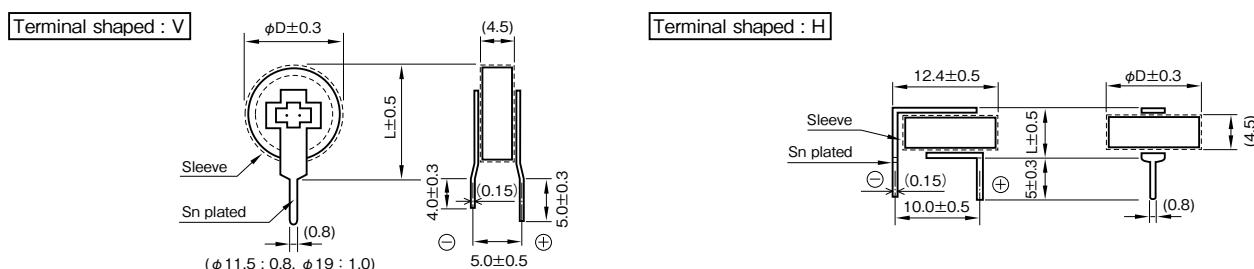


Specifications

Item	Performance								
Category temperature range (°C)	-10 to +85								
Tolerance at rated capacitance (%)	-20 to +80								
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33				
	Internal resistance (Ω Max.)	200	150	150	75				
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C							
	Internal resistance	Less than four times of the initial specified value.							
Endurance (85°C)	Test time	1000 hours							
	Percentage of capacitance change	Within ±30% of the initial measured value							
	Internal resistance	Less than four times of the initial specified value							
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.								
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)								

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.22F)

DXJ	—	5R5	<input type="checkbox"/>	224	<input type="checkbox"/>	U
Series code	Max.operating voltage symbol	Terminal code	Rated Capacitance symbol	Additional symbol		

Part number is refer to following table.

Note

Do not apply external force to products or terminals as stress such as twisting, bending, pushing, or falling of such products or terminals may remove the terminals, resulting in an open/short circuit or liquid leakage.
Avoid applying excessive heat to capacitors during heating of an adhesive curing oven. For details, refer to the precautions in use of DYNACAP.

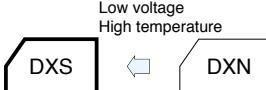
Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DXJ-5R5V473U	11.5×13.0
		DXJ-5R5H473U	11.5× 5.0
5.5	0.1	DXJ-5R5V104U	11.5×13.0
		DXJ-5R5H104U	11.5× 5.0
5.5	0.22	DXJ-5R5V224U	11.5×13.0
		DXJ-5R5H224U	11.5× 5.0
5.5	0.33	DXJ-5R5V334U	11.5×13.0
		DXJ-5R5H334U	11.5× 5.0
5.5	1	DXJ-5R5V105U	19.0×20.5

3.6V Miniaturized Low ESR High Temperature Capacitors

GREEN
CAP 85°C

- Long life of 3.6V 2000 hours, low ESR in DX series and this size.
- 5mm tall. Max. thin profile (H-shaped).
- Wider temperature range (-25 to +85°C) than battery.
- Miniaturized but can encase up to 0.47F in 11.5×5Lmm case and 1.0F in 19.0×20.5L mm case.
- It excels in rapid charge.
- Ideal for backing up of CMOS's, IC's of camera, microcomputers, RAM's, RTC's and the like used in audio, general electronic device, and others.



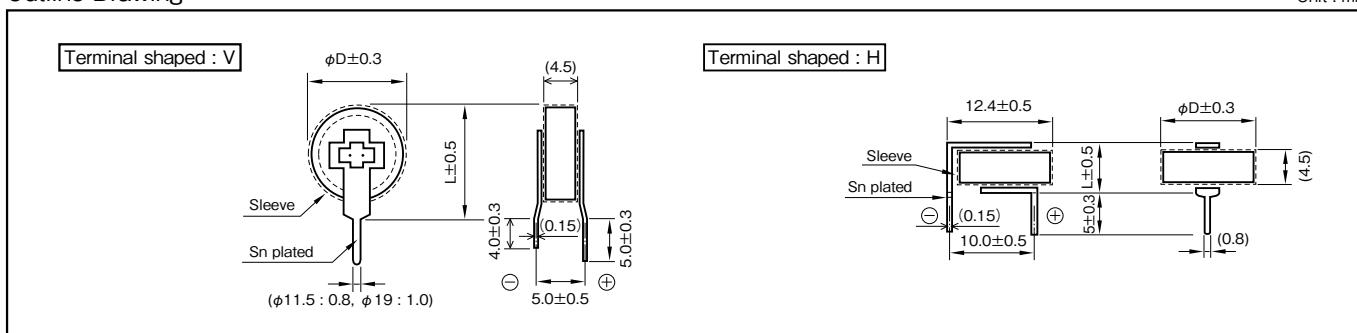
Marking color : White print on a black sleeve

Specifications

Item	Performance														
Category temperature range (°C)	-25 to +85														
Tolerance at rated capacitance (%)	-20 to +80														
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.33	0.47	0.47	1							
	Internal resistance (Ω Max.)	25	25	25	25	25 (φ11.5)	20 (φ19.0)	20							
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C													
	Internal resistance	Less than five times of the value at 20°C													
Endurance (85°C)	Test time	2000 hours (φ11.5 0.47F : 1000 hours)													
	Percentage of capacitance change	Within ±30% of the initial measured value													
	Internal resistance	Less than four times of the initial specified value													
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.														
Applicable standards	Conforms to JIS C5160-1 2009(IEC 62391-1 2006)														

Outline Drawing

Unit : mm



Part numbering system (example : 3.6V0.22F)

DXS	—	3R6	<input type="checkbox"/>	224	<input type="checkbox"/>	U
Series code	Max.operating voltage symbol	Terminal shaped	Rated capacitance symbol	Additional symbol		

Part number is refer to following table.

Note

Do not apply external force to products or terminals as stress such as twisting, bending, pushing, or falling of such products or terminals may remove the terminals, resulting in an open/short circuit or liquid leakage.
Avoid applying excessive heat to capacitors during heating of an adhesive curing oven. For details, refer to the precautions in use of DYNACAP.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φDXL (mm)
3.6	0.047	DXS-3R6V473U	11.5×13.0
		DXS-3R6H473U	11.5× 5.0
3.6	0.1	DXS-3R6V104U	11.5×13.0
		DXS-3R6H104U	11.5× 5.0
3.6	0.22	DXS-3R6V224U	11.5×13.0
		DXS-3R6H224U	11.5× 5.0
3.6	0.33	DXS-3R6V334U	11.5×13.0
		DXS-3R6H334U	11.5× 5.0
3.6	0.47	DXS-3R6V474SU	11.5×13.0
		DXS-3R6H474SU	11.5× 5.0
		DXS-3R6V474U	19.0×20.5
3.6	1	DXS-3R6V105U	19.0×20.5

*It can charge and discharge with 1.5 times as much current (mA) as rated capacitance.

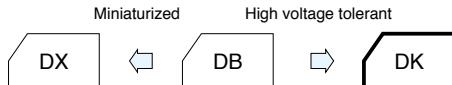
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

High Voltage Tolerance Capacitors

GREEN CAP

70°C

- High voltage tolerant (6.3V guaranteed) and highly reliable.
- Ideal for backing up of Li-battery-backed equipment such as cameras, video, medical and telephone sets.



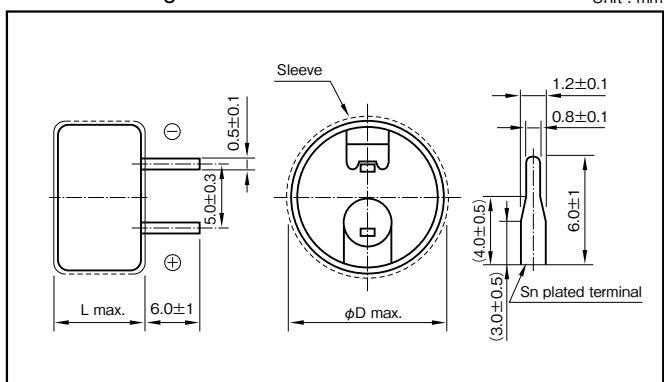
Marking color : White print on an indigo sleeve

Specifications

Item	Performance										
Category temperature range (°C)	-25 to +70										
Tolerance at rated capacitance (%)	-20 to +80										
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.47	0.68	1					
	Internal resistance (Ω Max.)	300	200	50	50	30					
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C									
	Internal resistance	Less than five times of the value at 20°C									
Endurance (70°C)	Test time	1000 hours									
	Percentage of capacitance change	Within ±30% of the initial measured value									
	Internal resistance	Less than four times of the initial specified value									
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.										
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)										

Outline Drawing

Unit : mm



Part numbering system (example : 6.3V0.1F)

DK	—	6R3	D	104	T
Series code	—	Max.operating voltage symbol	—	Rated capacitance symbol	—

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
6.3	0.047	DK-6R3D473T	13.5×9.5
6.3	0.1	DK-6R3D104T	13.5×9.5
6.3	0.47	DK-6R3D474T	21.5×9.5
6.3	0.68	DK-6R3D684T	21.5×9.5
6.3	1	DK-6R3D105T	21.5×9.5

High Temperature Capacitors

GREEN CAP 85°C

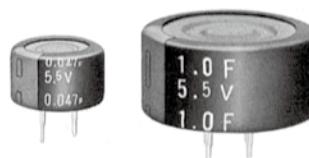
- High temperature tolerant (-25 to $+85^\circ\text{C}$) and highly reliable.
- Ideal for backing up of controls, electronic rice cooking jars, home bakeries and the like.
- Ideal for backing up of RTC's for smart meter, outdoor equipment, Industrial, momentary power assistance of a battery, automotive etc.

DH

High temperature

DX

DB



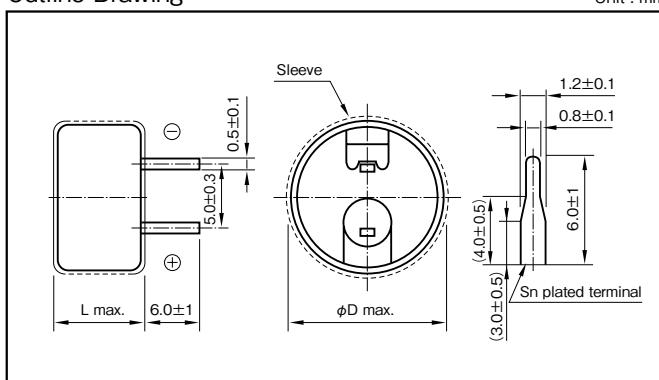
Marking color : White print on an indigo sleeve

Specifications

Item	Performance												
Category temperature range (°C)	-25 to +85												
Tolerance at rated capacitance (%)	-20 to +80												
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.47	0.68	1						
	Internal resistance (Ω Max.)	300	200	120	50	50	30						
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 30\%$ of the value at 20°C											
	Internal resistance	Less than five times of the value at 20°C											
Endurance (85°C)	Test time	1000 hours											
	Percentage of capacitance change	Within $\pm 30\%$ of the initial measured value											
	Internal resistance	Less than four times of the initial specified value											
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.												
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)												

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.22F)

DH	—	5R5	D	224	T
Series code	—	Max.operating voltage symbol	—	Rated capacitance symbol	

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DH-5R5D473T	13.5×9.5
5.5	0.1	DH-5R5D104T	13.5×9.5
5.5	0.22	DH-5R5D224T	13.5×9.5
5.5	0.47	DH-5R5D474T	21.5×9.5
5.5	0.68	DH-5R5D684T	21.5×9.5
5.5	1	DH-5R5D105T	21.5×9.5

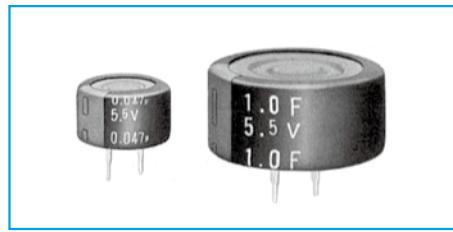
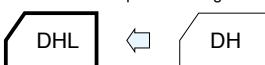
5.5V Wide Temperature Range Capacitors

GREEN CAP

85°C

- It is a category temperature range larger than battery.
- φ13.5 size can encase up to 0.22F, φ21.5 size can encase up to 1.0F.
- It excels in rapid charge.
- Ideal for backing up of CMOS IC's, microcomputers, RAM's, RTC's for smart meter, outdoor equipment, auto motive and industrial.

Wide temperature range



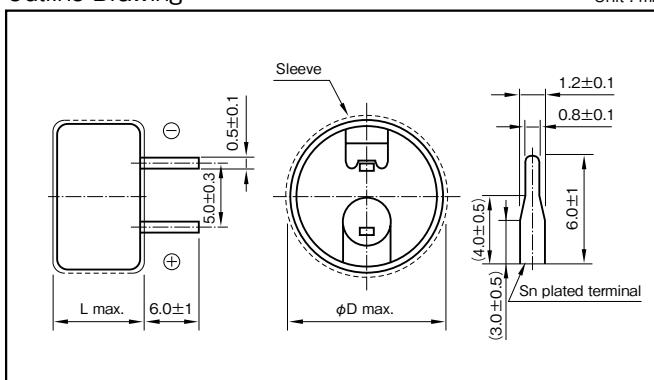
Marking color : White print on an indigo sleeve

Specifications

Item	Performance												
Category temperature range (°C)	-40 to +85												
Tolerance at rated capacitance (%)	-20 to +80												
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.47	0.68	1						
	Internal resistance (Ω Max.)	40	40	40	20	20	20						
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C											
	Internal resistance	-40°C : Less than seven times of the value at 20°C 85°C : Less than five times of the value at 20°C											
Endurance (85°C)	Test time	1000 hours											
	Percentage of capacitance change	Within ±30% of the initial measured value											
	Internal resistance	Less than four times of the initial specified value											
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.												
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)												

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.22F)

DHL	-	5R5	D	224	T
Series code		Rated voltage symbol	Terminal code	Rated capacitance symbol	

Part number is refer to following table.

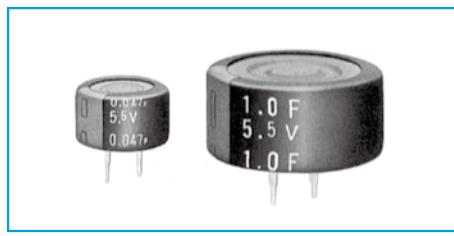
Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φDXL (mm)
5.5	0.047	DHL-5R5D473T	13.5×9.5
5.5	0.1	DHL-5R5D104T	13.5×9.5
5.5	0.22	DHL-5R5D224T	13.5×9.5
5.5	0.47	DHL-5R5D474T	21.5×9.5
5.5	0.68	DHL-5R5D684T	21.5×9.5
5.5	1	DHL-5R5D105T	21.5×9.5

5.5V High Temperature, Long Life Capacitors

GREEN CAP 85°C

- Guarantees 3000 hours at 85°C, 5.5V (10 years at room temperature).
- It is a category temperature range larger than battery.
- It excels in rapid charge.
- Ideal for backing up of CMOS IC's, microcomputers, RAM's, RTC's for smart meter, outdoor equipment, auto motive and industrial.



Long Life



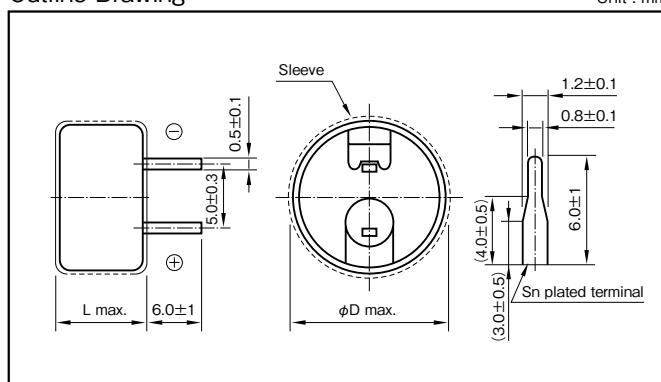
Marking color : White print on a Black sleeve

Specifications

Item	Performance												
Category temperature range (°C)	-25 to +85												
Tolerance at rated capacitance (%)	-20 to +80												
Internal resistance at 1 kHz	Rated capacitance (F)	0.047	0.1	0.22	0.47	0.68	1						
	Internal resistance (Ω Max.)	300	200	120	50	50	30						
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C											
	Internal resistance	Less than five times of the value at 20°C											
Endurance (85°C)	Test time	3000 hours											
	Percentage of capacitance change	Within ±30% of the initial measured value											
	Internal resistance	Less than four times of the initial specified value											
Shelf life (85°C)	Test time : 1000 hours ; Same as endurance.												
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)												

Outline Drawing

Unit : mm



Part numbering system (example : 5.5V0.22F)

DHC	—	5R5	D	224	T
Series code		Rated voltage symbol	Terminal code	Rated capacitance symbol	

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
5.5	0.047	DHC-5R5D473T	13.5×9.5
5.5	0.1	DHC-5R5D104T	13.5×9.5
5.5	0.22	DHC-5R5D224T	13.5×9.5
5.5	0.47	DHC-5R5D474T	21.5×9.5
5.5	0.68	DHC-5R5D684T	21.5×9.5
5.5	1	DHC-5R5D105T	21.5×9.5

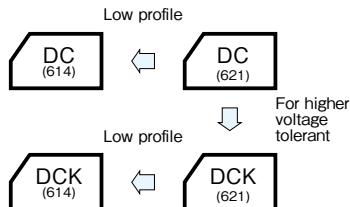
Coin Cell Capacitors

GREEN CAP

SMD

60°C
/70°C

- Unlike batteries, the number of charging / discharging cycles unlimited and rapid charging / discharging is possible.
- High reliability, Safe and unlike secondary batteries, this is pollution free devices.
- 1.8mm height 614type made lineup in the DC, DCK Series.
- Ideal for backing up of portable device etc.

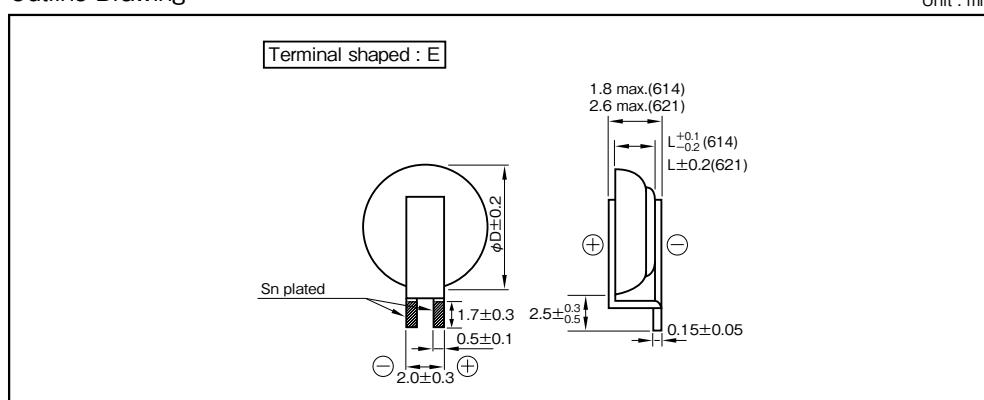


Specifications

Item	Performance					
	Series DC		Series DCK			
Series Name	Series DC		Series DCK			
Max. operating voltage (V)	2.5		3.3			
Category temperature range (°C)	−25 to +70		−10 to +60			
Tolerance at rated capacitance (%)	−20 to +80		−20 to +80			
Internal resistance (Ω) at 1 kHz	Size code	614	621	Size code	614	621
	Rated capacitance (F)	0.2	0.33	Rated capacitance (F)	0.2	0.4
	Internal resistance (Ω Max.)	100	100	Internal resistance (Ω Max.)	200	200
Characteristics at high and low temperature	Size code	614	621	Size code	614	621
	Percentage of capacitance change	Within ±30% of the value at 20°C	Within ±30% of the value at 20°C	Percentage of capacitance change	Within ±50% of the value at 20°C	Within ±50% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C	Less than five times of the value at 20°C	Internal resistance	Less than five times the initial specified value	Less than five times of the value at 20°C
Endurance	Size code	614	621	Size code	614	621
	Test time and temp	70°C 1000 hours	70°C 500 hours	Test time and temp	60°C 1000 hours	60°C 500 hours
	Percentage of capacitance change	Within ±30% of the initial measured value	Within ±40% of the initial measured value	Percentage of capacitance change	Within ±30% of the initial measured value	Within ±40% of the initial measured value
	Internal resistance	1kΩ Max.	400Ω Max.	Internal resistance	2kΩ Max.	800Ω Max.
Shelf life	Same as endurance.			Same as endurance.		
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)					

Outline Drawing

Unit : mm



Part numbering system (example : 614,2.5V0.2F, terminal shaped : E)

DC	—	2R5	E	204	T	614	—	E
Series code	Max. operating voltage symbol	Rated capacitance symbol		Additional symbol				

Part number is refer to following table.

Part numbering system (example : 621, 3.3V0.4F, terminal shaped : E)

DCK	—	3R3	E	404	T	—	E
Series code	Max. operating voltage symbol	Rated capacitance symbol		Additional symbol			

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
2.5	0.2	DC-2R5E204T614-E	6.8×1.4
3.3	0.2	DCK-3R3E204T614-E	6.8×1.4
2.5	0.33	DC-2R5E334T-E	6.8×2.1
3.3	0.4	DCK-3R3E404T-E	6.8×2.1

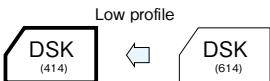
Coin Cell Capacitors

GREEN CAP

SMD

70°C

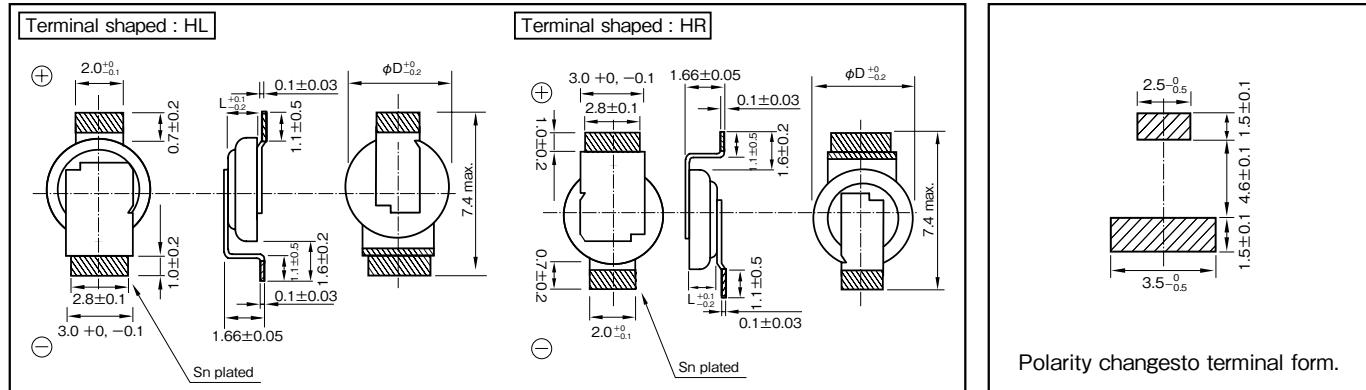
- Reflow soldering method available.
- Unlike batteries, the number of charging / discharging cycles unlimited and rapid charging / discharging is possible.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
- $\phi 4.8 \times 1.71$ Lmm Max height type made lineup in the DSK series.
- Ideal for backing up of portable device etc.



Specifications

Item	Performance	
Series name	series DSK	
Max. operating voltage (V)	3.3	
Category temperature range (°C)	-10 to +70	
Tolerance at rated capacitance (%)	-20 to +80	
Rated capacitance (F)	0.07	
Internal resistance (Ω Max.) at 1 kHz	100	
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 50\%$ of the value at 20°C
	Internal resistance	Less than ten times of the value at 20°C
Endurance (70°C)	Test time	500 hours
	Percentage of capacitance change	Within $\pm 30\%$ of the initial measured value
	Internal resistance	5k Ω Max.
Shelf life (70°C)	Test time : 500 hours ; Same as endurance.	
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)	

Outline Drawing



*Please consult with us about other terminal form

Part numbering system (3.3V0.07F, terminal shaped : HL)					
DSK	—	3R3	H	703	T414 — HL L
Series code	Max.operating voltage symbol	Rated capacitance symbol	Additional symbol	Terminal shaped	Taping symbol

Part number is refer to following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	$\phi D \times L$ (mm)
3.3	0.07	DSK-3R3H703T414-HLL	4.8×1.4
		DSK-3R3H703T414-HRL	

*Soldering conditions are described on page 207.

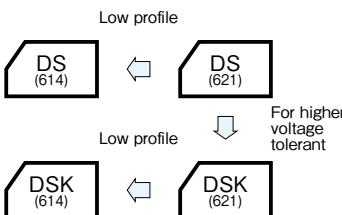
Coin Cell Capacitors

GREEN CAP

SMD

60°C
/70°C

- Reflow soldering method available.
- Unlike batteries, the number of charging/discharging cycles unlimited and rapid charging/discharging is possible.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reactions.
- 1.8Lmm height type 614 made lineup in the DS, DSK series.
- Ideal for backing up of portable device etc.

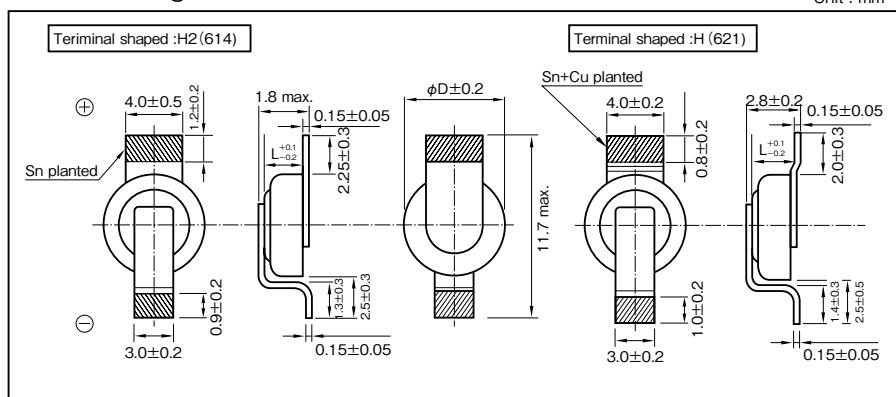


Specifications

Item	Performance					
Series Name	Series DS			Series DSK		
Max.operating voltage (V)	2.5			3.3		
Category temperature range (°C)	-25 to +70			-10 to +60		
Tolerance at rated capacitance (%)	-20 to +80			-20 to +80		
Internal resistance (Ω) at 1 kHz	Size code	614	621	Size code	614	621
	Rated capacitance (F)	0.2	0.33	Rated capacitance (F)	0.2	0.33
	Internal resistance (Ω Max.)	100	100	Internal resistance (Ω Max.)	200	200
Characteristics at high and low temperature	Size code	614	621	Size code	614	621
	Percentage of capacitance change	Within ±30% of the value at 20°C	Within ±30% of the value at 20°C	Percentage of capacitance change	Within ±50% of the value at 20°C	Within ±50% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C	Less than five times of the value at 20°C	Internal resistance	Less than five times of the initial specified value	Less than five times of the value at 20°C
Endurance	Size code	614	621	Size code	614	621
	Test time and temp.	70°C 1000 hours	70°C 500 hours	Test time and temp.	60°C 1000 hours	60°C 500 hours
	Percentage of capacitance change	Within ±30% of the initial measured value	Within ±30% of the initial measured value	Percentage of capacitance change	Within ±30% of the initial measured value	Within ±30% of the initial measured value
	Internal resistance	1kΩ Max.	400Ω Max.	Internal resistance	2kΩ Max.	800Ω Max.
Shelf life	Same as endurance.			Same as endurance.		
Applicable standards	Conforms to JIS C5160-1 2009(IEC 62391-1 2006)					

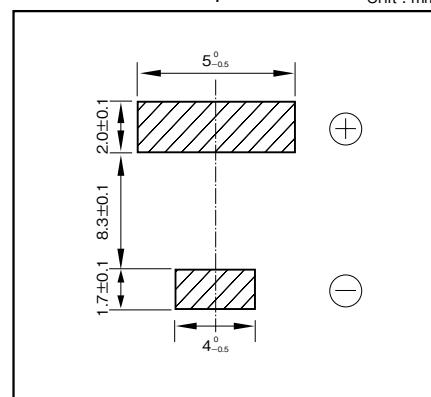
Outline Drawing

Unit : mm



Recommended land pattern size

Unit : mm



※Please consult with us about other terminal form.

Part numbering system (example : 614, 2.5V0.2F, terminal shaped : H2)								
DS	—	2R5	H	204	T614	—	H2	L
Series code		Max.operating voltage symbol		Rated capacitance symbol	Additional symbol	Terminal shaped	Taping symbol	

Part number is refer to following table.

Part numbering system (example:621, 3.3V0.33F, terminal shaped:H)								
DSK	—	3R3	H	334	U	—	H	L
Series code		Max.operating voltage symbol		Rated capacitance symbol	Additional symbol	Terminal shaped	Taping symbol	

Part number is refer to following table.

Standard Ratings

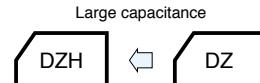
Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD×L (mm)
2.5	0.2	DS-2R5H204T614-H2L	6.8×1.4
3.3	0.2	DSK-3R3H334U-HL	6.8×1.4
2.5	0.33	DS-2R5H334U-HL	6.8×2.1
3.3	0.33	DSK-3R3H334U-HL	6.8×2.1

* Soldering conditions are described on page 207.

Standard, Large Capacitance Type Capacitors

GREEN CAP	60°C / 70°C	2.5V / 2.7V
-----------	-------------	-------------

- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries ; excellent charge and discharge characteristics with no chemical reactions



Large capacitance

DZH

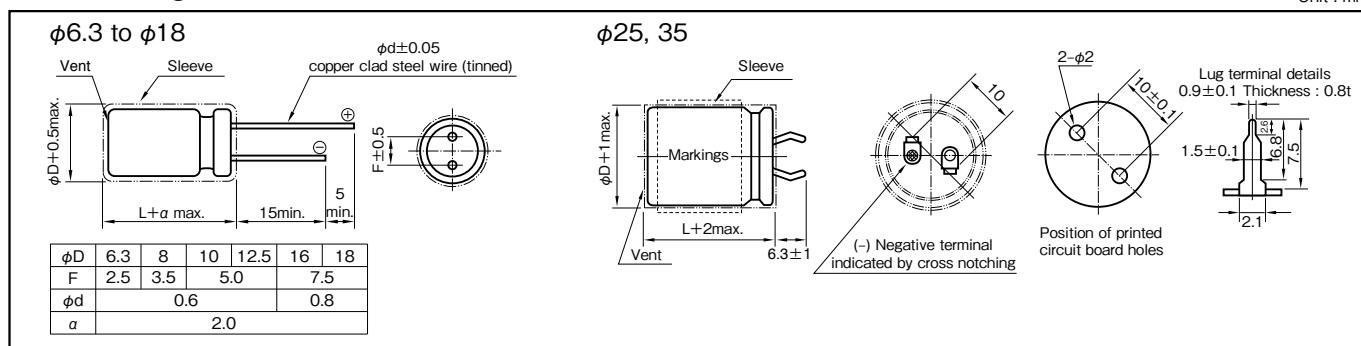
DZ

Specifications

Item	Performance			
Series name	Series DZ	Series DZH		
Category temperature range (°C)	-25 to +70	-25 to +60		
Tolerance at rated capacitance (%)	-20 to +80	-20 to +80		
Internal resistance at 1kHz	Refer to the following page			
Characteristics at high and low temperature	Percentage of capacitance change Internal resistance	Within ±30% of the value at 20°C Less than five times of the value at 20°C	Percentage of capacitance change Internal resistance	Within ±30% of the value at 20°C Less than eight times of the value at 20°C
Endurance	Test temperature Test time Percentage of capacitance change Internal resistance	70°C 1000 hours Within ±30% of the initial measured value Less than four times of the initial specified value	Test temperature Test time Percentage of capacitance change Internal resistance	60°C 2000 hours Within ±30% of the initial measured value Less than four times of the initial specified value
Shelf life	Same as endurance		Same as endurance	
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)			

Outline Drawing

Unit : mm



Part numbering system (example : 2.5V10F)

DZ	—	2R5	D	106	(Z6)(S)	T —	<input type="checkbox"/>
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Casing symbol	Taping (Forming) symbol		

Part number is refer to the following page.

Standard Ratings (Series DZ 2.5V)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (Ω max.) at 1kHz	Internal resistance ($m\Omega$) at 1kHz (measurement value)
2.5	1	0.1	DZ-2R5D105F4T	6.3 × 14	1.0	400
2.5	1	0.1	DZ-2R5D105G3T	8 × 12	1.0	200
2.5	2.7	0.2	DZ-2R5D275G5ST	8 × 20	0.5	150
2.5	3.3	0.2	DZ-2R5D335H5T	10 × 20	0.3	130
2.5	4.7	0.3	DZ-2R5D475H5T	10 × 20	0.2	80
2.5	5.6	0.3	DZ-2R5D565H5T	10 × 20	0.2	70
2.5	6.8	0.4	DZ-2R5D685H6T	10 × 25	0.2	60
2.5	10	0.5	DZ-2R5D106H8T	10 × 35	0.2	40
2.5	10	0.5	DZ-2R5D106Z6ST	12.5 × 25	0.2	40
2.5	15	0.7	DZ-2R5D156Z8ST	12.5 × 35	0.2	35
2.5	15	0.7	DZ-2R5D156J5T	16 × 20	0.2	35
2.5	22	0.8	DZ-2R5D226J6T	16 × 25	0.2	30
2.5	33	0.8	DZ-2R5D336J8T	16 × 35.5	0.2	30
2.5	40	0.8	DZ-2R5D406K9T	18 × 40	0.2	30
2.5	50	1.0	DZ-2R5D506T	25 × 40	0.08	20
2.5	100	1.0	DZ-2R5D107S37T	25 × 50	0.08	15
2.5	200	2.0	DZ-2R5D207S57T	35 × 50	0.08	15

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

Standard Ratings (Series DZ 2.7V)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (Ω max.) at 1kHz	Internal resistance ($m\Omega$) at 1kHz (measurement value)
2.7	1	0.2	DZ-2R7D105F4T	6.3 × 14	1.0	400
2.7	1	0.2	DZ-2R7D105G3T	8 × 12	1.0	200
2.7	2.7	0.3	DZ-2R7D275G5ST	8 × 20	0.5	150
2.7	3.3	0.3	DZ-2R7D335H5T	10 × 20	0.3	130
2.7	4.7	0.4	DZ-2R7D475H5T	10 × 20	0.2	80
2.7	5.6	0.4	DZ-2R7D565H5T	10 × 20	0.2	70
2.7	6.8	0.5	DZ-2R7D685H6T	10 × 25	0.2	60
2.7	10	0.6	DZ-2R7D106H8T	10 × 35	0.2	40
2.7	10	0.6	DZ-2R7D106Z6ST	12.5 × 25	0.2	40
2.7	15	0.8	DZ-2R7D156Z8ST	12.5 × 35	0.2	35
2.7	15	0.8	DZ-2R7D156J6T	16 × 25	0.2	35
2.7	22	1.0	DZ-2R7D226J7T	16 × 31.5	0.2	30
2.7	33	1.0	DZ-2R7D336J9T	16 × 40	0.2	30

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

Standard Ratings (Series DZH 2.5V)

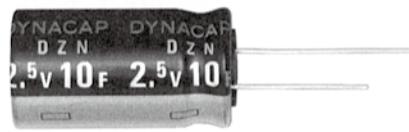
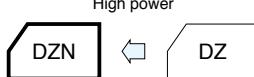
Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (Ω max.) at 1kHz	Internal resistance ($m\Omega$) at 1kHz (measurement value)
2.5	22	0.8	DZH-2R5D226Z8ST	12.5 × 35	0.2	55
2.5	50	1.0	DZH-2R5D506K9T	18 × 40	0.08	30
2.5	100	2.0	DZH-2R5D107S35T	25 × 40	0.08	20
2.5	300	5.0	DZH-2R5D307S57T	35 × 50	0.08	15

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

High Power Type Capacitors

GREEN CAP 70°C Low ESR 2.5V / 2.7V

- Low internal resistance allows boosting charge and heavy-current discharge. (ampere level)
- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reaction



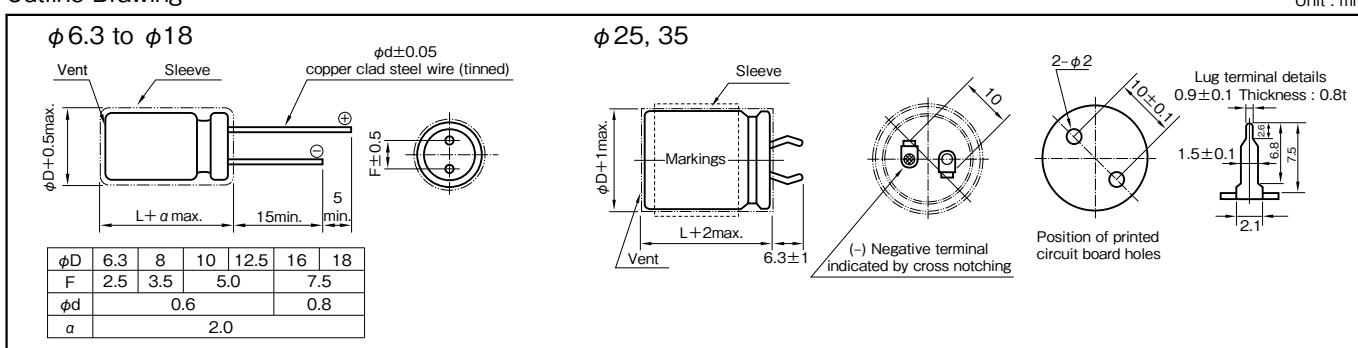
Marking color : White print on a blue sleeve

Specifications

Item	Performance	
Category temperature range (°C)	−25 to +70	
Tolerance at rated capacitance (%)	−20 to +80	
Internal resistance	Refer to the following page	
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C
Endurance (70°C)	Test time	1000 hours
	Percentage of capacitance change	Within ±30% of the initial measured value
	Internal resistance	Less than four times of the initial specified value
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.	
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)	

Outline Drawing

Unit : mm



Part numbering system (example : 2.5V10F)

DZN	—	2R5	D	106	(Z6)(S)	T	—	[]
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Casing symbol		Taping (Forming) symbol		

Part number is refer to the following page.

Standard Ratings (Series DZN 2.5V)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (Ω max.) at 1kHz	Internal DC resistance (m Ω Max.)
2.5	1	0.1	DZN-2R5D105F4T	6.3 × 14	0.4	1500
2.5	1	0.1	DZN-2R5D105G3T	8 × 12	0.3	1000
2.5	2.7	0.2	DZN-2R5D275G5ST	8 × 20	0.3	500
2.5	3.3	0.2	DZN-2R5D335H5T	10 × 20	0.2	470
2.5	4.7	0.3	DZN-2R5D475H5T	10 × 20	0.1	400
2.5	5.6	0.3	DZN-2R5D565H5T	10 × 20	0.1	350
2.5	6.8	0.4	DZN-2R5D685H6T	10 × 25	0.1	300
2.5	10	0.5	DZN-2R5D106H8T	10 × 35	0.1	200
2.5	10	0.5	DZN-2R5D106Z6ST	12.5 × 25	0.1	200
2.5	15	0.7	DZN-2R5D156Z8ST	12.5 × 35	0.1	150
2.5	15	0.7	DZN-2R5D156J5T	16 × 20	0.1	150
2.5	22	0.8	DZN-2R5D226J6T	16 × 25	0.1	120
2.5	33	0.8	DZN-2R5D336J8T	16 × 35.5	0.1	100
2.5	40	0.8	DZN-2R5D406K9T	18 × 40	0.1	75
2.5	50	1.0	DZN-2R5D506T	25 × 40	0.03	60
2.5	100	1.0	DZN-2R5D107S37T	25 × 50	0.03	50
2.5	200	2.0	DZN-2R5D207S57T	35 × 50	0.03	40

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

Standard Ratings (Series DZN 2.7V)

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (Ω max.) at 1kHz	Internal DC resistance (m Ω Max.)
2.7	1	0.2	DZN-2R7D105F4T	6.3 × 14	0.4	1500
2.7	1	0.2	DZN-2R7D105G3T	8 × 12	0.3	1000
2.7	2.7	0.3	DZN-2R7D275G5ST	8 × 20	0.3	500
2.7	3.3	0.3	DZN-2R7D335H5T	10 × 20	0.2	470
2.7	4.7	0.4	DZN-2R7D475H5T	10 × 20	0.1	400
2.7	5.6	0.4	DZN-2R7D565H5T	10 × 20	0.1	350
2.7	6.8	0.5	DZN-2R7D685H6T	10 × 25	0.1	300
2.7	10	0.6	DZN-2R7D106H8T	10 × 35	0.1	200
2.7	10	0.6	DZN-2R7D106Z6ST	12.5 × 25	0.1	200
2.7	15	0.8	DZN-2R7D156Z8ST	12.5 × 35	0.1	150
2.7	15	0.8	DZN-2R7D156J6T	16 × 25	0.1	150
2.7	22	1.0	DZN-2R7D226J7T	16 × 31.5	0.1	120
2.7	33	1.0	DZN-2R7D336J9T	16 × 40	0.1	100

We tailor packaged product in series and parallel arrangements according to voltage and capacitance as required.

High Power, For Low Temperature Type Capacitors

GREEN CAP

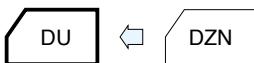
65°C

2.7V

For -40°C

- For Low Temperature (-40°C).
- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reaction.

For low temperature



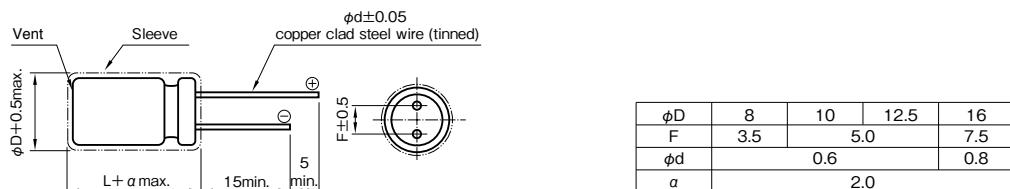
Marking color : White print on a brown sleeve

Specifications

Item	Performance	
Category temperature range (°C)	-40 to +65	
Tolerance at rated capacitance (%)	-20 to +80	
Internal resistance	Refer to the Standard Ratings	
Characteristics at high and low temperature	Percentage of capacitance change	Within $\pm 30\%$ of the value at 20°C
	Internal resistance	Less than three times of the value at 20°C
Endurance (65°C)	Test time	1000 hours
	Percentage of capacitance change	Within $\pm 30\%$ of initial measured value
	Internal resistance	Less than three times of the initial specified value
Shelf life (65°C)	Test time : 1000 hours ; same as endurance.	
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)	

Outline Drawing

Unit : mm



Part numbering system (example : 2.7V10F)

DU	—	2R7	D	106	H7	T —	<input type="checkbox"/>
Series code		Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Casing symbol		Taping (Forming) symbol

Part number is refer to the following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (mΩ max.) at 1kHz	Internal DC resistance (mΩ Max.)
2.7	1	0.2	DU-2R7D105G3T	8 × 12	250	700
2.7	3.3	0.3	DU-2R7D335G5T	8 × 20	75	200
2.7	6.8	0.5	DU-2R7D685H5T	10 × 20	60	120
2.7	10	0.6	DU-2R7D106H7T	10 × 30	50	75
2.7	15	0.8	DU-2R7D156Z6T	12.5 × 25	35	60
2.7	25	1.0	DU-2R7D256J6T	16 × 25	25	42
2.7	33	1.0	DU-2R7D336J7T	16 × 31.5	20	35

For Low Temperature Type Capacitors

GREEN CAP

70°C

2.5V

For -40°C

- For Low Temperature (-40°C).
- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reaction.

For low temperature



DY



DZ



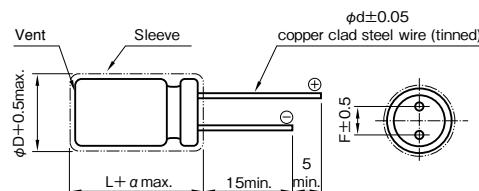
Marking color : White print on a brown sleeve

Specifications

Item	Performance		
Category temperature range ($^{\circ}\text{C}$)	-40 to $+70$		
Tolerance at rated capacitance (%)	-20 to $+80$		
Internal resistance at 1 kHz	Refer to the Standard Ratings		
Characteristics at high and low temperature	Percentage of capacitance change	-25 to $+70^{\circ}\text{C}$	Within $\pm 30\%$ of the value at 20°C
		-40 to $< -25^{\circ}\text{C}$	Within $\pm 50\%$ of the value at 20°C
Endurance (70°C)	Internal resistance	-25 to $+70^{\circ}\text{C}$	Less than five times of the value at 20°C
		-40 to $< -25^{\circ}\text{C}$	Less than ten times of the value at 20°C
Shelf life (70°C)	Test time : 1000 hours ; Same as endurance.		
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)		

Outline Drawing

Unit : mm

 $\phi 8$ to $\phi 18$ 

ϕD	8	10	16	18
F	3.5	5.0	7.5	
ϕd	0.6		0.8	
a			2.0	

Part numbering system (example : 2.5V10F)

DY	—	2R5	D	106	Z6(S)	T	—	[]
Series code	Max. operating voltage symbol	Terminal code	Rated capacitance symbol	Casing symbol	Taping (Forming) symbol			

Part number is refer to the following table.

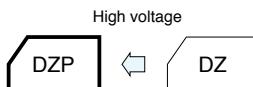
Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	$\phi D \times L$ (mm)	Internal resistance (Ω max.) at 1kHz	Internal resistance (m Ω) at 1kHz (measurement value)
2.5	1	0.1	DY-2R5D105G3T	8 × 12	1	200
2.5	2.7	0.2	DY-2R5D275G5ST	8 × 20	0.5	120
2.5	3.3	0.2	DY-2R5D335H5T	10 × 20	0.3	100
2.5	4.7	0.3	DY-2R5D475H5T	10 × 20	0.2	70
2.5	5.6	0.3	DY-2R5D565H5T	10 × 20	0.2	70
2.5	6.8	0.4	DY-2R5D685H6T	10 × 25	0.2	50
2.5	10	0.5	DY-2R5D106H8T	10 × 35	0.2	35
2.5	10	0.5	DY-2R5D106Z6ST	12.5 × 25	0.2	35
2.5	15	0.7	DY-2R5D156Z8ST	12.5 × 35	0.2	30
2.5	15	0.7	DY-2R5D156J5T	16 × 20	0.2	30
2.5	22	0.8	DY-2R5D226J6T	16 × 25	0.2	25
2.5	33	0.8	DY-2R5D336J8T	16 × 35.5	0.2	25
2.5	40	0.8	DY-2R5D406K9T	18 × 40	0.2	25

Packed Type Capacitors

GREEN CAP 70°C 5.0V

- High-voltage capacitor which connected DZ in series.
- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reaction.



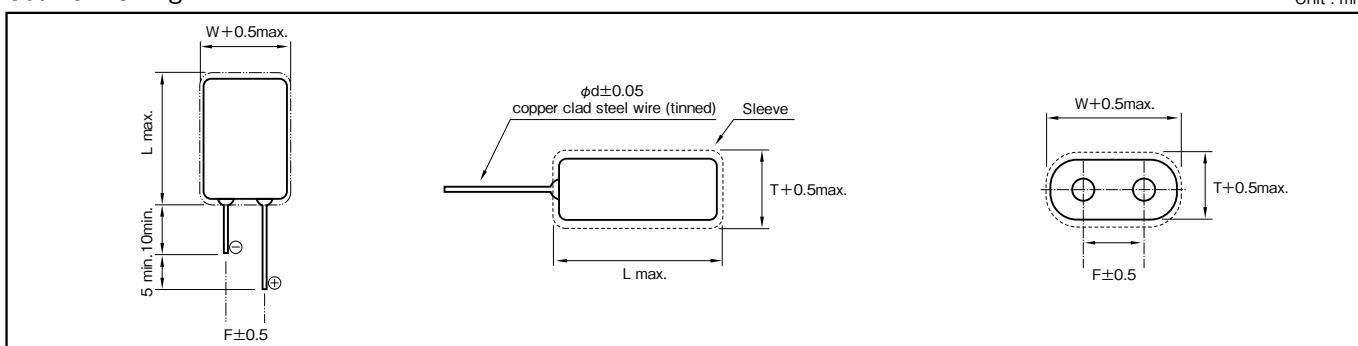
Marking color : White print on a blue sleeve

Specifications

Item	Performance	
Category temperature range (°C)	−25 to +70	
Tolerance at rated capacitance (%)	−20 to +80	
Internal resistance at 1 kHz		
Characteristics at high and low temperature	Percentage of capacitance change	Within ±30% of the value at 20°C
	Internal resistance	Less than five times of the value at 20°C
Endurance (70°C)	Test time	1000 hours
	Percentage of capacitance change	Within ±30% of the initial measured value
	Internal resistance	Less than four times of the initial specified value
Shelf life (70°C)	Test time : 1000hours ; same as endurance.	
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)	

Outline Drawing

Unit : mm

**Part numbering system (example : 5.0V0.47F)**

DZP	—	5	V	474	G3()	NT(S1)□
Series code	Max. operating voltage symbol	Max. operating voltage	Rated capacitance symbol	Rated capacitance	Casing symbol	Additional code

Part number is refer to the following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	Max. Leakage Current (mA) after 24h	ELNA Parts No.	T × W × L (mm)	φd	F	Internal resistance (Ω max.) at 1kHz	Internal resistance (mΩ) at 1kHz (measurement value)
5.0	0.47	0.2	DZP-5V474G3NTS1A	8.5 × 17.0 × 16.0	0.6	5.1	0.6	300
			DZP-5V474G3NTS1B			12.1		
5.0	1.0	0.3	DZP-5V105G5NTA	8.5 × 17.0 × 24.0	0.6	5.1	0.6	240
			DZP-5V105G5SNTB			12.1		
5.0	1.5	0.4	DZP-5V155G5NTA	8.5 × 17.0 × 24.0	0.6	5.1	0.6	200
			DZP-5V155G5SNTB			12.1		
5.0	3.3	0.8	DZP-5V335H6NTS1A	10.5 × 21.0 × 29.0	0.6	5.5	0.2	100
			DZP-5V335H6NTS1B			15.5		
5.0	4.7	1.0	DZP-5V475H8NTS1A	10.5 × 21.0 × 39.0	0.6	5.5	0.2	70
			DZP-5V475H8NTS1B			15.5		

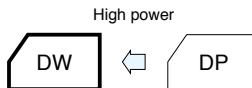
Large Capacitance, High Power Type Capacitors

GREEN
CAP

65°C

2.7V

- Because it is large capacitance and low resistance, most suitable for such as energy regeneration, and a large current discharge use.
- Pollution-Free ; with no pollutants such as Cd or Pb.
- Unlike batteries, excellent charge and discharge characteristics with no chemical reaction.



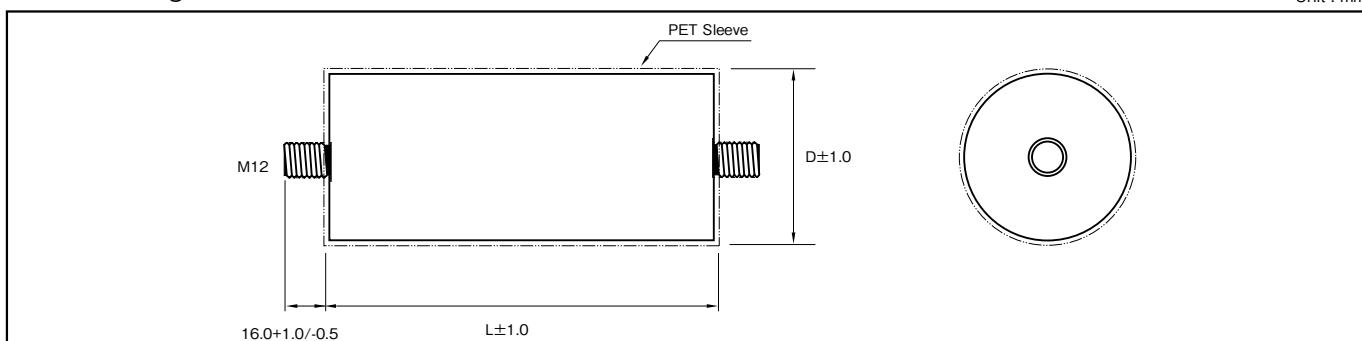
Marking color : White print on a black sleeve

Specifications

Item	Performance							
Category temperature range (°C)	−40 to +65							
Tolerance at rated capacitance (%)	0 to +30							
Internal DC resistance	Refer to the Standard Ratings							
Characteristics at high and low temperature	<table border="1"> <tr> <td>Percentage of capacitance change</td><td>Within ±30% of the value at 20°C</td></tr> <tr> <td>Internal DC resistance</td><td>Less than three times of the value at 20°C</td></tr> </table>	Percentage of capacitance change	Within ±30% of the value at 20°C	Internal DC resistance	Less than three times of the value at 20°C			
Percentage of capacitance change	Within ±30% of the value at 20°C							
Internal DC resistance	Less than three times of the value at 20°C							
Endurance (65°C)	<table border="1"> <tr> <td>Test time</td><td>1500 hours</td></tr> <tr> <td>Percentage of capacitance change</td><td>Within ±20% of the initial measured value</td></tr> <tr> <td>Internal DC resistance</td><td>Less than three times of the initial specified value</td></tr> </table>	Test time	1500 hours	Percentage of capacitance change	Within ±20% of the initial measured value	Internal DC resistance	Less than three times of the initial specified value	
Test time	1500 hours							
Percentage of capacitance change	Within ±20% of the initial measured value							
Internal DC resistance	Less than three times of the initial specified value							
Shelf life (65°C)	Test time : 1500hours ; same as endurance.							
Applicable standards	Conforms to JIS C5160-1 2009 (IEC 62391-1 2006)							

Outline Drawing

Unit : mm



Part numbering system (example : 2.7V3000F)

DW	—	2R7	D	308	DE0	T
Series code		Max. operating voltage symbol		Rated capacitance symbol	Casing symbol	

Part number is refer to the following table.

Standard Ratings

Max. operating voltage (V)	Rated capacitance (F)	ELNA Parts No.	φD × L (mm)	Internal DC resistance
2.7	650	DW-2R7D657D52T	61 × 52	3.2
2.7	1200	DW-2R7D128D74T	61 × 74	1.7
2.7	1500	DW-2R7D158D85T	61 × 85	1.4
2.7	2000	DW-2R7D208DA0T	61 × 102	1.0
2.7	3000	DW-2R7D308DE0T	61 × 138	0.70

1 Description of Electric Double Layer Capacitor

1-1 Basic Concepts

Generally capacitors are constructed with a dielectric placed between opposed electrodes, functioning as capacitors by accumulating charges in the dielectric material. Aluminum electrolytic and tantalum electrolytic capacitors, for example, use an aluminum oxide film and a tantalum oxide film as the dielectric, respectively.

On the other hand, Electric Double Layer Capacitors have no visible dielectric in a general sense but utilize the state referred to as the electric double layer, which is developed naturally on the interface between substances, as the function of dielectric.

1-2 Operating Principle

The Electric Double Layer represents the state in which positive and negative charges exist at a very short distance on the boundary where contact occurs between two different substances (e.g. solid and liquid). By externally applying a voltage below a certain voltage to the boundary, higher charges can be accumulated. Accordingly, charge and discharge of electric double layer capacitors utilize adsorption and desorption of ions to the ionic adsorption layer (Electric Double Layer) formed on the electrode surface of the activated carbon used for electrodes.

Applying DC voltage externally across the electrodes of the Electric Double Layer allows almost no passage of current up to a certain voltage, exhibiting a condition like insulation.

However, the application of voltages exceeding the certain voltage causes electrolysis to occur in the electrolyte, resulting in abrupt passage of current.

This voltage determines the resistance of voltage of an Electric Double Layer Capacitor. We use an organic electrolyte and its standard electrolysis occurs at the voltage of about 2.5 to 3V.

1-3 Advantages and Disadvantages of Electric Double Layer Capacitor

[Advantages]

- (1) Small size and capacitance in farads (F) available by utilizing the activated carbon electrode with a large surface area
- (2) No special charging circuit and constraints during discharge are required.
- (3) No effect on the life through overcharging and overdischarging
- (4) Environmentally clean energy

[Disadvantage]

- (1) The life is limited due to the use of electrolyte.
- (2) Series connection is required when used with a low resistance of voltage at a high voltage.
- (3) Cannot be used in AC circuits due to high internal resistance unlike aluminum electrolytic capacitors.

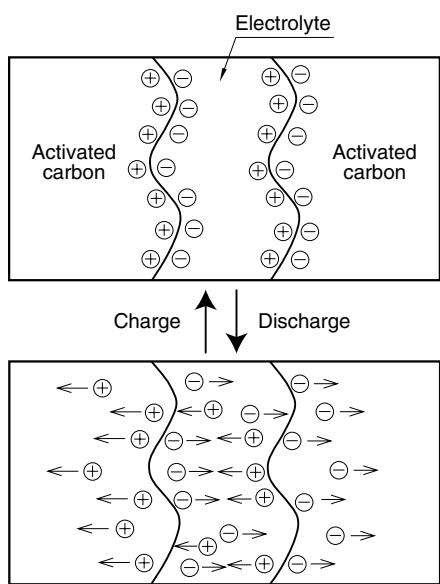


Fig.1 Schematic of Principle of Electric Double Layer Capacitor

1-4 Construction of DYNACAP

The series which consists of coin cells is similar to that of coin-type batteries as shown in Fig.2. DYNACAP contains a single cell or two to three cells stacked in series.

Since these series have a large electrode-to-electrode distance and a small electrode area exhibiting a large internal resistance, they are suitable for the memory backup application that involves microcurrent discharge.

The cylindrical cell construction as seen in the DZ and DZN series has the construction similar to that of aluminum electrolytic capacitors as shown in Fig.3.

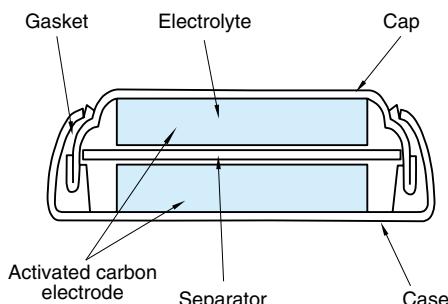


Fig.2 Example of Basic Construction of Coin Cell

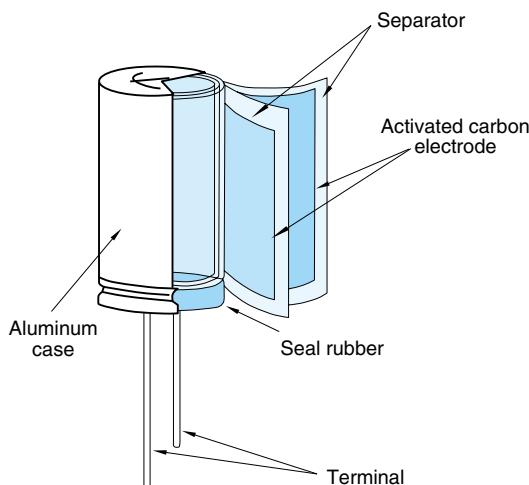


Fig.3 Example of Basic Construction of Cylindrical Cell

These series have a small electrode-to-electrode distance, allowing a large electrode area because of the winding structure. This decreases the internal resistance, which is primary suitable for applications requiring high-power such as motor drive and LED lighting that need high currents.

2 Description of Life Expectancy

Generally, the life of Electric Double Layer Capacitors is largely affected by the ambient temperature.

The expected life is approximated by the equation as shown below:

$$L = L_0 \times 2^{\left(\frac{T_0 - T}{10} \right)}$$

Where,

L : Expected lifetime at temperature T

L_0 : Lifetime at temperature T_0

T : Expected working temperature

T_0 : Upper category temperature

Note that the above equation does not cover charge and discharge. In the case of charge and discharge, heat generation occurs inside a capacitor; the temperature rise by this heat generation must also be considered.

3 Calculation Method of Discharge Time

3-1 Approximating the Discharge Time of Basic Constant Current Discharge

The discharge time at the constant current of a capacitor can be calculated by the following equation.

$$t = (C \times \Delta V) / I$$

Where,

- t : Discharge time (sec.)
- C : Capacitor capacitance (F)
- ΔV : Working voltage range (V)
- I : Discharge current (A)

As an example, we calculate the discharge time when a capacitor of the DB series 5.5V 1F is charged with 5V and discharged to 3V at a constant current of 1 mA. Since the working voltage range ΔV is 2V from 5 – 3V, $t = (1F \times 2V) / 0.001A$ from the above equation, and the discharge time can be calculated as 2,000 seconds (about 33 minutes). Note that the actual discharge time may be different because this equation does not cover the effect of the self-discharge and the IR drop by internal resistance described below.

3-2 Effect of Self-discharge at Microcurrents

When backup is made by discharge with a micro-current below some μA especially for the memory backup application and the like, the discharge time must be determined while taking into account the self-discharge as shown in Fig.4.

The value closer to the actual discharge curve is obtained by adding the voltage drop through the self-discharge determined from the voltage retention characteristic test to the discharge curve given by calculation.

Note that the value of self-discharge varies by the charge time, charging current and an ambient temperature.

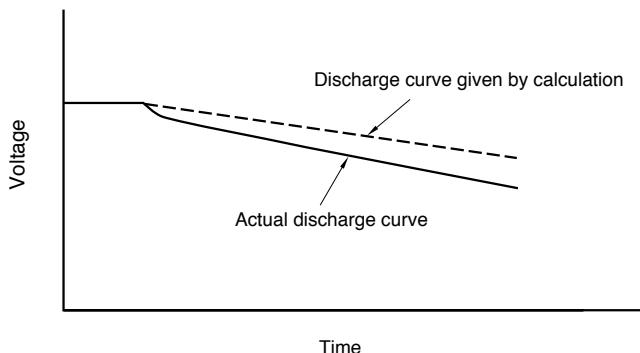


Fig.4 Example of Discharge Curve involving Self-Discharge

3-3 Effect of IR Drop at Large Currents

When a large Current discharge and a capacitor with a high internal resistance are used, the effect of IR drop by the product of the internal resistance and the current must be considered as shown in Fig.5. Moreover, the maximum discharge current of the product (coin cell series) of a memory backup use recommends below 1 mA/F (at 20 °C).

When a large current is required in a very short time, or a large instantaneous current flows at the start of discharge, the voltage drop indicated with ΔV_1 counts. However, when the discharge continues as it is, the discharge curve indicates in a manner showing a slow diffusion and then keeps a constant straight line.

We also make calculation including ΔV_2 of the intersection extending from the initial discharge and the discharge straight line section including the diffusion curve when indicating the DC internal resistance.

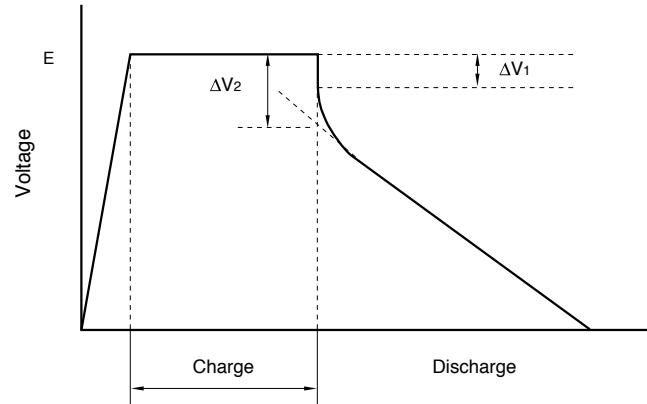


Fig.5 Example of Discharge Curve involving IR Drop

Due to IR drop, the shape of the discharge curve varies by the internal resistance and ambient temperature for each series.

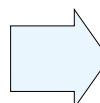
4 Series-parallel connection packaged products.

Electric Double Layer Capacitors have a low operating voltage per cell.

To deal with this, ELNA is ready to offer series packaging for high operating voltages to meet to various needs.

Please consult with us on optimization and design.

Packaged item



Example of packaged item

In case of a low voltage (up to about 24 V) for the DZ and DZN series with relatively low capacitance, we are preparing simple packaged products.

No full-scale voltage equalization circuit has been equipped yet, but comparatively low cost and flexible layout can be realized.

5 Moisture-proof provision

If a electric double layer capacitor is used in a heat-and-high-humidity environment, the characteristic will deteriorate.

We can improve the durability in heat-and-high-humidity environment by coating of special resin.
Please consult about resin coating.

6 Regarding Recovery Voltage

After charging and then discharging the electric double layer capacitor, and further causing short-circuit to the terminals and leave them alone, the voltage between the two terminals will rise again after some interval. This voltage is called recovery voltage.

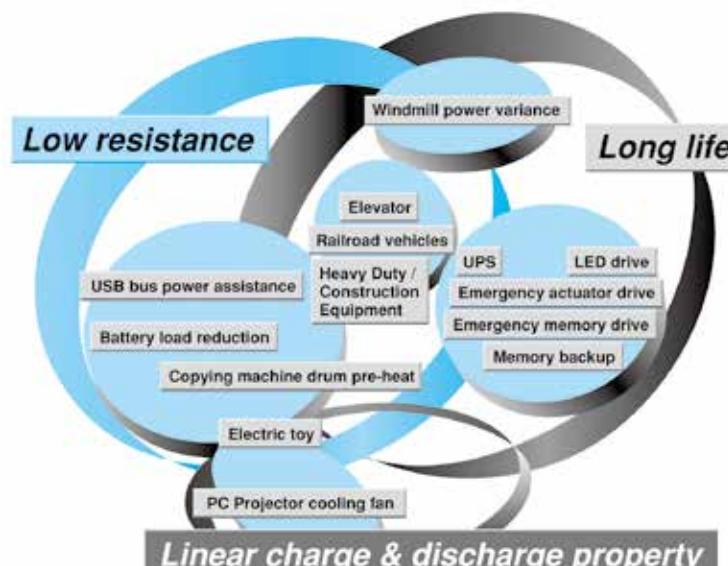
This voltage may cause the bad influence to the low-voltage driven components (CPU, memory, etc.) or damage of the capacitor with soldering.

Discharging before use is safer. It is important especially when using it by series connection.

Moreover, it is possible making the terminals in short-circuit condition at the production stage. Please consult us for adequate procedures.

7 Applications

Features & Benefits of Electric Double Layer Capacitor



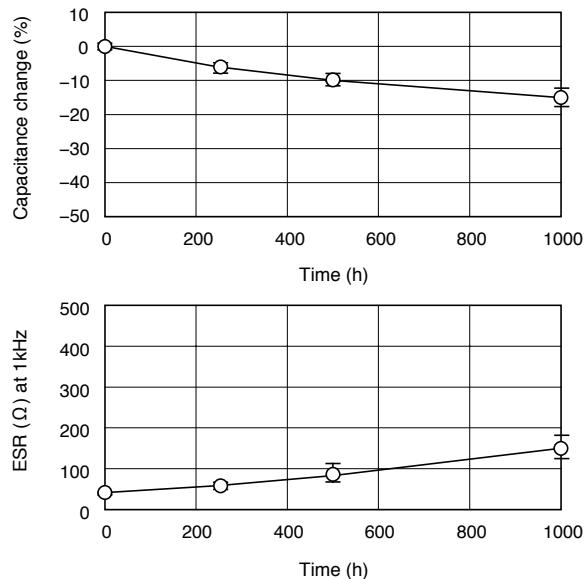
EDLC

7 Electric Characteristics Data

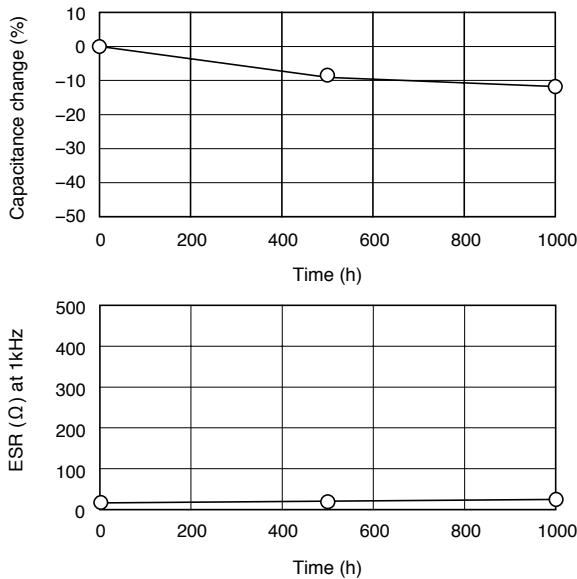
7-1 Coin type for memory back-up

DYNACAP Series DXJ
5.5V 0.33F/DXJ-5R5H334U ϕ 11.5×5L (mm)

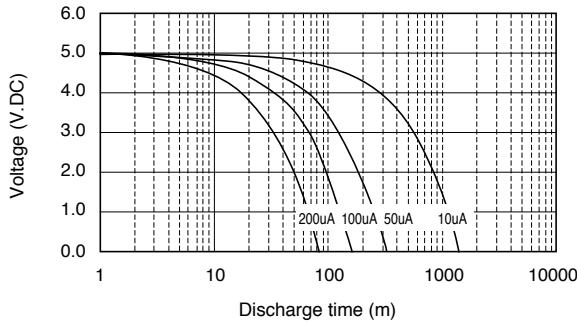
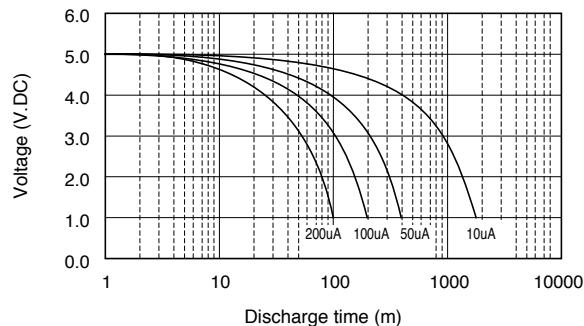
■ Endurance (85°C 5.5V.DC)



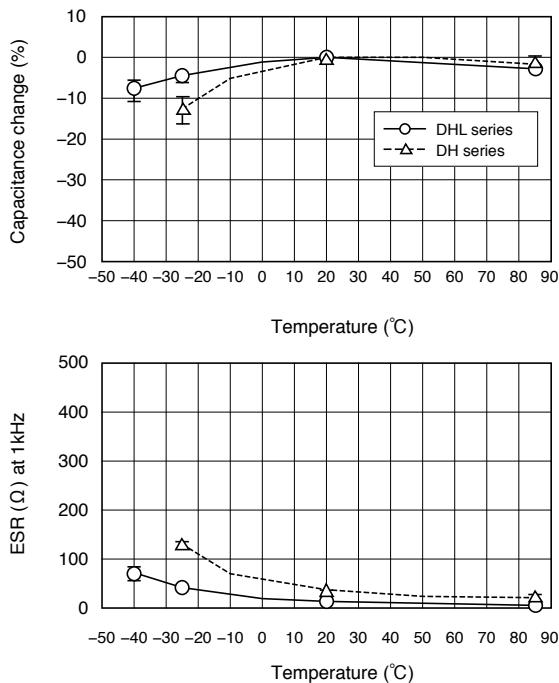
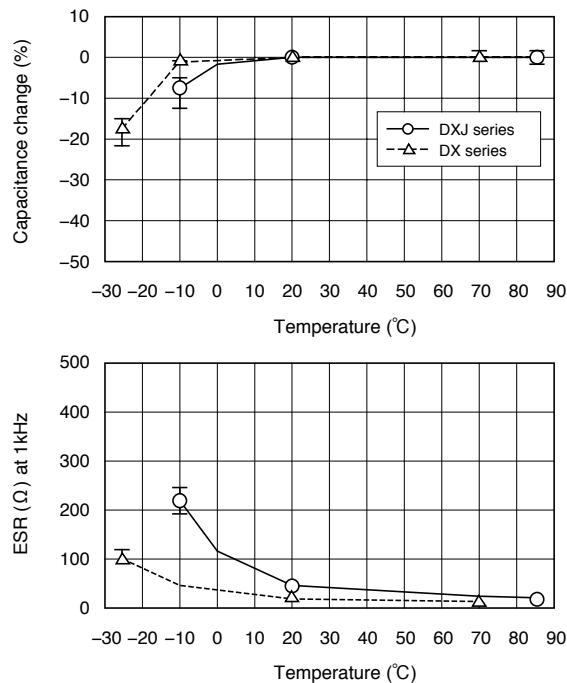
DYNACAP Series DHL
5.5V 0.22F/DHL-5R5D224T ϕ 13.5×9.5L (mm)



■ Discharge characteristics



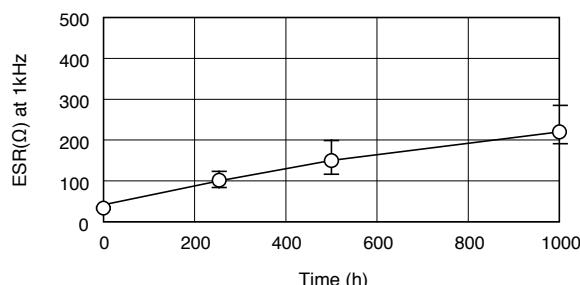
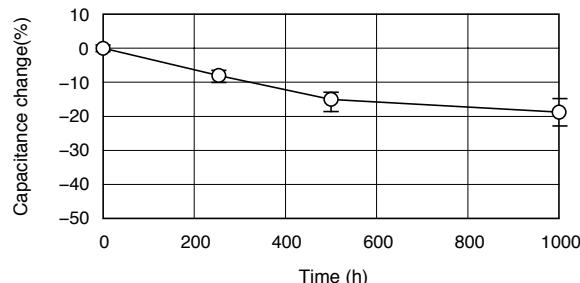
■ Characteristics at high and low temperature



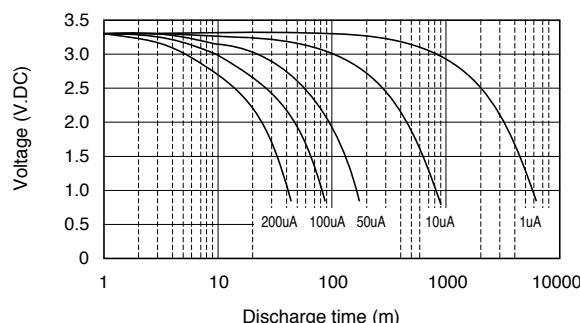
NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

DYNACAP Series DSK
3.3V 0.22F/DSK-3R3H224T ϕ 6.8×2.1L (mm)

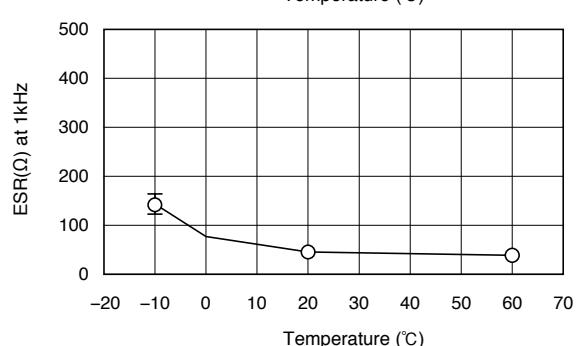
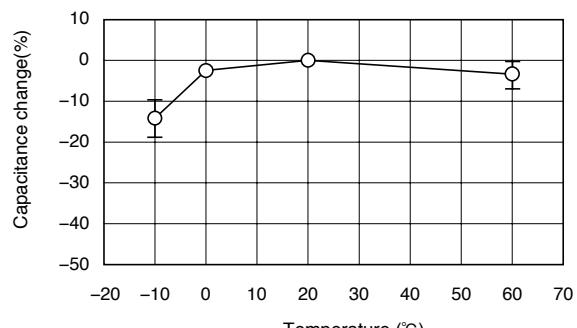
■ Endurance (60°C 3.3V.DC)



■ Discharge characteristics

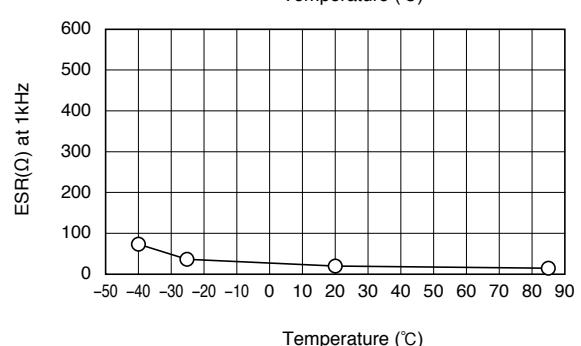
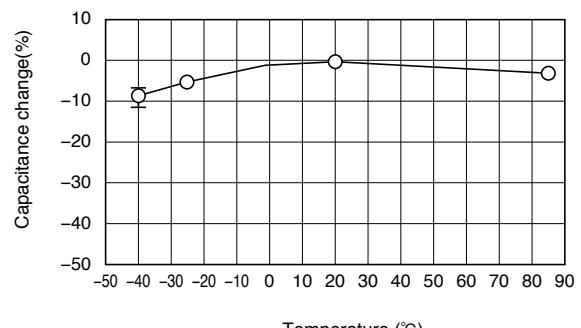
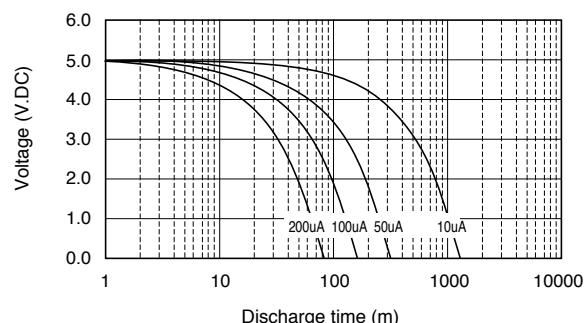
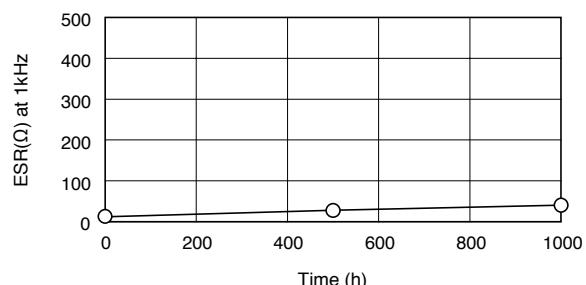
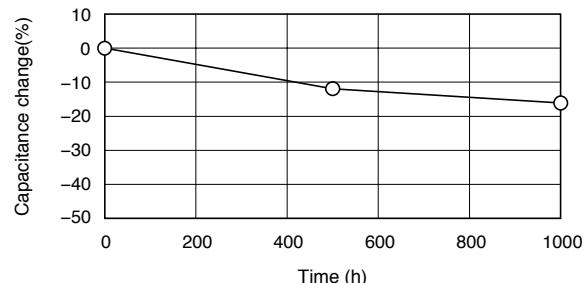


■ Characteristics at high and low temperature



DYNACAP Series DVL
5.5V 0.22F/DVL-5R5D224T-R5 ϕ 12.5×10.5L (mm)

■ Endurance (85°C 5.5V.DC)



TECHNICAL DATA

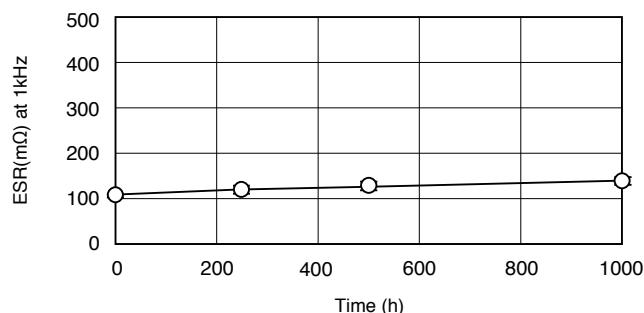
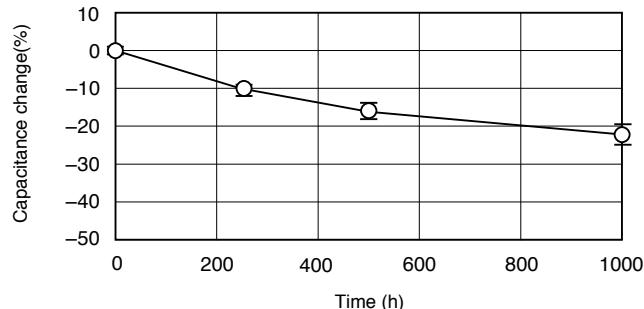
ELECTRIC DOUBLE
LAYER CAPACITORS

ELNA®

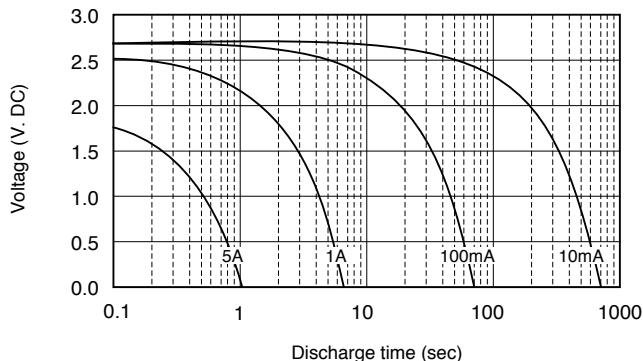
7-2 Cylindrical type for power

DYNACAP Series DZN
2.7V 2.7F/DZN-2R7D275G5ST ϕ 8X20L (mm)

■ Endurance (70°C 2.7V.DC)

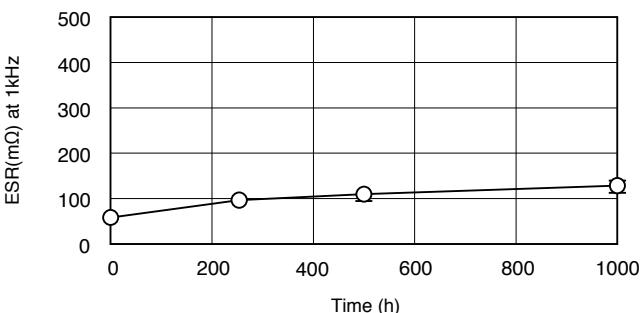
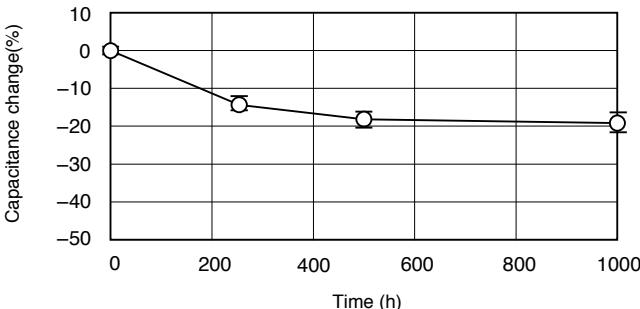


■ Discharge characteristics

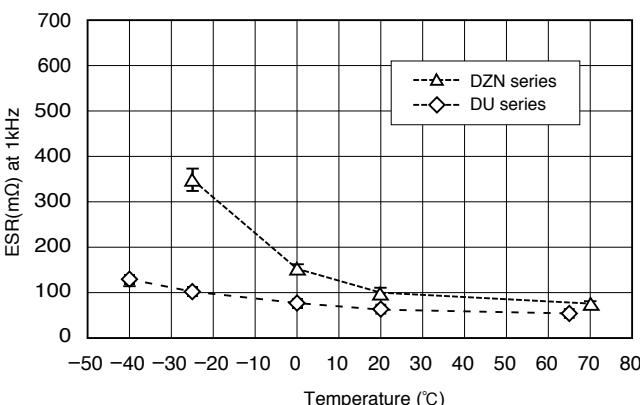
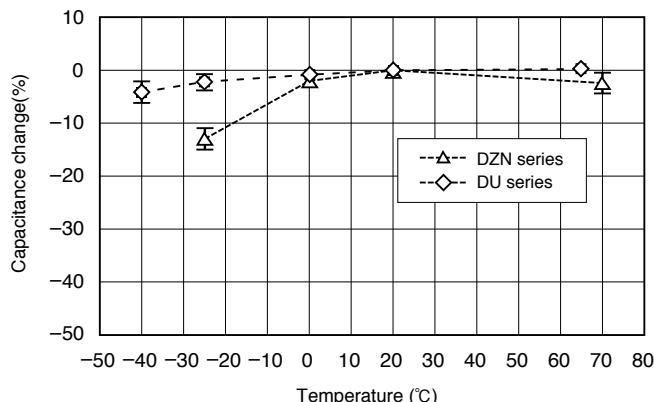


DYNACAP Series DU
2.7V 3.3F/DU-2R7D335G5T ϕ 8X20L (mm)

■ Endurance (65°C 2.7V.DC)



■ Characteristics at high and low temperature





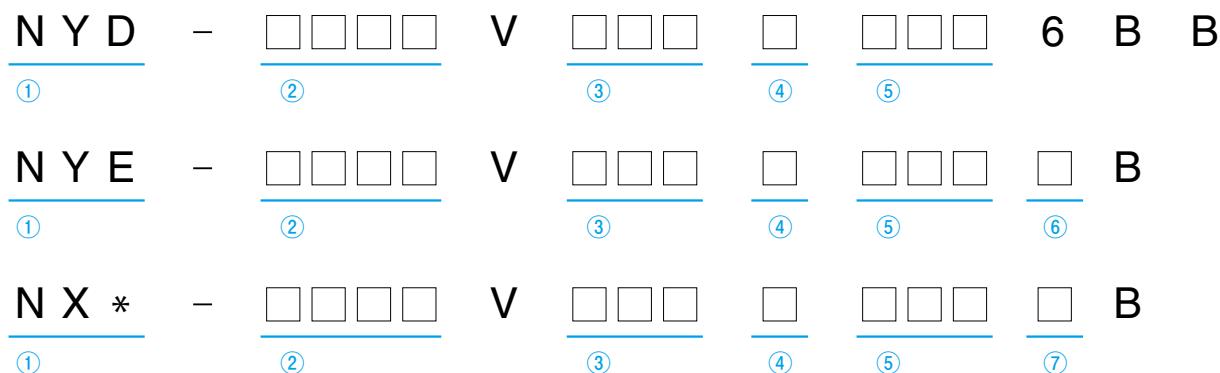
Plastic Film Capacitors

List of Contents

1. Product Symbol System for Plastic Film Capacitors	246
2. Cautions for Plastic Film Capacitors	247
3. Specifications for Plastic Film Capacitors by Series	248
4. Technical Note for Plastic Film Capacitors	256

A large, stylized blue number "3" is centered on the page, likely indicating the volume or edition number.

■ Product Symbol System for Plastic Film Capacitors



(1) Series code

Please refer to the page of each series.

(2) Rated voltage

Please refer to the page of each series.

(3) Rated capacitance symbol

Example of series NYD, NYE

Capacitance (μF)	Capacitance symbol	Capacitance (μF)	Capacitance symbol
70	700	420	421
100	101	440	441
110	111	450	451
140	141	480	481
160	161	550	551
170	171	610	611
220	221	700	701
230	231	750	751
260	261	940	941
280	281	970	971
350	351	1100	112
400	401	1500	152

Example of series NXA, NXB

Capacitance (μF)	Capacitance symbol	Capacitance (μF)	Capacitance symbol
0.15	154	1.3	135
0.2	204	1.4	145
0.22	224	1.5	155
0.3	304	1.6	165
0.33	334	1.7	175
0.4	404	1.8	185
0.45	454	2	205
0.47	474	2.2	225
0.55	554	2.5	255
0.56	564	2.8	285
0.6	604	3	305
0.65	654	3.3	335
0.68	684	3.5	355
0.7	704	4	405
0.8	804	4.2	425
0.82	824	4.5	455
0.85	854	4.8	485
1	105	5	505
1.1	115	6	605
1.2	125	7	705

(4) Capacitance tolerance symbol

Example

Contents	symbol
$\pm 5\%$	J
$\pm 10\%$	K
$\pm 20\%$	M

(5) Casing symbol

Please refer to the page of each series.

(7) Shape code

Please refer to the page of each series.

(6) Terminal code

Please refer to the page of each series.

■ Cautions for Using Film Capacitors

1 Operation voltage

The plastic film capacitor varies in the maximum applicable voltage depending on the applied voltage waveform, current waveform frequency, ambient temperature (capacitor surface temperature), capacitance value, etc.

Be sure to use capacitors within the specified values by checking the voltage waveform, current waveform, and frequency applied to them (In the application of high frequency, the permissible voltage varies with the type of the capacitor).

For detail see the specification).

2 Operating Current

The pulse (or AC) current flowing through the capacitor is expressed as: $I=C \times dV/dt$

type	1	2	3	4
waveform				
(rms)	$E/\sqrt{2}$	$E/\sqrt{2}$	$E/\sqrt{t/(2T)}$	$E/\sqrt{3}$
type	5	6	7	8
waveform				
(rms)	$E/\sqrt{t/(3T)}$	E	$E/\sqrt{t/T}$	$\sqrt{\frac{1}{2T}(I_1^2 + I_2^2 + I_3^2 + I_4^2)}$

4 Charging and discharging

Because the charging and discharging current of capacitor is obtained by the product of voltage rise rate (dV/dt) and capacitance, low voltage charging and discharging may also cause deterioration of capacitor such as shorting and open due to sudden charging and discharging current.

When charging and discharging, pass though a resistance of $20\Omega/V$ to $1000\Omega/V$ or more to limit current.

When connecting multiple film capacitors in parallel in withstand voltage test or life test, connect a resistance of $20\Omega/V$ to $1000\Omega/V$ or more in series to each capacitor. (For detail see the specification)

In additional, capacitors must be discharged with resistor before handling.

Because the capacitor hasn't discharge resistor inside, so there is residual but maybe deathful electric energy contained.

5 Buzzing noise

Any buzzing noise produced by capacitor is caused by the vibration of the film due to the coulomb force that is generated between the electrodes with opposite poles.

If the wave-form with a high distortion rate or frequency is applied across the capacitor, the buzzing noise will become louder.

But the buzzing noise is of no damage to capacitor.

6 Surface over temperature $\Delta\theta_{case}$

When continuing current flows through the capacitor, the temperature inside the capacitor will rise, induced by accumulated heat.

If the temperature exceeds allowed hot-spot temperature, it might cause a short circuit or fire.

The limits described in the catalogue are not exceeded and it's necessary to check the temperature on the capacitor surface when it works.

Due to the fact that dissipation factor of the capacitor will generate the internal heat under the application of high frequency or high pulse current, temperature rise in it will occur and may cause deterioration of with standing voltage, even lead to break down (smoking or firing).

Therefore, the safety use of capacitor must be within the rated voltage(or category voltage)and the permissible current. The rated current must be considered by dividing into pulse current (peak current) and continuous current (rms current) depending on the break down mode, and when using, should make sure the both currents are within the permissible values.

3 Calculation of rms in various waveforms

In each waveform, calculate the rms value in the following formula.

7 Flame retardation

Although flame retardation epoxy resin or plastic case is used in the coating or encapsulating of plastic film capacitor, continuous outer high temperature or firing will break the coating layer or plastic case of the capacitor, and may lead to melting and firing of the capacitor element.

flame time (s)					
Class	volume (mm ³)	≤ 250	$250 < \leq 500$	$500 < \leq 1750$	$1750 <$ Max. flame time (s)
A	15	30	60	120	3
B	10	20	30	60	10
C	5	10	20	30	30

8 Humid ambient

If used for a long time in a humid ambient, the capacitor might absorb humidity and oxidize the electrodes causing breakage of the capacitor.

If case of AC application, high humidity would increase the corona effect. This phenomenon causes a drop of capacitance and a increase of capacitor losses.

9 Storage conditions

1) Capacitors may not be stored in corrosive atmospheres, particularly not when chlorides, sulfides, acids, lye, salts, organic solvents or similar substances are present.

2) It shouldn't be located in particularly high temperature and high humidity, it must submit to the following conditions(unchanging primal package):

Temperature : $\leq 35^\circ C$

Humidity : $\leq 80\%$ RH, no dew allowed on the capacitor.

Storage time: ≤ 24 months (from the date marked on the capacitor's body or the label glued to the package)

For DC-Link Circuits Capacitors

85°C DC-LINK

- Used in DC-Link circuits, can replace electrolytic capacitor.
- PP film design, good temperature characteristics, stable capacity, low ESR, high ripple current handing capabilities, low Ls, long life.
- Aluminum case, filled with fire-retardant resin.
- Self-healing property.
- Used in Inverters of wind power and solar power, HEV or EV, welders, elevators, Motor Driver systems.

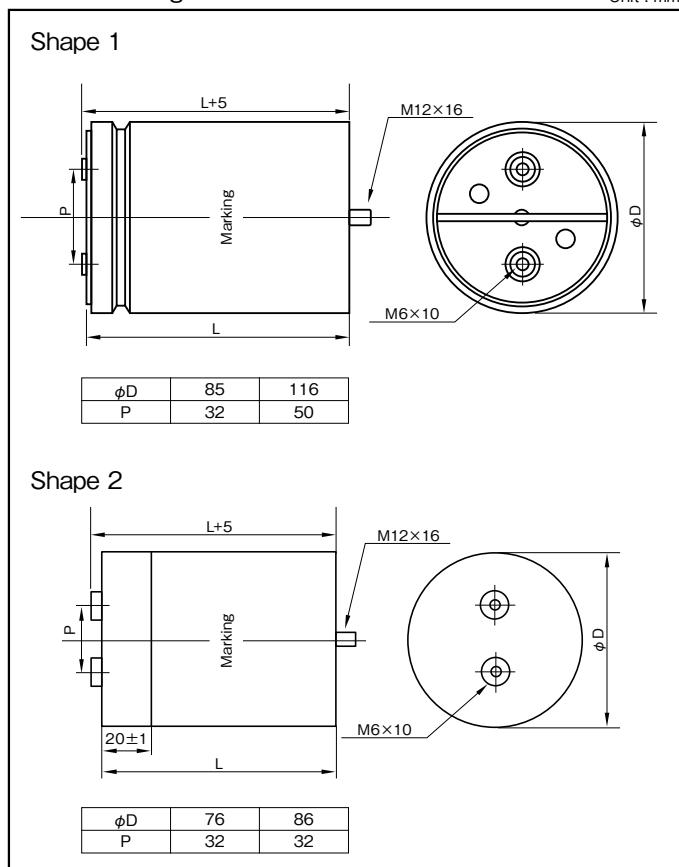


Specifications

Item	Performance	
Category temperature range (°C)	– 55 to +85	(at Hotspot in capacitor)
Tolerance at rated capacitance (%)	±5, ±10	(20°C, 50 to 120Hz)
Over Voltage	Rated voltage × 1.1	30% of on-load-duration
	Rated voltage × 1.15	30 min/day
	Rated voltage × 1.2	5 min/day
	Rated voltage × 1.3	1 min/day
	Rated voltage × 1.5	30 ms every time, 100ms/day
Dielectric Dissipation Factor	2×10^{-4} or less	
Life Expectancy	100000 hours	(at Hotspot in capacitor = 70°C)
Failure Rate	50Fit	
Withstanding DC Voltage	Between Terminals	Rated voltage × 1.5 10s
	Between Terminals and Case	(2x(Ratef voltage)/ $\sqrt{2}$) + 1000 or 3000 VAC whichever is lager 10 s (20°C, 50Hz)
Insulation Resistance	5000MΩ·μF or more (20°C, 100V DC, 1min)	
Reference Standard	IEC 61071	

Outline Drawing

Unit : mm



Standard Ratings

Rated voltage Ur (V)	Rated capacitance Cr (μ F)	Case (mm)		Casing symbol	Maximum current	Thermal resistance	Maximum peak current	Series resistance	Self-inductance	ELNA Parts No.
		ϕ D	L		I _{max} (Arms)	R _{th} (K/W)	I (A)	R _s (m Ω)	L _s (nH)	
800	350	76	120	EC0	60	4.7	3500	2.4	60	NYD-800V351*EC06BB
	400	76	136	ED6	56	4.6	3600	2.8	60	NYD-800V401*ED66BB
	480	85	120	FC0	61	4.7	3840	2.3	60	NYD-800V481*FC06BB
		86	120	FSC0	61	4.7	3840	2.3	60	NYD-800V481*FSC06BB
	550	85	136	FD6	58	4.6	3850	2.6	60	NYD-800V481*FD66BB
		86	136	FSD6	58	4.6	3850	2.6	60	NYD-800V551*FSD66BB
	970	116	120	HCO	69	5	5820	1.7	60	NYD-800V971*HC06BB
	1000	85	225	FM5	79	4	6000	1.6	80	NYD-800V102*FM56BB
		86	225	FSM5	79	4	6000	1.6	80	NYD-800V102*FSM56BB
	1100	116	136	HD6	67	4.9	6600	1.8	60	NYD-800V112*HD66BB
	1900	116	230	HN0	100	2.7	11400	1.4	80	NYD-800V192*HN06BB
900	350	76	120	EC0	54	4.7	3500	2.9	60	NYD-900V351*EC06BB
	400	76	136	ED6	51	4.6	3600	3.3	60	NYD-900V401*ED66BB
	480	85	120	FC0	55	4.7	3840	2.8	60	NYD-900V481*FC06BB
		86	120	FSC0	55	4.7	3840	2.8	60	NYD-900V481*FSC06BB
	550	85	136	FD6	53	4.6	3850	3.1	60	NYD-900V551*FD66BB
		86	136	FSD6	53	4.6	3850	3.1	60	NYD-900V551*FSD66BB
	970	116	120	HCO	60	5	5820	2.2	60	NYD-900V971*HC06BB
	1000	85	225	FM5	69	4	6000	2.1	80	NYD-900V102*FM56BB
		86	225	FSM5	69	4	6000	2.1	80	NYD-900V102*FSM56BB
	1100	116	136	HD6	60	4.9	6600	2.3	60	NYD-900V112*HD66BB
	1900	116	230	HN0	88	2.7	11400	1.9	80	NYD-900V192*HN06BB
1100	170	76	95	E95	50	5.6	1700	3	60	NYD-1100V171*E956BB
	230	76	120	EC0	50	4.7	1840	3.4	60	NYD-1100V231*EC06BB
	240	85	95	F95	56	5.1	1920	2.5	60	NYD-1100V241*F956BB
		86	95	FS95	56	5.1	1920	2.5	60	NYD-1100V241*FS956BB
	260	76	136	ED6	50	4.6	2080	3.6	60	NYD-1100V261*ED66BB
	310	85	120	FC0	57	4.7	2480	2.6	60	NYD-1100V311*FC06BB
		86	120	FSC0	57	4.7	2480	2.6	60	NYD-1100V311*FSC06BB
	350	76	175	EH5	68	4.3	2800	2	80	NYD-1100V351*EH56BB
	420	85	136	FD6	56	4.6	3360	2.8	60	NYD-1100V421*FD66BB
		86	136	FSD6	56	4.6	3360	2.8	60	NYD-1100V421*FSD66BB
	420	85	155	FF5	75	4.5	4200	1.6	60	NYD-1100V421*FF56BB
		86	155	FSF5	75	4.5	4200	1.6	60	NYD-1100V421*FSF56BB
	450	116	95	H95	61	5.4	4500	2	60	NYD-1100V451*H956BB
	480	85	175	FH5	72	4.3	4800	1.8	80	NYD-1100V481*FH56BB
		86	175	FSH5	72	4.3	4800	1.8	80	NYD-1100V481*FSH56BB
	600	85	225	FM5	71	4	6000	2	80	NYD-1100V601*FM56BB
		86	225	FSM5	71	4	6000	2	80	NYD-1100V601*FSM56BB
	610	116	120	HCO	60	5	4880	2.2	60	NYD-1100V611*HC06BB
	680	116	136	HD6	58	4.9	5440	2.4	60	NYD-1100V681*HD66BB
	940	116	175	HH5	99	3.4	8460	1.2	80	NYD-1100V941*HH56BB
	1100	116	230	HN0	100	2.7	9900	1.3	80	NYD-1100V112*HN06BB
	1200	116	230	HN0	100	2.7	10800	1.3	80	NYD-1100V122*HN06BB
1200	220	76	136	ED6	46	4.6	2200	4.2	60	NYD-1200V221*ED66BB
	300	85	136	FD6	50	4.6	3000	3.5	60	NYD-1200V301*FD66BB
	450	86	136	FSD6	50	4.6	3000	3.5	60	NYD-1200V301*FSD66BB
	470	86	225	HM5	67	4	4230	2.2	80	NYD-1200V471*FSM56BB
1300	100	76	95	E95	46	5.6	1400	3.4	60	NYD-1300V101*E956BB
	160	76	120	EC0	50	4.7	1920	3.6	60	NYD-1300V161*EC06BB
	160	85	95	F95	53	5.1	2240	2.8	60	NYD-1300V161*F956BB
		86	95	FS95	53	5.1	2240	2.8	60	NYD-1300V161*FS956BB
	220	85	120	FC0	53	4.7	2640	3	60	NYD-1300V221*FC06BB
	310	116	95	H95	58	5.4	3720	2.2	60	NYD-1300V311*H956BB
	310	85	175	FH5	45	4.3	3720	4.9	60	NYD-1300V311*FH56BB
	420	116	120	HCO	57	5	4200	2.5	60	NYD-1300V421*HC06BB
	470	85	225	FM5	65	4	4700	2.4	80	NYD-1300V471*FM56BB
		86	225	FSM5	65	4	4700	2.4	80	NYD-1300V471*FSM56BB
	620	116	175	HH5	92	3.4	5580	1.4	80	NYD-1300V621*HH56BB
	800	116	230	HN0	95	2.7	6400	1.5	80	NYD-1300V801*HN06BB
	1500	400	116	155	HF5	85	4000	1.3	60	NYD-1500V401*HF56BB

(Note) * : If tolerance at rated capacitance is 5% = J, 10% = K

NOTE : Design, Specifications are subject to change without notice.
 It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

For DC-Link Circuits Capacitors

85°C DC-LINK

- Used in DC-Link circuits, can replace electrolytic capacitor.
- PP film design, good temperature characteristics, stable capacity, low ESR, high ripple current handing capabilities, low Ls, long life.
- Plastic case , filled with fire-retardant resin.
- Self-healing property.
- Used in Inverters of wind power and solar power, welders, elevators, Motor Driver systems.



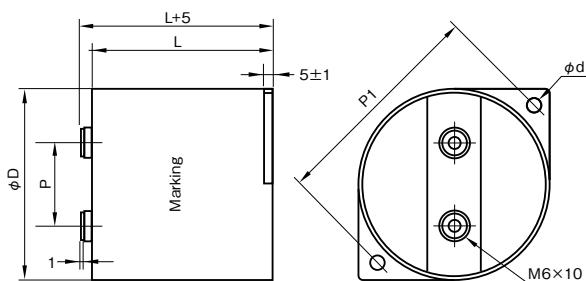
Specifications

Item	Performance	
Category temperature range (°C)	– 40 to +85	(at Hotspot in capacitor)
Tolerance at rated capacitance (%)	±5, ±10	(20°C, 50 to 120Hz)
Over Voltage	Rated voltage × 1.1	30% of on-load-duration
	Rated voltage × 1.15	30 min/day
	Rated voltage × 1.2	5 min/day
	Rated voltage × 1.3	1 min/day
	Rated voltage × 1.5	30 ms every time, 100ms/day
Dielectric Dissipation Factor	2×10^{-4} or less	
Life Expectancy	100000 hours	(at Hotspot in capacitor = 70°C)
Failure Rate	50Fit	
Withstanding DC Voltage	Between Terminals	Rated voltage × 1.5 VDC 10 s
	Between Terminals and Case	($2x(Ratef\ voltage)/\sqrt{2}$) + 1000 or 3000 VAC whichever is larger 10 s (20°C, 50Hz)
Insulation Resistance	5000MΩ·μF or more	
Reference Standard	IEC 61071	

Outline Drawing

Unit : mm

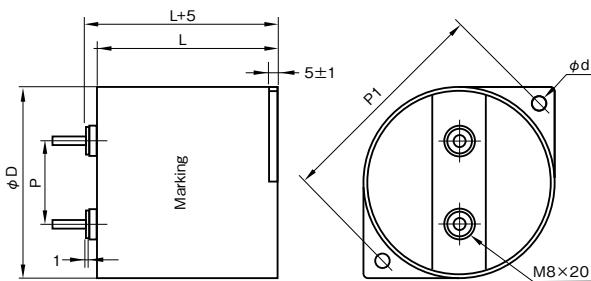
Shape 1 (Terminal code Y)



Part numbering system (example : 1000V110μF)

NYE	—	1000	V	111	K	F65	Y	B
Series code		Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Terminal code	Optional symbol	

Shape 2 (Terminal code N)



φD	85	85
L	65	51
P	45	45
P1	101	101
φd	5.5	5.5

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage UR (V)	Rated capacitance Cr (μ F)	Case (mm)		Casing symbol	Maximum current	Thermal resistance	Maximum peak current	Series resistance	Self-inductance	ELNA Parts No.
		ϕ D	L		I _{max} (Arms)	R _{th} (K/W)	I (A)	R _s (m Ω)	L _s (nH)	
600	200	85	51	F51	55	4.2	4000	1.2	20	NYE-600V201*F51□B
	280	85	65	F65	65	5.5	3700	1.4	30	NYE-600V281*F65□B
800	120	85	51	F51	55	4.2	3000	1.2	20	NYE-800V121*F51□B
	220	85	65	F65	65	5.5	3000	1.4	30	NYE-800V221*F65□B
1000	75	85	51	F51	50	4.2	2400	1.4	20	NYE-1000V750*F51□B
	110	85	65	F65	60	5.5	2300	1.7	30	NYE-1000V111*F65□B
1200	50	85	51	F51	50	4.2	2000	1.6	20	NYE-1200V500*F51□B
	80	85	65	F65	60	5.5	2000	2.0	30	NYE-1200V800*F65□B

(Note) * : If tolerance at rated capacitance is 5% = J, 10% = K

□ : Terminal code

For High-frequency Circuits Capacitors

85°C

High frequency

- Widely used in high voltage, high frequency circuit.
- Low loss and small inherent temperature rise.
- Excellent active and passive flame resistant circuit.
- Especially designed as snubber capacitor for IGBT.

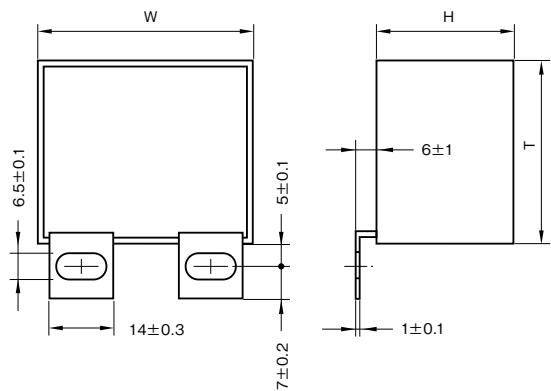
Specifications

Item	Performance	
Category temperature range (°C)	– 40 to +85	(at Hotspot in capacitor)
Tolerance at rated capacitance (%)	±5, ±10	(20°C, 50 to 120Hz)
Dielectric Dissipation Factor	2×10 ⁻⁴ or less	
Life Expectancy	100000 hours	(at Hotspot in capacitor = 70°C)
Failure Rate	100Fit	
Withstanding DC Voltage	Between Terminals	Rated voltage × 1.5 VDC 10 s
	Between Terminals and Case	3000 VAC 10 s (20°C, 50Hz)
Insulation Resistance		3000MΩ·μF or more (20°C, 100V DC, 1min)
Reference Standard		IEC 61071

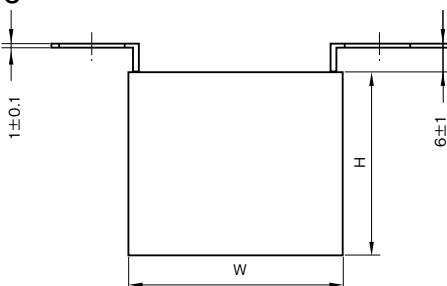
Outline Drawing

Unit : mm

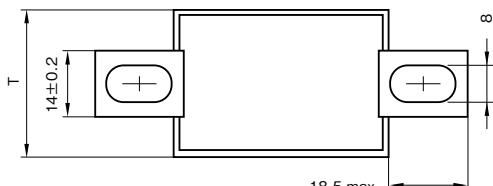
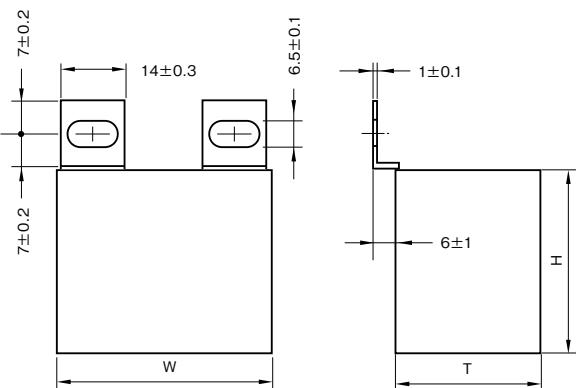
Shape A



Shape C



Shape B



W	H	T			
Size	Code	Size	Code	Size	Code
42.5	A	25.5	A	14	A
43	B	28	B	24	B
57.5	C	32	C	25.5	C
		33	D	29.5	D
		35.5	E	30	E
		36	F	33	F
		43	G	33.5	G
		43.5	H	35	H
		45	J	40	J
		50	K	42	K
		55	L	45	L

(Note) Tolerance at size : ±1.0

Part numbering system (example : 1200V2.2μF)

NXA	—	1200	V	225	K	CHD	A	B
Series code		Rated voltage symbol		Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Shape code	Optional symbol

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

Standard Ratings

Rated voltage Ur (V)	Rated capacitance Cr (μF)	Case (mm)			Casing symbol	Maximum rate of voltage rise dV/dt (V/μS)	Maximum Peak current I (A)	ESR (mΩ/100kHz Max.)	Maximum current Imax (A)	Self-inductance Ls (nH)	ELNA Parts No.
		W	H	T							
630VDC (330VAC)	1	42.5	28	14	ABA	100	100	12	7.5	20	NXA-630V105*ABA□B
	1.2	42.5	32	14	ACA	100	120	11	9.4	20	NXA-630V125*ACA□B
	1.5	42.5	25.5	25.5	AAC	100	150	10	11	20	NXA-630V155*AAC□B
	2	42.5	28	24	ABB	100	200	8	12.6	20	NXA-630V205*ABB□B
	3	42.5	36	24	AFB	100	300	7	17.2	20	NXA-630V305*AFB□B
	3.5	42.5	33	33	ADF	100	350	6	19.2	20	NXA-630V355*ADF□B
	4	42.5	35.5	33.5	AEG	100	400	5	20.5	20	NXA-630V405*AEG□B
	4.5	42.5	45	30	AJE	100	450	4	23	20	NXA-630V455*AJE□B
700VDC (380VAC)	7	42.5	43	42	AGK	100	700	3	28	20	NXA-630V705*AGK□B
	0.8	42.5	28	14	ABA	132	105.6	12	7.2	20	NXA-700V804*ABA□B
	1	42.5	32	14	ACA	132	132	12	9.2	20	NXA-700V105*ACA□B
	1.2	42.5	25.5	25.5	AAC	132	158.4	10	10.8	20	NXA-700V125*AAC□B
	1.6	42.5	28	24	ABB	132	211.2	10	12.4	20	NXA-700V165*ABB□B
	2.5	42.5	36	24	AFB	132	330	8	16.8	20	NXA-700V255*AFB□B
	3	42.5	33	33	ADF	132	396	7	18.8	20	NXA-700V305*ADF□B
	3.5	42.5	35.5	33.5	AEG	132	462	6	20.3	20	NXA-700V355*AEG□B
850VDC (450VAC)	4	42.5	45	30	AJE	132	528	5	22.4	20	NXA-700V405*AJE□B
	6	42.5	43	42	AGK	132	792	4	25	20	NXA-700V605*AGK□B
	0.7	42.5	28	14	ABA	200	140	12	6.4	20	NXA-850V704*ABA□B
	0.8	42.5	32	14	ACA	200	160	12	8.8	20	NXA-850V804*ACA□B
	1	42.5	25.5	25.5	AAC	200	200	10	10.4	20	NXA-850V105*AAC□B
	1.2	42.5	28	24	ABB	200	240	10	11.8	20	NXA-850V125*ABB□B
	2	42.5	36	24	AFB	200	400	9	15.8	20	NXA-850V205*AFB□B
	2.5	42.5	33	33	ADF	200	500	8	17.6	20	NXA-850V255*ADF□B
1000VDC (480VAC)	2.8	42.5	35.5	33.5	AEG	200	560	7	19.8	20	NXA-850V285*AEG□B
	3.3	42.5	45	30	AJE	200	660	6	21.5	20	NXA-850V335*AJE□B
	4	42.5	43	42	AGK	200	800	5	24	20	NXA-850V405*AGK□B
	0.47	42.5	28	14	ABA	225	105.75	12	6.2	20	NXA-1000V474*ABA□B
	0.56	42.5	32	14	ACA	225	126	12	8.6	20	NXA-1000V564*ACA□B
	0.82	42.5	25.5	25.5	AAC	225	184.5	10	9.8	20	NXA-1000V824*AAC□B
	1	42.5	28	24	ABB	225	225	10	11.6	20	NXA-1000V105*ABB□B
	1.5	42.5	36	24	AFB	225	337.5	9	15.5	20	NXA-1000V155*AFB□B
	1.8	42.5	33	33	ADF	225	405	8	17.5	20	NXA-1000V185*ADF□B
	2	42.5	35.5	33.5	AEG	225	450	7	18.8	20	NXA-1000V205*AEG□B
	2.5	42.5	45	30	AJE	225	562.5	6	21	20	NXA-1000V255*AJE□B
	3	42.5	43	42	AGK	225	675	5	23	20	NXA-1000V305*AGK□B
	3.3	57.5	43.5	29.5	CHD	130	429	6	23	20	NXA-1000V335*CHD□B
	3.5	57.5	45	30	CJE	130	455	5	24	20	NXA-1000V355*CJE□B
	4.2	57.5	45	35	CJH	130	546	5	24	20	NXA-1000V425*CJH□B
	4.8	57.5	50	35	CKH	130	624	4	25	20	NXA-1000V485*CKH□B
	5	57.5	45	45	CJL	130	650	4	25	20	NXA-1000V505*CJL□B
	6	57.5	55	40	CLJ	130	780	4	28	20	NXA-1000V605*CLJ□B
1200VDC (500VAC)	0.33	42.5	28	14	ABA	225	74.25	12	6	20	NXA-1200V334*ABA□B
	0.4	42.5	32	14	ACA	225	90	12	8.5	20	NXA-1200V404*ACA□B
	0.56	42.5	25.5	25.5	AAC	225	126	11	9.6	20	NXA-1200V564*AAC□B
	0.68	42.5	28	24	ABB	225	153	10	11.5	20	NXA-1200V684*ABB□B
	1	42.5	36	24	AFB	225	225	10	15.4	20	NXA-1200V105*AFB□B
	1.1	42.5	33	33	ADF	225	247.5	9	17.2	20	NXA-1200V115*ADF□B
	1.3	42.5	35.5	33.5	AEG	225	292.5	8	18.6	20	NXA-1200V135*AEG□B
	1.6	42.5	45	30	AJE	225	360	7	20.6	20	NXA-1200V165*AJE□B
	2	42.5	43	42	AGK	225	450	6	22	20	NXA-1200V205*AGK□B
	2.2	57.5	43.5	29.5	CHD	150	330	6	22	20	NXA-1200V225*CHD□B
	2.5	57.5	45	30	CJE	150	375	6	23	20	NXA-1200V255*CJE□B
	2.8	57.5	45	35	CJH	150	420	5	24	20	NXA-1200V285*CJH□B
	3.3	57.5	50	35	CKH	150	495	5	24	20	NXA-1200V335*CKH□B
	3.5	57.5	45	45	CJL	150	525	4	25	20	NXA-1200V355*CJL□B
	4	57.5	55	40	CLJ	150	600	4	26	20	NXA-1200V405*CLJ□B
1600VDC (550VAC)	0.2	42.5	28	14	ABA	225	45	12	6	20	NXA-1600V204*ABA□B
	0.22	42.5	32	14	ACA	225	49.5	12	8.4	20	NXA-1600V224*ACA□B
	0.33	42.5	25.5	25.5	AAC	225	74.25	11	9.5	20	NXA-1600V334*AAC□B
	0.45	42.5	28	24	ABB	225	101.25	11	11.4	20	NXA-1600V454*ABB□B
	0.6	42.5	36	24	AFB	225	135	10	15.2	20	NXA-1600V604*AFB□B
	0.7	43	33	33	BDF	225	157.5	10	17	20	NXA-1600V704*BDF□B
	0.85	43	35.5	33.5	BEG	225	191.25	9	18.4	20	NXA-1600V854*BEG□B
	1	42.5	45	30	AJE	225	225	8	20.5	20	NXA-1600V105*AJE□B
	1.3	42.5	43	42	AGK	225	292.5	7	21	20	NXA-1600V135*AGK□B
	1.5	57.5	43.5	29.5	CHD	150	225	6	22	20	NXA-1600V155*CHD□B
	1.6	57.5	45	30	CJE	150	240	6	22	20	NXA-1600V165*CJE□B
	1.8	57.5	45	35	CJH	150	270	5	23	20	NXA-1600V185*CJH□B
	2	57.5	50	35	CKH	150	300	5	24	20	NXA-1600V205*CKH□B
	2.2	57.5	45	45	CJL	150	330	4	24	20	NXA-1600V225*CJL□B
	2.5	57.5	55	40	CLJ	150	375	4	25	20	NXA-1600V255*CLJ□B

(Note) * : If tolerance at rated capacitance is 5% = J, 10% = K

□ : Shape code

NOTE : Design, Specifications are subject to change without notice.
 It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

For High-frequency Circuits Capacitors

85°C

High frequency

- Widely used in high voltage, high frequency circuit.
- Low loss and small inherent temperature rise.
- Excellent active and passive flame resistant circuit.
- Double side metallized.
- Especially designed as snubber capacitor for IGBT.

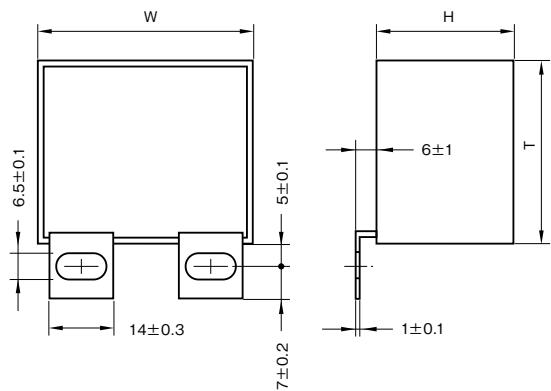
Specifications

Item	Performance	
Category temperature range (°C)	– 40 to +85	(at Hotspot in capacitor)
Tolerance at rated capacitance (%)	±5, ±10	(20°C, 50 to 120Hz)
Dielectric Dissipation Factor	2×10 ⁻⁴ or less	
Life Expectancy	100000 hours	(at Hotspot in capacitor = 70°C)
Failure Rate	100Fit	
Withstanding DC Voltage	Between Terminals Between Terminals and Case	Rated voltage × 1.5 VDC 10 s 3000 VAC 10 s (20°C, 50Hz)
Insulation Resistance		3000MΩ·μF or more (20°C, 100V DC, 1min)
Reference Standard		IEC 61071

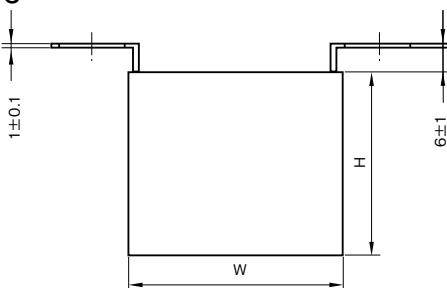
Outline Drawing

Unit : mm

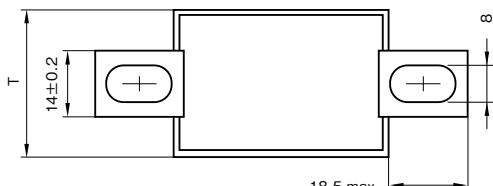
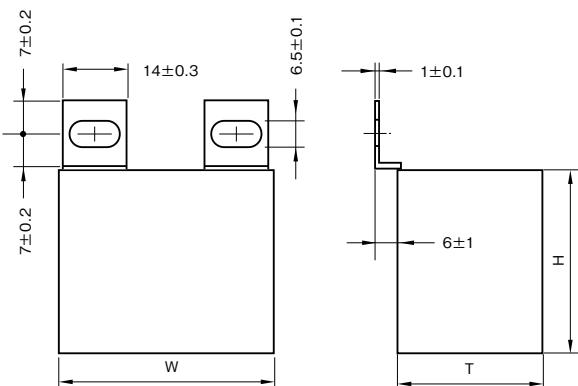
Shape A



Shape C



Shape B



W	H	T			
Size	Code	Size	Code	Size	Code
42.5	A	25.5	A	14	A
43	B	28	B	24	B
57.5	C	32	C	25.5	C
		33	D	29.5	D
		35.5	E	30	E
		36	F	33	F
		43	G	33.5	G
		43.5	H	35	H
		45	J	40	J
		50	K	42	K
		55	L	45	L

(Note) Tolerance at size : ±1.0

Part numbering system (example : 850V2.2μF)

NXB	—	850	V	225	K	AJE	C	B
Series code	Rated voltage symbol	Rated capacitance symbol	Capacitance tolerance symbol	Casing symbol	Shape code	Optional symbol		

Standard Ratings

Rated voltage Ur (V)	Rated capacitance Cr (μ F)	Case (mm)			Casing symbol	Maximum rate of voltage rise dV/dt (V/ μ s)	Maximum Peak current I (A)	ESR (m Ω /100kHz Max.)	Maximum current I _{max} (A)	Self-inductance L _s (nH)	ELNA Parts No.
		W	H	T							
700VDC (380VAC)	0.6	42.5	28	14	ABA	325	195	12	7.2	20	NXB-700V604*ABA□B
	0.8	42.5	32	14	ACA	325	260	12	9.2	20	NXB-700V804*ACA□B
	1	42.5	25.5	25.5	AAC	325	325	10	10.8	20	NXB-700V105*AAC□B
	1.2	42.5	28	24	ABB	325	390	10	12.4	20	NXB-700V125*ABB□B
	1.8	42.5	36	24	AFB	325	585	8	16.8	20	NXB-700V185*AFB□B
	2.2	42.5	33	33	ADF	325	715	7	18.8	20	NXB-700V225*ADF□B
	2.5	42.5	35.5	33.5	AEG	325	813	6	20.3	20	NXB-700V255*AEG□B
	3	42.5	45	30	AJE	325	975	5	22.4	20	NXB-700V305*AJE□B
	4	42.5	43	42	AGK	325	1300	4	25	20	NXB-700V405*AGK□B
850VDC (450VAC)	0.47	42.5	28	14	ABA	400	188	12	6.4	20	NXB-850V474*ABA□B
	0.55	42.5	32	14	ACA	400	220	12	8.8	20	NXB-850V554*ACA□B
	0.68	42.5	25.5	25.5	AAC	400	272	10	10.4	20	NXB-850V684*AAC□B
	0.8	42.5	28	24	ABB	400	320	10	11.8	20	NXB-850V804*ABB□B
	1.2	42.5	36	24	AFB	400	480	9	15.6	20	NXB-850V125*AFB□B
	1.5	42.5	33	33	ADF	400	600	8	17.6	20	NXB-850V155*ADF□B
	1.8	42.5	35.5	33.5	AEG	400	720	7	19.8	20	NXB-850V185*AEG□B
	2.2	42.5	45	30	AJE	400	880	6	21.5	20	NXB-850V225*AJE□B
	2.8	42.5	43	42	AGK	400	1120	5	24	20	NXB-850V285*AGK□B
1000VDC (480VAC)	0.33	42.5	28	14	ABA	500	165	12	6.2	20	NXB-1000V334*ABA□B
	0.45	42.5	32	14	ACA	500	225	12	8.6	20	NXB-1000V454*ACA□B
	0.55	42.5	25.5	25.5	AAC	500	275	10	9.8	20	NXB-1000V554*AAC□B
	0.65	42.5	28	24	ABB	500	325	10	11.6	20	NXB-1000V654*ABB□B
	1	42.5	36	24	AFB	500	500	9	15.5	20	NXB-1000V105*AFB□B
	1.2	42.5	33	33	ADF	500	600	8	17.5	20	NXB-1000V125*ADF□B
	1.4	42.5	35.5	33.5	AEG	500	700	7	18.8	20	NXB-1000V145*AEG□B
	1.8	42.5	45	30	AJE	500	900	6	21	20	NXB-1000V185*AJE□B
	2.2	42.5	43	42	AGK	500	1100	5	5	20	NXB-1000V225*AGK□B
	2.2	57.5	43.5	29.5	CHD	350	770	6	6	20	NXB-1000V225*CHD□B
	2.5	57.5	45	30	CJE	350	875	5	5	20	NXB-1000V255*CJE□B
	3	57.5	45	35	CJH	350	1050	5	5	20	NXB-1000V305*CJH□B
	3.3	57.5	50	35	CKH	350	1155	4	4	20	NXB-1000V335*CKH□B
	3.5	57.5	45	45	CJL	350	1225	4	4	20	NXB-1000V355*CJL□B
	4.5	57.5	55	40	CLJ	350	1575	4	28	20	NXB-1000V455*CLJ□B
	0.22	42.5	28	14	ABA	650	143	12	6	20	NXB-1200V224*ABA□B
	0.3	42.5	32	14	ACA	650	195	12	8.5	20	NXB-1200V304*ACA□B
	0.4	42.5	25.5	25.5	AAC	650	260	11	9.6	20	NXB-1200V404*AAC□B
	0.47	42.5	28	24	ABB	650	306	10	11.5	20	NXB-1200V474*ABB□B
	0.68	42.5	36	24	AFB	650	442	10	15.4	20	NXB-1200V684*AFB□B
	0.8	42.5	33	33	ADF	650	520	9	17.2	20	NXB-1200V804*ADF□B
	1	42.5	35.5	33.5	AEG	650	650	8	18.6	20	NXB-1200V105*AEG□B
	1.2	42.5	45	30	AJE	650	780	7	20.6	20	NXB-1200V125*AJE□B
	1.5	42.5	43	42	AGK	650	975	6	22	20	NXB-1200V155*AGK□B
	1.5	57.5	43.5	29.5	CHD	455	683	6	22	20	NXB-1200V155*CHD□B
	1.8	57.5	45	30	CJE	455	819	6	23	20	NXB-1200V185*CJE□B
	2	57.5	45	35	CJH	455	910	5	24	20	NXB-1200V205*CJH□B
	2.2	57.5	50	35	CKH	455	1001	5	24	20	NXB-1200V225*CKH□B
	2.5	57.5	45	45	CJL	455	1138	4	25	20	NXB-1200V255*CJL□B
	3	57.5	55	40	CLJ	455	1365	4	26	20	NXB-1200V305*CLJ□B
1600VDC (550VAC)	0.15	42.5	28	14	ABA	800	120	12	6	20	NXB-1600V154*ABA□B
	0.2	42.5	32	14	ACA	800	160	12	8.4	20	NXB-1600V204*ACA□B
	0.3	42.5	25.5	25.5	AAC	800	240	11	9.5	20	NXB-1600V304*AAC□B
	0.33	42.5	28	24	ABB	800	264	11	11.4	20	NXB-1600V334*ABB□B
	0.47	42.5	36	24	AFB	800	376	10	15.2	20	NXB-1600V474*AFB□B
	0.56	42.5	33	33	ADF	800	448	10	17	20	NXB-1600V564*ADF□B
	0.65	42.5	35.5	33.5	AEG	800	520	9	18.4	20	NXB-1600V654*AEG□B
	0.8	42.5	45	30	AJE	800	640	8	20.5	20	NXB-1600V804*AJE□B
	1	42.5	43	42	AGK	800	800	7	21	20	NXB-1600V105*AGK□B
	1	57.5	43.5	29.5	CHD	560	560	6	22	20	NXB-1600V105*CHD□B
	1.2	57.5	45	30	CJE	560	672	6	22	20	NXB-1600V125*CJE□B
	1.4	57.5	45	35	CJH	560	784	5	23	20	NXB-1600V145*CJH□B
	1.6	57.5	50	35	CKH	560	896	5	24	20	NXB-1600V165*CKH□B
	1.7	57.5	45	45	CJL	560	952	4	24	20	NXB-1600V175*CJL□B
	2	57.5	55	40	CLJ	560	1120	4	25	20	NXB-1600V205*CLJ□B

(Note) * : If tolerance at rated capacitance is 5% = J, 10% = K

□ : Shape code

1 The standard system of fixed plastic film capacitor for use in electronic equipment.

The standard system of fixed plastic film capacitor for use in electronic equipment includes the foundational standard, generic specification, sectional specification, blank detail specification and detail specification, or manufacturer specification.

Generic specification specifies the terminology, inspection procedures and test methods applied in sectional and detail specifications.

Sectional specification is classified according to the specific dielectric material and construction of capacitor, it prescribes preferred rating and characteristics and to elect from generic specification the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of capacitor. Blank detail specification is a supplementary document to the sectional specification and contains requirements for style, layout and minimum contents of detail specifications. Following please find the corresponding specification lists for plastic film capacitors.

No.	Standard
GB/T 2693 (IEC 60384-1)	Fixed capacitors for use in electronic equipment Part 1: Generic specification
GB/T 17702 (IEC 61071)	Power electronic capacitors
AEC-Q200	Stress test qualification for passive components
GB/T 25121 (IEC61881)	Railway applications - Rolling stock equipment - Capacitors for power electronics
GB/T21563 (IEC61373)	Railway applications - Rolling stock equipment Shock and vibration tests
GB/T 4798-1 (IEC 60721-3-1)	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 1 Storage
GB/T 4798-2 (IEC60721-3-2)	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 2 Transportation
GB/T 4798-3 (IEC 60721-3-3)	Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 3 Stationary use at weather protected locations

2 General Description of Film Capacitors

2-1 Principle of Capacitor Construction

The principle construction of a parallel plate capacitor is shown in Fig. 1.

When a voltage V is applied between the conducting electrodes placed opposite to each other, a certain amount Q of electric charge proportional to the voltage can be stored on the surfaces of the dielectric.

The proportional constant is called capacitance C, designating the ability of a capacitor to store energy in an electric field.

$$Q=C \cdot V$$

Q: Charge [Coulomb]

V: Voltage [Volt]

C: Capacitance [Farad]

The capacitance C of capacitor can be expressed by the following equation:

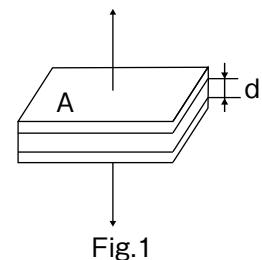


Fig.1

$$C[F] = \epsilon_0 \cdot \epsilon \cdot A / d$$

ϵ : dielectric constant

ϵ_0 : dielectric constant in vacuum ($= 8.85 \times 10^{-12} F/m$)

A: electrode area [m^2]

d: electrode distance [m]

The dielectric constant of Polypropylene film is 2.2.

Larger capacitances can be obtained by entailing the electrode area A or by reducing the distanced.

Table 1 shows the dielectric constants of typical film dielectrics used in capacitors.

In many cases, capacitor names are related to their dielectric material used.

Table-1

Dielectric	Dielectric Constant
Polypropylene	2.2
Polyester	3.3
Polyimide	3.5
Polyethylene	2.3
Polycarbonate	2.8
Polytetrafluoroethylene	2

The schematic of an film capacitor is shown in Fig. 2

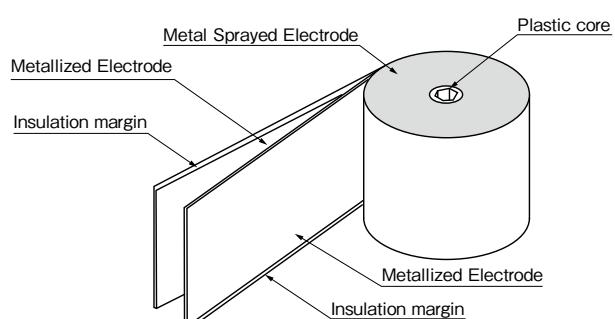


Fig-2

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

3 Basic parameters and terms

3-1 Rated capacitance Cr

Nominal value of the capacitance at 20°C and measuring frequency range of 50 to 120 Hz.

3-2 Rated voltage Ur

Maximum operating peak voltage of either polarity but of a non-reversing type waveform, for which the capacitor has been designed, for continuous operation.

It shall be higher than the sum of operating d.c. voltage and operating ripple peak voltage.

3-3 Ripple voltage Ur

Peak-to-peak alternating component of the unidirectional voltage.

3-4 Non-recurrent surge voltage Us

Peak voltage induced by a switching or any other disturbance of the system which is allowed for a limited number of times and for durations shorter than the basic period.

- Maximum duration: 50ms / pulse
- Maximum number of occurrences: 1000 (during load)

3-5 Insulation voltage Ui

Rms value of a.c. voltage designed for the insulation between terminals of the capacitor to case or earth.

The insulation voltage is equal to the rated voltage of the capacitor, divided by $\sqrt{2}$, unless otherwise specified.

3-6 Maximum current Imax

Maximum rms current for continuous operation.

3-7 Maximum rate of voltage rise dV/dt

Maximum permissible repetitive rate of voltage rise of the operational voltage.

3-8 Maximum peak current I $\hat{}$

Maximum permitted repetitive peak current that can occur during continuous operation.

The value is following: $\hat{I} = C_R \times (dV/dt)$

3-9 Maximum surge current Is

Admissible peak current induced by a switching or any other disturbance of the system.

- Maximum duration: 50ms / pulse
- Maximum number of occurrences: 1000

3-10 Series resistance Rs

Effective ohmic resistance of the conductors of a capacitor under specified operating conditions.

3-11 Equivalent series resistance ESR

The equivalent series resistance (ESR) represents all of the ohmic losses of the capacitor.

$$ESR = \frac{\operatorname{tg}\delta}{W \cdot C} = R_s + \frac{\operatorname{tg}\delta 0}{W \cdot C}$$

3-12 Dielectric dissipation factor tgδ0

Constant dissipation factor of the dielectric material for all capacitors at their rated frequency.

The typical loss factor of polypropylene film is 2×10^{-4} .

NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

3-13 Loss factor of the capacitor tgδ

The dissipation factor is ratio between reactive power of the impedance of the capacitor and effective power when capacitor is submitted to a sinusoidal voltage of specified frequency, it is that ratio between the equivalent series resistance and the capacitive reactance of a capacitor.

3-14 Dielectric power loss Pd

Loss power induced by dielectric polarization or dielectric conductance.

3-15 Joule power loss Pj

Loss power induced by series resistance of the capacitor under rms current.

3-16 Capacitor losses Pi

Active power dissipated in the capacitor. $P_t = I^2 \text{rms} \times \text{ESR}$

3-17 Maximum power loss Pmax

Maximum power loss at which the capacitor may be operated at the maximum case temperature.

3-18 Self-inductance Ls

Represents the sum of all inductive elements which are for mechanical and construction reasons contained in any capacitor.

3-19 Resonance frequency fr

Lowest frequency at which the impedance of the capacitor becomes minimum.

The value is following : $f_r = 1/(2\pi \times L_s)$

3-20 Ambient temperature ΘA

Temperature of the air measured at the hottest position of the capacitor, under steady-state conditions, midway between two units.

If only one unit is involved, it is the temperature of surrounding air, measured 10cm away and at 2/3 of the case height of the capacitor under steady-state conditions.

3-21 Maximum operating temperature Θmax

Highest temperature of the case at which the capacitor may be operated.

3-22 Lowest operating temperature Θmin

Lowest temperature of the dielectric at which the capacitor may be energized.

3-23 Thermal resistance Rth

The thermal resistance indicates by how many degrees the capacitor temperature at the hotspot rises above ΘA per watt of the heat dissipation loss.

3-24 Hotspot temperature Θhs

Temperature at the hottest spot inside the capacitor.

The value is following: $\Theta_{hs} = \Theta_A + P_t \times R_{th}$

3-25 Temperature coefficient of capacitance α

The change rate of capacitance with temperature measured over a specified range of temperature.

3-26 Voltage between terminals UTT

Voltage between terminals.

3-27 Voltage between terminals and case U_{TC}

Voltage between terminals and case.

3-28 Climatic category

The climatic category which the capacitor belongs to is expressed in three numbers separated by slashes, (I EC 60068-1 :example 40/85/56)

40 / 85 / 56

- days relevant to the damp heat test (56days)
- the upper category temperature (+85°C)
- the lower category temperature (-40°C)

3-29 Insulation Resistance (IR) /Time Constant (t)

The insulation resistance is the ratio between an applied D.C. voltage and the resulting leakage current after a minute of charge.

It is expressed in MΩ.

The time constant is expressed in seconds with the following formula: $t [s] = IR [M\Omega] \times C [\mu F]$

3-30 Self-healing (Only for metallized film capacitor)

Process by which the electrical properties of the capacitor, after a local breakdown of the dielectric, are rapidly and essentially restored to the values before the breakdown.

The metal coatings of the metallized film, which are vacuum-deposited directly onto the plastic film, have a thickness of only several tens nm.

At weak points or impurities in the dielectric, a dielectric breakdown would occur.

The energy released by the arc discharge in the breakdown channel is sufficient to totally evaporate the thin metal coating in the vicinity of the channel.

The insulated region thus resulting around the former faulty area will cause the capacitor to regain its full operation ability.

3-31 Failure rate λ

Failure rate refers to the work to a moment has not failed products, at that time, the failure probability of occurrence in a time unit.

$$\lambda = \frac{r}{n \cdot t}$$

t: test time

n: test number

r: number of failures

4 Expected lifetime of the capacitor

The expected lifetime of the capacitor depends on the applied voltage and the hot spot temperature during operation.

For capacitors applied in different situation, the designed average service lifes are different.

The capacitors used in DC-Link circuits will have a expected lifetime of probable 100000 hrs at rated voltage and 70t hot spot temperature.

4-1 The hotspot temperature estimation

During operation, the ripple current flowing through the capacitor will generate heat due to the series resistance (R_s) of the capacitor.

Considering the above factors hotspot temperature estimation formula is as follows:

$$\Theta_{hs} = \Theta_A + I_{rms} \times ESR \times R_{th}$$

Θ_{hs} : Hotspot Temperature

Θ_A : Environment Temperature

I_{rms} : Ripple Current

ESR : Equivalent series resistance

R_{th} : Thermal Resistance

4-2 Estimation of lifetime calculation

Considering the fever caused by ripple current, internal resistance (hotspot temperature), as well as the applied voltage, life estimation formula:

$$L = L_0 \times (U_R / U)^n \times 2^{(\Theta - \Theta_{hs}) / m}$$

L : The calculation of Lifetime, hrs

L_0 : Rated Lifetime (100000hrs)

U : Working Voltage, VDC

U_R : Rated Voltage, VDC

n : Acceleration Coefficient of Voltage,
experienced value: 8-12

Θ_{hs} : The Actual or Calculated Hotspot Temperature, VC

Θ : Rated Hotspot Temperature, 70 °C

m : Acceleration Coefficient of Temperature,
experienced value: 7-10

PS: Typically the capacity change rate > ± 3%, determined that product failure

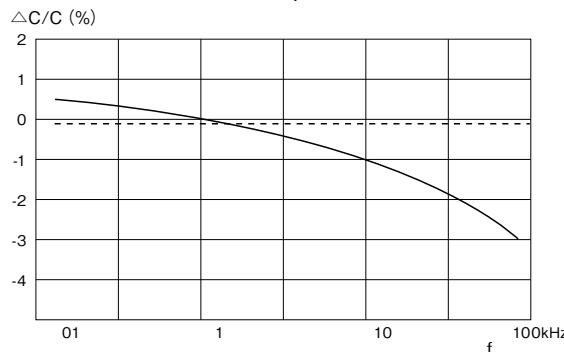
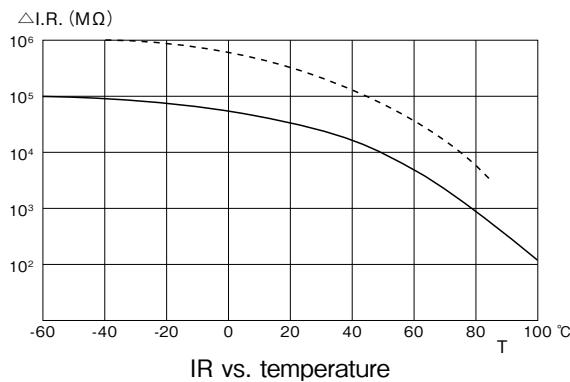
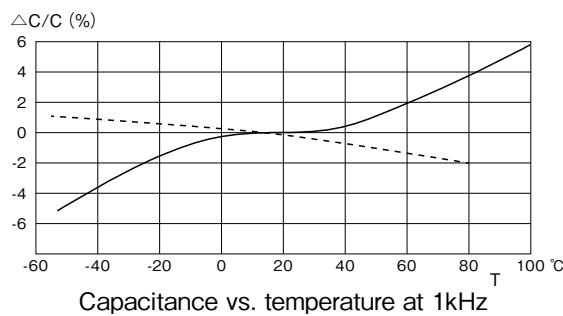
Expected lifetime is a statistical value calculated on the basis of experience and on theoretical evaluations.

The above formula only as a theoretical reference.

The diagrams should be considered only as a theoretical reference.

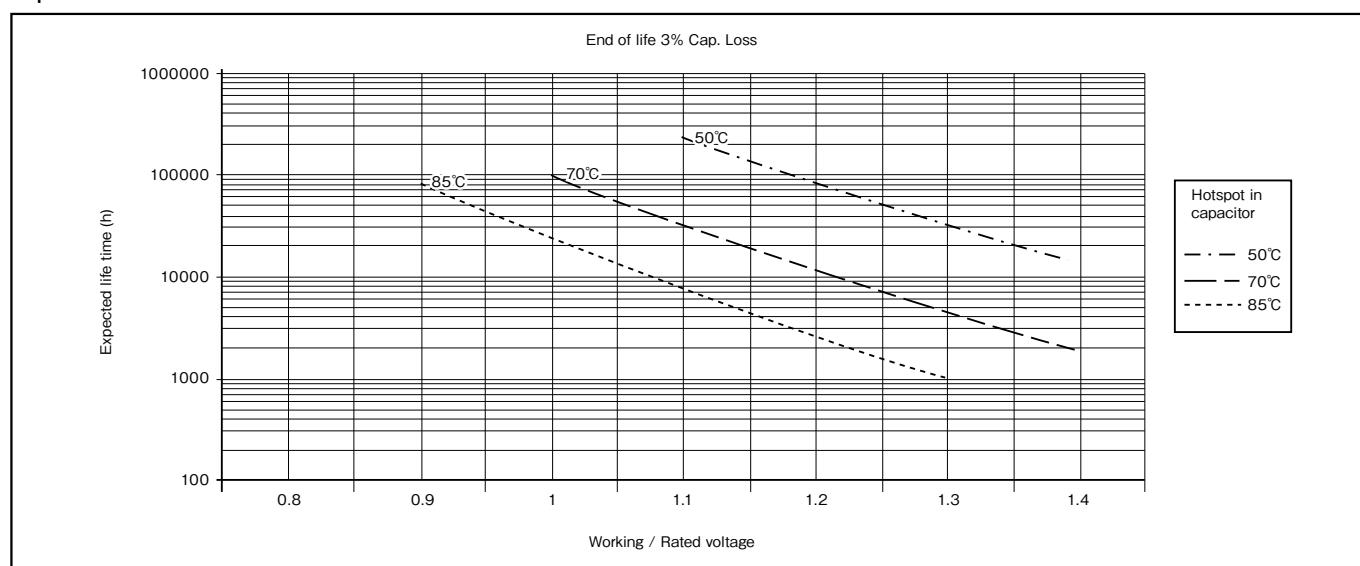
Please consult our technical department in case of working condition different from the rated ones.

5 Electrical behaviour



----- Polypropylene Film
—— Polyester Film

Expected life time curve



NOTE : Design, Specifications are subject to change without notice.
It is recommended that you shall obtain technical specifications from ELNA to ensure that the component is suitable for your use.

ELECTRONIC COMPONENTS

ELNA CO., LTD.
<http://www.elna.co.jp/>

HEAD OFFICE	3-8-11 Shin-Yokohama, Kouhoku, Yokohama, Kanagawa 222-0033, Japan	TEL. +81-45-470-7251 FAX. +81-45-470-7261
SHIGA FACTORY	30 Ta, Nagahama, Shiga 529-0142, Japan	TEL. +81-749-73-3021 FAX. +81-749-73-2175
SHIRAKAWA OFFICE	9-32 Sugiyama, Yone, Nishigo, Nishishirakawa, Fukushima 961-8031, Japan	TEL. +81-248-48-1654 FAX. +81-248-25-5614

■SALES OFFICE

ELNA AMERICA, INC.
3600 Dallas Hwy., Ste.230 #389
Marietta, GA 30064, U.S.A.

ELNA ELECTRONICS SINGAPORE PTE. LTD.
103 Kallang Avenue,
#04-01 AIS Industrial Building
Singapore 339504

ELNA (SHANGHAI) CO., LTD.
Room 6203, Rui Jin Hotel Business Center 118
Rui Jin 2 Road, Shanghai, China
Post Code 200020

ELNA BANGKOK SALES OFFICE
2/71 Thosapol Land building 4
14th/FL, Soi Bangna-Trad 25, Bangna
Bangkok 10260, Thailand

ELNA MALAYSIA PENANG SALES OFFICE
2473, Tingkat Perusahaan 6,
Free Trade Zone, Prai Industrial Estate,
13600 Prai, Penang, Malaysia

EASTERN JAPAN OFFICE
3-8-11 Shin-Yokohama, Kouhoku,
Yokohama, Kanagawa 222-0033, Japan

WESTERN JAPAN OFFICE
6-1-15 Nishinakajima Yodogawa,
Osaka, Osaka 532-0011, Japan

TEL. +1-678-261-8284
FAX. +1-678-815-0892

TEL. +65-62930181
FAX. +65-62966716

TEL. +86-21-64452269
FAX. +86-21-64452271

TEL. +66-2-7441464
+66-2-7441465
FAX. +66-2-7441466

TEL. +60-4-3985369

TEL. +81-45-470-7254
FAX. +81-45-470-7260

TEL. +81-6-6304-6831
FAX. +81-6-6304-8638

■AFFILIATED COMPANY

TANIN ELNA CO., LTD.
HEAD OFFICE
2/71 Thosapol Land building 4
14th/FL, Soi Bangna-Trad 25, Bangna
Bangkok 10260, Thailand

CHIANGMAI FACTORY
56 Mahidoal Road T.Sutep
A.Muang Chiangmai 50200, Thailand.

ELNA-SONIC SDN. BHD.
2473, Tingkat Perusahaan 6,
Free Trade Zone, Prai Industrial Estate,
13600 Prai, Penang, Malaysia.

ELNA TOHOKU CO., LTD.
AOMORI FACTORY
1-349-1 Okonoki,
Kuroishi, Aomori 036-0357, Japan

Sales office

TEL. +66-2-7441464
+66-2-7441465
FAX. +66-2-7441466

TEL. +66-53-270206
FAX. +66-53-275064

TEL. +60-4-3992916
FAX. +60-4-3992925
TEL. +60-4-3985369

TEL. +81-172-52-4166
FAX. +81-172-53-4609



CAUTION

Observe the following to
ensure safe operation.

1. The models and specification values contained in this catalog are for reference purposes only. During actual use or when placing an order, please request "drawings" and make your purchase or use the purchased product based on those drawings.
2. In order to ensure that products are used correctly and safely, always make sure to read the cautions for using prior to using the product.

NOTE

1. Since the contents contained are subject to changes in specifications, dimensions and so forth without notice due to modification, please confirm the contents when placing an order.
If any of the matters described here are unclear, please inquire at one of our nearby sales offices.
2. The contents of this catalog are valid as of December 2016.