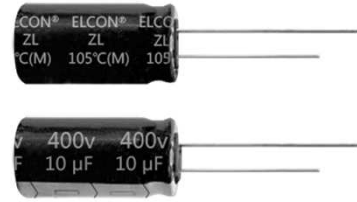


### ZL

#### Series

- 105°C High Frequency, Low Impedance
- 2000~4000 hours guaranteed

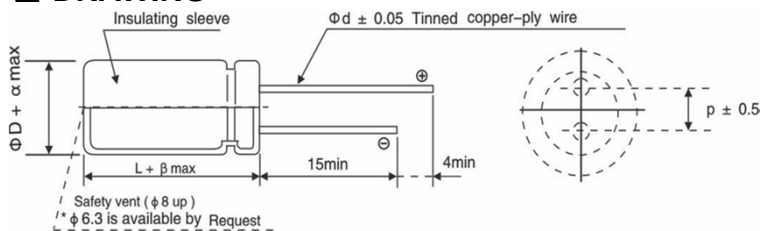


### SPECIFICATIONS

Item	Characteristics													
Category Temperature Range	-55 ~ +105℃				-40 ~ +105℃				-25 ~ +105℃					
Voltage Range	6.3 ~ 100V.DC				160 ~ 400V.DC				450V.DC					
Nominal Cap. Range	0.47 ~ 10000μF				3.3 ~ 220μF				2.2 ~ 33μF					
Capacitance Tolerance	± 20 % (at 120Hz , 20℃)													
Leakage Current	WV	6.3~100V.DC						160~450V.DC						
	L.C.	I=0.01CV or 3(μA) whichever is greater(after 2min)						Time	After 1 min			After 5 min		
		I=0.03CV or 4(μA) whichever is greater(after 1min)						CV≤10	I=0.1CV+40(μA)			I=0.03CV+15(μA)		
								CV>1000	I=0.04CV+100(μA)			I=0.02CV+25(μA)		
	where, I: max leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20℃)													
Dissipation Factor (MAX) (tanδ) (at 120Hz ,20℃)	WV	6.3	10	16	25	35	50	63	100	160~250	400	450		
	tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.20	0.24	0.24		
When nominal capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.														
Low Temp.Impedance Stability at 120Hz	WV	6.3	10	16	25~100	100~250	350	400	4					
	Z-25℃ /	4	3	2	2	3	5	6						
	Z-40℃ / Z+20℃	8	6	6	3	6	6	---						
Endurance	After application of DC rated working voltage at 105℃, the capacitor shall meet the following limits.													
	Capacitance change				≤ ±20% of the initial value									
	Dissipation Factor				≤ 200% of the initial specified value									
	Leakage Current				≤ the initial specified value									
	Size		Φ5~Φ6.3	Φ8& Φ10	≥Φ13	160~450								
Shelf Life	Life time		2000	3000	4000	2000								
	After storage for 1000 hours at 105℃ with no voltage applied, voltage treatment of JIS-C-5102 article 4-4 is to be given and then measurement shall be made, the capacitor shall meet the following limits.													
	W.V. (DC)				6.3~100V.DC				160~450V.DC					
	Capacitance Change				≤ ±20% of the initial value				≤ ±20% of the initial value					
	Dissipation Factor				≤ 200% of the initial specified value				≤ 200% of the initial specified value					
Leakage Current				≤ The initial specified value				≤ 500% of the initial specified value						

Note: Some cleaning solvents may adversely affect the capacitors, Consult us about the suitable type of cleaning solvents to be used.

### DRAWING



Unit:(mm)

ΦD	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φd	0.50			0.6		0.8	
β	1.5						
α	0.5						

### MULTIPLIER FOR RIPPLE CURRENT

#### (1) Frequency Coefficient

Freq.(Hz)	60(50)	120	1K	10K	100K
Cap.(µF)					
0.47~47	0.40	0.50	0.70	0.85	1.00
100~470	0.60	0.65	0.80	0.90	1.00
1000~10000	0.65	0.70	0.90	0.95	1.00

#### (2) Temperature Coefficient

Ambient Temperature(°C)	40	60	85	105
Coefficient	2.20	2.00	1.65	1.00

ZL

Series

■ STANDARD RATINGS Ripple Current : (mArms ) at 105℃ 100KHz;

WV(vdc) Parameter Cap(μf)	6.3V				10V				16V				25V			
	ΦDxL (mm)	Impedance(Ω )		Ripple Current	ΦDxL (mm)	Impedance(Ω )		Ripple Current	ΦDxL (mm)	Impedance(Ω )		Ripple Current	ΦDxL (mm)	Impedance(Ω )		Ripple Current
		20℃	-10℃			20℃	-10℃			20℃	-10℃			20℃	-10℃	
		100KH	100KH			100KH	100KH			100KH	100KH			100KH	100KH	
10									5x11	2	6.3	124	5x11	2	6	124
22					5x11	1.3	3.9	154	5x11	1.3	3.9	154	5x11	1.3	3.9	154
33	5x11	1.3	3.9	154	5x11	1.3	3.9	154	5x11	1.3	3.9	154	5x11	1.3	3.9	154
47	5x11	1.3	3.9	154	5x11	1.3	3.9	154	5x11	1.3	3.9	154	5x11	1.3	3.9	154
100	5x11	1.3	3.9	154	5x11	1.3	3.9	154	6.3x11	0.6	1.8	260	6.3x11	0.6	1.8	260
220	6.3x11	0.6	1.8	260	6.3x11	0.6	1.8	260	8x11.5	0.33	0.99	400	8x11.5	0.33	0.99	400
330	6.3x11	0.6	1.8	260	8x11.5	0.33	0.99	400	8x11.5	0.33	0.99	400	10x12.5	0.25	0.75	510
470	8x11.5	0.33	0.99	400	8x11.5	0.33	0.99	400	10x12.5	0.25	0.75	510	10x16	0.19	0.57	635
1000	10x12.5	0.25	0.75	510	10x16	0.19	0.57	635	10x20	0.14	0.42	860	13x20	0.085	0.26	1120
2200	13x20	0.085	0.26	1120	13x20	0.085	0.26	1120	13x25	0.07	0.21	1320	16x25	0.06	0.18	1570
3300	13x20	0.085	0.26	1120	13x25	0.07	0.21	1320	16x25	0.06	0.18	1570	16x31	0.048	0.14	1810
4700	16x25	0.06	0.18	1570	16x25	0.06	0.18	1570	16x31	0.048	0.14	1810	18x36	0.037	0.11	2240
6800	16x25	0.06	0.18	1570	16x31	0.048	0.14	1810	18x36	0.037	0.11	2240	18x40	0.034	0.1	2460
10000	16x31	0.048	0.14	1810	18x36	0.037	0.11	2240	18x40	0.034	0.1	2460				

WV(vdc) Parameter Cap(μf)	35V				50V				63V				100V			
	ΦDxL (mm)	Impedance(Ω )		Ripple Current	ΦDxL (mm)	Impedance(Ω )		Ripple Current	ΦDxL (mm)	Impedance(Ω )		Ripple Current	ΦDxL (mm)	Impedance(Ω )		Ripple Current
		20℃	-10℃			20℃	-10℃			20℃	-10℃			20℃	-10℃	
		100KH	100KH			100KH	100KH			100KH	100KH			100KH	100KH	
0.47					5x11	7	21	66					5x11	10	35	55
1.0					5x11	5	15	78					5x11	7	25	66
2.2					5x11	4	12	88					5x11	6	21	72
3.3					5x11	3.5	10.5	94					5x11	5	18	78
4.7	5x11	3	9	100	5x11	3	9	100	5x11	4	14	88	5x11	4	14	85
10	5x11	2	6	124	5x11	2	6	124	5x11	2.5	8.8	124	6.3x11	1.2	4.2	180
22	5x11	1.3	3.9	154	5x11	2	6	154	6.3x11	1.2	4.2	180	8x11.5	0.66	2.3	282
33	5x11	1.3	3.9	154	6.3x11	1.5	4.5	260	6.3x11	1.2	4.2	180	10x12.5	0.5	1.8	380
47	6.3x11	0.6	1.8	260	6.3x11	1.2	4.2	260	8x11.5	0.56	2	305	10x16	0.32	1.1	500
100	8x11.5	0.33	0.99	400	8x11.5	1.1	3.3	400	10x12.5	0.5	1.8	380	13x20	0.16	0.56	890
220	10x12.5	0.25	0.75	510	10x16	0.7	2.1	635	10x20	0.27	0.95	620	16x25	0.09	0.32	1440
330	10x16	0.19	0.57	635	10x20	0.5	1.5	860	13x20	0.16	0.56	890	16x25	0.09	0.32	1440
470	10x20	0.14	0.42	860	13x20	0.085	0.26	1120	13x25	0.14	0.49	1040	16x31	0.06	0.21	1790
1000	13x25	0.07	0.21	1320	16x25	0.06	0.18	1570	16x31	0.06	0.21	1790				
2200	16x31	0.048	0.14	1810	18x36	0.037	0.11	2240								
3300	18x36	0.037	0.11	2240												
4700	18x40	0.034	0.1	2460												

WV(vdc) Parameter Cap(μf)	160V			200V			250V			
	ΦDxL (mm)	Impedance(Ω )	Ripple Current	ΦDxL (mm)	Impedance(Ω )	Ripple Current	ΦDxL (mm)	Impedance(Ω )	Ripple Current	
		20°C,100KHz			20°C,100KHz					
4.7							10x16	3.5	165	
10	10x16	1.5	250	10x16	1.5	250	10x20	2.8	230	
22	10X20	1.1	350	10x20	1.1	350	13x25	1.2	360	
33	13x20	0.71	440	13x20	0.71	440	13x25	1.2	360	
47	13x25	0.46	600	13x25	0.46	600	16x25	0.6	570	
100	16x25	0.24	910	16x31	0.17	1160	18x36	0.3	935	
220	18x36	0.14	1370	18x36	0.14	1370	18x40	0.27	1000	

WV(vdc) Parameter Cap(μf)	400			450		
	ΦDxL (mm)	Impedance(Ω )	Ripple Current	ΦDxL (mm)	Impedance(Ω )	Ripple Current
		20℃,100KHz			20℃,100KHz	
2.2				10x16	7.9	110
3.3	10x20	2.9	195	10x20	6.2	135
4.7	10x25	2.3	220	13x20	3.7	190
10	13x25	1.5	360	13x25	2.6	250
22	16x25	1.3	570	16x31	1	480
33	16x25	1.2	700	18x36	0.62	650
47	18x32	0.5	860			