Panasonic INDUSTRY

⚠ Some part numbers are discontinued.

Aluminum Electrolytic Capacitors

Radial Lead Type

EE-A series

■ Not available in Japan

Features

- Endurance : 105 ℃ 8000 h to 10000 h
- High ripple current (at high frequency) : 40 % higher than ED series
- RoHS compliant

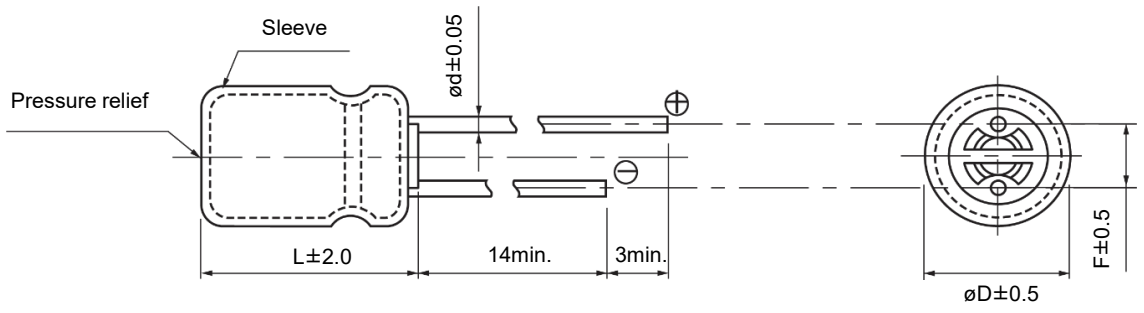
Specifications

Category temp. range	–25 ℃ to +105 ℃							
Rated voltage range	160 V to 450 V							
Capacitance range	10 µF to 330 µF							
Capacitance tolerance	±20 % (120 Hz / +20℃)							
Leakage current	I ≦ 0.06 CV +10 (µA) After 2 minutes							
Dissipation factor (tan δ)	Rated voltage (V)	160	200	250	350	400	450	(120 Hz /+20℃)
	Dissipation factor (tan δ)	0.15	0.15	0.15	0.20	0.24	0.24	
Endurance	After following life test with DC voltage and +105 ℃±2 ℃ ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), when the capacitors are restored to 20 ℃, the capacitors shall meet the limits specified bellow. ø10 : 8000 h ø12.5 to ø18 : 10000 h							
	Capacitance change	Within ±20 % of the initial value						
	Dissipation factor (tan δ)	≦ 200 % of the initial limit						
	DC leakage current	Within the initial limit						
Shelf life	After storage for 1000 h at +105 ℃±2 ℃ with no voltage applied and then being stabilized at +20 ℃, capacitors shall meet the limits specified in endurance. (With voltage treatment)							

Frequency correction factor for ripple current

Cap. (µF) \ Freq.(Hz)	60	120	300	1 k	10 k	100 k
10 to 82	0.25	0.35	0.50	0.65	0.90	1.00
100 to 330	0.30	0.40	0.55	0.70	0.90	1.00

Dimensions



Unit : mm

øD	10.0	12.5	16.0	18.0
ød	0.6	0.6	0.8	0.8
F	5.0	5.0	7.5	7.5

Case size / Ripple current

Capacitance (μF)	160 V			200 V		
	Case size (mm) (øD×L)	Ripple current (mA rms) (105 ℃)		Case size (mm) (øD×L)	Ripple current (mA rms) (105 ℃)	
		120 Hz	100 kHz		120 Hz	100 kHz
22	10 x 20	245	700	10 x 20	300	850
33	10 x 20	280	810	10 x 20	320	920
47	10 x 20	370	1065	12.5 x 20	385	1100
68	12.5 x 20	470	1350	12.5 x 25	465	1330
				16 x 20S	465	1330
82	12.5 x 25	520	1480	16 x 20S	510	1460
100	12.5 x 25	660	1660	16 x 25	690	1730
	16 x 20S	680	1700	18 x 20S	670	1665
150	16 x 25	755	1890	16 x 25	740	1860
	18 x 20S	730	1820			
220	16 x 31.5	910	2280	18 x 31.5	1175	2600
	18 x 25S	780	1950			
330	18 x 31.5	1040	2600	18 x 40	1250	3120

Capacitance (μF)	250 V			350 V		
	Case size (mm) (øD×L)	Ripple current (mA rms) (105 ℃)		Case size (mm) (øD×L)	Ripple current (mA rms) (105 ℃)	
		120 Hz	100 kHz		120 Hz	100 kHz
15	—			10 x 20	170	480
22	10 x 20	275	785	12.5 x 20	230	660
33	12.5 x 20	350	995	12.5 x 25	275	790
				16 x 20S	315	900
47	12.5 x 25	450	1290	16 x 25	375	1070
	16 x 20S	490	1400	18 x 20S	375	1070
68	16 x 20S	490	1400	16 x 31.5	535	1530
				18 x 25S	465	1330
82	16 x 25	590	1680	18 x 25S	535	1530
	18 x 20S	590	1680			
100	16 x 31.5	840	2100	18 x 31.5	640	1600
	18 x 25S	840	2100			
150	18 x 31.5	1010	2520	—	—	—
220	18 x 40	1175	2940	—	—	—

Capacitance (μF)	400 V			450 V		
	Case size (mm) (øD×L)	Ripple current (mA rms) (105 ℃)		Case size (mm) (øD×L)	Ripple current (mA rms) (105 ℃)	
		120 Hz	100 kHz		120 Hz	100 kHz
10	10 x 20	150	430	10 x 20U	115	330
				12.5 x 20	170	490
15	12.5 x 20	205	590	12.5 x 25	270	780
22	12.5 x 25	265	760	16 x 20S	330	945
	16 x 20S	300	860			
33	16 x 20S	355	1020	16 x 25	350	1000
				18 x 20S	350	1000
47	16 x 25	410	1180	16 x 31.5	420	1200
	18 x 20S	410	1180	18 x 25S	420	1200
56	—	—	—	18 x 31.5	480	1380
68	18 x 25	515	1470	18 x 40	630	1800
82	18 x 31.5	575	1645	—	—	—
100	18 x 40	825	2060	—	—	—

Characteristics list

Endurance : 105 ℃ 8000 h / ø10, 105 ℃ 10000 h / ø12.5 to ø18

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)			Part No.	Min. Packaging Q'ty (PCS)	
								Lead space				
		øD	L	Ripple current*1 (mA rms)	tan δ*2	Endu-rance (h)	Lead dia. (ød)	Straight	Taping ✻B		Straight leads	Taping
160	22	10.0	20.0	700	0.15	8000	0.6	5.0	5.0	EEUEE2C220( )	200	500
	33	10.0	20.0	810	0.15	8000	0.6	5.0	5.0	EEUEE2C330( )	200	500
	47	10.0	20.0	1065	0.15	8000	0.6	5.0	5.0	EEUEE2C470( )	200	500
	68	12.5	20.0	1350	0.15	10000	0.6	5.0	5.0	EEUEE2C680( )	200	500
	82	12.5	25.0	1480	0.15	10000	0.6	5.0	5.0	EEUEE2C820( )	200	500
	100	12.5	25.0	1660	0.15	10000	0.6	5.0	5.0	EEUEE2C101( )	200	500
		16.0	20.0	1700	0.15	10000	0.8	7.5	7.5	EEUEE2C101S( )	100	250
	150	16.0	25.0	1890	0.15	10000	0.8	7.5	7.5	EEUEE2C151( )	100	250
		18.0	20.0	1820	0.15	10000	0.8	7.5	7.5	EEUEE2C151S( )	100	250
	220	16.0	31.5	2280	0.15	10000	0.8	7.5	—	EEUEE2C221	100	—
		18.0	25.0	1950	0.15	10000	0.8	7.5	7.5	EEUEE2C221S( )	100	250
EOL	330	18.0	31.5	2600	0.15	10000	0.8	7.5	—	EEUEE2C331	50	—
200	22	10.0	20.0	850	0.15	8000	0.6	5.0	5.0	EEUEE2D220( )	200	500
	33	10.0	20.0	920	0.15	8000	0.6	5.0	5.0	EEUEE2D330( )	200	500
	47	12.5	20.0	1100	0.15	10000	0.6	5.0	5.0	EEUEE2D470( )	200	500
	68	12.5	25.0	1330	0.15	10000	0.6	5.0	5.0	EEUEE2D680( )	200	500
		16.0	20.0	1330	0.15	10000	0.8	7.5	7.5	EEUEE2D680S( )	100	250
	82	16.0	20.0	1460	0.15	10000	0.8	7.5	7.5	EEUEE2D820S( )	100	250
	100	16.0	25.0	1730	0.15	10000	0.8	7.5	7.5	EEUEE2D101( )	100	250
		18.0	20.0	1665	0.15	10000	0.8	7.5	7.5	EEUEE2D101S( )	100	250
	150	16.0	25.0	1860	0.15	10000	0.8	7.5	7.5	EEUEE2D151( )	100	250
EOL	220	18.0	31.5	2600	0.15	10000	0.8	7.5	—	EEUEE2D221	50	—
EOL	330	18.0	40.0	3120	0.15	10000	0.8	7.5	—	EEUEE2D331	50	—
250	22	10.0	20.0	785	0.15	8000	0.6	5.0	5.0	EEUEE2E220( )	200	500
	33	12.5	20.0	995	0.15	10000	0.6	5.0	5.0	EEUEE2E330( )	200	500
	47	12.5	25.0	1290	0.15	10000	0.6	5.0	5.0	EEUEE2E470( )	200	500
		16.0	20.0	1400	0.15	10000	0.8	7.5	7.5	EEUEE2E470S( )	100	250
	68	16.0	20.0	1400	0.15	10000	0.8	7.5	7.5	EEUEE2E680S( )	100	250
	82	16.0	25.0	1680	0.15	10000	0.8	7.5	7.5	EEUEE2E820( )	100	250
		18.0	20.0	1680	0.15	10000	0.8	7.5	7.5	EEUEE2E820S( )	100	250
	100	16.0	31.5	2100	0.15	10000	0.8	7.5	—	EEUEE2E101	100	—
		18.0	25.0	2100	0.15	10000	0.8	7.5	7.5	EEUEE2E101S( )	100	250
EOL	150	18.0	31.5	2520	0.15	10000	0.8	7.5	—	EEUEE2E151	50	—
EOL	220	18.0	40.0	2940	0.15	10000	0.8	7.5	—	EEUEE2E221	50	—
350	15	10.0	20.0	480	0.20	8000	0.6	5.0	5.0	EEUEE2V150( )	200	500
	22	12.5	20.0	660	0.20	10000	0.6	5.0	5.0	EEUEE2V220( )	200	500
	33	12.5	25.0	790	0.20	10000	0.6	5.0	5.0	EEUEE2V330( )	200	500
		16.0	20.0	900	0.20	10000	0.8	7.5	7.5	EEUEE2V330S( )	100	250
	47	16.0	25.0	1070	0.20	10000	0.8	7.5	7.5	EEUEE2V470( )	100	250
		18.0	20.0	1070	0.20	10000	0.8	7.5	7.5	EEUEE2V470S( )	100	250
	68	16.0	31.5	1530	0.20	10000	0.8	7.5	—	EEUEE2V680	100	—
		18.0	25.0	1330	0.20	10000	0.8	7.5	7.5	EEUEE2V680S( )	100	250
	82	18.0	25.0	1530	0.20	10000	0.8	7.5	7.5	EEUEE2V820S( )	100	250
EOL	100	18.0	31.5	1600	0.20	10000	0.8	7.5	—	EEUEE2V101	50	—

*1: Ripple current (100 kHz / +105 ℃)

*2: tan δ (120 Hz / +20 ℃)

EOL End of life

・When requesting taped product, please put the letter "B" be tween the "( )".
Lead wire pitch ✻B=5 mm, 7.5 mm.

・Please refer to the page of “Taping dimensions”.

Characteristics list

Endurance : 105 ℃ 8000 h / ø10, 105 ℃ 10000 h / ø12.5 to ø18

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)			Part No.	Min. Packaging Q'ty (PCS)	
								Lead space				
		øD	L	Ripple current*1 (mA rms)	tan δ*2	Endu-rance (h)	Lead dia. (ød)	Straight	Taping ✻B		Straight leads	Taping
400	10	10.0	20.0	430	0.24	8000	0.6	5.0	5.0	EEUEE2G100( )	200	500
	15	12.5	20.0	590	0.24	10000	0.6	5.0	5.0	EEUEE2G150( )	200	500
	22	12.5	25.0	760	0.24	10000	0.6	5.0	5.0	EEUEE2G220( )	200	500
		16.0	20.0	860	0.24	10000	0.8	7.5	7.5	EEUEE2G220S( )	100	250
	33	16.0	20.0	1020	0.24	10000	0.8	7.5	7.5	EEUEE2G330S( )	100	250
	47	16.0	25.0	1180	0.24	10000	0.8	7.5	7.5	EEUEE2G470( )	100	250
		18.0	20.0	1180	0.24	10000	0.8	7.5	7.5	EEUEE2G470S( )	100	250
	68	18.0	25.0	1470	0.24	10000	0.8	7.5	7.5	EEUEE2G680( )	100	250
EOL	82	18.0	31.5	1645	0.24	10000	0.8	7.5	—	EEUEE2G820	50	—
EOL	100	18.0	40.0	2060	0.24	10000	0.8	7.5	—	EEUEE2G101	50	—
450	10	10.0	20.0	330	0.24	8000	0.6	5.0	5.0	EEUEE2W100U( )	200	500
		12.5	20.0	490	0.24	10000	0.6	5.0	5.0	EEUEE2W100( )	200	500
	15	12.5	25.0	780	0.24	10000	0.6	5.0	5.0	EEUEE2W150( )	200	500
	22	16.0	20.0	945	0.24	10000	0.8	7.5	7.5	EEUEE2W220S( )	100	250
	33	16.0	25.0	1000	0.24	10000	0.8	7.5	7.5	EEUEE2W330( )	100	250
		18.0	20.0	1000	0.24	10000	0.8	7.5	7.5	EEUEE2W330S( )	100	250
	47	16.0	31.5	1200	0.24	10000	0.8	7.5	—	EEUEE2W470	100	—
		18.0	25.0	1200	0.24	10000	0.8	7.5	7.5	EEUEE2W470S( )	100	250
EOL	56	18.0	31.5	1380	0.24	10000	0.8	7.5	—	EEUEE2W560	50	—
EOL	68	18.0	40.0	1800	0.24	10000	0.8	7.5	—	EEUEE2W680	50	—

*1: Ripple current (100 kHz / +105 ℃)

*2: tan δ (120 Hz / +20 ℃)

EOL End of life

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Lead wire pitch ✻B=5 mm, 7.5 mm.

・Please refer to the page of “Taping dimensions”.