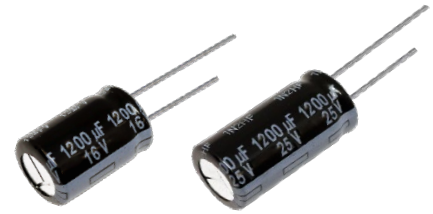


Aluminum Electrolytic Capacitors

Radial Lead Type

FS-A series



Features

- Endurance : 105 °C 5000 h to 10000 h
- Low ESR, Miniaturized (1 size smaller than series FR)
- RoHS compliant

Country of origin

- Malaysia

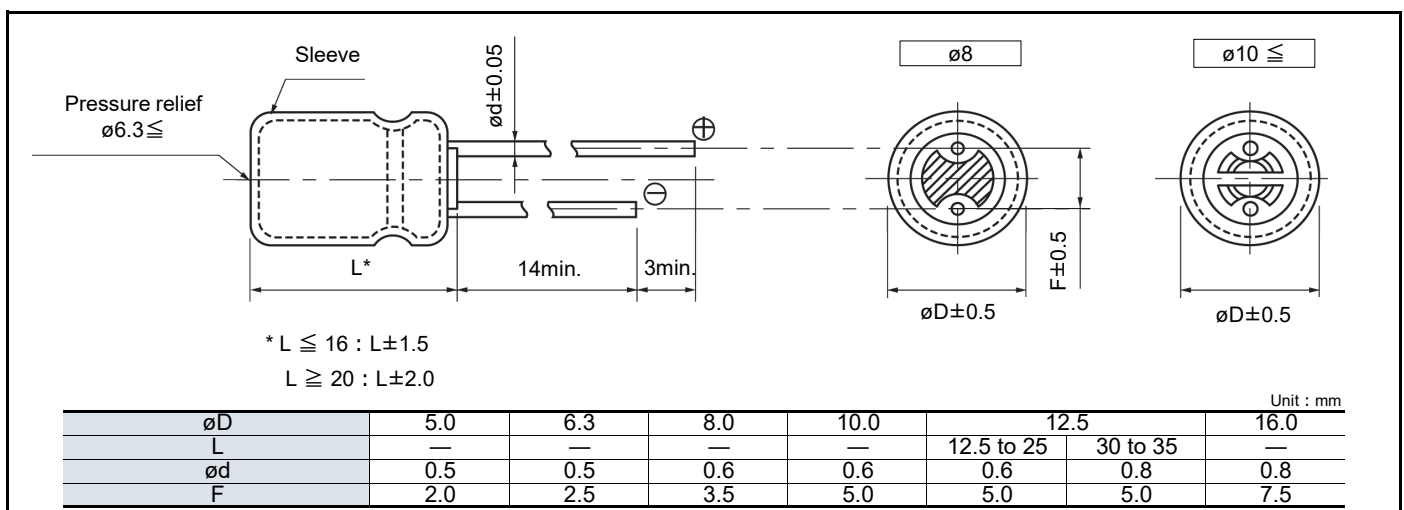
Specifications

Category temp. range	-40 °C to +105 °C											
Rated voltage range	6.3 V to 100 V											
Capacitance range	27 µF to 10000 µF											
Capacitance tolerance	±20 % (120 Hz / +20°C)											
Leakage current	I ≤ 0.01 CV (µA) After 2 minutes											
Dissipation factor (tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	(120 Hz /+20°C)	
	Dissipation factor (tan δ)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08		
	For capacitance value ≥ 1000 µF, add 0.02 per every 1000 µF.											
Endurance	After following life test with DC voltage and +105 °C±2 °C 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 °C, the capacitors shall meet the limits specified bellow. Duration ø5×11, ø6.3×11.2 : 5000 h ø8×11.5, ø10×12.5 : 6000 h ø8×15, ø10×16 : 8000 h, ø8×20 : 9000 h ø10×20 to ø10×25, ø12.5×20 to ø12.5×35, ø16×20 to ø16×25 : 10000 h											
	Capacitance change		Within ±25 % of the initial value (6.3 V to 10 V : ±30 %)									
	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 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in endurance. (With voltage treatment)											

Frequency correction factor for ripple current

Freq. (Hz)	60	120	1 k	10 k	100 k to
Cap. (µF)					
27 to 33	0.45	0.55	0.75	0.90	1.00
47 to 330	0.60	0.70	0.85	0.95	1.00
390 to 1000	0.65	0.75	0.90	0.98	1.00
1200 to 10000	0.75	0.80	0.95	1.00	1.00

Dimensions



Case size / Impedance / Ripple current

R. voltage Case size (mm) (øD×L)	6.3 V to 35 V			50 V		
	Impedance* ¹ (Ω)		Ripple current* ¹ (mA rms)	Impedance* ¹ (Ω)		Ripple current* ¹ (mA rms)
	+20 °C	-10 °C	+105 °C	+20 °C	-10 °C	+105 °C
5 × 11	0.300	1.000	280	0.340	1.130	250
6.3 × 11.2	0.130	0.430	455	—	—	—
8 × 11.5	0.056	0.168	950	—	—	—
8 × 15	0.041	0.123	1240	0.045	0.135	1140
8 × 20	0.030	0.090	1560	0.033	0.099	1430
10 × 12.5	0.043	0.114	1290	—	—	—
10 × 16	0.028	0.078	1790	—	—	—
10 × 20	0.020	0.057	2180	0.023	0.069	1890
10 × 25	0.018	0.054	2470	0.022	0.066	2150
12.5 × 20	0.018	0.045	2600	—	—	—
12.5 × 25	0.015	0.038	3190	0.018	0.045	2660
12.5 × 30	0.013	0.033	3630	0.016	0.040	3160
12.5 × 35	0.012	0.030	3750	0.014	0.035	3270
16 × 20	0.017	0.043	3300	—	—	—
16 × 25	0.014	0.035	3820	0.016	0.040	3320

R. voltage Case size (mm) (øD×L)	63 V			80 V to 100 V		
	Impedance* ¹ (Ω)		Ripple current* ¹ (mA rms)	Impedance* ¹ (Ω)		Ripple current* ¹ (mA rms)
	+20 °C	-10 °C	+105 °C	+20 °C	-10 °C	+105 °C
5 × 11	0.510	2.040	175	—	—	—
6.3 × 11.2	—	—	—	—	—	—
8 × 11.5	—	—	—	0.160	0.720	490
8 × 15	0.068	0.272	741	0.112	0.504	590
8 × 20	0.050	0.200	930	0.096	0.432	810
10 × 12.5	0.063	0.252	761	0.112	0.448	600
10 × 16	0.045	0.180	1073	0.072	0.288	930
10 × 20	—	—	—	0.054	0.224	1120
10 × 25	0.033	0.132	1500	0.044	0.176	1200
12.5 × 20	0.033	0.125	1582	0.043	0.135	1400
12.5 × 25	0.027	0.092	1995	0.034	0.108	1800
12.5 × 30	—	—	—	0.030	0.099	2200
12.5 × 35	0.021	0.071	2780	0.023	0.070	2380
16 × 20	0.029	0.093	2153	0.032	0.108	1450
16 × 25	0.024	0.074	2988	0.025	0.076	2500

*1: 100 kHz

Characteristics list

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
		øD	L	Ripple current ^{*1} (mA rms)	Impe- dance ^{*2} (Ω)	Endu- rance (h)	Lead dia. (ød)	Lead space				Straight leads	Taping
								Straight	Taping *B	Taping *H			
6.3	220	5.0	11.0	280	0.300	5000	0.5	2.0	5.0	2.5	EEUFS0J221()	200	2000
	1500	8.0	15.0	1240	0.041	8000	0.6	3.5	5.0	—	EEUFS0J152L()	200	1000
		10.0	12.5	1290	0.043	6000	0.6	5.0	5.0	—	EEUFS0J152()	200	500
	1800	8.0	20.0	1560	0.030	9000	0.6	3.5	5.0	—	EEUFS0J182L()	200	1000
	2000	8.0	20.0	1560	0.030	9000	0.6	3.5	5.0	—	EEUFS0J202L()	200	1000
		10.0	16.0	1790	0.028	8000	0.6	5.0	5.0	—	EEUFS0J202()	200	500
	2200	10.0	16.0	1790	0.028	8000	0.6	5.0	5.0	—	EEUFS0J222()	200	500
	2700	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS0J272()	200	500
	3300	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS0J332()	200	500
	3900	10.0	25.0	2470	0.018	10000	0.6	5.0	5.0	—	EEUFS0J392L()	200	500
	4700	12.5	20.0	2600	0.018	10000	0.6	5.0	5.0	—	EEUFS0J472()	200	500
	5100	12.5	25.0	3190	0.015	10000	0.6	5.0	5.0	—	EEUFS0J512()	200	500
	5600	12.5	25.0	3190	0.015	10000	0.6	5.0	5.0	—	EEUFS0J562()	200	500
	6200	12.5	30.0	3630	0.013	10000	0.8	5.0	—	—	EEUFS0J622L	100	—
	6800	12.5	30.0	3630	0.013	10000	0.8	5.0	—	—	EEUFS0J682L	100	—
	7500	12.5	35.0	3750	0.012	10000	0.8	5.0	—	—	EEUFS0J752L	100	—
		16.0	20.0	3300	0.017	10000	0.8	7.5	7.5	—	EEUFS0J752S()	100	250
	8200	12.5	35.0	3750	0.012	10000	0.8	5.0	—	—	EEUFS0J822L	100	—
		16.0	20.0	3300	0.017	10000	0.8	7.5	7.5	—	EEUFS0J822S()	100	250
	9100	16.0	25.0	3820	0.014	10000	0.8	7.5	7.5	—	EEUFS0J912()	100	250
	10000	16.0	25.0	3820	0.014	10000	0.8	7.5	7.5	—	EEUFS0J103()	100	250
10	180	5.0	11.0	280	0.300	5000	0.5	2.0	5.0	2.5	EEUFS1A181()	200	2000
	330	6.3	11.2	455	0.130	5000	0.5	2.5	5.0	2.5	EEUFS1A331()	200	2000
	820	8.0	11.5	950	0.056	6000	0.6	3.5	5.0	—	EEUFS1A821()	200	1000
	1000	10.0	12.5	1290	0.043	6000	0.6	5.0	5.0	—	EEUFS1A102()	200	500
	1200	8.0	15.0	1240	0.041	8000	0.6	3.5	5.0	—	EEUFS1A122L()	200	1000
		10.0	12.5	1290	0.043	6000	0.6	5.0	5.0	—	EEUFS1A122()	200	500
	1800	8.0	20.0	1560	0.030	9000	0.6	3.5	5.0	—	EEUFS1A182L()	200	1000
		10.0	16.0	1790	0.028	8000	0.6	5.0	5.0	—	EEUFS1A182()	200	500
	2000	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS1A202()	200	500
	2200	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS1A222()	200	500
	2700	10.0	25.0	2470	0.018	10000	0.6	5.0	5.0	—	EEUFS1A272L()	200	500
	3600	12.5	20.0	2600	0.018	10000	0.6	5.0	5.0	—	EEUFS1A362()	200	500
	4700	12.5	25.0	3190	0.015	10000	0.6	5.0	5.0	—	EEUFS1A472()	200	500
	5100	12.5	30.0	3630	0.013	10000	0.8	5.0	—	—	EEUFS1A512L	100	—
	5600	12.5	30.0	3630	0.013	10000	0.8	5.0	—	—	EEUFS1A562L	100	—
		16.0	20.0	3300	0.017	10000	0.8	7.5	7.5	—	EEUFS1A562S()	100	250
	7500	12.5	35.0	3750	0.012	10000	0.8	5.0	—	—	EEUFS1A752L	100	—
	8200	16.0	25.0	3820	0.014	10000	0.8	7.5	7.5	—	EEUFS1A822()	100	250

*1: Ripple current (100 kHz / +105 °C)

*2: Impedance (100 kHz / +20 °C)

• When requesting taped product, please put the letter "B" or "H" between the "()".

Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

• Please refer to the page of "Taping dimensions".

Characteristics list

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
		øD	L	Ripple current ^{*1} (mA rms)	Impe- dance ^{*2} (Ω)	Endu- rance (h)	Lead dia. (ød)	Lead space				Straight leads	Taping
								Straight	Taping *B	Taping *H			
16	120	5.0	11.0	280	0.300	5000	0.5	2.0	5.0	2.5	EEUFS1C121()	200	2000
	510	8.0	11.5	950	0.056	6000	0.6	3.5	5.0	—	EEUFS1C511()	200	1000
	820	8.0	15.0	1240	0.041	8000	0.6	3.5	5.0	—	EEUFS1C821L()	200	1000
		10.0	12.5	1290	0.043	6000	0.6	5.0	5.0	—	EEUFS1C821()	200	500
	1200	8.0	20.0	1560	0.030	9000	0.6	3.5	5.0	—	EEUFS1C122L()	200	1000
		10.0	16.0	1790	0.028	8000	0.6	5.0	5.0	—	EEUFS1C122()	200	500
	1800	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS1C182()	200	500
	2200	10.0	25.0	2470	0.018	10000	0.6	5.0	5.0	—	EEUFS1C222L()	200	500
	2400	12.5	20.0	2600	0.018	10000	0.6	5.0	5.0	—	EEUFS1C242()	200	500
	3300	12.5	25.0	3190	0.015	10000	0.6	5.0	5.0	—	EEUFS1C332()	200	500
	3600	12.5	30.0	3630	0.013	10000	0.8	5.0	—	—	EEUFS1C362L	100	—
	3900	12.5	30.0	3630	0.013	10000	0.8	5.0	—	—	EEUFS1C392L	100	—
	4700	16.0	20.0	3300	0.017	10000	0.8	7.5	7.5	—	EEUFS1C472S()	100	250
	5100	12.5	35.0	3750	0.012	10000	0.8	5.0	—	—	EEUFS1C512L	100	—
25	6200	16.0	25.0	3820	0.014	10000	0.8	7.5	7.5	—	EEUFS1C622()	100	250
	1200	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS1E122()	200	500
	2200	12.5	25.0	3190	0.015	10000	0.6	5.0	5.0	—	EEUFS1E222()	200	500
	3300	12.5	35.0	3750	0.012	10000	0.8	5.0	—	—	EEUFS1E332L	100	—
35	3900	16.0	25.0	3820	0.014	10000	0.8	7.5	7.5	—	EEUFS1E392()	100	250
	330	8.0	15.0	1240	0.041	8000	0.6	3.5	5.0	—	EEUFS1V331L()	200	1000
	820	10.0	20.0	2180	0.020	10000	0.6	5.0	5.0	—	EEUFS1V821()	200	500
	1000	10.0	25.0	2470	0.018	10000	0.6	5.0	5.0	—	EEUFS1V102L()	200	500
	1500	12.5	25.0	3190	0.015	10000	0.6	5.0	5.0	—	EEUFS1V152()	200	500
	1800	16.0	20.0	3300	0.017	10000	0.8	7.5	7.5	—	EEUFS1V182S()	100	250
50	2700	16.0	25.0	3820	0.014	10000	0.8	7.5	7.5	—	EEUFS1V272()	100	250
	27	5.0	11.0	250	0.340	5000	0.5	2.0	5.0	2.5	EEUFS1H270()	200	2000
	150	8.0	15.0	1140	0.045	8000	0.6	3.5	5.0	—	EEUFS1H151L()	200	1000
	220	8.0	20.0	1430	0.033	9000	0.6	3.5	5.0	—	EEUFS1H221L()	200	1000
	330	10.0	20.0	1890	0.023	10000	0.6	5.0	5.0	—	EEUFS1H331()	200	500
	390	10.0	25.0	2150	0.022	10000	0.6	5.0	5.0	—	EEUFS1H391L()	200	500
	680	12.5	25.0	2660	0.018	10000	0.6	5.0	5.0	—	EEUFS1H681()	200	500
	820	12.5	30.0	3160	0.016	10000	0.8	5.0	—	—	EEUFS1H821L	100	—
	1000	12.5	35.0	3270	0.014	10000	0.8	5.0	—	—	EEUFS1H102L	100	—
	1200	16.0	25.0	3320	0.016	10000	0.8	7.5	7.5	—	EEUFS1H122()	100	250
63	27	5.0	11.0	175	0.510	5000	0.5	2.0	5.0	2.5	EEUFS1J270()	200	2000
	120	8.0	15.0	741	0.068	8000	0.6	3.5	5.0	—	EEUFS1J121L()	200	1000
		10.0	12.5	761	0.063	6000	0.6	5.0	5.0	—	EEUFS1J121()	200	500
	180	8.0	20.0	930	0.050	9000	0.6	3.5	5.0	—	EEUFS1J181L()	200	1000
		10.0	16.0	1073	0.045	8000	0.6	5.0	5.0	—	EEUFS1J181()	200	500
	330	10.0	25.0	1500	0.033	10000	0.6	5.0	5.0	—	EEUFS1J331L()	200	500
	390	12.5	20.0	1582	0.033	10000	0.6	5.0	5.0	—	EEUFS1J391()	200	500
	560	12.5	25.0	1995	0.027	10000	0.6	5.0	5.0	—	EEUFS1J561()	200	500
	680	16.0	20.0	2153	0.029	10000	0.8	7.5	7.5	—	EEUFS1J681S()	100	250
	820	12.5	35.0	2780	0.021	10000	0.8	5.0	—	—	EEUFS1J821L	100	—
	1000	16.0	25.0	2988	0.024	10000	0.8	7.5	7.5	—	EEUFS1J102()	100	250

*1: Ripple current (100 kHz / +105 °C)

*2: Impedance (100 kHz / +20 °C)

• When requesting taped product, please put the letter "B" or "H" between the "()".

Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

• Please refer to the page of "Taping dimensions".

Characteristics list

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)			Part No.	Min. Packaging Q'ty (PCS)	
		øD	L	Ripple current ^{*1} (mA rms)	Impe- dance ^{*2} (Ω)	Endu- rance (h)	Lead dia. (øD)	Lead space			Straight leads	Taping
								Straight	Taping *B			
80	47	8.0	11.5	490	0.160	6000	0.6	3.5	5.0	EEUFS1K470()	200	1000
	56	8.0	11.5	490	0.160	6000	0.6	3.5	5.0	EEUFS1K560()	200	1000
	68	8.0	15.0	590	0.112	8000	0.6	3.5	5.0	EEUFS1K680()	200	1000
	82	8.0	15.0	590	0.112	8000	0.6	3.5	5.0	EEUFS1K820()	200	1000
	100	8.0	20.0	810	0.096	9000	0.6	3.5	5.0	EEUFS1K101L()	200	1000
		10.0	12.5	600	0.112	6000	0.6	5.0	5.0	EEUFS1K101()	200	500
	120	8.0	20.0	810	0.096	9000	0.6	3.5	5.0	EEUFS1K121L()	200	1000
	150	10.0	16.0	930	0.072	8000	0.6	5.0	5.0	EEUFS1K151()	200	500
	180	10.0	20.0	1120	0.054	10000	0.6	5.0	5.0	EEUFS1K181()	200	500
	220	10.0	20.0	1120	0.054	10000	0.6	5.0	5.0	EEUFS1K221()	200	500
		10.0	25.0	1200	0.044	10000	0.6	5.0	5.0	EEUFS1K221L()	200	500
	270	10.0	25.0	1200	0.044	10000	0.6	5.0	5.0	EEUFS1K271L()	200	500
		12.5	20.0	1400	0.043	10000	0.6	5.0	5.0	EEUFS1K271()	200	500
	390	12.5	25.0	1800	0.034	10000	0.6	5.0	5.0	EEUFS1K391()	200	500
	470	12.5	30.0	2200	0.030	10000	0.8	5.0	—	EEUFS1K471L()	100	—
		16.0	20.0	1450	0.032	10000	0.8	7.5	7.5	EEUFS1K471S()	100	250
	560	12.5	35.0	2380	0.023	10000	0.8	5.0	—	EEUFS1K561L()	100	—
	680	16.0	25.0	2500	0.025	10000	0.8	7.5	7.5	EEUFS1K681()	100	250
100	27	8.0	11.5	490	0.160	6000	0.6	3.5	5.0	EEUFS2A270()	200	1000
	33	8.0	11.5	490	0.160	6000	0.6	3.5	5.0	EEUFS2A330()	200	1000
	39	8.0	15.0	590	0.112	8000	0.6	3.5	5.0	EEUFS2A390()	200	1000
	47	8.0	15.0	590	0.112	8000	0.6	3.5	5.0	EEUFS2A470L()	200	1000
		10.0	12.5	600	0.112	6000	0.6	5.0	5.0	EEUFS2A470()	200	500
	56	8.0	20.0	810	0.096	9000	0.6	3.5	5.0	EEUFS2A560L()	200	1000
	68	8.0	20.0	810	0.096	9000	0.6	3.5	5.0	EEUFS2A680L()	200	1000
		10.0	16.0	930	0.072	8000	0.6	5.0	5.0	EEUFS2A680()	200	500
	120	10.0	20.0	1120	0.054	10000	0.6	5.0	5.0	EEUFS2A121()	200	500
		10.0	25.0	1200	0.044	10000	0.6	5.0	5.0	EEUFS2A121L()	200	500
	150	10.0	25.0	1200	0.044	10000	0.6	5.0	5.0	EEUFS2A151L()	200	500
		12.5	20.0	1400	0.043	10000	0.6	5.0	5.0	EEUFS2A151()	200	500
	180	12.5	25.0	1800	0.034	10000	0.6	5.0	5.0	EEUFS2A181()	200	500
	220	12.5	25.0	1800	0.034	10000	0.6	5.0	5.0	EEUFS2A221()	200	500
	270	12.5	30.0	2200	0.030	10000	0.8	5.0	—	EEUFS2A271L()	100	—
		16.0	20.0	1450	0.032	10000	0.8	7.5	7.5	EEUFS2A271S()	100	250
	330	12.5	35.0	2380	0.023	10000	0.8	5.0	—	EEUFS2A331L()	100	—
	390	16.0	25.0	2500	0.025	10000	0.8	7.5	7.5	EEUFS2A391()	100	250

*1: Ripple current (100 kHz / +105 °C)

*2: Impedance (100 kHz / +20 °C)

• When requesting taped product, please put the letter "B" between the "()".

Lead wire pitch *B=5 mm, 7.5 mm.

• Please refer to the page of "Taping dimensions".