

Radial Lead Type

Series : **FM** Type : **A**



Features

- Low impedance (40 % to 70 % less than FC Series)
- Endurance : 105 °C 2000 h to 7000 h
- RoHS compliant

Attention

- Not applicable for automotive

Specifications

Category temperature range	-40 °C to +105 °C							
Rated voltage range	6.3 V.DC to 50 V.DC							
Capacitance range	22 µF to 6800 µF							
Capacitance tolerance	±20 % (120 Hz/+20 °C)							
Leakage current	$I \leq 0.01 CV$ (µA) After 2 minutes							
Dissipation factor (tan δ)	V.DC	6.3	10	16	25	35	50	(max.) (120 Hz/+20 °C)
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	
Add 0.02 per 1000 µF for products of 1000 µF or more.								
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 below.							
	Duration							
	$\phi 5$ to $\phi 6.3$: 2000 hours, $\phi 8 \times 11.5$ to $\phi 8 \times 15$: 3000 hours $\phi 8 \times 20$ to $\phi 10 \times 16$: 4000 hours, $\phi 10 \times 20$ to $\phi 12.5 \times 20$ / $\phi 16 \times 20$: 5000 hours $\phi 12.5 \times 25$ to $\phi 12.5 \times 35$ / $\phi 16 \times 25$: 7000 hours							
	Capacitance change	Within ±25 % of the initial value (6.3 V.DC to 10 V.DC : ±30 %)						
tan δ	≤ 200 % of the initial limit							
DC leakage current	Within the initial limit							
Shelf life	After storage for 1000 hours 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

Rated voltage (V.DC)	Capacitance (µF)	Frequency (Hz)				
		60	120	1 k	10 k	100 k
6.3 to 50	22 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 6800	0.75	0.80	0.95	1.00	1.00

Dimensions

(Unit : mm)

φD	5	6.3	8	10	12.5		16
L	—	—	—	—	12.5 to 25	30 to 40	—
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0		7.5

Case size/ Impedance/ Ripple current

Rated voltage (V.DC)	Case size (mm) (ϕ D×L)	6.3 V.DC to 35 V.DC			50 V.DC		
		Impedance (Ω /100 kHz)		Ripple current (mA r.m.s./100 kHz)	Impedance (Ω /100 kHz)		Ripple current (mA r.m.s./100 kHz)
		+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	0.140	0.460	405
	8 × 11.5	0.056	0.168	950	0.061	0.183	870
	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	0.038	0.114	1290	0.042	0.126	1170
	10 × 16	0.026	0.078	1790	0.030	0.090	1650
	10 × 20	0.019	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	0.022	0.055	2260
	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	0.019	0.048	2870
	16 × 25	0.014	0.035	3820	0.016	0.040	3320

Characteristics list

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)			Part No.	Min. Packaging Qty		
		φD	L	Ripple current (100 kHz) (+105 °C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C) (Ω)	Endurance (hours)	Lead dia. φd	Lead space			Long lead (pcs)	Taping (pcs)	
								Straight	Taping *B				Taping *H
6.3	150	5	11	280	0.300	2000	0.5	2.0	5.0	2.5	EEUFM0J151()	200	2000
	330	6.3	11.2	455	0.130	2000	0.5	2.5	5.0	2.5	EEUFM0J331()	200	2000
	560	8	11.5	950	0.056	3000	0.6	3.5	5.0		EEUFM0J561()	200	1000
	820	8	15	1240	0.041	3000	0.6	3.5	5.0		EEUFM0J821L()	200	1000
	1000	10	12.5	1290	0.038	4000	0.6	5.0	5.0		EEUFM0J102()	200	500
	1200	8	20	1560	0.030	4000	0.6	3.5	5.0		EEUFM0J122L()	200	1000
		10	16	1790	0.026	4000	0.6	5.0	5.0		EEUFM0J122()	200	500
	1500	10	20	2180	0.019	5000	0.6	5.0	5.0		EEUFM0J152()	200	500
	2200	10	25	2470	0.018	5000	0.6	5.0	5.0		EEUFM0J222L()	200	500
	3300	12.5	20	2600	0.018	5000	0.6	5.0	5.0		EEUFM0J332()	200	500
	3900	12.5	25	3190	0.015	7000	0.6	5.0	5.0		EEUFM0J392()	200	500
	4700	12.5	30	3630	0.013	7000	0.8	5.0			EEUFM0J472L	100	
	5600	12.5	35	3750	0.012	7000	0.8	5.0			EEUFM0J562L	100	
		16	20	3300	0.017	5000	0.8	7.5	7.5		EEUFM0J562S()	100	250
	6800	16	25	3820	0.014	7000	0.8	7.5	7.5		EEUFM0J682()	100	250
10	100	5	11	280	0.300	2000	0.5	2.0	5.0	2.5	EEUFM1A101()	200	2000
	220	6.3	11.2	455	0.130	2000	0.5	2.5	5.0	2.5	EEUFM1A221()	200	2000
	470	8	11.5	950	0.056	3000	0.6	3.5	5.0		EEUFM1A471()	200	1000
	680	8	15	1240	0.041	3000	0.6	3.5	5.0		EEUFM1A681L()	200	1000
		10	12.5	1290	0.038	4000	0.6	5.0	5.0		EEUFM1A681()	200	500
	1000	8	20	1560	0.030	4000	0.6	3.5	5.0		EEUFM1A102L()	200	1000
		10	16	1790	0.026	4000	0.6	5.0	5.0		EEUFM1A102()	200	500
	1200	10	20	2180	0.019	5000	0.6	5.0	5.0		EEUFM1A122()	200	500
	1500	10	25	2470	0.018	5000	0.6	5.0	5.0		EEUFM1A152L()	200	500
	2200	12.5	20	2600	0.018	5000	0.6	5.0	5.0		EEUFM1A222()	200	500
	3300	12.5	25	3190	0.015	7000	0.6	5.0	5.0		EEUFM1A332()	200	500
	3900	12.5	30	3630	0.013	7000	0.8	5.0			EEUFM1A392L	100	
		16	20	3300	0.017	5000	0.8	7.5	7.5		EEUFM1A392S()	100	250
	4700	12.5	35	3750	0.012	7000	0.8	5.0			EEUFM1A472L	100	
	5600	16	25	3820	0.014	7000	0.8	7.5	7.5		EEUFM1A562()	100	250
16	68	5	11	280	0.300	2000	0.5	2.0	5.0	2.5	EEUFM1C680()	200	2000
	120	6.3	11.2	455	0.130	2000	0.5	2.5	5.0	2.5	EEUFM1C121()	200	2000
	330	8	11.5	950	0.056	3000	0.6	3.5	5.0		EEUFM1C331()	200	1000
	470	8	15	1240	0.041	3000	0.6	3.5	5.0		EEUFM1C471L()	200	1000
		10	12.5	1290	0.038	4000	0.6	5.0	5.0		EEUFM1C471()	200	500
	680	8	20	1560	0.030	4000	0.6	3.5	5.0		EEUFM1C681L()	200	1000
		10	16	1790	0.026	4000	0.6	5.0	5.0		EEUFM1C681()	200	500
	1000	10	20	2180	0.019	5000	0.6	5.0	5.0		EEUFM1C102()	200	500
	1200	10	25	2470	0.018	5000	0.6	5.0	5.0		EEUFM1C122L()	200	500
	1500	12.5	20	2600	0.018	5000	0.6	5.0	5.0		EEUFM1C152()	200	500
	2200	12.5	25	3190	0.015	7000	0.6	5.0	5.0		EEUFM1C222()	200	500
	2700	12.5	30	3630	0.013	7000	0.8	5.0			EEUFM1C272L	100	
		16	20	3300	0.017	5000	0.8	7.5	7.5		EEUFM1C272S()	100	250
	3300	12.5	35	3750	0.012	7000	0.8	5.0			EEUFM1C332L	100	
	3900	16	25	3820	0.014	7000	0.8	7.5	7.5		EEUFM1C392()	100	250

· 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.DC)	Cap. (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Qty	
		φD	L	Ripple current (100 kHz) (+105 °C) (mA r.m.s.)	Impedance (100 kHz) (+20 °C) (Ω)	Endurance (hours)	Lead dia. φd	Lead space				Long lead (pcs)	Taping (pcs)
								Straight	Taping *B	Taping *H			
25	47	5	11	280	0.300	2000	0.5	2.0	5.0	2.5	EEUFM1E470()	200	2000
	100	6.3	11.2	455	0.130	2000	0.5	2.5	5.0	2.5	EEUFM1E101()	200	2000
	220	8	11.5	950	0.056	3000	0.6	3.5	5.0		EEUFM1E221()	200	1000
	330	8	15	1240	0.041	3000	0.6	3.5	5.0		EEUFM1E331L()	200	1000
		10	12.5	1290	0.038	4000	0.6	5.0	5.0		EEUFM1E331()	200	500
	470	8	20	1560	0.030	4000	0.6	3.5	5.0		EEUFM1E471L()	200	1000
		10	16	1790	0.026	4000	0.6	5.0	5.0		EEUFM1E471()	200	500
	680	10	20	2180	0.019	5000	0.6	5.0	5.0		EEUFM1E681()	200	500
	820	10	25	2470	0.018	5000	0.6	5.0	5.0		EEUFM1E821L()	200	500
	1000	12.5	20	2600	0.018	5000	0.6	5.0	5.0		EEUFM1E102()	200	500
	1500	12.5	25	3190	0.015	7000	0.6	5.0	5.0		EEUFM1E152()	200	500
	1800	12.5	30	3630	0.013	7000	0.8	5.0			EEUFM1E182L	100	
		16	20	3300	0.017	5000	0.8	7.5	7.5		EEUFM1E182S()	100	250
	2200	12.5	35	3750	0.012	7000	0.8	5.0			EEUFM1E222L	100	
2700	16	25	3820	0.014	7000	0.8	7.5	7.5		EEUFM1E272()	100	250	
35	33	5	11	280	0.300	2000	0.5	2.0	5.0	2.5	EEUFM1V330()	200	2000
	68	6.3	11.2	455	0.130	2000	0.5	2.5	5.0	2.5	EEUFM1V680()	200	2000
	150	8	11.5	950	0.056	3000	0.6	3.5	5.0		EEUFM1V151()	200	1000
	220	8	15	1240	0.041	3000	0.6	3.5	5.0		EEUFM1V221L()	200	1000
		10	12.5	1290	0.038	4000	0.6	5.0	5.0		EEUFM1V221()	200	500
	330	8	20	1560	0.030	4000	0.6	3.5	5.0		EEUFM1V331L()	200	1000
		10	16	1790	0.026	4000	0.6	5.0	5.0		EEUFM1V331()	200	500
	470	10	20	2180	0.019	5000	0.6	5.0	5.0		EEUFM1V471()	200	500
	560	10	25	2470	0.018	5000	0.6	5.0	5.0		EEUFM1V561L()	200	500
	680	12.5	20	2600	0.018	5000	0.6	5.0	5.0		EEUFM1V681()	200	500
	1000	12.5	25	3190	0.015	7000	0.6	5.0	5.0		EEUFM1V102()	200	500
	1200	12.5	30	3630	0.013	7000	0.8	5.0			EEUFM1V122L	100	
		16	20	3300	0.017	5000	0.8	7.5	7.5		EEUFM1V122S()	100	250
	1500	12.5	35	3750	0.012	7000	0.8	5.0			EEUFM1V152L	100	
1800	16	25	3820	0.014	7000	0.8	7.5	7.5		EEUFM1V182()	100	250	
50	22	5	11	250	0.340	2000	0.5	2.0	5.0	2.5	EEUFM1H220()	200	2000
	56	6.3	11.2	405	0.140	2000	0.5	2.5	5.0	2.5	EEUFM1H560()	200	2000
	100	8	11.5	870	0.061	3000	0.6	3.5	5.0		EEUFM1H101()	200	1000
	120	8	15	1140	0.045	3000	0.6	3.5	5.0		EEUFM1H121L()	200	1000
	150	10	12.5	1170	0.042	4000	0.6	5.0	5.0		EEUFM1H151()	200	500
	180	8	20	1430	0.033	4000	0.6	3.5	5.0		EEUFM1H181L()	200	1000
	220	10	16	1650	0.030	4000	0.6	5.0	5.0		EEUFM1H221()	200	500
	270	10	20	1890	0.023	5000	0.6	5.0	5.0		EEUFM1H271()	200	500
	330	10	25	2150	0.022	5000	0.6	5.0	5.0		EEUFM1H331L()	200	500
	470	12.5	20	2260	0.022	5000	0.6	5.0	5.0		EEUFM1H471()	200	500
	560	12.5	25	2660	0.018	7000	0.6	5.0	5.0		EEUFM1H561()	200	500
	680	12.5	30	3160	0.016	7000	0.8	5.0			EEUFM1H681L	100	
	820	12.5	35	3270	0.014	7000	0.8	5.0			EEUFM1H821L	100	
		16	20	2870	0.019	5000	0.8	7.5	7.5		EEUFM1H821S()	100	250
1000	16	25	3320	0.016	7000	0.8	7.5	7.5		EEUFM1H102()	100	250	

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