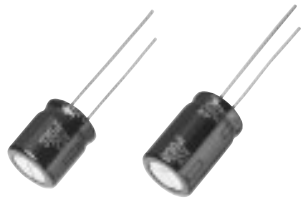
Radial Lead Type

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



■ Features

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

■ Specifications

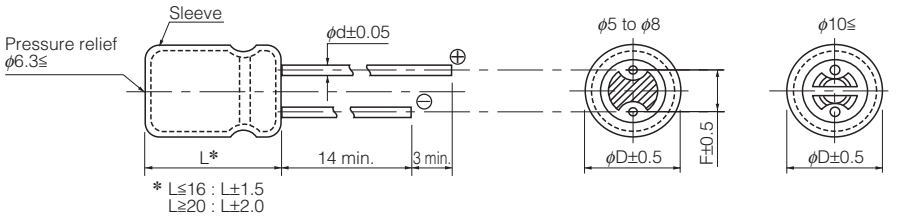
Category Temp. Range	−40 °C to +105 °C							
Rated W.V. Range	6.3 V.DC to 50 V.DC							
Nominal Cap. Range	22 µF to 6800 µF							
Capacitance Tolerance	±20 % (120 Hz/+20 °C)							
DC Leakage Current	I ≦ 0.01 CV (µA) After 2 minutes							
tan δ	W.V.	6.3	10	16	25	35	50	(max.) (120 Hz/+20 °C)
	tan 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 ϕ5 to ϕ6.3 : 2000 hours, ϕ8×11.5 to ϕ8×15: 3000 hours ϕ8×20 to ϕ10×16 : 4000 hours, ϕ10×20 to ϕ12.5×20/ ϕ16×20: 5000 hours ϕ12.5×25 to ϕ12.5×35/ ϕ16×25 : 7000 hours							
	Capacitance change	±25 % of initial measured value (6.3 V to 10 V : ±30 %)						
	tan δ	≦ 200 % of initial specified value						
	DC leakage current	≦ initial specified value						
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

W.V.(V.DC)	Cap (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 in mm (not to scale)

[mm]



(mm)

Body Dia. ϕD	5	6.3	8	10	12.5		16
Body Length L	—	—	—	—	12.5 to 25	30 to 40	—
Lead Dia. ϕd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
Lead space F	2.0	2.5	3.5	5.0	5.0		7.5

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■ Case size/Impedance/Ripple current

W.V.(V.DC) / Case size (φD×L)	6.3 V to 35 V			50 V		
	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

■ Standard Products

W.V.	Cap. (±20 %)	Case size		Specification			Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (100 kHz) (+105 °C)	Imped-ance (100 kHz) (+20 °C)	Endur-ance	Lead Dia.	Lead Space				Long Lead	Taping
								Straight	Taping ✻B	Taping ✻H			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)	(Ω)	(hours)	(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
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" of "H" between the "( )". Lead wire pitch B=5 mm, 7.5 mm, H=2.5 mm. The taping dimensions are explained on EE189 of our Catalog. Please use it as a reference guide.

■ Standard Products

W.V.	Cap. (±20 %)	Case size		Specification			Lead Length				Part No.	Min. Packaging Q'ty	
		Dia.	Length	Ripple Current (100 kHz) (+105 °C)	Imped-ance (100 kHz) (+20 °C)	Endur-ance	Lead Dia.	Lead Space				Long Lead	Taping
								Straight	Taping ✻B	Taping ✻H			
(V)	(μF)	(mm)	(mm)	(mA r.m.s.)	(Ω)	(hours)	(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
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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