

## RF series

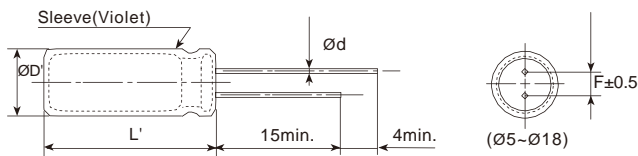
- Ultra-low impedance, high ripple current
- Endurance: +105°C 3,000~6,000 hours
- RoHS Compliant



### SPECIFICATIONS

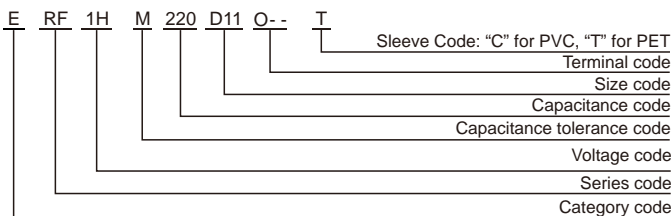
Items	Characteristics										
Category Temperature Range	-40~+105°C										
Rated Voltage Range	6.3~120 V <sub>dc</sub>										
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)										
Leakage Current	I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes)										
Dissipation Factor (tan δ)	Rated Voltage(V <sub>dc</sub> ) 6.3 10 16 25 35 50 63 80 100 120										
	tan (max.) 0.15 0.14 0.12 0.10 0.10 0.08 0.08 0.08 0.08 0.12										
When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz)											
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(V <sub>dc</sub> ) 6.3 10 16 25 35 50 63 80 100 120										
	Z(-25°C)/Z(+20°C) 5 4 3 3										
	Z(-40°C)/Z(+20°C) 10 8 5 4 6 (at 120Hz)										
Endurance	The following specifications shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105 °C.										
	Capacitance Change ±25% of the initial value										
	D.F. (tan δ) 200% of the initial specified value										
	Leakage Current The initial specified value										
<table border="1"> <thead> <tr> <th>Dia. (mm)</th> <th>Load life (hours)</th> </tr> </thead> <tbody> <tr> <td>ØD 6.3</td> <td>3,000</td> </tr> <tr> <td>ØD=8</td> <td>4,000</td> </tr> <tr> <td>ØD=10</td> <td>5,000</td> </tr> <tr> <td>ØD 12.5</td> <td>6,000</td> </tr> </tbody> </table>		Dia. (mm)	Load life (hours)	ØD 6.3	3,000	ØD=8	4,000	ØD=10	5,000	ØD 12.5	6,000
Dia. (mm)	Load life (hours)										
ØD 6.3	3,000										
ØD=8	4,000										
ØD=10	5,000										
ØD 12.5	6,000										
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours.										
	Capacitance Change ±25% of the initial value										
	D.F. (tan δ) 200% of the initial specified value										
	Leakage Current 200% of the initial specified value										

### DIMENSIONS[mm]



ØD	5	6.3	8	10	12.5	16	18
Ød	0.5	0.5	0.5	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ØD'	ØD+0.5max.						
L'	L+2max.						

### PART NUMBERING SYSTEM



### RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Freq.(Hz)	120	1k	10k	100k
Cap.<220	0.40	0.75	0.90	1.00
220 Cap.<680	0.50	0.85	0.94	1.00
680 Cap.<2200	0.60	0.87	0.95	1.00
2200 Cap.<4700	0.75	0.90	0.95	1.00
Cap. 4700	0.85	0.95	0.98	1.00

**RF series**

■ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Size DxL(mm)	tan	Impedance (max/20°C, 100kHz)	Rated ripple current (mA <sub>RMS</sub> /105°C, 100kHz)	Part Number	
6.3(0J)	150	5x11	0.15	0.29	300	ERF0JM151D11OT	
		6.3x9	0.15	0.37	270	ERF0JM151E09OT	
	220	6.3x11	0.15	0.205	377	ERF0JM221E11OT	
		8x9	0.15	0.26	337	ERF0JM221F09OT	
	330	6.3x11	0.15	0.12	455	ERF0JM331E11OT	
		8x9	0.15	0.15	408	ERF0JM331F09OT	
	470	8x11	0.15	0.09	632	ERF0JM471F11OT	
		10x9	0.15	0.12	565	ERF0JM471G09OT	
	820	8x16	0.15	0.055	1045	ERF0JM821F16OT	
	1000	8x16	0.15	0.052	1000	ERF0JM102F16OT	
	1200	8x20	0.15	0.04	1300	ERF0JM122F20OT	
		10x16	0.15	0.037	1480	ERF0JM122G16OT	
	1500	10x20	0.15	0.022	1870	ERF0JM152G20OT	
	2200	10x20	0.17	0.021	2200	ERF0JM222G20OT	
	2700	10x25	0.17	0.02	2250	ERF0JM272G25OT	
	3300	12.5x20	0.19	0.02	2410	ERF0JM332W20OT	
	3900	12.5x25	0.19	0.017	2820	ERF0JM392W25OT	
	4700	12.5x30	0.21	0.015	3340	ERF0JM472W30OT	
	5600	12.5x35	0.23	0.014	3400	ERF0JM562W35OT	
		16x20	0.23	0.017	3190	ERF0JM562L20OT	
6800	16x25	0.25	0.015	3510	ERF0JM682L25OT		
10(1A)	100	5x11	0.14	0.29	300	ERF1AM101D11OT	
		6.3x9	0.14	0.37	270	ERF1AM101E09OT	
	220	6.3x11	0.14	0.12	455	ERF1AM221E11OT	
		8x9	0.14	0.15	408	ERF1AM221F09OT	
	470	8x11	0.14	0.071	810	ERF1AM471F11OT	
		10x9	0.14	0.092	720	ERF1AM471G09OT	
	680	8x16	0.14	0.055	1046	ERF1AM681F16OT	
		10x12.5	0.14	0.052	1080	ERF1AM681G1BOT	
	1000	8x20	0.14	0.04	1300	ERF1AM102F20OT	
		10x16	0.14	0.037	1480	ERF1AM102G16OT	
	1200	10x20	0.14	0.022	1870	ERF1AM122G20OT	
	1500	10x20	0.14	0.021	2220	ERF1AM152G20OT	
	2200	12.5x20	0.16	0.02	2410	ERF1AM222W20OT	
	3300	12.5x25	0.18	0.017	2820	ERF1AM332W25OT	
	3900	12.5x30	0.18	0.015	3340	ERF1AM392W30OT	
	4700	12.5x35	0.20	0.014	3450	ERF1AM472W35OT	
	5600	16x25	0.22	0.015	3510	ERF1AM562L25OT	
	16(1C)	56	5x11	0.12	0.29	300	ERF1CM560D11OT
			6.3x9	0.12	0.37	270	ERF1CM560E09OT
		120	6.3x11	0.12	0.12	455	ERF1CM121E11OT
8x9			0.12	0.15	408	ERF1CM121F09OT	
150		6.3x11	0.12	0.096	632	ERF1CM151E11OT	
		8x9	0.12	0.12	565	ERF1CM151F09OT	
220		6.3x12	0.12	0.084	721	ERF1CM221E12OT	
		8x9	0.12	0.1	650	ERF1CM221F09OT	
330		8x11	0.12	0.071	810	ERF1CM331F11OT	
		10x9	0.12	0.092	720	ERF1CM331G09OT	
470		8x16	0.12	0.055	1045	ERF1CM471F16OT	
		10x12.5	0.12	0.052	1080	ERF1CM471G1BOT	
680		8x20	0.12	0.04	1300	ERF1CM681F20OT	
		10x16	0.12	0.04	1480	ERF1CM681G16OT	
1000		10x20	0.12	0.022	1870	ERF1CM102G20OT	
1200		10x25	0.12	0.021	2200	ERF1CM122G25OT	
1500		12.5x20	0.12	0.02	2410	ERF1CM152W20OT	
2200		12.5x25	0.14	0.017	2820	ERF1CM222W25OT	
2700		12.5x30	0.14	0.015	3340	ERF1CM272W30OT	
		16x20	0.14	0.017	3190	ERF1CM272L20OT	
3300	12.5x35	0.16	0.014	3450	ERF1CM332W35OT		
	16x25	0.16	0.016	3350	ERF1CM332L25OT		
3900	16x25	0.16	0.015	3510	ERF1CM392L25OT		

WV (Vdc)	Cap (μF)	Size DxL(mm)	tan	Impedance (max/20°C, 100kHz)	Rated ripple current (mA <sub>RMS</sub> /105°C, 100kHz)	Part Number
25(1E)	47	5x11	0.10	0.29	300	ERF1EM470D11OT
		6.3x9	0.10	0.37	270	ERF1EM470E09OT
	100	6.3x11	0.10	0.12	455	ERF1EM101E11OT
		8x9	0.10	0.15	408	ERF1EM101F09OT
	220	8x11	0.10	0.071	810	ERF1EM221F11OT
		10x9	0.10	0.092	720	ERF1EM221G09OT
	330	8x16	0.10	0.055	1045	ERF1EM331F16OT
		10x12.5	0.10	0.052	1080	ERF1EM331G1BOT
	390	8x20	0.10	0.044	1236	ERF1EM391F20OT
	470	10x16	0.10	0.037	1480	ERF1EM471G16OT
	560	10x16	0.10	0.03	1675	ERF1EM561G16OT
	680	10x20	0.10	0.022	1870	ERF1EM681G20OT
	820	10x25	0.10	0.021	2200	ERF1EM821G25OT
	1000	12.5x20	0.10	0.019	2550	ERF1EM102W20OT
		1500	12.5x25	0.10	0.017	2820
	1800	12.5x30	0.10	0.015	3340	ERF1EM182W30OT
		16x20	0.10	0.017	3190	ERF1EM182L20OT
	2200	12.5x35	0.12	0.014	3450	ERF1EM222W35OT
	2700	16x25	0.12	0.015	3510	ERF1EM272L25OT
	35(1V)	33	5x11	0.10	0.29	300
6.3x9			0.10	0.37	270	ERF1VM330E09OT
56		6.3x11	0.10	0.12	455	ERF1VM560E11OT
		8x9	0.10	0.15	408	ERF1VM560F09OT
100		8x11	0.10	0.095	632	ERF1VM101F11OT
		10x9	0.10	0.12	565	ERF1VM101G09OT
150		8x11	0.10	0.071	810	ERF1VM151F11OT
		10x9	0.10	0.092	720	ERF1VM151G09OT
220		8x16	0.10	0.055	1045	ERF1VM221F16OT
		10x12.5	0.10	0.052	1080	ERF1VM221G1BOT
270		8x20	0.10	0.04	1300	ERF1VM271F20OT
330		10x16	0.10	0.037	1480	ERF1VM331G16OT
470		10x20	0.10	0.022	1870	ERF1VM471G20OT
560		10x25	0.10	0.021	2200	ERF1VM561G25OT
680		12.5x20	0.10	0.02	2410	ERF1VM681W20OT
1000		12.5x25	0.10	0.017	2820	ERF1VM102W25OT
		12.5x30	0.10	0.015	3340	ERF1VM122W30OT
1200		16x20	0.10	0.017	3190	ERF1VM122L20OT
		1500	12.5x35	0.10	0.014	3450
50(1H)		22	5x11	0.08	0.33	288
	6.3x9		0.08	0.43	260	ERF1HM220E09OT
	56	6.3x11	0.08	0.13	435	ERF1HM560E11OT
		8x9	0.08	0.17	390	ERF1HM560F09OT
	100	8x11	0.08	0.073	774	ERF1HM101F11OT
		10x9	0.08	0.095	695	ERF1HM101G09OT
	120	8x16	0.08	0.06	1000	ERF1HM121F16OT
	150	10x12.5	0.08	0.06	1029	ERF1HM151G1BOT
	180	8x20	0.08	0.045	1240	ERF1HM181F20OT
	220	10x16	0.08	0.041	1420	ERF1HM221G16OT
	270	10x20	0.08	0.029	1630	ERF1HM271G20OT
	330	10x25	0.08	0.027	1920	ERF1HM331G25OT
	470	12.5x20	0.08	0.026	2100	ERF1HM471W20OT
	560	12.5x25	0.08	0.022	2460	ERF1HM561W25OT
	680	12.5x30	0.08	0.02	2910	ERF1HM681W30OT
	820	12.5x35	0.08	0.018	3010	ERF1HM821W35OT
		16x20	0.08	0.022	2780	ERF1HM821L20OT
	1000	16x25	0.08	0.02	3060	ERF1HM102L25OT

# RF series

■ STANDARD RATINGS

WV (V <sub>dc</sub> )	Cap (μF)	Size D×L(mm)	tan	Impedance (max/20°C, 100kHz)	Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz)	Part Number
63(1J)	15	5×11	0.08	0.88	165	ERF1JM150D11OT
		6.3×9	0.08	1.14	148	ERF1JM150E09OT
	33	6.3×11	0.08	0.35	265	ERF1JM330E11OT
		8×9	0.08	0.45	235	ERF1JM330F09OT
	56	8×11	0.08	0.22	500	ERF1JM560F11OT
		10×9	0.08	0.28	450	ERF1JM560G09OT
	82	8×16	0.08	0.16	665	ERF1JM820F16OT
		10×12.5	0.08	0.11	690	ERF1JM820G1BOT
	120	8×20	0.08	0.12	820	ERF1JM121F20OT
		10×16	0.08	0.076	950	ERF1JM121G16OT
	180	10×20	0.08	0.056	1150	ERF1JM181G20OT
		12.5×16	0.08	0.072	1150	ERF1JM181W16OT
	220	10×25	0.08	0.046	1350	ERF1JM221G25OT
	270	12.5×20	0.08	0.041	1500	ERF1JM271W20OT
	390	12.5×25	0.08	0.031	1900	ERF1JM391W25OT
	470	12.5×30	0.08	0.028	2300	ERF1JM471W30OT
		16×20	0.08	0.032	2000	ERF1JM471L20OT
	560	12.5×35	0.08	0.024	2500	ERF1JM561W35OT
		12.5×40	0.08	0.021	2800	ERF1JM681W40OT
	680	16×25	0.08	0.025	2600	ERF1JM681L25OT
		18×20	0.08	0.03	2500	ERF1JM681M20OT
	820	16×30	0.08	0.021	2850	ERF1JM821L30OT
		18×25	0.08	0.024	2800	ERF1JM821M25OT
	1000	16×35	0.08	0.019	2900	ERF1JM102L35OT
	1200	16×40	0.08	0.018	3400	ERF1JM122L40OT
		18×30	0.08	0.02	3300	ERF1JM122M30OT
	1500	18×35	0.08	0.018	3400	ERF1JM152M35OT
	1800	18×40	0.08	0.017	3500	ERF1JM182M40OT
80(1B)	68	10×12.5	0.08	0.17	480	ERF1BM680G1BOT
	100	10×16	0.08	0.11	600	ERF1BM101G16OT
	120	10×20	0.08	0.084	800	ERF1BM121G20OT
		10×25	0.08	0.069	900	ERF1BM151G25OT
	150	12.5×16	0.08	0.11	750	ERF1BM151W16OT
		12.5×20	0.08	0.062	1100	ERF1BM221W20OT
	330	12.5×25	0.08	0.047	1250	ERF1BM331W25OT
		16×20	0.08	0.048	1350	ERF1BM331L20OT
	390	12.5×30	0.08	0.042	1500	ERF1BM391W30OT
		12.5×35	0.08	0.036	1650	ERF1BM471W35OT
	470	16×25	0.08	0.038	1700	ERF1BM471L25OT
		18×20	0.08	0.045	1500	ERF1BM471M20OT
	560	12.5×40	0.08	0.032	1800	ERF1BM561W40OT
	680	16×30	0.08	0.032	1850	ERF1BM681L30OT
		18×25	0.08	0.036	1750	ERF1BM681M25OT
	820	16×35	0.08	0.029	2000	ERF1BM821L35OT
		18×30	0.08	0.03	1900	ERF1BM821M30OT
	1000	16×40	0.08	0.027	2200	ERF1BM102L40OT
		18×35	0.08	0.027	2200	ERF1BM102M35OT
	1200	18×40	0.08	0.026	2700	ERF1BM122M40OT

WV (V <sub>dc</sub> )	Cap (μF)	Size D×L(mm)	tan	Impedance (max/20°C, 100kHz)	Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz)	Part Number
100(1K)	6.8	5×11	0.08	1.4	125	ERF1KM6R8D11OT
		6.3×9	0.08	1.8	110	ERF1KM6R8E09OT
	15	6.3×11	0.08	0.57	205	ERF1KM150E11OT
		8×9	0.08	0.74	180	ERF1KM150F09OT
	27	8×12	0.08	0.36	355	ERF1KM270F12OT
		10×9	0.08	0.47	320	ERF1KM270G09OT
	39	8×16	0.08	0.25	450	ERF1KM390F16OT
	47	10×12.5	0.08	0.17	480	ERF1KM470G1BOT
	56	8×20	0.08	0.19	565	ERF1KM560F20OT
	68	10×16	0.08	0.11	600	ERF1KM680G16OT
	82	10×20	0.08	0.084	800	ERF1KM820G20OT
	100	12.5×16	0.08	0.11	750	ERF1KM101W16OT
	120	10×25	0.08	0.069	900	ERF1KM121G25OT
	150	12.5×20	0.08	0.062	1100	ERF1KM151W20OT
	220	12.5×25	0.08	0.047	1250	ERF1KM221W25OT
		16×20	0.08	0.048	1350	ERF1KM221L20OT
	270	12.5×30	0.08	0.042	1500	ERF1KM271W30OT
		12.5×35	0.08	0.036	1650	ERF1KM331W35OT
	330	16×25	0.08	0.038	1700	ERF1KM331L25OT
		18×20	0.08	0.045	1500	ERF1KM331M20OT
	390	12.5×40	0.08	0.032	1800	ERF1KM391W40OT
		16×30	0.08	0.032	1850	ERF1KM471L30OT
	470	18×25	0.08	0.036	1750	ERF1KM471M25OT
		16×35	0.08	0.029	2000	ERF1KM561L35OT
	560	18×30	0.08	0.03	1900	ERF1KM561M30OT
		16×40	0.08	0.027	2200	ERF1KM681L40OT
	680	18×35	0.08	0.027	2200	ERF1KM681M35OT
		18×40	0.08	0.026	2700	ERF1KM821M40OT
120(2B)	10	6.3×11	0.12	5.5	80	ERF2BM100E11OT
	15	6.3×12	0.12	4.5	100	ERF2BM150E12OT
	18	8×9	0.12	4.0	120	ERF2BM180F09OT
	22	8×12	0.12	3.5	130	ERF2BM220F12OT
		8×16	0.12	3.0	220	ERF2BM330F16OT
	33	10×12.5	0.12	3.0	220	ERF2BM330G1BOT
		8×20	0.12	2.5	270	ERF2BM470F20OT
	47	10×16	0.12	2.5	270	ERF2BM470G16OT
		10×16	0.12	2.2	285	ERF2BM560G16OT
	68	10×16	0.12	2.0	285	ERF2BM680G16OT
	82	10×20	0.12	1.8	300	ERF2BM820G20OT
	100	10×25	0.12	1.5	380	ERF2BM101G25OT
	120	12.5×20	0.12	1.3	520	ERF2BM121W20OT
	150	12.5×25	0.12	1.0	570	ERF2BM151W25OT
	220	13×30	0.12	0.75	700	ERF2BM221K30OT
		16×20	0.12	0.75	700	ERF2BM221L20OT
	270	16×25	0.12	0.55	800	ERF2BM271L25OT
		18×20	0.12	0.55	800	ERF2BM271M20OT
	330	16×30	0.12	0.42	860	ERF2BM331L30OT
		18×25	0.12	0.42	860	ERF2BM331M25OT
470	16×40	0.12	0.30	960	ERF2BM471L40OT	
	18×30	0.12	0.30	960	ERF2BM471M30OT	

Radial Type