

## RF series

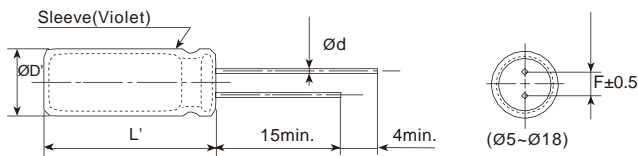
- Ultra-low impedance, high ripple current
- Endurance: +105°C 3,000~6,000 hours
- RoHS Compliant



### SPECIFICATIONS

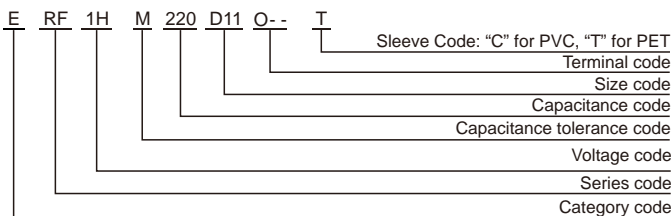
Items	Characteristics	
Category Temperature Range	-40~+105°C	
Rated Voltage Range	6.3~120 V <sub>dc</sub>	
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)	
Leakage Current	I ≤ 0.01CV or 3μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 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 δ (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
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 (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	
6.3(0J)	150	5×11	0.15	0.29	300	ERF0JM151D11OT	
		6.3×9	0.15	0.37	270	ERF0JM151E09OT	
	220	6.3×11	0.15	0.205	377	ERF0JM221E11OT	
		8×9	0.15	0.26	337	ERF0JM221F09OT	
	330	6.3×11	0.15	0.12	455	ERF0JM331E11OT	
		8×9	0.15	0.15	408	ERF0JM331F09OT	
	470	8×11	0.15	0.09	632	ERF0JM471F11OT	
		10×9	0.15	0.12	565	ERF0JM471G09OT	
	820	8×16	0.15	0.055	1045	ERF0JM821F16OT	
	1000	8×16	0.15	0.052	1000	ERF0JM102F16OT	
	1200	8×20	0.15	0.04	1300	ERF0JM122F20OT	
		10×16	0.15	0.037	1480	ERF0JM122G16OT	
	1500	10×20	0.15	0.022	1870	ERF0JM152G20OT	
	2200	10×20	0.17	0.021	2200	ERF0JM222G20OT	
	2700	10×25	0.17	0.02	2250	ERF0JM272G25OT	
	3300	12.5×20	0.19	0.02	2410	ERF0JM332W20OT	
	3900	12.5×25	0.19	0.017	2820	ERF0JM392W25OT	
	4700	12.5×30	0.21	0.015	3340	ERF0JM472W30OT	
	5600	12.5×35	0.23	0.014	3400	ERF0JM562W35OT	
		16×20	0.23	0.017	3190	ERF0JM562L20OT	
6800	16×25	0.25	0.015	3510	ERF0JM682L25OT		
10(1A)	100	5×11	0.14	0.29	300	ERF1AM101D11OT	
		6.3×9	0.14	0.37	270	ERF1AM101E09OT	
	220	6.3×11	0.14	0.12	455	ERF1AM221E11OT	
		8×9	0.14	0.15	408	ERF1AM221F09OT	
	470	8×11	0.14	0.071	810	ERF1AM471F11OT	
		10×9	0.14	0.092	720	ERF1AM471G09OT	
	680	8×16	0.14	0.055	1046	ERF1AM681F16OT	
		10×12.5	0.14	0.052	1080	ERF1AM681G1BOT	
	1000	8×20	0.14	0.04	1300	ERF1AM102F20OT	
		10×16	0.14	0.037	1480	ERF1AM102G16OT	
	1200	10×20	0.14	0.022	1870	ERF1AM122G20OT	
	1500	10×20	0.14	0.021	2220	ERF1AM152G20OT	
	2200	12.5×20	0.16	0.02	2410	ERF1AM222W20OT	
	3300	12.5×25	0.18	0.017	2820	ERF1AM332W25OT	
	3900	12.5×30	0.18	0.015	3340	ERF1AM392W30OT	
	4700	12.5×35	0.20	0.014	3450	ERF1AM472W35OT	
	5600	16×25	0.22	0.015	3510	ERF1AM562L25OT	
	16(1C)	56	5×11	0.12	0.29	300	ERF1CM560D11OT
			6.3×9	0.12	0.37	270	ERF1CM560E09OT
		120	6.3×11	0.12	0.12	455	ERF1CM121E11OT
8×9			0.12	0.15	408	ERF1CM121F09OT	
150		6.3×11	0.12	0.096	632	ERF1CM151E11OT	
		8×9	0.12	0.12	565	ERF1CM151F09OT	
220		6.3×12	0.12	0.084	721	ERF1CM221E12OT	
		8×9	0.12	0.1	650	ERF1CM221F09OT	
330		8×11	0.12	0.071	810	ERF1CM331F11OT	
		10×9	0.12	0.092	720	ERF1CM331G09OT	
470		8×16	0.12	0.055	1045	ERF1CM471F16OT	
		10×12.5	0.12	0.052	1080	ERF1CM471G1BOT	
680		8×20	0.12	0.04	1300	ERF1CM681F20OT	
		10×16	0.12	0.04	1480	ERF1CM681G16OT	
1000		10×20	0.12	0.022	1870	ERF1CM102G20OT	
1200		10×25	0.12	0.021	2200	ERF1CM122G25OT	
1500		12.5×20	0.12	0.02	2410	ERF1CM152W20OT	
2200		12.5×25	0.14	0.017	2820	ERF1CM222W25OT	
		12.5×30	0.14	0.015	3340	ERF1CM272W30OT	
2700		16×20	0.14	0.017	3190	ERF1CM272L20OT	
	12.5×35	0.16	0.014	3450	ERF1CM332W35OT		
3300	16×25	0.16	0.016	3350	ERF1CM332L25OT		
	16×25	0.16	0.015	3510	ERF1CM392L25OT		

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
25(1E)	47	5×11	0.10	0.29	300	ERF1EM470D11OT
		6.3×9	0.10	0.37	270	ERF1EM470E09OT
	100	6.3×11	0.10	0.12	455	ERF1EM101E11OT
		8×9	0.10	0.15	408	ERF1EM101F09OT
	220	8×11	0.10	0.071	810	ERF1EM221F11OT
		10×9	0.10	0.092	720	ERF1EM221G09OT
	330	8×16	0.10	0.055	1045	ERF1EM331F16OT
		10×12.5	0.10	0.052	1080	ERF1EM331G1BOT
	390	8×20	0.10	0.044	1236	ERF1EM391F20OT
	470	10×16	0.10	0.037	1480	ERF1EM471G16OT
	560	10×16	0.10	0.03	1675	ERF1EM561G16OT
	680	10×20	0.10	0.022	1870	ERF1EM681G20OT
	820	10×25	0.10	0.021	2200	ERF1EM821G25OT
	1000	12.5×20	0.10	0.019	2550	ERF1EM102W20OT
	1500	12.5×25	0.10	0.017	2820	ERF1EM152W25OT
	1800	12.5×30	0.10	0.015	3340	ERF1EM182W30OT
		16×20	0.10	0.017	3190	ERF1EM182L20OT
	2200	12.5×35	0.12	0.014	3450	ERF1EM222W35OT
	2700	16×25	0.12	0.015	3510	ERF1EM272L25OT
	35(1V)	33	5×11	0.10	0.29	300
6.3×9			0.10	0.37	270	ERF1VM330E09OT
56		6.3×11	0.10	0.12	455	ERF1VM560E11OT
		8×9	0.10	0.15	408	ERF1VM560F09OT
100		8×11	0.10	0.095	632	ERF1VM101F11OT
		10×9	0.10	0.12	565	ERF1VM101G09OT
150		8×11	0.10	0.071	810	ERF1VM151F11OT
		10×9	0.10	0.092	720	ERF1VM151G09OT
220		8×16	0.10	0.055	1045	ERF1VM221F16OT
		10×12.5	0.10	0.052	1080	ERF1VM221G1BOT
270		8×20	0.10	0.04	1300	ERF1VM271F20OT
330		10×16	0.10	0.037	1480	ERF1VM331G16OT
470		10×20	0.10	0.022	1870	ERF1VM471G20OT
560		10×25	0.10	0.021	2200	ERF1VM561G25OT
680		12.5×20	0.10	0.02	2410	ERF1VM681W20OT
1000		12.5×25	0.10	0.017	2820	ERF1VM102W25OT
1200		12.5×30	0.10	0.015	3340	ERF1VM122W30OT
		16×20	0.10	0.017	3190	ERF1VM122L20OT
1500		12.5×35	0.10	0.014	3450	ERF1VM152W35OT
50(1H)		22	5×11	0.08	0.33	288
	6.3×9		0.08	0.43	260	ERF1HM220E09OT
	56	6.3×11	0.08	0.13	435	ERF1HM560E11OT
		8×9	0.08	0.17	390	ERF1HM560F09OT
	100	8×11	0.08	0.073	774	ERF1HM101F11OT
		10×9	0.08	0.095	695	ERF1HM101G09OT
	120	8×16	0.08	0.06	1000	ERF1HM121F16OT
	150	10×12.5	0.08	0.06	1029	ERF1HM151G1BOT
	180	8×20	0.08	0.045	1240	ERF1HM181F20OT
	220	10×16	0.08	0.041	1420	ERF1HM221G16OT
	270	10×20	0.08	0.029	1630	ERF1HM271G20OT
	330	10×25	0.08	0.027	1920	ERF1HM331G25OT
	470	12.5×20	0.08	0.026	2100	ERF1HM471W20OT
	560	12.5×25	0.08	0.022	2460	ERF1HM561W25OT
	680	12.5×30	0.08	0.02	2910	ERF1HM681W30OT
	820	12.5×35	0.08	0.018	3010	ERF1HM821W35OT
		16×20	0.08	0.022	2780	ERF1HM821L20OT
	1000	16×25	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