

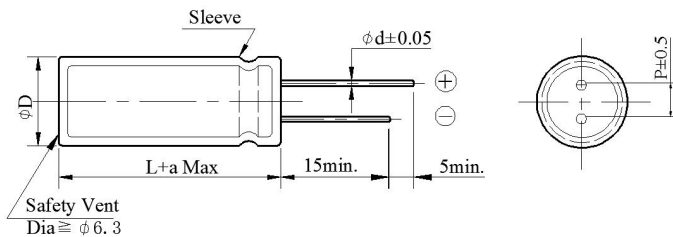
# RF Series

- Suitable for use in high ripple current capability.
- Miniaturized, Low E.S.R and low impedance.
- Load life 4,000~7,000 hours at 105°C.

## ◆ SPECIFICATIONS

Item	Performance Characteristics										
Category Temperature Range	-40 ~ +105°C										
Working Voltage Range	6.3 ~ 100Vdc										
Capacitance Range	6.8~6,800 μF										
Capacitance Tolerance	±20% (at 20°C and 120Hz)										
Dissipation Factor (tan δ) (at 20°C, 120Hz)	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100	
	tan δ (Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08	
The above values should be increased by 0.02 for every additional 1000μF											
Leakage Current	I ≤ 0.01CV or 3μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Apply rated voltage the rated voltage for 2 minutes.										
	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100	(at 120Hz)
Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2		
Z(-40°C)/Z(+20°C)	8	6	6	5	4	3	3	3	3		
Low Temperature Characteristics Impedance Ratio(MAX)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 4,000~7,000 hours at 105°C										
	Capacitance change	≒ ±25% of the initial value					Size		Life time (hours)		
Endurance	Dissipation factor(tan δ)	≒ 200% of the specified value					5Φ~ 6.3Φ		4,000		
	Leakage current	≒ specified value					8 Φ~ 10Φ		5,000		
							12.5Φ ~ 18Φ		7,000		
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 20°C after the rated voltage applied for 1,000 hours at 105°C without voltage applied.										
	Capacitance change	≒ ±25% of the initial value									
	Dissipation factor(tan δ)	≒ 200% of the specified value									
	Leakage current	≒ 200% of the specified value									
Others	Conforms to JIS-C-5101-4 (1998) and IEC 60384-4										

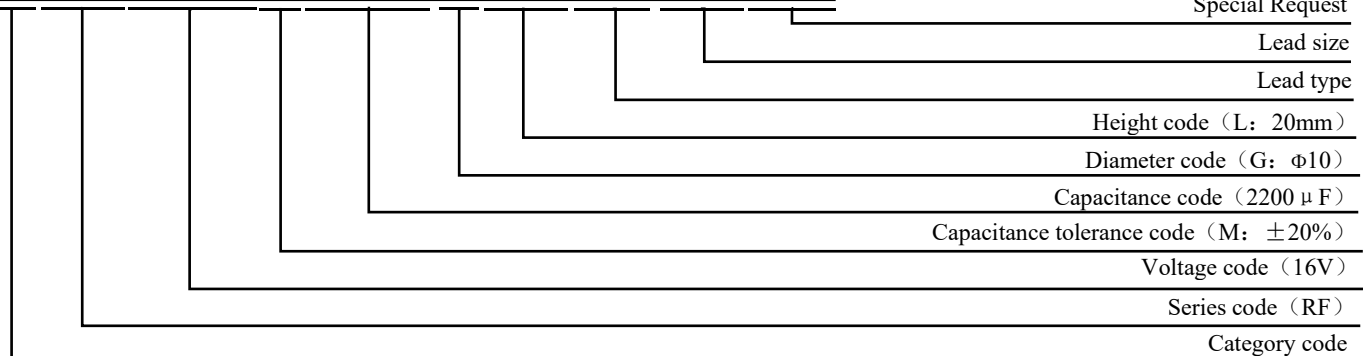
## ◆ DIMENSIONS(mm)



ΦD	5	6.3	8	10	12.5/13	16	18
ΦD	ΦD +0.5 Max						
Φd	0.5	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	7.5
a	< 20 L+1.5Max ≥ 20 L+2.0Max						

## ◆ PART NUMBER SYSTEM( Example :16V 2200μF)

E R F 0 1 6 M 2 2 2 G 2 0 L O 5 0 A A



**RF Series**

◆ Case size & Permissible rated ripple current: (mA rms) at 105°C / 100kHz

WV(V)	Nominal capacitance (uF)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz) 25°C	Max.Rated Ripple current @105°C/100kHz (mA rms)	WV(V)	Nominal capacitance (uF)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz) 25°C	Max.Rated Ripple current @105°C/100kHz (mA rms)
6.3	330	6.3x11	0.200	405	10	470	8x12	0.150	800
	560	8x12	0.150	960		680	8x12	0.140	850
	820	8x16	0.110	1200		10x13	0.130	1030	
	1000	8x12	0.120	1000		820	8x12	0.135	900
	1200	10x16	0.080	1430		10x13	0.098	1060	
	1500	10x16	0.060	1500		8x14	0.090	1000	
	1800	10x16	0.055	1550		10x13	0.080	1100	
	2200	10x12	0.075	1400		10x16	0.068	1430	
	3300	10x20	0.045	2100		1500	10x13	0.068	1200
	4700	13x20	0.035	3000		2200	13x20	0.055	2360
					4700	13x25	0.045	3000	
					6800	12.5x30	0.040	3300	
					10000	16x32	0.035	4210	
16	470	8x12	0.120	780	25	100	6.3x11	0.250	405
		10x13	0.090	1000		220	8x12	0.180	730
	680	8x14	0.088	850		330	8x12	0.160	750
		8x16	0.075	900		470	8x12	0.135	760
	820	10x16	0.068	1300		10x13	0.090	980	
	1000	8x16	0.075	1100		680	10x16	0.070	1180
		10x13	0.075	1120		820	8x20	0.068	1300
		10x16	0.070	1400			10x16	0.068	1300
	1500	10x16	0.060	1450			10x30	0.065	1500
	2200	10x20	0.055	2000		1000	8x20	0.066	1400
		10x30	0.040	2300			10x16	0.060	1400
	2700	16x21	0.040	3140		10x20	0.055	1600	
	3300	10x30	0.056	2500		1500	10x20	0.052	1650
	3900	16x26	0.030	3460		13x17	0.060	1800	
	4700	10x45	0.045	3650		2200	12.5x25	0.050	2200
					13x25	0.045	2300		
					2700	16x21	0.040	3100	
					3300	16x30	0.036	3500	
35	150	8x9	0.250	480	50	10	5x11	1.500	200
	220	8x12	0.180	720		22	5x11	0.900	238
		10x13	0.130	880		100	6.3x12	0.240	400
	330	8x14	0.160	780			8x9	0.250	390
		10x13	0.120	900			8x12	0.220	560
	470	8x16	0.068	930		150	8x14	0.190	700
		8x20	0.066	980		220	8x16	0.180	950
		10x20	0.065	1200			10x13	0.180	1000
	560	10x20	0.062	1300		330	8x16	0.168	1200
	680	10x16	0.075	1220		470	10x17	0.150	1400
		10x20	0.070	1390			10x20	0.090	1580
	820	10x20	0.070	1450		560	10x25	0.088	1680
	1000	10x17	0.068	1400		680	13x20	0.083	1900
		10x20	0.060	1560		820	13x25	0.060	2100
	1200	10x30	0.050	1800		1000	10x40	0.050	2400
		13x16	0.075	1650			13x20	0.065	2150
	1500	13x30	0.048	3000			13x25	0.058	2300
	1800	13x25	0.045	3000		1500	16x21	0.056	2500
2200	16x26	0.042	3500	2200	18x32	0.040	3500		
3300	18x26	0.040	3700	2700	18x40	0.035	3800		
4700	18x35	0.030	4200						

**RF Series**

◆ Case size & Permissible rated ripple current: (mA rms) at 105°C / 100KHz

WV(V)	Nominal capacitance (uF)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz) 25°C	Max. Rated Ripple current @105°C/100kHz (mA rms)	WV(V)	Nominal capacitance (uF)	Case Size ΦD×L (mm)	Impedance (Ωmax/100kHz) 25°C	Max. Rated Ripple current @105°C/100kHz (mA rms)
63	47	6.3×11	0.780	320	80	33	6.3×12	1.200	300
	68	8×12	0.380	450		56	8×12	0.420	400
	100	8×16	0.260	580		68	8×12	0.400	420
		10×13	0.280	600		82	10×14	0.268	590
	120	8×12	0.250	500		100	10×13	0.260	580
		10×9	0.280	490			10×16	0.230	660
	180	10×13	0.200	800		120	10×16	0.220	660
	220	10×16	0.180	980		150	10×16	0.220	680
		10×20	0.160	1080			10×20	0.160	860
		10×25	0.120	1250		220	10×20	0.120	1000
	270	13×15	0.150	1200		330	10×25	0.100	1200
	330	10×20	0.120	1200		470	13×20	0.100	1500
	470	10×25	0.120	1600		560	13×25	0.098	1900
		13×17	0.130	1500		680	12.5×40	0.072	2200
	560	13×20	0.100	1700		820	13×35	0.080	2200
	680	13×20	0.100	1800		1200	18×35	0.050	2500
		13×25	0.090	1960					
	820	13×25	0.065	2000					
13×30		0.062	2150						
1000	13×30	0.060	2300						
	16×35	0.050	2900						
1500	16×25	0.055	2600						
2200	18×40	0.040	3600						
100	22	8×12	1.280	320					
	33	8×12	1.000	360					
		10×13	0.800	430					
	39	8×14	0.600	420					
	47	8×16	0.380	460					
		10×13	0.330	480					
	56	10×13	0.300	500					
	68	10×13	0.280	550					
	100	10×16	0.240	650					
	150	10×20	0.160	850					
	220	10×25	0.110	1000					
		13×20	0.105	1050					
	270	13×20	0.100	1200					
	330	13×25	0.095	1400					
		16×26	0.065	1700					
	470	13×25	0.090	1500					
		16×26	0.062	1800					
	560	13×30	0.068	1900					
16×40		0.038	2300						
680	16×32	0.055	2100						
820	16×35	0.048	2400						
1000	18×40	0.045	2800						

◆ **RIPPLE CURRENT MULTIPLIERS**  
Frequency Multipliers

Vdc	Cap(uF)	Frequency (Hz)			
		120	1K	10K	100K
6.3 ~100	6.8~ 68	0.30	0.65	0.85	1.00
	82 ~ 220	0.50	0.70	0.90	1.00
	330 ~ 820	0.60	0.75	0.95	1.00
	1000 ~ 6800	0.70	0.80	0.98	1.00