

RR Series

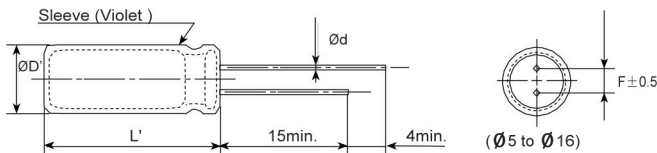
- High frequency, low impedance, high reliability
- Lifetime +105°C2,000 hours
- Suitable for switching power, UPS, power sources etc.
- RoHS Compliant



◆ SPECIFICATIONS

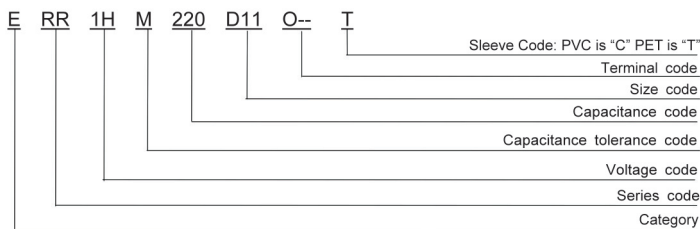
Items	Characteristics							
Category	-40 to +105°C							
Temperature Range	-40 to +105°C							
Rated Voltage Range	6.3 to 50V _{dc}							
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)							
Leakage Current	I ≤ 0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 1 minute)							
Dissipation Factor (tanδ)	Rated voltage (V _{dc})	6.3	10	16	25	35	50	
	tanδ (Max.)	0.22	0.18	0.14	0.12	0.10	0.08	
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 _{dc})	6.3	10	16	25	35	50	
	Z(-25°C)/Z(+20°C)	2						
	Z(-40°C)/Z(+20°C)	3						
Endurance	The following specification shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2000hours at 105°C.							
	Capacitance change	≤ ±20% of the initial value(6.3V,10V: ≤ ±30%)						
	D.F. (tanδ)	≤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 exposing them for 1000 hours at 105°C without voltage applied.							
	Capacitance change	≤ ±20% of the initial value(6.3V,10V: ≤ ±30%)						
	D.F. (tanδ)	≤200% of the initial specified value						
	Leakage current	≤200%The initial specified value						

◆ DIMENSIONS [mm]



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

◆ PART NUMBER SYSTEM



※ Sleeve Code and Terminal Code should follow the part number system

◆ RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Cap(μF) \ 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

The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

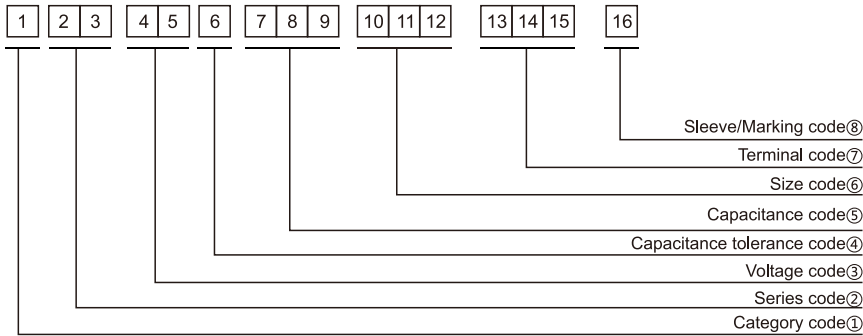
RR Series

◆ STANDARD RATINGS (Impedance :at 20°C 100kHz /Ωmax , Ripple current :mArms/105°C 100kHz)

WV (Vdc)	Cap (μF)	Case size ΦD×L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)	
6.3(0J)	150	5×11 6.3×7	0.22	0.3 0.3	250 250	
	330	6.3×11 6.3×9	0.22	0.13 0.15	405 350	
	560	8×12 8×9	0.22	0.072 0.12	760 605	
	820	8×16 10×9	0.22	0.056 0.085	995 800	
	1000	10×12.5	0.22	0.053	1030	
	1200	8×20 10×16	0.22	0.041 0.038	1250 1430	
	1500	10×20	0.22	0.023	1820	
	2200	10×25	0.24	0.022	2150	
	3300	12.5×20	0.26	0.021	2360	
	3900	12.5×25	0.26	0.018	2770	
	4700	12.5×30	0.28	0.016	3290	
	5600	12.5×35 16×20	0.30	0.015 0.018	3400 3140	
	6800	16×25	0.32	0.016	3460	
	10(1A)	100	5×11 5×7	0.18	0.30 1.38	250 185
220		6.3×11 6.3×7	0.18	0.13 0.35	405 405	
470		8×11 8×9	0.18	0.072 0.18	760 606	
680		8×16 10×12.5 10×19	0.18	0.056 0.053 0.085	995 1030 760	
1000		8×20 10×16	0.18	0.041 0.038	1250 1430	
1200		10×20	0.18	0.023	1820	
1500		10×25	0.18	0.022	2150	
2200		12.5×20	0.20	0.021	2360	
3300		12.5×25	0.22	0.018	2770	
3900		12.5×30 16×20	0.22	0.016 0.018	3290 3140	
4700		12.5×35	0.24	0.015	3400	
5600		16×25	0.26	0.016	3460	
16(1C)		56	5×11 5×7	0.14	0.30 0.7	250 180
		120	6.3×11 6.3×7	0.14	0.13 0.4	405 300
	330	8×12 8×7	0.14	0.072 0.14	760 510	
	470	8×16 10×12.5	0.14	0.056 0.053	795 1030	
	680	8×20 10×16	0.14	0.041 0.038	1250 1430	
	1000	10×20	0.14	0.023	1820	
	1200	10×25	0.14	0.022	2150	
	1500	12.5×20	0.14	0.021	2360	
	2200	12.5×25	0.16	0.018	2770	
	2700	12.5×30 16×20	0.16	0.016 0.018	3290 3140	
	3300	12.5×35	0.18	0.015	3400	
	3900	16×25	0.18	0.016	3460	

WV (Vdc)	Cap (μF)	Case size ΦD×L(mm)	tanδ	Impedance (Ωmax)	Ripple current (mArms)	
25(1E)	47	5×11 6.3×7	0.12	0.3 1.1	250 200	
	100	6.3×11 8×7	0.12	0.13 0.3	405 430	
	220	8×12 8×9	0.12	0.072 0.1	760 600	
	330	8×16	0.12	0.056	995	
	470	8×20	0.12	0.041	1250	
	680	10×12.5	0.12	0.053	1030	
	820	10×16	0.12	0.038	1430	
	1000	10×20	0.12	0.023	1820	
	1500	10×25	0.12	0.022	2150	
	1800	12.5×20 12.5×30 16×20	0.12	0.021 0.016 0.018	2360 3290 3140	
	2200	12.5×25 12.5×35	0.14	0.018 0.015	2770 3400	
	2700	16×25	0.14	0.016	3460	
	35(1V)	33	5×11 5×7	0.10	0.3 1.15	250 160
		56	6.3×11 8×7	0.10	0.13 0.39	405 405
150		8×12 8×9	0.10	0.072 0.17	760 600	
220		8×16 10×12.5	0.10	0.056 0.053	995 1030	
270		8×20	0.10	0.041	1250	
330		10×16	0.10	0.038	1430	
470		10×20	0.10	0.023	1820	
560		10×25	0.10	0.022	2150	
680		12.5×20	0.10	0.021	2360	
1000		12.5×25	0.10	0.018	2770	
1200		12.5×30 16×20	0.10	0.016 0.018	3290 3140	
1500		12.5×35	0.10	0.015	3400	
1800		16×25	0.10	0.016	3460	
50(1H)		22	5×11 6.3×7	0.08	0.34 0.52	238 200
	56	6.3×12 8×7	0.08	0.14 0.36	385 320	
	100	8×12 8×9	0.08	0.074 0.2	724 580	
	120	8×16	0.08	0.061	950	
	150	10×12.5	0.08	0.061	979	
	180	8×20	0.08	0.046	1190	
	220	10×16	0.08	0.042	1370	
	270	10×20	0.08	0.030	1580	
	330	10×25	0.08	0.028	1870	
	470	12.5×20	0.08	0.027	2050	
	560	12.5×25	0.08	0.023	2410	
	680	12.5×30	0.08	0.021	2860	
	820	12.5×35 16×20	0.08	0.019 0.023	2960 2730	
	1000	16×25	0.08	0.021	3010	

Part Numbering System



① Category code

Type	Code
	1
Electrolytic Capacitor	E
Conductive Polymer	S

② Series code

Series name	Code	
	2	3
WH	W	H
CD11GE	G	E
CD11GES	G	X
CD11GAS	G	W
CD11GHS	G	S
NR	N	R
PZ	P	Z

③ Voltage code

WV (V _{dc})	Code	
	4	5
2.5	0	E
3	0	D
4	0	G
6.3	0	J
6.8	0	C
7	0	Q
7.5	0	A
10	1	A
12	1	T
16	1	C
25	1	E
35	1	V
40	1	G
50	1	H
63	1	J
80	1	B
100	1	K
120	2	B
160	2	C
180	2	L
200	2	D
220	2	N
250	2	E
315	2	F
350	2	V
380	2	P
400	2	G
420	2	T
450	2	W
500	2	H
550	2	J
600	2	K

④ Capacitance tolerance code

Tol. (%)	Code
	6
-10~+10	K
-20~+20	M
-10~+30	Q
-10~+20	V
0~+20	A
-5~+20	C
-10~-20	B
-5~+5	D
0~+10	E
-5~-20	F
-15~+5	N

⑤ Capacitance code

Cap (μF)	Code		
	7	8	9
0.10	R	1	0
0.22	R	2	2
0.33	R	3	3
0.47	R	4	7
0.68	R	6	8
1	0	1	0
2.2	2	R	2
3.3	3	R	3
4.7	4	R	7
6.8	6	R	8
10	1	0	0
22	2	2	0
33	3	3	0
47	4	7	0
68	6	8	0
100	1	0	1
220	2	2	1
330	3	3	1
470	4	7	1
680	6	8	1
1000	1	0	2
2200	2	2	2
3300	3	3	2
4700	4	7	2
6800	6	8	2
10000	1	0	3
22000	2	2	3
33000	3	3	3
68000	6	8	3

⑥ Size code

ΦD (mm)	Code
4	C
5	D
6.3	E
8	F
10	G
11	H
12	J
12.5	W
13	K
14	X
16	L
18	M
19	Z
20	N
22	O
25	P
30	Q
35	R
40	Y
51.6	S
64.3	T
76.9	U
91	V
100	A

L (mm)	Code	
	11	12
5	0	5
7	0	7
11	1	1
12	1	2
16	1	6
20	2	0
25	2	5
30	3	0
35	3	5
40	4	0
46	4	6
50	5	0
60	6	0
80	8	0
100	A	0
115	B	5
120	C	0
130	D	0
140	E	0
160	G	0
200	K	0
220	M	0
236	N	6
250	P	0

⑦ Terminal code

Specification	Code	Size	
	13	14	15
Bulk packing	O	-	-
Taping (SMD Type)	D	0	0
Φ4~8 Taping F=5.0mm	P	5	0
Φ10~12.5 Taping F=5.0mm	B	5	0
Lead Cut L=3.5mm	C	3	5
Lead Cut L=11.0mm	C	B	0
Lead Forming & Cut L=4.5mm	F	-	-
Kink & Cut L=4.5mm	J	-	-
Snap-in type Terminal 4.0mm in length	K	-	-
Three Terminals	T	-	-
Ring clip mounting standard design	A	0	0
Ring clip mounting special design	S	-	-

⑧ Sleeve/Marking code

Sleeve/Marking	Code
	16
PVC	C
PET	T
Dark blue	B
Bright red	R
Sky-blue	S
Light blue	T
Pink	Z
Black	H
Purple-blue	V
Red	O