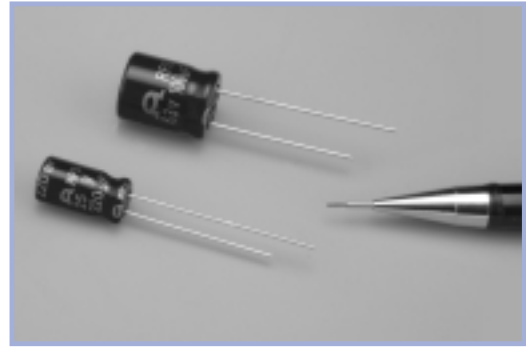


## RFS SERIES

Low Z, Low ESR, Super-miniature, Radial Leads

### Features

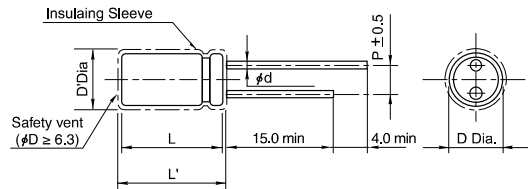
- Super-miniature (Smaller than RF)
- Low Impedance at high frequency
- For switching mode power supply
- Load life of 2000 hours at 105°C



### Specifications

Item	Performance Characteristics									
<b>Operating temperature range</b>	- 55°C ~ +105°C									
<b>Rated working voltage range</b>	6.3V ~ 100V									
<b>Nominal capacitance range</b>	0.47μF ~ 15000μF, ±20% (at 20°C, 120Hz)									
<b>D.C Leakage current (at 20°C)</b>	The following specifications shall be satisfied when the rated voltage is applied for the required time. $I \leq 0.01CV$ or $2\mu A$ (2 min), whichever is greater Where I = Leakage current (μA)    C = Nominal capacitance (μF)    V = Rated voltage (V)									
<b>Tan δ (max., at 20°C, 120Hz)</b>	W.V(V)	6.3	10	16	25	35	50	63	100	
	Tan δ	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.08	
When capacitance is over 1000μF, Tan δ shall be added 0.02 to the listed value with increase of every each 1000μF										
<b>Characteristics at low temperature (max.) (impedance ratio at 120Hz)</b>	W.V(V)	6.3~16		25~35		50	63~100			
<b>Load life</b>	Z - 55°C / +20°C	3		2		2	2			
After applying rated working voltage for 2000 hours at +105°C and then being stabilized at +20°C, capacitors shall meet following limits.										
Capacitance change		Within ± 20% of the initial measured value								
Tan δ		≤ 200% of the initial specified value								
Leakage current		≤ The initial specified value								
<b>Shelf life</b>	After storage for 1000 hours at +105°C with no voltage applied and then being stabilized at +20°C, capacitors shall meet following limits.									
Capacitance change		Within ± 20% of the initial measured value								
Tan δ		≤ 200% of the initial specified value								
Leakage current		≤ 200% of the initial specified value								

### Dimensions



#### • Standard lead style

D	5.0	6.3	8.0	10.0	12.5	16.0	18.0
P	2.0	2.5	3.5	5.0		7.5	
d	0.5		0.6			0.8	

D' = [D + 0.5] Max.

L' = [L + 1.0] Max. at D ≤ 8.0

L' = [L + 1.5] Max. at D ≥ 10.0

### Ripple current coefficient

#### • Frequency

Cap(μF) \ Freq(Hz)	50	120	400	1K	10K	50-100K
Cap ≤ 4.7	0.34	0.46	0.54	0.70	0.83	1.0
4.7 < Cap ≤ 47	0.45	0.57	0.68	0.80	0.87	1.0
47 < Cap ≤ 330	0.55	0.70	0.76	0.88	0.90	1.0
330 < Cap ≤ 1000	0.67	0.78	0.88	0.90	0.92	1.0
1000 < Cap	0.82	0.84	0.90	0.94	0.97	1.0

#### • Temperature

Temperature	≤ 70°C	85°C	105°C
Factor	1.65	1.4	1.0

## RFS SERIES

### Standard Ratings [Dimensions, Impedance, Ripple Current]

D x L(mm)

Cap(μF)	W.V(V)	6.3(0J)			10(1A)			16(1C)			25(1E)		
		SIZE	Z	I <sub>R</sub>	SIZE	Z	I <sub>R</sub>	SIZE	Z	I <sub>R</sub>	SIZE	Z	I <sub>R</sub>
4.7											5 x 11	0.78	180
10								5 x 11	0.78	180	5 x 11	0.75	180
22		5 x 11	0.78	180	5 x 11	0.78	180	5 x 11	0.75	180	5 x 11	0.72	180
33		5 x 11	0.78	180	5 x 11	0.75	180	5 x 11	0.72	180	5 x 11	0.65	180
47		5 x 11	0.78	180	5 x 11	0.72	180	5 x 11	0.65	180	5 x 11	0.50	180
100		5 x 11	0.78	180	5 x 11	0.65	180	5 x 11	0.50	180	6.3 x 11	0.33	280
150		5 x 11	0.45	230	5 x 11	0.60	200	6.3 x 11	0.33	220	6.3 x 11	0.18	380
220		6.3 x 11	0.33	280	6.3 x 11	0.33	280	6.3 x 11	0.20	280	8 x 11.5	0.16	450
330		6.3 x 11	0.33	280	6.3 x 11	0.18	450	8 x 11.5	0.17	470	8 x 11.5	0.12	600
470		6.3 x 11	0.20	450	8 x 11.5	0.18	580	8 x 11.5	0.12	600	10 x 12.5	0.091	800
680		8 x 11.5	0.12	660	8 x 11.5	0.12	660	10 x 12.5	0.091	850	10 x 16	0.069	1100
1000		10 x 12.5	0.12	660	10 x 12.5	0.10	850	10 x 16	0.069	1100	10 x 20	0.065	1400
1500		10 x 16	0.07	1100	10 x 16	0.069	1100	10 x 20	0.065	1400	12.5 x 20	0.045	1900
2200		10 x 20	0.065	1400	10 x 20	0.065	1400	12.5 x 20	0.049	1700	12.5 x 25	0.040	2100
3300		12.5 x 20	0.065	1600	12.5 x 20	0.038	1700	12.5 x 25	0.039	2100	16 x 31.5	0.028	2600
4700		12.5 x 20	0.058	1800	12.5 x 25	0.032	2100	16 x 25	0.028	2600	16 x 35.5	0.026	3000
6800		16 x 25	0.033	2200	16 x 25	0.030	2600	16 x 31.5	0.026	3000	18 x 35.5	0.024	3600
10000		16 x 31.5	0.029	2600	16 x 35.5	0.023	3000	18 x 35.5	0.023	3600			
15000		18 x 35.5	0.026	3000	18 x 35.5	0.023	3500						

Cap(μF)	W.V(V)	35(1V)			50(1H)			63(1J)			100(2A)		
		SIZE	Z	I <sub>R</sub>	SIZE	Z	I <sub>R</sub>	SIZE	Z	I <sub>R</sub>	SIZE	Z	I <sub>R</sub>
0.47					5 x 11	6.50	25						
1.0					5 x 11	4.55	40						
2.2					5 x 11	3.90	55				5 x 11	3.00	44
3.3					5 x 11	3.38	65				5 x 11	3.00	58
4.7		5 x 11	0.78	180	5 x 11	2.99	90	5 x 11	3.00	68	5 x 11	3.00	74
10		5 x 11	0.75	180	5 x 11	1.82	120	5 x 11	1.20	110	6.3 x 11	1.00	130
22		5 x 11	0.72	180	5 x 11	1.56	150	6.3 x 11	0.70	180	8 x 11.5	0.60	230
33		5 x 11	0.65	180	6.3 x 11	0.56	250	6.3 x 11	0.50	220	8 x 11.5	0.40	300
47		5 x 11	0.60	220	6.3 x 11	0.50	270	6.3 x 11	0.45	300	10 x 12.5	0.30	420
100		6.3 x 11	0.18	350	8 x 11.5	0.31	340	10 x 12.5	0.25	390	10 x 20	0.20	580
150		8 x 11.5	0.18	450	10 x 12.5	0.22	490	10 x 16	0.15	440	12.5 x 20	0.15	710
220		8 x 11.5	0.15	600	10 x 16	0.16	650	10 x 20	0.12	700	12.5 x 25	0.10	890
330		10 x 12.5	0.091	850	10 x 20	0.13	810	12.5 x 20	0.08	980	16 x 25	0.080	1080
470		10 x 16	0.069	1100	12.5 x 20	0.11	1100	12.5 x 20	0.055	1200	16 x 31.5	0.065	1310
680		10 x 20	0.065	1400	12.5 x 20	0.095	1200	16 x 25	0.048	1300	18 x 35.5	0.050	1410
1000		12.5 x 20	0.049	1700	16 x 25	0.056	1600	16 x 31.5	0.042	1400			
1500		16 x 25	0.033	2100	16 x 31.5	0.049	2000	18 x 35.5	0.035	1750			
2200		16 x 31.5	0.028	2600	18 x 35.5	0.044	2300						
3300		16 x 35.5	0.026	3000									
4700		18 x 35.5	0.026	3600									

I<sub>R</sub> : Maximum permissible ripple current[mA(rms) at 105°C,100KHz]  
 Z : Max. Impedance[Ω at 20°C,100KHz]

Low Z