

# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

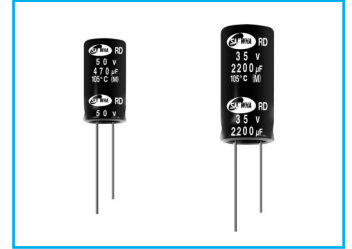


UPGRADE

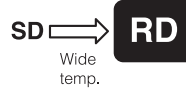
**RD**

Wide Temperature Range Series

**S**  
Solvent Proof  
WV ≤ 100V



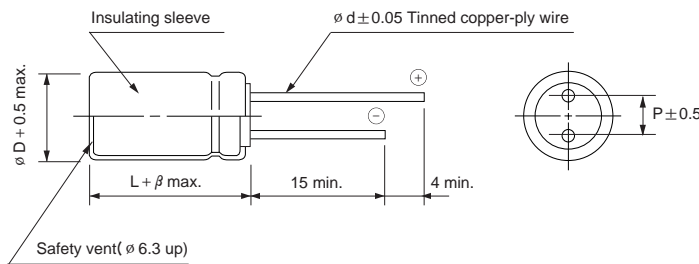
- Standard series for general purpose
- High CV value
- Wide operating temperature range of -55 ~ +105°C
- Complied to the RoHS directive



Item	Characteristics										
Operating temperature range	WV	6.3 ~ 100	160 ~ 350	400, 450							
	Temperature range	-55 ~ +105°C	-40 ~ +105°C	-25 ~ +105°C							
Leakage current max.	WV ≤ 100		WV > 100								
	I = 0.01CV or 3µA whichever is greater (after 2 min) I = 0.03CV or 4µA whichever is greater (after 1 min)		I = 0.02CV + 15µA (after 5 min)								
Capacitance tolerance	±20% at 120Hz, 20°C										
Dissipation factor max. (at 120Hz, 20°C)	Capacitance > 1000µF : tanδ increases by 0.02 for each 1000µF from below value.										
	WV	6.3	10	16	25	35	50	63	100	160~250	350~450
tanδ	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.15	0.20	
Low temperature characteristics (Impedance ratio at 120Hz)	WV	6.3	10	16	25	35	50~100	160	200~350	400	450
	Z-25°C/Z+20°C	5	4	3	2	2	2	3	4	6	10
	Z-40°C/Z+20°C	10	8	6	4	3	3	4	8	—	—
Load life (after application of the rated voltage for 2000 hours at 105°C)	Leakage current	Less than specified value									
	Capacitance change	Within ±20% of initial value									
	tanδ	Less than 200% of specified value									
Shelf life (at 105°C)	∅ 5, 6.3 and ∅ 8 products are for 1000 hours										
	After 1000 hours no load test, leakage current, capacitance and tanδ are same as load life value.										

● DRAWING

Unit : mm



∅ D	5	6.3	8	10	12.5	16	18	22	25.4
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5
∅ d	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0
α	0.5							1.0	
β	1.5		2.0						

MINIATURE TYPES

# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

**RD** series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV μF	WV															
	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	500	
2.2						5 × 11 24	5 × 11 26	5 × 11 26	6.3 × 11 23	6.3 × 11 23	6.3 × 11 23	8 × 11.5 28	8 × 11.5 28	10 × 12.5 27		
3.3						5 × 11 29	5 × 11 32	5 × 11 32	6.3 × 11 29	6.3 × 11 29	8 × 11.5 34	8 × 11.5 34	10 × 12.5 39	10 × 16 36		
4.7						5 × 11 35	5 × 11 38	5 × 11 38	6.3 × 11 34	8 × 11.5 40	8 × 11.5 40	10 × 12.5 47	10 × 12.5 47	10 × 16 43	10 × 16 59	
6.8						5 × 11 42	5 × 11 46	5 × 11 46	8 × 11.5 49	10 × 12.5 56	10 × 12.5 56	10 × 16 62	10 × 16 62	10 × 20 56	10 × 16 72	
10						5 × 11 51	5 × 11 56	5 × 11 56	10 × 12.5 68	10 × 12.5 68	10 × 12.5 68	10 × 16 75	10 × 20 82	12.5 × 20 80	12.5 × 25 88	
15						5 × 11 62	5 × 11 68	6.3 × 11 78	10 × 16 92	10 × 16 92	10 × 16 92	10 × 20 100	12.5 × 20 118	12.5 × 25 107	12.5 × 30 115	
22						5 × 11 75	5 × 11 83	6.3 × 11 95	10 × 16 111	10 × 16 111	10 × 20 121	12.5 × 20 143	12.5 × 25 155	16 × 25 144	16 × 25 159	
33						5 × 11 92	6.3 × 11 116	8 × 11.5 137	10 × 20 149	10 × 20 149	12.5 × 20 175	12.5 × 25 190	16 × 25 211	16 × 31.5 193	16 × 31.5 207	
47					★ 5 × 11 96	★ 6.3 × 11 127	6.3 × 11 139	10 × 12.5 190	12.5 × 20 208	12.5 × 20 208	12.5 × 25 227	16 × 25 252	16 × 31.5 276	16 × 35.5 242	18 × 31.5 261	
68				★ 5 × 11 108	6.3 × 11 132	8 × 11.5 180	8 × 11.5 197	10 × 16 251	12.5 × 25 273	16 × 20 279	16 × 25 303	16 × 31.5 332	18 × 35.5 373	18 × 40 352	18 × 31.5 335	
100			★ 5 × 11 119	6.3 × 11 151	● 6.3 × 11 160	8 × 11.5 218	8 × 11.5 239	10 × 20 332	12.5 × 25 331	16 × 25 368	16 × 31.5 402	18 × 35.5 407	18 × 40 427	22 × 41 486		
150		5 × 11 134	6.3 × 11 167	6.3 × 11 185	8 × 11.5 231	10 × 12.5 310	10 × 12.5 340	12.5 × 20 477	16 × 25 450	16 × 35.5 517	18 × 35.5 554	18 × 40 523	22 × 41 596			
220	5 × 11 146	★ 5 × 11 162	● 6.3 × 11 203	8 × 11.5 264	8 × 11.5 280	10 × 12.5 376	10 × 16 451	12.5 × 25 630	16 × 31.5 596	18 × 35.5 671	18 × 40 694	22 × 41 721				
330	★ 6.3 × 11 206	● 6.3 × 11 228	8 × 11.5 293	8 × 11.5 324	10 × 12.5 399	10 × 16 504	10 × 20 603	16 × 25 856	18 × 35.5 822	18 × 40 850	22 × 41 968					
470	● 6.3 × 11 246	6.3 × 11 272	8 × 11.5 349	10 × 12.5 449	10 × 16 521	10 × 20 657	12.5 × 20 844	16 × 25 1021	18 × 40 1015	22 × 41 1155						
680	8 × 11.5 348	10 × 12.5 449	10 × 12.5 488	10 × 16 591	12.5 × 16 740	12.5 × 20 927	12.5 × 25 1107	16 × 31.5 1344	22 × 41 1390							
1000	8 × 11.5 422	10 × 12.5 544	10 × 16 648	10 × 16 782	12.5 × 20 974	12.5 × 25 1226	16 × 25 1490	18 × 40 1925								
1500	10 × 16 621	10 × 16 680	12.5 × 16 862	12.5 × 20 1017	16 × 20 1188	16 × 25 1442	16 × 35.5 1770									
2200	10 × 20 778	10 × 20 844	12.5 × 20 1055	12.5 × 25 1235	16 × 25 1426	16 × 25 1442	16 × 35.5 1770									
3300	12.5 × 16 983	12.5 × 20 1148	12.5 × 25 1323	16 × 25 1562	16 × 35.5 1857	18 × 35.5 1794	18 × 40 2689									
4700	12.5 × 20 1219	12.5 × 25 1421	16 × 25 1657	16 × 31.5 1916	16 × 35.5 2224	18 × 35.5 2152										
6800	12.5 × 25 1480	16 × 25 1737	16 × 31.5 1982	18 × 35.5 2335												
10000	16 × 25 1807	16 × 35.5 2172	18 × 35.5 2409													
15000	16 × 35.5 2233	18 × 35.5 2482														
22000	18 × 40 2652															

Size  $\varnothing 8 \times 9$  is available for capacitors marked "★"  
 Size  $\varnothing 10 \times 9$  is available for capacitors marked "●"

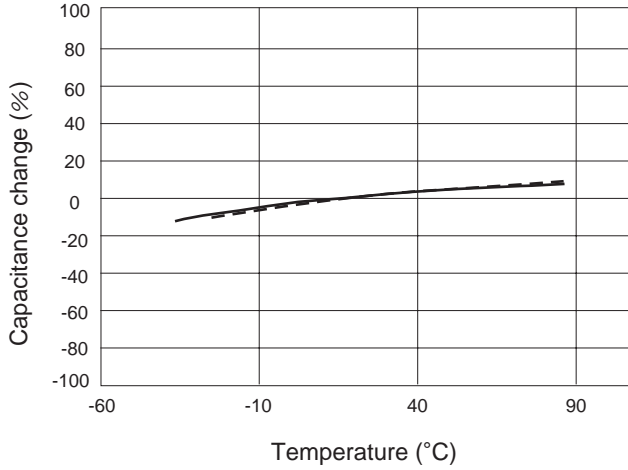
**RD** series

## TYPICAL PERFORMANCE

— 16V 1000 $\mu$ F  
 ..... 400V 10 $\mu$ F

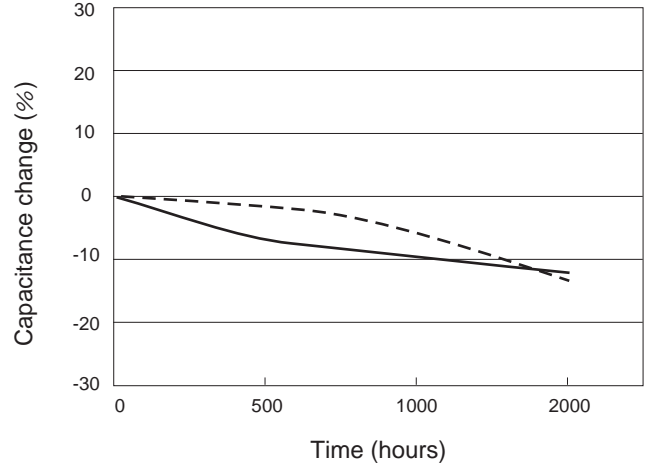
● TEMPERATURE CHARACTERISTICS

Capacitance change vs. temperature

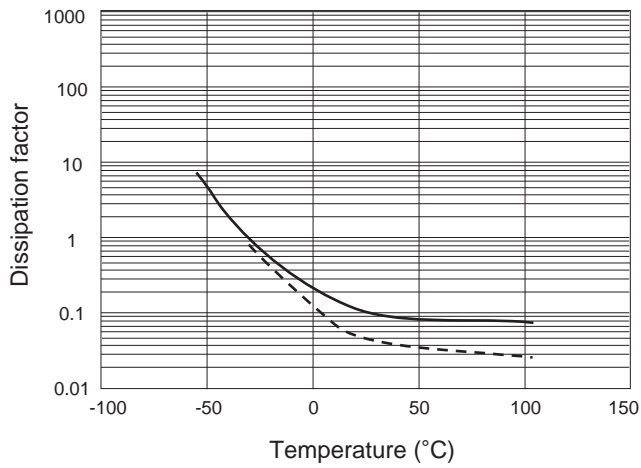


● LOAD LIFE (at +105°C)

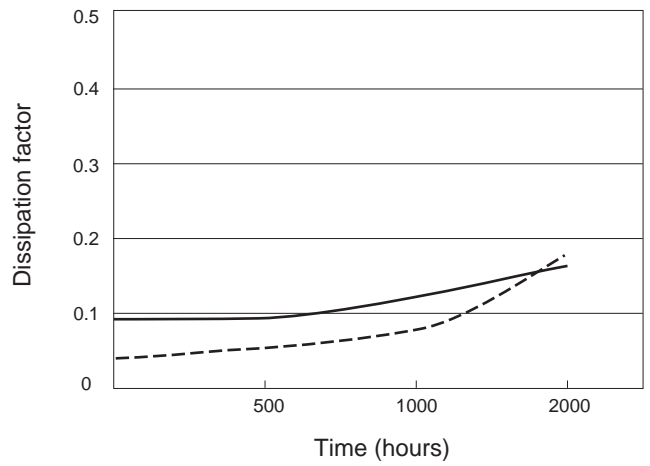
Capacitance change vs. time



Dissipation factor vs. temperature

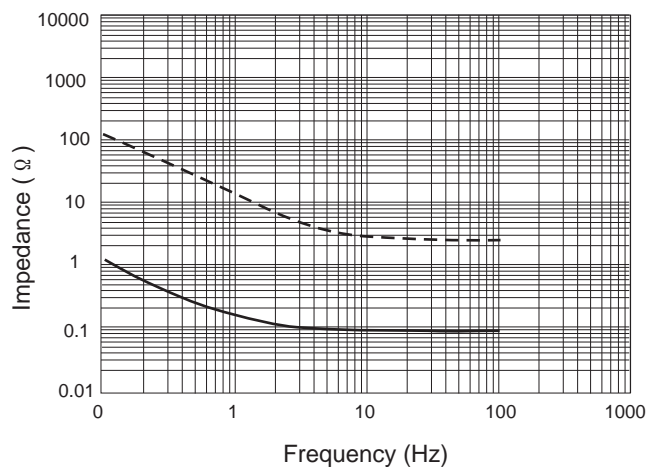


Dissipation factor vs. time

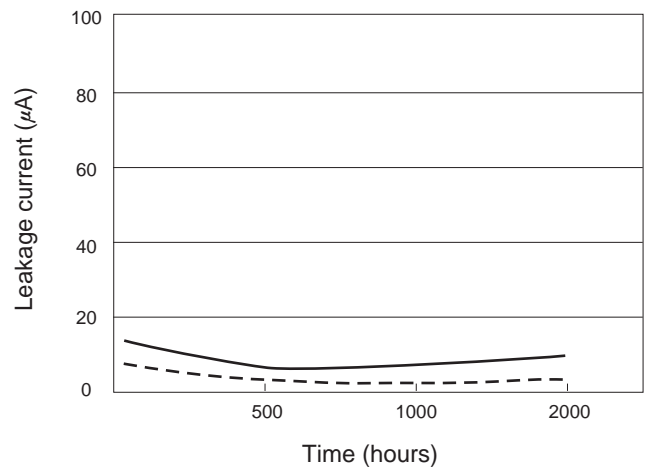


● FREQUENCY CHARACTERISTICS

Impedance vs. frequency



Leakage current vs. time



MINIATURE TYPES