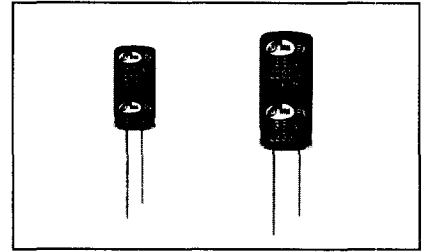


# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

## RX Low ESR, For Switching Power Supplies Series

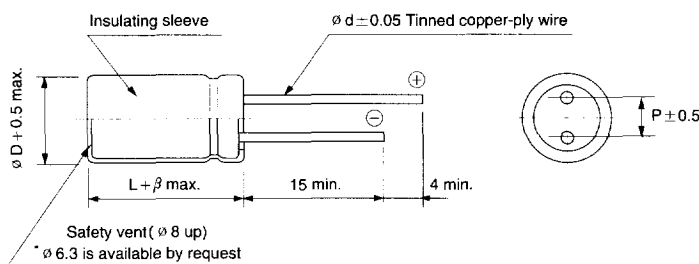
- Low ESR and impedance at high frequency
- Ideally suited for use of switching power supplies
- Wide operating temperature range of -55 ~ +105°C
- Voltage range of 6.3~450V
- Load life of 2000 hours at 105°C



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	160~315	350~450
tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.08	0.15	0.20
Low temperature characteristics (Impedance ratio at 120Hz)	WV	6.3, 10		16 ~ 35		50, 63					
	Z-55°C/Z+20°C	4		3		3					
	WV	100		160 ~ 250		315 ~ 450					
	Z-25°C/Z+20°C	2		3		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
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
∅ d	0.5	0.5	0.6	0.6	0.6*	0.8	0.8
β	1.0			1.5			

\*In case L = 40, lead diameter ∅ 0.8 will be applied.

### ● PERMISSIBLE RIPPLE CURRENT MULTIPLIERS

Frequency μF	50Hz	120Hz	300Hz	1kHz	10kHz~
~ 47	0.75	1	1.35	1.55	2.0
68 ~ 680	0.80	1	1.25	1.34	1.5
1000 ~	0.85	1	1.10	1.13	1.15

## RX series

### ● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV Item μF	6.3							
	Standard Products				Special Products			
	∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)		∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
47	5 × 11	2.10	78	117				
68	5 × 11	1.90	94	140				
100	5 × 11	1.70	113	170				
150	6.3 × 11	0.98	160	240				
220	6.3 × 11	0.61	193	290				
330	8 × 11.5	0.43	279	419	6.3 × 15	0.40	268	402
470	10 × 12.5	0.29	387	581	8 × 15	0.28	369	554
680	10 × 16	0.21	510	766	8 × 20	0.20	499	748
1000	10 × 20	0.15	675	777	12.5 × 16	0.15	730	840
1500	10 × 25	0.11	847	975	12.5 × 16	0.12	837	962
2200	12.5 × 20	0.091	1037	1192	10 × 30	0.088	1045	1202
3300	12.5 × 25	0.070	1314	1511	16 × 20	0.074	1342	1544
4700	16 × 25	0.062	1658	1907	12.5 × 34.5	0.054	1667	1917
6800	16 × 31.5	0.048	2007	2308	12.5 × 40	0.046	1965	2260
10000	18 × 35.5	0.044	2470	2841	16 × 40	0.041	2419	2781

WV Item μF	10							
	Standard Products				Special Products			
	∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)		∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
33	5 × 11	2.10	74	111				
47	5 × 11	1.90	88	132				
68	5 × 11	1.60	106	158				
100	6.3 × 11	1.10	147	221				
150	6.3 × 11	0.70	180	270				
220	8 × 11.5	0.51	257	386	6.3 × 15	0.48	247	371
330	10 × 12.5	0.33	366	549	8 × 15	0.30	349	523
470	10 × 16	0.24	479	718	8 × 20	0.22	468	702
680	10 × 20	0.16	628	942	12.5 × 16	0.20	679	1019
1000	10 × 25	0.10	835	960	12.5 × 16	0.12	824	948
1500	12.5 × 20	0.08	1007	1159	10 × 30	0.09	1015	1168
2200	12.5 × 25	0.068	1238	1424	16 × 20	0.079	1266	1455
3300	16 × 25	0.060	1581	1818	12.5 × 34.5	0.052	1589	1827
4700	16 × 31.5	0.050	1952	2245	12.5 × 40	0.048	1911	2198
6800	18 × 35.5	0.042	2403	2763	16 × 40	0.040	2353	2705

• Note : In case L ≥ 30 for the ∅ 12.5 diameter unit, will be able to produce from the year 2001.

# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

## RX series

### ● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV Item μF	16							
	Standard Products				Special Products			
	∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)		∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
22	5 × 11	2.00	66	132				
33	5 × 11	1.80	81	163				
47	5 × 11	1.30	97	194				
68	6.3 × 11	0.93	134	201				
100	6.3 × 11	0.70	163	244				
150	8 × 11.5	0.50	235	352	6.3 × 15	0.47	226	338
220	10 × 12.5	0.33	331	496	8 × 15	0.30	315	472
330	10 × 16	0.22	443	665	8 × 20	0.25	434	650
470	10 × 20	0.20	577	866	12.5 × 16	0.19	625	937
680	10 × 25	0.15	761	1141	12.5 × 16	0.14	751	1127
1000	12.5 × 20	0.12	989	1137	10 × 30	0.096	997	1146
1500	12.5 × 25	0.072	1194	1373	16 × 20	0.085	1220	1403
2200	16 × 25	0.070	1476	1697	12.5 × 34.5	0.055	1518	1745
3300	16 × 31.5	0.058	1841	2117	12.5 × 40	0.047	1843	2119
4700	18 × 35.5	0.050	2323	2672	16 × 40	0.043	2275	2616

WV Item μF	25							
	Standard Products				Special Products			
	∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)		∅ D×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
15	5 × 11	2.10	62	124				
22	5 × 11	1.90	75	150				
33	5 × 11	1.60	92	184				
47	6.3 × 11	1.20	126	253				
68	6.3 × 11	0.72	152	228				
100	8 × 11.5	0.53	217	326	6.3 × 15	0.49	209	313
150	10 × 12.5	0.41	309	464	8 × 15	0.35	295	442
220	10 × 16	0.30	411	616	8 × 20	0.25	401	602
330	10 × 20	0.20	549	823	12.5 × 16	0.21	593	890
470	10 × 25	0.16	717	1076	12.5 × 16	0.14	708	1062
680	12.5 × 20	0.12	924	1387	10 × 30	0.093	932	1398
1000	12.5 × 25	0.072	1222	1406	16 × 20	0.088	1249	1436
1500	16 × 25	0.070	1465	1684	12.5 × 34.5	0.060	1506	1732
2200	16 × 31.5	0.055	1755	2019	12.5 × 40	0.048	1757	2021
3300	18 × 35.5	0.050	2226	2560	16 × 40	0.042	2226	2507

## RX series

### ● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV Item $\mu$ F	35							
	Standard Products				Special Products			
	$\varnothing$ D×L (mm)	Impedance ( $\Omega$ )max. 20°C 100kHz	Ripple current (mA rms)		$\varnothing$ D×L (mm)	Impedance ( $\Omega$ )max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
10	5 × 11	2.10	55	110				
15	5 × 11	1.80	67	134				
22	5 × 11	1.50	81	163				
33	6.3 × 11	0.80	114	229				
47	6.3 × 11	0.67	137	273				
68	8 × 11.5	0.52	194	291	6.3 × 15	0.48	186	279
100	10 × 12.5	0.34	273	409	8 × 15	0.30	260	390
150	10 × 16	0.25	366	549	8 × 20	0.25	358	537
220	10 × 20	0.20	484	726	12.5 × 16	0.20	523	785
330	10 × 25	0.14	649	974	12.5 × 16	0.13	641	961
470	12.5 × 20	0.10	830	1245	10 × 30	0.093	837	1255
680	12.5 × 25	0.072	1089	1633	16 × 20	0.084	1112	1669
1000	16 × 25	0.070	1465	1684	12.5 × 34.5	0.060	1506	1732
1500	16 × 31.5	0.055	1700	1954	12.5 × 40	0.048	1701	1956
2200	18 × 35.5	0.046	2072	2383	16 × 40	0.043	2029	2334

WV Item $\mu$ F	50							
	Standard Products				Special Products			
	$\varnothing$ D×L (mm)	Impedance ( $\Omega$ )max. 20°C 100kHz	Ripple current (mA rms)		$\varnothing$ D×L (mm)	Impedance ( $\Omega$ )max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
1.0	5 × 11	22.0	21	42				
1.5	5 × 11	15.0	26	52				
2.2	5 × 11	10.0	31	63				
3.3	5 × 11	6.9	39	77				
4.7	5 × 11	4.9	46	92				
6.8	5 × 11	3.2	55	111				
10	5 × 11	2.2	67	134				
15	5 × 11	1.4	82	164				
22	6.3 × 11	1.0	114	229				
33	6.3 × 11	0.65	140	280				
47	8 × 11.5	0.50	197	394	6.3 × 15	0.45	189	379
68	10 × 12.5	0.32	276	413	8 × 15	0.30	263	394
100	10 × 16	0.24	366	549	8 × 20	0.22	358	537
150	10 × 20	0.15	489	734	12.5 × 16	0.16	529	794
220	10 × 25	0.11	649	974	12.5 × 16	0.12	641	961
330	12.5 × 20	0.092	852	1278	10 × 30	0.085	859	1288
470	12.5 × 25	0.066	1108	1663	16 × 20	0.075	1133	1699
680	16 × 25	0.063	1479	2219	12.5 × 34.5	0.054	1521	2282
1000	16 × 31.5	0.054	1962	2257	12.5 × 40	0.047	1964	2259
1500	18 × 35.5	0.050	2209	2541	16 × 40	0.040	2163	2488

# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

## RX series

### ● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV Item μF	63				100			
	ø D×L (mm)	Impedance (Ω) max. 20°C 100kHz	Ripple current (mA rms)		ø D×L (mm)	Impedance (Ω) max. 20°C 100kHz	Ripple current (mA rms)	
			105°C 120Hz	105°C 100kHz			105°C 120Hz	105°C 100kHz
0.47	5 × 11	45.7	15	30	5 × 11	43.0	15	30
0.68	5 × 11	31.5	18	36	5 × 11	23.0	18	36
1.0	5 × 11	21.0	21	42	5 × 11	17.0	21	42
1.5	5 × 11	13.5	26	52	5 × 11	10.0	26	52
2.2	5 × 11	9.20	31	62	5 × 11	6.60	31	62
3.3	5 × 11	6.20	39	78	5 × 11	4.10	39	78
4.7	5 × 11	4.30	46	92	5 × 11	2.80	46	92
6.8	5 × 11	2.90	55	110	6.3 × 11	1.90	64	128
10	5 × 11	1.60	67	134	6.3 × 11	1.20	77	154
15	6.3 × 11	1.10	94	188	8 × 11.5	1.00	111	222
22	6.3 × 11	0.78	114	228	8 × 11.5	0.55	135	270
33	8 × 11.5	0.64	165	330	10 × 12.5	0.50	192	384
47	10 × 12.5	0.37	229	458	10 × 16	0.35	251	502
68	10 × 16	0.26	302	453	10 × 20	0.24	329	494
100	10 × 20	0.18	399	599	12.5 × 20	0.21	469	704
150	10 × 25	0.13	536	804	12.5 × 25	0.11	626	939
220	12.5 × 20	0.094	696	1043	16 × 25	0.104	841	1262
330	12.5 × 25	0.073	929	1394	16 × 25	0.098	1030	1545
470	12.5 × 34.5	0.065	1265	1898	16 × 31.5	0.057	1345	2018
680	16 × 31.5	0.048	1618	2427	16 × 35.5	0.041	1698	2547
1000	16 × 40	0.041	2163	2487	18 × 40	0.040	2318	2666

WV μF	160		200		250		315	
0.47	6.3 × 11	13	6.3 × 11	13	6.3 × 11	13		
0.68	6.3 × 11	15	6.3 × 11	15	6.3 × 11	15		
1.0	6.3 × 11	18	6.3 × 11	18	6.3 × 11	18	8 × 11.5	22
1.5	6.3 × 11	23	6.3 × 11	23	8 × 11.5	27	8 × 11.5	27
2.2	6.3 × 11	27	6.3 × 11	27	8 × 11.5	32	10 × 12.5	37
3.3	8 × 11.5	40	8 × 11.5	40	10 × 12.5	46	10 × 12.5	46
4.7	8 × 11.5	47	10 × 12.5	55	10 × 12.5	55	10 × 16	60
6.8	10 × 12.5	66	10 × 12.5	66	10 × 12.5	66	10 × 20	79
10	10 × 16	88	10 × 16	88	10 × 16	88	10 × 20	95
15	10 × 16	107	10 × 20	117	10 × 20	117	12.5 × 20	137
22	10 × 20	142	12.5 × 20	166	12.5 × 20	166	12.5 × 25	181
33	12.5 × 20	204	12.5 × 20	204	12.5 × 20	204	16 × 25	246
47	12.5 × 25	265	12.5 × 25	265	12.5 × 25	265	16 × 35.5	377
68	12.5 × 25	319	16 × 25	354	16 × 25	354	18 × 35.5	435
100	16 × 25	429	16 × 31.5	469	16 × 35.5	492	18 × 40	554
150	16 × 31.5	575	16 × 35.5	603	18 × 40	679		
220	18 × 35.5	783	18 × 40	822				

Ripple current (mA rms) at 105°C, 120Hz

Case size ø D × L (mm)

## RX series

### ● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

$\mu F$ \ WV	350		400		450	
1.0	8 × 11.5	22	8 × 11.5	22	8 × 11.5	18
1.5	10 × 12.5	31	10 × 12.5	31	10 × 12.5	26
2.2	10 × 16	41	10 × 16	41	10 × 16	34
3.3	10 × 16	50	10 × 20	55	10 × 20	46
4.7	10 × 20	65	10 × 20	65	12.5 × 20	64
6.8	10 × 20	79	12.5 × 20	92	12.5 × 25	84
10	12.5 × 20	112	12.5 × 25	122	12.5 × 25	102
15	12.5 × 25	150	12.5 × 25	150	16 × 25	139
22	16 × 25	201	16 × 25	201	16 × 31.5	184
33	16 × 31.5	269	16 × 31.5	269	18 × 35.5	254
47	16 × 35.5	337	16 × 35.5	337	← Ripple current (mA rms) at 105°C, 120Hz	
68	18 × 40	457	↑ Case size $\varnothing D \times L$ (mm)			