

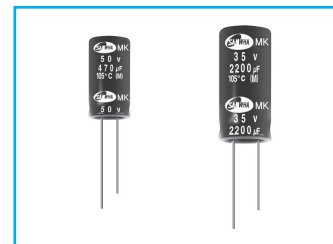
MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Upgrade



High Ripple Current Series

I **Z** **I** Low Impedance **S** Solvent Proof



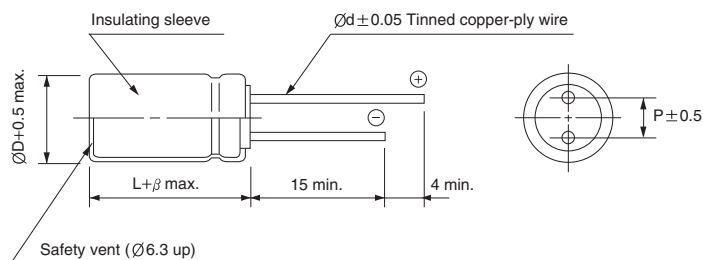
- Ripple current compared with RZ series
- Enabled high ripple current by a reduction of impedance at high frequency
- High reliability withstanding 5000 hours load life at 105°C (2000 ~ 3000 hours for smaller case sizes as specified below)
- Complied to the RoHS directive

RZ → **MK**
Miniature High Ripple

Item	Characteristics																	
Operating temperature range	-40 ~ +105°C																	
Leakage current max.	I = 0.01CV or 3μA whichever is greater (after 2 minutes) I = 0.03CV or 4μA whichever is greater (after 1 minute)																	
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.																	
	<table border="1"> <thead> <tr> <th>WV</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tanδ</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> </tr> </tbody> </table>	WV	6.3	10	16	25	35	50	63	100	tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.08
WV	6.3	10	16	25	35	50	63	100										
tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08										
Low temperature characteristics (Impedance ratio at 120Hz)	Z-40°C / Z+20°C																	
	Z-25°C / Z+20°C																	
Load life	After an application of DC bias voltage plus the rated AC ripple current for 5000 hours at 105°C. The measurement shall meet the following limits. The DC voltage plus the peak AC voltage combined must not exceed the rated voltage.																	
	Leakage current	Less than specified value																
	Capacitance change	Within ±25% of the initial value																
	tanδ	Less than 200% of the specified value																
Shelf life (at 105°C)	<table border="1"> <thead> <tr> <th>∅D</th> <th>∅D = 5, 6.3</th> <th>∅D = 8</th> <th>∅D ≥ 10</th> </tr> </thead> <tbody> <tr> <td>Life time</td> <td>2000 hours</td> <td>3000 hours</td> <td>5000 hours</td> </tr> </tbody> </table>	∅D	∅D = 5, 6.3	∅D = 8	∅D ≥ 10	Life time	2000 hours	3000 hours	5000 hours									
	∅D	∅D = 5, 6.3	∅D = 8	∅D ≥ 10														
Life time	2000 hours	3000 hours	5000 hours															
	After 1000 hours no load test, leakage current, capacitance and tanδ are same as load life value. The measurement shall be performed at 20°C by the KS C IEC 60384 - 4																	

● 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	1.5			2.0			

● FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

μF \ Frequency	120Hz	1kHz	10kHz	50kHz	100kHz ≤
~ 33	0.40	0.65	0.82	0.94	1.00
39 ~ 270	0.50	0.70	0.84	0.96	1.00
330 ~ 680	0.55	0.75	0.86	0.96	1.00
820 ~ 1800	0.60	0.80	0.88	0.97	1.00
2200 ~	0.70	0.85	0.90	0.97	1.00

MK series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV Item μF	6.3			10			16			25		
	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz
10							5×11	0.525	250	5×11	0.525	250
22	5×11	0.525	250	5×11	0.525	250	5×11	0.525	270	5×11	0.525	270
33	5×11	0.525	270	5×11	0.525	270	5×11	0.525	290	5×11	0.525	290
47	5×11	0.450	290	5×11	0.450	290	5×11	0.450	310	5×11	0.500	310
100	5×11	0.450	310	5×11	0.450	310	5×11	0.450	310	6.3×11	0.225	460
							6.3×11	0.225	405			
150	6.3×11	0.300	405	6.3×11	0.300	405	6.3×11	0.225	460	8×11.5	0.108	760
220	6.3×11	0.225	460	6.3×11	0.225	460	8×11.5	0.108	760	8×11.5	0.108	950
330	6.3×11	0.225	505	8×11.5	0.108	760	8×11.5	0.108	950	10×12.5	0.088	1280
390	8×11.5	0.108	550	8×11.5	0.108	760	8×15	0.098	1000	8×15	0.098	1430
							10×12.5	0.098	1000	10×12.5	0.098	1430
470	8×11.5	0.108	950	8×11.5	0.108	950	8×11.5	0.108	950	10×12.5	0.098	1430
							8×15	0.098	1100	10×16	0.065	1785
							10×12.5	0.088	1280	10×20	0.060	1785
							8×20	0.088	1280	10×16	0.088	1900
560	8×15	0.098	1000	8×15	0.098	1100	8×20	0.088	1280	8×20	0.088	1900
	10×12.5	0.098	1050	10×12.5	0.098	1100	10×16	0.088	1280	10×16	0.088	1900
680	10×12.5	0.088	1280	8×15	0.098	1280	10×16	0.065	1785	10×16	0.065	1900
				10×12.5	0.088					10×20	0.050	2270
820	10×16	0.075	1300	10×12.5	0.088	1400	10×16	0.065	1785	10×20	0.050	2300
1000	10×16	0.065	1785	8×20	0.088	1600	8×20	0.088	2000	10×20	0.050	2400
				10×12.5			0.065	2270		10×25	0.045	2560
				10×16			0.065	1785		10×20	0.050	2270
1200				10×16	0.065	2200				12.5×20	0.043	3100
1500	10×20	0.050	2270	10×20	0.050	2270	10×25	0.043	2950	12.5×25	0.029	3470
							12.5×20					16×20
1800	10×20	0.050	2300	12.5×20	0.043	2350	12.5×25	0.029	2450	12.5×25	0.029	3650
				10×20	0.05	2650						
2200	12.5×20	0.043	2950	10×25	0.048	2950	10×30	0.029	3460	12.5×25	0.029	3700
				12.5×20	0.043		12.5×25			0.024	3890	
				12.5×25	0.029		3140			16×25	0.024	3500
16×20												
4700	16×25	0.024	3114	16×25	0.024	3200	16×31.5	0.024	3600	18×35.5	0.022	3950
6800	16×25	0.024	3114	16×31.5	0.024	3312	18×35.5	0.022	3700			
10000	16×31.5	0.024	3312	18×35.5	0.022	3420						
15000	18×35.5	0.022	3420									

MINIATURE TYPES

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

MK series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV Item μF	35			50			63			100		
	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz	ØD×L (mm)	Impedance (Ω)max. 20°C 100kHz	Ripple current (mA rms) 105°C 100kHz
1.0				5×11	3.00	250						
2.2				5×11	3.00	250				5×11	3.000	125
3.3				5×11	1.50	250	5×11	2.000	165	5×11	2.000	125
4.7	5×11	0.525	250	5×11	1.50	270	5×11	2.000	165	5×11	2.000	125
10	5×11	0.525	270	5×11	0.750	290	5×11	0.800	165	6.3×11	1.200	205
22	5×11	0.525	290	5×11	0.390	310	6.3×11	0.500	265	8×11.5	0.600	355
33	5×11	0.450	310	6.3×11	0.255	405	6.3×11	0.500	265	10×12.5	0.250	450
47	6.3×11	0.225	460	6.3×11	0.210	460	8×11.5	0.300	500	8×15	0.300	500
										10×16	0.200	580
56	6.3×11	0.225	460	8×11.5	0.160	580	10×12.5	0.160	680	10×16	0.160	750
100	8×11.5	0.108	760	8×11.5	0.108	950	10×16	0.100	945	10×20	0.150	800
				8×15	0.108	960				12.5×20	0.100	1045
150	8×11.5	0.108	950	10×12.5	0.088	1280	10×20	0.080	1100	12.5×25	0.080	1195
220	8×15	0.098	1030	10×16	0.065	1785	10×25	0.070	1300	16×25	0.060	1600
	10×12.5	0.088	1280									
330	10×16	0.065	1785	10×20	0.050	2270	12.5×20	0.050	1495	16×31.5	0.040	1750
390	8×20	0.088	1830	10×20	0.050	1820	12.5×25	0.039	1600	16×31.5	0.040	1750
470	8×20	0.088	1930	12.5×20	0.043	2950	16×20	0.035	1990	18×40	0.030	2060
	10×16	0.065										
	10×20	0.050										
680	10×20	0.050	2400	12.5×25	0.029	3460	16×25	0.030	2780			
	12.5×20	0.043	2950									
1000	12.5×20	0.043	3100	16×25	0.027	3890	16×35.5	0.020	2835			
	12.5×25	0.032	3460									
1500	12.5×25	0.029	3500	16×31.5	0.024	3900						
	16×20	0.027	3600									
	16×25	0.024	3890									
2200	16×31.5	0.024	3900	18×35.5	0.022	3950						
3300	18×35.5	0.022	3950									