

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

I14054 (SHK)

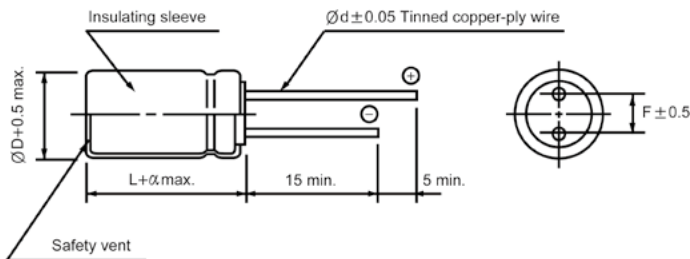
Low Impedance Series

- Operating temperature range of $-40 \sim +105^{\circ}\text{C}$
- Low impedance at high frequency
- High reliability withstanding 5000 hours load life at 105°C
- Complied to the RoHS directive

Items	Performance characteristics																								
Operating temperature range	$-40 \sim +105^{\circ}\text{C}$ (6.3V~450V); $-25 \sim +105^{\circ}\text{C}$ (500V)																								
Leakage current max.	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:50%; text-align:center;">WV \leq 100</th> <th style="width:50%; text-align:center;">WV $>$ 100</th> </tr> <tr> <td style="text-align:center;">$I = 0.01\text{CV}$ or $3\mu\text{A}$ whichever is greater (after 2 minutes)</td> <td rowspan="2" style="text-align:center;">$I = 0.02\text{CV} + 15\mu\text{A}$ (after 5 minutes)</td> </tr> <tr> <td style="text-align:center;">$I = 0.03\text{CV}$ or $4\mu\text{A}$ whichever is greater (after 1 minute)</td> </tr> </table>	WV \leq 100	WV $>$ 100	$I = 0.01\text{CV}$ or $3\mu\text{A}$ whichever is greater (after 2 minutes)	$I = 0.02\text{CV} + 15\mu\text{A}$ (after 5 minutes)	$I = 0.03\text{CV}$ or $4\mu\text{A}$ whichever is greater (after 1 minute)																			
	WV \leq 100	WV $>$ 100																							
$I = 0.01\text{CV}$ or $3\mu\text{A}$ whichever is greater (after 2 minutes)	$I = 0.02\text{CV} + 15\mu\text{A}$ (after 5 minutes)																								
$I = 0.03\text{CV}$ or $4\mu\text{A}$ whichever is greater (after 1 minute)																									
Capacitance tolerance	$\pm 20\%$ at 120Hz, 20°C																								
Dissipation factor max. (at 120Hz, 20°C)	Capacitance $>$ 1000 μF :tan δ increases by 0.02 for each 1000 μF from below value.																								
	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">WV</th> <td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160~250</td><td>350~500</td> </tr> <tr> <th style="width:10%;">Tanδ</th> <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>0.09</td><td>0.08</td><td>0.15</td><td>0.20</td> </tr> </table>	WV	6.3	10	16	25	35	50	63	100	160~250	350~500	Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20		
WV	6.3	10	16	25	35	50	63	100	160~250	350~500															
Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20															
Low temperature characteristics (Impedance ratio at 120Hz)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">WV</th> <td>6.3</td><td>10</td><td>16</td><td>25~100</td><td>160~250</td><td>350~450</td><td>500</td> </tr> <tr> <th style="width:10%;">Z-25°C / Z+20°C</th> <td>4</td><td>3</td><td>2</td><td>2</td><td>3</td><td>6</td><td>8</td> </tr> <tr> <th style="width:10%;">Z-40°C / Z+20°C</th> <td>8</td><td>6</td><td>4</td><td>3</td><td>4</td><td>10</td><td>-</td> </tr> </table>	WV	6.3	10	16	25~100	160~250	350~450	500	Z- 25°C / Z+ 20°C	4	3	2	2	3	6	8	Z- 40°C / Z+ 20°C	8	6	4	3	4	10	-
	WV	6.3	10	16	25~100	160~250	350~450	500																	
	Z- 25°C / Z+ 20°C	4	3	2	2	3	6	8																	
Z- 40°C / Z+ 20°C	8	6	4	3	4	10	-																		
Load life (after application of the rated voltage for 5000 hours at 105°C)	Leakage current	Less than specified value																							
	Capacitance change	Within $\pm 25\%$ of initial value																							
	Tan δ	Less than 200% of specified value																							
	WV \leq 100 : $\Phi 5, \Phi 6.3$ (2000 hours); $\Phi 8$: 3000 hours; $\geq \Phi 10$: 5000 hours; WV $>$ 100: 2000 hours.																								
Shelf life (at 105°C)	After 1000 hours no load test, leakage current, capacitance and tan δ are same as load life value.																								

● DRAWING

Unit : mm



ΦD	5	6.3	8	10	12.5	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
Φd	0.5		0.6		0.8			
α	1.5		2.0		3.0			

● FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

μF \ Frequency	120Hz	1kHz	10kHz	50kHz	100kHz \leq
~ 33	0.40	0.65	0.82	0.91	1.00
39 ~ 270	0.50	0.70	0.84	0.92	1.00
330 ~ 680	0.55	0.75	0.86	0.93	1.00
820 ~ 1800	0.60	0.80	0.88	0.94	1.00
2200 ~	0.70	0.85	0.90	0.95	1.00

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

I14054 (SHK) Series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV μF	6.3			10			16			25		
	10							5×11	0.90	180	5×11	0.90
22	5×11	0.70	180	5×11	0.70	180	5×11	0.70	180	5×11	0.70	180
33	5×11	0.70	180	5×11	0.70	180	5×11	0.70	180	5×11	0.70	180
47	5×11	0.65	180	5×11	0.65	180	5×11	0.65	180	5×11	0.65	180
100	5×11	0.65	180	5×11	0.65	180	6.3×11	0.30	280	6.3×11	0.30	280
150	6.3×11	0.30	280	6.3×11	0.30	280	6.3×11	0.30	280	8×11.5	0.20	450
220	6.3×11	0.30	280	6.3×11	0.30	280	8×11.5	0.14	450	8×11.5	0.20	450
330	6.3×11	0.30	280	8×11.5	0.14	450	8×11.5	0.14	450	10×12.5	0.10	660
470	8×11.5	0.14	450	8×11.5	0.14	450	10×12.5	0.10	660	10×16	0.08	850
680	10×12.5	0.10	660	10×12.5	0.10	660	10×16	0.08	850	10×20	0.054	1100
1000	10×12.5	0.10	660	10×16	0.08	850	10×20	0.054	1100	12.5×20	0.050	1400
1500	10×20	0.054	1100	10×20	0.054	1100	12.5×20	0.050	1400	16×20	0.030	2100
2200	12.5×20	0.050	1400	12.5×20	0.050	1400	12.5×25	0.038	1700	16×25	0.030	2100
3300	12.5×20	0.050	1400	12.5×25	0.038	1700	16×25	0.030	2100	16×31.5	0.025	2600
4700	16×25	0.030	2100	16×25	0.030	2100	16×31.5	0.025	2600	18×35.5	0.022	3000
6800	16×25	0.030	2100	16×31.5	0.025	2600	18×35.5	0.022	3000			
10000	16×31.5	0.025	2600	18×35.5	0.022	3000						
15000	18×35.5	0.022	3000									

WV μF	35			50			63			100		
	1.0				5×11	3.50	40					
2.2				5×11	3.00	55				5×11	2.50	52
3.3				5×11	2.60	65	5×11	2.00	64	5×11	2.50	64
4.7	5×11	0.90	180	5×11	2.30	90	5×11	2.00	76	5×11	2.50	76
10	5×11	0.90	180	5×11	1.40	120	5×11	2.00	111	6.3×11	1.00	128
22	5×11	0.70	180	5×11	1.20	150	6.3×11	0.60	190	8×11.5	0.60	224
33	5×11	0.65	180	6.3×11	0.60	200	6.3×11	0.60	233	10×12.5	0.40	319
47	6.3×11	0.30	280	6.3×11	0.43	250	8×11.5	0.50	328	10×16	0.30	417
100	8×11.5	0.20	450	8×11.5	0.24	340	10×16	0.12	456	12.5×20	0.15	570
150	8×11.5	0.14	450	10×12.5	0.17	490	10×20	0.10	610	12.5×25	0.12	762
220	10×12.5	0.10	660	10×16	0.12	650	10×25	0.09	809	16×25	0.07	1250
330	10×16	0.08	850	10×20	0.10	810	12.5×20	0.085	1036	16×31.5	0.05	1404
470	10×20	0.054	1100	12.5×20	0.085	1100	16×20	0.050	1411	18×40	0.03	1980
680	12.5×20	0.050	1400	12.5×25	0.065	1200	16×25	0.043	1843	18×40	0.03	2050
820	12.5×25	0.045	1500	16×25	0.055	1300	18×25	0.035	1900	18×40	0.03	2215
1000	12.5×25	0.038	1700	16×25	0.043	1600	16×35.5	0.025	1967			
1500	16×25	0.030	2100	16×31.5	0.038	2000						
2200	16×31.5	0.025	2600	18×35.5	0.034	2300						
3300	18×35.5	0.022	3000									

↑ Ripple current (mA rms) at 105°C , 100kHz
 ↑ Impedance (Ω) max. at 20°C , 100kHz
 ← Case size ΦD×L(mm)

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

I14054 (SHK) Series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

μF \ WV	160		200		250		350	
	1.0	6.3×11	45					
10	10×12.5	230			10×16	300	10×16	180
22	10×16	440	10×20	440	10×20	480	12.5×20	270
33	10×16	560	12.5×20	590	12.5×20	630	16×20	600
47	10×20	725	12.5×20	780	12.5×25	630	16×25	700
68	12.5×25	950	12.5×25	950	16×25	1000	16×31.5	1100
82					16×25	1100	16×35.5	1130
100	16×25	1280	16×25	1280	16×31.5	1400	18×31.5	1170
120							18×35.5	1200
150	16×25	1300	16×25	1500	18×25 18×31.5	1450 1450	18×40	1250
220	16×31.5	1500	18×31.5	1700	18×35.5 18×40	1485 1485		
330	18×31.5	1700	18×35.5	1900				

μF \ WV	400		450		500	
	3.3			10×12.5	150	
4.7			10×16	200		
10	10×16	176	10×16	230	12.5×20	240
22	12.5×25	300	12.5×25	525	12.5×30	420
33	16×20	600	16×25	600	16×31.5	560
47	16×25	700	16×25	660	16×35.5	650
			16×31.5	720	18×31.5	620
			18×25	720	18×35.5	700
56			16×31.5	800	16×40	740
			18×25	800		
68	16×31.5	1100	16×35.5	900	16×45	820
			18×31.5	900	18×40	900
82	16×35.5	1150	16×40	1115	16×50 18×40	1000 1000
			18×31.5	1115		
			18×35.5	1200		
100	18×35.5	1200	16×40	1300	16×50 18×45 22×40	1250 1250 1250
			18×35.5	1300		
120	18×40	1270	16×50	1500	22×45	1370
			18×40	1500		
150	22×40	1380	22×40	1600		

Ripple current (mA rms) at 105°C , 100kHz
 Case size ΦD×L(mm)