

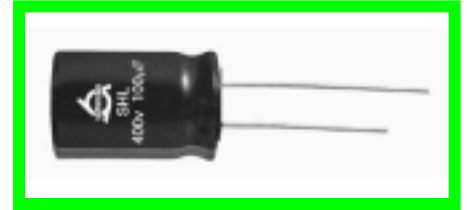
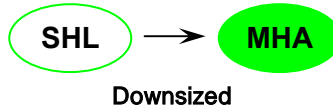


# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

## SHL Series

85 2,000Hrs assured.

Non-solvent proof.  
General  
RoHS compliant.  
Halogen-free capacitors are also available.



## SPECIFICATIONS

Item	Characteristics																																											
Series	SHL																																											
Rated Voltage Range	100V <sub>DC</sub> or less	160 ~ 450V <sub>DC</sub>																																										
Operating Temperature Range	-40 ~ +85	-25 ~ +85																																										
Capacitance Tolerance	±20% (M) (at 20 , 120Hz)																																											
Leakage Current	The following specifications shall be satisfied when the rated voltage is applied for the required time.																																											
	100V <sub>DC</sub>	> 100V <sub>DC</sub>																																										
	After 1minute:0.03 CV(μA) or 4μA whichever is greater After 2minutes:0.01 CV(μA) or 3μA whichever is greater Where, C=Nominal Capacitance(μF) V=Rated Voltage(V <sub>DC</sub> )	<table border="1"> <thead> <tr> <th colspan="2">After 1 minute</th> <th colspan="2">After 5 minutes</th> </tr> <tr> <th>CV 1000</th> <th>CV&gt;1000</th> <th>CV 1000</th> <th>CV&gt;1000</th> </tr> </thead> <tbody> <tr> <td>0.1CV+40</td> <td>0.04CV+100</td> <td>0.03CV+15</td> <td>0.02CV+25</td> </tr> </tbody> </table>	After 1 minute		After 5 minutes		CV 1000	CV>1000	CV 1000	CV>1000	0.1CV+40	0.04CV+100	0.03CV+15	0.02CV+25																														
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CV 1000	CV>1000	CV 1000	CV>1000																																									
0.1CV+40	0.04CV+100	0.03CV+15	0.02CV+25																																									
Dissipation Factor(Tanδ)	<table border="1"> <thead> <tr> <th>Rated Voltage(V<sub>DC</sub>)</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> <th>160~250</th> <th>350~450</th> </tr> </thead> <tbody> <tr> <td>Tan δ</td> <td>0.34</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.20</td> <td>0.24</td> </tr> </tbody> </table>											Rated Voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63	100	160~250	350~450	Tan δ	0.34	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.20	0.24											
	Rated Voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63	100	160~250	350~450																																	
Tan δ	0.34	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.20	0.24																																		
When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase. (at 20 , 120Hz)																																												
Temperature Characteristic (Max. Impedance ratio)	<table border="1"> <thead> <tr> <th>Rated voltage(V<sub>DC</sub>)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63~100</th> <th>160</th> <th>200~250</th> <th>350~450</th> </tr> </thead> <tbody> <tr> <td>Z(-25 )/Z(20 )</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>4</td> <td>8</td> <td>16</td> </tr> <tr> <td>Z(-40 )/Z(20 )</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>4</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>											Rated voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63~100	160	200~250	350~450	Z(-25 )/Z(20 )	5	4	3	2	2	2	3	4	8	16	Z(-40 )/Z(20 )	12	10	8	5	4	3	4	-	-	-
	Rated voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63~100	160	200~250	350~450																																	
	Z(-25 )/Z(20 )	5	4	3	2	2	2	3	4	8	16																																	
Z(-40 )/Z(20 )	12	10	8	5	4	3	4	-	-	-																																		
(at 120Hz)																																												
Load life	The following specifications shall be satisfied when the capacitors are restored to 20 after the rated voltage is applied for 2000 hours at 85 .																																											
	Capacitance change	± 20% of the initial value																																										
Tanδ	200% of the initial specified value																																											
Leakage current	The initial specified value																																											
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20 after exposing them for 1000 hours at 85 , without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurement.																																											
	Capacitance change	± 20% of the initial value																																										
	Tanδ	200% of the initial specified value																																										
	Leakage current	The initial specified value(where, 200% for WV 160V <sub>DC</sub> )																																										
Others	Satisfied characteristics W of KS C6421																																											

## RATED RIPPLE CURRENT MULTIPLIERS

### Frequency Multipliers

Freq.(Hz)	60	120	300	1k	10k~
Cap.(μF)					
~ 6.8	0.65	1.00	1.35	1.75	2.30
10 ~ 68	0.75	1.00	0.25	1.50	1.75
100 ~ 1000	0.80	1.00	1.15	1.30	1.40
2200 ~	0.85	1.00	1.03	1.05	1.08

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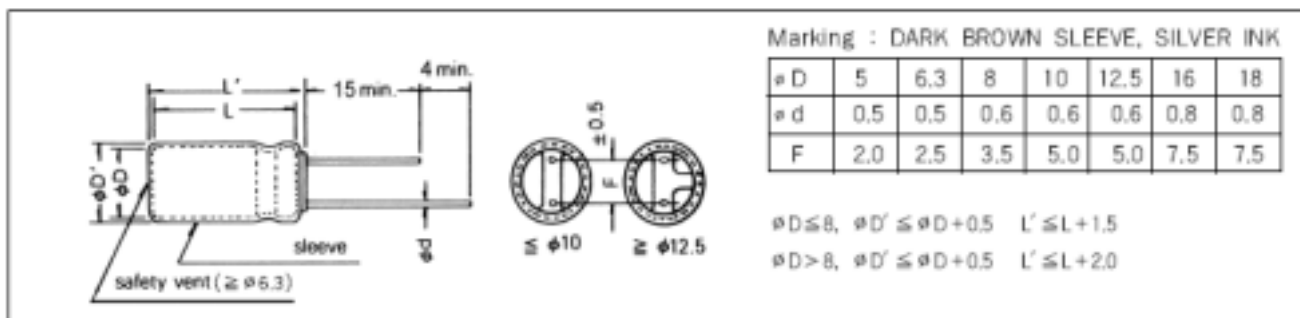


## RATINGS OF SHL Series

$V_{DC}$ $\mu F$	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
0.1						5x11 5.5	5x11 6.2	5x11 6.5						
0.22						5x11 8	5x11 9	5x11 11						
0.33						5x11 10	5x11 11	5x11 13						
0.47						5x11 15	5x11 16	5x11 17	6.3x11 18	6.3x11 18	6.3x11 19	6.3x11 20	6.3x11 20	
0.68						5x11 18	5x11 19	5x11 19	6.3x11 21	6.3x11 21	6.3x11 22	6.3x11 23	6.3x11 23	
1						5x11 22	5x11 24	5x11 24	6.3x11 25	6.3x11 26	6.3x11 27	6.3x11 28	6.3x11 29	8x11.5 26
2.2						5x11 34	5x11 35	5x11 37	6.3x11 38	6.3x11 39	6.3x11 41	8x11.5 46	8x11.5 47	8x11.5 40
3.3						5x11 41	5x11 43	5x11 44	6.3x11 46	6.3x11 47	8x11.5 54	8x11.5 56	10x12.5 64	10x16 58
4.7					5x11 35	5x11 48	5x11 53	5x11 55	6.3x11 56	8x11.5 64	8x11.5 66	10x12.5 77	10x16 77	10x20 76
6.8					5x11 46	5x11 59	5x11 63	5x11 64	8x11.5 78	8x11.5 80	8x11.5 82	10x12.5 92	10x16 100	10x20 90
10			5x11 39	5x11 49	5x11 53	5x11 71	5x11 76	6.3x11 87	10x12.5 110	10x12.5 112	10x16 114	10x20 123	10x20 134	12.5x20 120
22		5x11 52	5x11 68	5x11 73	5x11 80	5x11 106	5x11 113	6.3x11 130	10x20 181	10x20 183	10x20 198	12.5x20 233	12.5x25 254	16x25 228
33	5x11 41	5x11 70	5x11 76	5x11 83	5x11 100	5x11 129	6.3x11 159	8x11.5 187	10x20 243	10x20 245	12.5x20 286	16x25 312	16x25 345	16x31.5 309
47	5x11 59	5x11 88	5x11 98	5x11 126	5x11 138	6.3x11 177	6.3x11 190	10x12.5 259	12.5x20 341	12.5x20 343	12.5x25 371	16x25 413	16x31.5 451	16x35.5 403
68	5x11 90	5x11 110	5x11 130	5x11 151	6.3x11 191	6.3x11 213	8x11.5 269	10x16 342	12.5x20 410	12.5x20 447	16x25 495	16x31.5 542	16x35.5 569	18x40 573
100	5x11 135	5x11 150	5x11 170	6.3x11 211	6.3x11 231	8x11.5 306	8x11.5 321	10x20 453	12.5x25 541	16x25 601	16x31.5 658	18x31.5 691	18x40 778	
220	5x11 211	5x11 229	6.3x11 290	8x11.5 370	8x11.5 405	10x12.5 506	10x16 315	12.5x25 860	16x31.5 976	18x35.5 1099	18x40 1152			
330	6.3x11 297	6.3x11 322	8x11.5 419	8x11.5 453	10x12.5 576	10x16 706	10x20 823	16x20 1169	18x35.5 1346					
470	6.3x11 355	6.3x11 384	8x11.5 499	10x12.5 628	10x16 753	10x20 918	12.5x20 1153	16x25 1394						
680	8x11.5 503	8x11.5 546	10x12.5 690	10x16 826	10x20 988	12.5x20 1296	12.5x25 1512	16x35.5 1620						
1000	8x11.5 610	10x12.5 791	10x16 928	10x20 1094	12.5x20 1407	12.5x25 1715	16x25 2037	18x40 2130						
2200	10x20 1147	10x20 1226	12.5x20 1555	12.5x25 1800	16x25 2134	16x35.5 2645								
3300	10x20 1350	12.5x20 1685	12.5x25 1970	16x25 2304	16x35.5 2806	18x35.5 3218								
4700	12.5x20 1822	12.5x25 2103	16x25 2487	16x31.5 2854	18x35.5 3386									
6800	12.5x25 2235	16x25 2606	16x31.5 3010	18x35.5 3528										
10000	16x25 2760	16x35.5 3302	18x35.5 3705											
15000	16x35.5 3453	18x35.5 3826	← Case Size $\varnothing D \times L$ (mm) ← Rated Ripple Current (mA rms/ 85 °C, 120Hz)											

## DIMENSIONS OF SHL Series

Unit (mm)



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[RXW471M1ESA-0815](#) [ELXZ630ELL221MJ25S](#) [ERR1HM1R0D11OT](#) [LPE681M30060FVA](#) [LPL471M22030FVA](#) [HFE221M25030FVA](#)  
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[LKMD1401H181MF](#) [LKMI2502G820MF](#) [LKMJ2001J122MF](#) [LKML2501C472MF](#) [LKMJ4002C681MF](#) [450MXH330MEFCSN25X45](#)  
[450MXK330MA2RFC22X50](#) [63ZLH560MEFCG412.5X30](#) [ELH2DM331O25KT](#) [ELH2DM471P30KT](#)