SMD Aluminum Electrolytic Capacitors

HL Series – High Temperature Chip Type 105℃ 2000hrs

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Specifications

<table>
<tr><th>Item</th><th colspan="4">Performance</th></tr>
<tr><td>Operating Temperature Range</td><td colspan="2">-55 to+105℃</td><td colspan="2">-40 to+105℃</td></tr>
<tr><td>Rated Working Voltage Range</td><td colspan="2">6.3 – 100VDC</td><td colspan="2">160 – 450VDC</td></tr>
<tr><td>Nominal Capacitance Range</td><td colspan="4">1 – 8200μ F</td></tr>
<tr><td>Capacitance Tolerance</td><td colspan="4">± 20% (at+20℃ ,120Hz)</td></tr>
<tr><td>Leakage Current</td><td colspan="4">
<table>
<tr><td>Rated Vol.</td><td colspan="2">6.3-100V</td><td>160-450V</td></tr>
<tr><td>Time</td><td colspan="2">After 2 mins.</td><td>After 5 mins.</td></tr>
<tr><td>Case size</td><td>4 – 10mm dia.</td><td>12.5 – 18mm dia.</td><td>12.5 – 18mm dia.</td></tr>
<tr><td>Leakage Current</td><td>I=0.01CV or 3(μ A), whichever is greater</td><td>I=0.03CV or 3(μ A), whichever is greater</td><td>I=0.04CV + 100(μ A), whichever is greater</td></tr>
</table>
Where C=rated capacitance in UF, V=rated DC working voltage in V.
</td></tr>
<tr><td>Dissipation Factor (tanδ)
(120Hz\+20℃)</td><td colspan="4">
<table>
<tr><td>Rated vol.</td><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>400-450</td></tr>
<tr><td>Dia. : 4 - 10</td><td>0.45</td><td>0.35</td><td>0.28</td><td>0.18</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.12</td><td>-</td><td>-</td></tr>
<tr><td>Dia :2.5 – 18</td><td>0.40</td><td>0.38</td><td>0.34</td><td>0.26</td><td>0.22</td><td>0.18</td><td>0.14</td><td>0.10</td><td>0.20</td><td>0.25</td></tr>
</table>
</td></tr>
<tr><td>Characteristics at
Low Temperature
(stability at 120 Hz)</td><td colspan="4">
<table>
<tr><td colspan="3">Rated Vol.</td><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>400-450</td></tr>
<tr><td rowspan="4">I.R.</td><td rowspan="2">Z (-25℃) / Z (+20℃)</td><td>D<12.5</td><td>4</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>-</td><td>-</td></tr>
<tr><td>D≧12.5</td><td>5</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>6</td></tr>
<tr><td rowspan="2">Z (-55/-40℃) / Z (+20℃)</td><td>D<12.5</td><td>12</td><td>8</td><td>6</td><td>4</td><td>3</td><td>3</td><td>3</td><td>4</td><td>-</td><td>-</td></tr>
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Load life	The specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied for 2,000 hours at 105℃.

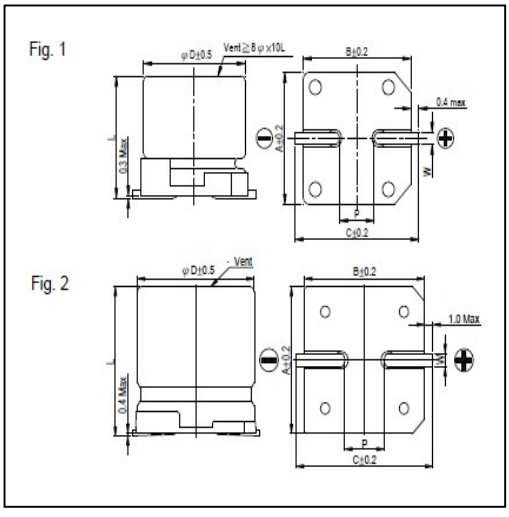
Test Time	2,000Hrs
Capacitance change	Within ±25% of initial value for .D≦6.3mm, within ±20% of initial value for .D≧8mm.
Dissipation Factor(tanδ)	Less than 300% of specified value for D ≦6.3mm, less than 200% of specified value for D≧8mm..
Leakage Current	Within specified value.

Shelf Life	Test time 1,000hrs : other items are the same as those for the Endurance. The rated voltage shall be applied to the capacitors before the measurements for 160-450V .

Ripple Current & Frequency Multipliers

Freq. (Hz)	50	120	1k	10k up
Cap. Under 1,000 UF	0.80	1.00	1.25	1.40
Cap. :1,000 UF ＜C 6,800 UF	0.85	1.00	1.15	1.25

Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

ϕD	L	A	B	C	W	P ± 0.2	Fig. No.
4	5.7 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	6.5 ± 0. 3	8.4	8.4	9.0	0.5 ~ 0.8	2.3	1
8	10 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1	1
10	7.7 ± 0.3	10.4	10.4	11.0	0.7 ~ 1.3	4.7	1
10	10 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7	1
12.5	13.5 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
12.5	16 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
16	16.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
16	21.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
18	16.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2
18	21.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2

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Case Size

Max ripple current: mA rms at 105℃. 120Hz (DxL mm)

W.V	6.3V		10V		16V		25V		35V		50		63		100V	
μF	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1											4x5.7	8	4x5.7	8		
2.2											4x5.7	12	4x5.7	12		
3.3											4x5.7	14	4x5.7	17		
4.7							4x5.7	17	4x5.7	17	5x5.7	20	6.3x5.7	22		
10					4x5.7	20	4x5.7	20	5x5.7	27	6.3x5.7	32	6.3x5.7	32		
22	4x5.7	22	4x5.7	22	5x5.7	30	5x5.7	30	6.3x5.7	44	6.3x5.7	38	6.3x7.7	58	8x10	100
33	5x5.7	34	5x5.7	34	5x5.7	34	6.3x5.7	46	6.3x5.7	46	6.3x7.7	65	8x10	140	10x10	150
47	5x5.7	38	5x5.7	38	6.3x5.7	48	6.3x5.7	48	6.3x7.7	80	6.3x7.7	70	8x10	170	12.5x13.5	250
100	5x5.7 6.3x5.7	40 69	6.3x5.7	69	6.3x5.7	69	6.3x7.7	100	8x10	240	8x10	210	10x10.3	310	12.5x13.5	380
220	6.3x7.7	120	6.3x7.7	120	6.3x7.7	120	8x10 10x7.7	270 270	8x10	270	10x10.3	330	12.5x13.5	470	16x16.5	450
330	8x10	290	8x10	290	8x10 10x7.7	290 290	8x10	290	10x10	370	12.5x13.5	490	16x16.5	650	18x16.5 16x21.5	590 750
470	8x10	320	8x10 10x7.7	320 320	10x10	380	10x10	380	12.5x13.5	520	12.5x16	550	16x16.5	700	18x21.5	980
1,000	10x10	410	10x10.3	410	12.5x13.5	550	12.5x16	550	16x16.5	800	18x16.5	990				
2,200	12.5x13.5	680	12.5x13.5	680	16x16.5	900	16x16.5	900	18x16.5	1.050						
3,300	12.5x16	850	16x16.5	950	16x16.5	950	18x16.5 16x21.5	1,150 1,200								
4,700	16x16.5	1,000	16x16.5	1,000	18x16.5 16x21.5	1,225 1,275	18x21.5	1,300								
6,800	18x16.5 16x21.5	1,290 1,350	18x16.5 16x21.5	1,290 1,350												
8,200	18x21.5	1,450	18x21.5	1,450												

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Max ripple current: mA rms at 105℃. 120Hz (DxL mm)

W.V	160V		200V		250V		400V		450V	
μF	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
3.3					12.5x13.5	60			12.5x13.5	40
4.7					12.5x13.5	65	12.5x13.5	45	12.5x13.5	45
10			12.5x13.5	80	12.5x13.5	70	12.5x13.5	50	12.5x16	75
22			12.5x16	110	12.5x13.5	105	16x16.5	85	16x16.5	85
33	12.5x13.5	95	12.5x16	120	16x16.5	180	18x16.5	100	18x16.5	100
47	16x16.5	240	16x16.5	220	16x16.5	220	18x21.5	130		
100	16x16.5	250	18x16.5	280	18x16.5	260				

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