

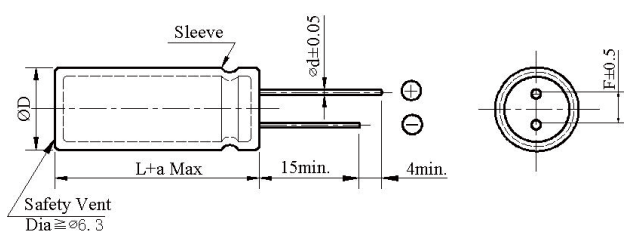
LL Series

- Extremely low and stable leakage current characteristics.
- Endurance: 2000 hours at 105°C.
- RoHS Compliant
- RoHS Compliant
- ◆ SPECIFICATIONS



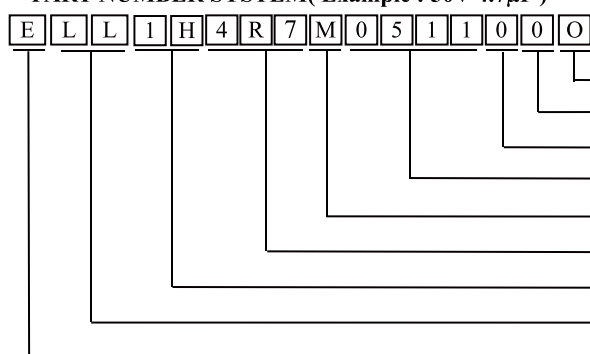
Item	Performance Characteristics																											
Category Temperature Range	-40 ~ +105°C																											
Working Voltage Range	6.3 ~ 100Vdc																											
Capacitance Range	0.47 ~ 2200 μF																											
Capacitance Tolerance	±20% (at 20°C and 120Hz)																											
Dissipation Factor (tanδ) (at 20°C, 120Hz)	<table border="1"> <tr> <td>Rated Voltage (V)</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> </tr> <tr> <td>tanδ(Max)</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>0.10</td> <td>0.10</td> </tr> </table>	Rated Voltage (V)	6.3	10	16	25	35	50	63	100	tanδ(Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10									
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100																			
tanδ(Max)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10																				
The above values should be increased by 0.02 for every additional 1000μF																												
Leakage Current	I=0.002CV or 0.4μA whichever is greater I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes																											
Low Temperature Characteristics Impedance Ratio(MAX)	<table border="1"> <tr> <td>Rated Voltage (V)</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> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Rated Voltage (V)	6.3	10	16	25	35	50	63	100	Z(-25°C)/Z(+20°C)	4	3	3	3	2	2	2	2	Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100																			
Z(-25°C)/Z(+20°C)	4	3	3	3	2	2	2	2																				
Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3																				
(at 120Hz)																												
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.																											
	<table border="1"> <tr> <td>Capacitance change</td> <td>≅ ±20% of the initial value</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≅ 200% of the specified value</td> </tr> <tr> <td>Leakage current</td> <td>≅ specified value</td> </tr> </table>	Capacitance change	≅ ±20% of the initial value	Dissipation factor(tanδ)	≅ 200% of the specified value	Leakage current	≅ specified value																					
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Dissipation factor(tanδ)	≅ 200% of the specified value																											
Leakage current	≅ specified value																											
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 20°C after the rated voltage applied for 500 hours at 105°C without voltage applied.																											
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◆ DIMENSIONS (mm)



ΦD	5	6.3	8	10	12.5
ΦD	ΦD +0.5 Max				
Φd	0.5	0.5	0.5/0.6	0.6	0.6
F	2.0	2.5	3.5	5.0	5.0
a	L+2.0 Max				

◆ PART NUMBER SYSTEM(Example : 50V 4.7μF)



LL Series

◆ Standard Ratings & Permissible rated ripple current

WV (Vdc)	Cap (μF)	Case Size ΦD×L (mm)	Max. Rated ripple current mArms@105°C 120Hz
6.3	22	5×11	36
	33	5×11	44
	47	5×11	53
	100	5×11	74
	220	6.3×11	131
	330	6.3×11	161
	470	8×12	242
	1000	10×12	390
	2200	12.5×20	665
10	22	5×11	50
	33	5×11	66
	47	5×11	75
	100	5×11	104
	220	8×12	193
	330	8×12	256
	470	8×12	319
	1000	10×16	605
	2200	12.5×20	860
16	10	5×11	39
	22	5×11	62
	33	5×11	68
	47	5×11	105
	100	6.3×11	138
	220	8×12	220
	330	8×12	268
	470	10×12	407
	1000	10×20	704
2200	12.5×25	890	
25	4.7	5×11	32
	10	5×11	43
	22	5×11	65
	33	5×11	76
	47	6.3×11	116
	100	8×12	149
	220	10×12	246
	330	10×12	352
	470	10×16	484
1000	12.5×20	847	
35	4.7	5×11	33
	10	5×11	48
	22	6.3×11	71
	33	6.3×11	83
	47	6.3×11	125
	100	8×12	187
	220	10×12	330
	330	10×16	440
	470	12.5×20	590
1000	12.5×25	1012	

WV (Vdc)	Cap (μF)	Case Size ΦD×L (mm)	Max. Rated ripple current mArms@105°C 120Hz
50	0.47	5×11	12
	1	5×11	17
	2.2	5×11	24
	3.3	5×11	29
	4.7	5×11	36
	10	5×11	52
	22	6.3×11	77
	33	6.3×11	99
	47	8×12	138
	100	10×12	217
	220	10×20	380
	330	12.5×20	506
63	470	12.5×25	705
	0.47	5×11	12
	1	5×11	17
	2.2	5×11	24
	3.3	5×11	32
	4.7	5×11	39
	10	6.3×11	58
	22	6.3×11	94
	33	8×12	110
	47	8×12	152
	100	10×16	260
	220	10×20	440
100	330	12.5×20	594
	0.47	5×11	12
	1	5×11	17
	2.2	5×11	24
	3.3	5×11	32
	4.7	6.3×11	39
	10	8×12	61
	22	8×12	106
	33	10×12	142
	47	10×16	184
	100	12.5×20	300
	220	12.5×30	533

◆ RIRIPPLE CURRENT MULTIPLIERS
Frequency Multipliers

Cap(μF)	Frequency (Hz)				
	50/60	120	1K	10K	100K
0.47 ~ 82	0.60	1.00	1.45	1.65	1.70
100 ~ 820	0.80	1.00	1.36	1.48	1.53
1000 ~ 2200	0.85	1.00	1.25	1.35	1.45