



# LL Series

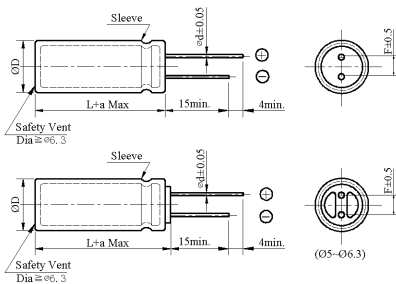
- High ripple current capability
- High stability



◆ SPECIFICATIONS

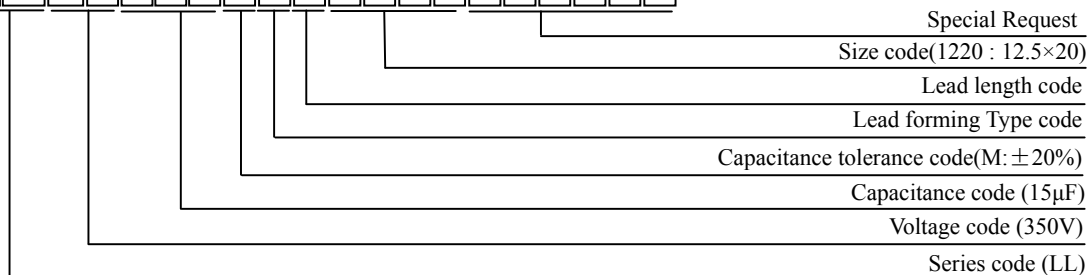
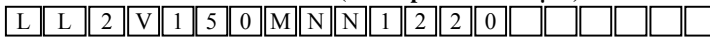
Item	Performance Characteristics																
Category Temperature Range	-25 ~ +105°C																
Working Voltage Range	200 ~ 450Vdc																
Capacitance Range	1 ~ 68 µF																
Capacitance Tolerance	±20% (at 25°C and 120Hz)																
Dissipation Factor (tanδ) (at 25°C, 120Hz)	<table border="1"> <tr> <td>Rated Voltage (V)</td> <td>200 ~ 250</td> <td>350</td> <td>400 ~ 450</td> </tr> <tr> <td>tanδ(Max)</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> </tr> </table>	Rated Voltage (V)	200 ~ 250	350	400 ~ 450	tanδ(Max)	0.15	0.20	0.20								
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tanδ(Max)	0.15	0.20	0.20														
The above values should be increased by 0.02 for every additional 1000µF																	
Leakage Current	$I \leq 0.03CV + 10 \mu A$ 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>200 ~ 250</td> <td>350</td> <td>400</td> <td>420 ~ 450</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>3</td> <td>5</td> <td>5</td> <td>6</td> </tr> </table> <p style="text-align: right;">(at 120Hz)</p>	Rated voltage (V)	200 ~ 250	350	400	420 ~ 450	Z(-25°C)/Z(+20°C)	3	5	5	6						
Rated voltage (V)	200 ~ 250	350	400	420 ~ 450													
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Endurance	The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 ~ 5,000 hours at 105°C																
Shelf Life	<table border="1"> <tr> <td>Capacitance change</td> <td>≒ ±20% of the initial value</td> <td>Size</td> <td>Life time (hours)</td> </tr> <tr> <td>Dissipation factor(tanδ)</td> <td>≒ 200% of the specified value</td> <td>≒ 6.3Φ</td> <td>2,000</td> </tr> <tr> <td>Leakage current</td> <td>≒ specified value</td> <td>≒ 8 Φ</td> <td>3,000</td> </tr> <tr> <td></td> <td></td> <td>≒ 10Φ</td> <td>5,000</td> </tr> </table>	Capacitance change	≒ ±20% of the initial value	Size	Life time (hours)	Dissipation factor(tanδ)	≒ 200% of the specified value	≒ 6.3Φ	2,000	Leakage current	≒ specified value	≒ 8 Φ	3,000			≒ 10Φ	5,000
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Leakage current	≒ specified value	≒ 8 Φ	3,000														
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The following requirements shall be satisfied when the capacitor are restored to 25°C after the rated voltage applied for 500 hours at 105°C without voltage applied.																	
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Others	Conforms to JIS-C-5101-4 (1998), characteristic W																

◆ DIMENSIONS (mm)



ΦD	5	6.3	8	10	12.5 L < 35	12.5 L ≥ 35	16	18
ΦD	ΦD + 0.5 Max							
Φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0		7.5	7.5
a	L + 1.5 Max				$\leq 35 L + 1.5 \text{Max}$ $\geq 40 L + 2.0 \text{Max}$		L + 1.5 Max	

◆ PART NUMBER SYSTEM( Example : 350V 15µF )





## LL Series

◆ Case size & Permissible rated ripple current: (mA rms) at 105°C / 120Hz

uF \ Vdc	200		250		350		400		450	
	ΦD × L	RC	ΦD × L	RC	ΦD × L	RC	ΦD × L	RC	ΦD × L	RC
1	5×11	16	5×11	15	6.3×11	15	6.3×11	17	6.3×11	14
2.2	6.3×11	25	6.3×11	23	6.3×11	26	8×11.5	30	10×12.5	24
2.7	6.3×11	28	6.3×11	28	8×11.5	32	10×12.5	35	10×12.5	30
3.3	8×11.5	30	8×11.5	32	10×12.5	38	10×12.5	38	10×16	32
4.7	8×11.5	39	8×11.5	39	10×16	45	10×16	50	10×20	41
5.6	8×11.5	42	10×12.5	45	10×16	50	10×20	55	10×20	46
6.8	10×12.5	55	10×12.5	60	10×16	55	10×20	60	12.5×20	55
8.2	10×12.5	60	10×12.5	65	10×20	65	12.5×20	75	12.5×20	60
10	10×16	65	10×16	74	10×20	80	12.5×20	90	12.5×25	75
15	10×20	80	10×20	95	12.5×20	100	12.5×25	130	12.5×25	95
22	12.5×20	120	12.5×20	130	12.5×20	115	16×25	165	16×25	125
33	12.5×20	160	12.5×25	160	16×20	195	16×31.5	215	16×31.5	175
47	12.5×25	195	12.5×25	210	16×25	270	16×35.5	270	16×35.5	205
68	16×25	210	16×25	250	16×31.5	280	18×35.5	310	18×35.5	230

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Vdc	Cap(uF)	Frequency (Hz)				
		50/60	120	1K	10K	100K
200 ~ 450	1 ~ 68	0.80	1.00	1.40	1.60	1.60