

LL series

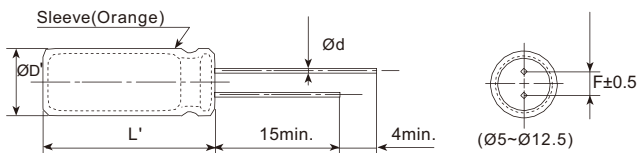
- Stable and extremely low leakage current characteristics
- Endurance: 2,000 hours at 105°C
- Wide temperature range of -40°C~+105°C
- **RoHS Compliant**



SPECIFICATIONS

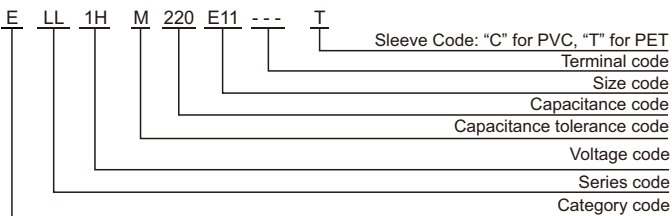
Items	Characteristics																											
Category Temperature Range	-40~+105°C																											
Rated Working Voltage Range	6.3~100 V _{dc}																											
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)																											
Leakage Current	I ≤ 0.002CV or 0.4μA, whichever is greater. Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes)																											
Dissipation Factor (tanδ)	<table border="1"> <tr> <td>Rated Voltage(V_{dc})</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>Dissipation Factor (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> <p>When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz)</p>	Rated Voltage(V _{dc})	6.3	10	16	25	35	50	63	100	Dissipation Factor (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10									
Rated Voltage(V _{dc})	6.3	10	16	25	35	50	63	100																				
Dissipation Factor (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.10																				
Low Temperature Characteristics (Max. Impedance Ratio)	<table border="1"> <tr> <td>Rated Voltage(V_{dc})</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>2</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> <p>(at 120Hz)</p>	Rated Voltage(V _{dc})	6.3	10	16	25	35	50	63	100	Z(-25°C)/Z(+20°C)	4	3	3	2	2	2	2	2	Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3
Rated Voltage(V _{dc})	6.3	10	16	25	35	50	63	100																				
Z(-25°C)/Z(+20°C)	4	3	3	2	2	2	2	2																				
Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3																				
Endurance	<p>The following specifications shall be satisfied when the capacitors are restored to 20 °C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105 °C.</p> <table border="1"> <tr> <td>Capacitance Change</td> <td>≤±20% of the initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤200% of the initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td>≤The initial specified value</td> </tr> </table>	Capacitance Change	≤±20% of the initial value	Dissipation Factor	≤200% of the initial specified value	Leakage Current	≤The initial specified value																					
Capacitance Change	≤±20% of the initial value																											
Dissipation Factor	≤200% of the initial specified value																											
Leakage Current	≤The initial specified value																											
Shelf Life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied.</p> <table border="1"> <tr> <td>Capacitance Change</td> <td>≤±20% of the initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤200% of the initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td>≤200% of the initial specified value</td> </tr> </table>	Capacitance Change	≤±20% of the initial value	Dissipation Factor	≤200% of the initial specified value	Leakage Current	≤200% of the initial specified value																					
Capacitance Change	≤±20% of the initial value																											
Dissipation Factor	≤200% of the initial specified value																											
Leakage Current	≤200% of the initial specified value																											

DIMENSIONS[mm]



ØD	5	6.3	8	10	12.5
Ød	0.45	0.5	0.5	0.6	0.6
F	2.0	2.5	3.5	5.0	5.0
ØD'	ØD+0.5max.				
L'	L+2max.				

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

WV (V _{dc}) \ Freq.(Hz)	50(60)	120	1k	10k	100k
Cap.<100	0.80	1.00	1.45	1.65	1.70
100≤Cap.<1000	0.80	1.00	1.36	1.48	1.53
Cap.≥1000	0.85	1.00	1.25	1.35	1.38

LL series

STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size ΦDxL(mm)	Rated ripple current (mArms/105°C, 120Hz)	Part Number
6.3	22	5×11	36	ELL0JM220D11---T
	33	5×11	44	ELL0JM330D11---T
	47	5×11	53	ELL0JM470D11---T
	100	5×11	74	ELL0JM101D11---T
	220	6.3×11	131	ELL0JM331E11---T
	330	6.3×11	161	ELL0JM471F11---T
	470	8×11	242	ELL0JM102G13---T
	1000	10×13	390	ELL0JM222W20---T
2200	12.5×20	665	ELL1AM220D11---T	
10	22	5×11	50	ELL1AM330D11---T
	33	5×11	66	ELL1AM470D11---T
	47	5×11	75	ELL1AM101D11---T
	100	5×11	104	ELL1AM102G16---T
	220	8×11	193	ELL1AM222W20---T
	330	8×11	256	ELL1CM100D11---T
	470	8×11	319	ELL1CM220D11---T
	1000	10×16	605	ELL1CM330D11---T
2200	12.5×20	860	ELL1CM470D11---T	
16	10	5×11	39	ELL1CM101E11---T
	22	5×11	62	ELL1CM221F11---T
	33	5×11	68	ELL1CM331F11---T
	47	5×11	105	ELL1CM471G13---T
	100	6.3×11	138	ELL1CM102G20---T
	220	8×11	220	ELL1CM222W25---T
	330	8×11	268	ELL1EM100D11---T
	470	10×13	407	ELL1EM220D11---T
1000	10×20	704	ELL1EM330D11---T	
2200	12.5×25	890	ELL1EM470E11---T	
25	10	5×11	43	ELL1EM221G13---T
	22	5×11	65	ELL1EM331G13---T
	33	5×11	76	ELL1EM471G16---T
	47	6.3×11	116	ELL1EM102W20---T
	100	8×11	149	ELL1VM100D11---T
	220	10×13	246	ELL1VM220E11---T
	330	10×13	352	ELL1VM330E11---T
	470	10×16	484	ELL1VM470E11---T
1000	12.5×20	847	ELL1VM221G13---T	
35	10	5×11	48	ELL1VM331G16---T
	22	6.3×11	71	ELL1VM471W20---T
	33	6.3×11	83	ELL1VM102W25---T
	47	6.3×11	125	ELL1HMR47D11---T
	100	8×11	187	ELL1HM010D11---T
	220	10×13	330	ELL1HM2R2D11---T
	330	10×16	440	ELL1HM3R3D11---T
	470	12.5×20	590	ELL1HM4R7D11---T
1000	12.5×25	1012	ELL1HM100D11---T	
50	0.47	5×11	12	ELL1HM220E11---T
	1	5×11	17	ELL1HM330E11---T
	2.2	5×11	24	ELL1HM470F11---T
	3.3	5×11	29	ELL1HM331W20---T
	4.7	5×11	36	ELL1HM471W25---T
	10	5×11	52	ELL1JMR47D11---T
	22	6.3×11	77	ELL1JM010D11---T
	33	6.3×11	99	ELL1JM2R2D11---T
	47	8×11	138	ELL1JM3R3D11---T
	100	10×13	217	ELL1JM4R7D11---T
	220	10×20	380	ELL0JM221E11---T
	330	12.5×20	506	ELL1EM101F11---T
470	12.5×25	705	ELL1VM101F11---T	
63	0.47	5×11	12	ELL1HM101G13---T
	1	5×11	17	ELL1HM221G20---T
	2.2	5×11	24	ELL1AM221F11---T
	3.3	5×11	32	ELL1AM331F11---T
4.7	5×11	39	ELL1AM471F11---T	

WV (V _{dc})	Cap (μF)	Size ΦDxL(mm)	Rated ripple current (mArms/105°C, 120Hz)	Part Number
	10	6.3×11	58	ELL1JM100E11---T
	22	6.3×11	94	ELL1JM220E11---T
	33	8×11	110	ELL1JM330F11---T
	47	8×11	152	ELL1JM470F11---T
	100	10×16	260	ELL1JM101G16---T
	220	10×20	440	ELL1JM221G20---T
	330	12.5×20	594	ELL1JM331W20---T
100	0.47	5×11	12	ELL1KMR47D11---T
	1	5×11	17	ELL1KM010D11---T
	2.2	5×11	24	ELL1KM2R2D11---T
	3.3	5×11	32	ELL1KM3R3D11---T
	4.7	6.3×11	39	ELL1KM4R7E11---T
	10	8×11	61	ELL1KM100F11---T
	22	8×11	106	ELL1KM220F11---T
	33	10×13	142	ELL1KM330G13---T
	47	10×16	184	ELL1KM470G16---T
	100	12.5×20	300	ELL1KM101W20---T
	220	12.5×30	533	ELL1KM221W30---T

※ Specifications subject to change without notice.