



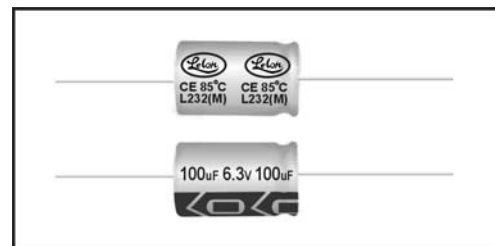
Aluminum Electrolytic Capacitors

TL/TLA

CE02 Type

Features

- 85°C, standard low leakage current series.

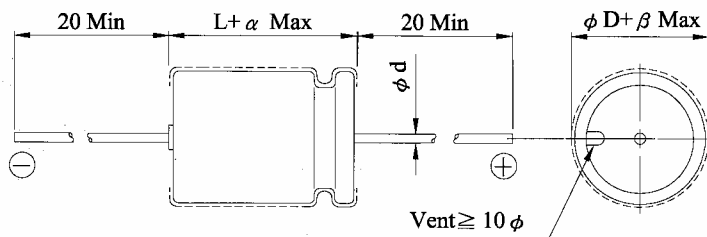


SPECIFICATIONS

Items	Performance																														
	TL	TLA																													
Life	At 85℃, 1000 Hrs	At 85℃, 2000 Hrs																													
Operating Temperature Range	-40℃ ~ +85℃																														
Capacitance Tolerance	±20% (at 120Hz, 20℃)																														
Leakage Current (at 20℃)	I = 0.002CV or 0.4 (μ A) whichever is greater (after 2 minutes) Where, C= rated capacitance in μ F. V = rated DC working voltage in V.																														
Dissipation Factor (Tan δ at 120Hz, 20℃)	<table><tr><td>Rated Voltage</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>Tan δ (max)</td><td>0.24</td><td>0.21</td><td>0.17</td><td>0.15</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td></tr></table> When the capacitance exceeds 1000 μ F, 0.02 shall be added every 1000 μ F increase.		Rated Voltage	6.3	10	16	25	35	50	63	100	Tan δ (max)	0.24	0.21	0.17	0.15	0.12	0.10	0.09	0.08											
Rated Voltage	6.3	10	16	25	35	50	63	100																							
Tan δ (max)	0.24	0.21	0.17	0.15	0.12	0.10	0.09	0.08																							
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below. <table><tr><td colspan="2">Rated Voltage</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 rowspan="2">Impedance Ratio</td><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>2</td><td>2</td></tr><tr><td>Z(-40℃)/Z(+20℃)</td><td>10</td><td>8</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td><td>3</td></tr></table>		Rated Voltage		6.3	10	16	25	35	50	63	100	Impedance Ratio	Z(-25℃)/Z(+20℃)	5	4	3	2	2	2	2	2	Z(-40℃)/Z(+20℃)	10	8	6	4	4	3	3	3
Rated Voltage		6.3	10	16	25	35	50	63	100																						
Impedance Ratio	Z(-25℃)/Z(+20℃)	5	4	3	2	2	2	2	2																						
	Z(-40℃)/Z(+20℃)	10	8	6	4	4	3	3	3																						
Load Life Test	<table><tr><td>Test Time</td><td>1000 / 2000 Hrs</td></tr><tr><td>Capacitance Change</td><td>With in ±20%of initial value</td></tr><tr><td>Dissipation Factor</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20℃after the rated voltage applied for 1000/2000 hrs at 85℃.		Test Time	1000 / 2000 Hrs	Capacitance Change	With in ±20%of initial value	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																					
Test Time	1000 / 2000 Hrs																														
Capacitance Change	With in ±20%of initial value																														
Dissipation Factor	Less than 200% of specified value																														
Leakage Current	Within specified value																														
Shelf Life Test	<table><tr><td>Test Time</td><td>1000 Hrs</td></tr><tr><td>Capacitance Change</td><td>Within ±20%of initial value</td></tr><tr><td>Dissipation Factor</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20℃after exposing them for 1000 hrs at 85℃ without voltage applied.		Test Time	1000 Hrs	Capacitance Change	Within ±20%of initial value	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																					
Test Time	1000 Hrs																														
Capacitance Change	Within ±20%of initial value																														
Dissipation Factor	Less than 200% of specified value																														
Leakage Current	Within specified value																														
Ripple Current & Frequency Multipliers	<table><tr><td> Freq.(Hz) Cap.(μ F) </td><td>60</td><td>120</td><td>500</td><td>1K</td><td>10K up</td></tr><tr><td>Under 100</td><td>0.75</td><td>1.00</td><td>1.35</td><td>1.55</td><td>2.00</td></tr><tr><td>100 to 1000</td><td>0.83</td><td>1.00</td><td>1.23</td><td>1.32</td><td>1.50</td></tr><tr><td>1000 up above</td><td>0.90</td><td>1.00</td><td>1.12</td><td>1.10</td><td>1.15</td></tr></table>		Freq.(Hz) Cap.(μ F)	60	120	500	1K	10K up	Under 100	0.75	1.00	1.35	1.55	2.00	100 to 1000	0.83	1.00	1.23	1.32	1.50	1000 up above	0.90	1.00	1.12	1.10	1.15					
Freq.(Hz) Cap.(μ F)	60	120	500	1K	10K up																										
Under 100	0.75	1.00	1.35	1.55	2.00																										
100 to 1000	0.83	1.00	1.23	1.32	1.50																										
1000 up above	0.90	1.00	1.12	1.10	1.15																										
Other Standards	JIS C 5101-4																														

CE02 Type

DIAGRAM OF DIMENSIONS



Unit: mm

LEAD DIAMETER

ϕD	5	6.3	8	10	13	16	18	22
ϕd	0.6				0.8			1.0
α	1.5				2.0			
β	0.5				1.0			

Dimension: $\phi D \times L$ (mm)

Ripple Current: mA/rms at 120 Hz, 85°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

μF	Contents	V.DC		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
0.1	0R1													5 × 12	1.5	5 × 12	3	5 × 12	3
0.22	R22													5 × 12	3.5	5 × 12	4.5	5 × 12	4.5
0.33	R33													5 × 12	5	5 × 12	7.5	5 × 12	7.5
0.47	R47													5 × 12	6	5 × 12	9	5 × 12	9
1	010													5 × 12	10	5 × 12	15	5 × 12	15
2.2	2R2													5 × 12	20	5 × 12	20	5 × 12	30
3.3	3R3													5 × 12	30	5 × 12	42	5 × 12	48
4.7	4R7													5 × 12	50	5 × 12	54	6.3 × 13	61
10	100											5 × 12	66	5 × 12	79	6.3 × 13	79	6.3 × 13	90
22	220					5 × 12	83	5 × 12	89	6.3 × 13	104	6.3 × 13	125	6.3 × 13	139	8 × 16	149		
33	330	5 × 12	85	5 × 12	92	5 × 12	102	6.3 × 13	117	6.3 × 13	137	6.3 × 13	171	8 × 13	171	10 × 17	209		
47	470	5 × 12	101	5 × 12	117	6.3 × 13	129	6.3 × 13	149	6.3 × 13	182	8 × 13	204	8 × 16	233	10 × 21	261		
100	101	6.3 × 13	158	6.3 × 13	171	6.3 × 13	202	8 × 13	243	8 × 16	266	10 × 17	340	10 × 17	356	13 × 22	433		
220	221	6.3 × 16	250	6.3 × 16	272	8 × 16	333	8 × 16	412	10 × 21	472	10 × 21	575	13 × 27	601	16 × 33	712		
330	331	8 × 16	342	8 × 16	424	10 × 17	467	10 × 17	528	13 × 22	630	13 × 27	736	16 × 27	787	16 × 37	895		
470	471	8 × 16	408	8 × 16	506	10 × 21	584	10 × 21	686	13 × 27	786	16 × 27	939	16 × 33	973	18 × 37	1109		
1000	102	10 × 17	681	10 × 21	773	10 × 21	927	13 × 27	1046	16 × 27	1226	16 × 37	1458	18 × 43	1559				
2200	222	13 × 22	1151	13 × 22	1248	16 × 27	1536	16 × 33	1719	18 × 37	2009	22 × 43	2440						
3300	332	13 × 27	1473	13 × 27	1597	16 × 27	1882	18 × 37	2246	18 × 43	2533								
4700	472	16 × 27	1879	16 × 27	2038	16 × 37	2390	18 × 43	2760	22 × 43	3190								