



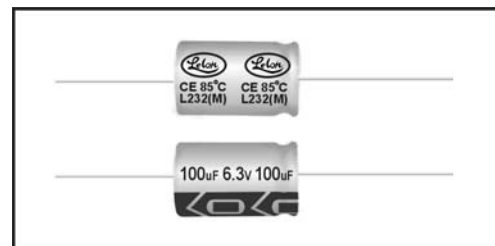
Aluminum Electrolytic Capacitors

TL/TLA

CE02 Type

Features

- 85°C, standard low leakage current series.

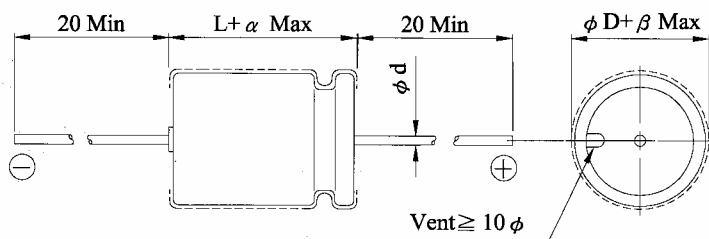


SPECIFICATIONS

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											
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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
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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																					
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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																					
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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					
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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								