

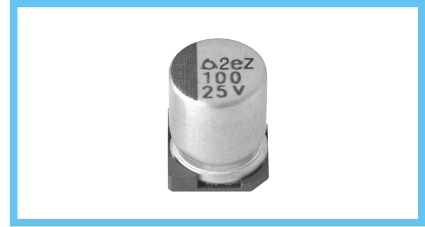
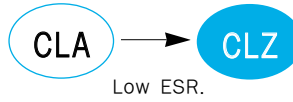
CLZ Series

• 125°C 1,000~5,000Hrs assured.

- Vertical SMD type.
- LOW ESR of CLA Series
- For ECU, ESA
- RoHS compliant.
- Halogen-free capacitors are also available.

Solvent-proof

WV ≤ 80V_{DC}

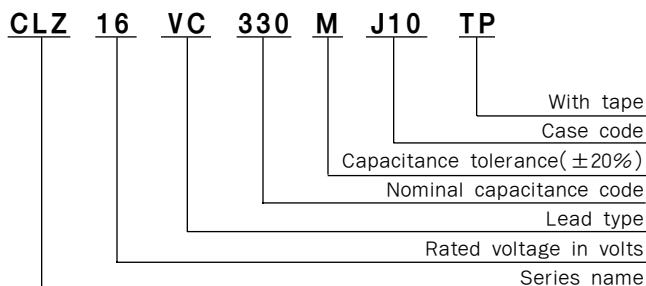


SPECIFICATIONS

Item	Characteristics																																	
Rated Voltage Range	10 ~ 400 V _{DC}																																	
Operating Temperature Range	-40 ~ +125°C																																	
Capacitance Tolerance	±20%(M)																																	
Leakage Current	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Rated voltage(V_{DC})</td> <td style="width: 35%;">10~100</td> <td style="width: 35%;">160~400</td> </tr> <tr> <td>Max. Leakage current (μA)</td> <td>I = 0.01CV(μA) or 3μA, whichever is greater. (at 20°C, 2 minutes)</td> <td>0.04CV + 100(μA) (at 20°C, 2 minutes)</td> </tr> </table> <p style="text-align: center; font-size: small;">Where, C : Nominal capacitance(μF), V : Rated voltage(V_{DC})</p>	Rated voltage(V _{DC})	10~100	160~400	Max. Leakage current (μA)	I = 0.01CV(μA) or 3μA, whichever is greater. (at 20°C, 2 minutes)	0.04CV + 100(μA) (at 20°C, 2 minutes)																											
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Dissipation Factor (Tanδ)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Rated voltage(VDC)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50~80</td> <td>100</td> <td>160~250</td> <td>400</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>0.20</td> <td>0.24</td> </tr> </table> <p style="text-align: right; font-size: small;">(at 20°C, 120Hz)</p>	Rated voltage(VDC)	10	16	25	35	50~80	100	160~250	400	Tanδ(Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.20	0.24															
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Temperature Characteristics (Max. Impedance ratio)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Rated voltage(V_{DC})</td> <td>10</td> <td>16</td> <td>25</td> <td>35~100</td> <td>160~250</td> <td>400</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>6</td> <td>10</td> </tr> </table> <p style="text-align: right; font-size: small;">(at 120Hz)</p>	Rated voltage(V _{DC})	10	16	25	35~100	160~250	400	Z(-25°C)/Z(+20°C)	4	3	2	2	3	6	Z(-40°C)/Z(+20°C)	8	6	4	3	6	10												
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Load Life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for the specified time at 125°C</p> <table style="width: 100%;"> <tr> <td style="width: 60%;">Capacitance change</td> <td style="width: 10%;">≤ ±30% of the initial value</td> <td style="width: 30%;"></td> </tr> <tr> <td>Tanδ</td> <td>≤ 300% of the initial specified value</td> <td></td> </tr> <tr> <td>Leakage current</td> <td>≤ The initial specified value</td> <td></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>Case Code</th> <th>10~80V</th> <th>100V</th> <th>160~400V</th> </tr> </thead> <tbody> <tr> <td>D55~F60</td> <td>1,000Hrs</td> <td>-</td> <td>-</td> </tr> <tr> <td>H63</td> <td>3,000Hrs</td> <td>-</td> <td>-</td> </tr> <tr> <td>H10</td> <td>5,000Hrs</td> <td>2,000Hrs</td> <td>-</td> </tr> <tr> <td>J10</td> <td>5,000Hrs</td> <td>2,000Hrs</td> <td>2,000Hrs</td> </tr> <tr> <td>K14~M22</td> <td>5,000Hrs</td> <td>5,000Hrs</td> <td>2,000Hrs</td> </tr> </tbody> </table>	Capacitance change	≤ ±30% of the initial value		Tanδ	≤ 300% of the initial specified value		Leakage current	≤ The initial specified value		Case Code	10~80V	100V	160~400V	D55~F60	1,000Hrs	-	-	H63	3,000Hrs	-	-	H10	5,000Hrs	2,000Hrs	-	J10	5,000Hrs	2,000Hrs	2,000Hrs	K14~M22	5,000Hrs	5,000Hrs	2,000Hrs
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H63	3,000Hrs	-	-																															
H10	5,000Hrs	2,000Hrs	-																															
J10	5,000Hrs	2,000Hrs	2,000Hrs																															
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Shelf Life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 125°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. (Where, D55 ~ F60 is 500 hours)</p> <p>Capacitance change ≤ ±30% of the initial value Tanδ ≤ 300% of the initial specified value Leakage current ≤ 500% of the initial specified value</p>																																	
Others	Satisfied characteristics KS C IEC 60384-4																																	

CLZ Series

PART NUMBERING SYSTEM



Capacitance	Code
0.1μF	R1
0.47μF	R47
1.0μF	1
4.7μF	4R7
10μF	10
100μF	100



SURFACE MOUNT ALUMINUM ELECTROLYTIC CAPACITORS

DIMENSIONS OF CLZ Series (Type : VC)

Unit(mm)

DIMENSIONS

● Vibration Resistance

<Size code:H63~M22> <Size code:L17~M22>

■ : Dummy terminals

Recommended solder land on PC board

■ : Solder land on PC board

MARKING

<D55~J10> <K14~M22>

Note 1 : L±0.5 for 8×6.3(H63)~18×21.5(M22)
 Note 2 : 4×5.2(D55), 5×5.2(E55) is excluded symbol mark

Case code	∅D	L	A	B	C	W	P	a	b	c	a	b	c
D55	4	5.2	4.3	4.3	5.1	0.5~0.8	1.0	1.0	2.6	1.6			
E55	5	5.2	5.3	5.3	5.9	0.5~0.8	1.4	1.4	3.0	1.6			
F55	6.3	5.2	6.6	6.6	7.2	0.5~0.8	1.9	1.9	3.5	1.6			
F60	6.3	5.7	6.6	6.6	7.2	0.5~0.8	1.9	1.9	3.5	1.6			
H63	8	6.3	8.3	8.3	9.0	0.5~0.8	2.3	2.3	4.5	1.6			
H10	8	10	8.3	8.3	9.0	0.7~1.1	3.1	3.1	4.2	2.2			
J10	10	10	10.3	10.3	11.0	0.7~1.1	4.5	4.5	4.4	2.2			
K14	12.5	13.5	13.0	13.0	13.7	1.0~1.3	4.2	4.0	5.7	2.5			
L17	16	16.5	17.0	17.0	18.0	1.0~1.3	6.5	6.0	6.9	2.5	4.7	7.8	9.6
L22	16	21.5	17.0	17.0	18.0	1.0~1.3	6.5	6.0	6.9	2.5			
M17	18	16.5	19.0	19.0	20.0	1.0~1.3	6.5	6.0	7.9	2.5	4.7	8.8	9.6
M22	18	21.5	19.0	19.0	20.0	1.0~1.3	6.5	6.0	7.9	2.5			

● Vibration Resistance

RATINGS OF CLZ Series

Vdc μF	10	16	25	35	50	63	80	100
10		D55 7.00 105	12 E55 3.30 49.5 23	F60 1.60 24.0 69	F60 2.80 42.0 51	H63 2.00 110 60	H10 1.20 50.0 70	H10 1.60 50.0 70
22	E55 3.30 49.5 23	E55 3.30 49.5 23	F55 2.00 30.0 40	F60 1.60 24.0 69	H63 1.60 30.0 83	H10 1.00 35.0 70	J10 0.55 35.0 115	J10 1.60 50.0 70
33	E55 3.30 49.5 23	F55 2.00 30.0 40	F60 1.60 24.0 69	H63 0.90 14.0 110	H10 0.70 11.0 160	J10 0.55 25.0 115	J10 0.55 35.0 115	J10 0.80 35.0 115
47	F55 2.00 30.0 40	F60 1.60 24.0 69	H63 0.90 14.0 110	H10 0.40 6.0 220	J10 0.50 11.0 247	J10 0.55 25.0 115	K14 0.33 16.5 450	K14 0.33 16.5 450
100	H63 0.90 14.0 110	H63 0.90 14.0 110	H10 0.40 6.0 220	H10 0.40 6.0 220	J10 0.50 7.5 247	K14 0.33 12.5 450	L17 0.24 9.0 650	K14 0.33 16.5 450
220	H10 0.40 6.0 220	H10 0.40 6.0 220	J10 0.30 4.5 296	J10 0.30 4.5 296	K14 0.23 3.5 550	L17 0.24 9.0 650	M17 0.16 2.5 950	
330	J10 0.30 4.5 296	J10 0.30 4.5 296	K14 0.14 2.1 750	K14 0.14 2.1 750	L17 0.15 2.3 850	L17 0.24 9.0 650		
470	J10 0.30 4.5 296	K14 0.14 2.1 750	L17 0.10 1.5 1000	M17 0.10 1.5 1000	M17 0.15 2.3 920	L22 0.16 5.5 950		
1,000	K14 0.14 2.1 750	M17 0.10 1.5 1200	M22 0.058 0.87 1550					
2,200	L17 0.10 1.5 1000							
3,300	M17 0.10 1.5 1200							
4,700	M22 0.058 0.87 1550							

↑ Rated Ripple Current (mA rms/125°C, 100kHz)
 ↑ ESR (Ω max./-40°C, 100kHz)
 ↑ ESR (Ω max./20°C, 100kHz)
 ↑ Case code

Vdc μF	160	200	250	400
1				J10 18
2.2				J10 26
3.3				J10 37
4.7				K14 70
10	K14 100	K14 100	L17 120	L22 140
22	L17 180	L17 180	M17 205	
33	M17 245	M17 245	M22 260	
47	M22 315	M22 315		
68	M22 380			

↑ Rated Ripple Current (mA rms/125°C, 120Hz)
 ↑ Case code