

CLZ Series

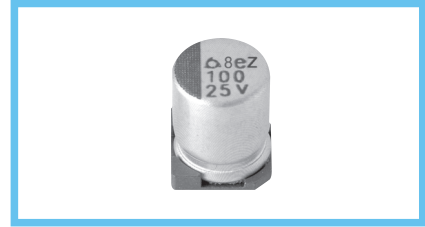
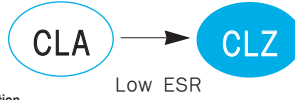
• 125°C 1,000~5,000Hrs assured.

- Vertical SMD type.
- Wide Temp., Low ESR.
- Suitable to fit for automotive equipment.
- RoHS compliant.
- Halogen-free capacitors are also available.

• AEC-Q200 compliant : Please contact us for more details, test data, information.

Solvent-proof

WV ≤ 80V_{DC}

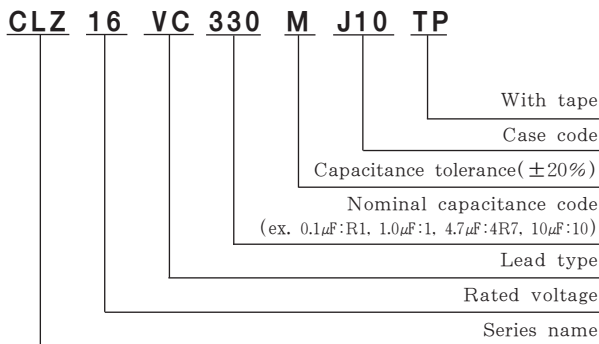


SPECIFICATIONS

| Item | Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|----------|------|--------|---------|------|---------|------|-----------|--------|------|----------|---------|----------|---|---|-----|----------|---|---|-----|----------|----------|---|-----|----------|----------|----------|---------|----------|----------|----------|
| Rated Voltage Range | 10 ~ 400 V _{DC} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating Temperature Range | -40 ~ +125°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | 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) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Where, C : Nominal capacitance(μF), V : Rated voltage(V _{DC}) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor(Tanδ) | Rated voltage(V _{DC}) | 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature Characteristics (Max. Impedance ratio) | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (at 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Load Life | 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. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanδ | ≤ 300% of the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ The initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="float: right; margin-left: auto; margin-right: 0;"> <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> | | | | | | | | | | 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 |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | 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) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Capacitance change | ≤ ±30% of the initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tanδ | ≤ 300% of the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | ≤ The initial specified value (where, 500% for ≥ WV 80 V _{DC}) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Others | Satisfied characteristics KS C IEC 60384-4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

CLZ Series

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

| Rated Voltage(V _{DC}) | Size code | Freq.(Hz) | | | | |
|---------------------------------|-----------|---------------|------|------|------|------|
| | | Cap.(μF) | 120 | 1K | 10K | 100K |
| 10 ~ 100 | D55 ~ J10 | 10 | 0.66 | 0.86 | 0.93 | 1.00 |
| | | 22 ~ 470 | 0.93 | 0.97 | 1.00 | 1.00 |
| | K14 ~ M22 | 47 ~ 100 | 0.40 | 0.75 | 0.90 | 1.00 |
| | | 220 ~ 1,000 | 0.50 | 0.85 | 0.94 | 1.00 |
| | | 2,200 ~ 3,300 | 0.75 | 0.90 | 0.95 | 1.00 |
| 160 ~ 400 | J10 ~ M22 | 4,700 | 0.85 | 0.95 | 0.98 | 1.00 |
| | | 1 ~ 33 | 1.00 | 1.50 | 1.75 | 1.80 |
| | | 47 ~ 68 | 1.00 | 1.30 | 1.40 | 1.50 |

DIMENSIONS OF CLZ Series

Unit(mm)

DIMENSIONS

● Vibration Resistance

<Size code: D55~M22> <Size code: H10~M22>

: Dummy terminals
 : Solder land on PC board

Recommended 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 | 3.1 | 4.2 | 3.5 |
| J10 | 10 | 10 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 | 4.5 | 4.4 | 2.2 | 4.5 | 4.4 | 3.5 |
| K14 | 12.5 | 13.5 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.2 | 4.0 | 5.7 | 2.5 | 3.4 | 6.3 | 9.3 |
| L17 | 16 | 16.5 | 17.0 | 17.0 | 18.0 | 1.0~1.3 | 6.5 | 6.0 | 6.9 | 2.5 | | | |
| L22 | 16 | 21.5 | 17.0 | 17.0 | 18.0 | 1.0~1.3 | 6.5 | 6.0 | 6.9 | 2.5 | 4.7 | 7.8 | 9.6 |
| M17 | 18 | 16.5 | 19.0 | 19.0 | 20.0 | 1.0~1.3 | 6.5 | 6.0 | 7.9 | 2.5 | | | |
| M22 | 18 | 21.5 | 19.0 | 19.0 | 20.0 | 1.0~1.3 | 6.5 | 6.0 | 7.9 | 2.5 | 4.7 | 8.8 | 9.6 |

※ Please inquire beforehand for 16, 18∅ size

● Vibration Resistance →

RATINGS OF CLZ Series

| V _{DC} 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 80.4 70 | H10 1.60 107.2 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 50.0 70 | J10 0.55 35.0 115 | J10 1.00 64.0 95 |
| 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 27.5 115 | J10 0.55 35.0 115 | J10 0.80 51.2 115 |
| 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 7.5 247 | J10 0.55 27.5 115 | K14 0.33 21.1 450 | K14 0.33 19.8 450 |
| 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 16.5 450 | L17 0.24 15.4 650 | K14 0.33 19.8 450 |
| 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 12.0 650 | M17 0.16 10.2 950 | |
| 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 12.0 650 | | |
| 470 | J10 0.30 4.5 296 | K14 0.14 2.1 750 | L17 0.10 1.5 1,000 | M17 0.10 1.5 1,000 | M17 0.15 2.3 920 | L22 0.16 8.0 950 | | |
| 1,000 | K14 0.14 2.1 750 | M17 0.10 1.5 1,200 | M22 0.058 0.87 1,550 | | | | | |
| 2,200 | L17 0.10 1.5 1,000 | | | | | | | |
| 3,300 | M17 0.10 1.5 1,200 | | | | | | | |
| 4,700 | M22 0.058 0.87 1,550 | | | | | | | |

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

| V _{DC} 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

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