

Surface Mount Type

Series: **ZC** Type: **V**

High temperature Lead-Free reflow



Features

- Endurance: 4000 h at 125 °C
(The longest endurance in the industry by each case size)
- Low ESR and High ripple current (85% over, Lower ESR than Current V-TP)
- High-withstand voltage (25 V to 63 V), Low LC(0.01 CV or 3 μA)
- Equivalent to conductive polymer type Aluminum Electrolytic Capacitor
(There are little characteristics change by temperature and frequency)
- Vibration-proof product is available upon request. (φ8 mm and larger).
- AEC-Q200 qualified*
- RoHS directive compliant

Specifications

| | | |
|------------------------------|---|------------------------------------|
| Category Temp. Range | -55 °C to +125 °C | |
| Rated Voltage Range | 25 V.DC to 63 V.DC | |
| Nominal Cap.Range | 10 μF to 330 μF | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | I ≤ 0.01 CV or 3 (μA) After 2 minutes (whichever is greater) | |
| tan δ | Please see the attached Standard Products list | |
| Endurance 1 | The capacitor shall be subjected to application of the D.C. voltage with full rated ripple current at +125 °C for 4000 hours. After stabilizing at room temperature(+15 to 35 °C), the capacitor shall not exceed the specified limits. (The sum of DC voltage and ripple peak voltage shall not exceed the rated voltage.) | |
| | Capacitance change | ±30 % of initial measured value |
| | tan δ | ≤ 200 % of initial specified value |
| | E. S. R. | ≤ 200 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Endurance 2 | The capacitor shall be subjected to application of the D.C. voltage with full rated ripple current at +125 °C for 3000 hours. After stabilizing at room temperature(+15 to 35 °C), the capacitor shall not exceed the specified limits. (The sum of DC voltage and ripple peak voltage shall not exceed the rated voltage.) | |
| | Capacitance change | ±30 % of initial measured value |
| | tan δ | ≤ 200 % of initial specified value |
| | E. S. R. | ≤ 300 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +125 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | |
| Damp Heat (Load) | After applying rated working voltage for 2000 hours at +85 °C±2 °C / 85% to 90%RH and then being stabilized at +20 °C, Capacitors shall meet the following limits. | |
| | Capacitance change | ±30 % of initial measured value |
| | tan δ | ≤ 200 % of initial specified value |
| | E. S. R. | ≤ 200 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Resistance to Soldering Heat | After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits. | |
| | Capacitance change | ±10 % of initial measured value |
| | tan δ | ≤ initial specified value |
| | DC leakage current | ≤ initial specified value |

Marking

Example: 25 V 33 μF Marking color : BLACK

Negative polarity marking (-)

Capacitance (μF)

Series identification

Rated Voltage Mark

Lot number

| Rated Voltage Mark | |
|--------------------|------|
| E | 25 V |
| V | 35 V |
| H | 50 V |
| J | 63 V |

Dimensions in mm (not to scale)

(Unit : mm)

| Size code | D | L | A, B | H | I | W | P | K |
|-----------|------|----------|------|-----------|-----|----------|-----|--|
| C | 5.0 | 5.8±0.3 | 5.3 | 6.5 max. | 2.2 | 0.65±0.1 | 1.5 | 0.35 ^{+0.15} _{-0.20} |
| D | 6.3 | 5.8±0.3 | 6.6 | 7.8 max. | 2.6 | 0.65±0.1 | 1.8 | 0.35 ^{+0.15} _{-0.20} |
| D8 | 6.3 | 7.7±0.3 | 6.6 | 7.8 max. | 2.6 | 0.65±0.1 | 1.8 | 0.35 ^{+0.15} _{-0.20} |
| F | 8.0 | 10.2±0.3 | 8.3 | 10.0 max. | 3.4 | 0.90±0.2 | 3.1 | 0.70±0.2 |
| G | 10.0 | 10.2±0.3 | 10.3 | 12.0 max. | 3.5 | 0.90±0.2 | 4.6 | 0.70±0.2 |

* This product qualify for AEC-Q200, but it has some deviations.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Standard Products

Endurance 1 : 125 °C 4000 h
Endurance 2 : 125 °C 3000 h

| R.V. (V) | Cap. (±20 %) (μF) | Case size | | | Specification | | | | Part No. (RoHS:compliant) | Reflow | Min. Packaging Q'ty |
|-------------|-------------------------|--------------|----------------|--------------|---|-------------|---|-------------------------------|------------------------------|--------|------------------------|
| | | Dia. (mm) | Length (mm) | Size Code | Ripple Current (100 kHz) (+125 °C) (mA r.m.s.) | | E.S.R. (100 kHz) (+20 °C) (mΩ) | tan δ (120 Hz) (+20 °C) | | | Taping (pcs) |
| | | | | | Endurance 1 | Endurance 2 | | | | | |
| 25 | 33 | 5 | 5.8 | C | 550 | – | 80 | 0.14 | EEHZA1E330R | (5) | 1000 |
| | 56 | 6.3 | 5.8 | D | 900 | – | 50 | 0.14 | EEHZA1E560P | (5) | 1000 |
| | 100 | 6.3 | 7.7 | D8 | 1400 | – | 30 | 0.14 | EEHZA1E101XP | (5) | 900 |
| | 220 | 8 | 10.2 | F | 1600 | 1900 | 27 | 0.14 | EEHZA1E221P | (6) | 500 |
| | 330 | 10 | 10.2 | G | 2000 | 2900 | 20 | 0.14 | EEHZA1E331P | (6) | 500 |
| 35 | 22 | 5 | 5.8 | C | 550 | – | 100 | 0.12 | EEHZA1V220R | (5) | 1000 |
| | 47 | 6.3 | 5.8 | D | 900 | – | 60 | 0.12 | EEHZA1V470P | (5) | 1000 |
| | 68 | 6.3 | 7.7 | D8 | 1400 | – | 35 | 0.12 | EEHZA1V680XP | (5) | 900 |
| | 150 | 8 | 10.2 | F | 1600 | 1900 | 27 | 0.12 | EEHZA1V151P | (6) | 500 |
| | 270 | 10 | 10.2 | G | 2000 | 2800 | 20 | 0.12 | EEHZA1V271P | (6) | 500 |
| 50 | 10 | 5 | 5.8 | C | 500 | – | 120 | 0.10 | EEHZA1H100R | (5) | 1000 |
| | 22 | 6.3 | 5.8 | D | 750 | – | 80 | 0.10 | EEHZA1H220P | (5) | 1000 |
| | 33 | 6.3 | 7.7 | D8 | 1100 | – | 40 | 0.10 | EEHZA1H330XP | (5) | 900 |
| | 68 | 8 | 10.2 | F | 1250 | – | 30 | 0.10 | EEHZA1H680P | (6) | 500 |
| | 100 | 10 | 10.2 | G | 1600 | – | 28 | 0.10 | EEHZA1H101P | (6) | 500 |
| 63 | 10 | 6.3 | 5.8 | D | 700 | – | 120 | 0.08 | EEHZA1J100P | (5) | 1000 |
| | 22 | 6.3 | 7.7 | D8 | 900 | – | 80 | 0.08 | EEHZA1J220XP | (5) | 900 |
| | 33 | 8 | 10.2 | F | 1100 | – | 40 | 0.08 | EEHZA1J330P | (6) | 500 |
| | 56 | 10 | 10.2 | G | 1400 | – | 30 | 0.08 | EEHZA1J560P | (6) | 500 |

- Please refer to the page of "Reflow Profile" and "The Taping Dimensions".
- When requesting vibration-proof product, please put the last "V" instead to "P".

■ Frequency correction factor for ripple current

| Capacitance (μF) | Frequency (kHz) | 0.1 | 0.12 | 0.2 | 0.3 | 0.5 | 1 | 2 | 3 | 5 | 10 | 15 | 20 | 30 | 40 | 50 | 100 | 300 | 500 | 1000 |
|---------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| C < 47 | Correction factor | 0.10 | 0.10 | 0.10 | 0.15 | 0.20 | 0.30 | 0.40 | 0.45 | 0.50 | 0.60 | 0.65 | 0.70 | 0.75 | 0.80 | 0.85 | 1.00 | 1.00 | 1.05 | 1.05 |
| 47 ≤ C < 150 | | 0.15 | 0.15 | 0.20 | 0.25 | 0.30 | 0.40 | 0.45 | 0.55 | 0.60 | 0.70 | 0.75 | 0.80 | 0.80 | 0.85 | 0.90 | 1.00 | 1.00 | 1.00 | 1.00 |
| 150 ≤ C | | 0.15 | 0.15 | 0.25 | 0.25 | 0.30 | 0.45 | 0.50 | 0.60 | 0.65 | 0.75 | 0.80 | 0.85 | 0.85 | 0.85 | 0.90 | 1.00 | 1.00 | 1.00 | 1.00 |

■ After Endurance ESR (100 kHz, –40 °C)

| Size | φ5×5.8 | φ6.3×5.8 | φ6.3×7.7 | φ8×10.2 | φ10×10.2 |
|--------|--------|----------|----------|---------|----------|
| ESR(Ω) | 2.0 | 1.4 | 0.8 | 0.4 | 0.3 |