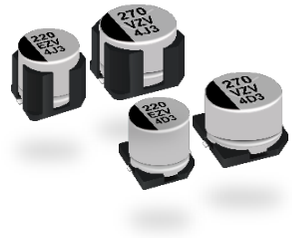
chanhvinh.com

Panasonic INDUSTRY

Hybrid



# Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

## Surface Mount Type

**ZV** series **High temperature lead-free reflow**

## Features

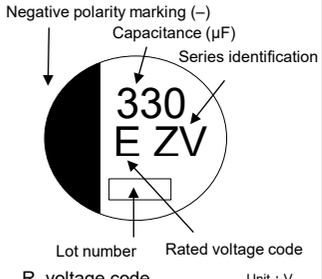
- Endurance: 4000 h at 125 °C / 135 °C
- Low ESR (up to 39 %, Lower ESR than Current ZT series)
- Higher ripple current (max 150 % of ZT series)
- AEC-Q200 compliant
- RoHS compliant

## Specifications

| Size code | F | G |
|---|---|---|
| Category temp. range | –55 °C to +135 °C | |
| Rated voltage range | 25 V to 63 V | |
| Nominal capacitance range | 33 µF to 220 µF | 56 µF to 330 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 ℃) | |
| Leakage current | I ≦ 0.01 CV (µA), 2 minutes after reaching rated voltage, 20 ℃ *CV = (Capacitance in µF) x (Rated voltage in V) | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | |
| Surge voltage (V) | Rated voltage × 1.25 (15 ℃ to 35 ℃) | |
| Endurance 1 | +125 ℃ ± 2 ℃, 4000 h, apply the rated ripple current without exceeding the rated voltage | |
| Capacitance change | Within ±30% of the initial value | |
| Dissipation factor (tan δ) | ≦ 200 % of the initial limit | |
| E.S.R. | ≦ 200 % of the initial limit | |
| Leakage current | Within the initial limit | |
| ESR after endurance (Ω / 100 kHz)(-40 ℃) | Size code F: 0.4 | Size code G: 0.3 |
| Endurance 2 | +135 °C ± 2 °C, 4000 h, apply the rated ripple current without exceeding the rated voltage | |
| Capacitance change | Within ±30% of the initial value | |
| Dissipation factor (tan δ) | ≦ 200 % of the initial limit | |
| E.S.R. | ≦ 200 % of the initial limit | |
| Leakage current | Within the initial limit | |
| ESR after endurance (Ω / 100 kHz)(-40 ℃) | Size code F: 0.4 | Size code G: 0.3 |
| Shelf life | After storage for 1000 hours at +135 °C ± 2 °C with no voltage applied and then being stabilized at +20 ℃, capacitors shall meet the limits specified in endurance. (With voltage treatment) | |
| Damp heat (Load) | 85 ℃ ± 2 ℃, 85 % to 90 %RH, 2000 h, rated voltage applied | |
| Capacitance change | Within ±30% of the initial value | |
| Dissipation factor (tan δ) | ≦ 200 % of the initial limit | |
| E.S.R. | ≦ 200 % of the initial limit | |
| Leakage current | Within the initial limit | |
| Resistance to soldering heat | After reflow soldering and then being stabilized at +20 ℃, capacitors shall meet the following limits. | |
| Capacitance change | Within ±10% of the initial value | |
| Dissipation factor (tan δ) | Within the initial limit | |
| Leakage current | Within the initial limit | |

## Marking

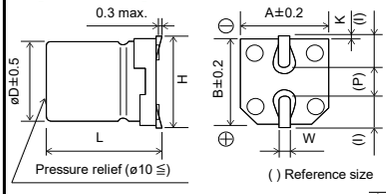
Example : 25 V 330 µF
Marking color : BLACK




| R. voltage code | Unit : V |
|---|---|
| E | 25 |
| V | 35 |
| H | 50 |
| J | 63 |

## Dimensions (not to scale)

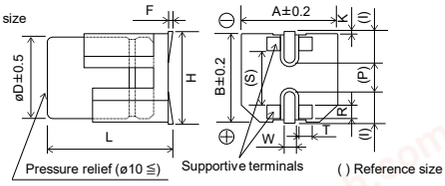
[Standard]




Unit : mm

| Size code | øD | L | A, B | H max. | I | W | P | K |
|---|---|---|---|---|---|---|---|---|
| F | 8.0 | 10.2±0.3 | 8.3 | 10.0 | 3.4 | 0.90±0.2 | 3.1 | 0.70±0.2 |
| G | 10.0 | 10.2±0.3 | 10.3 | 12.0 | 3.5 | 0.90±0.2 | 4.6 | 0.70±0.2 |

[Vibration-proof product]




Unit : mm

| Size code | øD | L | A, B | H max. | F | I | W | P | K | R | S | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | 8.0 | 10.5±0.3 | 8.3 | 10.0 | 0 to +0.15 | 3.4 | 1.2±0.2 | 3.1 | 0.70±0.2 | 0.70±0.2 | 5.3 | 1.3±0.2 |
| G | 10.0 | 10.5±0.3 | 10.3 | 12.0 | 0 to +0.15 | 3.5 | 1.2±0.2 | 4.6 | 0.70±0.2 | 0.70±0.2 | 6.9 | 1.3±0.2 |

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.

chanhvinh.com



## Explanation of part numbers

### ◇ Part number system

e.g.: EEHZV1E221P

| EEH | ZV | 1E | 221 | P |
|---|---|---|---|---|
| Product classification | | | | |

| Series | Code |
|---|---|
| ZV | ZV |

| Rated voltage (V) | Code* |
|---|---|
| 25 | 1E |
| 35 | 1V |
| 50 | 1H |
| 63 | 1J |

| Capacitance (μF) | Code | Capacitance (μF) | Code |
|---|---|---|---|
| 33 | 330 | 120 | 121 |
| 47 | 470 | 150 | 151 |
| 56 | 560 | 220 | 221 |
| 68 | 680 | 270 | 271 |
| 82 | 820 | 330 | 331 |
| 100 | 101 | | |

| Tape width (mm) | Code |
|---|---|
| 16 to 24 | P |

Replace for the following configuration

| Configuration | Code |
|---|---|
| Vibration proof | V |

*: If the total figures number of the part number exceeds 12 figures, "1" is omitted.

## Characteristics list

Endurance 1 : 125 ℃ 4000 h

Endurance 2 : 135 °C 4000 h

| Rated voltage (V) | Capacitance (±20 %) (μF) | Case size (mm) øD | Case size (mm) L Standard | Case size (mm) L Vibration-proof | Size code | Specification Ripple current *1 (mA rms) Endurance 1 (+125℃) | Specification Ripple current *1 (mA rms) Endurance 2 (+135℃) | Specification ESR*2 (mΩ) | Specification tan δ*3 | Part number Standard product | Part number Vibration-proof product | Min. packaging q'ty (pcs) Taping |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 220 | 8.0 | 10.2 | 10.5 | F | 3900 | 2900 | 16 | 0.14 | EEHZV1E221P | EEHZV1E221V | 500 |
| | 330 | 10.0 | 10.2 | 10.5 | G | 4600 | 3400 | 12 | 0.14 | EEHZV1E331P | EEHZV1E331V | 500 |
| 35 | 150 | 8.0 | 10.2 | 10.5 | F | 3900 | 2900 | 16 | 0.12 | EEHZV1V151P | EEHZV1V151V | 500 |
| | 270 | 10.0 | 10.2 | 10.5 | G | 4600 | 3400 | 12 | 0.12 | EEHZV1V271P | EEHZV1V271V | 500 |
| 50 | 68 | 8.0 | 10.2 | 10.5 | F | 3600 | 2500 | 19 | 0.10 | EEHZV1H680P | EEHZV1H680V | 500 |
| | 100 | 10.0 | 10.2 | 10.5 | G | 4300 | 3200 | 15 | 0.10 | EEHZV1H101P | EEHZV1H101V | 500 |
| | 120 | 10.0 | 10.2 | 10.5 | G | 4300 | 3200 | 15 | 0.10 | EEHZV1H121P | EEHZV1H121V | 500 |
| 63 | 33 | 8.0 | 10.2 | 10.5 | F | 3300 | 2300 | 22 | 0.08 | EEHZV1J330P | EEHZV1J330V | 500 |
| | 47 | 8.0 | 10.2 | 10.5 | F | 3300 | 2300 | 22 | 0.08 | EEHZV1J470P | EEHZV1J470V | 500 |
| | 56 | 10.0 | 10.2 | 10.5 | G | 4000 | 3000 | 17 | 0.08 | EEHZV1J560P | EEHZV1J560V | 500 |
| | 68 | 10.0 | 10.2 | 10.5 | G | 4000 | 3000 | 17 | 0.08 | EEHZV1J680P | EEHZV1J680V | 500 |
| | 82 | 10.0 | 10.2 | 10.5 | G | 4000 | 3000 | 17 | 0.08 | EEHZV1J820P | EEHZV1J820V | 500 |

*1: Ripple current (100 kHz / +125 °C or +135 °C)

*2: ESR (100 kHz / +20 ℃)

*3: tan δ (120 Hz / +20 ℃)

◆ Please refer to the page of “Reflow profile” and “The taping dimensions”.

◆ The dimensions of the vibration-proof products, please refer to the page of the mounting specification.

## Frequency correction factor for ripple current

| Rated capacitance (C) | Frequency (f) | 100 Hz ≦ f < 200 Hz | 200 Hz ≦ f < 300 Hz | 300 Hz ≦ f < 500 Hz | 500 Hz ≦ f < 1 kHz |
|---|---|---|---|---|---|
| C < 47 μF | Correction factor | 0.10 | 0.10 | 0.15 | 0.20 |
| 47 μF ≦ C < 150 μF | | 0.15 | 0.20 | 0.25 | 0.30 |
| 150 μF ≦ C | | 0.15 | 0.25 | 0.25 | 0.30 |

| Rated capacitance (C) | Frequency (f) | 1 kHz ≦ f < 2 kHz | 2 kHz ≦ f < 3 kHz | 3 kHz ≦ f < 5 kHz | 5 kHz ≦ f < 10 kHz |
|---|---|---|---|---|---|
| C < 47 μF | Correction factor | 0.30 | 0.40 | 0.45 | 0.50 |
| 47 μF ≦ C < 150 μF | | 0.40 | 0.45 | 0.55 | 0.60 |
| 150 μF ≦ C | | 0.45 | 0.50 | 0.60 | 0.65 |

| Rated capacitance (C) | Frequency (f) | 10 kHz ≦ f < 15 kHz | 15 kHz ≦ f < 20 kHz | 20 kHz ≦ f < 30 kHz | 30 kHz ≦ f < 40 kHz |
|---|---|---|---|---|---|
| C < 47 μF | Correction factor | 0.60 | 0.65 | 0.70 | 0.75 |
| 47 μF ≦ C < 150 μF | | 0.70 | 0.75 | 0.80 | 0.80 |
| 150 μF ≦ C | | 0.75 | 0.80 | 0.85 | 0.85 |

| Rated capacitance (C) | Frequency (f) | 40 kHz ≦ f < 50 kHz | 50 kHz ≦ f < 100 kHz | 100 kHz ≦ f < 500 kHz | 500 kHz ≦ f < 1000 kHz |
|---|---|---|---|---|---|
| C < 47 μF | Correction factor | 0.80 | 0.85 | 1.00 | 1.05 |
| 47 μF ≦ C < 150 μF | | 0.85 | 0.90 | 1.00 | 1.00 |
| 150 μF ≦ C | | 0.85 | 0.90 | 1.00 | 1.00 |

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.