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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## Surface Mount Type

Series : **ZE** Type : **V**

**High temperature Lead-Free reflow**



### Features

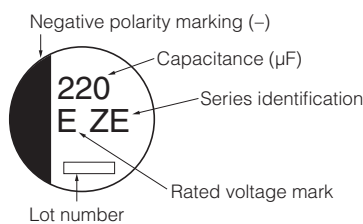
- Endurance: 2000 h at 145 °C (High temperature / Long life)
- Low ESR and high ripple current (85 % over, Lower ESR than current V-TP)
- High-withstand voltage (25 V.DC to 63 V.DC), Low LC (0.01 CV or 3 μA)
- Equivalent to conductive polymer type aluminum electrolytic capacitor (There are little characteristics change by temperature and frequency)
- Vibration-proof product is available upon request. (φ8 mm and larger)
- AEC-Q200 compliant
- RoHS directive compliant

### Specifications

| Size code                    | F   | G                                |
|------------------------------|---|----------------------------------|
| Category temp. range         | -55 °C to +145 °C   |                                  |
| Rated voltage range          | 25 V.DC to 63 V.DC  |                                  |
| Nominal cap.range            | 33 μF to 220 μF   | 56 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)  |                                  |
| Dissipation factor (tan δ)   | Please see the attached standard products list  |                                  |
| Endurance 1                  | 145 °C, 2000 h, apply the rated ripple current without exceeding the rated voltage  |                                  |
|                              | Capacitance change  | Within ±30% of the initial value |
|                              | tan δ   | ≤ 200 % of the initial limit     |
|                              | E. S. R.  | ≤ 200 % of the initial limit     |
| Endurance 2                  | 135 °C, 4000 h, apply the rated ripple current without exceeding the rated voltage  |                                  |
|                              | Capacitance change  | Within ±30% of the initial value |
|                              | tan δ   | ≤ 200 % of the initial limit     |
|                              | E. S. R.  | ≤ 200 % of the initial limit     |
| Shelf life                   | After storage for 1000 hours at +145 °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) |                                  |
|                              | 85 °C, 85 % to 90 %, 2000 h, rated voltage applied  |                                  |
|                              | Capacitance change  | Within ±30% of the initial value |
|                              | tan δ   | ≤ 200 % of the initial limit     |
| Damp heat (Load)             | 85 °C, 85 % to 90 %, 2000 h, rated voltage applied  |                                  |
|                              | Capacitance change  | Within ±30% of the initial value |
|                              | tan δ   | ≤ 200 % of the initial limit     |
|                              | E. S. R.  | ≤ 200 % of the initial limit     |
| Resistance to soldering heat | After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.   |                                  |
|                              | Capacitance change  | Within ±10% of the initial value |
|                              | tan δ   | Within the initial limit         |
|                              | DC leakage current  | Within the initial limit         |

### Marking

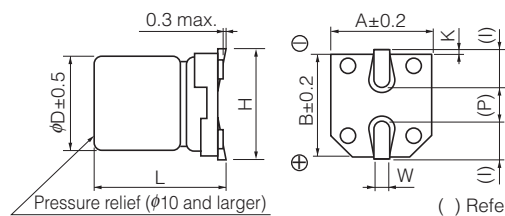
Example : 25 V.DC 220 μF Marking color : BLACK



Rated voltage mark

|   |         |   |         |
|---|---------|---|---------|
| E | 25 V.DC | H | 50 V.DC |
| V | 35 V.DC | J | 63 V.DC |

### Dimensions (not to scale)



| Size code | D    | L        | A, B | H         | I   | W        | P   | K        |
|-----------|------|----------|------|-----------|-----|----------|-----|----------|
| 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 |

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

## Standard products

Endurance 1 : 145 °C 2000 h  
Endurance 2 : 135 °C 4000 h

| Rated voltage (V.DC) | Capacitance (±20 %) (μF) | Case size (mm) |      | Size code | Specification                        |                       |                             |                         | Part number      |                         | Min. packaging q'ty |
|----------------------|--------------------------|----------------|------|-----------|--------------------------------------|-----------------------|-----------------------------|-------------------------|------------------|-------------------------|---------------------|
|                      |                          | φD             | L    |           | Ripple current (100 kHz) (mA r.m.s.) |                       | ESR (100 kHz) (+20 °C) (mΩ) | tan δ (120 Hz) (+20 °C) | Standard Product | Vibration-proof product |                     |
|                      |                          |                |      |           | Endurance 1 (+145 °C)                | Endurance 2 (+135 °C) |                             |                         |                  |                         | Taping (pcs)        |
| 25                   | 220                      | 8              | 10.2 | F         | 700                                  | 1600                  | 27                          | 0.14                    | EEHZE1E221P      | EEHZE1E221V             | 500                 |
|                      | 330                      | 10             | 10.2 | G         | 900                                  | 2000                  | 20                          | 0.14                    | EEHZE1E331P      | EEHZE1E331V             | 500                 |
| 35                   | 150                      | 8              | 10.2 | F         | 700                                  | 1600                  | 27                          | 0.12                    | EEHZE1V151P      | EEHZE1V151V             | 500                 |
|                      | 270                      | 10             | 10.2 | G         | 900                                  | 2000                  | 20                          | 0.12                    | EEHZE1V271P      | EEHZE1V271V             | 500                 |
| 50                   | 68                       | 8              | 10.2 | F         | 600                                  | 1250                  | 30                          | 0.10                    | EEHZE1H680P      | EEHZE1H680V             | 500                 |
|                      | 100                      | 10             | 10.2 | G         | 800                                  | 1600                  | 28                          | 0.10                    | EEHZE1H101P      | EEHZE1H101V             | 500                 |
| 63                   | 33                       | 8              | 10.2 | F         | 600                                  | 1100                  | 40                          | 0.08                    | EEHZE1J330P      | EEHZE1J330V             | 500                 |
|                      | 56                       | 10             | 10.2 | G         | 800                                  | 1400                  | 30                          | 0.08                    | EEHZE1J560P      | EEHZE1J560V             | 500                 |

· Please refer to the page of "Reflow profile" and "The taping dimensions".

## Frequency correction factor for ripple current

| Rated capacitance  | Frequency         | 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  | Frequency         | 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  | Frequency         | 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  | Frequency         | 40 kHz ≤ f < 50 kHz | 50 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz | 500 kHz ≤ f         |
| 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                |

## After endurance ESR (100 kHz, -40 °C)

| Size    | φ8×10.2 | φ10×10.2 |
|---------|---------|----------|
| ESR (Ω) | 0.4     | 0.3      |