

Surface Mount Type

Series : **HD** Type : **V**

✳ 6.3 V.DC to 35 V.DC : High temperature Lead-Free reflow (suffix : A*)
50 V.DC to 100 V.DC : Standard Lead-Free reflow



Features

- Endurance : 105 °C 5000 h
- Vibration-proof product is available upon request. (φ8 mm and larger)
- RoHS compliant

Specifications

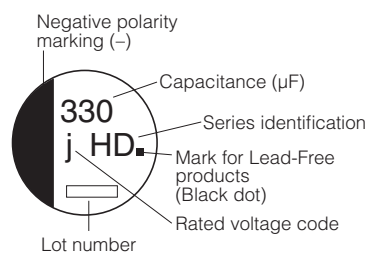
| | | | | | | | | | | |
|------------------------------------|---|-----------------------------------|----|----|----|----|----|----|-----|-----------------------------|
| Category temperature range | -40 °C to +105 °C | | | | | | | | | |
| Rated voltage range | 6.3 V.DC to 100 V.DC | | | | | | | | | |
| Capacitance range | 1 µF to 1000 µF | | | | | | | | | |
| Capacitance tolerance | ±20 % (120 Hz/+20 °C) | | | | | | | | | |
| Leakage current | I ≤ 0.01 CV or 3 (µA) After 2 minutes (Whichever is greater) | | | | | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | | | | | |
| Characteristics at low temperature | V.DC | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (Impedance ratio at 120 Hz) |
| | Z(-25 °C)/Z(+20 °C) | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | Z(-40 °C)/Z(+20 °C) | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | |
| Endurance | After applying rated working voltage for 5000 hours at +105 °C±2 °C and then being stabilized at +20 °C, capacitors shall meet the following limits. | | | | | | | | | |
| | Capacitance change | Within ±30 % of the initial value | | | | | | | | |
| | tan δ | ≤ 300 % of the initial limit | | | | | | | | |
| Shelf life | After storage for 1000 hours at +105 °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) | | | | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | | | | |
| | tan δ | ≤ 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 | | | | | | | | |
| AEC-Q200 | AEC-Q200 compliant | | | | | | | | | |

Frequency correction factor for ripple current

| | | | | |
|-------------------|--------|------|------|---------|
| Frequency (Hz) | 50, 60 | 120 | 1 k | 10 k to |
| Correction factor | 0.70 | 1.00 | 1.30 | 1.70 |

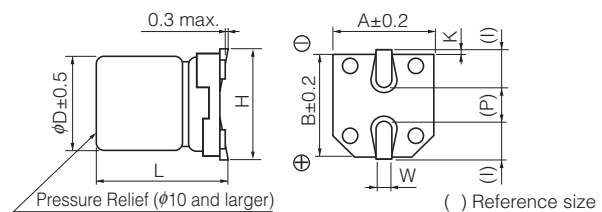
Marking

Example : 6.3 V.DC 330 µF
Marking color : BLACK



| | | | | | | | | |
|-------------------|-----|----|----|----|----|----|----|-----|
| R. Voltage (V.DC) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
| Code | j | A | C | E | V | H | J | 2A |

Dimensions



(Unit : mm)

| Size code | φD | L | A, B | H | I | W | P | K |
|-----------|------|----------|------|-----------|-----|----------|-----|--|
| B | 4.0 | 5.8±0.3 | 4.3 | 5.5 max. | 1.8 | 0.65±0.1 | 1.0 | 0.35 ^{+0.15} _{-0.20} |
| 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} |
| E | 8.0 | 6.2±0.3 | 8.3 | 9.5 max. | 3.4 | 0.65±0.1 | 2.2 | 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±0.20 |
| G | 10.0 | 10.2±0.3 | 10.3 | 12.0 max. | 3.5 | 0.90±0.2 | 4.6 | 0.70±0.20 |

Characteristics list (6.3 V.DC to 35 V.DC)

Endurance : 105 °C 5000 h

| Rated voltage (V.DC) | Cap. (±20 %) (μF) | Case size (mm) | | Size code | Specification | | | Part No. | Reflow | Min. Packaging Qty | |
|----------------------|-------------------|----------------|------|-----------|---|----------------------------------|-------------------------|--------------|--------|--------------------|--|
| | | φD | L | | Ripple current (120 Hz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | tan δ (120 Hz) (+20 °C) | | | Taping (pcs) | |
| 6.3 | 330 | 8 | 10.2 | F | 230 | 1.5 | 0.30 | EEEHD0J331AP | (7) | 500 | |
| | 1000 | 10 | 10.2 | G | 313 | 0.8 | 0.50 | EEEHD0J102AP | (7) | 500 | |
| 10 | 100 | 8 | 6.2 | E | 62 | 2.0 | 0.30 | EEEHD1A101AP | (7) | 1000 | |
| | 220 | 8 | 10.2 | F | 160 | 1.5 | 0.30 | EEEHD1A221AP | (7) | 500 | |
| | 330 | 8 | 10.2 | F | 160 | 1.5 | 0.30 | EEEHD1A331AP | (7) | 500 | |
| 16 | 10 | 4.0 | 5.8 | B | 28 | 12.0 | 0.20 | EEEHD1C100AR | (5) | 2000 | |
| | 22 | 5.0 | 5.8 | C | 39 | 7.2 | 0.20 | EEEHD1C220AR | (5) | 1000 | |
| | 47 | 6.3 | 5.8 | D | 70 | 4.0 | 0.20 | EEEHD1C470AP | (5) | 1000 | |
| | 100 | 8 | 10.2 | F | 130 | 1.5 | 0.20 | EEEHD1C101AP | (7) | 500 | |
| | 220 | 10 | 10.2 | G | 220 | 0.8 | 0.20 | EEEHD1C221AP | (7) | 500 | |
| | 470 | 10 | 10.2 | G | 340 | 0.8 | 0.20 | EEEHD1C471AP | (7) | 500 | |
| 25 | 4.7 | 4 | 5.8 | B | 17 | 12.0 | 0.16 | EEEHD1E4R7AR | (5) | 2000 | |
| | 10 | 5 | 5.8 | C | 28 | 7.2 | 0.16 | EEEHD1E100AR | (5) | 1000 | |
| | 22 | 6.3 | 5.8 | D | 55 | 4.0 | 0.16 | EEEHD1E220AP | (5) | 1000 | |
| | 33 | 6.3 | 5.8 | D | 55 | 4.0 | 0.16 | EEEHD1E330AP | (5) | 1000 | |
| | 47 | 8 | 6.2 | E | 56 | 2.0 | 0.18 | EEEHD1E470AP | (7) | 1000 | |
| | 100 | 8 | 10.2 | F | 130 | 1.5 | 0.16 | EEEHD1E101AP | (7) | 500 | |
| | 330 | 10 | 10.2 | G | 238 | 0.8 | 0.16 | EEEHD1E331AP | (7) | 500 | |
| 35 | 4.7 | 4 | 5.8 | B | 17 | 12.0 | 0.13 | EEEHD1V4R7AR | (5) | 2000 | |
| | 10 | 5 | 5.8 | C | 28 | 7.2 | 0.13 | EEEHD1V100AR | (5) | 1000 | |
| | 22 | 6.3 | 5.8 | D | 55 | 4.0 | 0.13 | EEEHD1V220AP | (5) | 1000 | |
| | 33 | 8 | 6.2 | E | 53 | 2.0 | 0.16 | EEEHD1V330AP | (7) | 1000 | |
| | | 6.3 | 7.7 | D8 | 57 | 2.0 | 0.13 | EEEHDV330XAP | (5) | 900 | |
| | 47 | 6.3 | 7.7 | D8 | 57 | 2.0 | 0.14 | EEEHDV470XAP | (5) | 900 | |
| | | 8 | 10.2 | F | 79 | 1.5 | 0.14 | EEEHD1V470AP | (7) | 500 | |
| | 100 | 10 | 10.2 | G | 101 | 0.8 | 0.14 | EEEHD1V101AP | (7) | 500 | |
| | 220 | 10 | 10.2 | G | 220 | 0.8 | 0.14 | EEEHD1V221AP | (7) | 500 | |

Characteristics list (50 V.DC to 100 V.DC)

Endurance : 105 °C 5000 h

| Rated voltage (V.DC) | Cap. (±20 %) (μF) | Case size (mm) | | Size code | Specification | | | Part No. | Reflow | Min. Packaging Qty | |
|----------------------|-------------------|----------------|------|-----------|---|----------------------------------|-------------------------|-------------|--------|--------------------|--|
| | | φD | L | | Ripple current (120 Hz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | tan δ (120 Hz) (+20 °C) | | | Taping (pcs) | |
| 50 | 1 | 4 | 5.8 | B | 7 | 12.0 | 0.12 | EEEHD1H1R0R | (1) | 2000 | |
| | 2.2 | 4 | 5.8 | B | 12 | 12.0 | 0.12 | EEEHD1H2R2R | (1) | 2000 | |
| | 3.3 | 4 | 5.8 | B | 16 | 12.0 | 0.12 | EEEHD1H3R3R | (1) | 2000 | |
| | 4.7 | 5 | 5.8 | C | 21 | 7.2 | 0.12 | EEEHD1H4R7R | (1) | 1000 | |
| | 10 | 6.3 | 5.8 | D | 33 | 4.0 | 0.12 | EEEHD1H100P | (1) | 1000 | |
| | 22 | 8 | 6.2 | E | 50 | 2.0 | 0.14 | EEEHD1H220P | (2) | 1000 | |
| | 33 | 8 | 10.2 | F | 74 | 1.5 | 0.14 | EEEHD1H330P | (2) | 500 | |
| | 47 | 10 | 10.2 | G | 94 | 0.8 | 0.14 | EEEHD1H470P | (2) | 500 | |
| 63 | 100 | 10 | 10.2 | G | 94 | 0.8 | 0.14 | EEEHD1H101P | (2) | 500 | |
| | 10 | 8 | 6.2 | E | 45 | 2.0 | 0.18 | EEEHD1J100P | (2) | 1000 | |
| | 22 | 8 | 10.2 | F | 65 | 1.5 | 0.18 | EEEHD1J220P | (2) | 500 | |
| 100 | 33 | 10 | 10.2 | G | 80 | 0.8 | 0.18 | EEEHD1J330P | (2) | 500 | |
| | 10 | 8 | 10.2 | F | 55 | 1.5 | 0.18 | EEEHD2A100P | (2) | 500 | |
| | 22 | 10 | 10.2 | G | 70 | 0.8 | 0.18 | EEEHD2A220P | (2) | 500 | |

If Part number exceeds 12 digits, voltage code is abbreviated as follows; 0J → J, 1A → A, 1C → C, 1E → E, 1V → V,

· Please refer to the page of "Reflow Profile" and "The Taping Dimensions".

· When requesting vibration-proof product, please put the last "V" instead of "P"

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