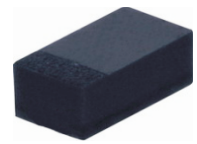


SMD Zener Diode



SMD Diodes Specialist

CZRQR2V4B-HF Thru CZRQR39VB-HF (RoHS Device)



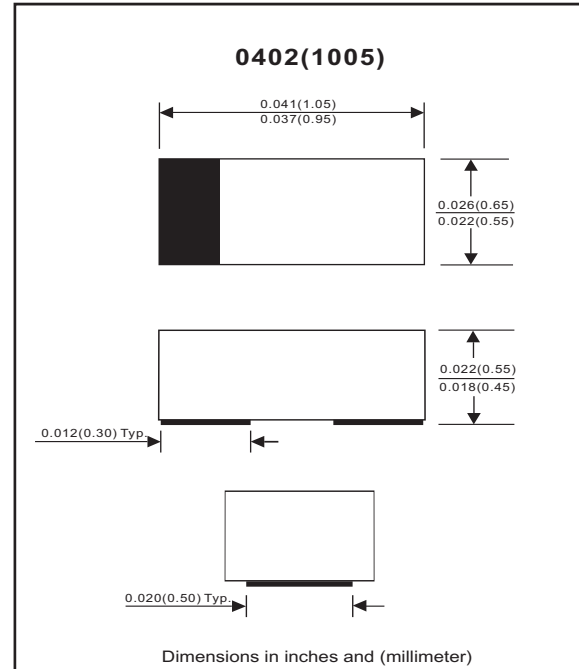
Voltage 2.4 to 39 Volts
Power 125 mWatts

Features

- Halogen free.
- 125mW Power Dissipation.
- High Voltages from 2.4 ~ 39 V.
- Designed for mounting on small surface.
- Extremely thin/leadless package.
- Constant voltage control.
- Pb free product.

Mechanical data

- Case: 0402(1005)Standard package
Molded plastic.
- Terminals: Gold plated, solderable per
MIL-STD-750,method 2026.
- Polarity: Indicated by cathode band.
- Weight: 0.001 gram(approx.).



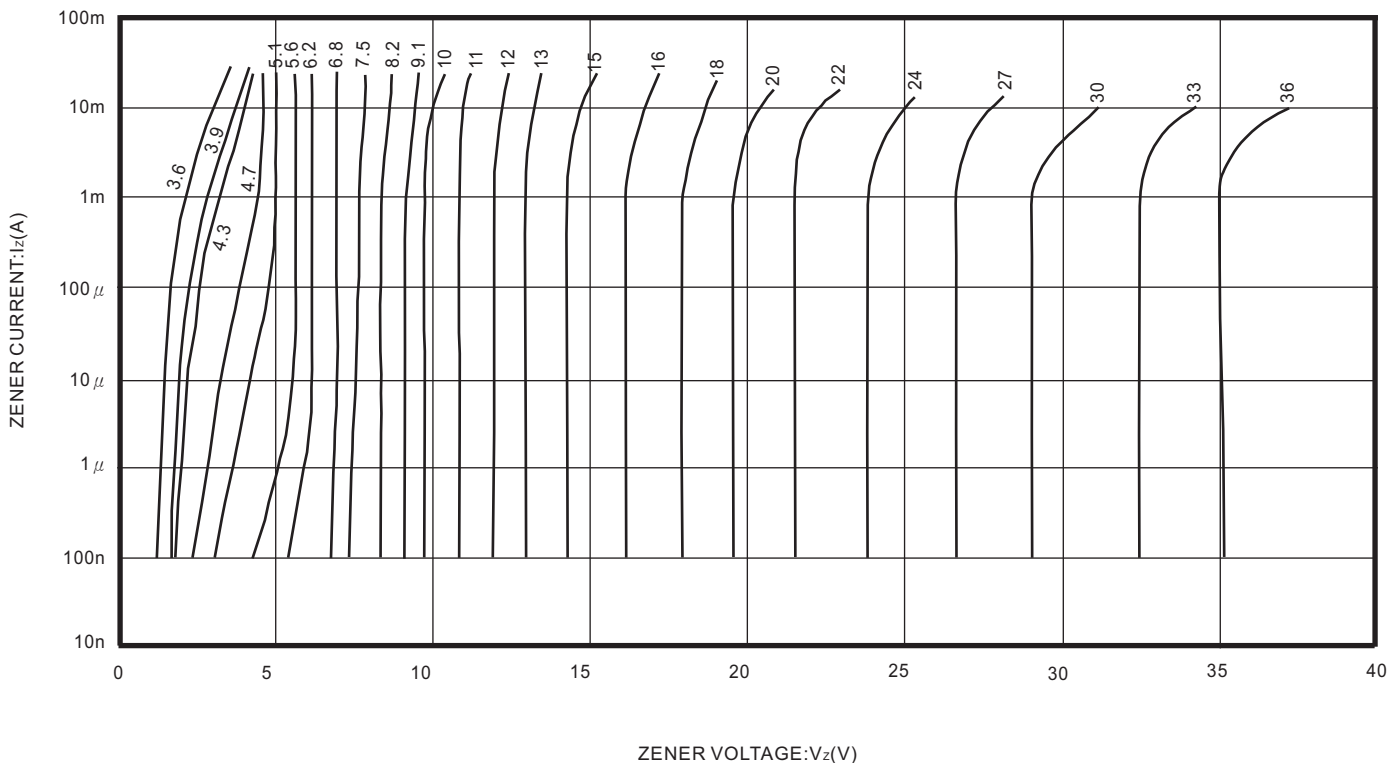
Maximum Rating AND Electrical Characteristics

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------------------|
| Maximum Forward Voltage Drop at $I_F = 10 \text{ mA}$ | V_F | 0.9 | V |
| Maximum Power Dissipation at 25°C | P_D | 125 | mW |
| Forward current , surge peak 8.3 ms single half sine-wave superimposed on rate load(JEDEC method) | I_{FSM} | 2.0 | A |
| Peak ESD voltage capability (IEC 61000-4-2) | V_{PV} | 8 | kV |
| Operating Junction and Storage Temperature Range | T_J | -55 to +125 | $^\circ\text{C}$ |

Electrical Characteristics(Ta = 25°C)

| Part Number | Marking Code | Zener Voltage | | | Operating resistance | | Rising operating Resistance | | Reverse current | |
|--------------|--------------|---------------|-------|--------|----------------------|--------|-----------------------------|--------|-----------------|-------|
| | | Vz(V) | | | ZZT(Ohm) | | ZZK(Ohm) | | IR(uA) | |
| | | Min | Max | Iz(mA) | Max | Iz(mA) | Max | Iz(mA) | Max | VR(V) |
| CZRQR2V4B-HF | U2 | 2.34 | 2.46 | 5 | 100 | 5 | 1800 | 0.25 | 100 | 1 |
| CZRQR2V7B-HF | U3 | 2.63 | 2.77 | 5 | 100 | 5 | 1900 | 0.25 | 75 | 1 |
| CZRQR3V0B-HF | U4 | 2.93 | 3.08 | 5 | 95 | 5 | 2000 | 0.25 | 50 | 1 |
| CZRQR3V3B-HF | U5 | 3.22 | 3.38 | 5 | 95 | 5 | 2200 | 0.25 | 25 | 1 |
| CZRQR3V6B-HF | U6 | 3.51 | 3.69 | 5 | 90 | 5 | 2300 | 0.25 | 15 | 1 |
| CZRQR3V9B-HF | U7 | 3.80 | 4.00 | 5 | 90 | 5 | 2400 | 0.25 | 10 | 1 |
| CZRQR4V3B-HF | U8 | 4.19 | 4.41 | 5 | 88 | 5 | 2500 | 0.25 | 5 | 1 |
| CZRQR4V7B-HF | U9 | 4.58 | 4.82 | 5 | 70 | 5 | 2200 | 0.25 | 3 | 1.5 |
| CZRQR5V1B-HF | UA | 4.97 | 5.23 | 5 | 50 | 5 | 2050 | 0.25 | 2 | 2 |
| CZRQR5V6B-HF | UB | 5.46 | 5.74 | 5 | 25 | 5 | 1800 | 0.25 | 2 | 3 |
| CZRQR6V2B-HF | UC | 6.05 | 6.36 | 5 | 10 | 5 | 1300 | 0.25 | 1 | 4 |
| CZRQR6V8B-HF | UE | 6.63 | 6.97 | 5 | 8 | 5 | 750 | 0.25 | 1 | 5.2 |
| CZRQR7V5B-HF | UF | 7.31 | 7.69 | 5 | 7 | 5 | 600 | 0.25 | 0.5 | 6 |
| CZRQR8V2B-HF | UG | 8.00 | 8.41 | 5 | 7 | 5 | 600 | 0.25 | 0.5 | 6.5 |
| CZRQR9V1B-HF | UH | 8.87 | 9.33 | 5 | 10 | 5 | 600 | 0.25 | 0.1 | 7 |
| CZRQR10VB-HF | UJ | 9.75 | 10.25 | 5 | 15 | 5 | 600 | 0.25 | 0.1 | 8 |
| CZRQR11VB-HF | UK | 10.73 | 11.27 | 5 | 18 | 5 | 600 | 0.25 | 0.1 | 8.4 |
| CZRQR12VB-HF | UM | 11.70 | 12.30 | 5 | 22 | 5 | 600 | 0.25 | 0.1 | 9.1 |
| CZRQR13VB-HF | UN | 12.68 | 13.32 | 5 | 25 | 5 | 600 | 0.25 | 0.1 | 9.9 |
| CZRQR15VB-HF | UP | 14.63 | 15.37 | 5 | 32 | 5 | 600 | 0.25 | 0.1 | 11 |
| CZRQR16VB-HF | UQ | 15.60 | 16.40 | 5 | 36 | 5 | 600 | 0.25 | 0.1 | 12 |
| CZRQR18VB-HF | UR | 17.55 | 18.45 | 5 | 42 | 5 | 600 | 0.25 | 0.1 | 14 |
| CZRQR20VB-HF | US | 19.50 | 20.50 | 5 | 48 | 5 | 600 | 0.25 | 0.1 | 15 |
| CZRQR22VB-HF | UT | 21.45 | 22.55 | 5 | 55 | 5 | 600 | 0.25 | 0.1 | 17 |
| CZRQR24VB-HF | UU | 23.40 | 24.60 | 5 | 62 | 5 | 600 | 0.25 | 0.1 | 18 |
| CZRQR27VB-HF | UV | 26.33 | 27.67 | 5 | 70 | 5 | 600 | 0.25 | 0.1 | 21 |
| CZRQR30VB-HF | UW | 29.25 | 30.75 | 5 | 78 | 5 | 600 | 0.25 | 0.1 | 23 |
| CZRQR33VB-HF | UX | 32.18 | 33.82 | 5 | 88 | 5 | 700 | 0.25 | 0.1 | 25 |
| CZRQR36VB-HF | UY | 35.10 | 36.90 | 5 | 95 | 5 | 700 | 0.25 | 0.1 | 27 |
| CZRQR39VB-HF | UZ | 38.03 | 39.97 | 5 | 130 | 5 | 800 | 0.25 | 0.1 | 30 |

RATING AND CHARACTERISTIC CURVES (CZRQR2V4B-HF Thru CZRQR39VB-HF)



ZENER VOLTAGE: V_z (V)
Fig.1 Zener voltage characteristics

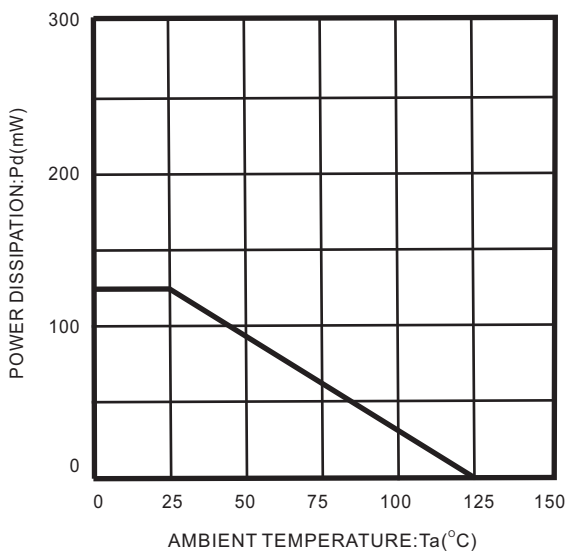


Fig.2 Derating curve

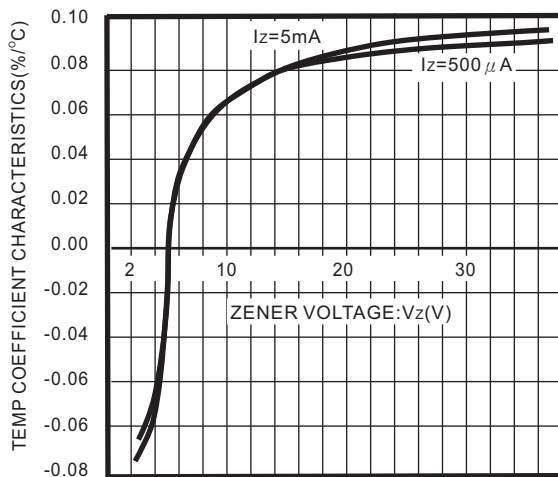
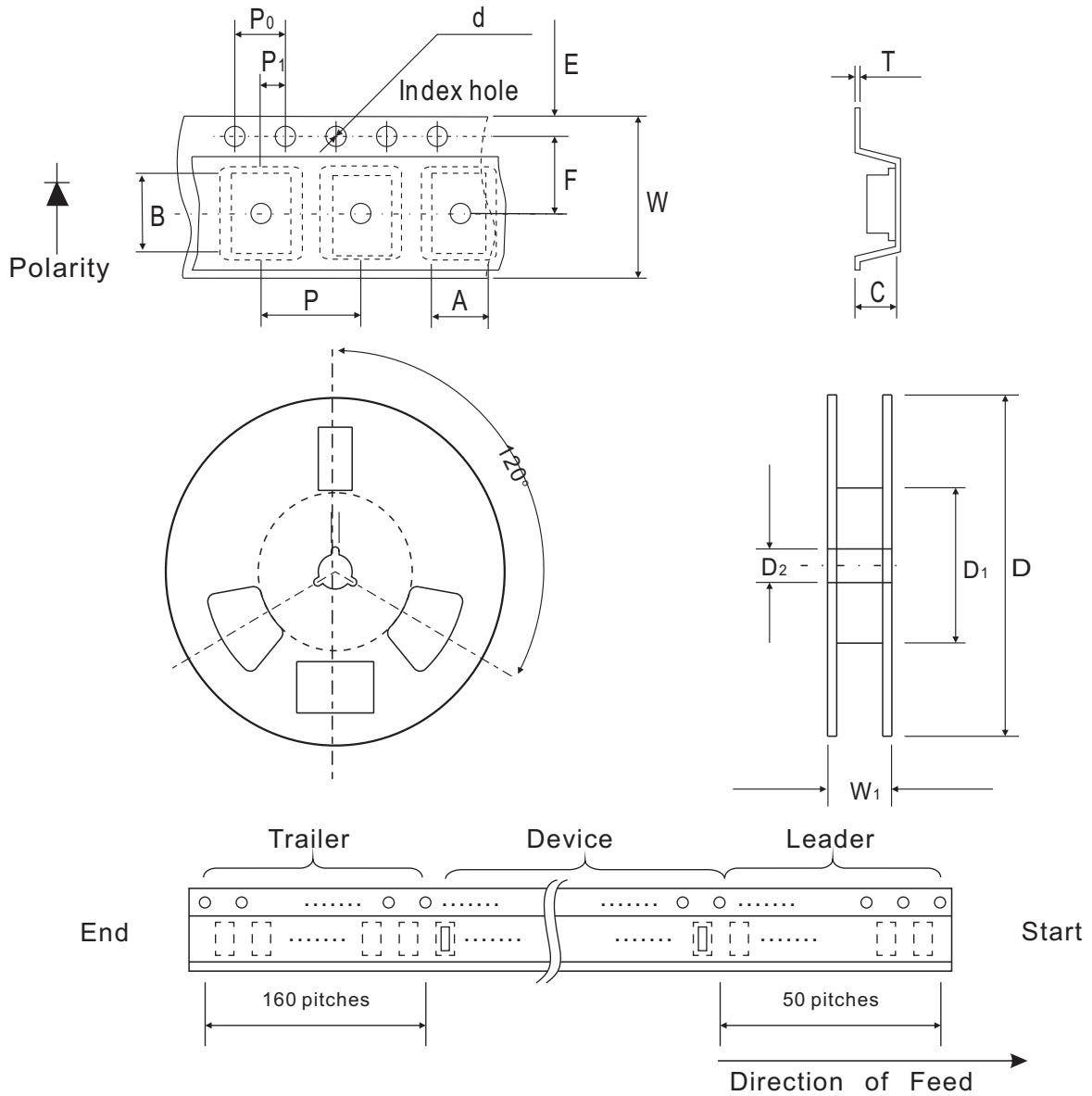


Fig.3 Zener voltage-temp. Coefficient characteristics

Reel Taping Specification

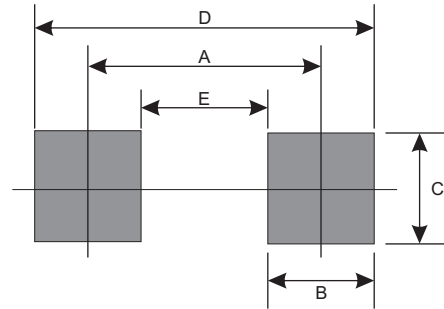


| QR/0402 | SYMBOL | A | B | C | d | D | D ₁ | D ₂ |
|---------|--------|---------------|---------------|---------------|---------------|--------------|----------------|----------------|
| | (mm) | 0.75 ± 0.10 | 1.15 ± 0.10 | 0.60 ± 0.10 | 1.55 ± 0.10 | 178 ± 1 | 60.0 MIN. | 13.0 ± 0.20 |
| | (inch) | 0.030 ± 0.004 | 0.045 ± 0.004 | 0.024 ± 0.004 | 0.061 ± 0.004 | 7.008 ± 0.04 | 2.362 MIN. | 0.512 ± 0.008 |

| QR/0402 | SYMBOL | E | F | P | P ₀ | P ₁ | T | W | W ₁ |
|---------|--------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|----------------|
| | (mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 0.22 ± 0.05 | 8.00 ± 0.20 | 13.5 MAX. |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.009 ± 0.002 | 0.315 ± 0.008 | 0.531 MAX. |

Suggested PAD Layout

| SIZE | QR/0402 | |
|------|---------|--------|
| | (mm) | (inch) |
| A | 0.750 | 0.030 |
| B | 0.500 | 0.020 |
| C | 0.700 | 0.028 |
| D | 1.250 | 0.049 |
| E | 0.250 | 0.010 |



Standard Package

| Case Type | Qty per Reel | Reel Size |
|-----------|--------------|-----------|
| | (Pcs) | (inch) |
| QR/0402 | 5000 | 7 |