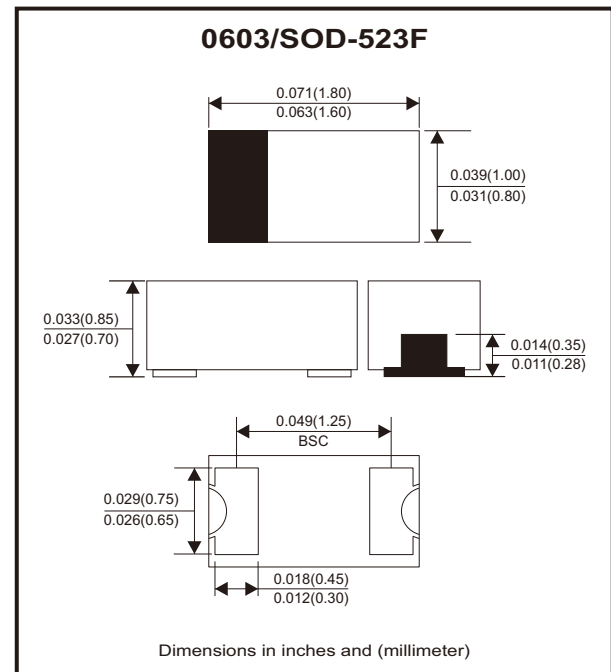


**CZRU2V4B-HF Thru. CZRU39VB-HF****Voltage 2.4 to 39 Volts****Power 150 mWatts****RoHS Device****Halogen Free****Features**

- 150mW 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: 0603/SOD-523F Standard package  
Molded plastic.
- Terminals: Gold plated, solderable per  
MIL-STD-750,method 2026.
- Polarity: Indicated by cathode band.
- Weight: 0.003 grams (approx.).

**Circuit Diagram****Maximum Rating and Electrical Characteristics**

| Parameter                                                                                                 | Symbol    | Value       | Unit |
|-----------------------------------------------------------------------------------------------------------|-----------|-------------|------|
| Maximum forward voltage drop at $I_F = 10$ mA                                                             | $V_F$     | 0.9         | V    |
| Maximum power dissipation at 25°C                                                                         | $P_D$     | 150         | mW   |
| Forward current , surge peak<br>8.3 ms single half sine-wave superimposed<br>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 | °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(μA)          |                    |
|             |              | Min           | Max   | Iz(mA) | Max                  | Iz(mA) | Max                         | Iz(mA) | Max             | V <sub>R</sub> (V) |
| CZRU2V4B-HF | U2           | 2.34          | 2.46  | 5      | 100                  | 5      | 1800                        | 0.25   | 100             | 1                  |
| CZRU2V7B-HF | U3           | 2.63          | 2.77  | 5      | 100                  | 5      | 1900                        | 0.25   | 75              | 1                  |
| CZRU3V0B-HF | U4           | 2.93          | 3.08  | 5      | 95                   | 5      | 2000                        | 0.25   | 50              | 1                  |
| CZRU3V3B-HF | U5           | 3.22          | 3.38  | 5      | 95                   | 5      | 2200                        | 0.25   | 25              | 1                  |
| CZRU3V6B-HF | U6           | 3.51          | 3.69  | 5      | 90                   | 5      | 2300                        | 0.25   | 15              | 1                  |
| CZRU3V9B-HF | U7           | 3.80          | 4.00  | 5      | 90                   | 5      | 2400                        | 0.25   | 10              | 1                  |
| CZRU4V3B-HF | U8           | 4.19          | 4.41  | 5      | 88                   | 5      | 2500                        | 0.25   | 5               | 1                  |
| CZRU4V7B-HF | U9           | 4.58          | 4.82  | 5      | 70                   | 5      | 2200                        | 0.25   | 3               | 1.5                |
| CZRU5V1B-HF | UA           | 4.97          | 5.23  | 5      | 50                   | 5      | 2050                        | 0.25   | 2               | 2                  |
| CZRU5V6B-HF | UB           | 5.46          | 5.74  | 5      | 25                   | 5      | 1800                        | 0.25   | 2               | 3                  |
| CZRU6V2B-HF | UC           | 6.05          | 6.36  | 5      | 10                   | 5      | 1300                        | 0.25   | 1               | 4                  |
| CZRU6V8B-HF | UE           | 6.63          | 6.97  | 5      | 8                    | 5      | 750                         | 0.25   | 1               | 5.2                |
| CZRU7V5B-HF | UF           | 7.31          | 7.69  | 5      | 7                    | 5      | 600                         | 0.25   | 0.5             | 6                  |
| CZRU8V2B-HF | UG           | 8.00          | 8.41  | 5      | 7                    | 5      | 600                         | 0.25   | 0.5             | 6.5                |
| CZRU9V1B-HF | UH           | 8.87          | 9.33  | 5      | 10                   | 5      | 600                         | 0.25   | 0.1             | 7                  |
| CZRU10VB-HF | UJ           | 9.75          | 10.25 | 5      | 15                   | 5      | 600                         | 0.25   | 0.1             | 8                  |
| CZRU11VB-HF | UK           | 10.73         | 11.27 | 5      | 18                   | 5      | 600                         | 0.25   | 0.1             | 8.4                |
| CZRU12VB-HF | UM           | 11.70         | 12.30 | 5      | 22                   | 5      | 600                         | 0.25   | 0.1             | 9.1                |
| CZRU13VB-HF | UN           | 12.68         | 13.32 | 5      | 25                   | 5      | 600                         | 0.25   | 0.1             | 9.9                |
| CZRU15VB-HF | UP           | 14.63         | 15.37 | 5      | 32                   | 5      | 600                         | 0.25   | 0.1             | 11                 |
| CZRU16VB-HF | UQ           | 15.60         | 16.40 | 5      | 36                   | 5      | 600                         | 0.25   | 0.1             | 12                 |
| CZRU18VB-HF | UR           | 17.55         | 18.45 | 5      | 42                   | 5      | 600                         | 0.25   | 0.1             | 14                 |
| CZRU20VB-HF | US           | 19.50         | 20.50 | 5      | 48                   | 5      | 600                         | 0.25   | 0.1             | 15                 |
| CZRU22VB-HF | UT           | 21.45         | 22.55 | 5      | 55                   | 5      | 600                         | 0.25   | 0.1             | 17                 |
| CZRU24VB-HF | UU           | 23.40         | 24.60 | 5      | 62                   | 5      | 600                         | 0.25   | 0.1             | 18                 |
| CZRU27VB-HF | UV           | 26.33         | 27.67 | 5      | 70                   | 5      | 600                         | 0.25   | 0.1             | 21                 |
| CZRU30VB-HF | UW           | 29.25         | 30.75 | 5      | 78                   | 5      | 600                         | 0.25   | 0.1             | 23                 |
| CZRU33VB-HF | UX           | 32.18         | 33.82 | 5      | 88                   | 5      | 700                         | 0.25   | 0.1             | 25                 |
| CZRU36VB-HF | UY           | 35.10         | 36.90 | 5      | 95                   | 5      | 700                         | 0.25   | 0.1             | 27                 |
| CZRU39VB-HF | UZ           | 38.03         | 39.97 | 5      | 130                  | 5      | 800                         | 0.25   | 0.1             | 30                 |

Rating and Characteristic Curves (CZRU2V4B-HF Thru. CZRU39VB-HF)

Fig.1 - Zener Voltage Characteristics

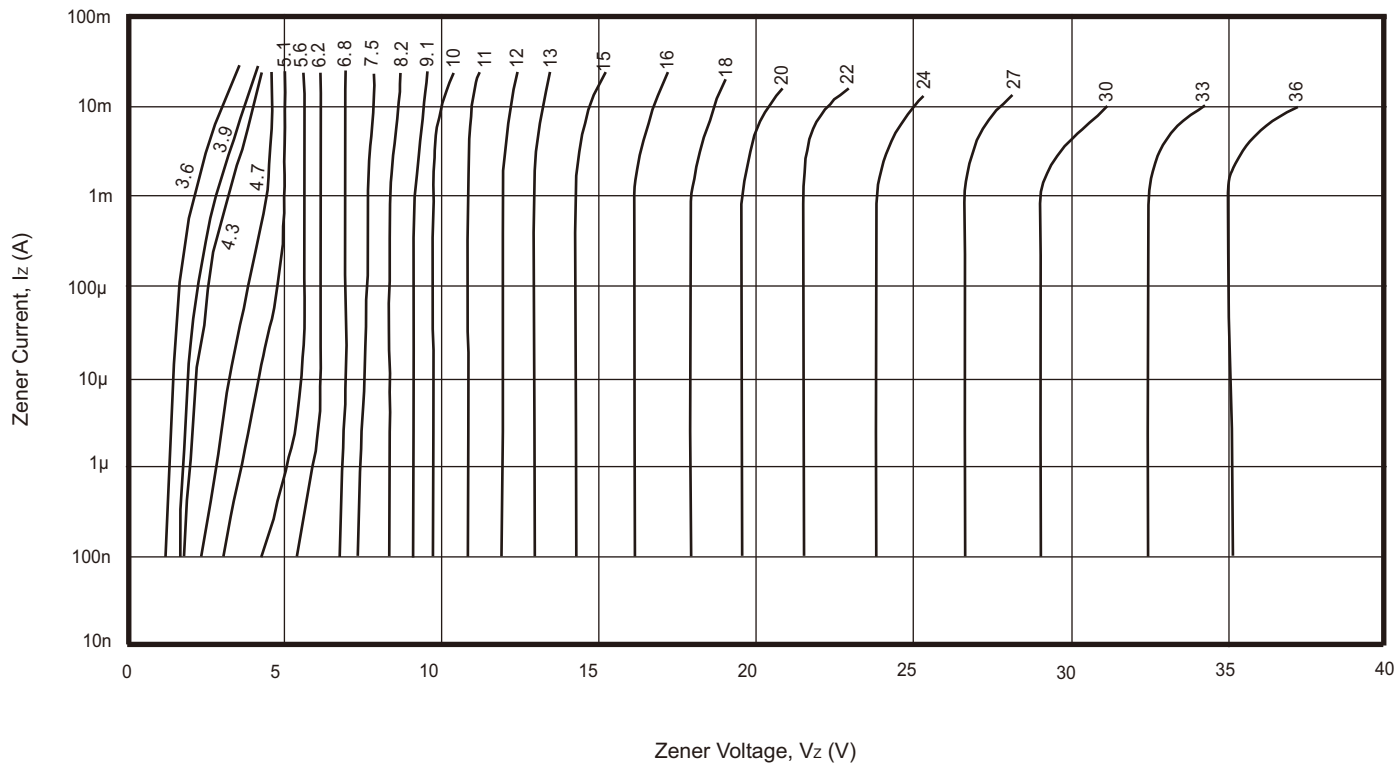


Fig.2 - Derating Curve

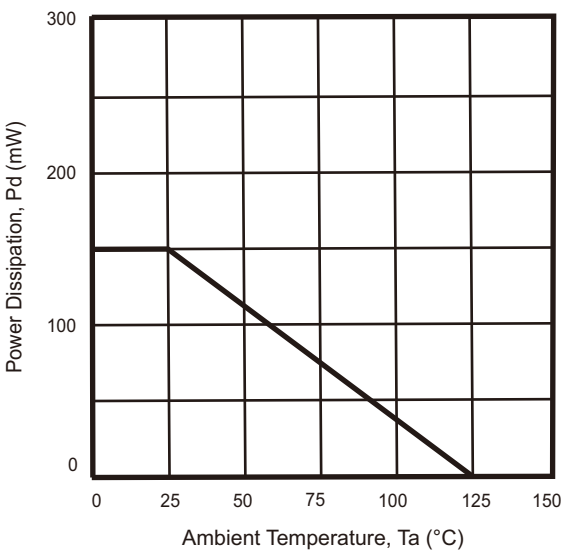
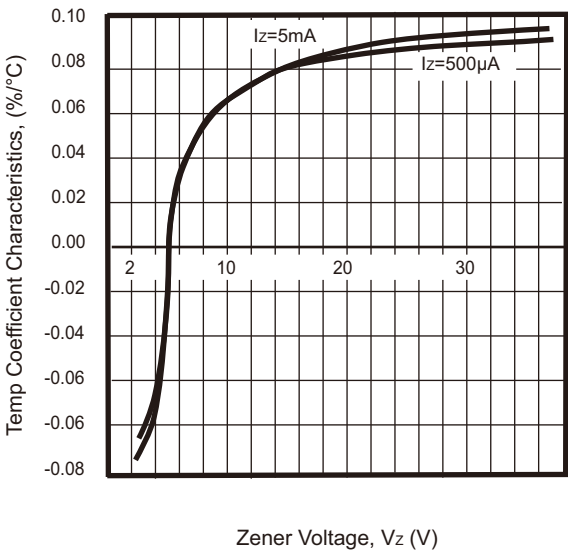
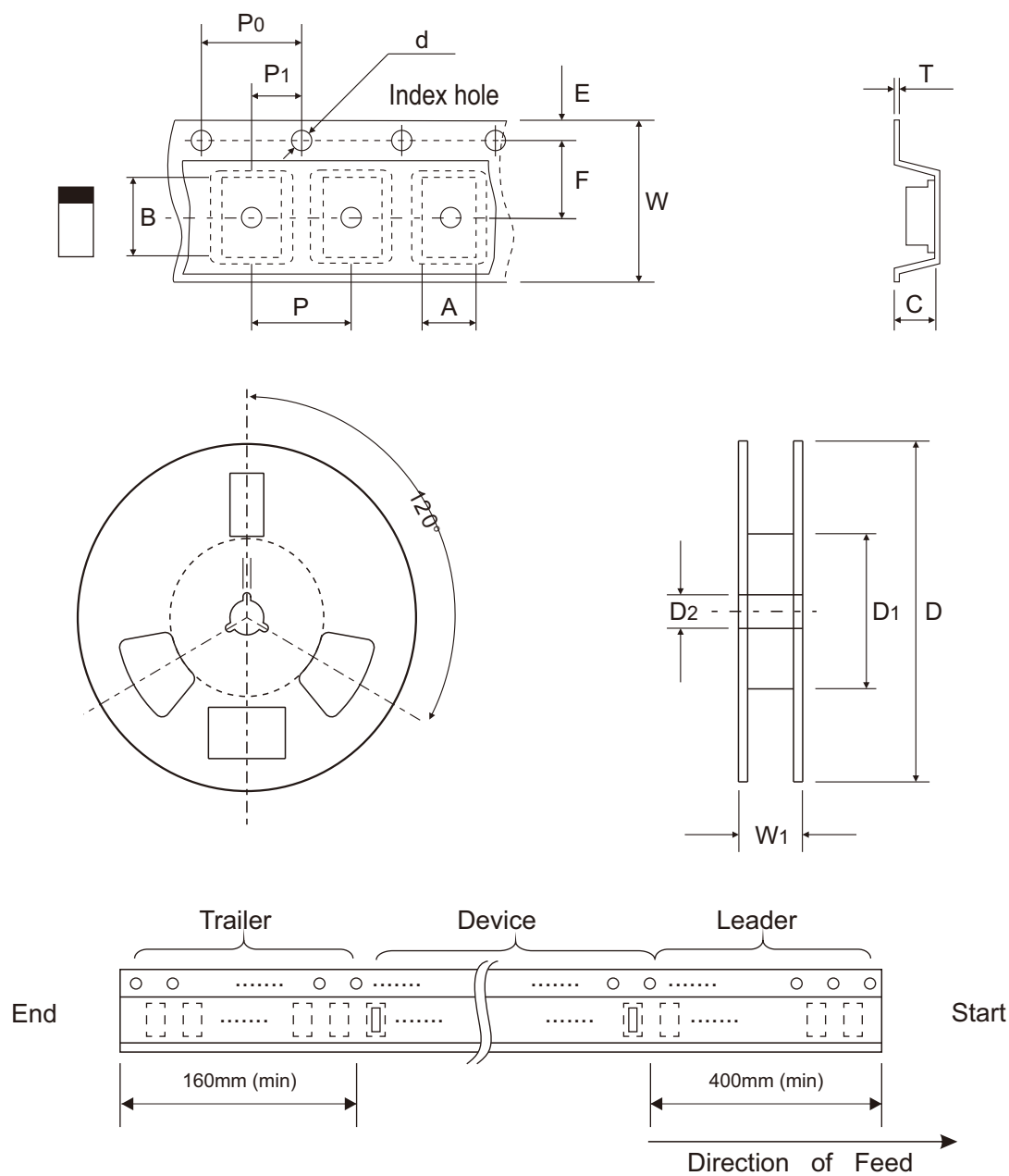


Fig.3 - Zener Voltage-Temp. Coefficient Characteristics



Reel Taping Specification



|                    |        |               |               |               |                          |               |               |               |
|--------------------|--------|---------------|---------------|---------------|--------------------------|---------------|---------------|---------------|
| 0603<br>(SOD-523F) | SYMBOL | A             | B             | C             | d                        | D             | D1            | D2            |
|                    | (mm)   | 1.16 ± 0.10   | 1.90 ± 0.10   | 0.95 ± 0.10   | 1.50 + 0.10<br>- 0.00    | 178.00 ± 1.00 | 60.00 ± 0.50  | 13.50 ± 0.20  |
|                    | (inch) | 0.046 ± 0.004 | 0.075 ± 0.004 | 0.037 ± 0.004 | 0.059 + 0.004<br>- 0.000 | 7.008 ± 0.039 | 2.362 ± 0.020 | 0.531 ± 0.008 |

|                    |        |               |               |               |               |               |               |               |                          |
|--------------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|
| 0603<br>(SOD-523F) | SYMBOL | E             | F             | P             | P0            | P1            | T             | W             | W1                       |
|                    | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.05   | 4.00 ± 0.10   | 4.00 ± 0.10   | 2.00 ± 0.05   | 0.22 ± 0.03   | 8.00 ± 0.20   | 12.00 + 0.50<br>- 0.00   |
|                    | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | 0.009 ± 0.001 | 0.315 ± 0.008 | 0.472 + 0.020<br>- 0.000 |

Marking Code

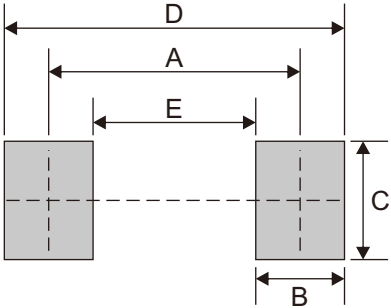
| Part Number                      | Marking Code |
|----------------------------------|--------------|
| CZRU2V4B-HF Thru.<br>CZRU39VB-HF | See Page 2   |



xx = Product type marking code

Suggested P.C.B. PAD Layout

| SIZE | 0603/SOD-523F |        |
|------|---------------|--------|
|      | (mm)          | (inch) |
| A    | 1.70          | 0.067  |
| B    | 0.60          | 0.024  |
| C    | 0.80          | 0.031  |
| D    | 2.30          | 0.091  |
| E    | 1.10          | 0.043  |



Standard Packaging

| Case Type         | REEL PACK     |                     |
|-------------------|---------------|---------------------|
|                   | REEL<br>(pcs) | Reel Size<br>(inch) |
| 0603/<br>SOD-523F | 4,000         | 7                   |