

## SMD Zener Diode



SMD Diodes Specialist

# CZRW5221B-HF Thru CZRW5267B-HF

Voltage: 2.4 to 75 Volts

Power: 500 mWatts

RoHS Device

### Features

Halogen free.

For surface mounted applications.

500mW Power Dissipation.

Ideally suited for automated assembly processes.

Pb free product.

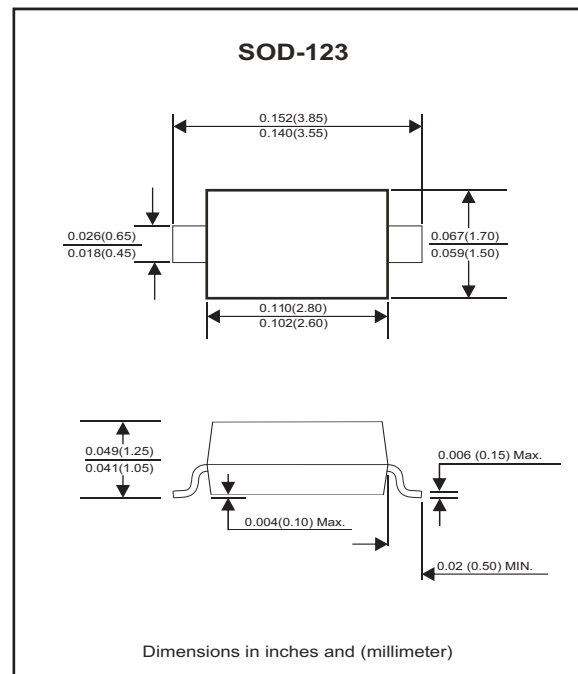
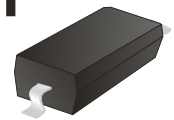
### Mechanical data

Case: SOD-123, Molded plastic.

Terminals: Solder Plated, solderable per MIL-STD-750, method 2026.

Polarity: Cathode band.

Weight: 0.01 gram(approx.).



## Maximum Rating AND Electrical Characteristics

| Parameter                                           | Symbol | Value       | Unit             |
|-----------------------------------------------------|--------|-------------|------------------|
| Maximum Power Dissipation, $T_A = 25^\circ\text{C}$ | $P_D$  | 500         | mW               |
| Operating Junction and Storage Temperature Range    | $T_J$  | -55 to +150 | $^\circ\text{C}$ |

## Electrical Characteristics(Ta = 25°C)

| Part Number  | Zener Voltage                      |     |       | Operating resistance  |                      | Rising operating resistance |                      | Reverse current     |                    | Marking Code |
|--------------|------------------------------------|-----|-------|-----------------------|----------------------|-----------------------------|----------------------|---------------------|--------------------|--------------|
|              | V <sub>Z</sub> (V)@I <sub>ZT</sub> |     |       | Z <sub>ZT</sub> (Ohm) |                      | Z <sub>ZK</sub> (Ohm)       |                      | I <sub>R</sub> (uA) |                    |              |
|              | Min                                | Nom | Max   | Max                   | I <sub>ZT</sub> (mA) | Max                         | I <sub>ZK</sub> (mA) | Max                 | V <sub>R</sub> (V) |              |
| CZRW5221B-HF | 2.28                               | 2.4 | 2.52  | 30                    | 20                   | 1200                        | 0.25                 | 100                 | 1                  | C1           |
| CZRW5222B-HF | 2.38                               | 2.5 | 2.63  | 30                    | 20                   | 1250                        | 0.25                 | 100                 | 1                  | C2           |
| CZRW5223B-HF | 2.57                               | 2.7 | 2.84  | 30                    | 20                   | 1300                        | 0.25                 | 75                  | 1                  | C3           |
| CZRW5225B-HF | 2.85                               | 3   | 3.15  | 30                    | 20                   | 1600                        | 0.25                 | 50                  | 1                  | C5           |
| CZRW5226B-HF | 3.14                               | 3.3 | 3.47  | 28                    | 20                   | 1600                        | 0.25                 | 25                  | 1                  | D1           |
| CZRW5227B-HF | 3.42                               | 3.6 | 3.78  | 24                    | 20                   | 1700                        | 0.25                 | 15                  | 1                  | D2           |
| CZRW5228B-HF | 3.71                               | 3.9 | 4.1   | 23                    | 20                   | 1900                        | 0.25                 | 10                  | 1                  | D3           |
| CZRW5229B-HF | 4.09                               | 4.3 | 4.52  | 22                    | 20                   | 2000                        | 0.25                 | 5                   | 1                  | D4           |
| CZRW5230B-HF | 4.47                               | 4.7 | 4.94  | 19                    | 20                   | 1900                        | 0.25                 | 5                   | 2                  | D5           |
| CZRW5231B-HF | 4.85                               | 5.1 | 5.36  | 17                    | 20                   | 1600                        | 0.25                 | 5                   | 2                  | E1           |
| CZRW5232B-HF | 5.32                               | 5.6 | 5.88  | 11                    | 20                   | 1600                        | 0.25                 | 5                   | 3                  | E2           |
| CZRW5234B-HF | 5.89                               | 6.2 | 6.51  | 7                     | 20                   | 1000                        | 0.25                 | 5                   | 4                  | E4           |
| CZRW5235B-HF | 6.46                               | 6.8 | 7.14  | 5                     | 20                   | 750                         | 0.25                 | 3                   | 5                  | E5           |
| CZRW5236B-HF | 7.13                               | 7.5 | 7.88  | 6                     | 20                   | 500                         | 0.25                 | 3                   | 6                  | F1           |
| CZRW5237B-HF | 7.79                               | 8.2 | 8.61  | 8                     | 20                   | 500                         | 0.25                 | 3                   | 6                  | F2           |
| CZRW5239B-HF | 8.65                               | 9.1 | 9.56  | 10                    | 20                   | 600                         | 0.25                 | 3                   | 6.5                | F4           |
| CZRW5240B-HF | 9.5                                | 10  | 10.5  | 17                    | 20                   | 600                         | 0.25                 | 3                   | 8                  | F5           |
| CZRW5241B-HF | 10.45                              | 11  | 11.55 | 22                    | 20                   | 600                         | 0.25                 | 3                   | 8.4                | H1           |
| CZRW5242B-HF | 11.4                               | 12  | 12.6  | 30                    | 20                   | 600                         | 0.25                 | 2                   | 9.1                | H2           |
| CZRW5243B-HF | 12.35                              | 13  | 13.65 | 13                    | 9.5                  | 600                         | 0.25                 | 1                   | 9.9                | H3           |
| CZRW5244B-HF | 13.3                               | 14  | 14.7  | 15                    | 9.0                  | 600                         | 0.25                 | 0.5                 | 10.5               | H4           |
| CZRW5245B-HF | 14.25                              | 15  | 15.75 | 16                    | 8.5                  | 600                         | 0.25                 | 0.5                 | 11                 | H5           |
| CZRW5246B-HF | 15.2                               | 16  | 16.8  | 17                    | 7.8                  | 600                         | 0.25                 | 0.1                 | 12                 | J1           |
| CZRW5247B-HF | 16.15                              | 17  | 17.85 | 19                    | 7.5                  | 600                         | 0.25                 | 0.1                 | 13                 | J2           |
| CZRW5248B-HF | 17.1                               | 18  | 18.9  | 21                    | 7                    | 600                         | 0.25                 | 0.1                 | 14                 | J3           |
| CZRW5250B-HF | 19                                 | 20  | 21    | 25                    | 6.2                  | 600                         | 0.25                 | 0.1                 | 15                 | J5           |
| CZRW5251B-HF | 20.9                               | 22  | 23.1  | 29                    | 5.6                  | 600                         | 0.25                 | 0.1                 | 17                 | K1           |
| CZRW5252B-HF | 22.8                               | 24  | 25.2  | 33                    | 5.2                  | 600                         | 0.25                 | 0.1                 | 18                 | K2           |
| CZRW5254B-HF | 25.65                              | 27  | 28.35 | 41                    | 5                    | 600                         | 0.25                 | 0.1                 | 21                 | K4           |
| CZRW5255B-HF | 26.6                               | 28  | 29.4  | 44                    | 4.5                  | 600                         | 0.25                 | 0.1                 | 21                 | K5           |
| CZRW5256B-HF | 28.5                               | 30  | 31.5  | 49                    | 4.2                  | 600                         | 0.25                 | 0.1                 | 23                 | M1           |
| CZRW5257B-HF | 31.35                              | 33  | 34.65 | 58                    | 3.8                  | 700                         | 0.25                 | 0.1                 | 25                 | M2           |
| CZRW5258B-HF | 34.2                               | 36  | 37.8  | 70                    | 3.4                  | 700                         | 0.25                 | 0.1                 | 27                 | M3           |
| CZRW5259B-HF | 37.05                              | 39  | 40.95 | 80                    | 3.2                  | 800                         | 0.25                 | 0.1                 | 30                 | M4           |
| CZRW5260B-HF | 40.85                              | 43  | 45.15 | 93                    | 3                    | 900                         | 0.25                 | 0.1                 | 33                 | M5           |
| CZRW5261B-HF | 44.65                              | 47  | 49.35 | 105                   | 2.7                  | 1000                        | 0.25                 | 0.1                 | 36                 | N1           |
| CZRW5262B-HF | 48.45                              | 51  | 53.55 | 125                   | 2.5                  | 1100                        | 0.25                 | 0.1                 | 39                 | N2           |
| CZRW5263B-HF | 53.2                               | 56  | 58.8  | 150                   | 2.2                  | 1300                        | 0.25                 | 0.1                 | 43                 | N3           |
| CZRW5264B-HF | 57                                 | 60  | 63    | 170                   | 2.1                  | 1400                        | 0.25                 | 0.1                 | 46                 | N4           |
| CZRW5265B-HF | 58.9                               | 62  | 65.1  | 185                   | 2                    | 1500                        | 0.25                 | 0.1                 | 47                 | N5           |
| CZRW5266B-HF | 64.6                               | 68  | 71.4  | 230                   | 1.8                  | 1600                        | 0.25                 | 0.1                 | 52                 | P1           |
| CZRW5267B-HF | 71.25                              | 75  | 78.75 | 270                   | 1.7                  | 1400                        | 0.25                 | 0.1                 | 56                 | P2           |

## RATING AND CHARACTERISTIC CURVES (CZRW5221B-HF Thru CZRW5267B-HF)

Fig.1 Typical forward voltage

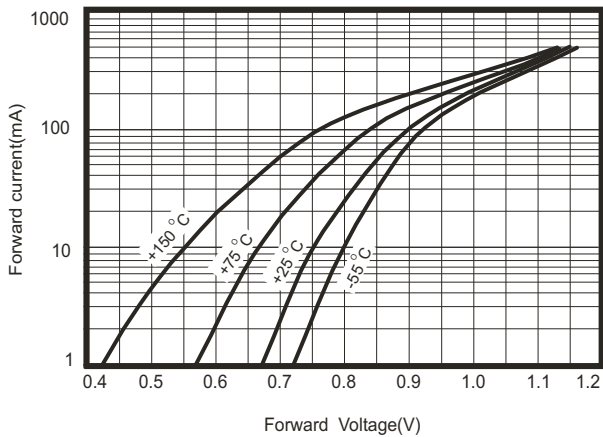


Fig.2 Typical leakage current

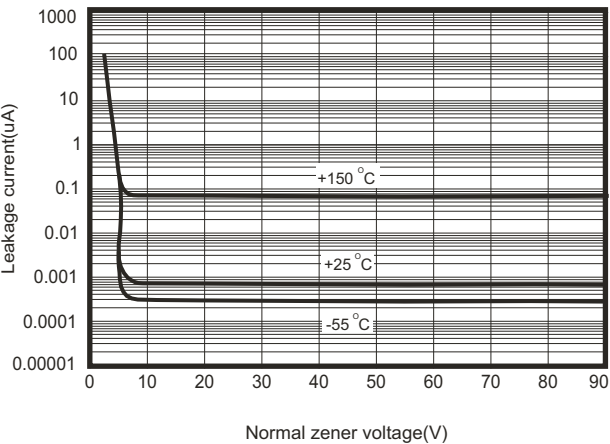


Fig.3 Temperature coefficients

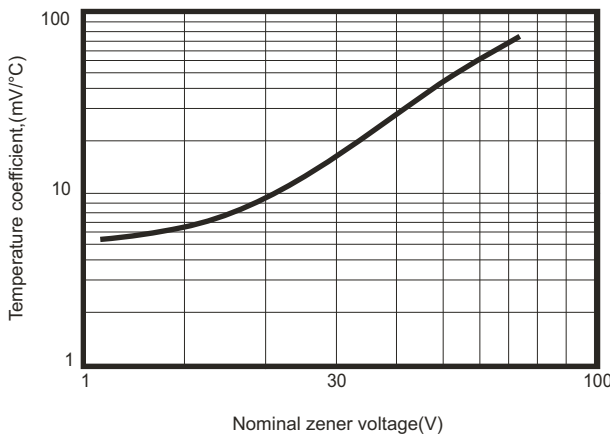
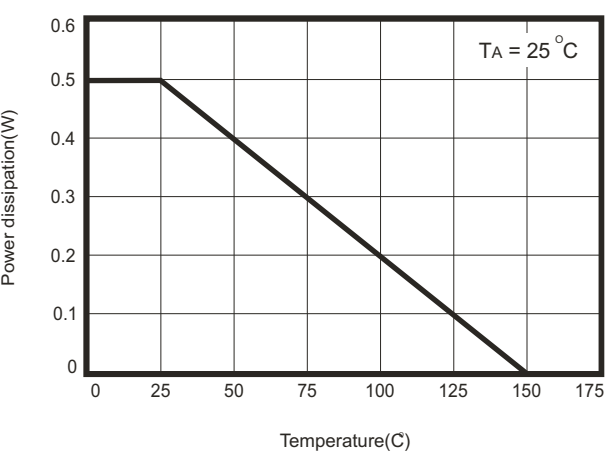
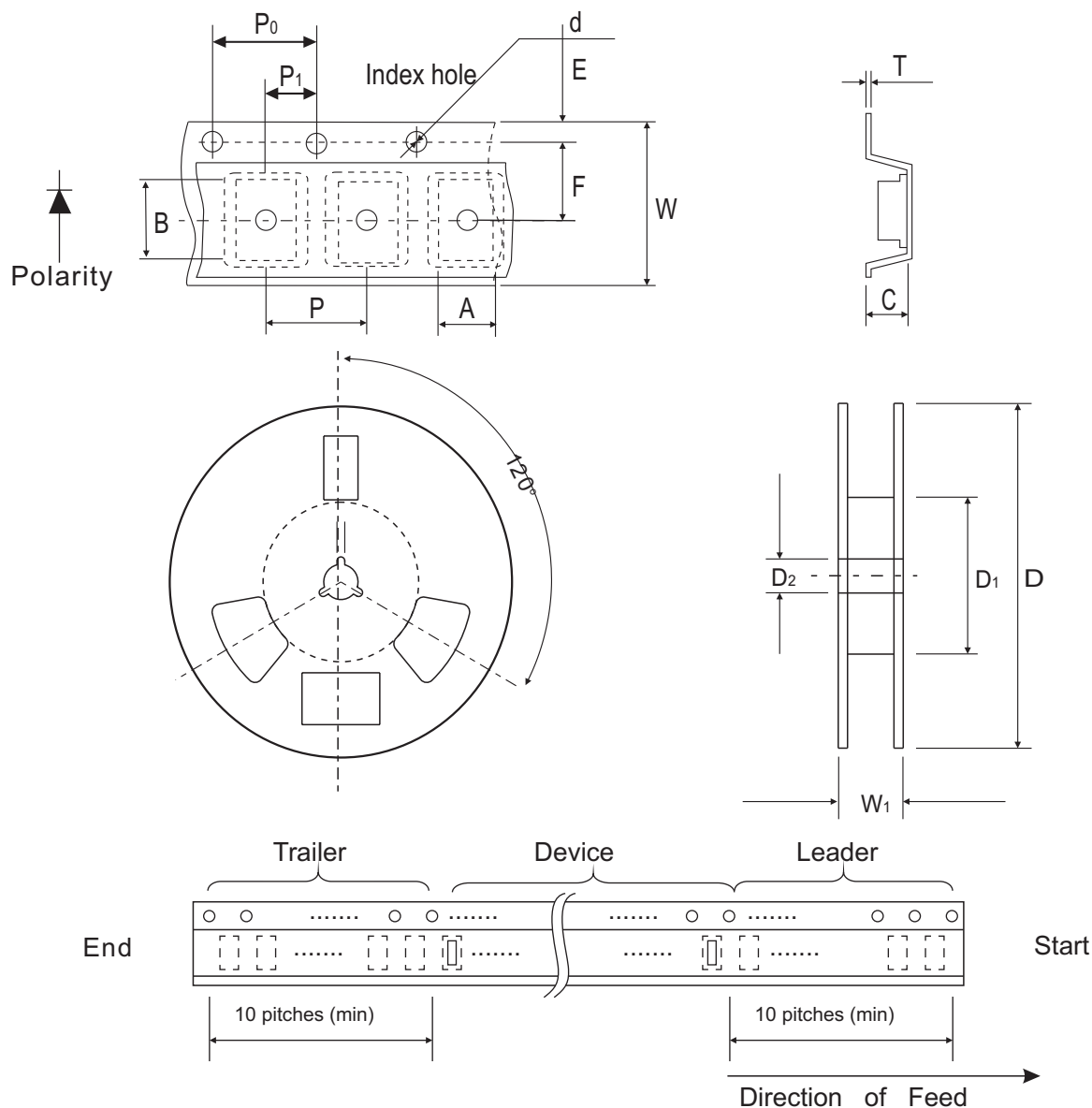


Fig.4 Steady state power derating



## Reel Taping Specification



| SOD-123 | SYMBOL | A             | B             | C             | d             | D            | D <sub>1</sub> | D <sub>2</sub> |
|---------|--------|---------------|---------------|---------------|---------------|--------------|----------------|----------------|
|         | (mm)   | 1.90 ± 0.10   | 4.00 ± 0.10   | 1.50 ± 0.10   | 1.55 ± 0.10   | 178 ± 1      | 50.0 MIN.      | 13.0 ± 0.20    |
|         | (inch) | 0.074 ± 0.004 | 0.157 ± 0.004 | 0.059 ± 0.004 | 0.061 ± 0.004 | 7.008 ± 0.04 | 1.968 MIN.     | 0.512 ± 0.008  |

| SOD-123 | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | W             | W <sub>1</sub> |
|---------|--------|---------------|---------------|---------------|----------------|----------------|---------------|----------------|
|         | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.05   | 4.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.05    | 8.00 ± 0.30   | 14.4 MAX.      |
|         | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.002  | 0.315 ± 0.012 | 0.567 MAX.     |

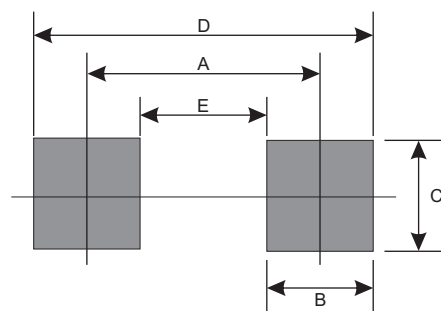
## Marking Code

| Part Number          | Marking Code |
|----------------------|--------------|
| CZRW5221B ~ 5267B-HF | XX           |



## Suggested PAD Layout

| SIZE | SOD-123 |        |
|------|---------|--------|
|      | (mm)    | (inch) |
| A    | 3.35    | 0.132  |
| B    | 0.80    | 0.032  |
| C    | 1.00    | 0.039  |
| D    | 5.025   | 0.198  |
| E    | 1.675   | 0.066  |



## Standard Package

| Case Type | Qty per Reel | Reel Size |
|-----------|--------------|-----------|
|           | (Pcs)        | (inch)    |
| SOD-123   | 3000         | 7         |