

**SURFACE MOUNT SILICON ZENER DIODES**

**VOLTAGE** 2.4 to 39 Volts      **POWER** 410 mWatts

**FEATURES**

- Planar Die construction
- 410mW Power Dissipation
- Zener Voltages from 2.4V - 39V
- Ideally Suited for Automated Assembly Processes

**MECHANICAL DATA**

- Case: SOD-123, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram Below
- Approx. Weight: 0.008 grams
- Mounting Position: Any



**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

| Parameter   | Symbol           | Value       | Units |
|---|------------------|-------------|-------|
| Power Dissipation (Notes A) at 25°C   | P <sub>D</sub>   | 410         | mW    |
| Peak Forward Surge Current, 8.3ms single half sine-wave superimposed on rated load (JEDEC method) (Notes B) | I <sub>rSM</sub> | 2.0         | Amps  |
| Operating Junction and Storage Temperature Range  | T <sub>J</sub>   | -55 to +150 | °C    |

NOTES:

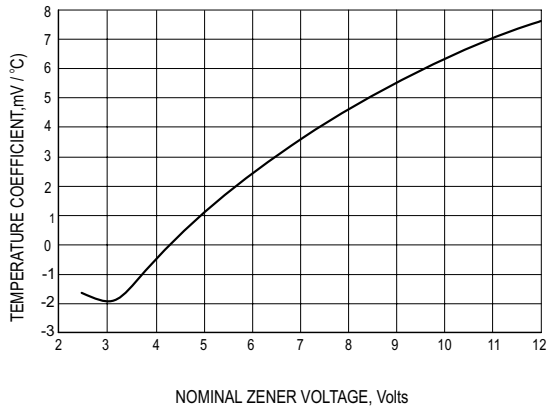
- A. Mounted on 5.0mm<sup>2</sup>(.013mm thick) land areas.
- B. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted) V<sub>F</sub>=1.2V max, I<sub>F</sub>=100mA for all types.

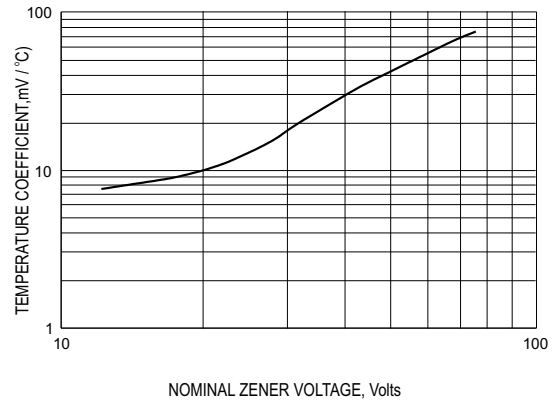
| Part Number | Nominal Zener Voltage<br>@ I <sub>Z</sub> =5mA |        |        | Dynamic Resistance Impedance      |    |                                   |    | Max Reverse<br>Leakage Current  |      | Max. Zener<br>Current           | Package |
|-------------|--|--------|--------|-----------------------------------|----|-----------------------------------|----|---------------------------------|------|---------------------------------|---------|
|             | V <sub>Z</sub> @ I <sub>ZT</sub>               |        |        | Z <sub>1T</sub> @ I <sub>ZT</sub> |    | Z <sub>1K</sub> @ I <sub>ZK</sub> |    | I <sub>R</sub> @ V <sub>R</sub> |      | I <sub>ZM</sub> @T <sub>A</sub> |         |
|             | Nom. V   | Min. V | Max. V | Ω                                 | mA | Ω                                 | mA | nA                              | V    | mA                              |         |
| BZT52-C2V4  | 2.4  | 2.28   | 2.56   | 85                                | 5  | 600                               | 1  | 100000                          | 1    | -                               | SOD-123 |
| BZT52-C2V7  | 2.7  | 2.5    | 2.9    | 83                                | 5  | 500                               | 1  | 75000                           | 1    | 134                             | SOD-123 |
| BZT52-C3    | 3  | 2.8    | 3.2    | 95                                | 5  | 500                               | 1  | 50000                           | 1    | 118                             | SOD-123 |
| BZT52-C3V3  | 3.3  | 3.1    | 3.5    | 95                                | 5  | 500                               | 1  | 25000                           | 1    | 109                             | SOD-123 |
| BZT52-C3V6  | 3.6  | 3.4    | 3.8    | 95                                | 5  | 500                               | 1  | 15000                           | 1    | 100                             | SOD-123 |
| BZT52-C3V9  | 3.9  | 3.7    | 4.1    | 95                                | 5  | 500                               | 1  | 10000                           | 1    | 92                              | SOD-123 |
| BZT52-C4V3  | 4.3  | 4      | 4.6    | 95                                | 5  | 500                               | 1  | 5000                            | 1    | 84                              | SOD-123 |
| BZT52-C4V7  | 4.7  | 4.4    | 5      | 78                                | 5  | 500                               | 1  | 5000                            | 1    | 76                              | SOD-123 |
| BZT52-C5V1  | 5.1  | 4.8    | 5.4    | 60                                | 5  | 480                               | 1  | 100                             | 0.8  | 67                              | SOD-123 |
| BZT52-C5V6  | 5.6  | 5.2    | 6      | 40                                | 5  | 400                               | 1  | 100                             | 1    | 59                              | SOD-123 |
| BZT52-C6V2  | 6.2  | 5.8    | 6.6    | 10                                | 5  | 200                               | 1  | 100                             | 2    | 54                              | SOD-123 |
| BZT52-C6V8  | 6.8  | 6.4    | 7.2    | 8                                 | 5  | 150                               | 1  | 100                             | 3    | 49                              | SOD-123 |
| BZT52-C7V5  | 7.5  | 7      | 7.9    | 7                                 | 5  | 50                                | 1  | 100                             | 5    | 44                              | SOD-123 |
| BZT52-C8V2  | 8.2  | 7.7    | 8.7    | 7                                 | 5  | 50                                | 1  | 100                             | 6    | 40                              | SOD-123 |
| BZT52-C9V1  | 9.1  | 8.5    | 9.6    | 10                                | 5  | 50                                | 1  | 100                             | 7    | 36                              | SOD-123 |
| BZT52-C10   | 10   | 9.4    | 10.6   | 15                                | 5  | 70                                | 1  | 100                             | 7.5  | 33                              | SOD-123 |
| BZT52-C11   | 11   | 10.4   | 11.6   | 20                                | 5  | 70                                | 1  | 100                             | 8.5  | 30                              | SOD-123 |
| BZT52-C12   | 12   | 11.4   | 12.7   | 20                                | 5  | 90                                | 1  | 100                             | 9    | 28                              | SOD-123 |
| BZT52-C13   | 13   | 12.4   | 14.1   | 25                                | 5  | 110                               | 1  | 100                             | 10   | 25                              | SOD-123 |
| BZT52-C15   | 15   | 13.8   | 15.6   | 30                                | 5  | 110                               | 1  | 100                             | 11   | 23                              | SOD-123 |
| BZT52-C16   | 16   | 15.3   | 17.1   | 40                                | 5  | 170                               | 1  | 100                             | 12   | 20                              | SOD-123 |
| BZT52-C18   | 18   | 16.8   | 19.1   | 50                                | 5  | 170                               | 1  | 100                             | 14   | 18                              | SOD-123 |
| BZT52-C20   | 20   | 18.8   | 21.2   | 50                                | 5  | 220                               | 1  | 100                             | 15   | 17                              | SOD-123 |
| BZT52-C22   | 22   | 20.8   | 23.3   | 55                                | 5  | 220                               | 1  | 100                             | 17   | 16                              | SOD-123 |
| BZT52-C24   | 24   | 22.8   | 25.6   | 80                                | 5  | 220                               | 1  | 100                             | 18   | 13                              | SOD-123 |
| BZT52-C27   | 27   | 25.1   | 28.9   | 80                                | 5  | 250                               | 1  | 100                             | 20   | 12                              | SOD-123 |
| BZT52-C30   | 30   | 28     | 32     | 80                                | 5  | 250                               | 1  | 100                             | 22.5 | 10                              | SOD-123 |
| BZT52-C33   | 33   | 31     | 35     | 80                                | 5  | 250                               | 1  | 100                             | 25   | 9                               | SOD-123 |
| BZT52-C36   | 36   | 34     | 38     | 90                                | 5  | 250                               | 1  | 100                             | 27   | 9                               | SOD-123 |
| BZT52-C39   | 39   | 37     | 41     | 90                                | 5  | 300                               | 1  | 100                             | 29   | 8                               | SOD-123 |

NOTE:

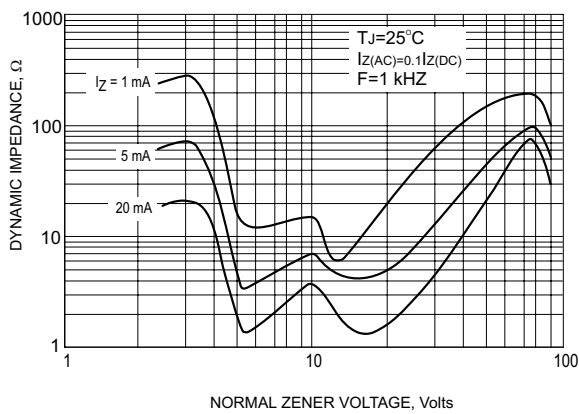
1. Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of ±5%.
2. Specials Available Include:
  - A. Nominal zener voltages between the voltages shown and tighter voltage tolerances.
  - B. Matched sets.
3. Zener Voltage (V<sub>Z</sub>) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (T<sub>L</sub>) at 30°C, from the diode body.
4. Zener Impedance (Z<sub>Z</sub>) Derivation. The zener impedance is derived from the 60 cycle ac voltage, which results when an AC current having an rms value equal to 10% of the dc zener current (I<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed on I<sub>ZT</sub> or I<sub>ZK</sub>.
5. Surge Current (I<sub>R</sub>) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, I<sub>ZT</sub>, per JEDEC registration; however, actual device capability is as described in Figure 5.



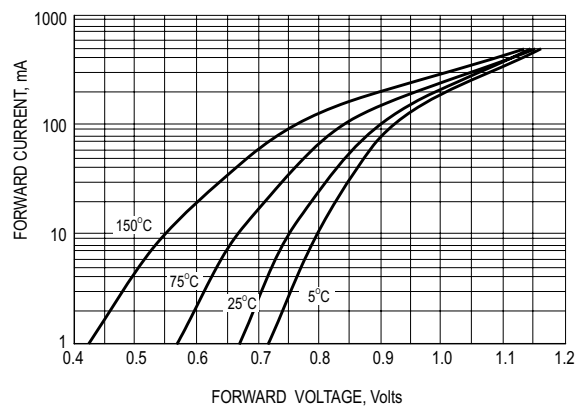
**TYPICAL REVERSE CURRENT**



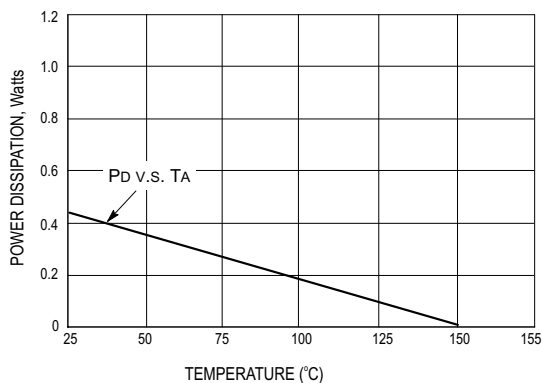
**STEADY STATE POWER DERATING**



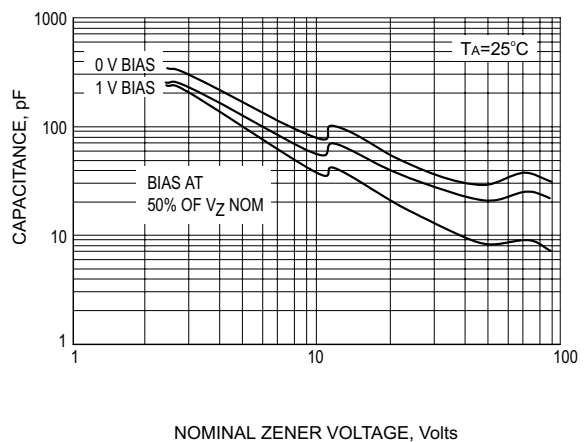
**EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE**



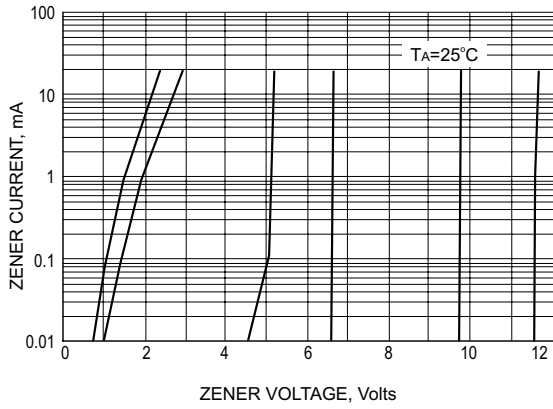
**TYPICAL FORWARD VOLTAGE**



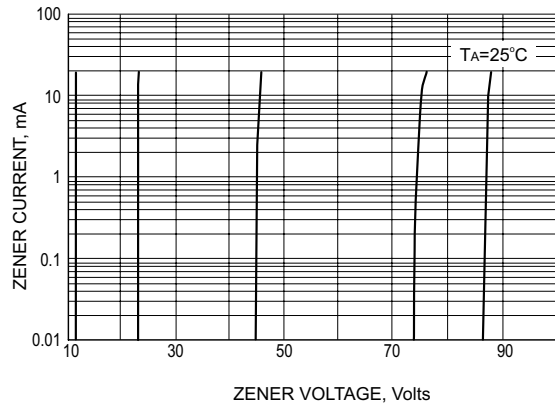
**STEADY STATE POWER DERATING**



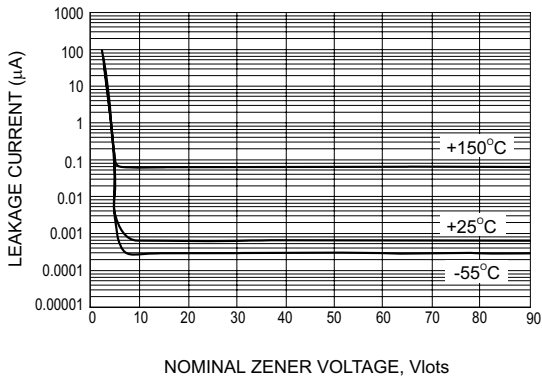
**TYPICAL CAPACITANCE**



ZENER VOLTAGE V.S. ZENER CURRENT

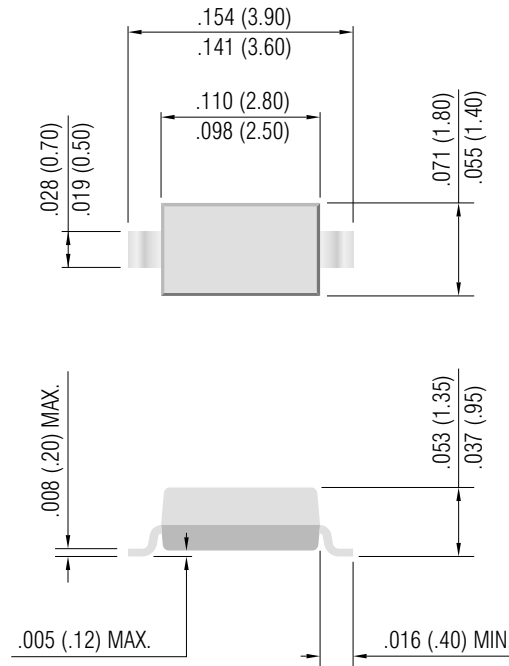


ZENER VOLTAGE V.S. ZENER CURRENT



TYPICAL LEAKGE CURRENT

**SOD-123**



Dimensions in inches and (millimeters)

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**PanJit International Inc.**

TEL:886-7-6213121 Fax:886-7-6213129 Internet: <http://www.panjit.com.tw> email: [sales@panjit.com.tw](mailto:sales@panjit.com.tw)