


SURFACE MOUNT PRECISION ZENER DIODE

Features

- $\pm 2.0\%$ Tolerance on Breakdown Voltage
- Small, Low Profile Surface Mount Package
- Flat Lead Package Design for Low Profile and High Power Dissipation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: SOD523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish—Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.001 grams (Approximate)



Top View

Ordering Information (Note 5)

| Part Number | Qualification | Case | Packaging |
|-------------------|---------------|--------|--------------------|
| (Type Number)-7* | Automotive | SOD523 | 3000/Tape & Reel |
| (Type Number)-13* | Automotive | SOD523 | 10,000/Tape & Reel |

*For (Type Number), please see the Electrical Characteristics Table. Example: 6.2V Zener = BZT585B6V2TQ-7.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



xx = Product Type Marking Code
(See Electrical Characteristics Table)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive, or inductive load.
For capacitance load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|--|----------------|-------|------|
| Forward Voltage @ I _F = 10mA @ I _F = 100mA | V _F | 0.9 | V |
| | | 1.1 | |
| Continuous Forward Current | I _F | 200 | mA |

Thermal Characteristics

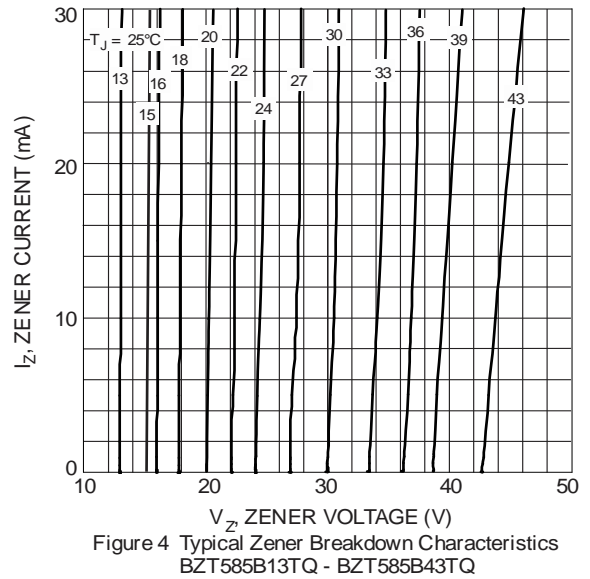
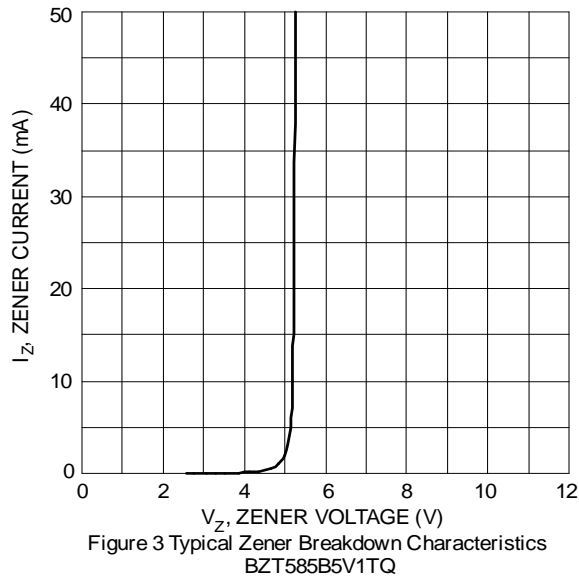
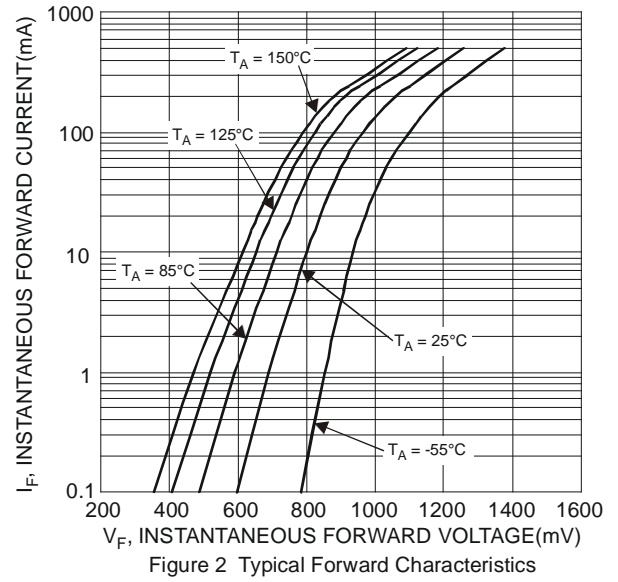
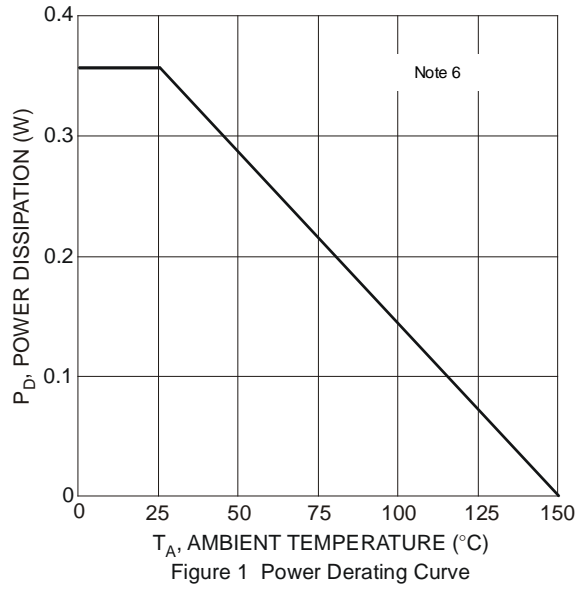
| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 350 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R _{ΘJA} | 357 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

Note: 6. Device mounted on FR-4 PCB with minimum recommended pad layout, as shown on our website at <http://www.diodes.com/package-outlines.html>.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Type Number | Marking Codes | Zener Voltage Range (Note 7) | | | | Maximum Zener Impedance (Note 8) | | | Temperature Coefficient | Total Capacitance | Maximum Reverse Current (Note 7) | |
|--------------|---------------|----------------------------------|---------|---------|-----------------|-----------------------------------|-----------------------------------|-----------------|-------------------------|--|----------------------------------|------------------|
| | | V _Z @ I _{ZT} | | | I _{ZT} | Z _{ZT} @ I _{ZT} | Z _{ZK} @ I _{ZK} | I _{ZK} | TC @ I _{ZT} | C _T @ f = 1MHz, V _R = 0V | I _R | @ V _R |
| | | Nom (V) | Min (V) | Max (V) | mA | Ω | | mA | Typical (mV/°C) | Max (pF) | μA | V |
| BZT585B5V1TQ | 3N | 5.1 | 5.00 | 5.20 | 5 | 60 | 480 | 1 | -0.5 | 300 | 2 | 2 |
| BZT585B8V2TQ | 3V | 8.2 | 8.04 | 8.36 | 5 | 10 | 80 | 1 | 4.7 | 150 | 0.7 | 5 |
| BZT585B9V1TQ | 3X | 9.1 | 8.92 | 9.28 | 5 | 10 | 100 | 1 | 5.8 | 120 | 0.5 | 6 |
| BZT585B10TQ | 3Y | 10 | 9.80 | 10.20 | 5 | 10 | 150 | 1 | 7.0 | 110 | 0.2 | 7 |
| BZT585B11TQ | 3Z | 11 | 10.78 | 11.22 | 5 | 10 | 150 | 1 | 8.2 | 110 | 0.1 | 8 |
| BZT585B12TQ | 4A | 12 | 11.76 | 12.24 | 5 | 10 | 150 | 1 | 9.5 | 105 | 0.1 | 8 |
| BZT585B13TQ | 4B | 13 | 12.74 | 13.26 | 5 | 10 | 170 | 1 | 10.7 | 105 | 0.1 | 8 |
| BZT585B15TQ | 4D | 15 | 14.70 | 15.30 | 5 | 15 | 200 | 1 | 13.2 | 100 | 0.05 | 10.5 |
| BZT585B16TQ | 4E | 16 | 15.68 | 16.32 | 5 | 40 | 200 | 1 | 14.4 | 90 | 0.05 | 11.2 |
| BZT585B18TQ | 4F | 18 | 17.64 | 18.36 | 5 | 45 | 225 | 1 | 16.9 | 80 | 0.05 | 12.6 |
| BZT585B20TQ | 4G | 20 | 19.60 | 20.40 | 5 | 55 | 225 | 1 | 19.4 | 70 | 0.05 | 14.0 |
| BZT585B22TQ | 4H | 22 | 21.56 | 22.44 | 5 | 55 | 250 | 1 | 21.9 | 60 | 0.05 | 15.4 |
| BZT585B24TQ | 4J | 24 | 23.52 | 24.48 | 5 | 70 | 250 | 1 | 24.4 | 55 | 0.05 | 16.8 |
| BZT585B27TQ | 4K | 27 | 26.46 | 27.54 | 2 | 80 | 300 | 0.5 | 25.4 | 50 | 0.05 | 18.9 |
| BZT585B30TQ | 4M | 30 | 29.40 | 30.60 | 2 | 80 | 300 | 0.5 | 31.1 | 50 | 0.05 | 21.0 |
| BZT585B33TQ | 4N | 33 | 32.34 | 33.66 | 2 | 80 | 325 | 0.5 | 36.7 | 45 | 0.05 | 23.1 |
| BZT585B36TQ | 4P | 36 | 35.28 | 36.72 | 2 | 90 | 350 | 0.5 | 42.4 | 45 | 0.05 | 25.2 |
| BZT585B39TQ | 4R | 39 | 38.22 | 39.78 | 2 | 130 | 350 | 0.5 | 48.1 | 45 | 0.05 | 27.3 |
| BZT585B43TQ | 4S | 43 | 42.14 | 43.86 | 2 | 150 | 375 | 0.5 | 55.7 | 40 | 0.05 | 30.1 |

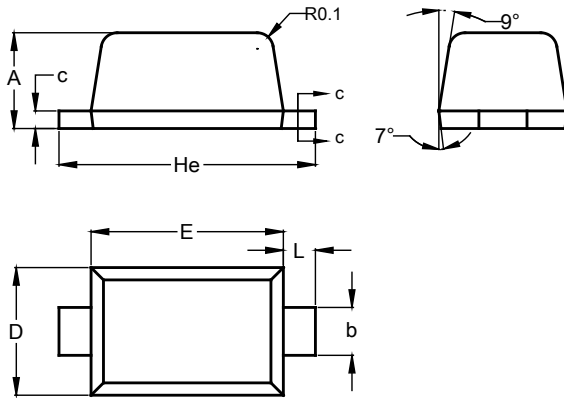
Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. f = 1 kHz.



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD523

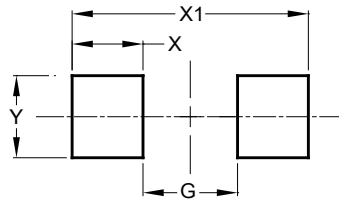


| SOD523 | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.55 | 0.65 |
| b | 0.26 | 0.34 |
| c | 0.11 | 0.17 |
| D | 0.75 | 0.85 |
| E | 1.15 | 1.25 |
| He | 1.55 | 1.65 |
| L | 0.10 | 0.30 |
| All Dimensions in mm | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD523



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 0.80 |
| X | 0.60 |
| X1 | 2.00 |
| Y | 0.70 |

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