

## Features

- ±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)**
- **The BZT585B2V4TQ - BZT585B43TQ is suitable for automotive applications requiring specific change control and is AEC-Q101 qualified, is PPAP capable, and is manufactured in IATF16949:2016 certified facilities.**
- <https://www.diodes.com/quality/product-definitions/>

## 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 (E3)
- Weight: 0.001 grams (Approximate)



Top View

## Ordering Information (Note 4)

| 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. 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<sub>A</sub> = +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            | V <sub>F</sub> | @ I <sub>F</sub> = 10mA  | 0.9  |
|                            |                | @ I <sub>F</sub> = 100mA | 1.1  |
| Continuous Forward Current | I <sub>F</sub> | 200                      | mA   |

**Thermal Characteristics**

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                           | P <sub>D</sub>                    | 350         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 5) | R <sub>θJA</sub>                  | 357         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

Note: 5. 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<sub>A</sub> = +25°C, unless otherwise specified.)

| Type Number  | Marking Codes | Zener Voltage Range (Note 6)     |         |         |                 | Maximum Zener Impedance (Note 7)  |                                   |                 | Temperature Coefficient | Total Capacitance                              | Maximum Reverse Current (Note 6) |                  |
|--------------|---------------|----------------------------------|---------|---------|-----------------|-----------------------------------|-----------------------------------|-----------------|-------------------------|--|----------------------------------|------------------|
|              |               | V <sub>Z</sub> @ I <sub>ZT</sub> |         |         | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>ZK</sub> | TC @ I <sub>ZT</sub>    | C <sub>T</sub> @ f = 1MHz, V <sub>R</sub> = 0V | I <sub>R</sub>                   | @ V <sub>R</sub> |
|              |               | Nom (V)                          | Min (V) | Max (V) | mA              | Ω                                 | mA                                | Typical (mV/°C) | Max (pF)                | μA   | V                                |                  |
| BZT585B2V4TQ | 3C            | 2.4                              | 2.35    | 2.45    | 5               | 100                               | 400                               | 1               | -1.3                    | 450  | 50                               | 1                |
| BZT585B3V6TQ | 3J            | 3.6                              | 3.53    | 3.67    | 5               | 90                                | 500                               | 1               | -1.9                    | 390  | 5                                | 1                |
| BZT585B3V9TQ | 3K            | 3.9                              | 3.82    | 3.98    | 5               | 90                                | 500                               | 1               | -1.9                    | 370  | 3                                | 1                |
| BZT585B5V1TQ | 3N            | 5.1                              | 5.00    | 5.20    | 5               | 60                                | 480                               | 1               | -0.5                    | 300  | 2                                | 2                |
| BZT585B5V6TQ | 3P            | 5.6                              | 5.49    | 5.71    | 5               | 40                                | 400                               | 1               | 1.0                     | 275  | 1                                | 2                |
| BZT585B6V2TQ | 3S            | 6.2                              | 6.08    | 6.32    | 5               | 10                                | 150                               | 1               | 2.2                     | 250  | 3                                | 4                |
| BZT585B6V8TQ | 3T            | 6.8                              | 6.66    | 6.94    | 5               | 15                                | 80                                | 1               | 3.0                     | 215  | 2                                | 4                |
| BZT585B7V5TQ | 3U            | 7.5                              | 7.35    | 7.65    | 5               | 10                                | 80                                | 1               | 3.8                     | 170  | 1                                | 5                |
| 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: 6. Short duration pulse test used to minimize self-heating effect.  
7. f = 1kHz.

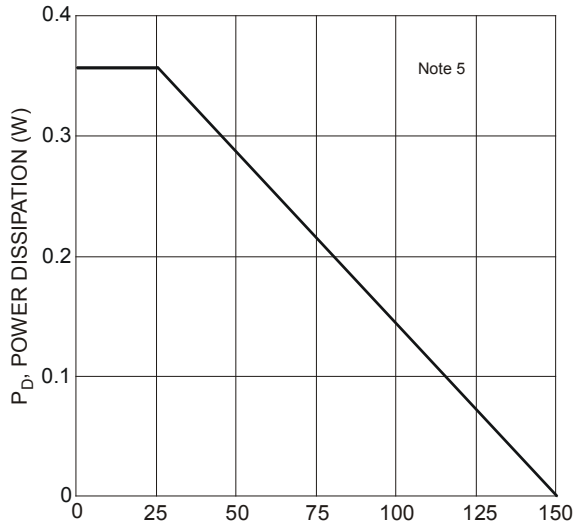


Figure 1 Power Derating Curve

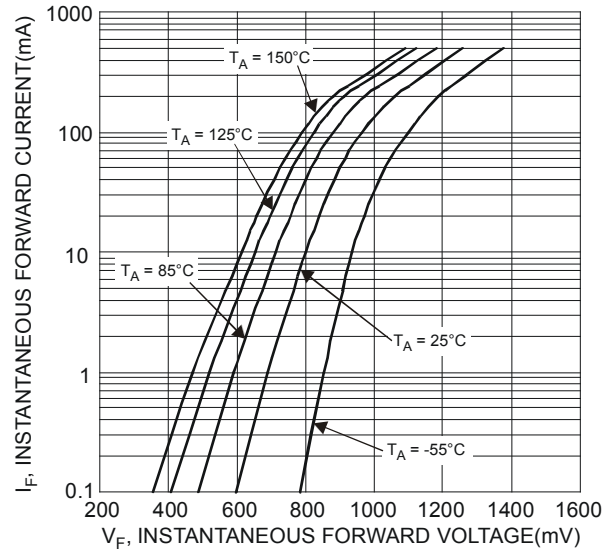


Figure 2 Typical Forward Characteristics

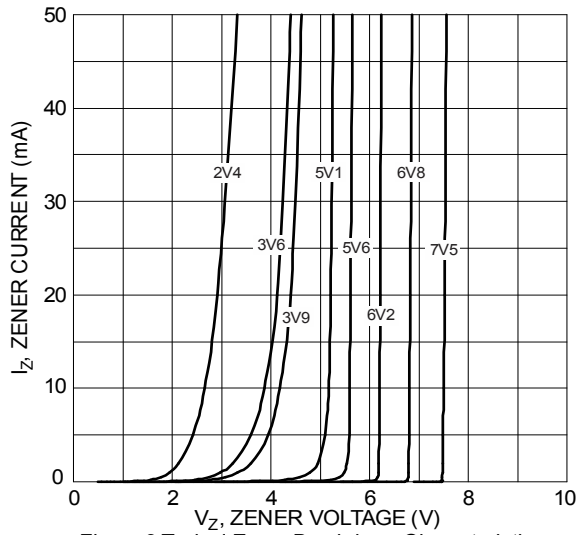


Figure 3 Typical Zener Breakdown Characteristics  
BZT585B2V4TQ - BZT585B7V5TQ

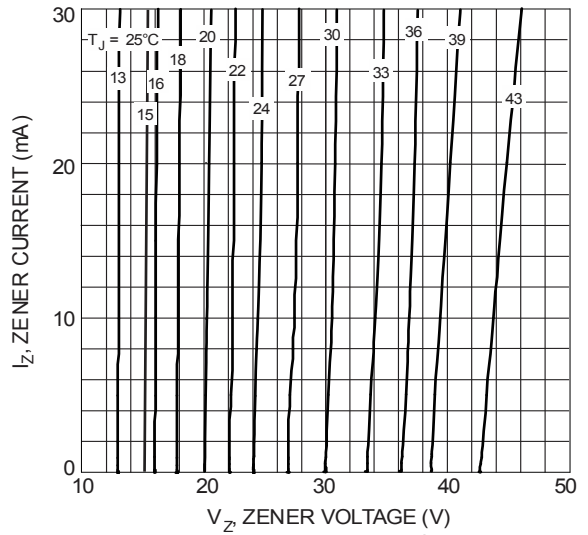
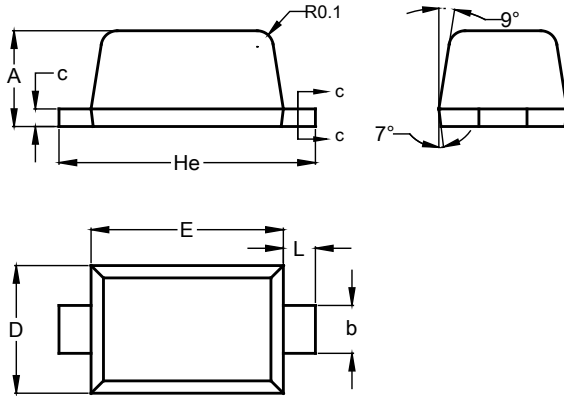


Figure 4 Typical Zener Breakdown Characteristics  
BZT585B13TQ - BZT585B43TQ

## Package Outline Dimensions

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

### SOD523

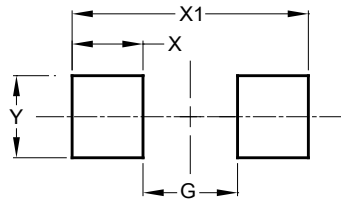


| SOD523               |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 0.55 | 0.65 |
| b                    | 0.26 | 0.34 |
| c                    | 0.11 | 0.17 |
| D                    | 0.75 | 0.85 |
| E                    | 1.15 | 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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