


Features

- Planar Die Construction
- 500mW Power Dissipation
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**
- Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 
- Polarity: Cathode Band
- Weight: 0.010 grams (Approximate)

SOD123



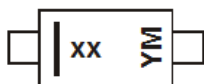
Top View

Ordering Information (Notes 5 & 6)

| Part Number | Qualification | Case | Packaging |
|---------------------|---------------|--------|--------------------|
| (Type Number)-7-F | Commercial | SOD123 | 3,000/Tape & Reel |
| (Type Number)Q-7-F | Automotive | SOD123 | 3,000/Tape & Reel |
| (Type Number)-13-F | Commercial | SOD123 | 10,000/Tape & Reel |
| (Type Number)Q-13-F | Automotive | SOD123 | 10,000/Tape & Reel |

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 - See <http://www.diodes.com> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - Product manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.
 - For packaging details, go to our website at <http://www.diodes.com>.
 - For (Type Number), please see the Electrical Characteristics Table. Example: 6.2V Zener = BZT52C6V2Q-13-F.

Marking Information



xx = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking
Y = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | ... | 2020 | 2021 | 2022 | 2023 | 2024 |
|------|------|------|------|------|------|-----|------|------|------|------|------|
| Code | A | B | C | D | E | ... | H | I | J | K | L |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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 | V _F | 0.9 | V |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 7) @T _L = +75°C | P _D | 500 | mW |
| Power Dissipation (Note 8) @T _A = +25°C | P _D | 370 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 8) | R _{θJA} | 338 | °C/W |
| Thermal Resistance, Junction to Lead (Note 9) | R _{θJL} | 150 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

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

| Type Number | Marking Codes | Zener Voltage Range (Note 10) | | | | Maximum Zener Impedance f = 1kHz | | | Maximum Reverse Current (Note 10) | | Temperature Coefficient @ I _{ZTC} mV/°C | | Test Current I _{ZTC} |
|-------------|---------------|----------------------------------|---------|---------|-----------------|-------------------------------------|-----------------------------------|-----------------|--------------------------------------|------------------|---|------|----------------------------------|
| | | V _Z @ I _{ZT} | | | I _{ZT} | Z _{ZT} @ I _{ZT} | Z _{ZK} @ I _{ZK} | I _{ZK} | I _R | @ V _R | Min | Max | |
| | | Nom (V) | Min (V) | Max (V) | mA | Ω | mA | μA | V | | | | |
| BZT52C2V0 | WY | 2.0 | 1.91 | 2.09 | 5 | 100 | 600 | 1.0 | 150 | 1.0 | -3.5 | 0 | 5 |
| BZT52C2V4 | WX | 2.4 | 2.2 | 2.6 | 5 | 100 | 600 | 1.0 | 50 | 1.0 | -3.5 | 0 | 5 |
| BZT52C2V7 | W1 | 2.7 | 2.5 | 2.9 | 5 | 100 | 600 | 1.0 | 20 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V0 | W2 | 3.0 | 2.8 | 3.2 | 5 | 95 | 600 | 1.0 | 10 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V3 | W3 | 3.3 | 3.1 | 3.5 | 5 | 95 | 600 | 1.0 | 5.0 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V6 | W4 | 3.6 | 3.4 | 3.8 | 5 | 90 | 600 | 1.0 | 5.0 | 1.0 | -3.5 | 0 | 5 |
| BZT52C3V9 | W5 | 3.9 | 3.7 | 4.1 | 5 | 90 | 600 | 1.0 | 3.0 | 1.0 | -3.5 | 0 | 5 |
| BZT52C4V3 | W6 | 4.3 | 4.0 | 4.6 | 5 | 90 | 600 | 1.0 | 3.0 | 1.0 | -3.5 | 0 | 5 |
| BZT52C4V7 | W7 | 4.7 | 4.4 | 5.0 | 5 | 80 | 500 | 1.0 | 3.0 | 2.0 | -3.5 | 0.2 | 5 |
| BZT52C5V1 | W8 | 5.1 | 4.8 | 5.4 | 5 | 60 | 480 | 1.0 | 2.0 | 2.0 | -2.7 | 1.2 | 5 |
| BZT52C5V6 | W9 | 5.6 | 5.2 | 6.0 | 5 | 40 | 400 | 1.0 | 1.0 | 2.0 | -2 | 2.5 | 5 |
| BZT52C6V2 | WA | 6.2 | 5.8 | 6.6 | 5 | 10 | 150 | 1.0 | 3.0 | 4.0 | 0.4 | 3.7 | 5 |
| BZT52C6V8 | WB | 6.8 | 6.4 | 7.2 | 5 | 15 | 80 | 1.0 | 2.0 | 4.0 | 1.2 | 4.5 | 5 |
| BZT52C7V5 | WC | 7.5 | 7.0 | 7.9 | 5 | 15 | 80 | 1.0 | 1.0 | 5.0 | 2.5 | 5.3 | 5 |
| BZT52C8V2 | WD | 8.2 | 7.7 | 8.7 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 | 3.2 | 6.2 | 5 |
| BZT52C9V1 | WE | 9.1 | 8.5 | 9.6 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 | 3.8 | 7.0 | 5 |
| BZT52C10 | WF | 10 | 9.4 | 10.6 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 | 4.5 | 8.0 | 5 |
| BZT52C11 | WG | 11 | 10.4 | 11.6 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 | 5.4 | 9.0 | 5 |
| BZT52C12 | WH | 12 | 11.4 | 12.7 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 | 6.0 | 10.0 | 5 |
| BZT52C13 | WI | 13 | 12.4 | 14.1 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 | 7.0 | 11.0 | 5 |
| BZT52C15 | WJ | 15 | 13.8 | 15.6 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 | 9.2 | 13.0 | 5 |
| BZT52C16 | WK | 16 | 15.3 | 17.1 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 | 10.4 | 14.0 | 5 |
| BZT52C18 | WL | 18 | 16.8 | 19.1 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 | 12.4 | 16.0 | 5 |
| BZT52C20 | WM | 20 | 18.8 | 21.2 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 | 14.4 | 18.0 | 5 |
| BZT52C22 | WN | 22 | 20.8 | 23.3 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 | 16.4 | - | 5 |
| BZT52C24 | WO | 24 | 22.8 | 25.6 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 | 18.4 | - | 5 |
| BZT52C27 | WP | 27 | 25.1 | 28.9 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | - | 2 |
| BZT52C30 | WQ | 30 | 28.0 | 32.0 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 | 24.4 | - | 2 |
| BZT52C33 | WR | 33 | 31.0 | 35.0 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | - | 2 |
| BZT52C36 | WS | 36 | 34.0 | 38.0 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | - | 2 |
| BZT52C39 | WT | 39 | 37.0 | 41.0 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | - | 2 |
| BZT52C43 | WU | 43 | 40.0 | 46.0 | 5 | 100 | 700 | 1.0 | 0.1 | 32.0 | 37.6 | - | 5 |
| BZT52C47 | WV | 47 | 44.0 | 50.0 | 5 | 100 | 750 | 1.0 | 0.1 | 35.0 | 42.0 | - | 5 |
| BZT52C51 | WW | 51 | 48.0 | 54.0 | 5 | 100 | 750 | 1.0 | 0.1 | 38.0 | 46.6 | - | 5 |

- Notes:
- R_{θJL} = 132°C/W
 - Device mounted on FR-4 PCB with 1 inch copper pad layout.
 - Thermal Resistance measurement obtained via infrared scan method.
 - Short duration pulse test used to minimize self-heating effect.

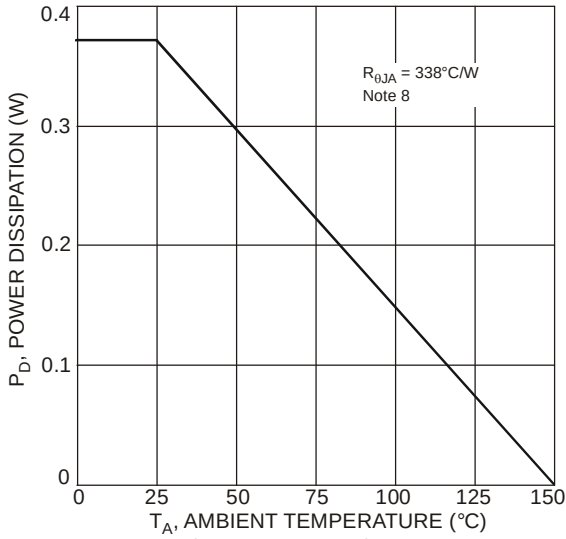


Fig. 1 Power Derating Curve

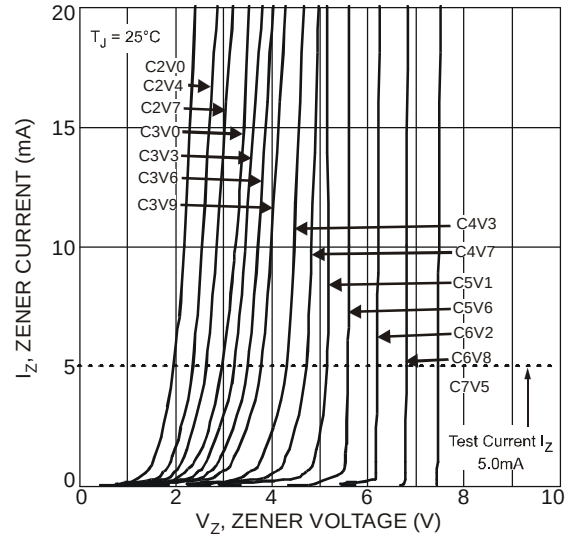


Fig. 2 Typical Zener Breakdown Characteristics

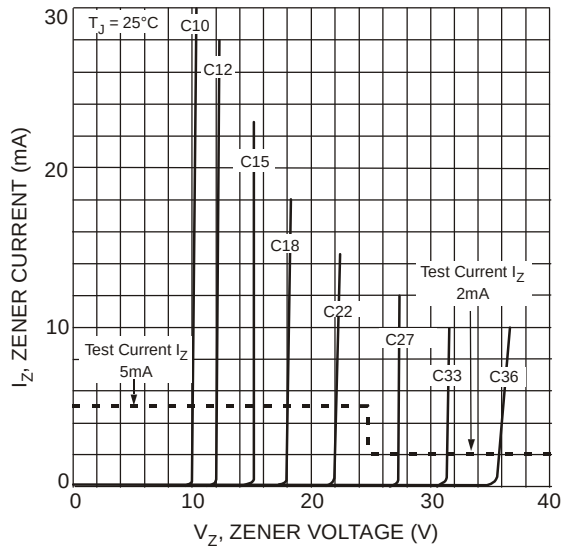


Fig. 3 Typical Zener Breakdown Characteristics

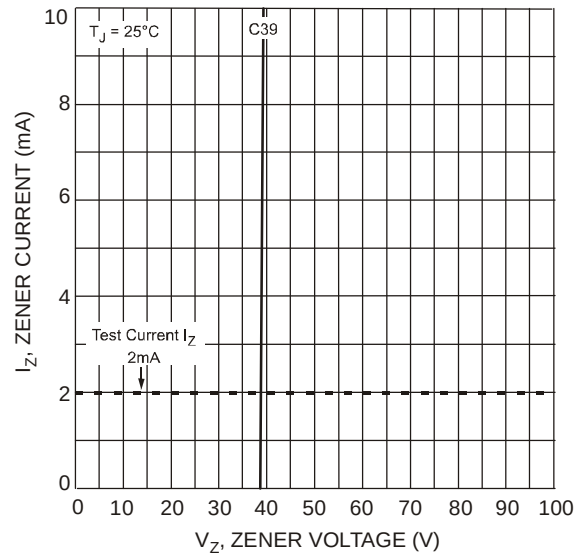


Fig. 4 Typical Zener Breakdown Characteristics

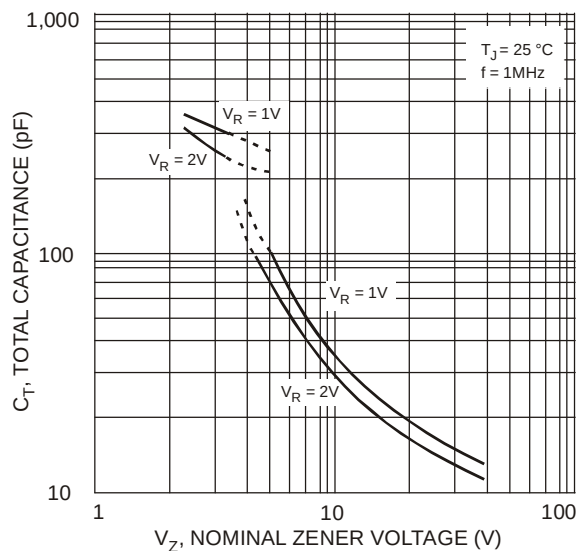
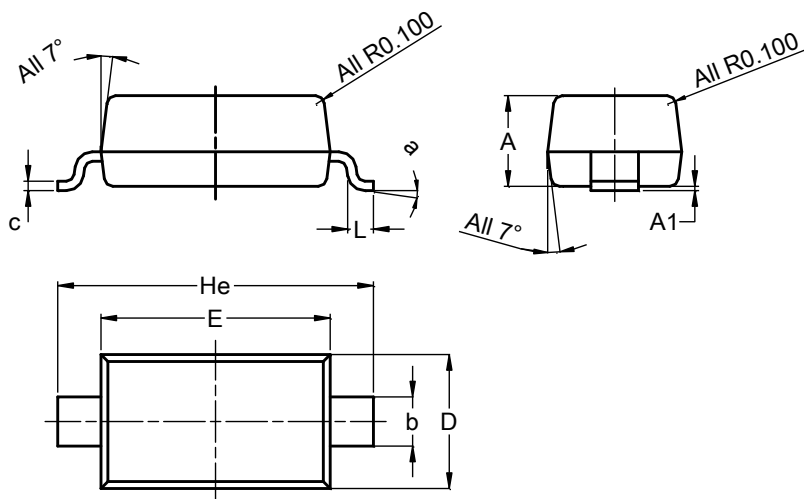


Fig. 5 Typical Total Capacitance vs. Nominal Zener Voltage

Package Outline Dimensions

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

SOD123

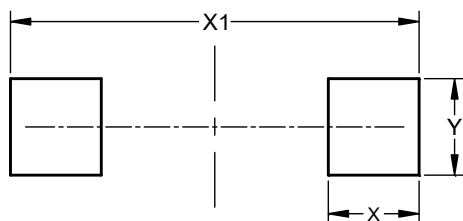


| SOD123 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 1.00 | 1.35 | 1.05 |
| A1 | 0.00 | 0.10 | 0.05 |
| b | 0.52 | 0.62 | 0.57 |
| c | 0.10 | 0.15 | 0.11 |
| D | 1.40 | 1.70 | 1.55 |
| E | 2.55 | 2.85 | 2.65 |
| He | 3.55 | 3.85 | 3.65 |
| L | 0.25 | 0.40 | 0.30 |
| a | 0° | 8° | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOD123



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.900 |
| X1 | 4.050 |
| Y | 0.950 |

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