



**THE DATASHEET OF
BZT52HC24WF-7**



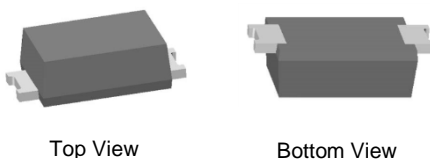
Features

- 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**

Mechanical Data

- Case: SOD123F (Type B)
- 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 Copper Alloy Leadframe. Solderable per MIL-STD-202, Method 208 **e3**
- Polarity: Cathode Band
- Weight: 0.015 grams (Approximate)

SOD123F (Type B)



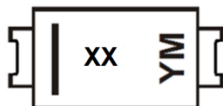
Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|------------------|------------|------------------|-------------------|
| (Type Number)-7* | AEC-Q101 | SOD123F (Type B) | 3,000/Tape & Reel |

*Add "-7" to the appropriate type number in Electrical Characteristics Table, example: 6.2V Zener = BZT52HC6V2WF-7.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html 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)
YM = Date Code Marking
Y = Year (ex: C = 2015)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|------|------|------|------|------|------|------|------|
| Code | C | D | E | F | G | H | I |

| 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.)

| Characteristic | Symbol | Value | Unit |
|--|----------------|-------|------|
| Forward Voltage (Note 5) @ I _F = 10mA | V _F | 0.9 | V |
| Forward Current | I _F | 250 | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 375 | mW |
| Power Dissipation (Note 7) | P _D | 830 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R _{θJA} | 330 | °C/W |
| Thermal Resistance, Junction to Ambient Air (Note 7) | R _{θJA} | 150 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

- Note:
- 5. Short duration pulse test used to minimize self-heating effect.
 - 6. Device mounted on FR-4 PCB with minimum recommended pad layout, as shown in Diodes Incorporated's Suggested Pad Layout document, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 - 7. Device mounted on FR-4 PCB with mounting pad for cathode 1cm².

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Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Type Number | Marking Codes | Zener Voltage Range (Note 8) | | | Maximum Zener Impedance (Note 9) | | | Temperature Coefficient | | Total Capacitance | Maximum Reverse Current (Note 8) | |
|--------------|---------------|------------------------------|---------|----------|----------------------------------|-------------------|----------|-------------------------|-------------|--|----------------------------------|---------------|
| | | $V_Z @ I_{ZT}$ | | I_{ZT} | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ I_{ZK}$ | I_{ZK} | $T_C @ I_{ZT}$ | | $C_T @ f = 1\text{MHz}, V_R = 0\text{V}$ | I_R | @ V_R |
| | | Min (V) | Max (V) | mA | Ω | | | mA | Min (mV/°C) | Max (mV/°C) | Max (pF) | μA |
| BZT52HC2V4WF | WX | 2.2 | 2.6 | 5 | 85 | 400 | 1 | -3.5 | 0.0 | 450 | 50 | 1 |
| BZT52HC2V7WF | W1 | 2.5 | 2.9 | 5 | 83 | 500 | 1 | -3.5 | 0.0 | 450 | 20 | 1 |
| BZT52HC3V0WF | W2 | 2.8 | 3.2 | 5 | 95 | 500 | 1 | -3.5 | 0.0 | 450 | 10 | 1 |
| BZT52HC3V3WF | W3 | 3.1 | 3.5 | 5 | 95 | 500 | 1 | -3.5 | 0.0 | 450 | 5 | 1 |
| BZT52HC3V6WF | W4 | 3.4 | 3.8 | 5 | 95 | 500 | 1 | -3.5 | 0.0 | 450 | 5 | 1 |
| BZT52HC3V9WF | W5 | 3.7 | 4.1 | 5 | 95 | 500 | 1 | -3.5 | 0.0 | 450 | 3 | 1 |
| BZT52HC4V3WF | W6 | 4.0 | 4.6 | 5 | 95 | 500 | 1 | -3.5 | 0.0 | 450 | 3 | 1 |
| BZT52HC4V7WF | W7 | 4.4 | 5.0 | 5 | 78 | 500 | 1 | -3.5 | 0.2 | 300 | 3 | 2 |
| BZT52HC5V1WF | W8 | 4.8 | 5.4 | 5 | 60 | 480 | 1 | -2.7 | 1.2 | 300 | 2 | 2 |
| BZT52HC5V6WF | W9 | 5.2 | 6.0 | 5 | 40 | 400 | 1 | -2.0 | 2.5 | 300 | 1 | 2 |
| BZT52HC6V2WF | WA | 5.8 | 6.6 | 5 | 10 | 150 | 1 | 0.4 | 3.7 | 200 | 3 | 4 |
| BZT52HC6V8WF | WB | 6.4 | 7.2 | 5 | 8 | 80 | 1 | 1.2 | 4.5 | 200 | 2 | 4 |
| BZT52HC7V5WF | WC | 7.0 | 7.9 | 5 | 10 | 80 | 1 | 2.5 | 5.3 | 150 | 1 | 5 |
| BZT52HC8V2WF | WD | 7.7 | 8.7 | 5 | 10 | 80 | 1 | 3.2 | 6.2 | 150 | 0.7 | 5 |
| BZT52HC9V1WF | WE | 8.5 | 9.6 | 5 | 10 | 100 | 1 | 3.8 | 7.0 | 150 | 0.5 | 6 |
| BZT52HC10WF | WF | 9.4 | 10.6 | 5 | 10 | 70 | 1 | 4.5 | 8.0 | 90 | 0.2 | 7 |
| BZT52HC11WF | WG | 10.4 | 11.6 | 5 | 10 | 70 | 1 | 5.4 | 9.0 | 85 | 0.1 | 8 |
| BZT52HC12WF | WH | 11.4 | 12.7 | 5 | 10 | 90 | 1 | 6.0 | 10.0 | 85 | 0.1 | 8 |
| BZT52HC13WF | WI | 12.4 | 14.1 | 5 | 10 | 110 | 1 | 7.0 | 11.0 | 80 | 0.1 | 8 |
| BZT52HC15WF | WJ | 13.8 | 15.6 | 5 | 15 | 110 | 1 | 9.2 | 13.0 | 75 | 0.05 | 10.5 |
| BZT52HC16WF | WK | 15.3 | 17.1 | 5 | 20 | 170 | 1 | 10.4 | 14.0 | 75 | 0.05 | 11.2 |
| BZT52HC18WF | WL | 16.8 | 19.1 | 5 | 20 | 170 | 1 | 12.4 | 16.0 | 70 | 0.05 | 12.6 |
| BZT52HC20WF | WM | 18.8 | 21.2 | 5 | 20 | 220 | 1 | 14.4 | 18.0 | 60 | 0.05 | 14.0 |
| BZT52HC22WF | WN | 20.8 | 23.3 | 5 | 25 | 220 | 1 | 16.4 | - | 60 | 0.05 | 15.4 |
| BZT52HC24WF | WO | 22.8 | 25.6 | 5 | 30 | 220 | 1 | 18.4 | - | 55 | 0.05 | 16.8 |
| BZT52HC27WF | WP | 25.1 | 28.9 | 2 | 40 | 250 | 1 | 21.4 | - | 50 | 0.05 | 18.9 |
| BZT52HC30WF | WQ | 28.0 | 32.0 | 2 | 40 | 250 | 1 | 24.4 | - | 50 | 0.05 | 21.0 |
| BZT52HC33WF | WR | 31.0 | 35.0 | 2 | 40 | 250 | 1 | 27.4 | - | 45 | 0.05 | 23.1 |
| BZT52HC36WF | WS | 34.0 | 38.0 | 2 | 60 | 250 | 1 | 30.4 | - | 45 | 0.05 | 25.2 |
| BZT52HC39WF | WT | 37.0 | 41.0 | 2 | 75 | 300 | 1 | 33.4 | - | 45 | 0.05 | 27.3 |
| BZT52HC43WF | WU | 40.0 | 46.0 | 2 | 80 | 325 | 1 | 37.6 | - | 40 | 0.05 | 30.1 |
| BZT52HC47WF | WV | 44.0 | 50.0 | 2 | 90 | 325 | 1 | 42.0 | - | 40 | 0.05 | 32.9 |

Notes: 8. Short duration pulse test used to minimize self-heating effect.
9. $f = 1\text{kHz}$.

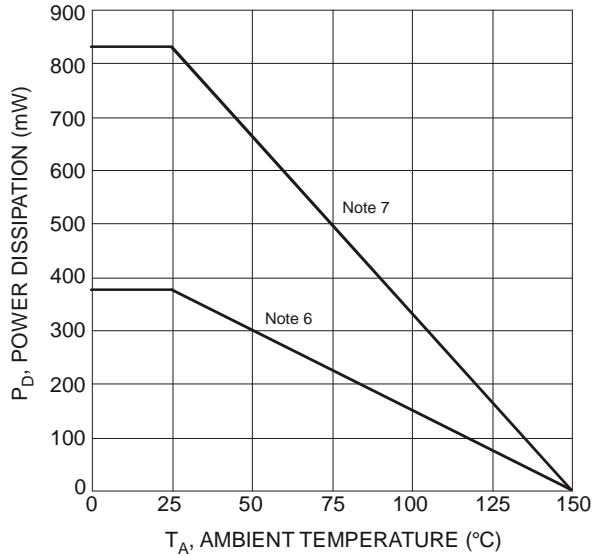


Figure 1 Power Derating Curve

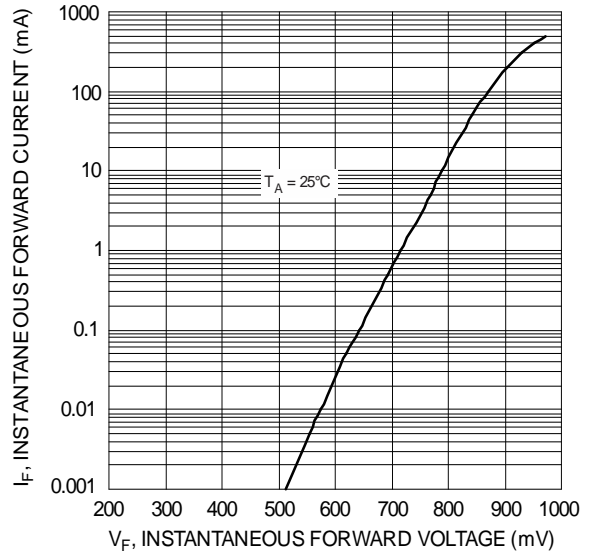


Figure 2 Typical Forward Characteristics

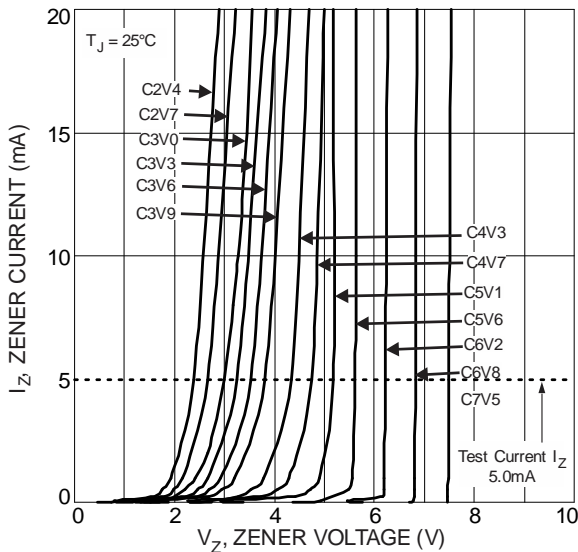


Figure 3 Typical Zener Breakdown Characteristics

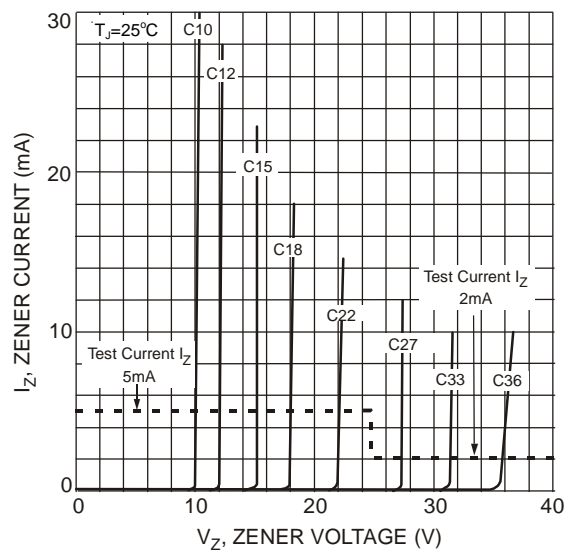
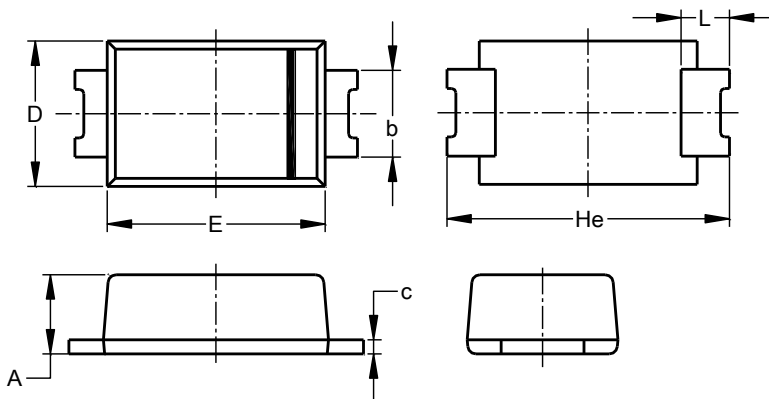


Figure 4 Typical Zener Breakdown Characteristics

Package Outline Dimensions

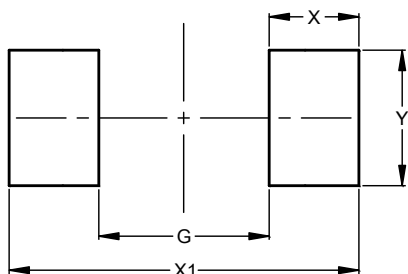
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| SOD123F (Type B) | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.81 | 1.15 | - |
| b | 0.80 | 1.35 | - |
| c | 0.05 | 0.30 | - |
| D | 1.70 | 1.90 | 1.80 |
| E | 2.60 | 2.80 | 2.70 |
| He | 3.30 | 3.70 | 3.50 |
| L | 0.35 | 0.85 | - |
| All Dimensions in mm | | | |

Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 1.90 |
| X | 1.00 |
| X1 | 3.90 |
| Y | 1.50 |

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