# 410mW 2% Zener Diodes

## FEATURES

- Wide zener voltage range selection: 2.4V to 43V
- VZ Tolerance Selection of ± 2%
- Surface device type mountin
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

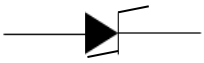
## APPLICATIONS

- Low voltage stabilzers or voltage references
- Adapters
- On-board DC/DC converter

## MECHANICAL DATA

- Case: SOD-123
- Molding compound: UL flammability classification rating 94V-0
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 10.54mg (approximately)

| KEY PARAMETERS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| $V_Z$ | 2.4-43 | V |
| Test current $I_{ZT}$ | 5 | mA |
| $P_{tot}$ | 410 | mW |
| $V_F$ at $I_F$=10mA | 0.9 | V |
| $T_J$ Max. | 150 | °C |
| Package | SOD-123 | |
| Configuration | Single dice | |



| ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise noted) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **PART NUMBER** | **UNIT** |
| Forward voltage @ $I_F$=10mA | $V_F$ | 0.9 | V |
| Total power dissipation | $P_{tot}$ | 410 | mW |
| Junction temperature range | $T_J$ | -55 to +150 | °C |
| Storage temperature range | $T_{STG}$ | -55 to +150 | °C |

| THERMAL PERFORMANCE | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **LIMIT** | **UNIT** |
| Junction-to-ambient thermal resistance | $R_{\Theta JA}$ | 357 | °C/W |

## ELECTRICAL SPECIFICATIONS ($T_A$ = 25°C unless otherwise noted)

| PART NUMBER | MARKING CODE | ZENER VOLTAGE | | | TEST CURRENT | REGULAR IMPEDANCE | | TEST CURRENT | LEAKAGE CURRENT | | TYPICAL TEMPERATURE COEFFICIENT @ $I_{ZTC}$ | | TEST CURRENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_Z$ @ $I_{ZT}$ | | | $I_{ZT}$ | $Z_{ZT}$ @ $I_{ZT}$ | $Z_{ZK}$ @ $I_{ZK}$ | $I_{ZK}$ | $V_Z$ @ $I_{ZT}$ | | | | $I_{ZTC}$ |
| | | V | | | mA | Ω | Ω | mA | μA | V | mV/°C | | mA |
| | | Nom. | Min. | Max. | | Max. | Max. | | Max. | | Min. | Max. | |
| BZT52B2V4-G | 2WX | 2.4 | 2.35 | 2.45 | 5 | 100 | 600 | 1.0 | 50 | 1.0 | -3.5 | 0 | 5 |
| BZT52B2V7-G | 2W1 | 2.7 | 2.65 | 2.75 | 5 | 100 | 600 | 1.0 | 20 | 1.0 | -3.5 | 0 | 5 |
| BZT52B3V0-G | 2W2 | 3.0 | 2.94 | 3.06 | 5 | 95 | 600 | 1.0 | 10 | 1.0 | -3.5 | 0 | 5 |
| BZT52B3V3-G | 2W3 | 3.3 | 3.23 | 3.37 | 5 | 95 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 | 5 |
| BZT52B3V6-G | 2W4 | 3.6 | 3.53 | 3.67 | 5 | 90 | 600 | 1.0 | 5 | 1.0 | -3.5 | 0 | 5 |
| BZT52B3V9-G | 2W5 | 3.9 | 3.82 | 3.98 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 | 5 |
| BZT52B4V3-G | 2W6 | 4.3 | 4.21 | 4.39 | 5 | 90 | 600 | 1.0 | 3 | 1.0 | -3.5 | 0 | 5 |
| BZT52B4V7-G | 2W7 | 4.7 | 4.61 | 4.79 | 5 | 80 | 500 | 1.0 | 3 | 2.0 | -3.5 | 0.2 | 5 |
| BZT52B5V1-G | 2W8 | 5.1 | 5.00 | 5.20 | 5 | 60 | 480 | 1.0 | 2 | 2.0 | -2.7 | 1.2 | 5 |
| BZT52B5V6-G | 2W9 | 5.6 | 5.49 | 5.71 | 5 | 40 | 400 | 1.0 | 1 | 2.0 | -2.0 | 2.5 | 5 |
| BZT52B6V2-G | 2WA | 6.2 | 6.08 | 6.32 | 5 | 10 | 150 | 1.0 | 3 | 4.0 | 0.4 | 3.7 | 5 |
| BZT52B6V8-G | 2WB | 6.8 | 6.66 | 6.94 | 5 | 15 | 80 | 1.0 | 2 | 4.0 | 1.2 | 4.5 | 5 |
| BZT52B7V5-G | 2WC | 7.5 | 7.35 | 7.65 | 5 | 15 | 80 | 1.0 | 1 | 5.0 | 2.5 | 5.3 | 5 |
| BZT52B8V2-G | 2WD | 8.2 | 8.04 | 8.36 | 5 | 15 | 80 | 1.0 | 0.7 | 5.0 | 3.2 | 6.2 | 5 |
| BZT52B9V1-G | 2WE | 9.1 | 8.92 | 9.28 | 5 | 15 | 100 | 1.0 | 0.5 | 6.0 | 3.8 | 7.0 | 5 |
| BZT52B10-G | 2WF | 10 | 9.80 | 10.20 | 5 | 20 | 150 | 1.0 | 0.2 | 7.0 | 4.5 | 8.0 | 5 |
| BZT52B11-G | 2WG | 11 | 10.78 | 11.22 | 5 | 20 | 150 | 1.0 | 0.1 | 8.0 | 5.4 | 9.0 | 5 |
| BZT52B12-G | 2WH | 12 | 11.76 | 12.24 | 5 | 25 | 150 | 1.0 | 0.1 | 8.0 | 6.0 | 10.0 | 5 |
| BZT52B13-G | 2WI | 13 | 12.74 | 13.26 | 5 | 30 | 170 | 1.0 | 0.1 | 8.0 | 7.0 | 11.0 | 5 |
| BZT52B15-G | 2WJ | 15 | 14.70 | 15.30 | 5 | 30 | 200 | 1.0 | 0.1 | 10.5 | 9.2 | 13.0 | 5 |
| BZT52B16-G | 2WK | 16 | 15.68 | 16.32 | 5 | 40 | 200 | 1.0 | 0.1 | 11.2 | 10.4 | 14.0 | 5 |
| BZT52B18-G | 2WL | 18 | 17.64 | 18.36 | 5 | 45 | 225 | 1.0 | 0.1 | 12.6 | 12.4 | 16.0 | 5 |
| BZT52B20-G | 2WM | 20 | 19.60 | 20.40 | 5 | 55 | 225 | 1.0 | 0.1 | 14.0 | 14.4 | 18.0 | 5 |
| BZT52B22-G | 2WN | 22 | 21.56 | 22.44 | 5 | 55 | 250 | 1.0 | 0.1 | 15.4 | 16.4 | 20.0 | 5 |
| BZT52B24-G | 2WO | 24 | 23.52 | 24.48 | 5 | 70 | 250 | 1.0 | 0.1 | 16.8 | 18.4 | 22.0 | 5 |
| BZT52B27-G | 2WP | 27 | 26.46 | 27.54 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 | 2 |
| BZT52B30-G | 2WQ | 30 | 29.40 | 30.60 | 2 | 80 | 300 | 0.5 | 0.1 | 21.0 | 24.4 | 29.4 | 2 |
| BZT52B33-G | 2WR | 33 | 32.34 | 33.66 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | 33.4 | 2 |
| BZT52B36-G | 2WS | 36 | 35.28 | 36.72 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 | 2 |
| BZT52B39-G | 2WT | 39 | 38.22 | 39.78 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 | 2 |
| BZT52B43-G | 2WU | 43 | 41.46 | 42.84 | 2 | 130 | 350 | 0.5 | 0.1 | 29.4 | 36.4 | 45.2 | 2 |

| ORDERING INFORMATION | | | | |
|---|---|---|---|---|
| **PART NO.** | **PACKING CODE** | **PACKING CODE SUFFIX** | **PACKAGE** | **PACKING** |
| BZT52BXXX-G (Note 1&2) | RH | G | SOD-123 | 3K / 7" Reel |

**Notes:**

1. "xxx" defines voltage from 2.4V (BZT52B2V4-G) to 43V (BZT52B43-G)
2. Whole series with green compound

| EXAMPLE | | | | |
|---|---|---|---|---|
| **EXAMPLE P/N** | **PART NO.** | **PACKING CODE** | **PACKING CODE SUFFIX** | **DESCRIPTION** |
| BZT52B43-G RHG | BZT52B43-G | RH | G | Green compound |

## CHARACTERISTICS CURVES

($T_A$ = 25°C unless otherwise noted)

**Fig.1 Power Dissipation Curve**

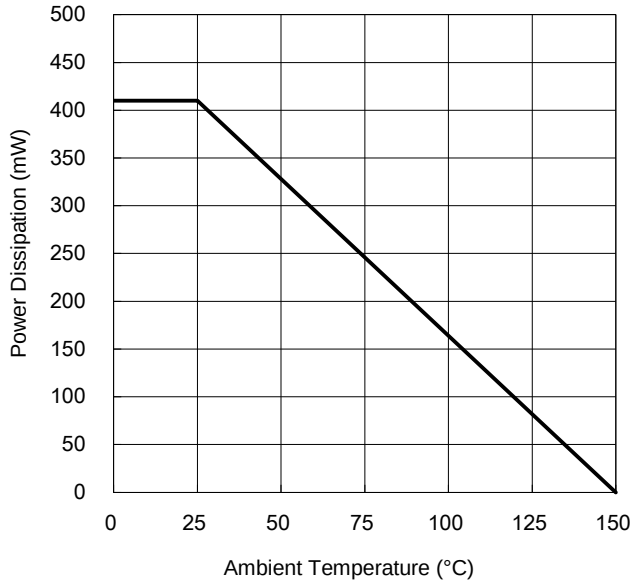



**Fig.2 Forward Characteristics**

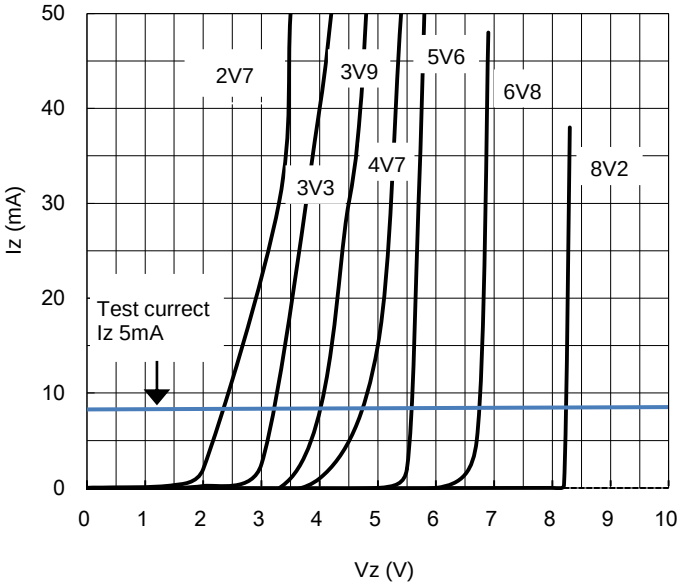
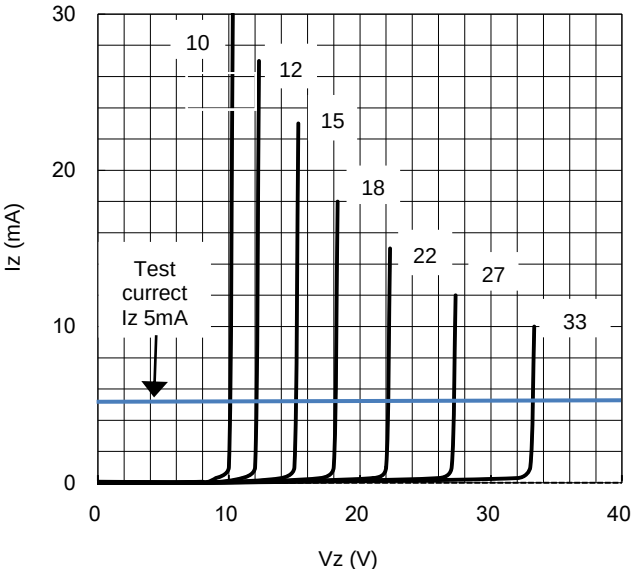
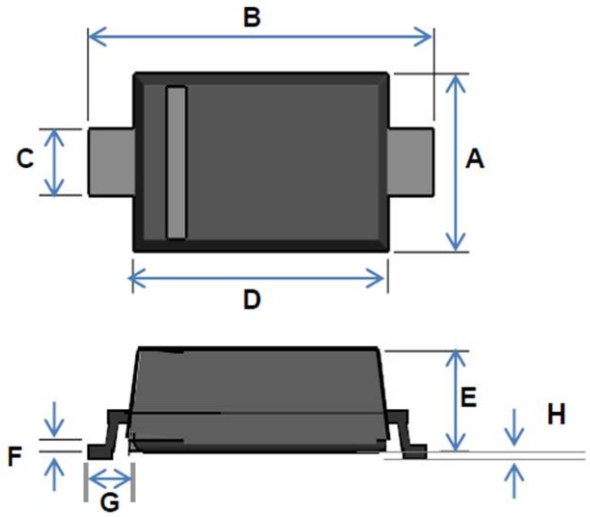



**Fig.3 Admissible Power Dissipation VS. Ambient Temperature**



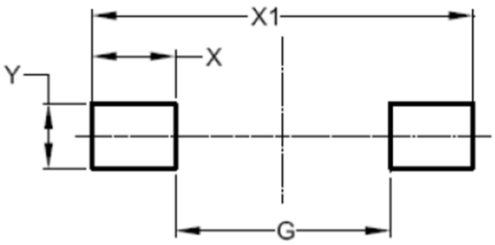
## PACKAGE OUTLINE DIMENSION

SOD-123




| DIM. | Unit(mm) | | Unit(inch) | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.40 | 1.80 | 0.055 | 0.071 |
| B | 3.55 | 3.85 | 0.140 | 0.152 |
| C | 0.45 | 0.70 | 0.018 | 0.028 |
| D | 2.55 | 2.85 | 0.100 | 0.112 |
| E | 0.95 | 1.35 | 0.037 | 0.053 |
| F | 0.05 | 0.15 | 0.002 | 0.006 |
| G | 0.50 REF | | 0.02 REF | |
| H | - | 0.10 | - | 0.004 |

## SUGGEST PAD LAYOUT




| DIM. | Unit(mm) | Unit(inch) |
|---|---|---|
| | Min | Min |
| G | 2.25 | 0.089 |
| X | 0.90 | 0.035 |
| X1 | 4.05 | 0.159 |
| Y | 0.95 | 0.037 |

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