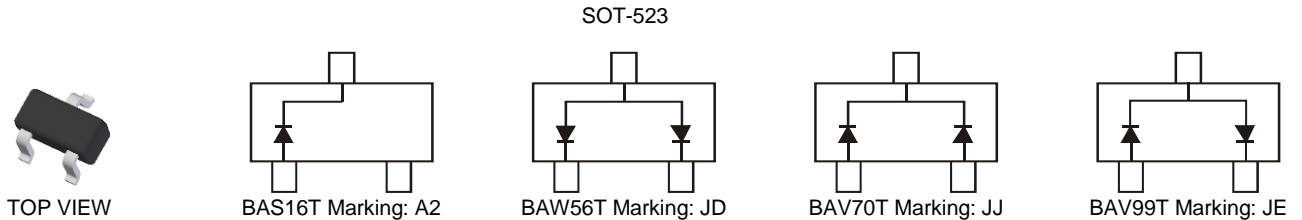


Features

- Ultra-Small Surface Mount Package
- Fast Switching Speed
- For General Purpose Switching Applications
- High Conductance
- **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: SOT-523
- Case Material: Molded Plastic, "Green" Molding Compound; 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 (3)
- Polarity: See Diagrams Below
- Weight: 0.002 grams (Approximate)

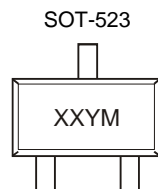


Ordering Information (Note 5)

| Part Number | Compliance | Case | Packaging |
|--------------|------------|---------|--------------------|
| BAS16T-7-F | Standard | SOT-523 | 3,000/Tape & Reel |
| BAW56T-7-F | Standard | SOT-523 | 3,000/Tape & Reel |
| BAV70T-7-F | Standard | SOT-523 | 3,000/Tape & Reel |
| BAV99T-7-F | Standard | SOT-523 | 3,000/Tape & Reel |
| BAV99TQ-13-F | Automotive | SOT-523 | 10,000/Tape & Reel |

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



XX = Product Type Marking Code (See this page, e.g. A2 = BAS16T)
 YM = Date Code Marking
 Y = Year (ex: C = 2015)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2002 | 2003 | 2004 | | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|------|------|------|------|-------|------|------|------|------|------|------|------|
| Code | N | P | R | | 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 |
|---|------------------------------|-----------------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 85 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _R | | |
| RMS Reverse Voltage | V _{R(RMS)} | 60 | V |
| Forward Continuous Current (Note 6) | Single Diode Double Diode | I _{FM} | 155 |
| | | | 75 |
| Repetitive Peak Forward Current | I _{FRM} | 500 | mA |
| Non-Repetitive Peak Forward Surge Current | | @ t = 1.0μs | 4.0 |
| | | @ t = 1.0ms | 1.0 |
| | | @ t = 1.0s | 0.5 |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 150 | mW |
| Thermal Resistance Junction to Ambient (Note 6) | R _{θJA} | 833 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|--------------------|-----|-----|-------|------|---|
| Reverse Breakdown Voltage (Note 7) | V _{(BR)R} | 85 | — | — | V | I _R = 100μA |
| Forward Voltage | V _F | — | — | 0.715 | V | I _F = 1.0mA |
| | | | | 0.855 | | I _F = 10mA |
| | | | | 1.0 | | I _F = 50mA |
| | | | | 1.25 | | I _F = 150mA |
| Leakage Current (Note 7) | I _R | — | — | 2.0 | μA | V _R = 75V |
| | | | | 100 | μA | V _R = 75V, T _J = +150°C |
| | | | | 60 | μA | V _R = 25V, T _J = +150°C |
| | | | | 30 | nA | V _R = 25V |
| Total Capacitance | C _T | — | 1.5 | — | pF | V _R = 0, f = 1.0MHz |
| Reverse Recovery Time | t _{rr} | — | — | 4.0 | ns | I _F = I _R = 10mA, I _{rr} = 0.1 x I _R , R _L = 100Ω |

Notes: 6. Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
7. Short duration pulse test used to minimize self-heating effect.

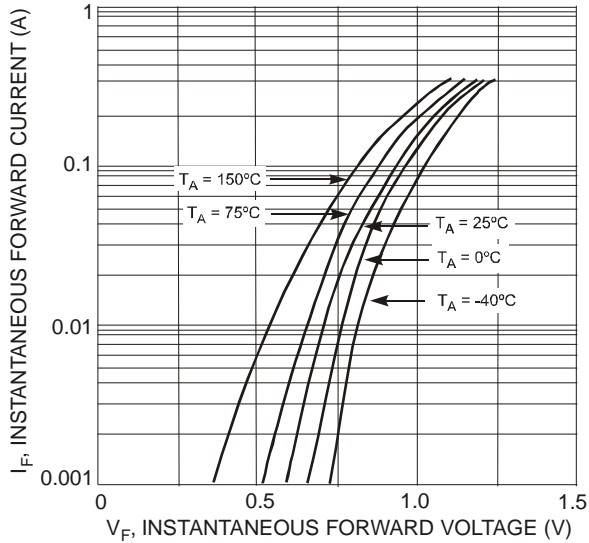


Fig. 1 Typical Forward Characteristics, Per Element

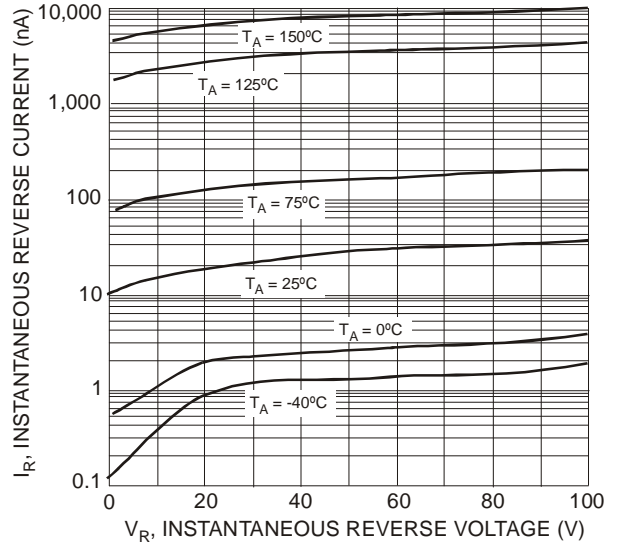


Fig. 2 Typical Reverse Characteristics, Per Element

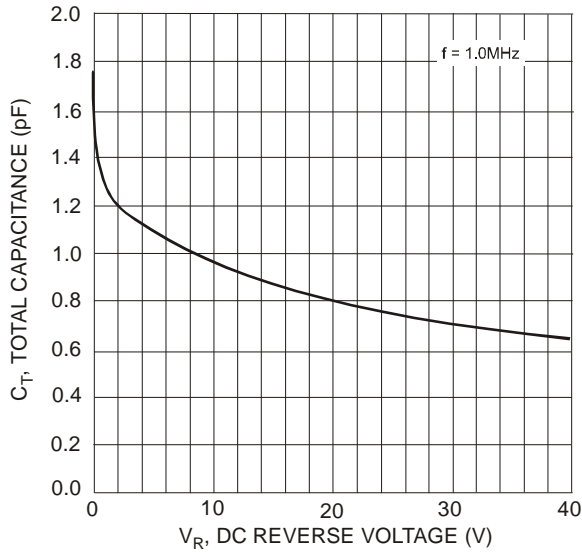


Fig. 3 Total Capacitance vs. Reverse Voltage, Per Element

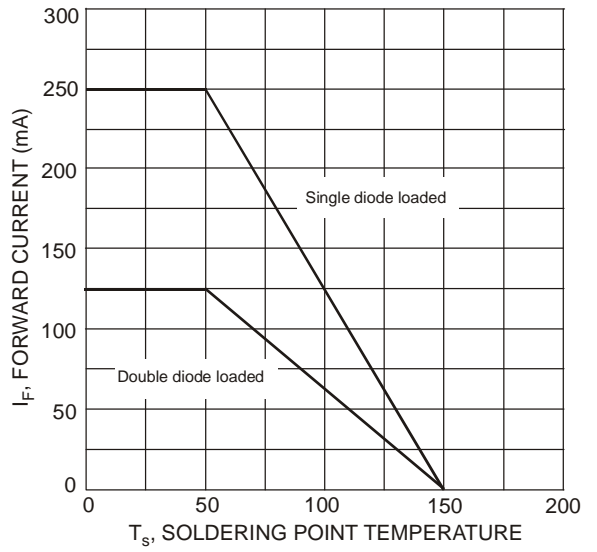
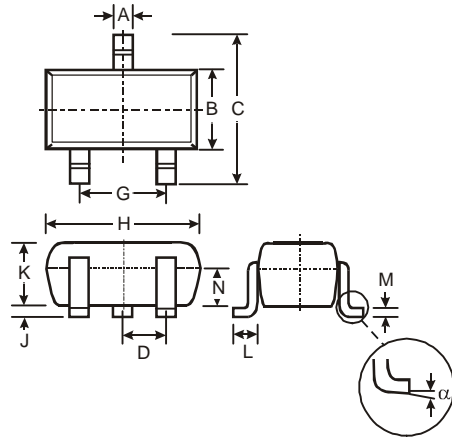


Fig. 4 Current Derating Curve, Total Package

Package Outline Dimensions

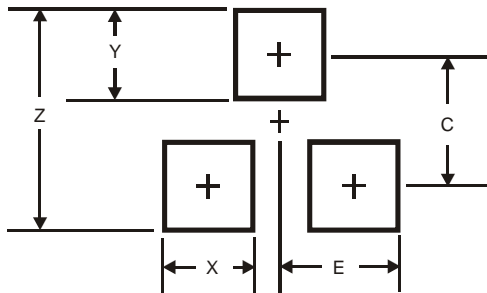
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOT-523 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.15 | 0.30 | 0.22 |
| B | 0.75 | 0.85 | 0.80 |
| C | 1.45 | 1.75 | 1.60 |
| D | — | — | 0.50 |
| G | 0.90 | 1.10 | 1.00 |
| H | 1.50 | 1.70 | 1.60 |
| J | 0.00 | 0.10 | 0.05 |
| K | 0.60 | 0.80 | 0.75 |
| L | 0.10 | 0.30 | 0.22 |
| M | 0.10 | 0.20 | 0.12 |
| N | 0.45 | 0.65 | 0.50 |
| α | 0° | 8° | — |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 1.8 |
| X | 0.4 |
| Y | 0.51 |
| C | 1.3 |
| E | 0.7 |

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