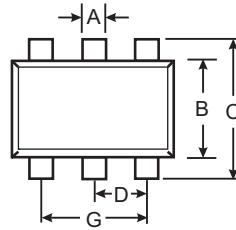


Features

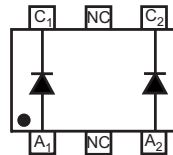
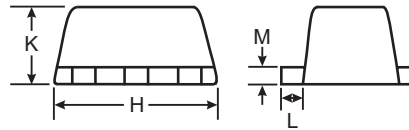
- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- PN Junction Guard Ring for Transient and ESD Protection
- **Lead Free by Design/RoHS Compliant (Note 1)**
- **Qualified to AEC-Q101 Standards for High Reliability**



| SOT-563 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.15 | 0.30 | 0.25 |
| B | 1.10 | 1.25 | 1.20 |
| C | 1.55 | 1.70 | 1.60 |
| D | 0.50 | | |
| G | 0.90 | 1.10 | 1.00 |
| H | 1.50 | 1.70 | 1.60 |
| K | 0.56 | 0.60 | 0.60 |
| L | 0.10 | 0.30 | 0.20 |
| M | 0.10 | 0.18 | 0.11 |
| All Dimensions in mm | | | |

Mechanical Data

- Case: SOT-563, Molded Plastic
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminals: Lead bearing terminal plating available. See Ordering information Page 2, Note 5
- Ordering: See Page 2
- Marking & Type Code Information: See last page
- Weight: 0.003 grams (approx.)



Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 40 | V |
| Forward Continuous Current (Note 2) | I_F | 200 | mA |
| Repetitive Peak Forward Current (Note 2) | I_{FRM} | 350 | mA |
| Forward Surge Current (Note 2) @ $t_p = 10\text{ms}$ | I_{FSM} | 750 | mA |
| Operating and Storage Temperature Range | T_j, T_{STG} | -65 to +125 | $^\circ\text{C}$ |

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|-------------|-----|-----|---------------------------|------|---|
| Reverse Breakdown Voltage (Note 3) | $V_{(BR)R}$ | 40 | — | — | V | $I_R = 100\mu\text{A}$ |
| Forward Voltage (Note 3) | V_F | — | — | 330 420 800 1000 | mV | $I_F = 2.0\text{mA}$ $I_F = 15\text{mA}$ $I_F = 100\text{mA}$ $I_F = 200\text{mA}$ |
| Reverse Leakage Current (Note 3) | I_R | — | — | 500 | nA | $V_R = 25\text{V}$ |
| Total Capacitance | C_T | — | — | 10 | pF | $V_R = 1.0\text{V}, f = 1.0\text{MHz}$ |
| Reverse Recovery Time | t_{rr} | — | — | 5.0 | ns | $I_F = 10\text{mA}$ through $I_R = 10\text{mA}$ to $I_R = 1.0\text{mA}, R_L = 100\Omega$ |

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------|--------------------|
| Power Dissipation (Note 2) | P_d | 150 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 3) | $R_{\theta JA}$ | 833 | $^\circ\text{C/W}$ |

- Notes:
1. No purposefully added lead.
 2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 3. Short duration test pulse used to minimize self-heating effect.

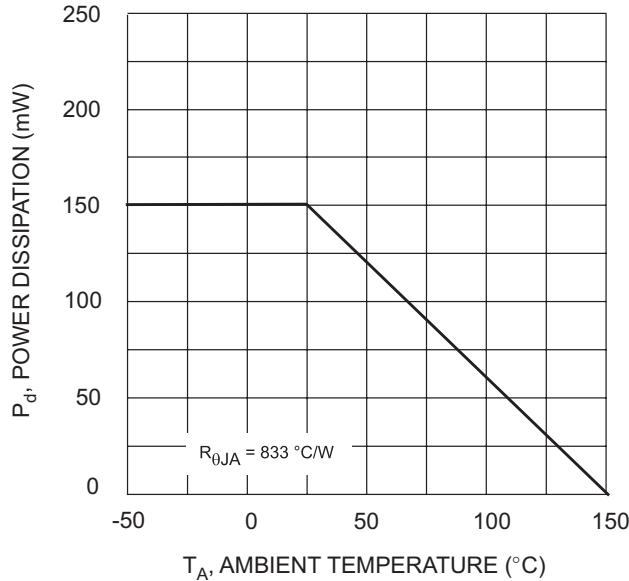


Fig. 1, Derating Curve - Total

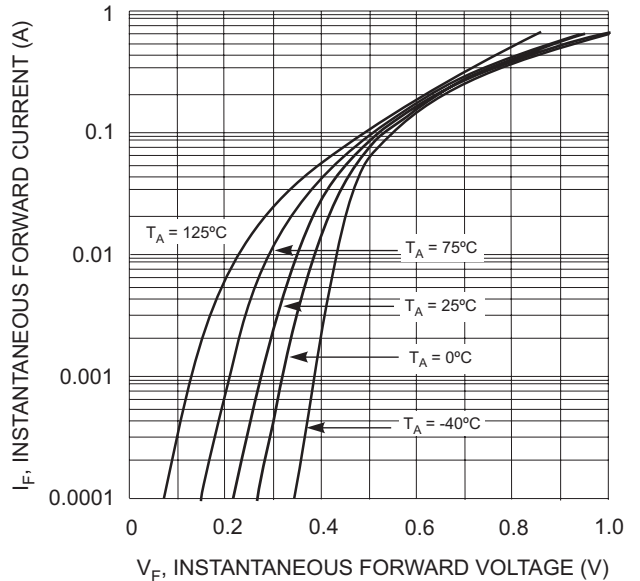


Fig. 2 Forward Characteristics

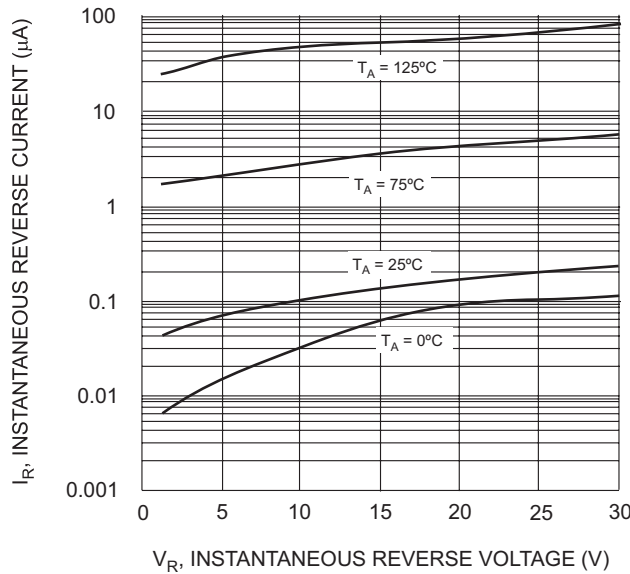


Fig. 3 Typical Reverse Characteristics

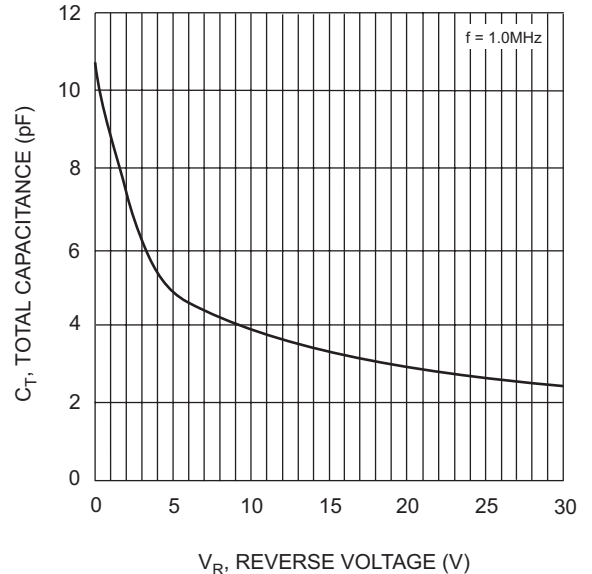


Fig. 4 Typical Capacitance vs. Reverse Voltage

Ordering Information (Note 4)

| Device | Packaging | Shipping |
|------------|-----------|------------------|
| BAT40V-7 | SOT-563 | 3000/Tape & Reel |
| BAT40V-7-L | SOT-563 | 3000/Tape & Reel |

- Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
5. "-L" suffix on part number indicates Pb/Sn terminal plating. "-L" version is a Non Lead-Free, Non RoHS-compliant device.

Marking Information



KAX = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: R = 2004
M = Month ex: 9 = September

Date Code Key

| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|
| Code | R | S | T | U | V | W |

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