

## Features

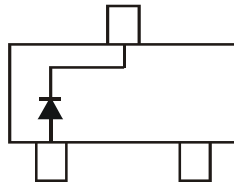
- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- PN Junction Guard Ring for Transient and ESD Protection
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 3, 4 and 5)**

## Mechanical Data

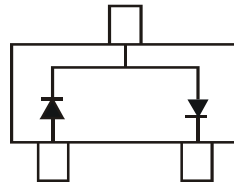
- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagrams Below
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.002 grams (approximate)



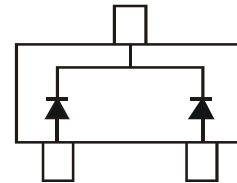
Top View



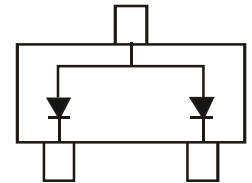
BAS40T



BAS40-04T



BAS40-05T



BAS40-06T

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

| Characteristic  | Symbol       | Value | Unit |
|---|--------------|-------|------|
| Peak Repetitive Reverse Voltage                               | $V_{RRM}$    | 40    | V    |
| Working Peak Reverse Voltage                                  | $V_{RWM}$    |       |      |
| DC Blocking Voltage   | $V_R$        |       |      |
| RMS Reverse Voltage   | $V_{R(RMS)}$ | 28    | V    |
| Forward Continuous Current (Note 1)                           | $I_{FM}$     | 200   | mA   |
| Non-Repetitive Peak Forward Surge Current @ $t = 1.0\text{s}$ | $I_{FSM}$    | 600   | mA   |

## Thermal Characteristics

| Characteristic                                  | Symbol          | Value       | Unit                      |
|---|-----------------|-------------|---------------------------|
| Power Dissipation (Note 1)                      | $P_D$           | 150         | mW                        |
| Thermal Resistance Junction to Ambient (Note 1) | $R_{\theta JA}$ | 833         | $^\circ\text{C}/\text{W}$ |
| Operating Temperature Range                     | $T_J$           | -55 to +125 | $^\circ\text{C}$          |
| Storage Temperature Range                       | $T_{STG}$       | -65 to +150 | $^\circ\text{C}$          |

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

| Characteristic                     | Symbol      | Min | Max  | Unit | Test Condition   |
|------------------------------------|-------------|-----|------|------|--|
| Reverse Breakdown Voltage (Note 2) | $V_{(BR)R}$ | 40  | —    | V    | $I_R = 10\mu\text{A}$  |
| Forward Voltage                    | $V_F$       | —   | 380  | mV   | $I_F = 1.0\text{mA}$ , $t_p < 300\mu\text{s}$                                |
|                                    |             |     | 1000 | mV   |  |
| Leakage Current (Note 2)           | $I_R$       | —   | 200  | nA   | $V_R = 30\text{V}$   |
| Total Capacitance                  | $C_T$       | —   | 5.0  | pF   | $V_R = 0$ , $f = 1.0\text{MHz}$  |
| Reverse Recovery Time              | $t_{rr}$    | —   | 5.0  | ns   | $I_F = I_R = 10\text{mA}$ ,<br>$I_{rr} = 0.1 \times I_R$ , $R_L = 100\Omega$ |

- Notes:
1. 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>.
  2. Short duration pulse test used to minimize self-heating effect.
  3. No purposefully added lead. Halogen and Antimony Free.
  4. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  5. Product manufactured with Green Molding Compound and does not contain Halogens or  $\text{Sb}_2\text{O}_3$  Fire Retardants.

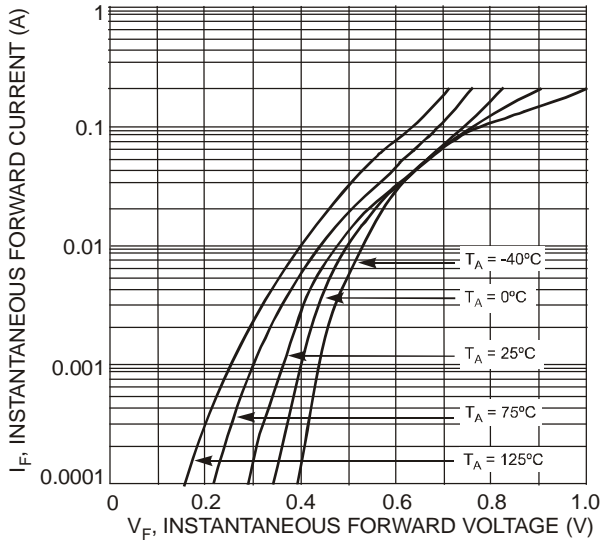


Fig. 1 Typical Forward Characteristics

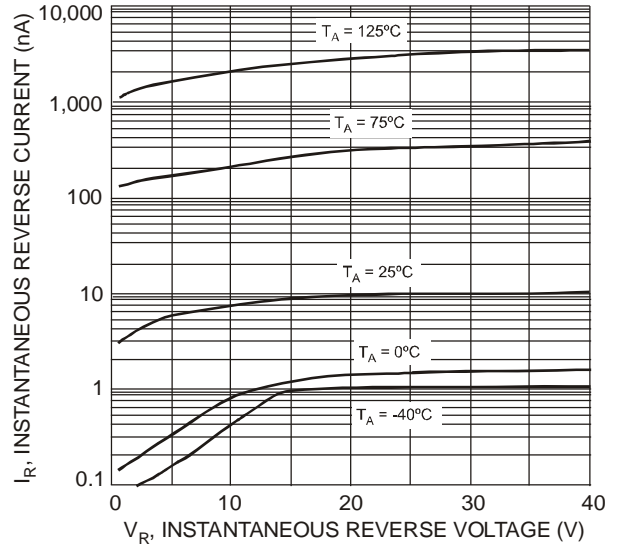


Fig. 2 Typical Reverse Characteristics

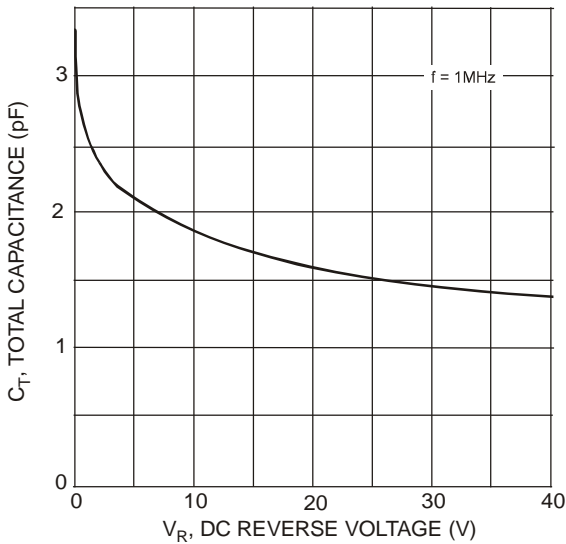


Fig. 3 Total Capacitance vs. Reverse Voltage

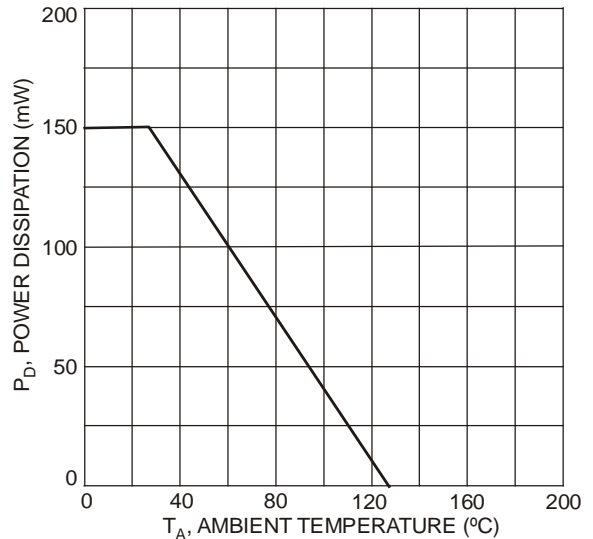


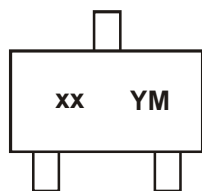
Fig. 4 Power Derating Curve, Total Package

**Ordering Information** (Note 6)

| Part Number   | Case    | Packaging        |
|---------------|---------|------------------|
| BAS40T-7-F    | SOT-523 | 3000/Tape & Reel |
| BAS40-04T-7-F | SOT-523 | 3000/Tape & Reel |
| BAS40-05T-7-F | SOT-523 | 3000/Tape & Reel |
| BAS40-06T-7-F | SOT-523 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

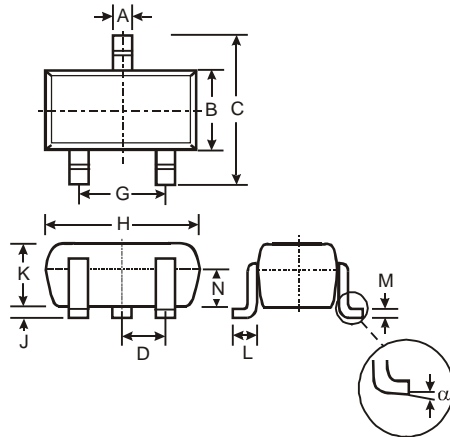


xx = Product Type Marking Code  
 43 = BAS40T  
 44 = BAS40-04T  
 45 = BAS40-05T  
 46 = BAS40-06T  
 YM = Date Code Marking  
 Y = Year (ex: N = 2002)  
 M = Month (ex: 9 = September)

Date Code Key

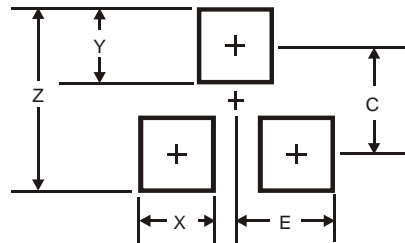
| Year  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code  | M    | N    | P    | R    | S    | T    | U    | V    | W    | X    | Y    | Z    | A    | B    | C    |
| 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    |      |      |      |

## Package Outline Dimensions



| 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



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

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