

Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Conductance
- **Qualified to AEC-Q101 Standards for High Reliability**
- **Lead, Halogen and Antimony Free, RoHS Compliant**
- **"Green" Device (Notes 3 and 4)**

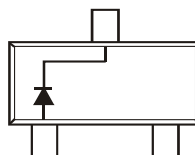
Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.008 grams (approximate)

SOT-23



TOP VIEW



TOP VIEW
Internal Schematic

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

| Characteristic | Symbol | Value | Unit | |
|---|--------------|------------------------|------|---|
| Non-Repetitive Peak Reverse Voltage | V_{RM} | 100 | V | |
| Peak Repetitive Reverse Voltage | V_{RRM} | 75 | V | |
| Working Peak Reverse Voltage | V_{RWM} | | | |
| DC Blocking Voltage | V_R | | | |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 53 | V | |
| Forward Continuous Current (Note 1) | I_{FM} | 300 | mA | |
| Average Rectified Output Current (Note 1) | I_O | 200 | mA | |
| Non-Repetitive Peak Forward Surge Current | I_{FSM} | @ $t = 1.0\mu\text{s}$ | 2.0 | A |
| | | @ $t = 1.0\text{s}$ | 1.0 | |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 1) | P_D | 350 | mW |
| Thermal Resistance Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 357 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, 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) | $V_{(BR)R}$ | 75 | — | V | $I_R = 100\mu\text{A}$ |
| Forward Voltage | V_F | — | 0.715 | V | $I_F = 1.0\text{mA}$ |
| | | | 0.855 | | $I_F = 10\text{mA}$ |
| | | | 1.0 | | $I_F = 50\text{mA}$ |
| | | | 1.25 | | $I_F = 150\text{mA}$ |
| Leakage Current (Note 2) | I_R | — | 1.0 | μA | $V_R = 75\text{V}$ |
| | | | 50 | μA | $V_R = 75\text{V}, T_J = 150^\circ\text{C}$ |
| | | | 30 | μA | $V_R = 25\text{V}, T_J = 150^\circ\text{C}$ |
| | | | 25 | nA | $V_R = 20\text{V}$ |
| Total Capacitance | C_T | — | 2.0 | pF | $V_R = 0, f = 1.0\text{MHz}$ |
| Reverse Recovery Time | t_{rr} | — | 4.0 | ns | $I_F = I_R = 10\text{mA}, I_{rr} = 0.1 \times I_R, R_L = 100\Omega$ |

- Notes:
1. Device mounted on glass epoxy PCB 1.6" x 1.6" x 0.06"; mounting pad for the cathode lead min. 0.93in².
 2. Short duration pulse test used to minimize self-heating effect.
 3. No purposefully added lead. Halogen and Antimony Free.
 4. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.

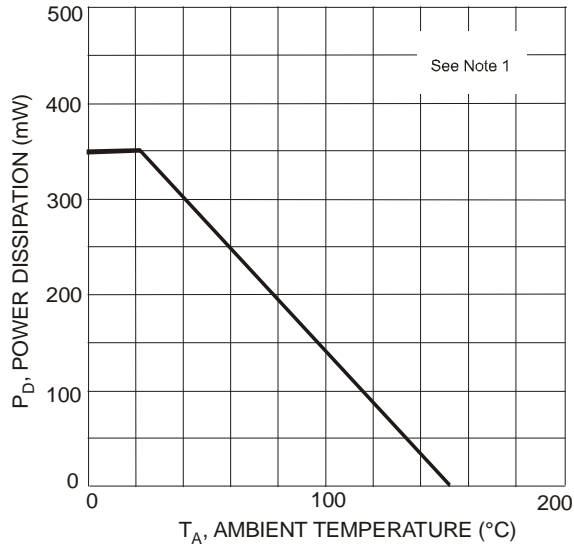


Fig. 1 Power Derating Curve

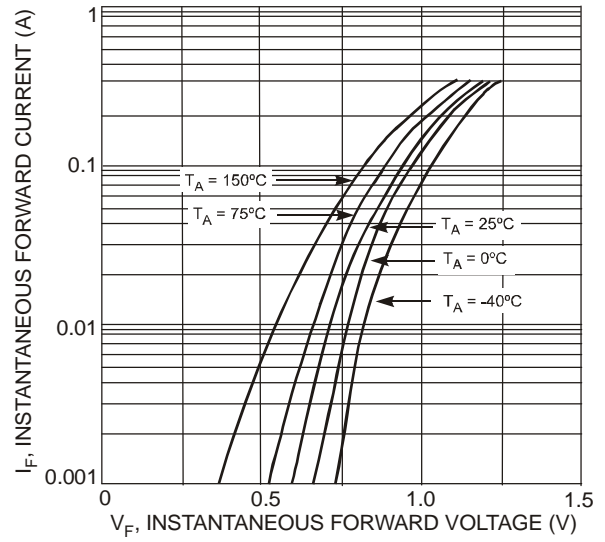


Fig. 2 Typical Forward Characteristics

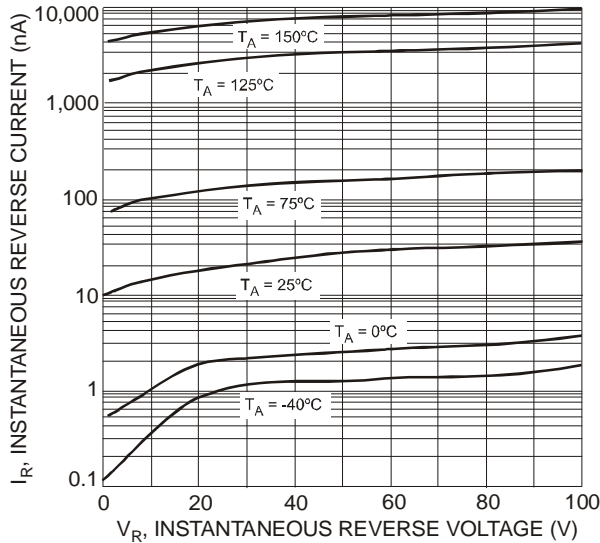


Fig. 3 Typical Reverse Characteristics

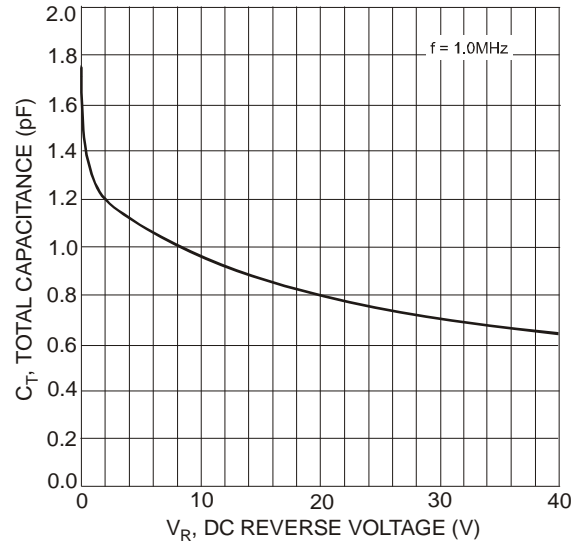


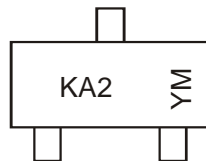
Fig. 4 Total Capacitance vs. Reverse Voltage

Ordering Information (Note 5)

| Part Number | Case | Packaging |
|--------------|--------|------------------|
| BAS16-7-F | SOT-23 | 3000/Tape & Reel |
| MMBD4148-7-F | SOT-23 | 3000/Tape & Reel |
| MMBD914-7-F | SOT-23 | 3000/Tape & Reel |

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

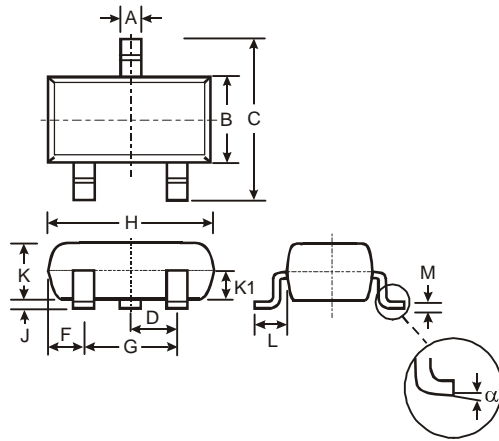


KA2 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: N = 2002)
 M = Month (ex: 9 = September)

Date Code Key

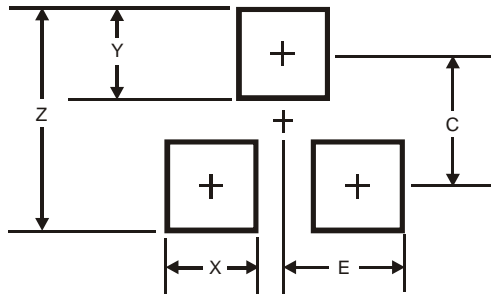
| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J | K | L | M | N | P | R | S | T | U | V | W | X | Y | Z |
| Month | 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-23 | | | |
|----------------------|-------|------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 0.05 |
| K | 0.903 | 1.10 | 1.00 |
| K1 | - | - | 0.400 |
| L | 0.45 | 0.61 | 0.55 |
| M | 0.085 | 0.18 | 0.11 |
| α | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |

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