**DIODES**
INCORPORATED

**DUAL SURFACE MOUNT SWITCHING DIODE**

Lead-free

## Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Conductance
- **Lead Free/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOT-23
- 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 Diagram
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.008 grams (approximate)

SOT-23

TOP VIEW

TOP VIEW
Internal Schematic
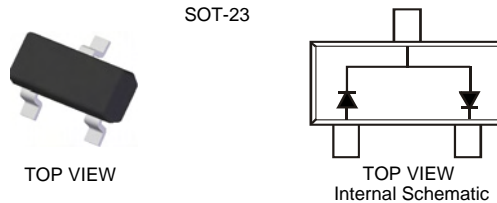
## Maximum Ratings @$T_A$ = 25°C unless otherwise specified

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

## 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 | °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 | Max | Unit | Test Condition |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 2) | $V_{(BR)R}$ | 75 | — | V | $I_R$ = 2.5µA |
| Forward Voltage | $V_F$ | — | 0.715<br>0.855<br>1.0<br>1.25 | V | $I_F$ = 1.0mA<br>$I_F$ = 10mA<br>$I_F$ = 50mA<br>$I_F$ = 150mA |
| Reverse Current (Note 2) | $I_R$ | — | 2.5<br>50<br>30<br>25 | µA<br>µA<br>µA<br>nA | $V_R$ = 75V<br>$V_R$ = 75V, $T_J$ = 150°C<br>$V_R$ = 25V, $T_J$ = 150°C<br>$V_R$ = 20V |
| Total Capacitance | $C_T$ | — | 2.0 | pF | $V_R$ = 0, f = 1.0MHz |
| Reverse Recovery Time | $t_{rr}$ | — | 4.0 | ns | $I_F$ = $I_R$ = 10mA,<br>$I_{rr}$ = 0.1 x $I_R$, $R_L$ = 100Ω |

Notes:  1. Part mounted on Polymide PC board with pad dimensions 1.13mm x 1.27mm.
2. Short duration pulse test used to minimize self-heating effect.
3. No purposefully added lead.

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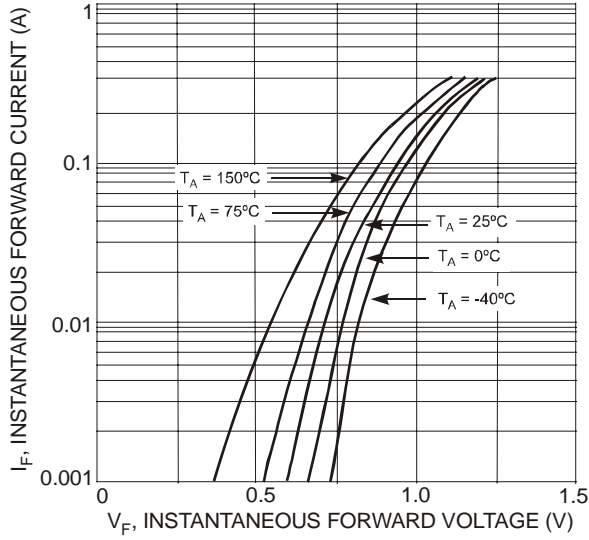© Diodes Incorporated

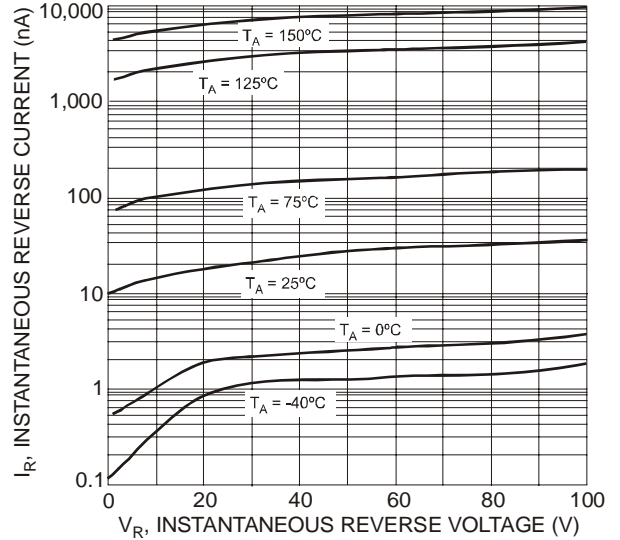Fig. 1  Forward Characteristics


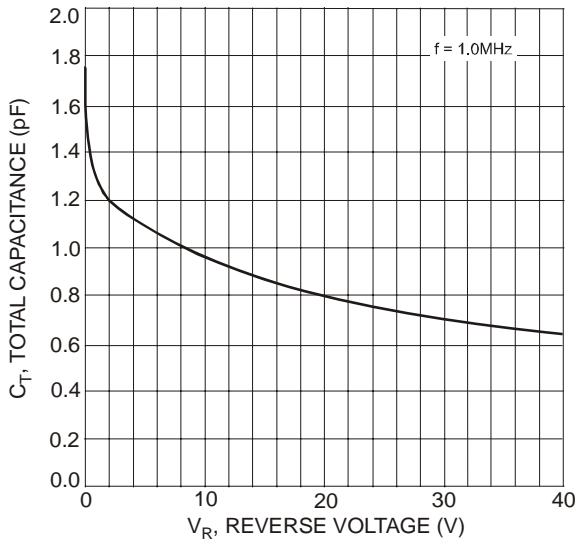Fig. 2  Typical Reverse Characteristics
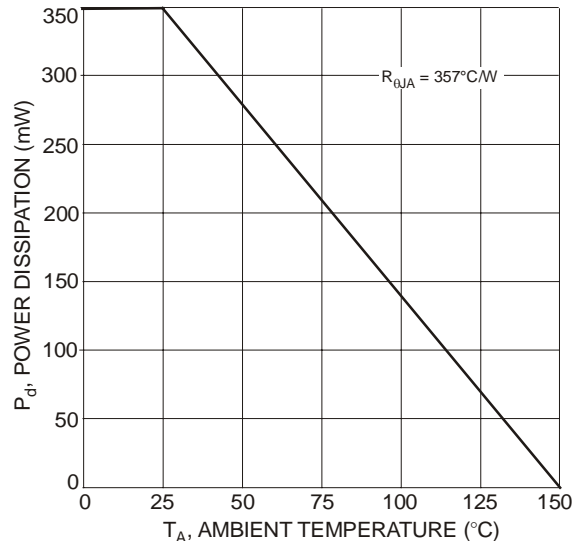

Fig. 3  Typical Capacitance vs. Reverse Voltage


Fig. 4  Power Derating Curve

## Ordering Information  (Note 4)

| Part Number | Case | Packaging |
| --- | --- | --- |
| BAV99-7-F | SOT-23 | 3000/Tape & Reel |

Notes:     4. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
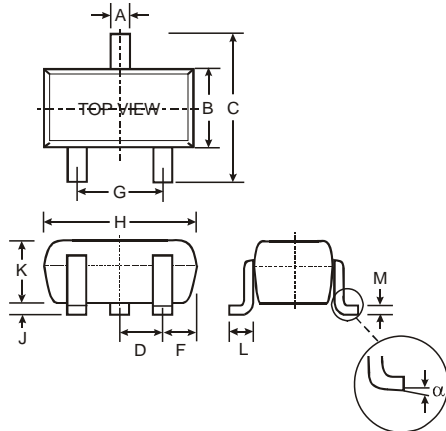
## Marking Information

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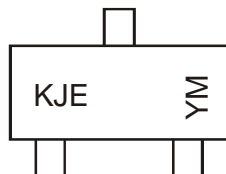
KJE = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

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 |

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## Package Outline Dimensions



| SOT-23 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 0.37 | 0.51 |
| **B** | 1.20 | 1.40 |
| **C** | 2.30 | 2.50 |
| **D** | 0.89 | 1.03 |
| **F** | 0.45 | 0.60 |
| **G** | 1.78 | 2.05 |
| **H** | 2.80 | 3.00 |
| **J** | 0.013 | 0.10 |
| **K** | 0.903 | 1.10 |
| **L** | 0.45 | 0.61 |
| **M** | 0.085 | 0.180 |
| **α** | 0° | 8° |
| **All Dimensions in mm** | | |

## Suggested Pad Layout
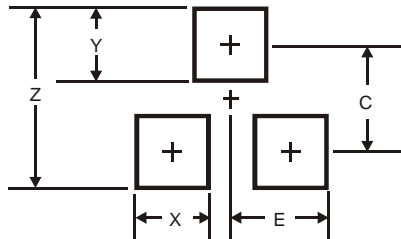


| Dimensions | Value (in mm) |
|---|---|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |

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