

## 250mA, 100V Schottky Barrier Diode

### FEATURES

- High breakdown voltage
- Low forward voltage
- Surface mount device type
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- High-speed switching
- Voltage clamping
- Reverse polarity protection

### MECHANICAL DATA

- Case: SOD-123
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 11.00mg (approximately)

| KEY PARAMETERS               |            |      |
|------------------------------|------------|------|
| PARAMETER                    | VALUE      | UNIT |
| $I_F$                        | 250        | mA   |
| $V_{RRM}$                    | 100        | V    |
| $V_F$ at $I_F = 10\text{mA}$ | 0.45       | V    |
| $T_{J\text{MAX}}$            | 125        | °C   |
| Package                      | SOD-123    |      |
| Configuration                | Single die |      |



**SOD-123**



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |              |             |      |
|---|--------------|-------------|------|
| PARAMETER   | SYMBOL       | BAT46GW     | UNIT |
| Marking code on the device  |              | S9          |      |
| Power dissipation   | $P_D$        | 200         | mW   |
| Non-repetitive peak reverse voltage   | $V_{RM}$     | 100         | V    |
| Repetitive peak reverse voltage   | $V_{RRM}$    | 100         | V    |
| RMS reverse voltage   | $V_{R(RMS)}$ | 70          | V    |
| Forward current   | $I_F$        | 250         | mA   |
| Junction temperature range  | $T_J$        | -55 to +125 | °C   |
| Storage temperature range   | $T_{STG}$    | -55 to +125 | °C   |

| <b>THERMAL PERFORMANCE</b>             |                 |            |               |
|--|-----------------|------------|---------------|
| <b>PARAMETER</b>                       | <b>SYMBOL</b>   | <b>TYP</b> | <b>UNIT</b>   |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 331        | $^{\circ}C/W$ |

**Note:** Units mounted on PCB (10mm x 5mm Cu pad test board)

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}C$ unless otherwise noted) |                                     |               |            |            |            |             |
|--|-------------------------------------|---------------|------------|------------|------------|-------------|
| <b>PARAMETER</b>   | <b>CONDITIONS</b>                   | <b>SYMBOL</b> | <b>MIN</b> | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b> |
| Forward voltage <sup>(1)</sup>   | $I_F = 0.1mA, T_J = 25^{\circ}C$    | $V_F$         | -          | -          | 0.25       | V           |
|  | $I_F = 10mA, T_J = 25^{\circ}C$     |               | -          | 0.33       | 0.45       | V           |
|  | $I_F = 250mA, T_J = 25^{\circ}C$    |               | -          | 0.78       | 1.00       | V           |
| Reverse voltage <sup>(2)</sup>   | $I_R = 100\mu A, T_J = 25^{\circ}C$ | $V_R$         | 100        | -          | -          | V           |
| Reverse current <sup>(2)</sup>   | $V_R = 10V, T_J = 25^{\circ}C$      | $I_R$         | -          | -          | 0.8        | $\mu A$     |
|  | $V_R = 50V, T_J = 25^{\circ}C$      |               | -          | -          | 2.0        | $\mu A$     |
|  | $V_R = 75V, T_J = 25^{\circ}C$      |               | -          | -          | 5.0        | $\mu A$     |
| Junction capacitance   | $f = 1MHz, V_R = 0V$                | $C_J$         | -          | 14.5       | 20         | pF          |

**Notes:**

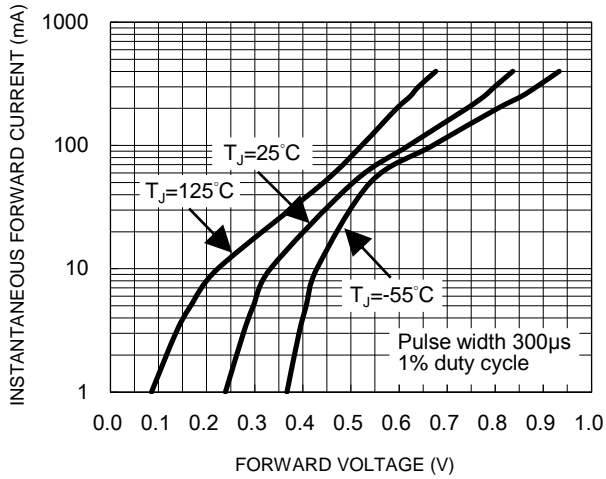
1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

| <b>ORDERING INFORMATION</b> |                |                |
|-----------------------------|----------------|----------------|
| <b>ORDERING CODE</b>        | <b>PACKAGE</b> | <b>PACKING</b> |
| BAT46GW RHG                 | SOD-123        | 3K / 7" Reel   |

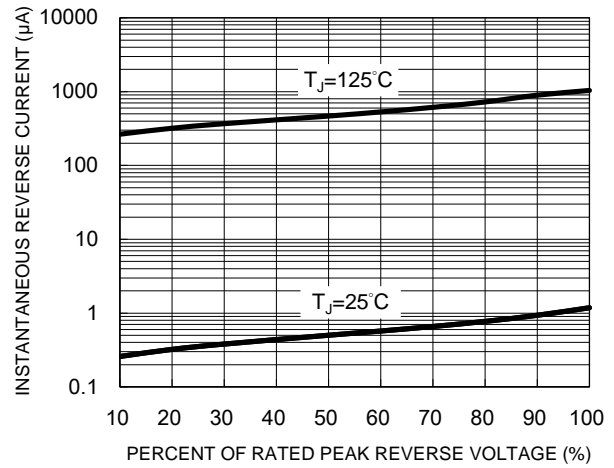
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

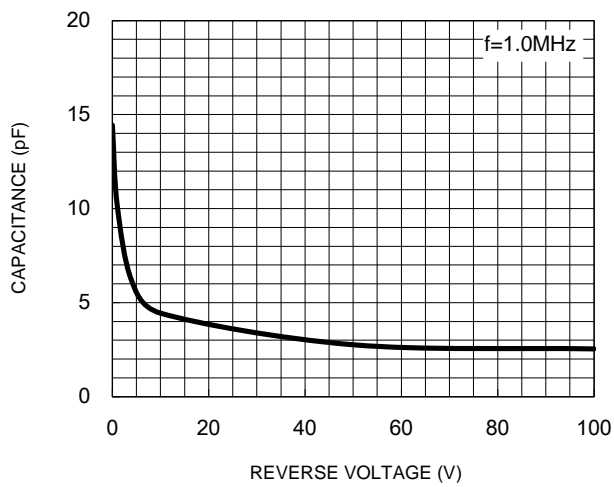
**Fig.1 Typical Forward Characteristics**



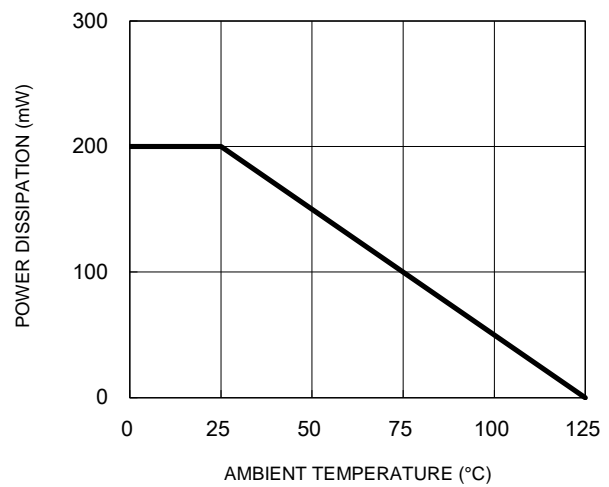
**Fig.2 Typical Reverse Characteristics**



**Fig.3 Typical Junction Capacitance**

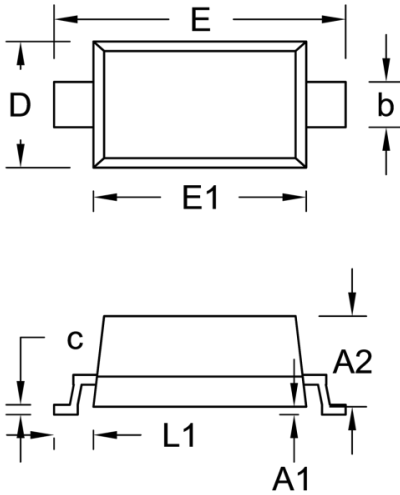


**Fig.4 Power Derating Curve**



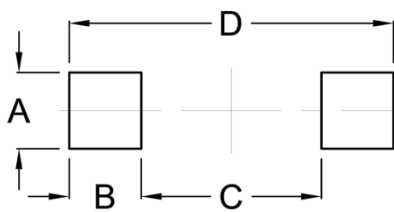
**PACKAGE OUTLINE DIMENSION**

SOD-123



| DIM. | Unit (mm)  |      | Unit (inch) |       |
|------|------------|------|-------------|-------|
|      | Min.       | Max. | Min.        | Max.  |
| A1   | -          | 0.10 | -           | 0.004 |
| A2   | 0.95       | 1.35 | 0.037       | 0.053 |
| b    | 0.45       | 0.70 | 0.018       | 0.028 |
| c    | 0.05       | 0.15 | 0.002       | 0.006 |
| D    | 1.40       | 1.80 | 0.055       | 0.071 |
| E    | 3.55       | 3.85 | 0.140       | 0.152 |
| E1   | 2.55       | 2.85 | 0.100       | 0.112 |
| L1   | 0.50 (REF) |      | 0.020 (REF) |       |

**SUGGEST PAD LAYOUT**



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 0.95      | 0.037       |
| B      | 0.90      | 0.035       |
| C      | 2.25      | 0.089       |
| D      | 4.05      | 0.159       |

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