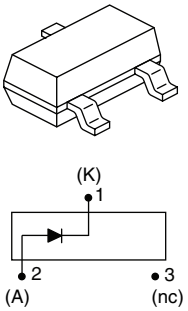
# Schottky Diode, 0.2 A




SOT-23

## FEATURES

- Small foot print, surface mountable
- Very low forward voltage drop
- Extremely fast switching speed for high frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level

Pb-free Available

RoHS* COMPLIANT

## DESCRIPTION

This Schottky barrier diode is designed for high speed switching applications, voltage clamping and circuit protection. Miniature surface mount packages with reduced foot print are excellent for portable applications where space is limited.

| PRODUCT SUMMARY | |
|---|---|
| $I_{F(AV)}$ | 0.2 A |
| $V_R$ | 30 V |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|---|---|---|---|
| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
| $I_F$ | DC | 0.2 | A |
| $V_{RRM}$ | | 30 | V |
| $I_{FSM}$ | $t_p$ = 10 ms sine | 1.0 | A |
| $V_F$ | 30 mA DC, $T_J$ = 25 °C | 0.5 | V |
| $P_d$ | Power dissipation at $T_A$ = 25 °C | 200 | mW |
| $T_J$ | Range | - 65 to 150 | °C |

| VOLTAGE RATINGS | | | |
|---|---|---|---|
| PARAMETER | SYMBOL | BAT54PbF | UNITS |
| Maximum DC reverse voltage | $V_R$ | 30 | V |
| Maximum working peak reverse voltage | $V_{RWM}$ | | |

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|---|---|---|---|---|---|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Forward current | $I_F$ | DC | | 0.2 | A |
| Maximum peak one cycle non-repetitive surge current at $T_J$ = 25 °C | $I_{FSM}$ | 5 µs sine or 3 µs rect. pulse | Following any rated load condition and with rated $V_{RRM}$ applied | 8.4 | A |
| | | 10 ms sine or 6 ms rect. pulse | | 1.0 | A |

* Pb containing terminations are not RoHS compliant, exemptions may apply

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | | **VALUES** | **UNITS** |
| Maximum forward voltage drop | $V_{FM}$ (1) | 0.1 A | $T_J$ = 25 °C | 0.65 | V |
| | | 30 mA | | 0.50 | |
| | | 10 mA | | 0.40 | |
| | | 1 mA | | 0.32 | |
| | | 0.1 mA | | 0.24 | |
| Maximum reverse leakage current | $I_{RM}$ (1) | $V_R$ = 25 V | | 2 | µA |
| | | $V_R$ = 30 V | | 3 | |
| Maximum junction capacitance | $C_T$ | $V_R$ = 1 $V_{DC}$ (test signal range 100 kHz to 1 MHz), $T_J$ = 25 °C | | 10 | pF |
| Maximum voltage rate of change | dV/dt | Rated $V_R$ | | 10 000 | V/µs |

**Note**

(1) Pulse width < 300 µs, duty cycle < 2 %

| THERMAL - MECHANICAL SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | **VALUES** | **UNITS** |
| Maximum junction and storage temperature range | $T_J$ (1), $T_{Stg}$ | | - 65 to 150 | °C |
| Maximum thermal resistance, junction to ambient | $R_{thJA}$ | Mounted on PC board FR4 with minimum pad size | 500 | °C/W |
| Approximate weight | | | 0.008 | g |
| Marking device | | Case style SOT-23 | E$\underline{Y}\overline{W}$LC | |

**Note**

(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

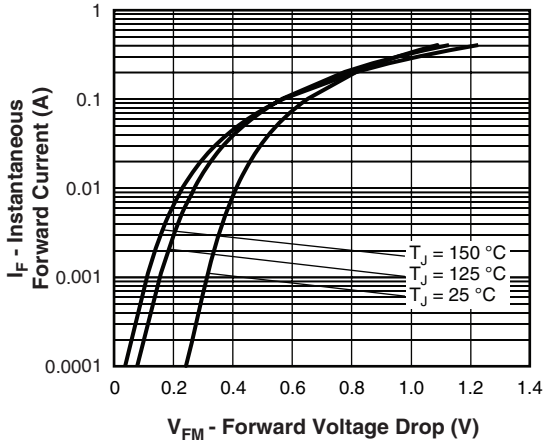



Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

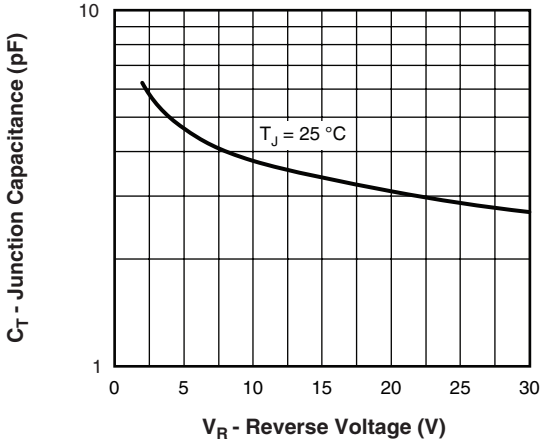



Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

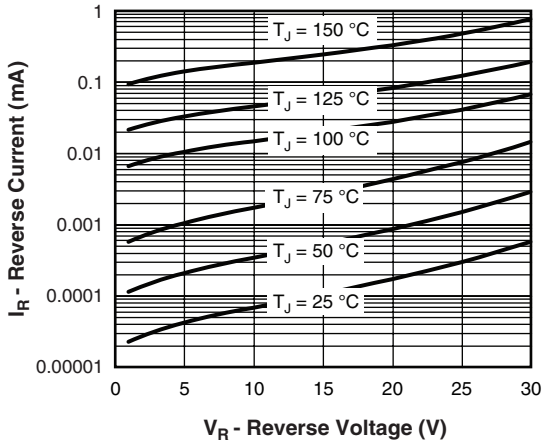



Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

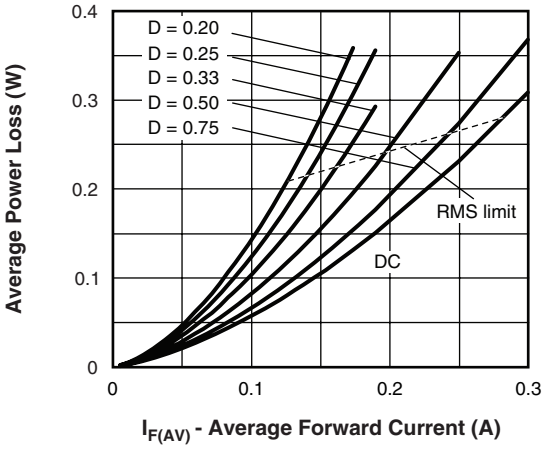



Fig. 4 - Forward Power Loss Characteristics

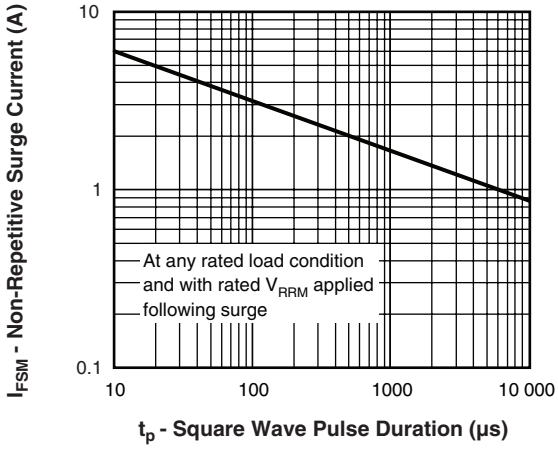



Fig. 5 - Maximum Non-Repetitive Surge Current

| ORDERING INFORMATION TABLE | | | | | |
|---|---|---|---|---|---|
| **DEVICE** | **PACKAGE** | **MARKING** | **CONFIGURATION** | **BASE QUANTITY** | **DELIVERY MODE** |
| BAT54 | SOT-23 | E$\underline{Y}\overline{W}$LC | Single | 3000 | Tape and reel |

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | http://www.vishay.com/doc?95048 |
| Part marking information | http://www.vishay.com/doc?95338 |
| Packaging information | http://www.vishay.com/doc?95061 |

# Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.