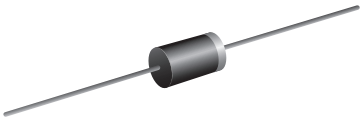
# Miniature Schottky Barrier Rectifier



MPG06

## FEATURES

- Guardring for overvoltage protection
- Very small conduction losses
- Extremely fast switching
- Low forward voltage drop
- High frequency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

RoHS COMPLIANT

## TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

## MECHANICAL DATA

**Case:** MPG06
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** Color band denotes the cathode end

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 0.6 A |
| $V_{RRM}$ | 20 V to 60 V |
| $I_{FSM}$ | 20 A |
| $V_F$ | 0.55 V, 0.70 V |
| $T_J$ max. | 125 °C, 150 °C |

**MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | SB020 | SB030 | SB040 | SB050 | SB060 | UNIT |
|---|---|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 20 | 30 | 40 | 50 | 60 | V |
| Maximum RMS voltage | $V_{RMS}$ | 14 | 21 | 28 | 35 | 42 | V |
| Maximum DC blocking voltage | $V_{DC}$ | 20 | 30 | 40 | 50 | 60 | V |
| Maximum average forward rectified current at 0.375" (9.5 mm) lead length (fig. 1) | $I_{F(AV)}$ | 0.6 | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 20 | | | | | A |
| Operating junction temperature range | $T_J$ | - 65 to + 125 | | | - 65 to + 150 | | °C |
| Storage temperature range | $T_{STG}$ | - 65 to + 150 | | | | | °C |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | SYMBOL | SB020 | SB030 | SB040 | SB050 | SB060 | UNIT |
|---|---|---|---|---|---|---|---|---|
| Maximum instantaneous forward voltage | 0.6 A | $V_F$ (1) | 0.55 | | | 0.70 | | V |
| Maximum instantaneous reverse current at rated DC blocking voltage | $T_A$ = 25 °C | $I_R$ (1) | 0.5 | | | | | mA |
| | $T_A$ = 100 °C | | 10 | | | 5.0 | | |

**Note**
(1) Pulse test: 300 µs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **SB020** | **SB030** | **SB040** | **SB050** | **SB060** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 80 | | | | | °C/W |
| | $R_{\theta JL}$ (1) | 20 | | | | | |

**Note**

(1) Thermal resistance junction to lead P.C.B. mounted 0.375" (9.5 mm) lead length

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (G)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| SB040-E3/54 | 0.203 | 54 | 5500 | 13" diameter paper tape and reel |
| SB040-E3/73 | 0.203 | 73 | 3000 | Ammo pack packaging |

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

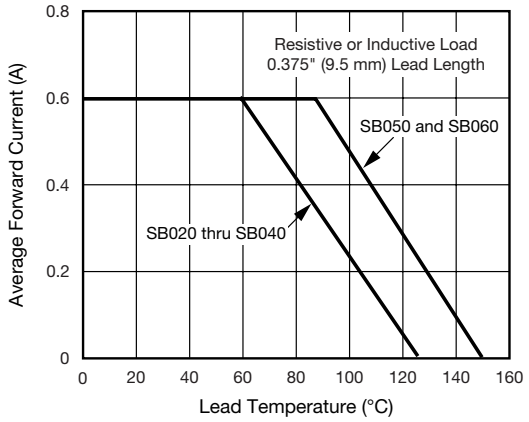



Fig. 1 - Forward Current Derating Curve

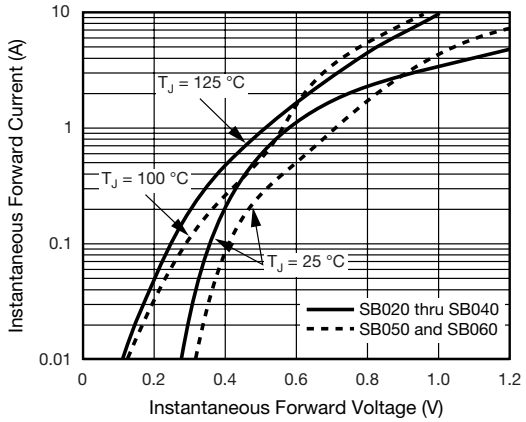



Fig. 3 - Typical Instantaneous Forward Characteristics

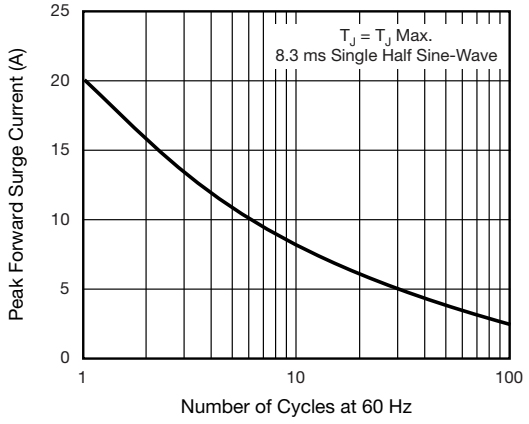



Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

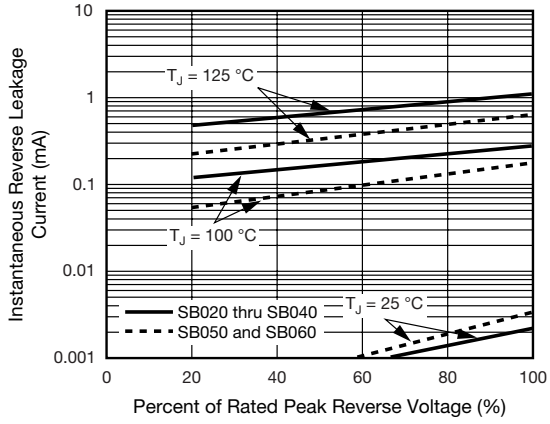



Fig. 4 - Typical Reverse Leakage Characteristics



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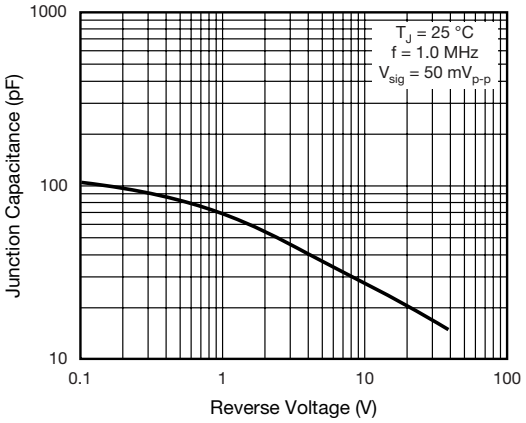



Fig. 5 - Typical Junction Capacitance

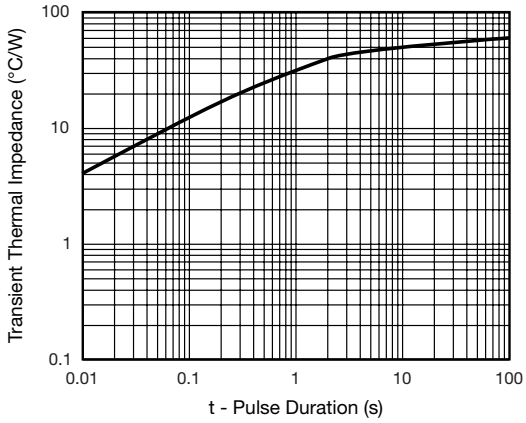
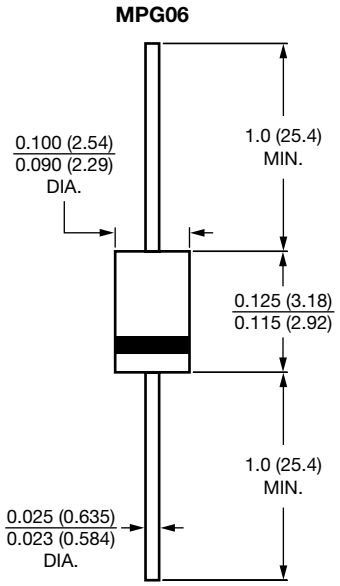



Fig. 6 - Transient Thermal Impedance

## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



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