

MB1S-MB8S

Bridge Rectifiers, 0.5 A

Description

The MB family of bridge rectifiers is a 0.5 A rectifier family that achieves high surge current absorption within a very small foot print. Within its small 35 mm² form factor, the MB family shines in its surge capability. In order to absorb high surge currents, the design supports a 35 A I_{FSM} rating and a 5.0 A²Sec I²T rating. Devices in the family are also rated to breakdown voltages of up to 1000 V. These features make the MB family ideal for small power supplies that need a little extra surge capability.

For higher I_{FAV} current ratings, lower profile packaging, or lower V_F values, explore the ON Semiconductor MDB family of bridge rectifiers. For improved V_F and efficiency values in the MB package or even higher surge capability, ask about ON Semiconductor's pending MBxSV family.

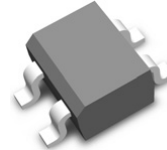
Features

- Low-Leakage
- Surge Overload Rating: 35 A peak
- Ideal for Printed Circuit Board
- UL Certified: UL #E258596
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- This Device is Pb-Free and RoHS Compliant



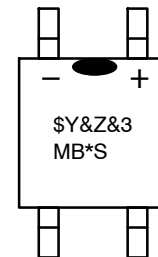
ON Semiconductor®

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SOIC4 W
CASE 751EP

MARKING DIAGRAM



\$Y = ON Semiconductor Logo
&Z = Assembly Plant Code
&3 = 3-Digit Data Code (Year & Week)
MB*S = Specific Device Code
* = 1/2/4/6/8

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

MB1S–MB8S

ABSOLUTE MAXIMUM RATINGS

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

| Symbol | Parameter | MB1S | MB2S | MB4S | MB6S | MB8S | Unit |
|-------------|----------------------------------------------------------------------------|-------------|------|------|------|------|------------------|
| V_{RRM} | Maximum Repetitive Reverse Voltage | 100 | 200 | 400 | 600 | 800 | V |
| V_{RMS} | Maximum RMS Bridge Input Voltage | 70 | 140 | 280 | 420 | 560 | V |
| V_R | DC Reverse Voltage (Rated V_R) | 100 | 200 | 400 | 600 | 800 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current at $T_A = 50^\circ\text{C}$ | 0.5 | | | | | A |
| I_{FSM} | Non-Repetitive Peak Forward Surge Current: 8.3 ms Single Half-Sine-Wave | 35 | | | | | A |
| T_{STG} | Storage Temperature Range | -55 to +150 | | | | | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature Range | -55 to +150 | | | | | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

| Symbol | Parameter | Value | Unit |
|-----------------|-----------------------------------------------------------|-------|---------------------------|
| P_D | Power Dissipation | 1.4 | W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient, per Leg (Note 1) | 85 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JL}$ | Thermal Resistance, Junction to Lead, per Leg (Note 1) | 20 | $^\circ\text{C}/\text{W}$ |

1. Device mounted on PCB with 0.5×0.5 inch (13×13 mm) lead length.

ELECTRICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Conditions | Value | Unit |
|--------|-----------------------------------------|------------------------------|-------|----------------------|
| V_F | Forward Voltage, per Bridge | $I_F = 0.5$ A | 1.0 | V |
| I_R | Reverse Current, per Leg at Rated V_R | $T_A = 25^\circ\text{C}$ | 5.0 | μA |
| | | $T_A = 125^\circ\text{C}$ | 0.5 | mA |
| I^2t | I^2t Rating for Fusing | $t < 8.3$ ms | 5.0 | A^2s |
| C_T | Total Capacitance, per Leg | $V_R = 4.0$ V, $f = 1.0$ MHz | 13 | pF |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

ORDERING INFORMATION

| Part Number | Top Mark | Package | Shipping [†] |
|----------------|----------|----------------------|-----------------------|
| MB1S, NRVMB1S* | MB1S | SOIC4 W (Pb-Free) | 3,000 / Tape & Reel |
| MB2S, NRVMB2S* | MB2S | | |
| MB4S, NRVMB4S* | MB4S | | |
| MB6S, NRVMB6S* | MB6S | | |
| MB8S, NRVMB8S* | MB8S | | |

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable

TYPICAL PERFORMANCE CHARACTERISTICS

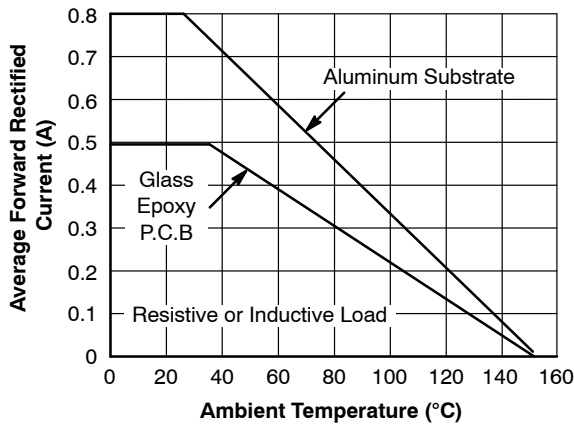


Figure 1. Derating Curve for Output Rectified Current

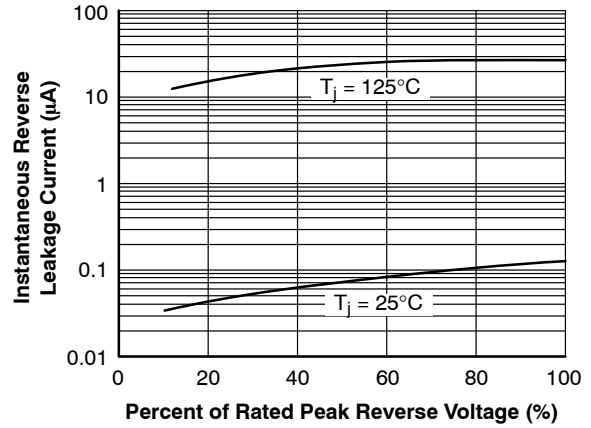


Figure 2. Typical Reverse Leakage Characteristics Per Leg

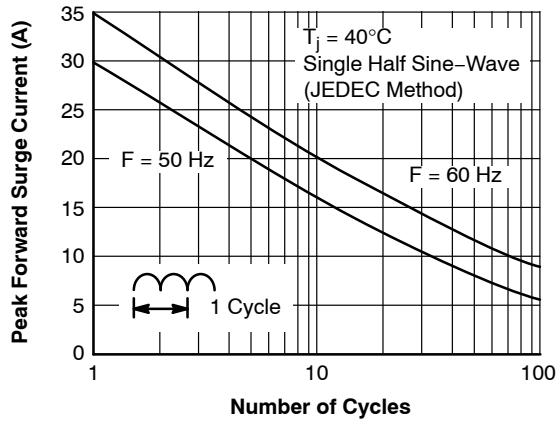


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Leg

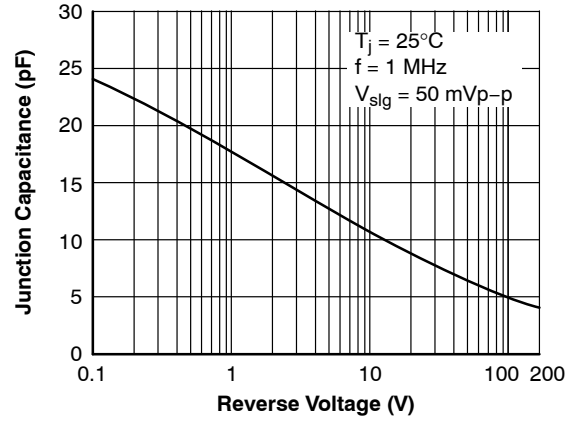


Figure 4. Typical Junction Capacitance Per Leg

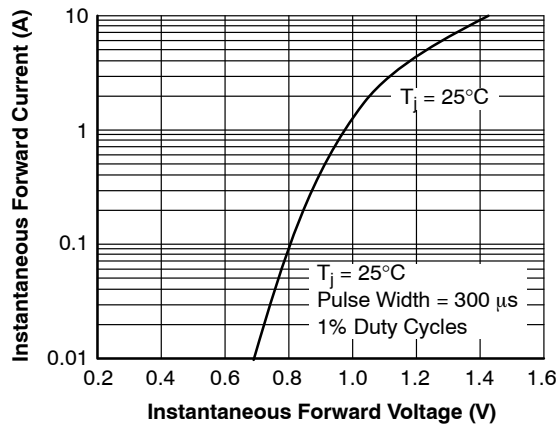


Figure 5. Typical Forward Voltage Characteristics Per Leg

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®

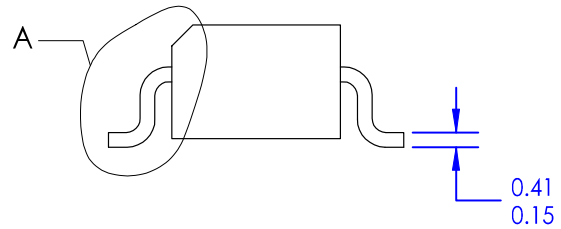
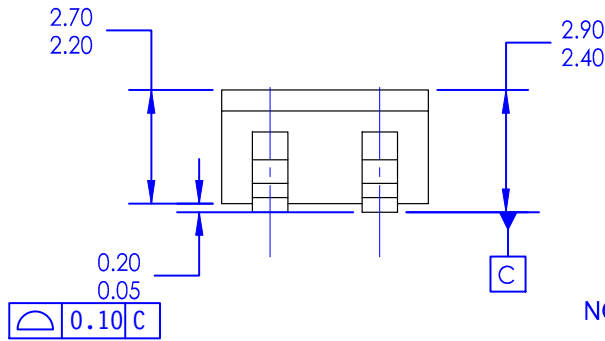


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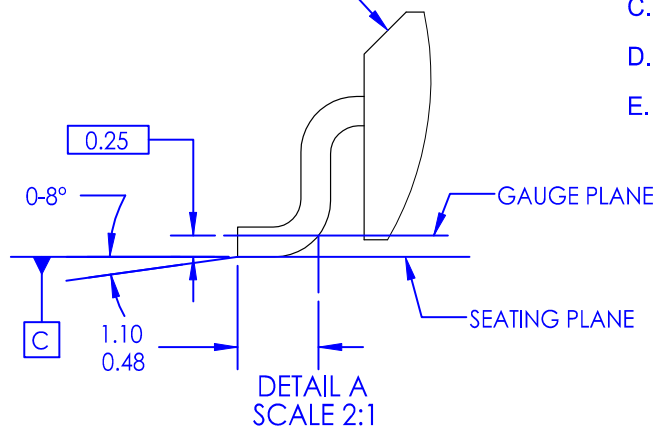
LAND PATTERN RECOMMENDATION



NOTES: UNLESS OTHERWISE SPECIFIED

- A. THIS PACKAGE DOES NOT CONFORM TO JEDEC TO269AA
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D. DIMENSIONS AND TOLERANCES AS PER ASME Y14.5-2009.
- E. LAND PATTERN AS PER IPC7351# SOIC254P960X400-4N

OPTION A - BEVEL EDGE



| | | |
|-------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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