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April 2014

MB1S - MB8S 0.5 A Bridge Rectifiers

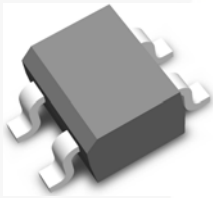
Features

- Low-Leakage
- Surge Overload Rating: 35 A peak
- Ideal for Printed Circuit Board
- UL Certified: UL #E258596

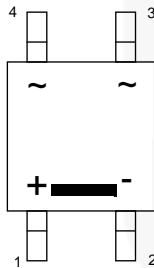
Description

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 Fairchild MDB family of bridge rectifiers. For improved V_F and efficiency values in the MB package or even higher surge capability, ask about Fairchild's pending MBxSV family.



SOIC-4
Polarity symbols molded
or mark on body



Ordering Informations

| Part Number | Marking | Package | Packing Method |
|-------------|---------|---------|----------------|
| MB1S | MB1S | SOIC-4 | Tape and Reel |
| MB2S | MB2S | | |
| MB4S | MB4S | | |
| MB6S | MB6S | | |
| MB8S | MB8S | | |

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | | | | | Unit |
|-------------|--|-------------|------|------|------|------|------------------|
| | | MB1S | MB2S | MB4S | MB6S | MB8S | |
| 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 | | | | | $^\circ\text{C}$ |

Thermal Characteristics

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

Note:

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

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise specified.

| Symbol | Parameter | Conditions | Value | Unit |
|--------|---|--|-------|----------------------|
| V_F | Forward Voltage, per Bridge | $I_F = 0.5 \text{ A}$ | 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 | $t < 8.3 \text{ ms}$ | 5.0 | A^2s |
| C_T | Total Capacitance, per Leg | $V_R = 4.0 \text{ V}$, $f = 1.0 \text{ MHz}$ | 13 | pF |

Typical Performance Characteristics

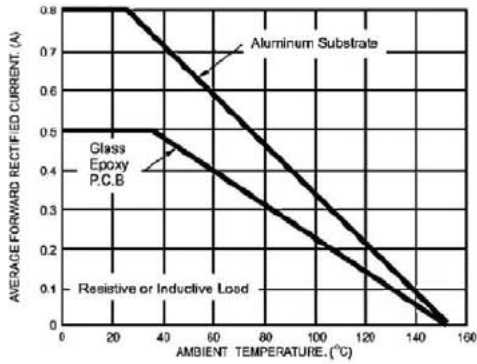


Figure 1. Derating Curve for Output Rectified Current

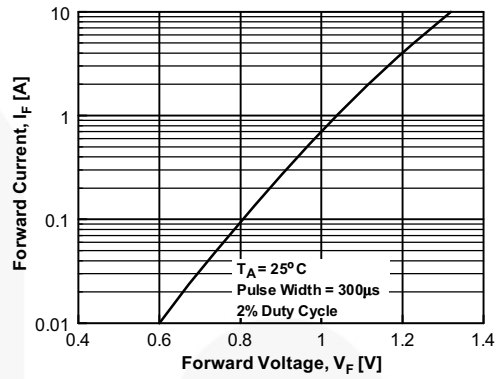


Figure 2. Forward Voltage Characteristics

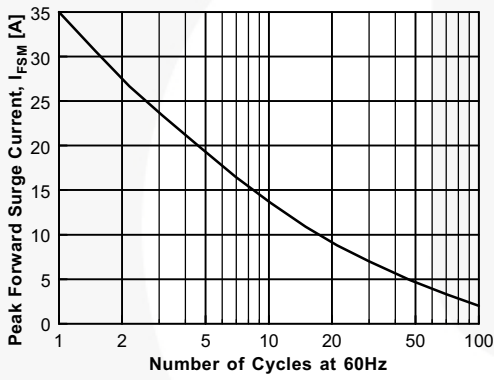


Figure 3. Non-Repetitive Surge Current

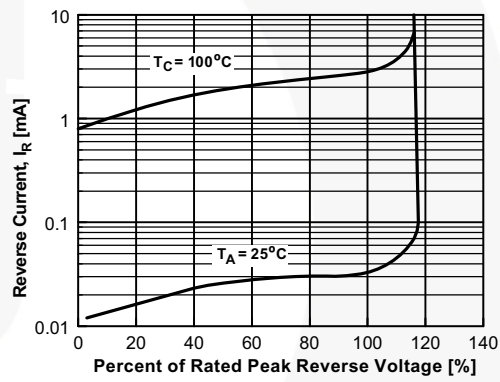
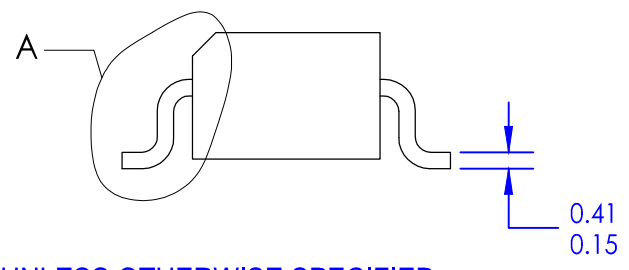
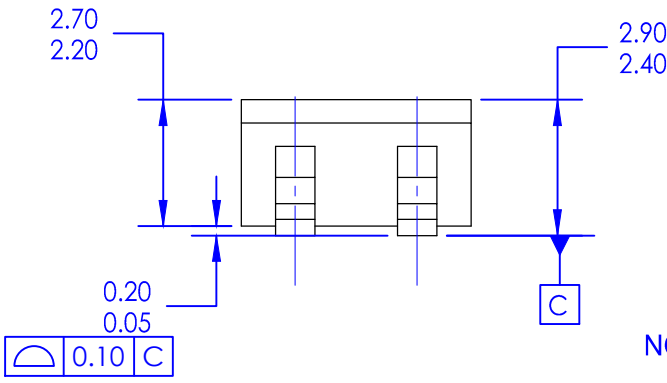
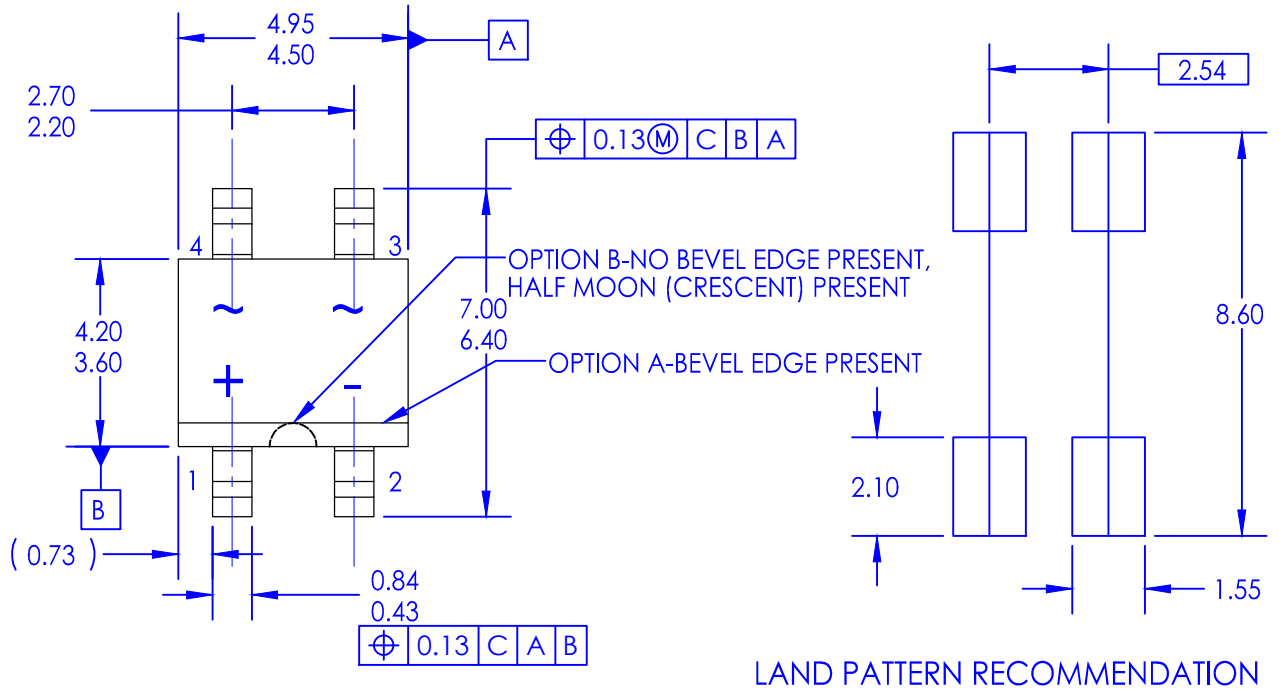
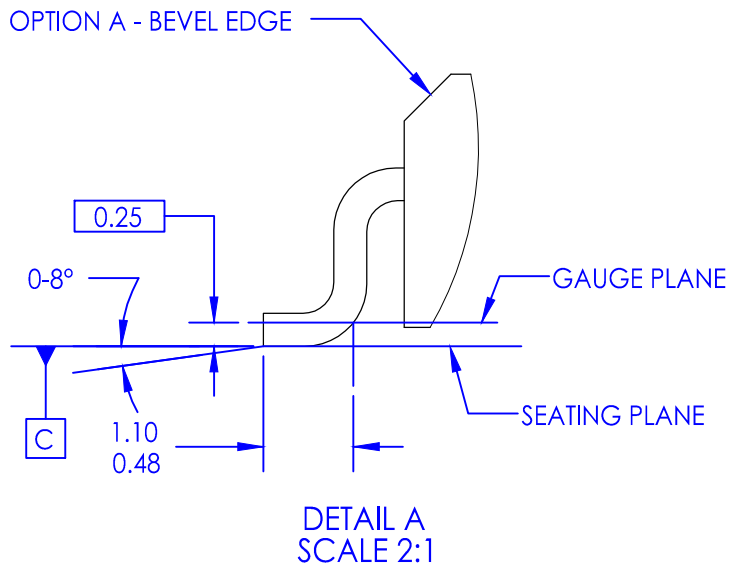


Figure 4. Reverse Current vs. Reverse Voltage



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- E. LAND PATTERN AS PER IPC7351# SOIC254P960X400-4N
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