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April 2014

# MB1S - MB8S 0.5 A Bridge Rectifiers

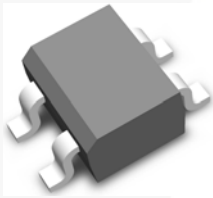
## Features

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

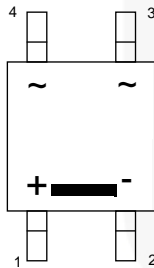
## Description

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 mm<sup>2</sup> form factor, the MB family shines in its surge capability. In order to absorb high surge currents, the design supports a 35 A I<sub>FSM</sub> rating and a 5.0 A<sup>2</sup>Sec I<sup>2</sup>T 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<sub>FAV</sub> current ratings, lower profile packaging, or lower V<sub>F</sub> values, explore the Fairchild MDB family of bridge rectifiers. For improved V<sub>F</sub> 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:<br>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 <sup>(1)</sup> | 85    | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JL}$ | Thermal Resistance, Junction to Lead, per Leg <sup>(1)</sup>    | 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   | $\mu\text{A}$        |
|        |                                         | $T_A = 125^\circ\text{C}$                        | 0.5   | mA                   |
| $I^2t$ | $I^2t$ Rating for Fusing                | $t < 8.3 \text{ ms}$                             | 5.0   | $\text{A}^2\text{s}$ |
| $C_T$  | Total Capacitance, per Leg              | $V_R = 4.0 \text{ V}$ ,<br>$f = 1.0 \text{ MHz}$ | 13    | pF                   |

## Typical Performance Characteristics

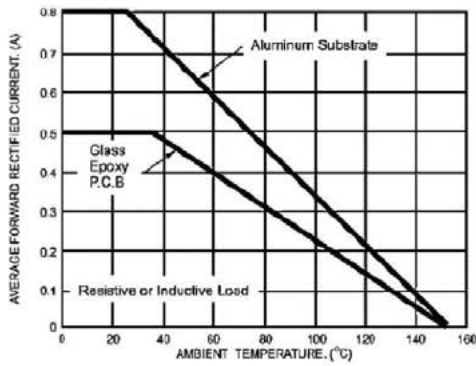


Figure 1. Derating Curve for Output Rectified Current

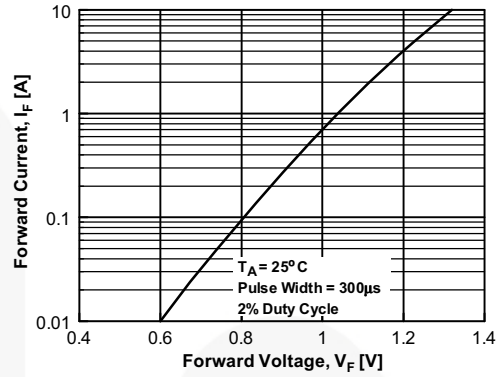


Figure 2. Forward Voltage Characteristics

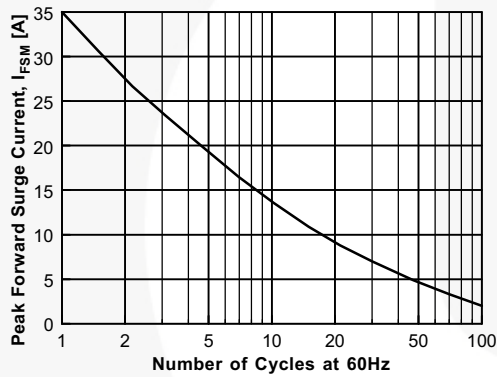


Figure 3. Non-Repetitive Surge Current

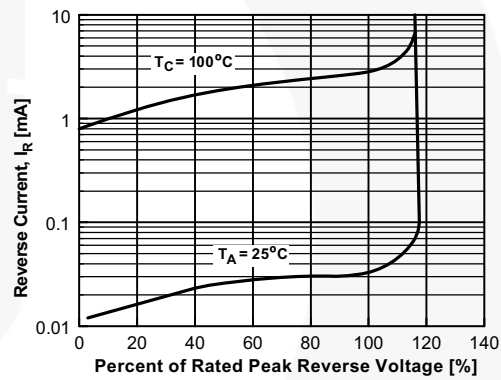


Figure 4. Reverse Current vs. Reverse Voltage



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