

MDB6S / MDB8S / MDB10S

1 A, MicroDIP, Single-Phase Bridge Rectifiers

Features

- Low Package Profile: 1.60 mm (max)
- Small Area Requirements: 35 mm²
- Efficient V_F
 - 0.935 V (Typ) at 1 A
 - 1.165 V (Typ) at 5 A
- $I_F(AV) = 1.0$ A
- $I_{FSM} = 30$ A
- Glass Passivated Junctions
- RoHS Compliant
- Halogen Free
- UL Certification: E352360

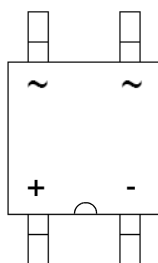
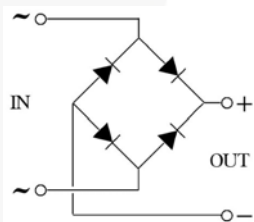
Description

With the ever pressing need to improve power supply efficiency and reliability, the MDBxS family is focused on offering a best in class small form factor combined with best in class efficient rectifier performance.

The “S” family offers industry leading balance of efficiency, size, and cost. They offer designers improved efficiency by achieving an industry leading V_F of 0.935 V Typ. at 1 A 25 °C, and a V_F of 1.165 V Typ. at 5 A 25 °C. These lower V_F values offer roughly a 5% efficiency improvement over measured competitive same form factor devices. This lower V_F vs. competitive devices results in cooler and more efficient power supply operation.

The design supports a 30 A I_{FSM} rating to absorb high surge currents and offers rated breakdown voltages up to 1000 V.

Finally, the MDBxS family achieves all this in a small form factor micro-dip package - offering a max height of 1.6 mm, and requiring only 35 mm² of board space.



Micro DIP

Ordering Information

| Part Number | Marking | Package | Packing Method |
|-------------|---------|-----------|----------------|
| MDB6S | MDB6S | Micro DIP | Tape and Reel |
| MDB8S | MDB8S | | |
| MDB10S | MDB10S | | |

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 | | | Units |
|-------------|--|-------------|-------|--------|------------------|
| | | MDB6S | MDB8S | MDB10S | |
| V_{RRM} | Maximum Repetitive Peak Reverse Voltage | 600 | 800 | 1000 | V |
| V_{RMS} | Maximum RMS Voltage | 420 | 560 | 700 | V |
| V_{DC} | Maximum DC Blocking Voltage | 600 | 800 | 1000 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current ⁽¹⁾ | 1.0 | | | A |
| I_{FSM} | Peak Forward Surge Current ⁽²⁾ | 30 | | | A |
| I^2t | I^2t Rating for fusing ($t < 8.3$ ms) | 3.735 | | | A ² S |
| T_J | Operating Junction Temperature Range | -55 to +150 | | | °C |
| T_{STG} | Storage Temperature Range | -55 to +150 | | | °C |

Notes:

- 60 Hz sine wave, R-load, $T_A = 25^\circ\text{C}$ on FR-4 PCB.
- 60 Hz sine wave, Non-repetitive 1 cycle peak value, $T_J = 25^\circ\text{C}$.

Thermal Characteristics⁽³⁾

| Symbol | Parameter | Typ. | Units | |
|-----------------|--|-----------------------------|-------|------|
| $R_{\theta JA}$ | Thermal Resistance, Junction-Ambient | Measurement with Dual Dice | 250 | °C/W |
| | | Measurement with Single Die | 150 | °C/W |
| ψ_{JL} | Thermal Characterization, Junction to Lead | Measured at Anode pin | 57 | °C/W |
| | | Measured at Cathode pin | 15 | °C/W |

Note:

- Device mounted on FR-4 PCB with board size = 76.2 mm x 114.3 mm (JE51-3 standards).

Electrical Characteristics

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

| Symbol | Parameter | Test condition | Value | Units |
|--------|------------------------------|--|-------|---------------|
| V_F | Maximum Forward Voltage | $I_F = 1$ A, Pulse measurement, Per diode | 1.1 | V |
| I_R | Maximum Reverse Current | At V_{RRM} , Pulse measurement, Per diode | 10 | μA |
| C_J | Typical Junction Capacitance | $V_R = 4$ V, $f = 1$ MHz | 10 | pF |

Typical Performance Characteristics

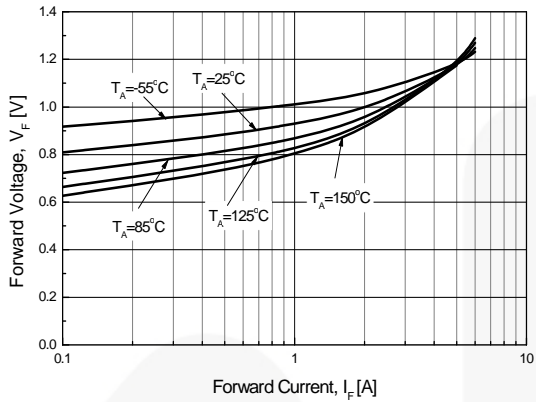


Figure 1. Forward Voltage vs Forward Current (Per diode)

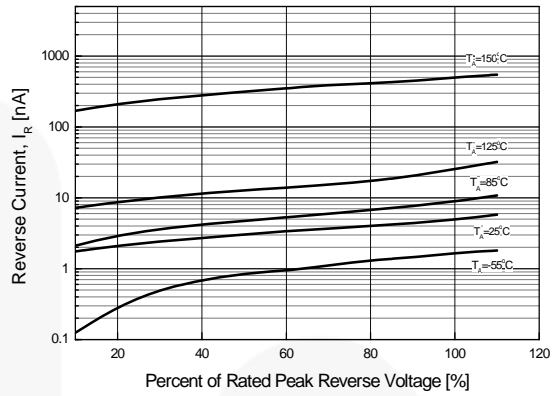


Figure 2. Typical Reverse Current Characteristics (Per Diode)

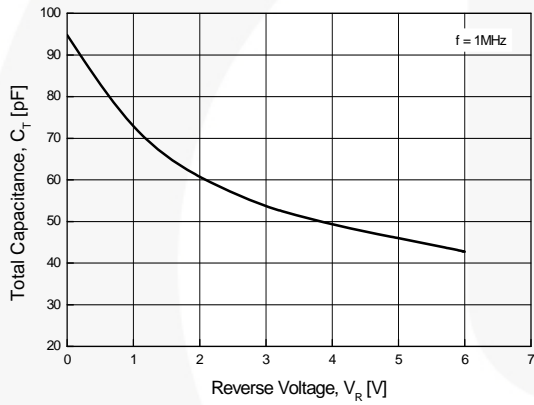
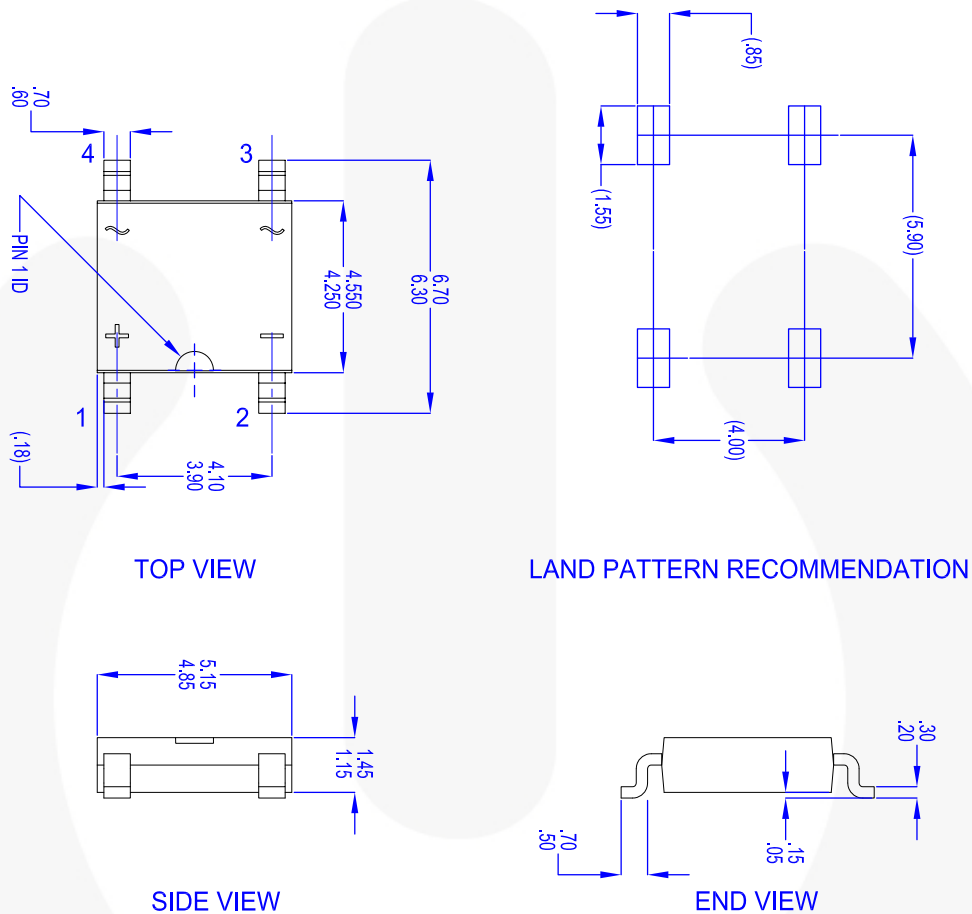


Figure 3. Total Capacitance

Physical Dimension

Micro-DIP



NOTES:

- A. THIS PACKAGE DOES NOT CONFORM TO ANY REFERENCE STANDARD.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- G. DRAWING FILE NAME: MKT-TDI04AREV1.

Figure 4. 4-LEAD, MICRO SURFACE MOUNT, 1.3 x 4 x 5 mm (Active)

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