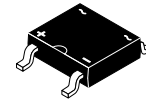


Bridge Rectifiers, Single-Phase, MicroDIP, 1 A

MDB8S Series

MDB6S, MDB8S, MDB10S



TSSOP4
CASE 948BS

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 inclass efficient rectifier performance.

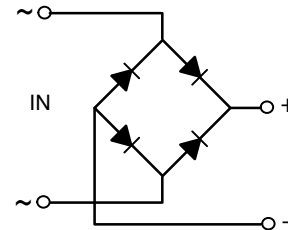
The “S” family offers industry leading balance of efficiency, size, and cost. They offer designers improved efficiency by achieving an industry leading V_F of 0.935 V Typ. at 1 A 25°C, and a V_F of 1.165 V Typ. at 5 A 25°C. These lower V_F values offer roughly a 5% efficiency improvement over measured 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.

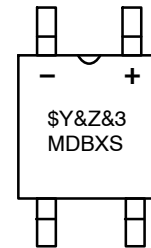
Finally, the MDBxS family achieves all this in a small form factor micro-dip package – offering a max height of 1.6 mm, and requiring only 35 mm² of board space.

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
- $IF(AV) = 1.0$ A
- $IFSM = 30$ A
- Glass Passivated Junctions
- UL Certification: E352360
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant



MARKING DIAGRAM



\$Y = onsemi Logo
 &Z = Assembly Plant Code
 &3 = 3-Digit Data Code (Year & Week)
 MDBXS = Specific Device Code
 X = 6, 8, 10

ORDERING INFORMATION

| Device | Package | Shipping† |
|--------|----------------------|--------------------|
| MDB6S | TSSOP-4 (Pb-Free) | 5000 / Tape & Reel |
| MDB8S | TSSOP-4 (Pb-Free) | 5000 / Tape & Reel |
| MDB10S | TSSOP-4 (Pb-Free) | 5000 / Tape & Reel |

†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](#).

MDB8S Series

ABSOLUTE MAXIMUM RATINGS

(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 (Note 1) | 1.0 | | | A |
| I_{FSM} | Peak Forward Surge Current (Note 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 | | | $^\circ\text{C}$ |
| T_{STG} | Storage 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.

- 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 (Note 3)

| Symbol | Parameter | Value | Typ. | Units |
|-----------------|---|-----------------------------|------|---------------------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | Measurement with Dual Dice | 250 | $^\circ\text{C}/\text{W}$ |
| | | Measurement with Single Die | 150 | $^\circ\text{C}/\text{W}$ |
| Ψ_{JL} | Thermal Characterization Junction to Lead | Pin 2 | 57 | $^\circ\text{C}/\text{W}$ |
| | | Pin 1, 3, 4 | 15 | $^\circ\text{C}/\text{W}$ |

- Device mounted on FR-4 PCB with board size = 76.2 mm x 114.3 mm (JE5D51-3 standards).

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

| Symbol | Parameter | Conditions | Value | Unit |
|--------|------------------------------|--|-------|---------------|
| 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 |

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.

MDB8S Series

TYPICAL PERFORMANCE CHARACTERISTICS

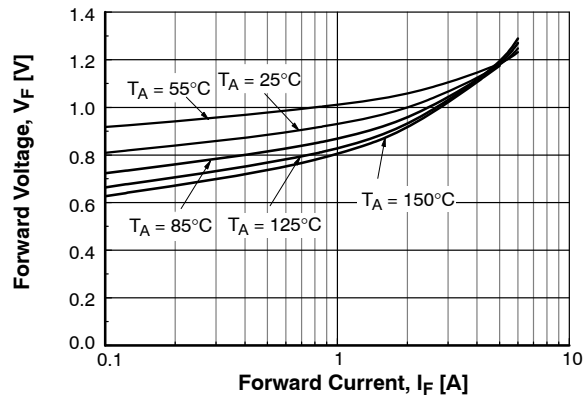


Figure 1. Forward Voltage vs. Forward Current (Per Diode)

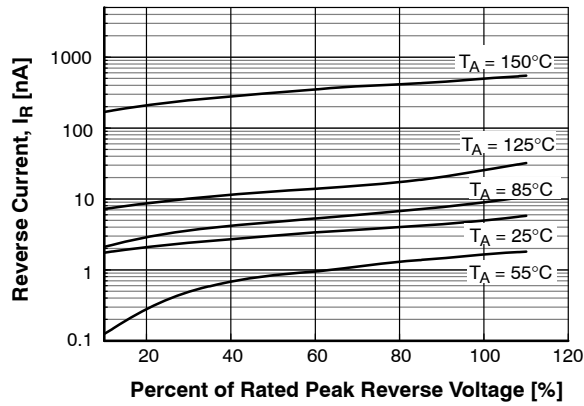


Figure 2. Typical Reverse Current Characteristic (Per Diode)

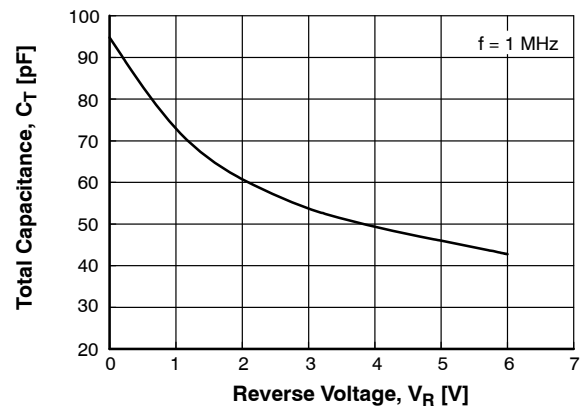
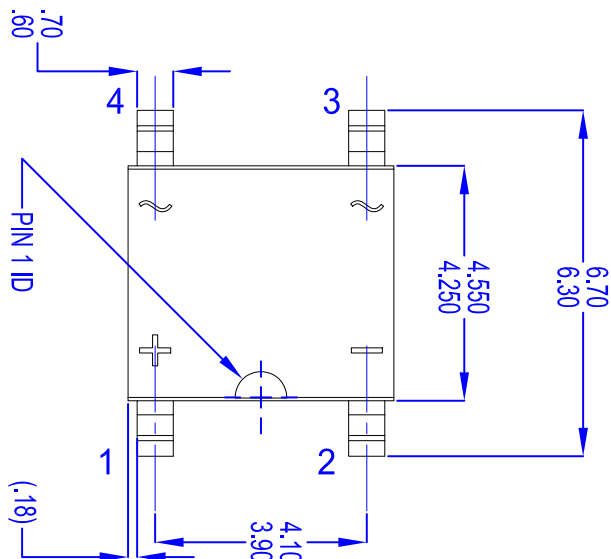


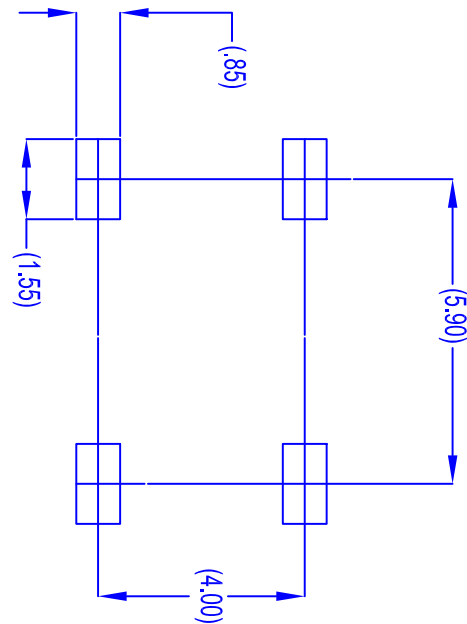
Figure 3. Total Capacitance

TSSOP4 5.0x4.4 / Micro-DIP
CASE 948BS
ISSUE O

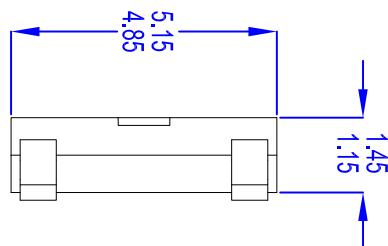
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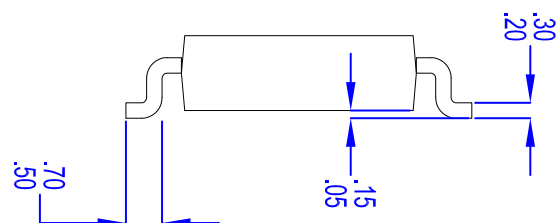
TOP VIEW



LAND PATTERN RECOMMENDATION



SIDE VIEW




END VIEW

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.

| | | |
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