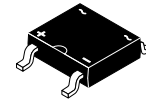


# Bridge Rectifiers, Single-Phase, MicroDIP, 1 A

## 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 in class efficient rectifier performance.

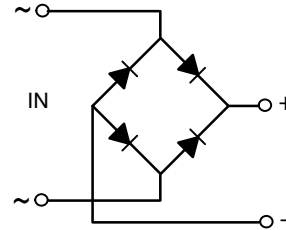
The “S” family offers industry leading balance of efficiency, size, and cost. They offer designers improved efficiency by achieving an industry leading  $V_F$  of 0.935 V Typ. at 1 A 25°C, and a  $V_F$  of 1.165 V Typ. at 5 A 25°C. These lower  $V_F$  values offer roughly a 5% efficiency improvement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

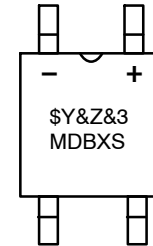
Finally, the MDBxS family achieves all this in a small form factor micro-dip package – offering a max height of 1.6 mm, and requiring only 35 mm<sup>2</sup> of board space.

#### Features

- Low Package Profile: 1.60 mm (max)
- Small Area Requirements: 35 mm<sup>2</sup>
- 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
- 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			$\text{A}^2\text{S}$
$T_J$	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.

1. 60 Hz sine wave, R-load,  $T_A = 25^\circ\text{C}$  on FR-4 PCB.
2. 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	$^\circ\text{C}/\text{W}$
$\Psi_{JL}$	Thermal Characterization Junction to Lead	Pin 2	57	$^\circ\text{C}/\text{W}$
		Pin 1, 3, 4	15	$^\circ\text{C}/\text{W}$

3. Device mounted on FR-4 PCB with board size = 76.2 mm x 114.3 mm (JESD51-3 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	$\mu\text{A}$
$C_J$	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

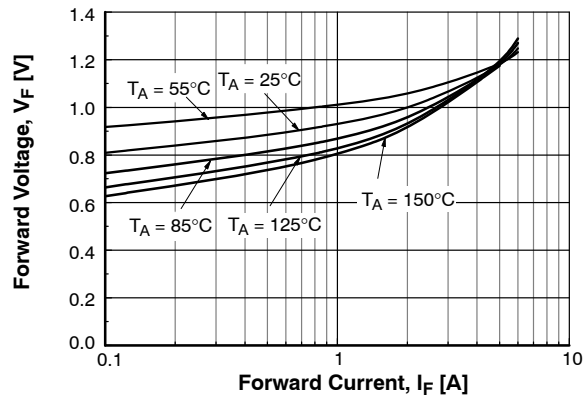


Figure 1. Forward Voltage vs. Forward Current (Per Diode)

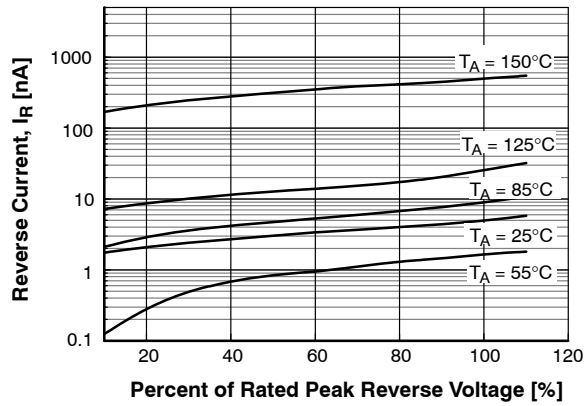


Figure 2. Typical Reverse Current Characteristic (Per Diode)

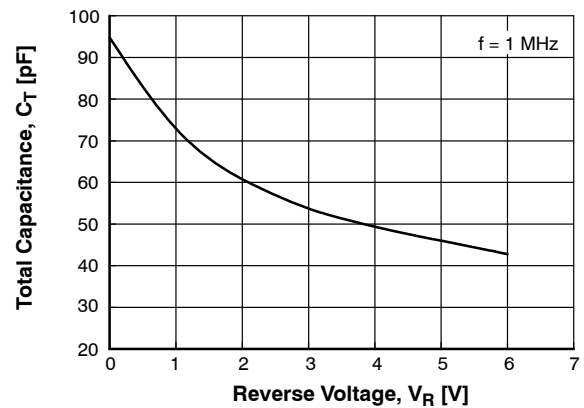


Figure 3. Total Capacitance

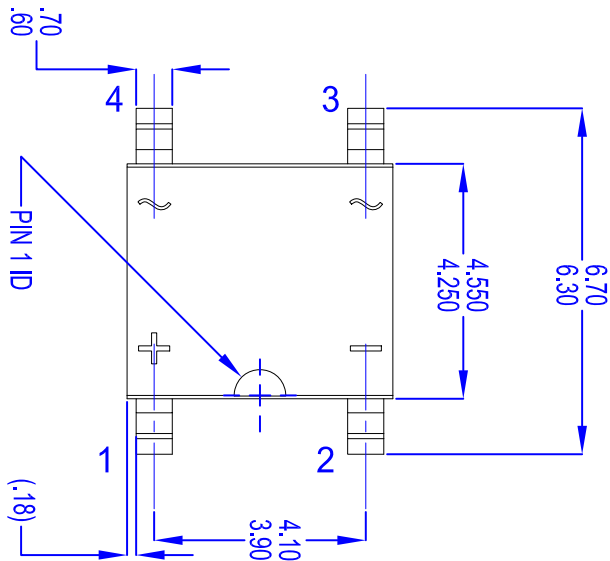
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®

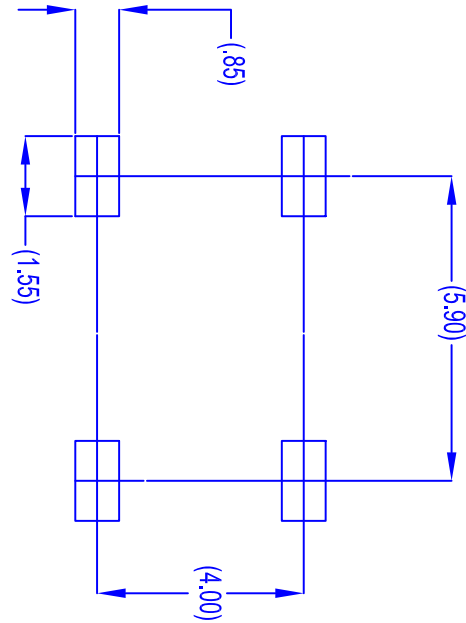


TSSOP4 5.0x4.4 / Micro-DIP  
CASE 948BS  
ISSUE O

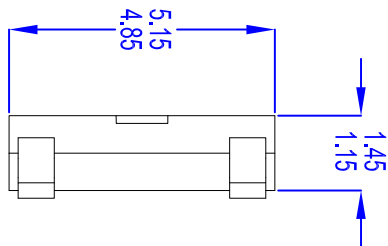
DATE 30 NOV 2016



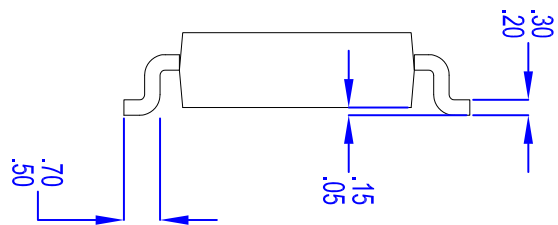
TOP VIEW



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.

<b>DOCUMENT NUMBER:</b>	<b>98AON13795G</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>TSSOP4 5.0x4.4 / Micro-DIP</b>	<b>PAGE 1 OF 1</b>

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Email Requests to: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**onsemi Website:** [www.onsemi.com](http://www.onsemi.com)

### TECHNICAL SUPPORT

**North American Technical Support:**  
Voice Mail: 1 800-282-9855 Toll Free USA/Canada  
Phone: 011 421 33 790 2910

**Europe, Middle East and Africa Technical Support:**

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative