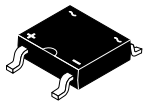
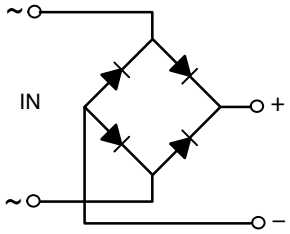
Bridge Rectifiers, Single-Phase, MicroDIP, 1 A

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 mm^2 of board space.

Features

- Low Package Profile: 1.60 mm (max)
- Small Area Requirements: 35 mm^2
- 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.

ABSOLUTE MAXIMUM RATINGS

(Values are at T_A = 25°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^2S
T_J	Operating Junction Temperature Range	−55 to +150			°C
T_{STG}	Storage Temperature Range	−55 to +150			°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, TA = 25°C on FR−4 PCB.
2. 60 Hz sine wave, Non−repetitive 1 cycle peak value, TJ = 25°C.

THERMAL CHARACTERISTICS (Note 3)

Symbol	Parameter	Value	Typ.	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	Measurement with Dual Dice	250	°C/W
		Measurement with Single Die	150	°C/W
ΨJL	Thermal Characterization Junction to Lead	Pin 2	57	°C/W
		Pin 1, 3, 4	15	°C/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°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	VR = 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.

TYPICAL PERFORMANCE CHARACTERISTICS

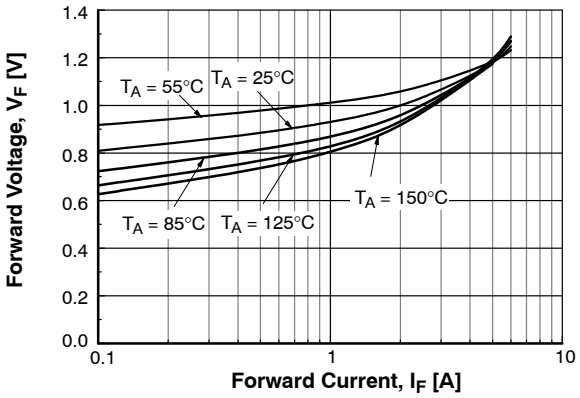


Figure 1. Forward Voltage vs. Forward Current (Per Diode)

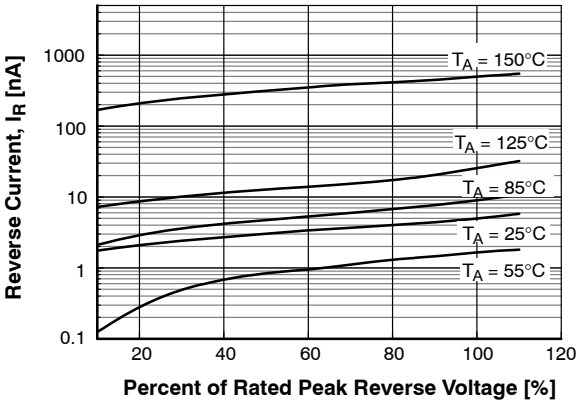


Figure 2. Typical Reverse Current Characteristic (Per Diode)

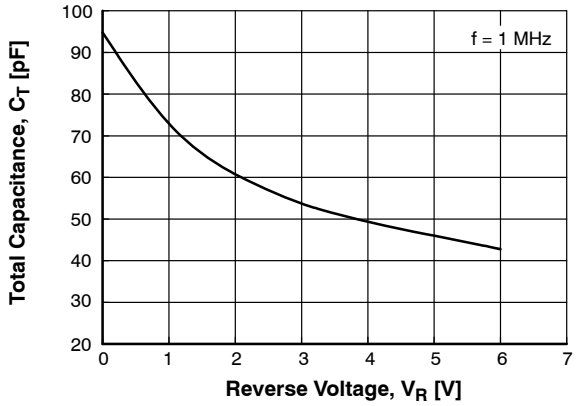
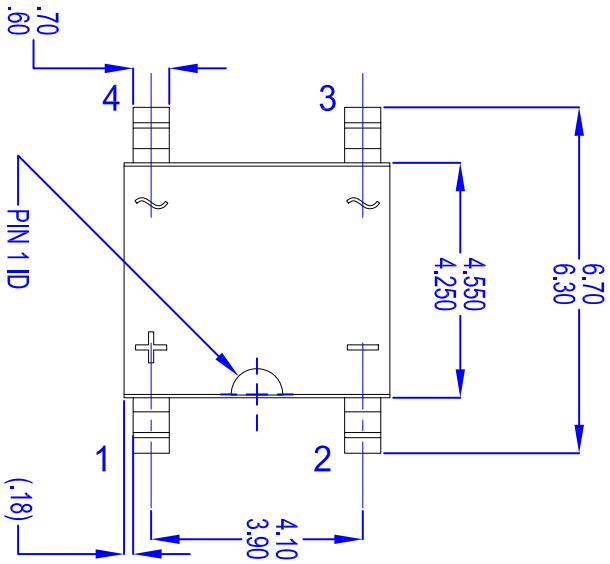


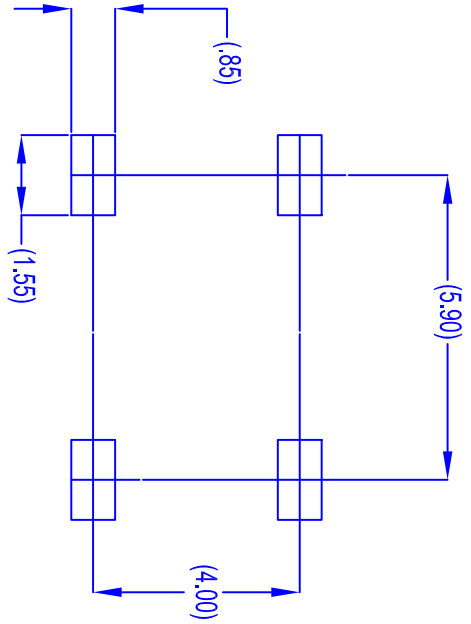
Figure 3. Total Capacitance

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

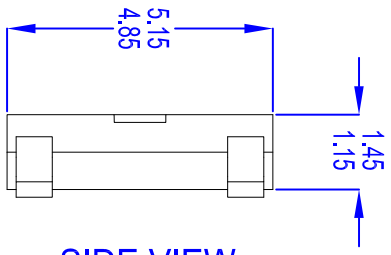
DATE 30 NOV 2016



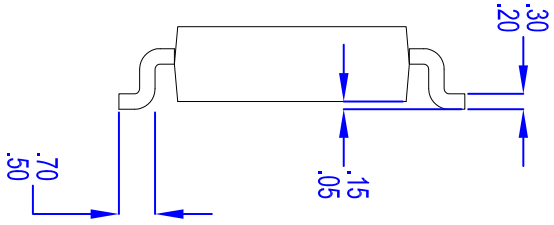
TOP VIEW



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.

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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Email Requests to: orderlit@onsemi.com

onsemi Website: 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

◊