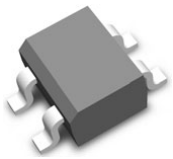
Bridge Rectifiers, 0.5 A

MB10S



SOIC4 W
CASE 751EP

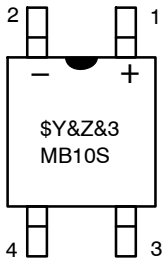
Description

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^2 form factor, the MB family shines in its surge capability. In order to absorb high surge currents, the design supports a 35 A I_{FSM} rating and a 5.0 A^2Sec I^2T 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.

Features

- Low−Leakage
- Surge Overload Rating: 35 A peak
- Ideal for Printed Circuit Board
- UL Certified: UL #E258596
- This Device is Pb−Free and RoHS Compliant

MARKING DIAGRAM



$Y	= **onsemi** Logo
&Z	= Assembly Plant Code
&3	= 3−Digit Data Code (Year & Week)
MB10S	= Specific Device Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

© Semiconductor Components Industries, LLC, 2010

ABSOLUTE MAXIMUM RATINGS

(Values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{RRM}	Maximum Repetitive Reverse Voltage	1000	V
V_{RMS}	Maximum RMS Bridge Input Voltage	700	V
V_R	DC Reverse Voltage (Rated V_R)	1000	V
$I_{F(AV)}$	Average Rectified Forward Current at T_A = 50°C On Glass−Epoxy PCB On Aluminum Substrate	 0.5 0.8	A
I_{FSM}	Non−Repetitive Peak Forward Surge Current: 8.3 ms Single Half−Sine−Wave	35	A
T_{STG}	Storage Temperature Range	−55 to +150	°C
T_J	Operating Junction 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.

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	1.4	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient, per Leg (Note 1)	85	°C/W
$R_{\theta JL}$	Thermal Resistance, Junction to Lead, per Leg (Note 1)	20	°C/W

1. Device mounted on PCB with 0.5 × 0.5 inch (13 × 13 mm) lead length.

ELECTRICAL CHARACTERISTICS (Values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Value	Unit
V_F	Maximum Forward Voltage, per Diode	I_F = 0.5 A	1.0	V
I_R	Maximum Reverse Current, per Diode at Rated V_R	T_A = 25°C	5.0	μA
		T_A = 125°C	0.5	mA
I^2t	I^2t Rating for Fusing	t < 8.3 ms	5.0	A^2s
C_T	Typical Capacitance, per Diode	V_R = 4.0 V, f = 1.0 MHz	13	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.

ORDERING INFORMATION

Part Number	Marking	Package	Shipping†
MB10S	MB10S	SOIC4 W (Pb−Free)	3,000 / 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.

TYPICAL PERFORMANCE CHARACTERISTICS

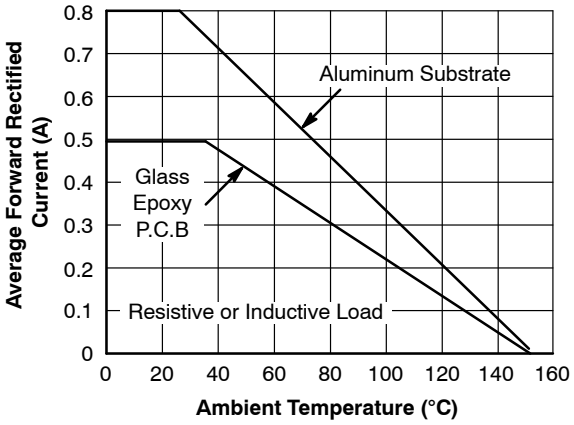


Figure 1. Derating Curve for Output Rectified Current

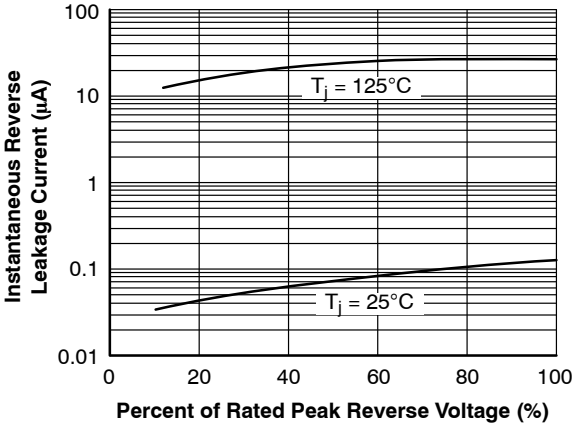


Figure 2. Typical Reverse Leakage Characteristics Per Leg

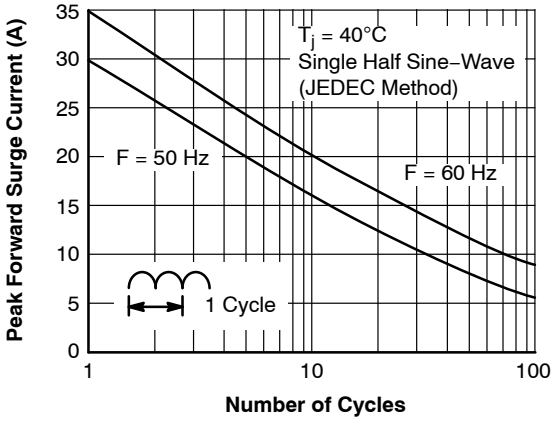


Figure 3. Maximum Non−Repetitive Peak Forward Surge Current Per Leg

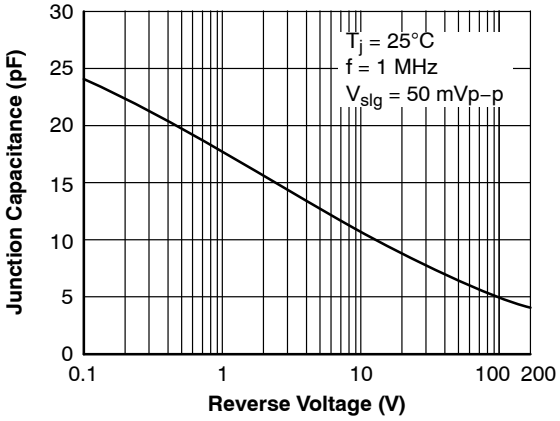


Figure 4. Typical Junction Capacitance Per Leg

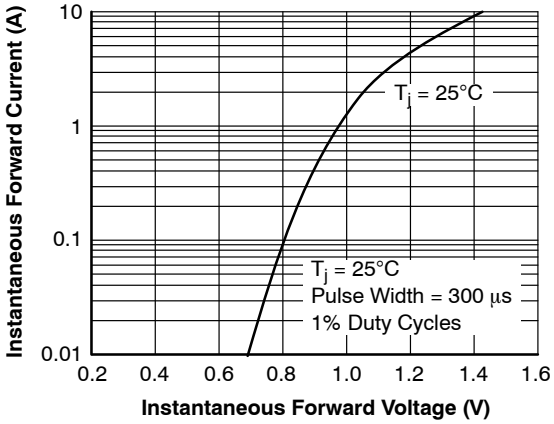


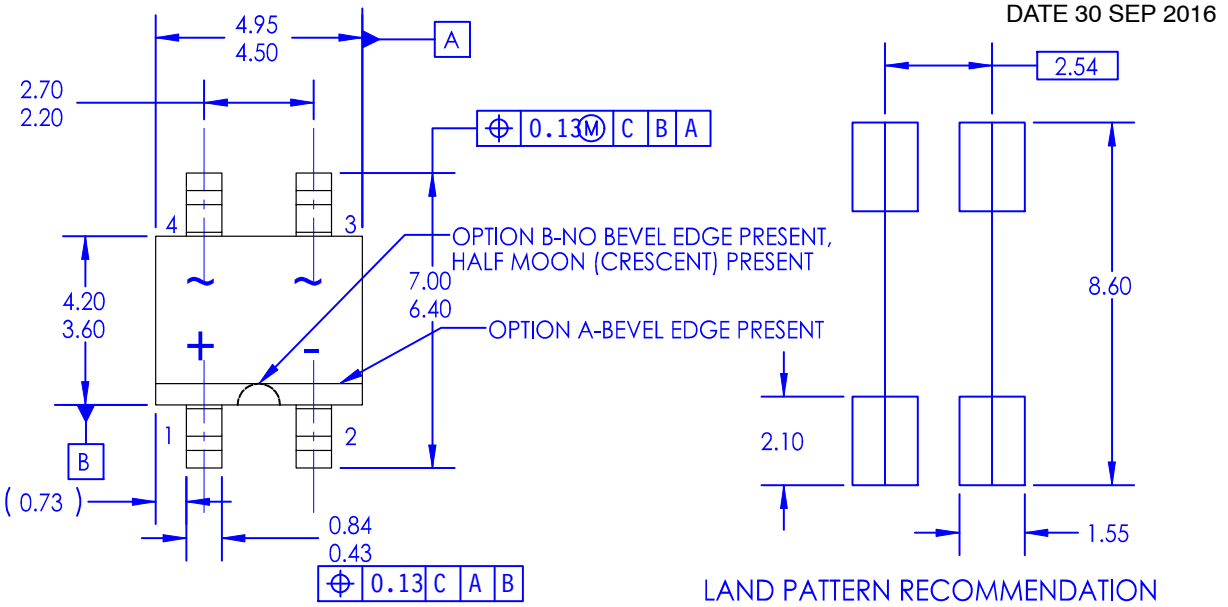
Figure 5. Typical Forward Voltage Characteristics Per Leg

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

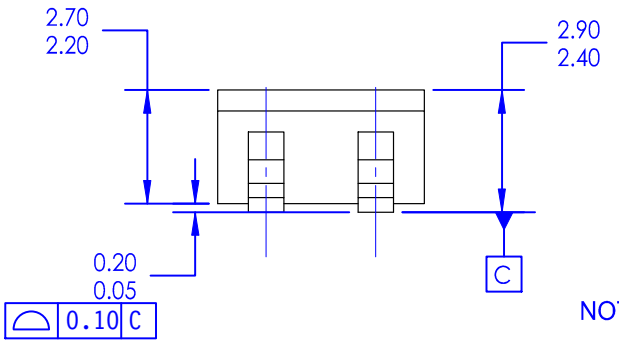
ON Semiconductor®

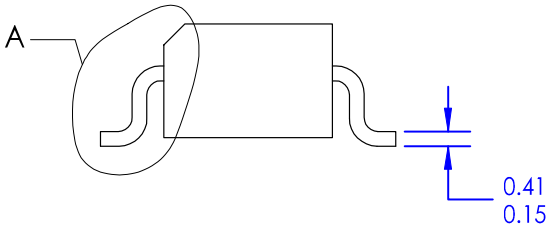
SOIC4 W
CASE 751EP
ISSUE O

DATE 30 SEP 2016



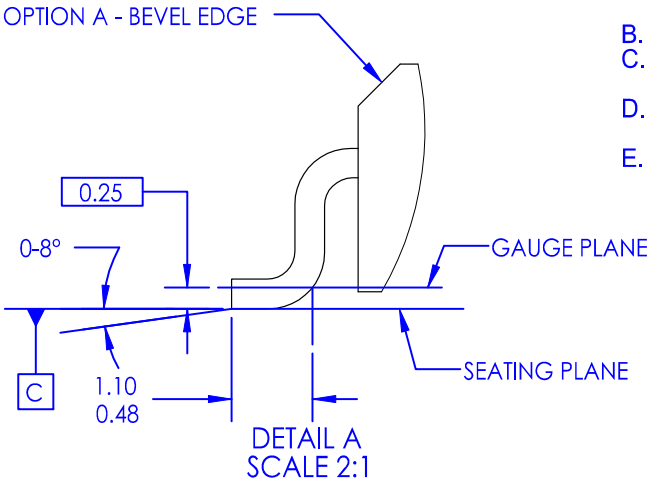
LAND PATTERN RECOMMENDATION





NOTES: UNLESS OTHERWISE SPECIFIED

A. THIS PACKAGE DOES NOT CONFORM TO JEDEC TO269AA
B. ALL DIMENSIONS ARE IN MILLIMETERS.
C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
D. DIMENSIONS AND TOLERANCES AS PER ASME Y14.5-2009.
E. LAND PATTERN AS PER IPC7351# SOIC254P960X400-4N



DETAIL A
SCALE 2:1

DOCUMENT NUMBER:	**98AON13753G**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	**SOIC4 W**		**PAGE 1 OF 1**

ON Semiconductor and ON 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.

© Semiconductor Components Industries, LLC, 2019

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. **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.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales