

# Bridge Rectifiers, 0.5 A

## MB10S

### 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<sup>2</sup> form factor, the MB family shines in its surge capability. In order to absorb high surge currents, the design supports a 35 A I<sub>FSM</sub> rating and a 5.0 A<sup>2</sup>Sec I<sup>2</sup>T 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.

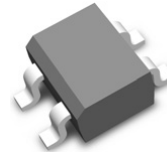
### Features

- 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



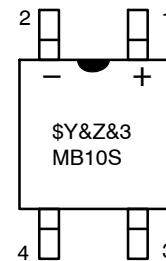
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SOIC4 W  
CASE 751EP

### MARKING DIAGRAM



\$Y = ON Semiconductor 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.

# MB10S

## ABSOLUTE MAXIMUM RATINGS

(Values are at  $T_A = 25^\circ\text{C}$  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 $T_A = 50^\circ\text{C}$ 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	$^\circ\text{C}$
$T_J$	Operating Junction 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.

## 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	$^\circ\text{C}/\text{W}$
$R_{\theta JL}$	Thermal Resistance, Junction to Lead, per Leg (Note 1)	20	$^\circ\text{C}/\text{W}$

1. Device mounted on PCB with  $0.5 \times 0.5$  inch ( $13 \times 13$  mm) lead length.

## ELECTRICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ 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 $V_R$	$T_A = 25^\circ\text{C}$	5.0	$\mu\text{A}$
		$T_A = 125^\circ\text{C}$	0.5	mA
$I^2t$	$I^2t$ Rating for Fusing	$t < 8.3$ ms	5.0	$\text{A}^2\text{s}$
$C_T$	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 <sup>†</sup>
MB10S	MB10S	SOIC4 W (Pb-Free)	3,000 / Tape & Reel

<sup>†</sup>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

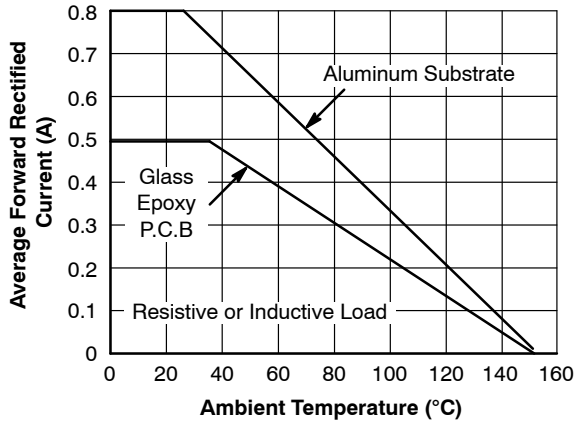


Figure 1. Derating Curve for Output Rectified Current

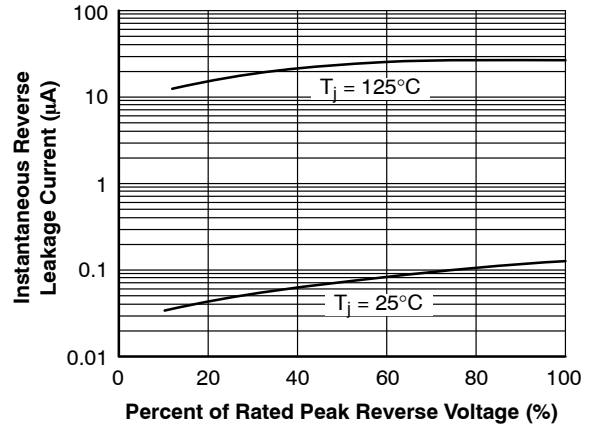


Figure 2. Typical Reverse Leakage Characteristics Per Leg

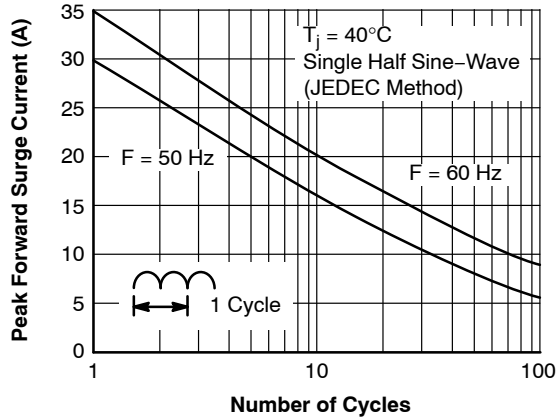


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Leg

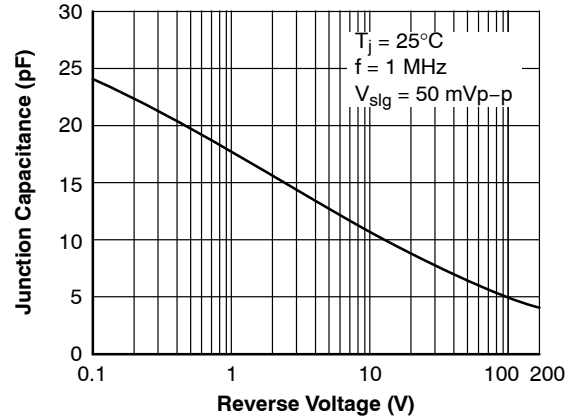


Figure 4. Typical Junction Capacitance Per Leg

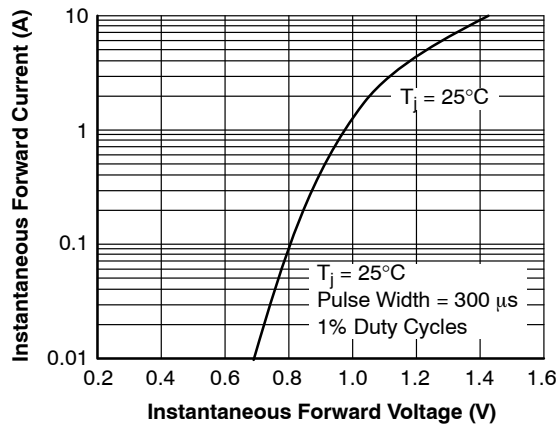


Figure 5. Typical Forward Voltage Characteristics Per Leg

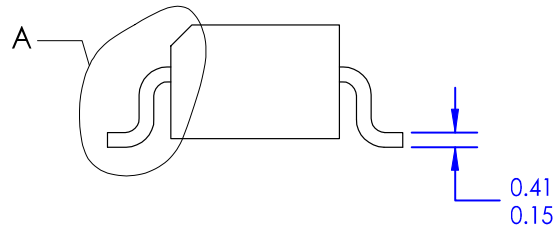
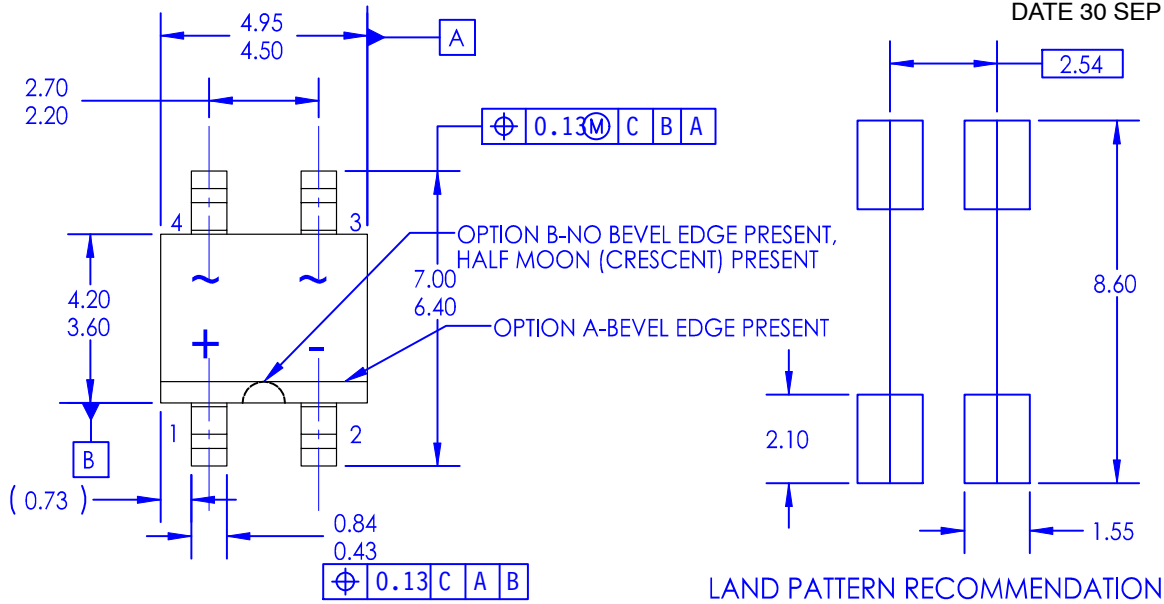
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®

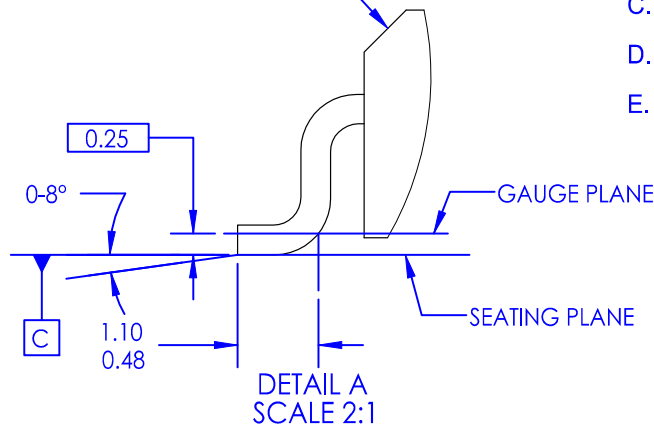


**SOIC4 W**  
**CASE 751EP**  
**ISSUE O**

DATE 30 SEP 2016



OPTION A - BEVEL EDGE



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

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