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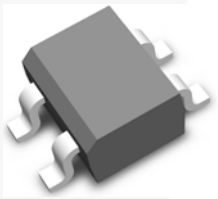
April 2014

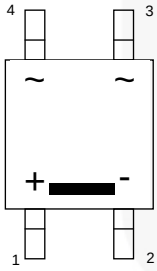
MB10S
0.5 A Bridge Rectifiers

Features

- Low-Leakage
- Surge Overload Rating: 35 A Peak
- Ideal for Printed Circuit Board
- UL Certified: UL #E258596



SOIC-4
Polarity symbols molded
or mark on body



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.

For higher I_{FAV} current ratings, lower profile packaging, or lower V_F values, explore the Fairchild MDB family of bridge rectifiers. For improved V_F and efficiency values in the MB package or even higher surge capability, ask about Fairchild's pending MBxSV family.

Ordering Information

Part Number	Marking	Package	Packing Method
MB10S	MB10S	SOIC-4	Tape and Reel

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. 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	0.5	A
		On Aluminum Substrate	0.8	
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		-55 to +150	°C

Thermal Characteristics

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

Note:

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

Electrical Characteristics

Values are at T_A = 25°C unless otherwise specified.

Symbol	Parameter	Conditions	Value	Unit
V_F	Forward Voltage, per Bridge	I_F = 0.5 A	1.0	V
I_R	Reverse Current, per Leg 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	Total Capacitance, per Leg	V_R = 4.0 V, f = 1.0 MHz	13	pF

Typical Performance Characteristics

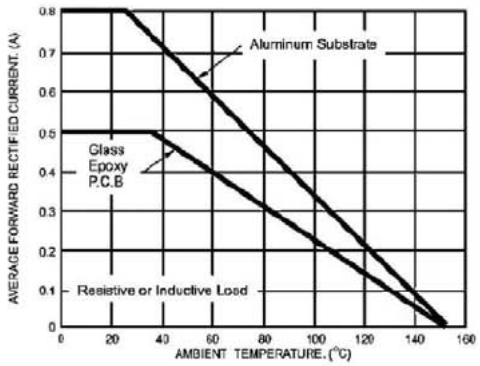


Figure 1. Derating Curve for Output Rectified Current

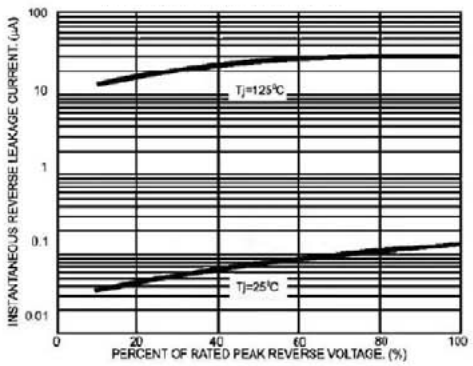


Figure 2. Typical Reverse Leakage Characteristics Per Leg

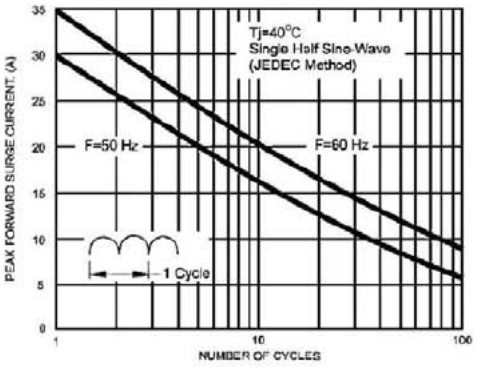


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Leg

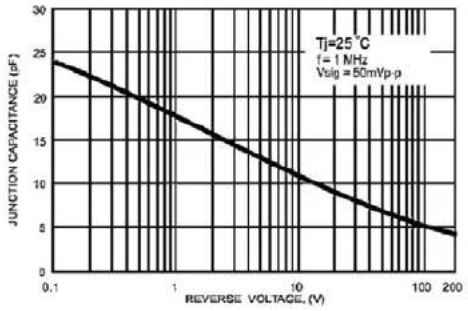


Figure 4. Typical Junction Capacitance Per Leg

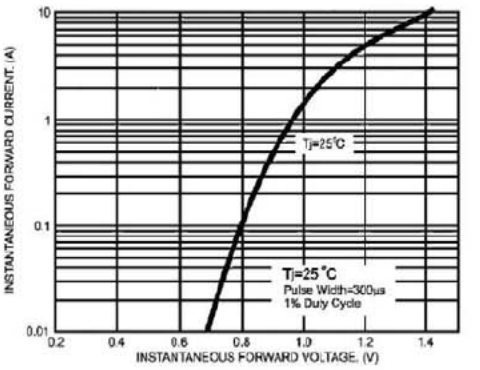
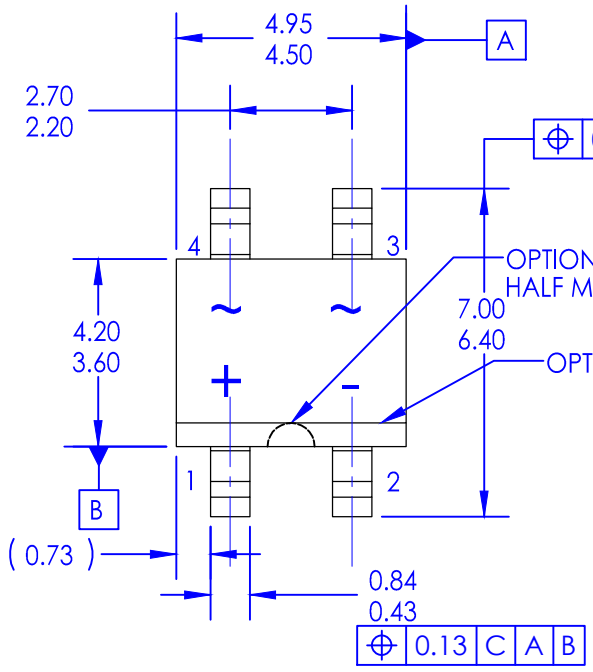
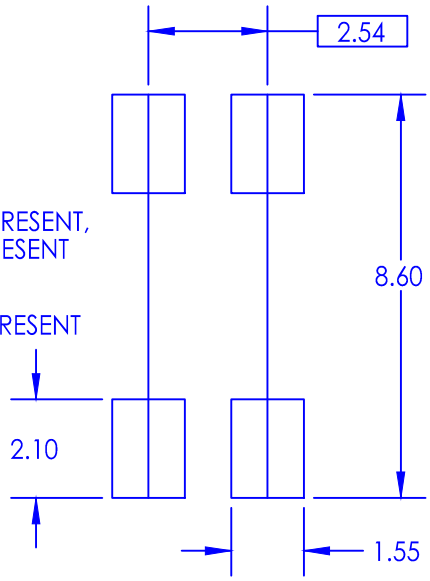
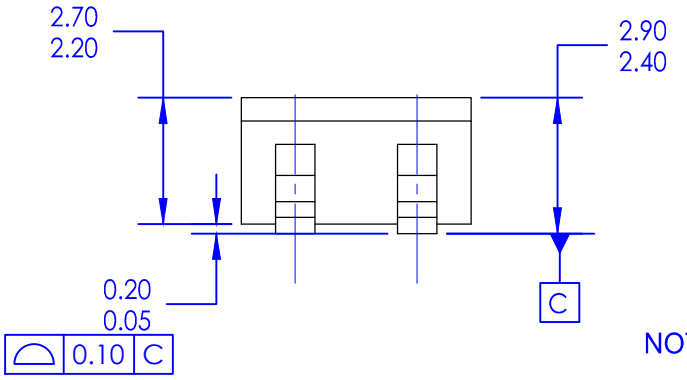


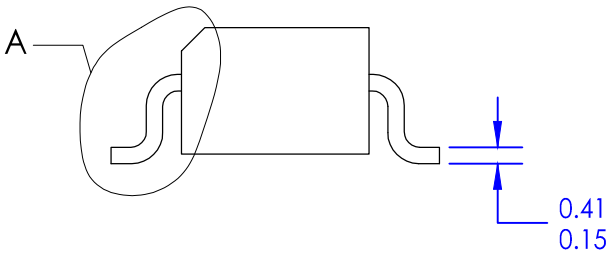
Figure 5. Typical Forward Voltage Characteristics Per Leg





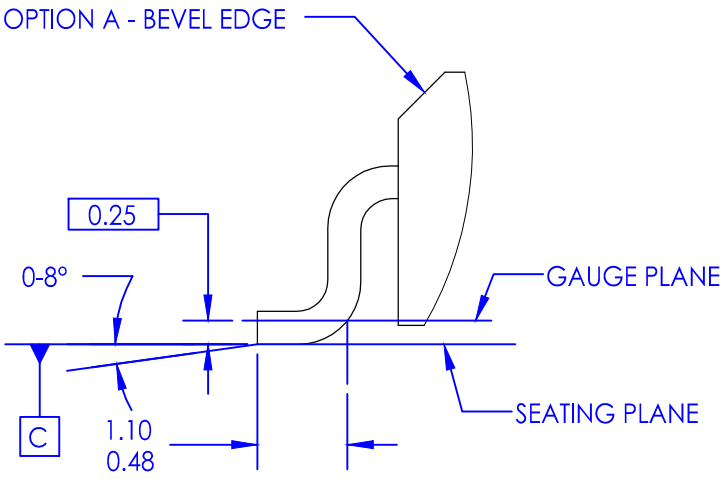
LAND PATTERN RECOMMENDATION





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
F. FILE NAME: MKT-M04AREV3



DETAIL A
SCALE 2:1

FAIRCHILD ™

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