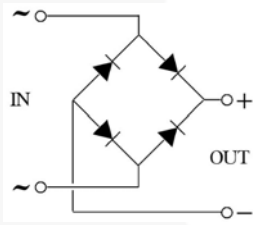
FAIRCHILD SEMICONDUCTOR®

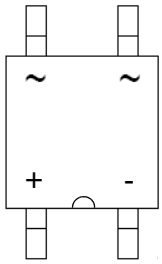
October 2013

MDB6S / MDB8S / MDB10S
1 A, MicroDIP, Single-Phase Bridge Rectifiers

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
- RoHS Compliant
- Halogen Free
- UL Certification: E352360





Micro DIP

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^2 of board space.

Ordering Information

Part Number	Marking	Package	Packing Method
MDB6S	MDB6S	Micro DIP	Tape and Reel
MDB8S	MDB8S		
MDB10S	MDB10S		

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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			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 (1)	1.0			A
I_{FSM}	Peak Forward Surge Current (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

Notes:

1. 60 Hz sine wave, R-load, T_A = 25°C on FR-4 PCB.
2. 60 Hz sine wave, Non-repetitive 1 cycle peak value, T_J = 25°C.

Thermal Characteristics(3)

Symbol	Parameter		Typ.	Units
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	Measurement with Dual Dice	250	°C/W
		Measurement with Single Die	150	°C/W
Ψ_{JL}	Thermal Characterization, Junction to Lead	Measured at Anode pin	57	°C/W
		Measured at Cathode pin	15	°C/W

Note:

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	Test condition	Value	Units
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	V_R = 4 V, f = 1 MHz	10	pF

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Typical Performance Characteristics

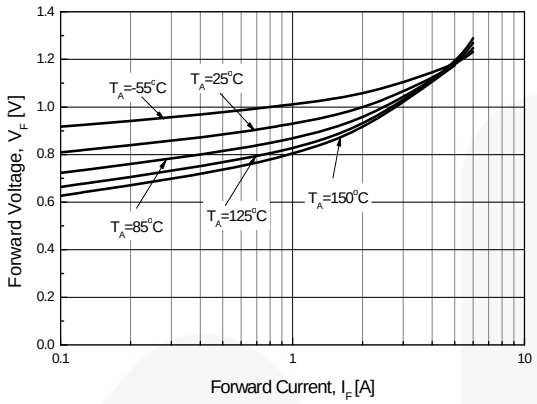

Figure 1. Forward Voltage vs Forward Current (Per diode)

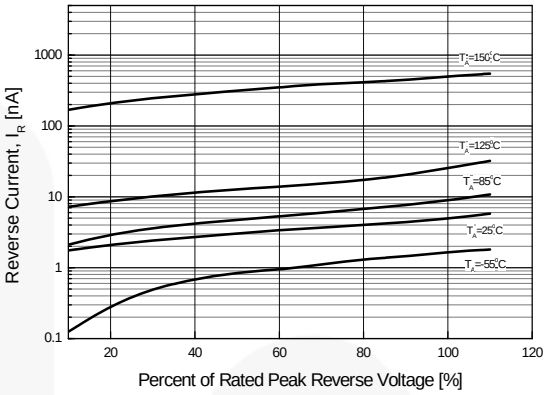

Figure 2. Typical Reverse Current Characteristics (Per Diode)

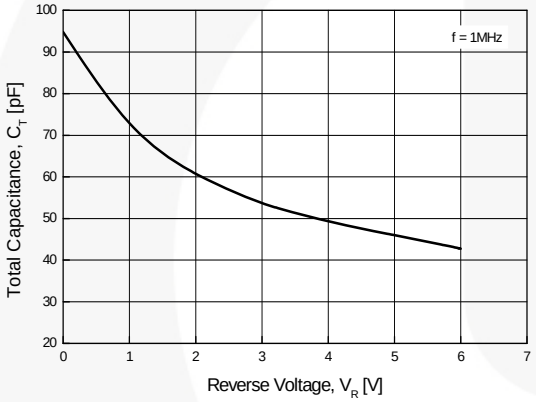

Figure 3. Total Capacitance

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Physical Dimension

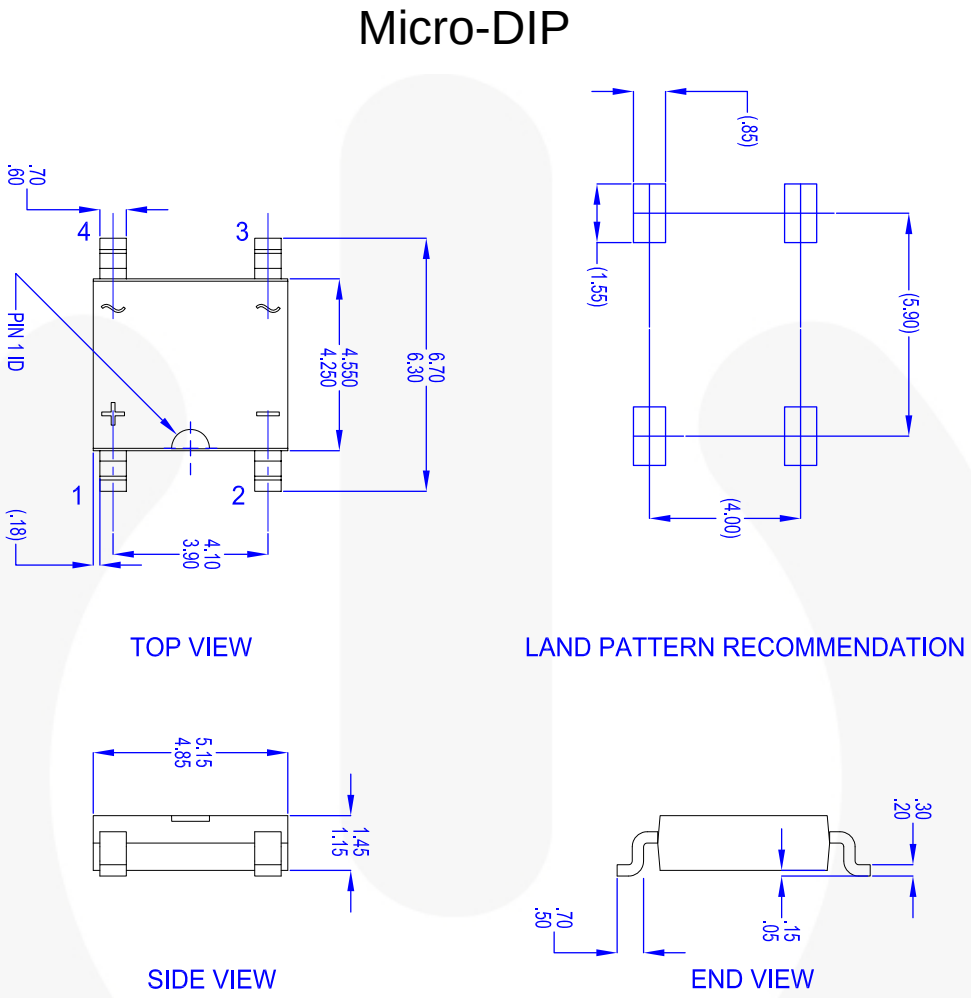

Figure 4. 4-LEAD, MIRCRO SURFACE MOUNT, 1.3 x 4 x 5 mm (Active)

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