MBR860MFS, NRVB860MFS

SWITCHMODE Power Rectifiers

These state−of−the−art devices have the following features:

Features

- Low Power Loss / High Efficiency
- New Package Provides Capability of Inspection and Probe After Board Mounting
- Guardring for Stress Protection
- Low Forward Voltage Drop
- 175°C Operating Junction Temperature
- Wettable Flacks Option Available
- NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These are Pb−Free Devices

Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94−0 @ 0.125 in.
- Lead Finish: 100% Matte Sn (Tin)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL 1 Requirements

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	 60	V
Average Rectified Forward Current (Rated V_R, T_C = 165°C)	$I_{F(AV)}$	8.0	A
Peak Repetitive Forward Current, (Rated V_R, Square Wave, 20 kHz, T_C = 165°C)	I_{FRM}	16	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	150	A
Storage Temperature Range	T_{stg}	−65 to +175	°C
Operating Junction Temperature	T_J	−55 to +175	°C
Unclamped Inductive Switching Energy (10 mH Inductor, Non−repetitive)	E_{AS}	40	mJ
ESD Rating (Human Body Model)		3B	
ESD Rating (Machine Model)		M4	

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

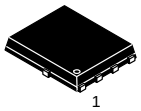
NOTE: The heat generated must be less than the thermal conductivity from Junction−to−Ambient: dPD/dTJ < 1/RJA.

ON Semiconductor®

http://onsemi.com

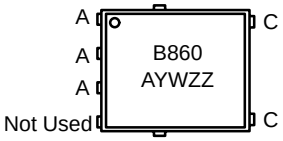
SCHOTTKY BARRIER RECTIFIERS 8 AMPERES 60 VOLTS





SO−8 FLAT LEAD CASE 488AA STYLE 2

MARKING DIAGRAM



B860	= Specific Device Code
A	= Assembly Location
Y	= Year
W	= Work Week
ZZ	= Lot Traceability

ORDERING INFORMATION

Device	Package	Shipping†
MBR860MFST1G	SO−8 FL (Pb−Free)	1500 / Tape & Reel
MBR860MFST3G	SO−8 FL (Pb−Free)	5000 / Tape & Reel
NRVB860MFST1G	SO−8 FL (Pb−Free)	1500 / Tape & Reel
NRVB860MFST3G	SO−8 FL (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 Specification Brochure, BRD8011/D.

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THERMAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction−to−Case, Steady State (Assumes 600 mm^2 1 oz. copper bond pad, on a FR4 board)	$R_{\theta JC}$	−	2.0	°C/W

ELECTRICAL CHARACTERISTICS

Instantaneous Forward Voltage (Note 1) (i_F = 8 Amps, T_J = 125°C) (i_F = 8 Amps, T_J = 25°C)	v_F	 0.60 0.65	 0.72 0.80	V
Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_J = 125°C) (Rated dc Voltage, T_J = 25°C)	i_R	 25 0.015	 75 0.150	mA

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

TYPICAL CHARACTERISTICS

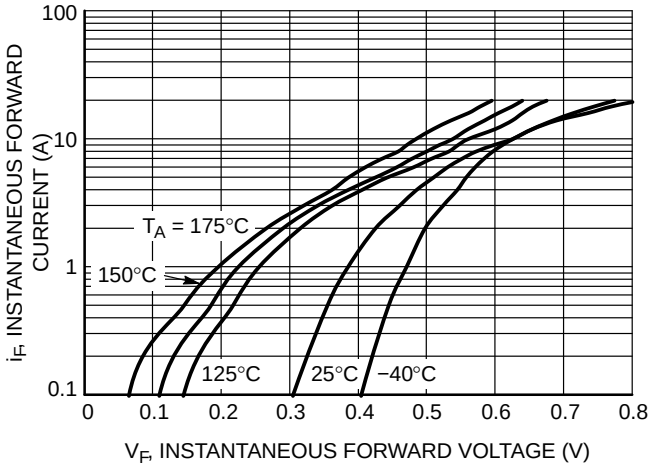


Figure 1. Typical Instantaneous Forward Characteristics

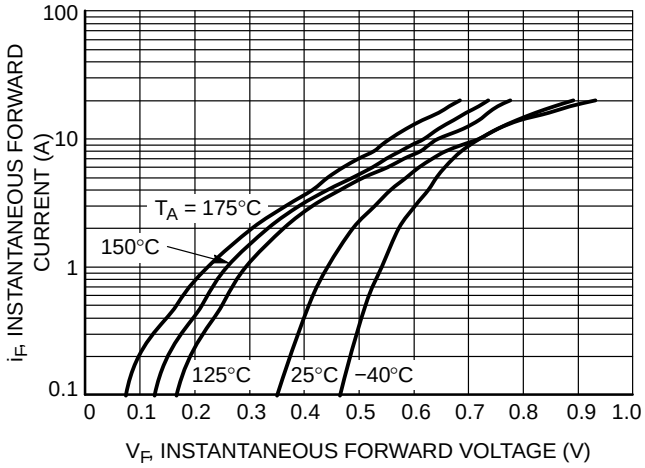


Figure 2. Maximum Instantaneous Forward Characteristics

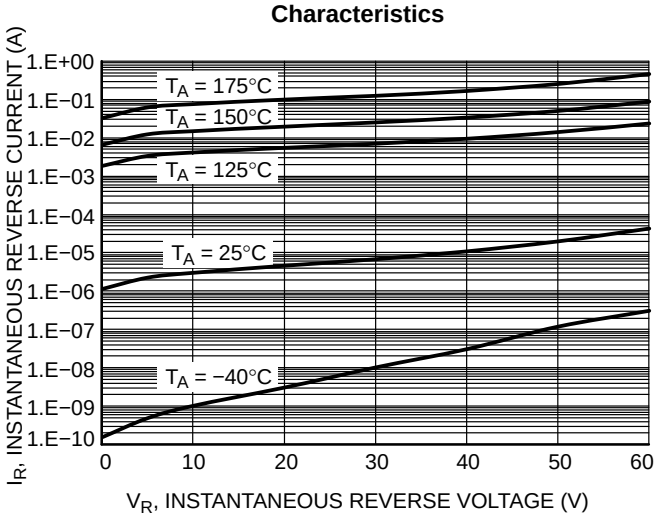


Figure 3. Typical Reverse Characteristics

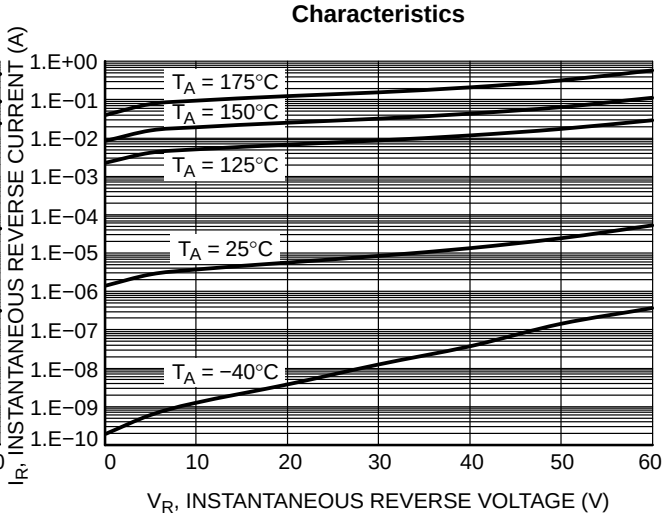


Figure 4. Maximum Reverse Characteristics

TYPICAL CHARACTERISTICS

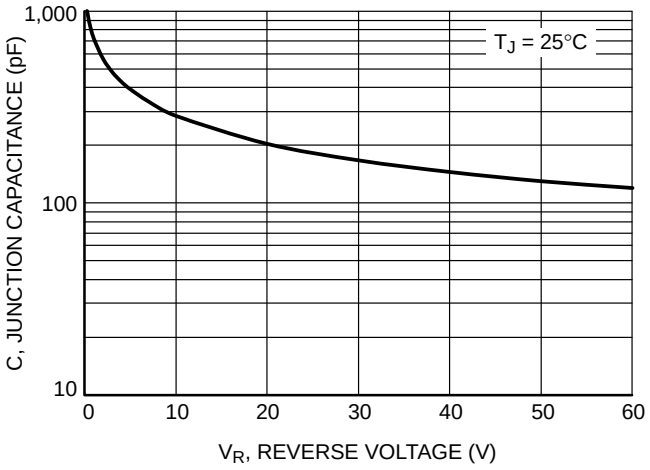


Figure 5. Typical Junction Capacitance

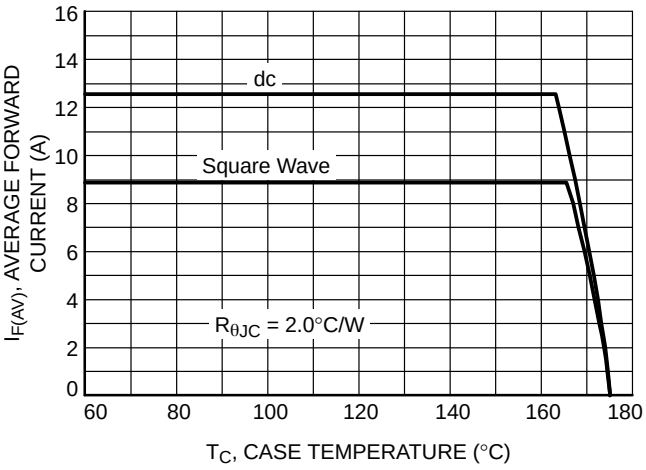


Figure 6. Current Derating TO−220AB

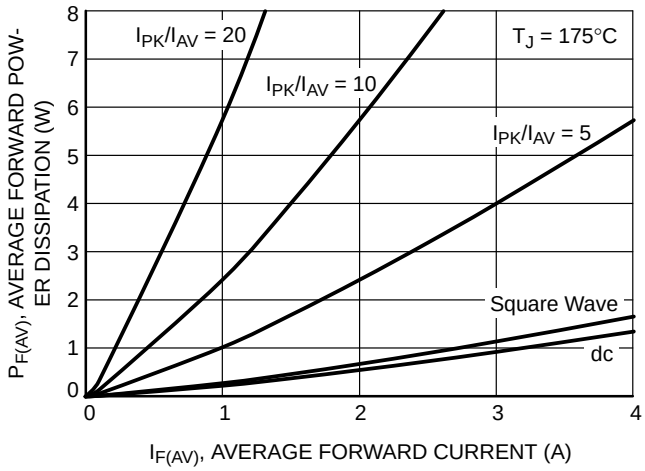


Figure 7. Forward Power Dissipation

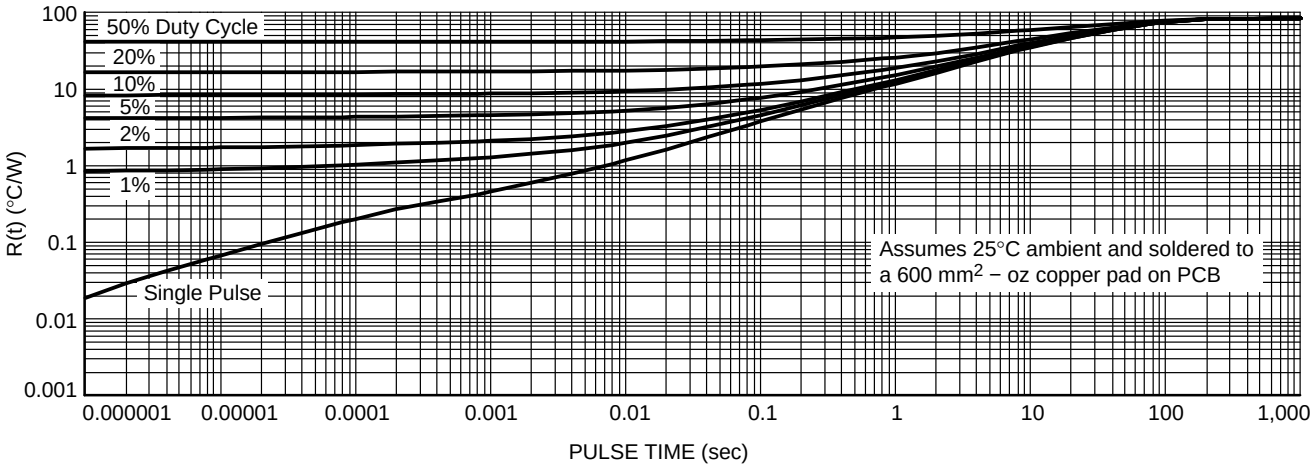
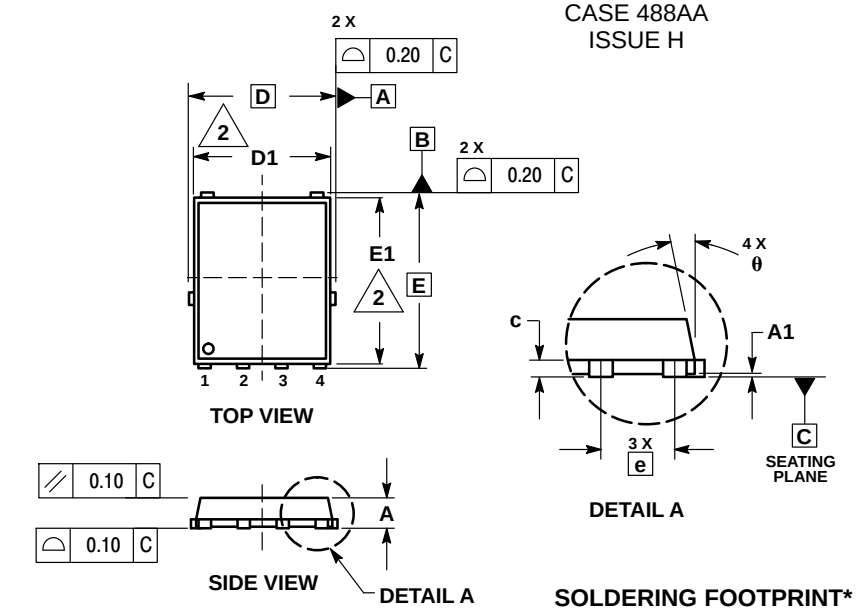


Figure 8. Thermal Response

PACKAGE DIMENSIONS

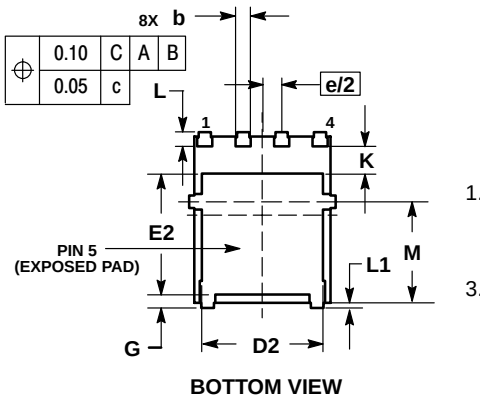
DFN6 5x6, 1.27P
(SO−8FL)
CASE 488AA
ISSUE H



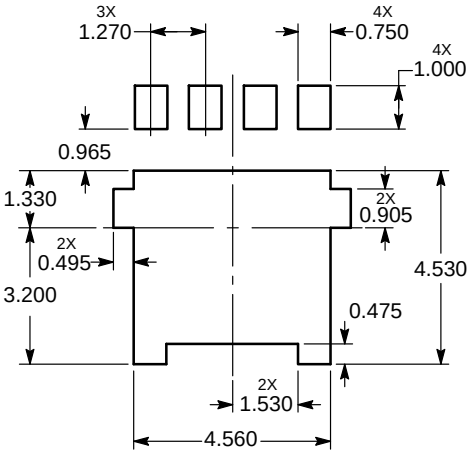
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0.00	−−−	0.05
b	0.33	0.41	0.51
c	0.23	0.28	0.33
D		5.15 BSC	
D1	4.70	4.90	5.10
D2	3.80	4.00	4.20
E		6.15 BSC	
E1	5.70	5.90	6.10
E2	3.45	3.65	3.85
e		1.27 BSC	
G	0.51	0.61	0.71
K	1.20	1.35	1.50
L	0.51	0.61	0.71
L1	0.05	0.17	0.20
M	3.00	3.40	3.80
θ	0 °	−−−	12 °

STYLE 2:
PIN 1. ANODE
2. ANODE
3. ANODE
4. NO CONNECT
5. CATHODE



SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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