

# Switch-mode Power Rectifiers MBR560MFS, NRVB560MFS

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
- NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- Wettable Flanks Option available
- 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
- The Heat Generated must be less than the Thermal Conductivity from Junction-to-Ambient:  $dPD/dTJ < 1/RJA$

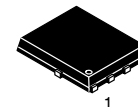
## MAXIMUM RATINGS

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 $V_R$ , $T_C = 160^\circ\text{C}$ )	$I_{F(AV)}$	5.0	A
Peak Repetitive Forward Current, (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 165^\circ\text{C}$ )	$I_{FRM}$	10	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	100	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)	$E_{AS}$	10	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.

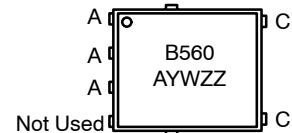
## SCHOTTKY BARRIER RECTIFIERS 5 AMPERES 60 VOLTS

1,2,3  5,6



SO-8 FLAT LEAD  
CASE 488AA  
STYLE 2

## MARKING DIAGRAM



B560 = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
ZZ = Lot Traceability

## ORDERING INFORMATION

Device	Package	Shipping†
NRVB560MFST1G	SO-8 FL (Pb-Free)	1500 / Tape & Reel
NRVB560MFST3G	SO-8 FL (Pb-Free)	5000 / Tape & Reel

## DISCONTINUED (Note 1)

MBR560MFST1G	TO-220 (Pb-Free)	1500 / Tape & Reel
MBR560MFST3G	TO-220 (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 Specifications Brochure, [BRD8011/D](http://BRD8011/D).

1. **DISCONTINUED:** This device is not recommended for new design. Please contact your onsemi representative for information. The most current information on this device may be available on [www.onsemi.com](http://www.onsemi.com).

## MBR560MFS, NRVB560MFS

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction-to-Case, Steady State (Assumes 600 mm <sup>2</sup> 1 oz. copper bond pad, on a FR4 board)	$R_{\theta JC}$	–	2.4	°C/W

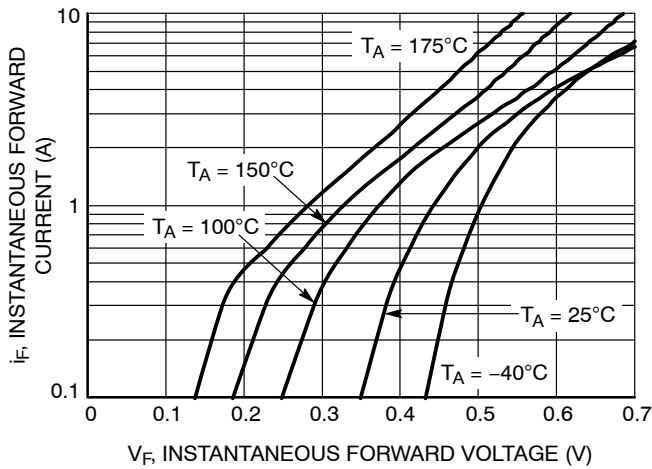
### ELECTRICAL CHARACTERISTICS

Instantaneous Forward Voltage (Note 1) ( $i_F = 5$ Amps, $T_J = 100^\circ\text{C}$ ) ( $i_F = 5$ Amps, $T_J = 25^\circ\text{C}$ )	$V_F$	0.60 0.65	0.72 0.78	V
Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 100^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 25^\circ\text{C}$ )	$i_R$	1.5 0.015	2.5 0.150	mA

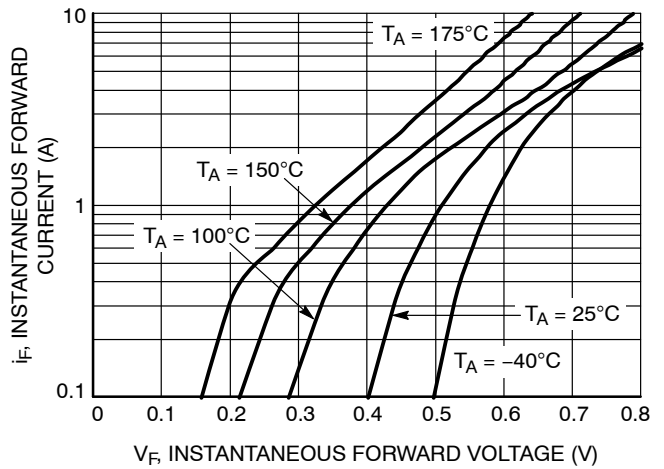
1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

# MBR560MFS, NRVB560MFS

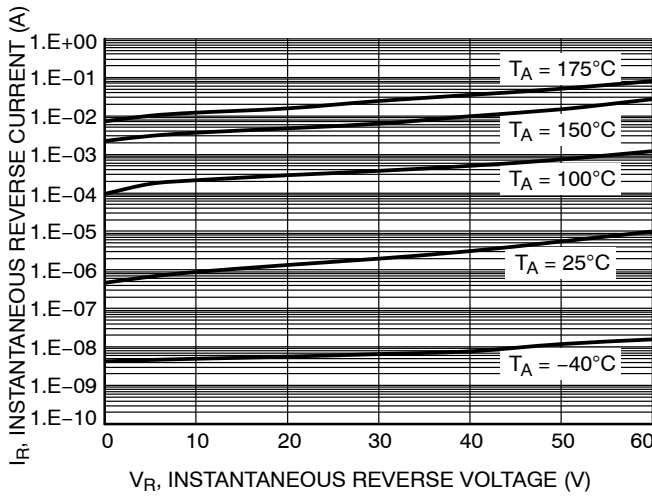
## TYPICAL CHARACTERISTICS



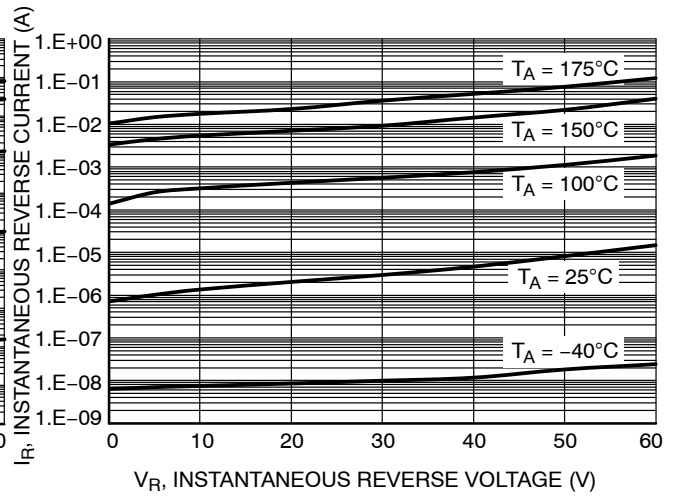
**Figure 1. Typical Instantaneous Forward Characteristics**



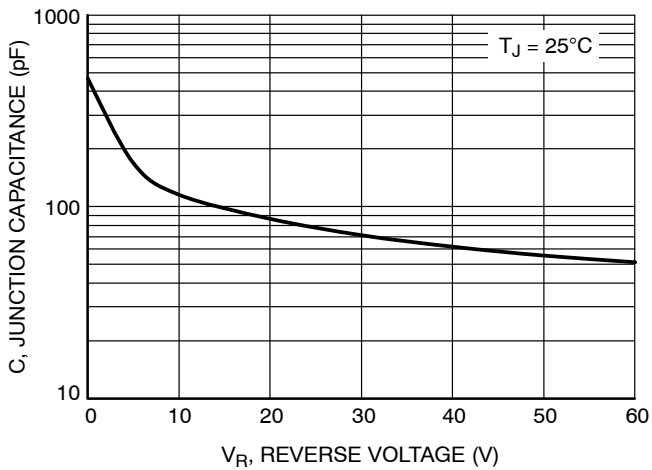
**Figure 2. Maximum Instantaneous Forward Characteristics**



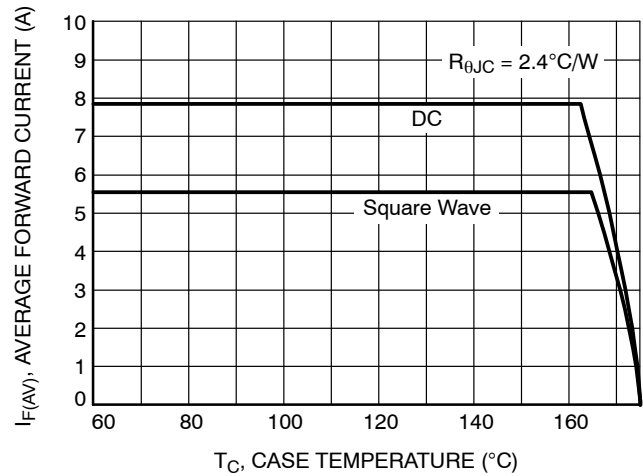
**Figure 3. Typical Reverse Characteristics**



**Figure 4. Maximum Reverse Characteristics**



**Figure 5. Typical Junction Capacitance**



**Figure 6. Current Derating TO-220AB**

# MBR560MFS, NRVB560MFS

## TYPICAL CHARACTERISTICS

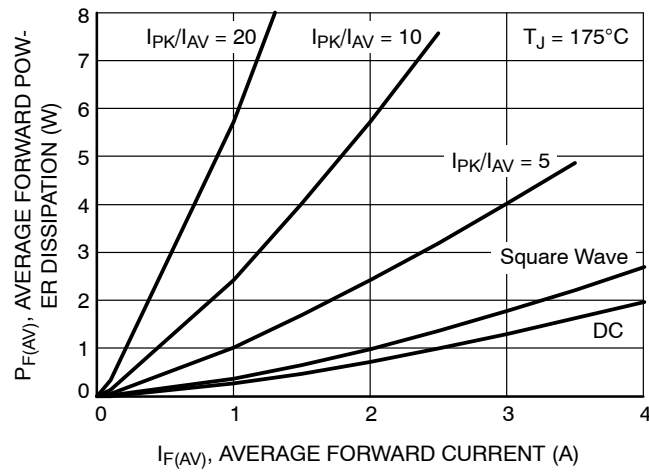


Figure 7. Forward Power Dissipation

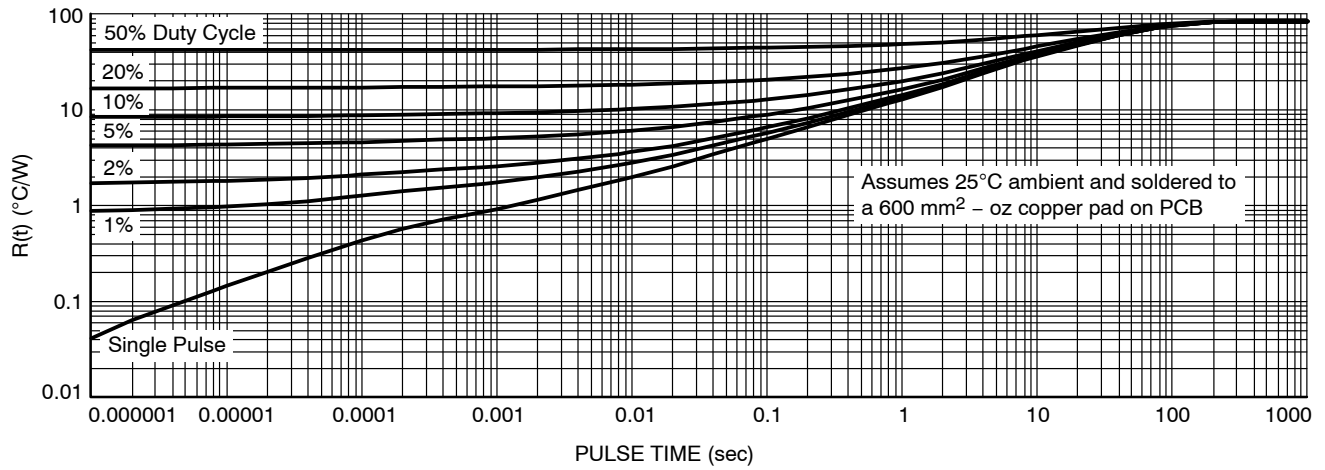


Figure 8. Thermal Characteristics

## MBR560MFS, NRVB560MFS

### REVISION HISTORY

Revision	Description of Changes	Date
2	MBR560MFST1G, MBR560MFST3G OPN Marked as Discontinued + Rebranded the Data Sheet to onsemi format	6/25/2025



SCALE 2:1

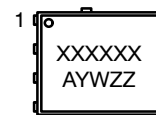
**DFN5 5x6, 1.27P**  
**(SO-8FL)**  
**CASE 488AA**  
**ISSUE N**

DATE 25 JUN 2018

## NOTES:

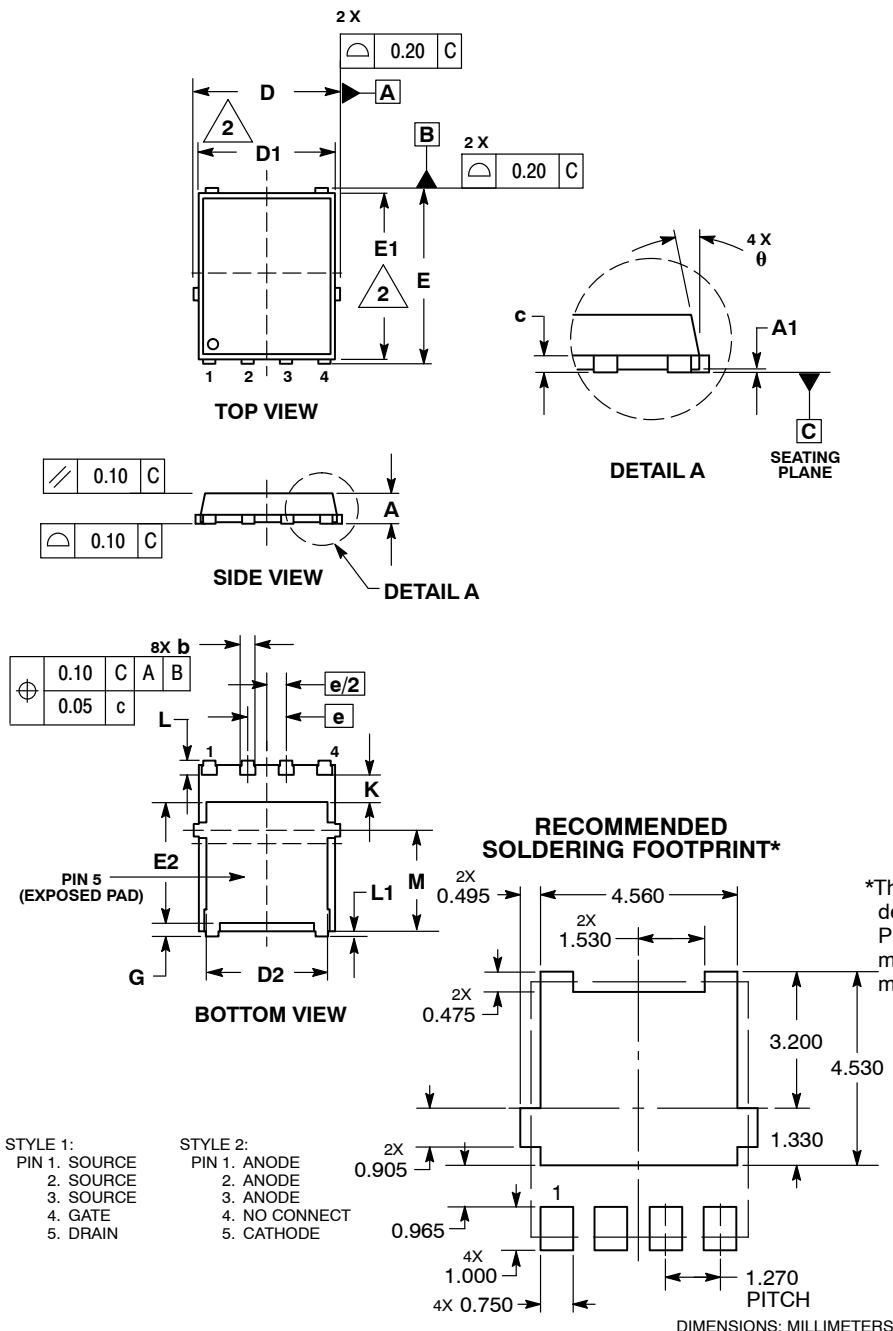
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM	MILLIMETERS		
	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	5.00	5.15	5.30
D1	4.70	4.90	5.10
D2	3.80	4.00	4.20
E	6.00	6.15	6.30
E1	5.70	5.90	6.10
E2	3.45	3.65	3.85
e	1.27 BSC		
G	0.51	0.575	0.71
K	1.20	1.35	1.50
L	0.51	0.575	0.71
L1	0.125 REF		
M	3.00	3.40	3.80
θ	0°	---	12°

**GENERIC**  
**MARKING DIAGRAM\***


XXXXXX = Specific Device Code  
A = Assembly Location  
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\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



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

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<b>DESCRIPTION:</b>	<b>DFN5 5x6, 1.27P (SO-8FL)</b>	<b>PAGE 1 OF 1</b>

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