

MBR5H100MFS, NRVB5H100MFS

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
- 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	100	V
Average Rectified Forward Current (Rated V_R , $T_C = 150^\circ\text{C}$)	$I_{F(AV)}$	5	A
Peak Repetitive Forward Current, (Rated V_R , Square Wave, 20 kHz, $T_C = 150^\circ\text{C}$)	I_{FRM}	10	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	200	A
Storage Temperature Range	T_{stg}	-65 to +175	°C
Operating Junction Temperature	T_J	-55 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/ μs
Unclamped Inductive Switching Energy (10 mH Inductor, Non-repetitive)	E_{AS}	100	mJ
ESD Rating (Human Body Model)		3B	
ESD Rating (Machine Model)		C	

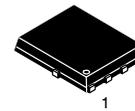
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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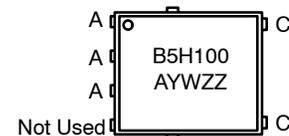
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SCHOTTKY BARRIER RECTIFIERS 5 AMPERES 100 VOLTS



SO-8 FLAT LEAD
CASE 488AA
STYLE 2

MARKING DIAGRAM



B5H100 = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
ZZ = Lot Traceability

ORDERING INFORMATION

Device	Package	Shipping†
MBR5H100MFST1G	SO-8 FL (Pb-Free)	1500 / Tape & Reel
MBR5H100MFST3G	SO-8 FL (Pb-Free)	5000 / Tape & Reel
NRVB5H100MFST1G	SO-8 FL (Pb-Free)	1500 / Tape & Reel
NRVB5H100MFST3G	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)	$R_{\theta JC}$	-	2.4	°C/W

ELECTRICAL CHARACTERISTICS

Instantaneous Forward Voltage (Note 1) ($i_F = 5$ Amps, $T_J = 125^\circ\text{C}$) ($i_F = 5$ Amps, $T_J = 25^\circ\text{C}$)	V_F	0.56	0.6	V
		0.6	0.73	
Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 125^\circ\text{C}$) (Rated dc Voltage, $T_J = 25^\circ\text{C}$)	i_R	3	13	mA
		0.003	0.1	

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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TYPICAL CHARACTERISTICS

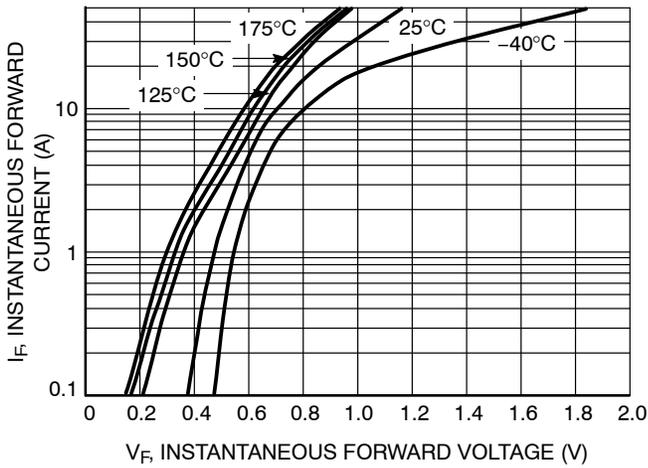


Figure 1. Typical Instantaneous Forward Characteristics

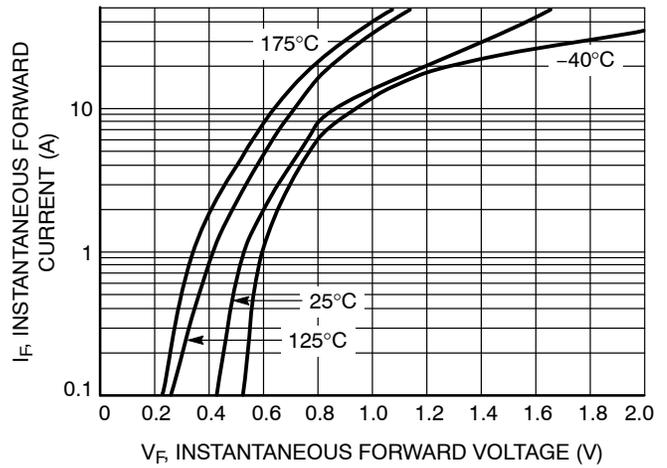


Figure 2. Maximum Instantaneous Forward Characteristics

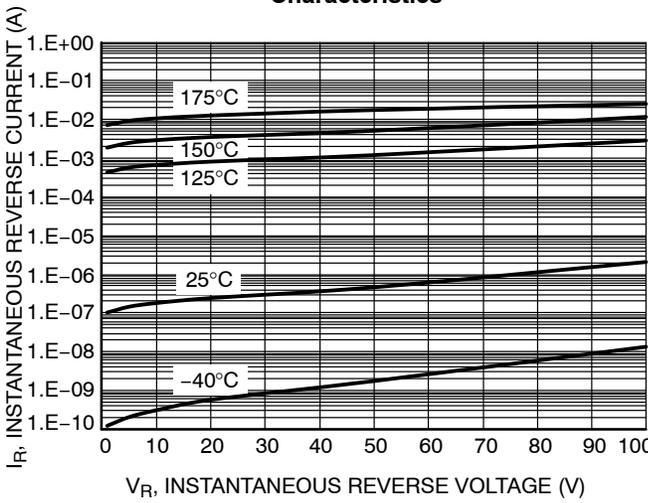


Figure 3. Typical Reverse Current Characteristics

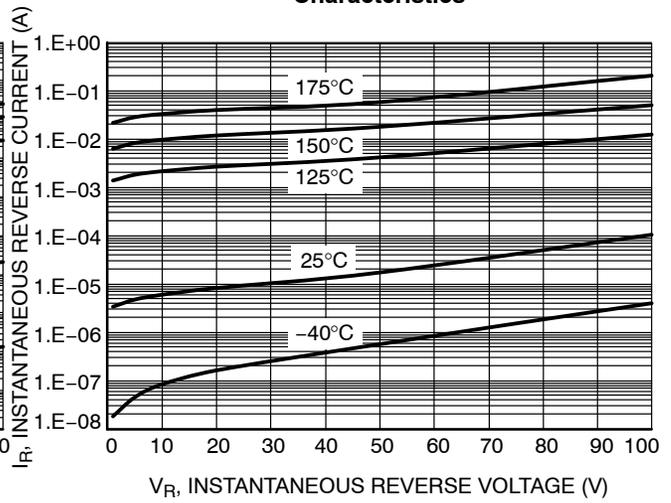


Figure 4. Maximum Reverse Current Characteristics

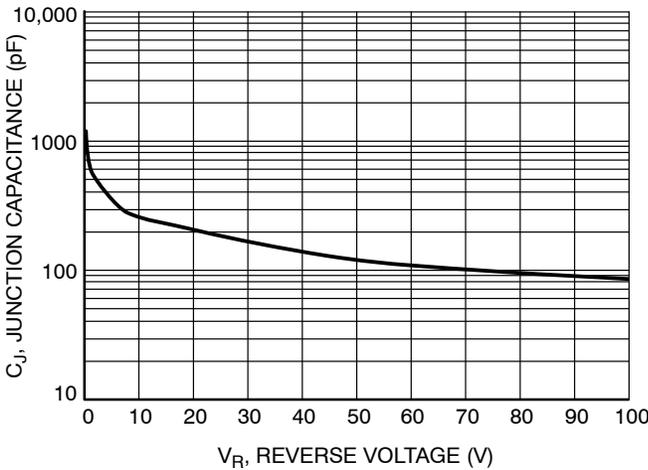


Figure 5. Typical Junction Capacitance

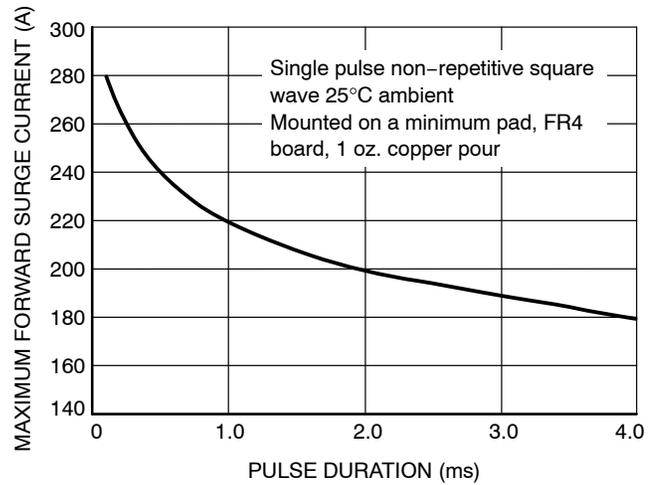


Figure 6. Forward Surge Safe Operating Area

MBR5H100MFS, NRVB5H100MFS

TYPICAL CHARACTERISTICS

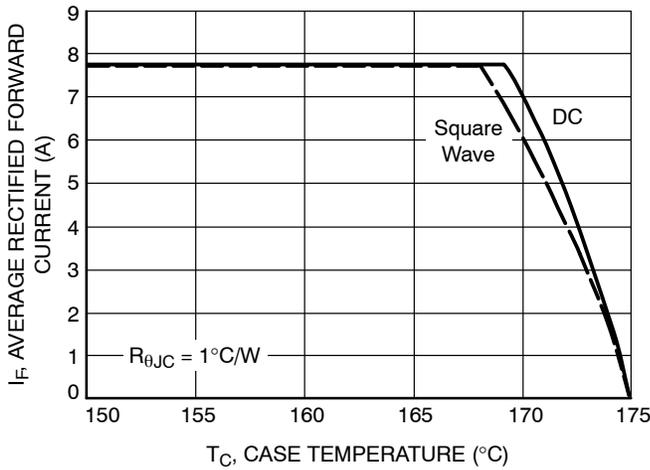


Figure 7. Forward Current Derating Over Case Temperature

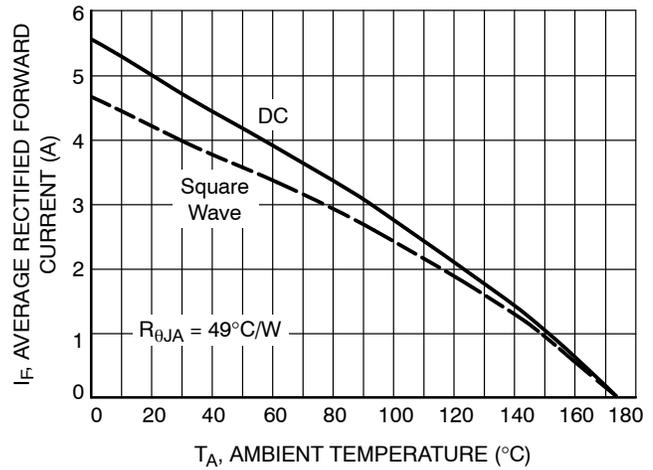


Figure 8. Forward Current Derating Over Ambient Temperature

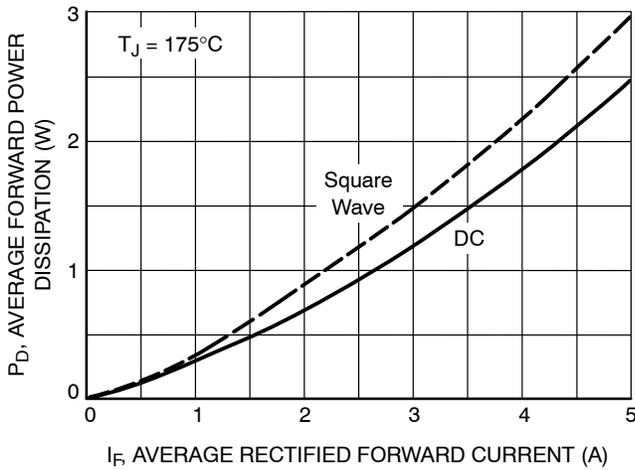


Figure 9. Maximum Forward Power Dissipation

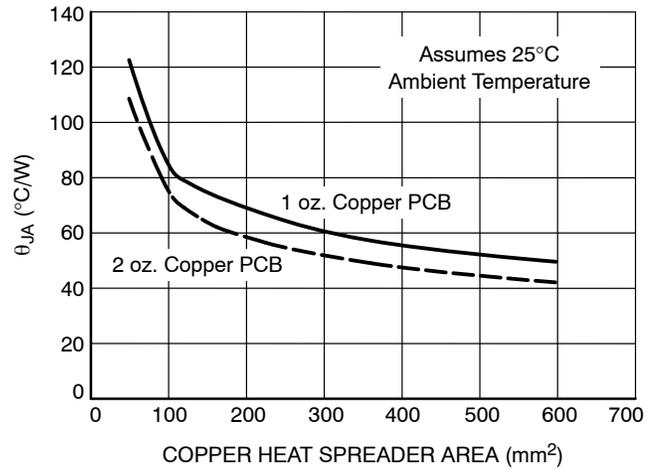


Figure 10. Steady State Junction to Ambient Thermal Resistance

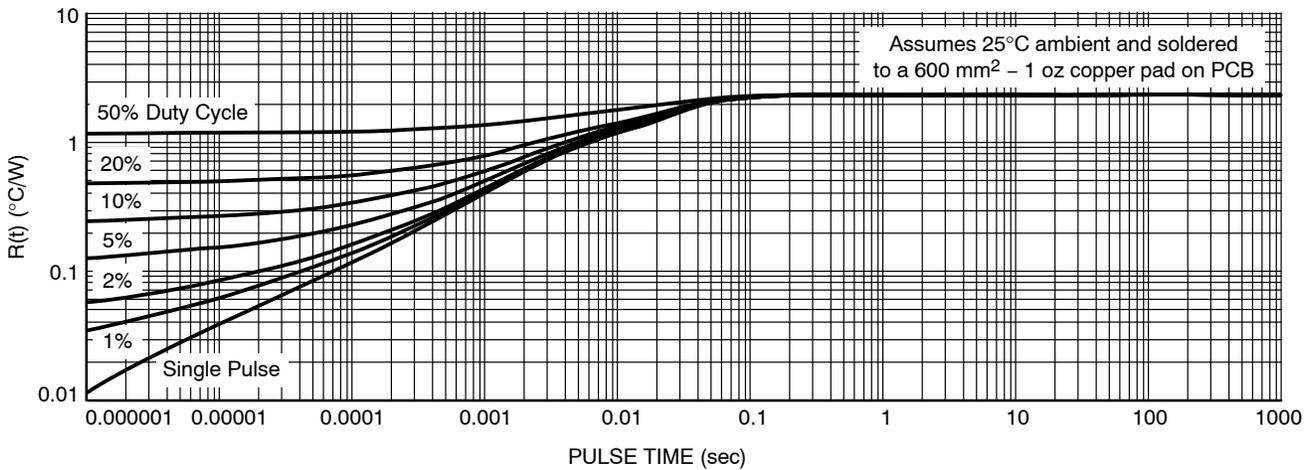
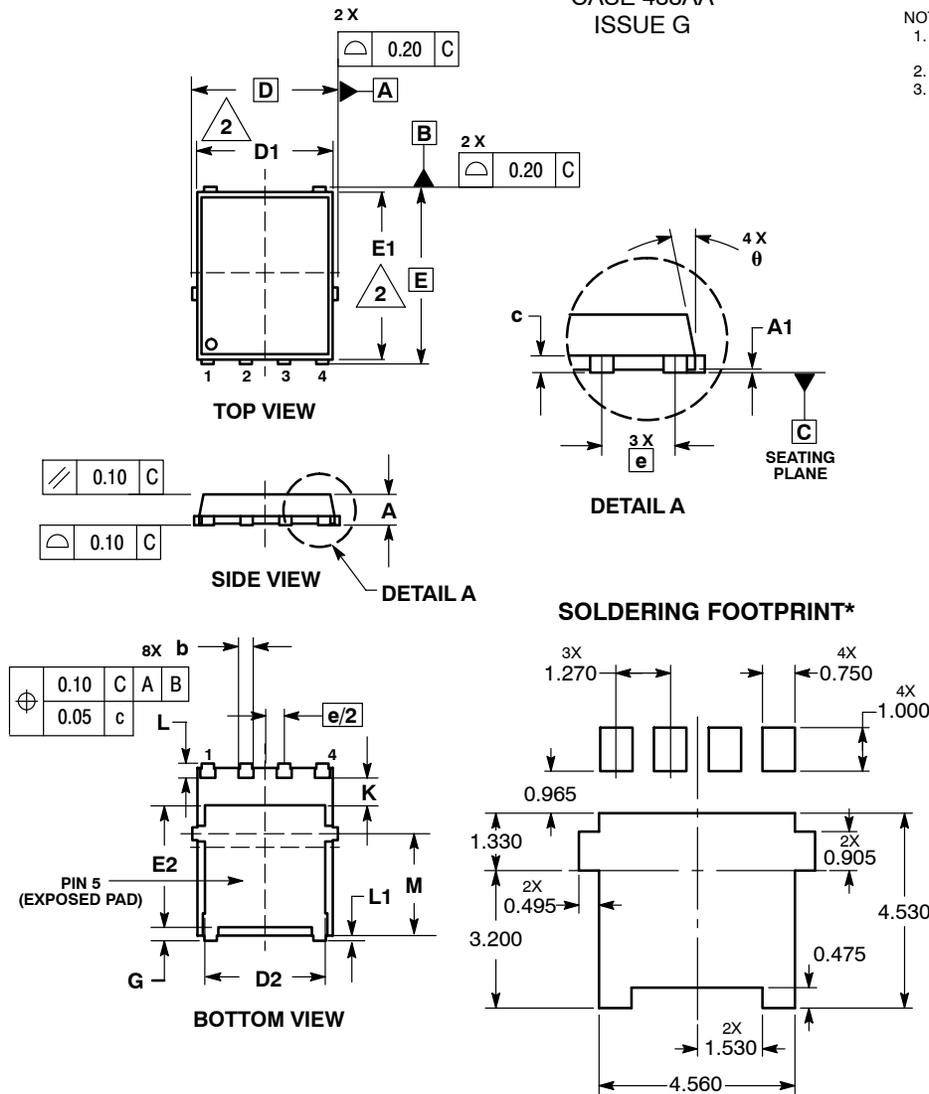


Figure 11. Transient Thermal Response, Junction to Case

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PACKAGE DIMENSIONS

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



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	4.50	4.90	5.10
D2	3.50	---	4.22
E	6.15 BSC		
E1	5.50	5.80	6.10
E2	3.45	---	4.30
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:

1. ANODE
2. ANODE
3. ANODE
4. NO CONNECT
5. CATHODE

*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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