ON Semiconductor

Is Now



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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
- 150°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 and Halide-Free Devices

Mechanical Characteristics:

- Case: Epoxy, Molded
- 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	30	V
Average Rectified Forward Current (Rated V_R , $T_C = 143^{\circ}C$)	I _{F(AV)}	8.0	Α
Peak Repetitive Forward Current, (Rated V_R , Square Wave, 20 kHz, $T_C = 143^{\circ}C$)	I _{FRM}	16	Α
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 +150	°C
Operating Junction Temperature	TJ	-40 to +150	°C
Unclamped Inductive Switching Energy (10 mH Inductor, Non-repetitive)	E _{AS}	100	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.



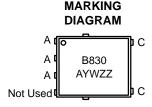
ON Semiconductor®

http://onsemi.com

SCHOTTKY BARRIER RECTIFIERS 8 AMPERES 30 VOLTS







B830 = Specific Device Code A = Assembly Location

 $egin{array}{ll} Y &= \mbox{Year} \ &= \mbox{Work Week} \ &= \mbox{Lot Traceability} \ \end{array}$

ORDERING INFORMATION

Device	Package	Shipping†
MBR830MFST1G	SO-8 FL (Pb-Free)	1500 / Tape & Reel
MBR830MFST3G	SO-8 FL (Pb-Free)	5000 / Tape & Reel
NRVB830MFST1G	SO-8 FL (Pb-Free)	1500 / Tape & Reel
NRVB830MFST3G	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.

THERMAL CHARACTERISTICS

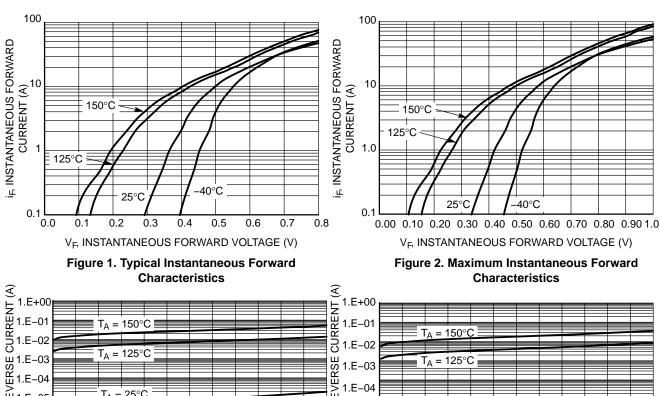
(Rated dc Voltage, T_J = 125°C)

(Rated dc Voltage, T_J = 25°C)

Characteristic	Symbol	Тур	Max	Unit
Thermal Resistance, Junction–to–Case, Steady State (Assumes 600 mm² 1 oz. copper bond pad, on a FR4 board)	$R_{ heta JC}$	-	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)	VF	0.44 0.50	0.57 0.70	V
Instantaneous Reverse Current (Note 1)	i _R			mA

Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.

TYPICAL CHARACTERISTICS



Characteristics (¥) 1.E+00 2 1.E-01 0 1.E-02 1.E-03 1.E-04 1.E-05 1.E-06 1.E-06 1.E-08 1.E-08 1.E-09 $T_A = 25^{\circ}C$ = -40°C 30 20 10 15 V_R, INSTANTANEOUS REVERSE VOLTAGE (V)

15

0.020

50

0.200

V_R, INSTANTANEOUS REVERSE VOLTAGE (V) Figure 3. Typical Reverse Characteristics

15

20

 $T_A = 125^{\circ}C$

 $T_A = 25^{\circ}C$

 $T_A = -40^{\circ}C$

10

Figure 4. Maximum Reverse Characteristics

25

₩1.E-05

2 1.E-06 2 1.E-07 2 1.E-08 2 1.E-10

<u>~</u>

TYPICAL CHARACTERISTICS

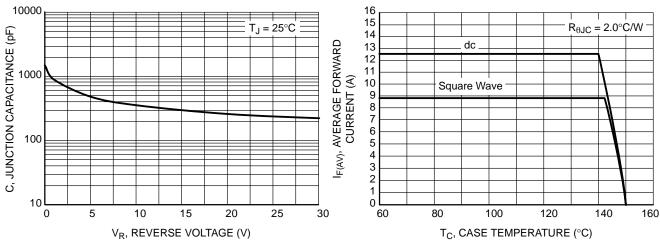


Figure 5. Typical Junction Capacitance

Figure 6. Current Derating TO-220AB

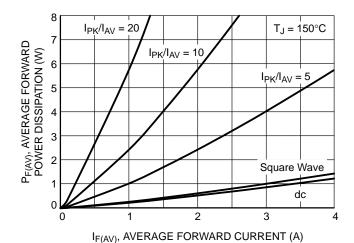


Figure 7. Forward Power Dissipation

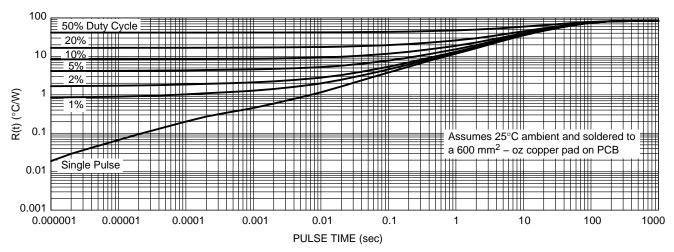
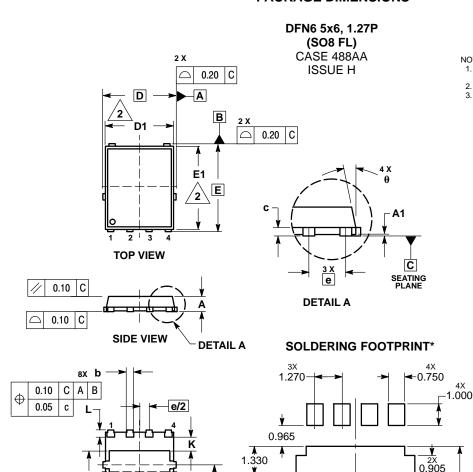


Figure 8. Thermal Response

PACKAGE DIMENSIONS



2X 0.495 ➤

3.200

М

NOTES:

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

	MILLIMETERS			
DIM	MIN	NOM	MAX	
Α	0.90	1.00	1.10	
A1	0.00		0.05	
b	0.33	0.41	0.51	
С	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	
е	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	
М	3.00	3.40	3.80	
θ	0 °		12 °	

STYLE 2: PIN 1. ANODE

4.530

0.475

- ANODE
- 3. ANODE
- 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.

2X

→ 1.530 4.560

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PUBLICATION ORDERING INFORMATION

E2

G

D2

BOTTOM VIEW

PIN 5

(EXPOSED PAD)

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