

# MBRB4030G, NRVBB4030T4G

Preferred Device

## SWITCHMODE Power Rectifier

These state-of-the-art devices use the Schottky Barrier principle with a proprietary barrier metal.

### Features

- Guardring for Stress Protection
- Maximum Die Size
- 175°C Operating Junction Temperature
- Short Heat Sink Tab Manufactured – Not Sheared
- AEC-Q101 Qualified and PPAP Capable
- NRVBB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- All Packages are Pb-Free\*

### Mechanical Characteristics:

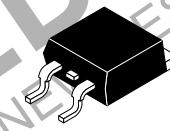
- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 1.7 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads Readily Solderable
- Device Meets MSL1 Requirements
- ESD Ratings:
  - ◆ Machine Model = C (> 400 V)
  - ◆ Human Body Model = 3B (> 8000 V)



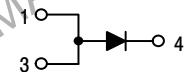
ON Semiconductor®

<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIER 40 AMPERES, 30 VOLTS



D<sup>2</sup>PAK  
CASE 418B  
STYLE 3



MARKING DIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
B4030	= Device Code
G	= Pb-Free Package
AKA	= Diode Polarity

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

**Preferred** devices are recommended choices for future use and best overall value.

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

# MBRB4030G, NRVBB4030T4G

## 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 (At Rated $V_R$ ) $T_C = +115^\circ\text{C}$ (Note 1)	$I_{F(AV)}$	40	A
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 20 kHz), $T_C = +112^\circ\text{C}$	$I_{FRM}$	80	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	300	A
Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	2.0	A
Storage Temperature Range	$T_{stg}$	-65 to +175	$^\circ\text{C}$
Operating Junction Temperature Range (Note 2)	$T_J$	-65 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10,000	V/ $\mu\text{s}$
Reverse Energy (Unclamped Inductive Surge), ( $T_C = 25^\circ\text{C}$ , $L = 3.0 \text{ mH}$ )	W	600	mJ

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.

1. Rating applies when pins 1 and 3 are connected.
2. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient (Note 3)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$

3. Rating applies when surface mounted on the minimum pad size recommended.

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Notes 4 and 5), per Device ( $I_F = 20 \text{ A}$ , $T_C = +25^\circ\text{C}$ ) ( $I_F = 20 \text{ A}$ , $T_C = +150^\circ\text{C}$ ) ( $I_F = 40 \text{ A}$ , $T_C = +25^\circ\text{C}$ ) ( $I_F = 40 \text{ A}$ , $T_C = +150^\circ\text{C}$ )	$V_F$	0.46 0.34 0.55 0.45	V
Maximum Instantaneous Reverse Current (Note 5), per Device (Rated DC Voltage, $T_C = +25^\circ\text{C}$ ) (Rated DC Voltage, $T_C = +125^\circ\text{C}$ )	$I_R$	0.35 150	mA

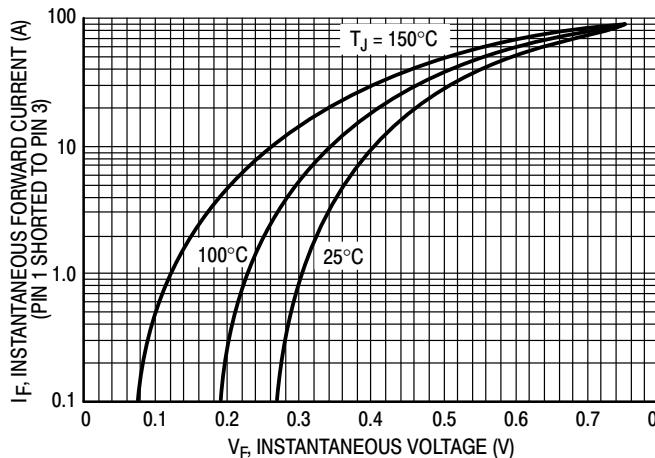
4. Rating applies when pins 1 and 3 are connected.
5. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## ORDERING INFORMATION

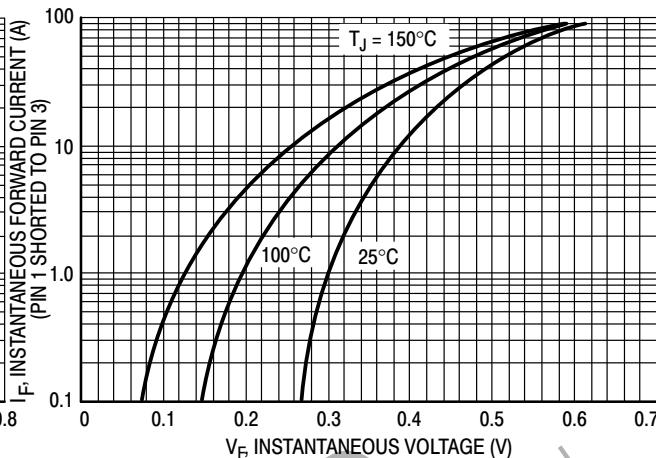
Device	Package	Shipping <sup>†</sup>
MBRB4030G	D <sup>2</sup> PAK (Pb-Free)	50 Units / Rail
MBRB4030T4G	D <sup>2</sup> PAK (Pb-Free)	800 Units / Tape & Reel
NRVBB4030T4G	D <sup>2</sup> PAK (Pb-Free)	800 Units / Tape & Reel

<sup>†</sup>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.

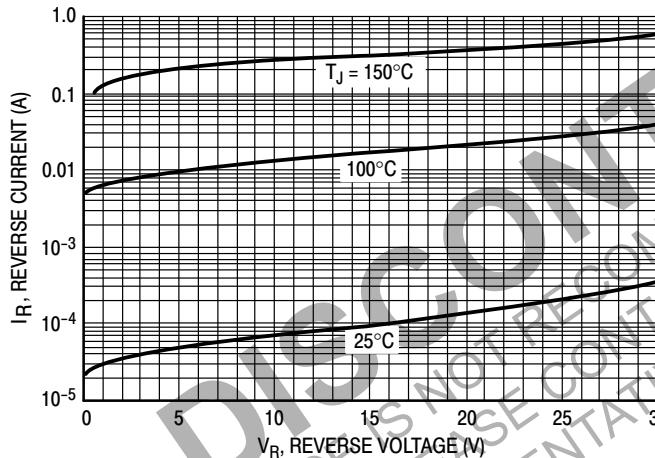
**ELECTRICAL CHARACTERISTICS**



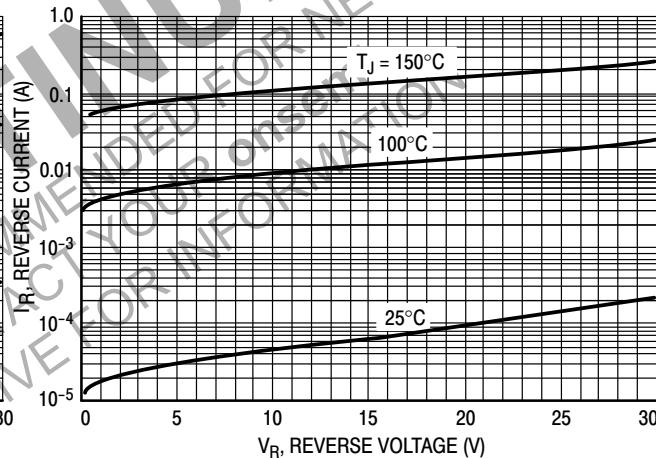
**Figure 1. Maximum Forward Voltage**



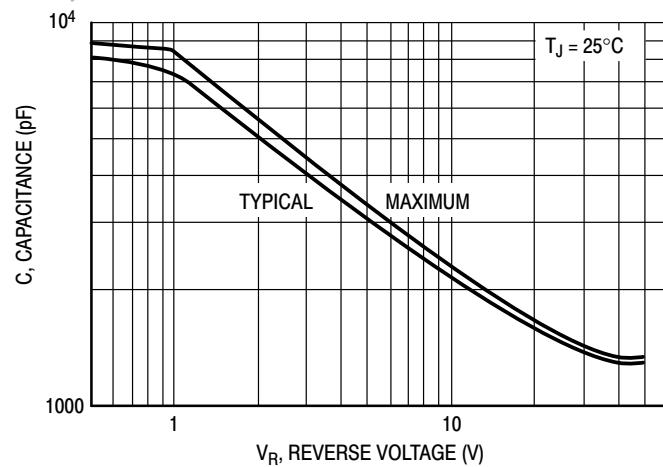
**Figure 2. Typical Forward Voltage**



**Figure 3. Maximum Reverse Current**

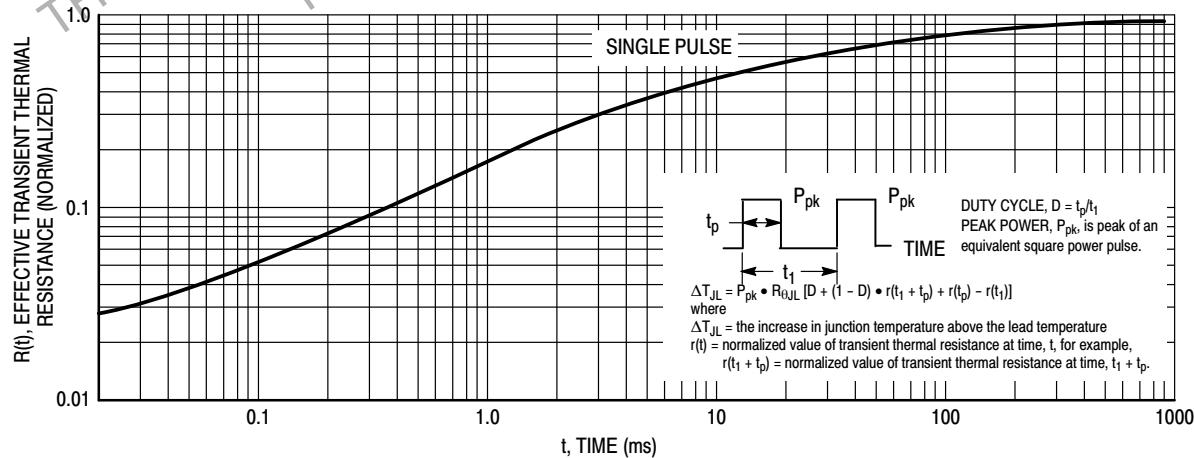
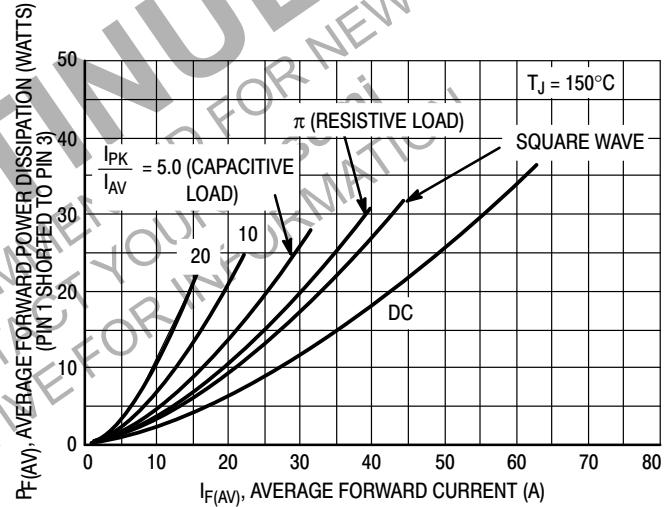
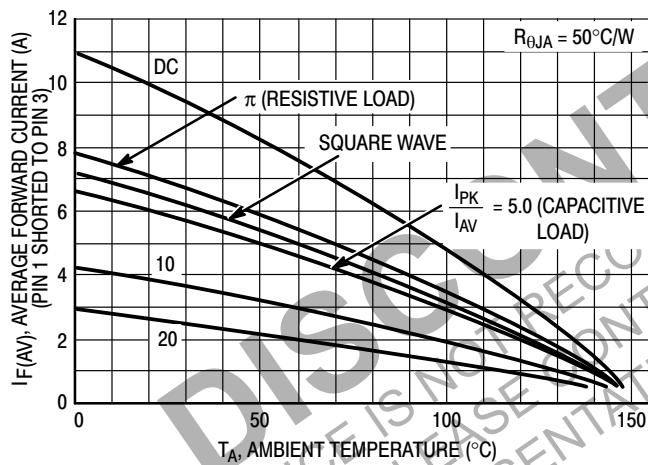
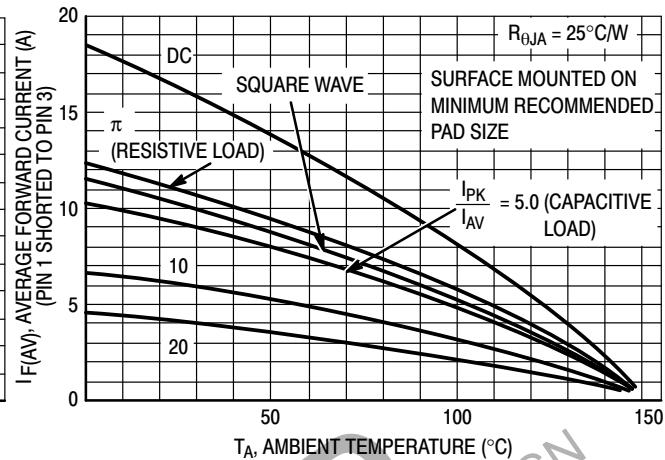
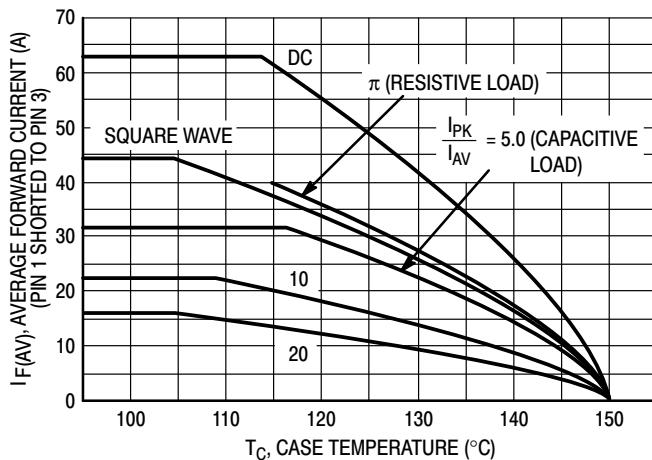


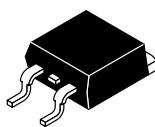
**Figure 4. Typical Reverse Current**



**Figure 5. Maximum and Typical Capacitance**

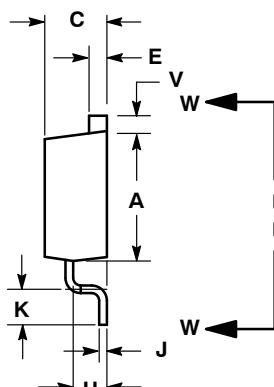
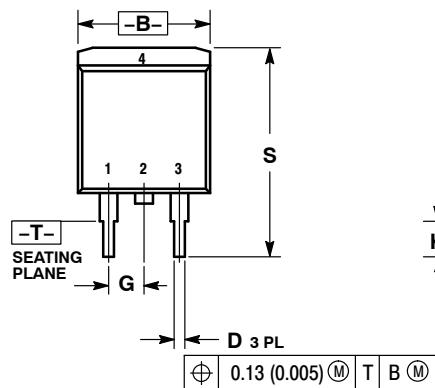
ELECTRICAL CHARACTERISTICS




**D<sup>2</sup>PAK 3**  
CASE 418B-04  
ISSUE L

DATE 17 FEB 2015

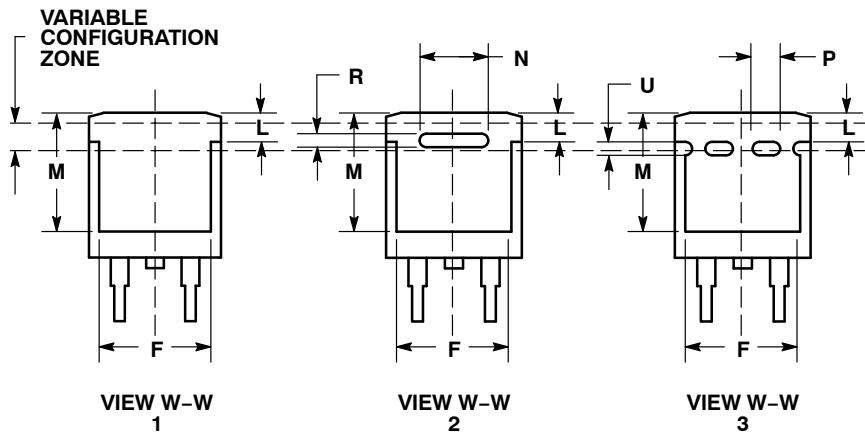
SCALE 1:1



## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
F	0.310	0.350	7.87	8.89
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.090	0.110	2.29	2.79
L	0.052	0.072	1.32	1.83
M	0.280	0.320	7.11	8.13
N	0.197 REF		5.00 REF	
P	0.079 REF		2.00 REF	
R	0.039 REF		0.99 REF	
S	0.575	0.625	14.60	15.88
V	0.045	0.055	1.14	1.40



STYLE 1:  
PIN 1. BASE  
2. COLLECTOR  
3. Emitter  
4. COLLECTOR

STYLE 2:  
PIN 1. GATE  
2. DRAIN  
3. SOURCE  
4. DRAIN

STYLE 3:  
PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. CATHODE

STYLE 4:  
PIN 1. GATE  
2. COLLECTOR  
3. Emitter  
4. COLLECTOR

STYLE 5:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE  
4. ANODE

STYLE 6:  
PIN 1. NO CONNECT  
2. CATHODE  
3. ANODE  
4. CATHODE

## MARKING INFORMATION AND FOOTPRINT ON PAGE 2

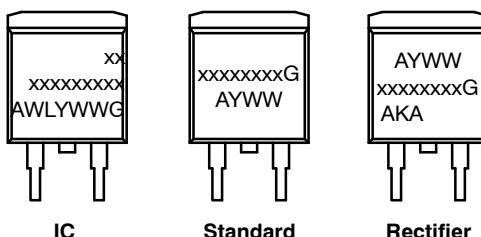
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**D<sup>2</sup>PAK 3**  
CASE 418B-04  
ISSUE L

DATE 17 FEB 2015

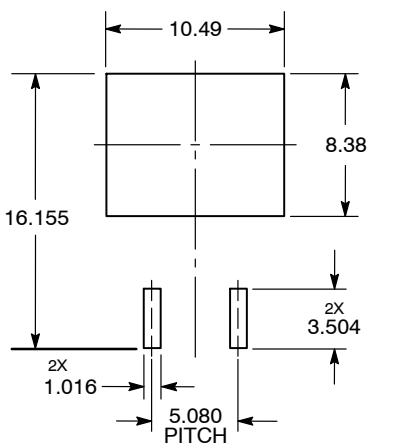
**GENERIC  
MARKING DIAGRAM\***



xx = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package  
AKA = Polarity Indicator

\*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.

**SOLDERING FOOTPRINT\***



\*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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