

Switch-mode Power Rectifier MBRB20100CTG, NRVBB20100CTT4G, NRVBBS20100CTT4G

D²PAK Surface Mount Power Package

The D²PAK Power Rectifier is a state-of-the-art device that employs the use of the Schottky Barrier principle with a platinum barrier metal.

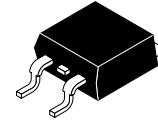
Features

- Package Designed for Power Surface Mount Applications
- Center-Tap Configuration
- Guardring for Stress Protection
- Low Forward Voltage
- 175 °C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Short Heat Sink Tab Manufactured-Not Sheared!
- Similar in Size to Industry Standard TO-220 Package
- NRVBB and NRVBBS Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant*

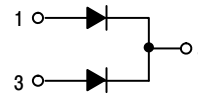
Mechanical Characteristics

- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 1.4 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260 °C Max. for 10 Seconds
- MBRB20100CTG, NRVBB20100CTT4G Meets MSL1 Requirements
- NRVBBS20100CTT4G Meets MSL2 Requirements
- ESD Ratings:
 - ◆ Machine Model = C (> 400 V)
 - ◆ Human Body Model = 3B (> 8000 V)

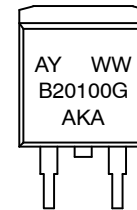
**SCHOTTKY BARRIER
RECTIFIER
20 AMPERES
100 VOLTS**



**D²PAK
CASE 418B
STYLE 3**



MARKING DIAGRAM



A = Assembly Location
 Y = Year
 WW = Work Week
 B20100 = 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.

*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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MAXIMUM RATINGS (Per Leg)

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 Per Leg (Rated V_R , $T_C = 155\text{ }^\circ\text{C}$) Total Device	$I_{F(AV)}$	10 20	A
Peak Repetitive Forward Current (Rated V_R , Square Wave, 20 kHz, $T_C = 150\text{ }^\circ\text{C}$)	I_{FRM}	20	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	150	A
Peak Repetitive Reverse Surge Current (2.0 μs , 1.0 kHz)	I_{RRM}	0.5	A
Storage Temperature Range	T_{stg}	-65 to +175	$^\circ\text{C}$
Operating Junction Temperature (Note 1)	T_J	-65 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/ μs

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.

- The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case Junction-to-Ambient (Note 2)	$R_{\theta JC}$ $R_{\theta JA}$	2.0 50	$^\circ\text{C/W}$

- When mounted using minimum recommended pad size on FR-4 board.

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 3) ($i_F = 10\text{ Amp}$, $T_C = 125\text{ }^\circ\text{C}$) ($i_F = 10\text{ Amp}$, $T_C = 25\text{ }^\circ\text{C}$) ($i_F = 20\text{ Amp}$, $T_C = 125\text{ }^\circ\text{C}$) ($i_F = 20\text{ Amp}$, $T_C = 25\text{ }^\circ\text{C}$)	V_F	0.75 0.85 0.85 0.95	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_J = 125\text{ }^\circ\text{C}$) (Rated dc Voltage, $T_J = 25\text{ }^\circ\text{C}$)	i_R	6.0 0.1	mA

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

ORDERING INFORMATION

Device	Package	Shipping [†]
MBRB20100CTT4G	D ² PAK (Pb-Free)	800 Units / Tape & Reel
NRVBB20100CTT4G	D ² PAK (Pb-Free)	800 Units / Tape & Reel
NRVBBS20100CTT4G	D ² PAK (Pb-Free)	800 Units / Tape & Reel

DISCONTINUED (Note 4)

Device	Package	Shipping [†]
MBRB20100CTG	D ² PAK (Pb-Free)	50 Units / Rail

[†]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](#).

- 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.

MBRB20100CTG, NRVBB20100CTT4G, NRVBBS20100CTT4G

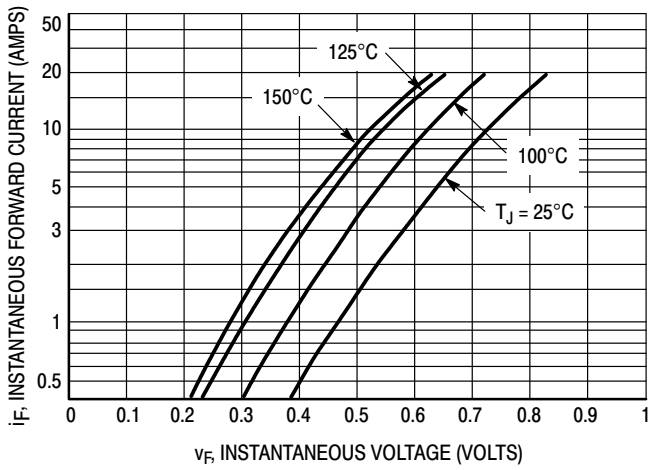


Figure 1. Typical Forward Voltage Per Diode

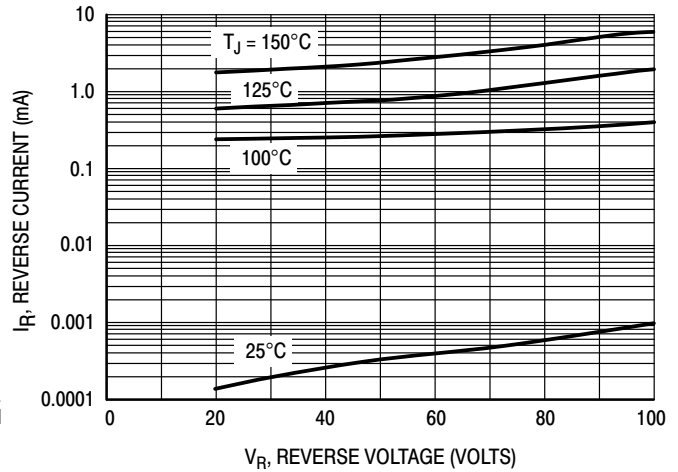


Figure 2. Typical Reverse Current Per Diode

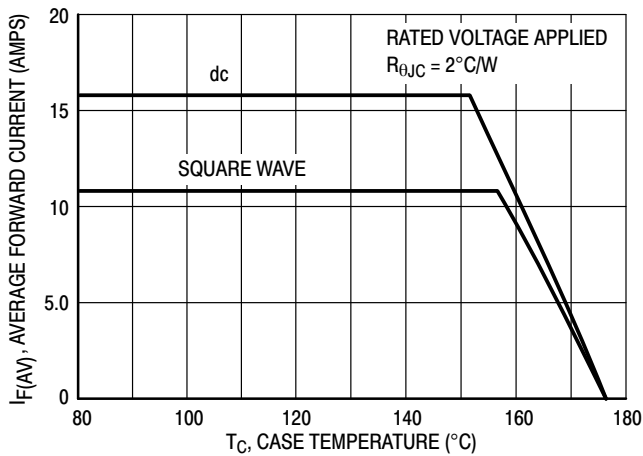


Figure 3. Typical Current Derating, Case, Per Leg

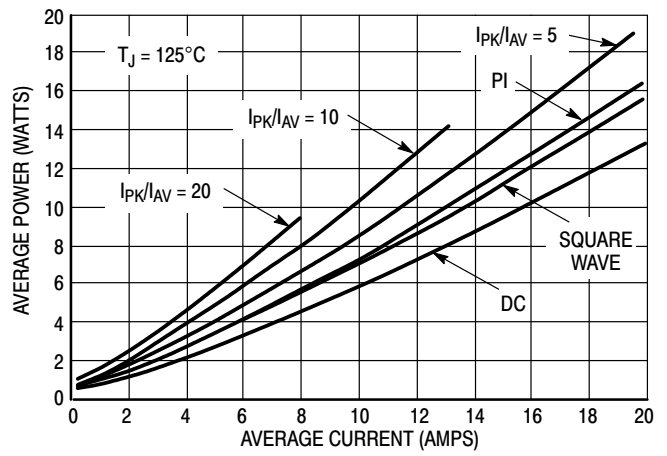


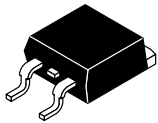
Figure 4. Average Power Dissipation & Average Current

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REVISION HISTORY

Revision	Description of Changes	Date
11	MBRB20100CTG OPN Marked as Discontinued + Rebranded the Data Sheet to onsemi format	7/2/2025

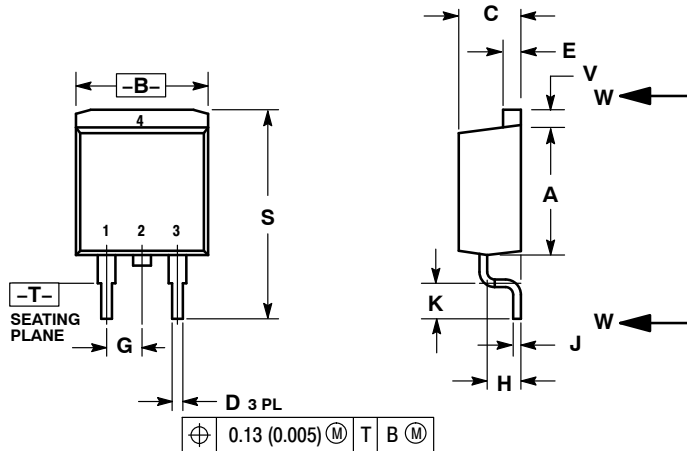
This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



D²PAK 3
CASE 418B-04
ISSUE L

DATE 17 FEB 2015

SCALE 1:1

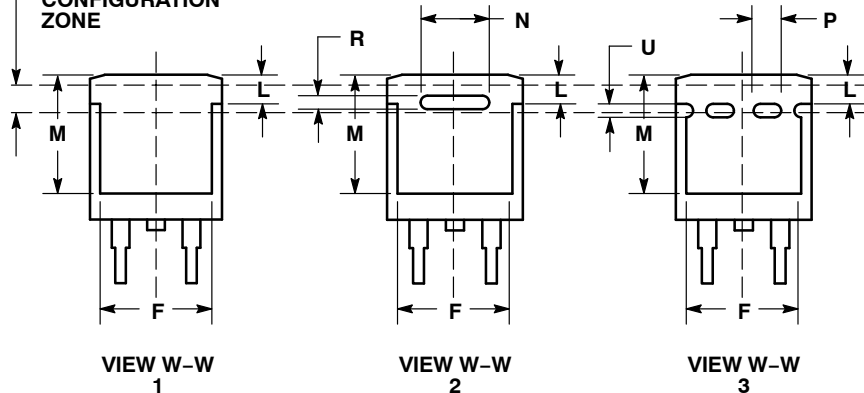


NOTES:

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

VARIABLE CONFIGURATION ZONE



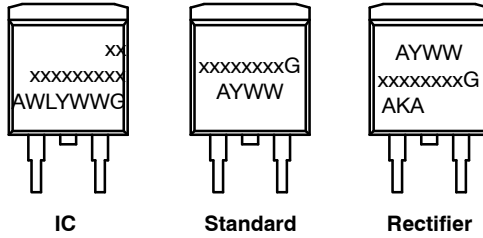
- | | | | | | |
|---|--|--|---|--|---|
| STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR | STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN | STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE | STYLE 4:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR | STYLE 5:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE | STYLE 6:
PIN 1. NO CONNECT
2. CATHODE
3. ANODE
4. CATHODE |
|---|--|--|---|--|---|

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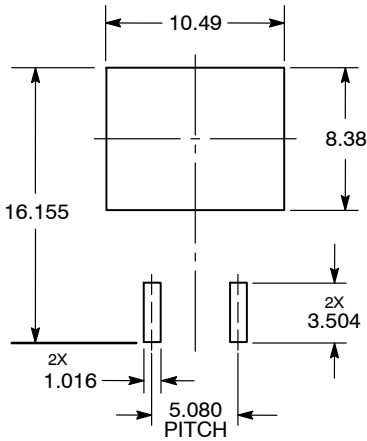
**GENERIC
MARKING DIAGRAM***



- 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*



DIMENSIONS: MILLIMETERS

*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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