Switch-mode Power Rectifier

Dual Schottky Rectifier

MBRB20200CTG, SBRB20200CTT4G

This device uses the Schottky Barrier technology with a platinum barrier metal. This state−of−the−art device is designed for use in high frequency switching power supplies and converters with up to 48 V outputs. They block up to 200 V and offer improved Schottky performance at frequencies from 250 kHz to 5.0 MHz.

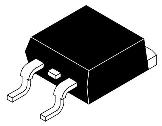
Features

- 200 V Blocking Voltage
- Low Forward Voltage Drop
- Guardring for Stress Protection and High dv/dt Capability (10,000 V/μs)
- Dual Diode Construction − Terminals 1 and 3 Must be Connected for Parallel Operation at Full Rating
- AEC−Q101 Qualified and PPAP Capable
- SBRB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- All Packages are Pb−Free*

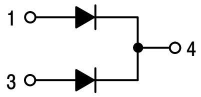
Mechanical Characteristics:

- Case: Epoxy, Molded, Epoxy Meets UL 94 V−0
- Weight: 1.7 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL1 Requirements
- ESD Rating:
  - Human Body Model = 3B
  - Machine Model = C

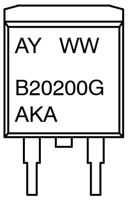
SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 200 V



D^{2}PAK
CASE 418B



MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
B20200 = 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.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 2.

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

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	200	V
Average Rectified Forward Current (At Rated V_R, T_C = 134°C) Per Leg Per Device	$I_{F(AV)}$	 10 20	A
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 20 kHz, T_C = +137°C) Per Leg	I_{FRM}	 20	A
Nonrepetitive 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}	1.0	A
Storage Temperature Range	T_{stg}	−65 to +175	°C
Operating Junction Temperature	T_J	−65 to +150	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	2.0	°C/W

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 1) (I_F = 10 A, T_C = 25°C) (I_F = 10 A, T_C = 125°C) (I_F = 20 A, T_C = 25°C) (I_F = 20 A, T_C = 125°C)	V_F	 0.9 0.8 1.0 0.9	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_C = 25°C) (Rated dc Voltage, T_C = 125°C)	I_R	 1.0 50	mA

DYNAMIC CHARACTERISTICS (Per Leg)

Capacitance (V_R = −5.0 V, T_C = 25°C, Frequency = 1.0 MHz)	C_T	 500	pF

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

ORDERING INFORMATION

Device	Package	Shipping†
SBRB20200CTT4G	D^2PAK (Pb−Free)	800 Units / Tape & Reel

DISCONTINUED (Note 2)

MBRB20200CTG	D^2PAK (Pb−Free)	50 Units / Rail
MBRB20200CTT4G	D^2PAK (Pb−Free)	800 Units / 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.

2. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

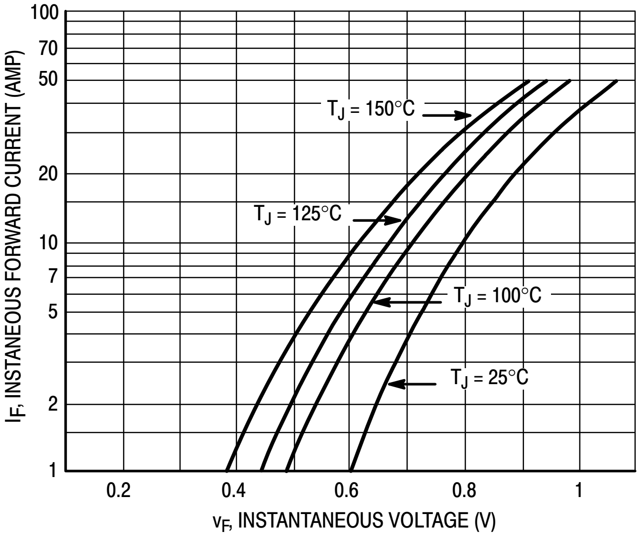


Figure 1. Typical Forward Voltage (Per Leg)

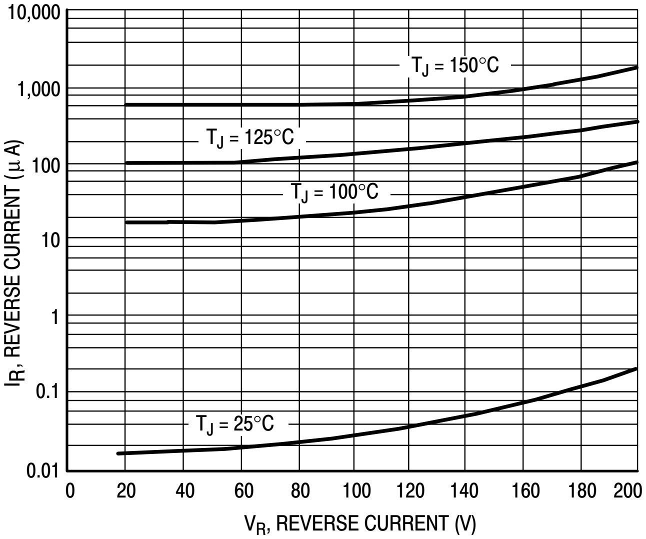


Figure 2. Typical Reverse Current (Per Leg)

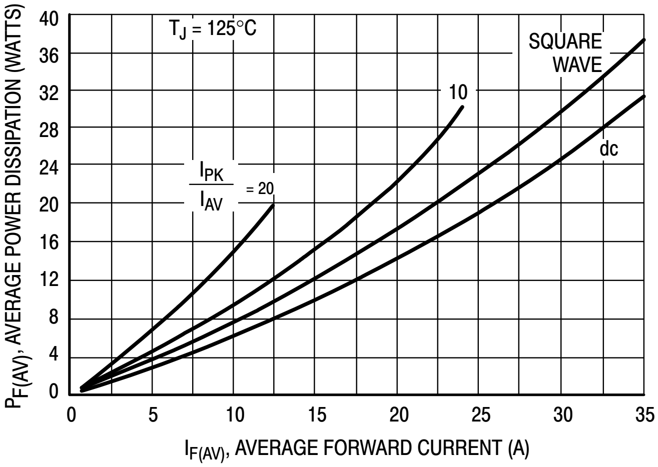


Figure 3. Forward Power Dissipation

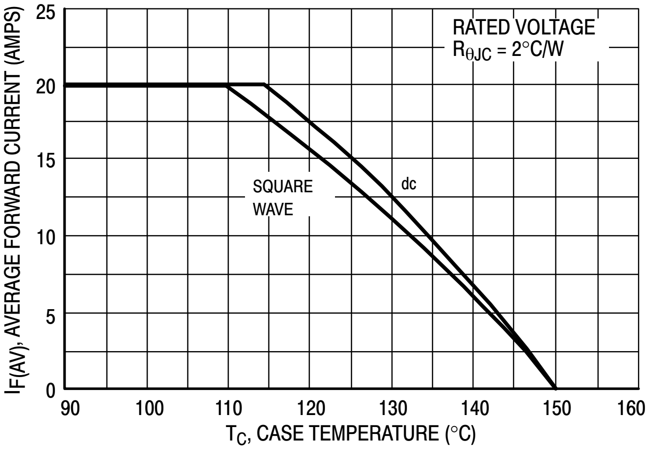


Figure 4. Current Derating, Case

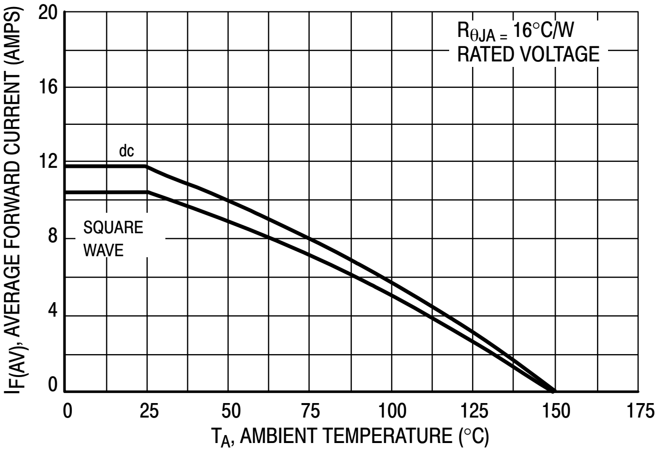


Figure 5. Current Derating, Ambient

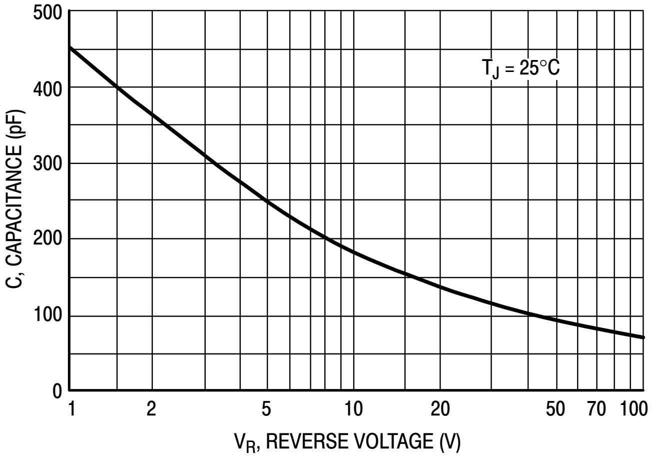
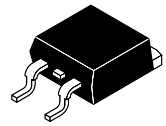


Figure 6. Typical Capacitance (Per Leg)

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

ON Semiconductor®



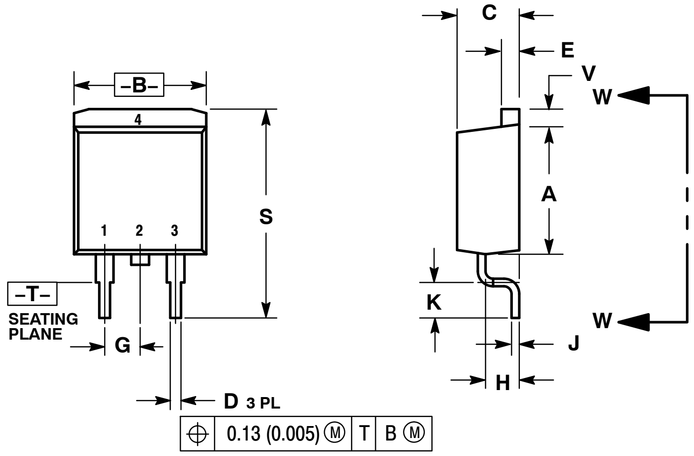
SCALE 1:1

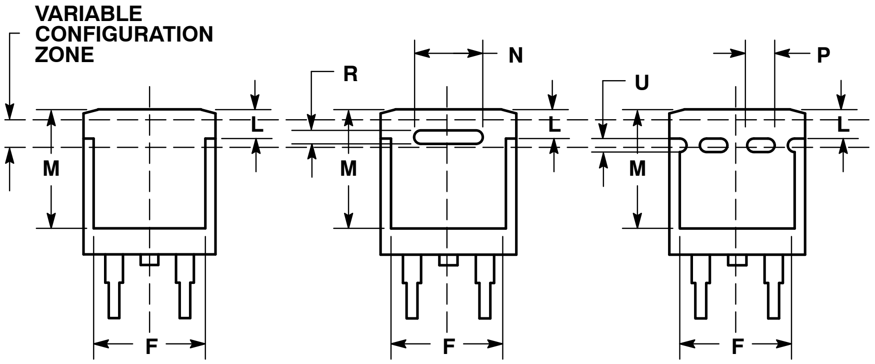
D^{2}PAK 3
CASE 418B−04
ISSUE L

DATE 17 FEB 2015

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.

	INCHES		MILLIMETERS	
DIM	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





VIEW W−W 1 **VIEW W−W 2** **VIEW W−W 3**

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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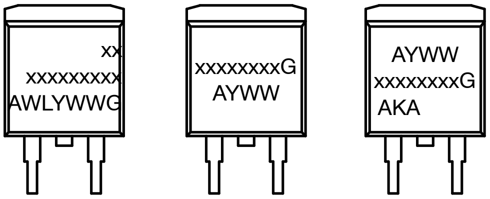
D^2PAK 3
CASE 418B−04
ISSUE L

DATE 17 FEB 2015

GENERIC MARKING DIAGRAM*

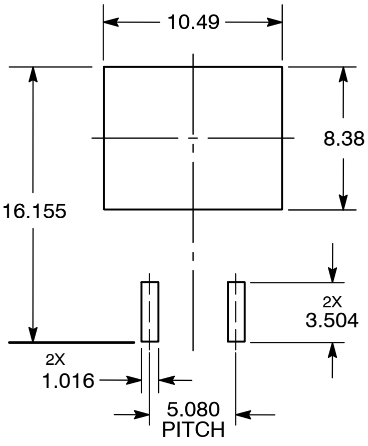


IC **Standard** **Rectifier**

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.

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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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DESCRIPTION:	**D^2PAK 3**	**PAGE 2 OF 2**

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