

Switch-mode Schottky Power Rectifier

The Switch-mode Power Rectifier employs the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for use as rectifiers in very low-voltage, high-frequency switching power supplies, free wheeling diodes and polarity protection diodes.

Features

- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
- Matched Dual Die Construction
- High Junction Temperature Capability
- High dv/dt Capability
- Guardring for Stress Protection
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Electrically Isolated. No Isolation Hardware Required.
- These Devices are Pb-Free and are RoHS Compliant

Mechanical Characteristics:

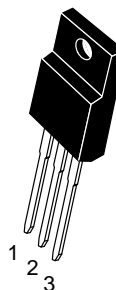
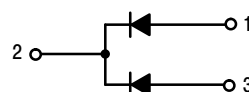
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:
260°C Max. for 10 Seconds



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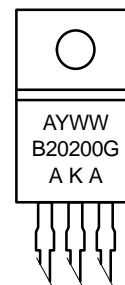
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SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 200 VOLTS



TO-220 FULLPAK
CASE 221AH

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
B20200 = Device Code
G = Pb-Free Package
AKA = Polarity Designator

ORDERING INFORMATION

Device	Package	Shipping
MBRF20200CTG	TO-220 (Pb-Free)	50 Units/Rail

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

MBRF20200CTG

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 (Rated V_R) $T_C = 125^\circ\text{C}$ Per Leg Per Package	$I_{F(AV)}$	10 20	A
Peak Repetitive Forward Current, Per Leg (Rated V_R , Square Wave, 20 kHz) $T_C = 90^\circ\text{C}$	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
Operating Junction Temperature and Storage Temperature	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$
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)

Rating	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.5	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1) ($i_F = 10$ Amp, $T_C = 25^\circ\text{C}$) ($i_F = 10$ Amp, $T_C = 125^\circ\text{C}$) ($i_F = 20$ Amp, $T_C = 25^\circ\text{C}$) ($i_F = 20$ Amp, $T_C = 125^\circ\text{C}$)	V_F	0.9 0.8 1.0 0.9	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_C = 25^\circ\text{C}$) (Rated dc Voltage, $T_C = 125^\circ\text{C}$)	i_R	1.0 50	mA

DYNAMIC CHARACTERISTICS (Per Leg)

Capacitance ($V_R = -5.0$ V, $T_C = 25^\circ\text{C}$, Freq. = 1.0 MHz)	C_T	500	pF
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1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

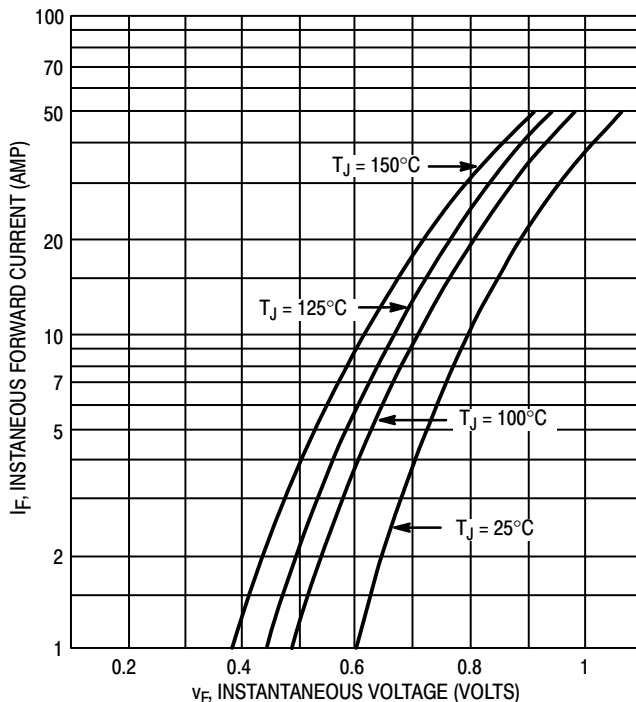


Figure 1. Typical Forward Voltage (Per Leg)

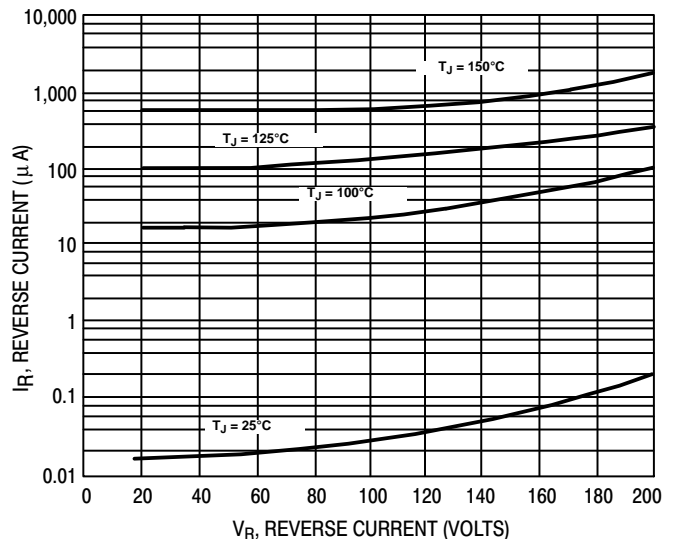


Figure 2. Typical Reverse Current (Per Leg)

TEST CONDITION FOR ISOLATION TEST*

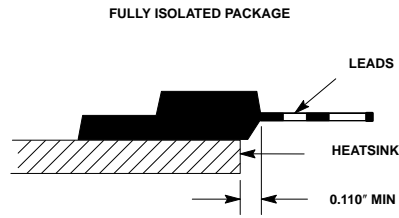


Figure 3. Mounting Position

*Measurement made between leads and heatsink with all leads shorted together.

MOUNTING INFORMATION

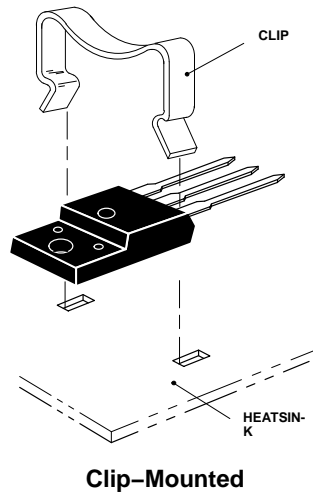
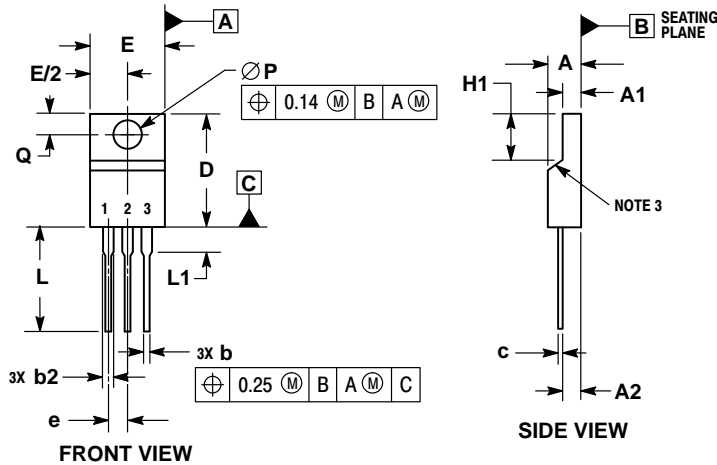


Figure 4. Typical Mounting Technique

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PACKAGE DIMENSIONS

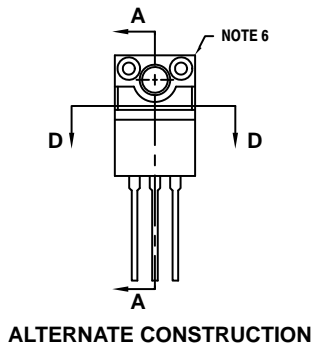
TO-220 FULLPACK, 3-LEAD CASE 221AH ISSUE F



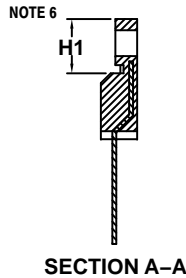
FRONT VIEW

SIDE VIEW

SECTION D-D



ALTERNATE CONSTRUCTION




SECTION A-A

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR UNCONTROLLED IN THIS AREA.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH AND GATE PROTRUSIONS. MOLD FLASH AND GATE PROTRUSIONS NOT TO EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE TO BE MEASURED AT OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DIMENSION b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 2.00.
6. CONTOURS AND FEATURES OF THE MOLDED PACKAGE BODY MAY VARY WITHIN THE ENVELOPE DEFINED BY DIMENSIONS A1 AND H1 FOR MANUFACTURING PURPOSES.

MILLIMETERS		
DIM	MIN	MAX
A	4.30	4.70
A1	2.50	2.90
A2	2.50	2.90
b	0.54	0.84
b2	1.10	1.40
c	0.49	0.79
D	14.70	15.30
E	9.70	10.30
e	2.54 BSC	
H1	6.60	7.10
L	12.50	14.73
L1	---	2.80
P	3.00	3.40
Q	2.80	3.20

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