

Switch-mode Schottky Power Rectifier

MBRF20200CTG

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

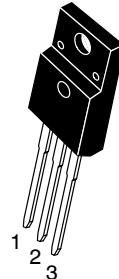
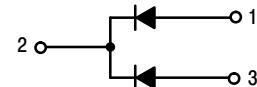


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SCHOTTKY BARRIER RECTIFIER

20 AMPERES, 200 VOLTS



TO-220 FULLPAK™
CASE 221D

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, SOLDERMM/D.

MBRF20200CTG

MAXIMUM RATINGS (Per Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	200	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_R		
Average Rectified Forward Current (Rated V_R) $T_C = 125^\circ\text{C}$	$I_{F(AV)}$	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	$\text{V}/\mu\text{s}$

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	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1) ($i_F = 10 \text{ Amp}, T_C = 25^\circ\text{C}$) ($i_F = 10 \text{ Amp}, T_C = 125^\circ\text{C}$) ($i_F = 20 \text{ Amp}, T_C = 25^\circ\text{C}$) ($i_F = 20 \text{ Amp}, T_C = 125^\circ\text{C}$)	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 ($V_R = -5.0 \text{ V}, T_C = 25^\circ\text{C}$, Freq. = 1.0 MHz)	C_T	500	pF
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1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

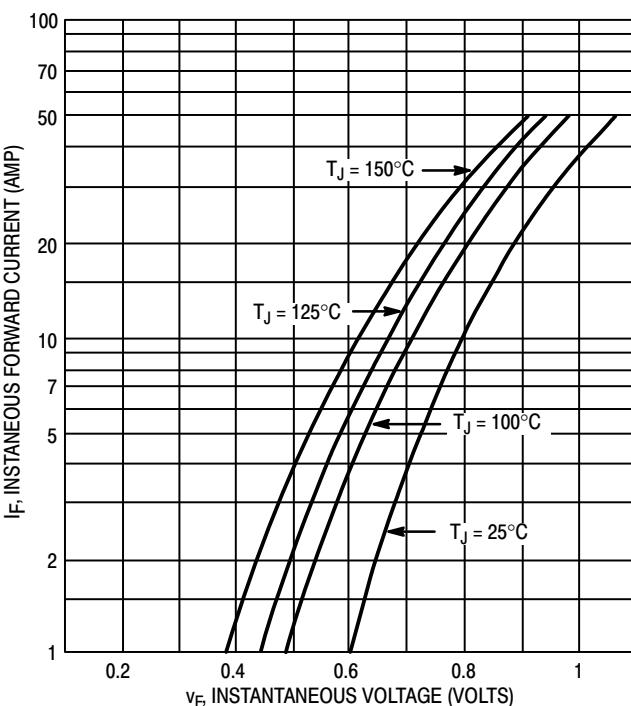


Figure 1. Typical Forward Voltage (Per Leg)

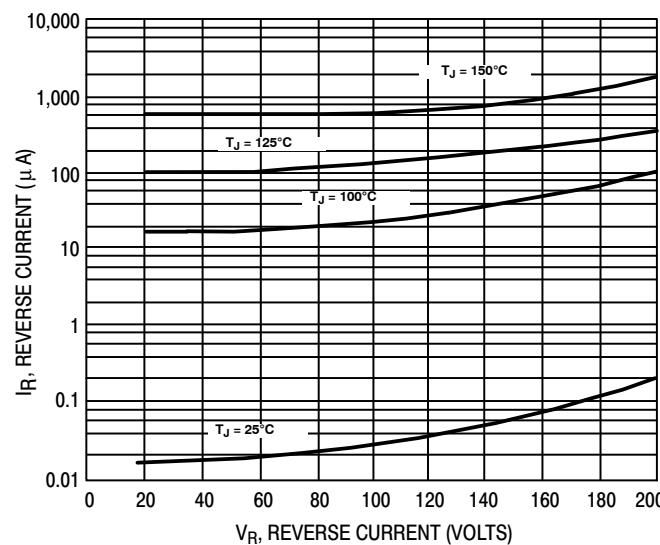


Figure 2. Typical Reverse Current (Per Leg)

MBRF20200CTG

TEST CONDITION FOR ISOLATION TEST*

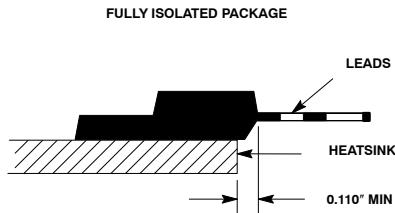
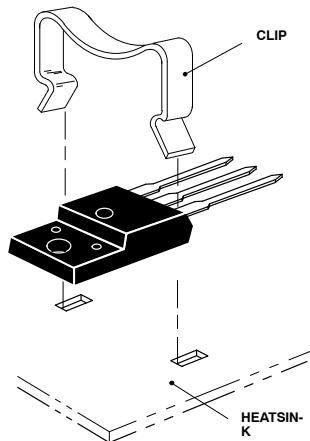


Figure 3. Mounting Position

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

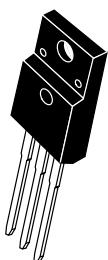
MOUNTING INFORMATION



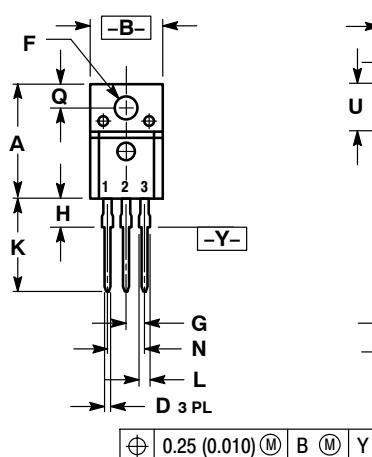
Clip-Mounted

Figure 4. Typical Mounting Technique

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SCALE 1:1



TO-220 FULLPAK
CASE 221D-03
ISSUE K

DATE 27 FEB 2009

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH
3. 221D-01 THRU 221D-02 OBSOLETE, NEW STANDARD 221D-03.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.617	0.635	15.67	16.12
B	0.392	0.419	9.96	10.63
C	0.177	0.193	4.50	4.90
D	0.024	0.039	0.60	1.00
F	0.116	0.129	2.95	3.28
G	0.100	BSC	2.54	BSC
H	0.118	0.135	3.00	3.43
J	0.018	0.025	0.45	0.63
K	0.503	0.541	12.78	13.73
L	0.048	0.058	1.23	1.47
N	0.200	BSC	5.08	BSC
Q	0.122	0.138	3.10	3.50
R	0.099	0.117	2.51	2.96
S	0.092	0.113	2.34	2.87
U	0.239	0.271	6.06	6.88

**MARKING
DIAGRAMS**

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

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

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

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

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

STYLE 6:
PIN 1. MT 1
2. MT 2
3. GATE



Bipolar



Rectifier

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

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