

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.

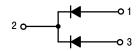
Features

- 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

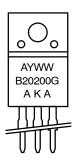
SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 200 VOLTS





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 **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MBRF20200CTG

MAXIMUM RATINGS (Per Leg)

Rating		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 Per Leg (Rated V_R) $T_C = 125^{\circ}C$ Per Package	I _{F(AV)}	10 20	Α
Peak Repetitive Forward Current, Per Leg (Rated V _R , Square Wave, 20 kHz) T _C =	90°C I _{FRM}	20	Α
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)		150	Α
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	I _{RRM}	1.0	Α
Operating Junction Temperature and Storage Temperature		-65 to +150	°C
Voltage Rate of Change (Rated V _R)		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	°C/W

ELECTRICAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1)	٧ _F		V
$(i_F = 10 \text{ Amp}, T_C = 25^{\circ}C)$		0.9	
$(i_F = 10 \text{ Amp}, T_C = 125^{\circ}C)$		0.8	
$(i_F = 20 \text{ Amp}, T_C = 25^{\circ}C)$		1.0	
(i _F = 20 Amp, T _C = 125°C)		0.9	
Maximum Instantaneous Reverse Current (Note 1)	i _R		mA
(Rated dc Voltage, T _C = 25°C)		1.0	
(Rated dc Voltage, T _C = 125°C)		50	

DYNAMIC CHARACTERISTICS (Per Leg)

Capacitance (V _R = -5.0 V, T _C = 25°C, Freq. = 1.0 MHz)	C _T	500	pF
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^{1.} Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%

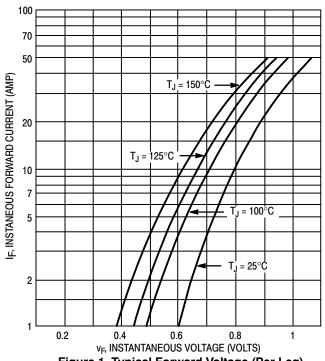


Figure 1. Typical Forward Voltage (Per Leg)

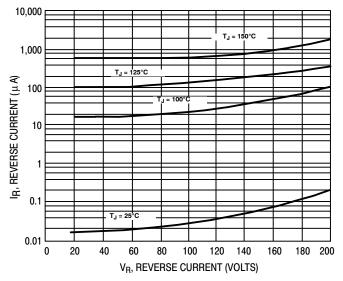


Figure 2. Typical Reverse Current (Per Leg)

MBRF20200CTG

TEST CONDITION FOR ISOLATION TEST*

FULLY ISOLATED PACKAGE

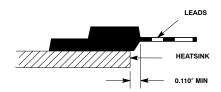
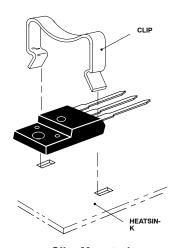


Figure 3. Mounting Position

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

MOUNTING INFORMATION



Clip-Mounted

Figure 4. Typical Mounting Technique





SCALE 1:1

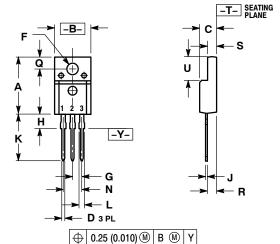
TO-220 FULLPAK CASE 221D-03 ISSUE K

DATE 27 FEB 2009

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

	INCHES		MILLIN	IETERS
DIM	MIN	MAX	MIN	MAX
Α	0.617	0.635	15.67	16.12
В	0.392	0.419	9.96	10.63
С	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	
Н	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



CATHODE
 ANODE

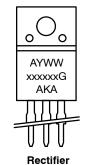
STYLE 1: PIN 1. GATE STYLE 2: PIN 1. BASE STYLE 3: PIN 1. ANODE 2. COLLECTOR 3. EMITTER 2. DRAIN 2. 3. SOURCE STYLE 6: PIN 1. MT 1 2. MT 2 3. GATE STYLE 4: PIN 1. CATHODE

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

O xxxxxxG **AYWW**

Bipolar xxxxxx = Specific Device Code G = Pb-Free Package

Α = Assembly Location Υ = Year = Work Week WW



= Assembly Location

= Polarity Designator

Υ = Year = Work Week WW XXXXXX = Device Code = Pb-Free Package G

AKA

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