WINSOURCE ELECTRONICS

THE DATASHEET OF

MBRF20H150CTG

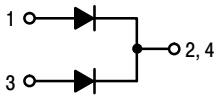
MBRF20H150CTG, MBR20H150CTG

Switch-mode Power Rectifier 150 V, 20 A

ON Semiconductor®

www.onsemi.com

SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 150 VOLTS



Features and Benefits

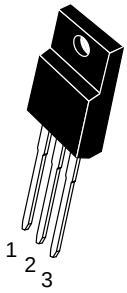
- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capability
- 20 A Total (10 A Per Diode Leg)
- Guard−Ring for Stress Protection
- These Devices are Pb−Free and are RoHS Compliant

Applications

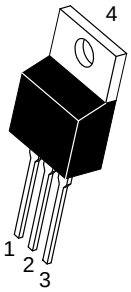
- Power Supply − Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight (Approximately): 1.9 Grams (TO−220 & TO−220FP)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

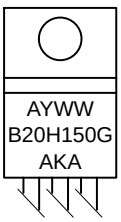


TO−220 FULLPAK™
CASE 221AH

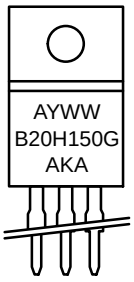


TO−220
CASE 221A
STYLE 6

MARKING DIAGRAMS



TO−220



TO−220FP

A = Assembly Location
Y = Year
WW = Work Week
B20H150 = Device Code
G = Pb−Free Device
AKA = Polarity Designator

ORDERING INFORMATION

See detailed ordering and shipping information on page 1 of this data sheet.

MAXIMUM RATINGS (Per Diode Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	150	V
Average Rectified Forward Current (Per Leg) (Rated V_R) T_C = 134°C (Per Device)	$I_{F(AV)}$	10 20	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	180	A
Operating Junction Temperature (Note 1)	T_J	−20 to +150	°C
Storage Temperature	T_{stg}	−65 to +150	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs
ESD Ratings: Machine Model = C Human Body Model = 3B		> 400 > 8000	V

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.

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

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Maximum Thermal Resistance (MBR20H150CTG) − Junction−to−Case − Junction−to−Ambient (MBRF20H150CTG) − Junction−to−Case	 $R_{\theta JC}$ $R_{\theta JA}$ $R_{\theta JC}$	 2.0 45 2.5	°C/W

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2)	v_F			V
(I_F = 5 A, T_C = 25°C)		0.72		
(I_F = 5 A, T_C = 125°C)		0.57	0.60	
(I_F = 10 A, T_C = 25°C)		0.87		
(I_F = 10 A, T_C = 125°C)		0.65	0.68	
Maximum Instantaneous Reverse Current (Note 2)	i_R			
(Rated DC Voltage, T_C = 25°C)			50	μA
(Rated DC Voltage, T_C = 125°C)			30	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

ORDERING INFORMATION

Device Order Number	Package Type	Shipping
MBRF20H150CTG	TO−220FP (Pb−Free)	50 Units / Rail
MBR20H150CTG	TO−220 (Pb−Free)	50 Units / Rail

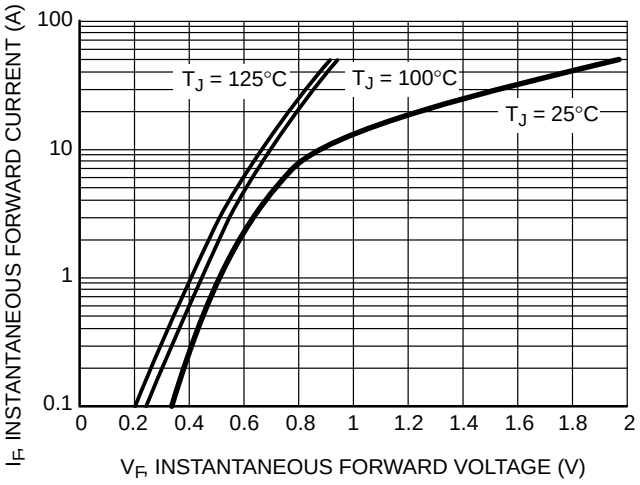


Figure 1. Typical Forward Voltage

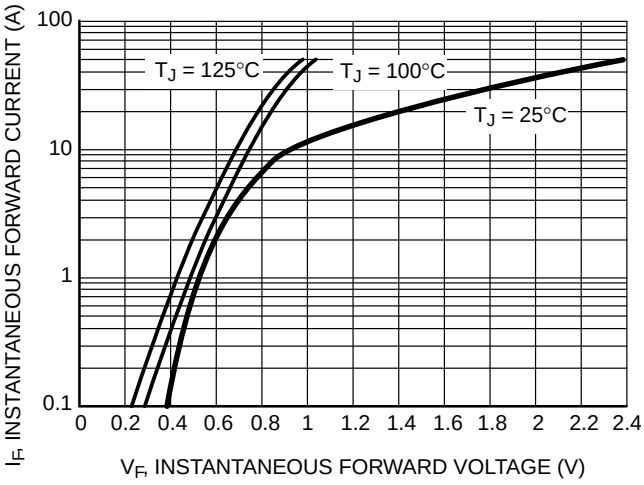


Figure 2. Maximum Forward Voltage

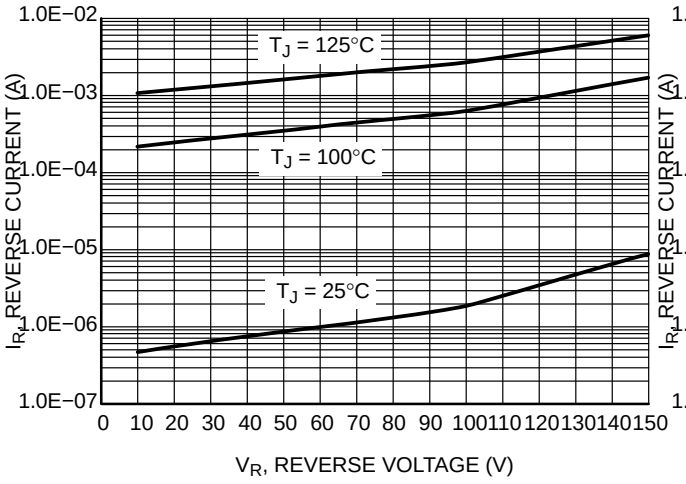


Figure 3. Typical Reverse Current

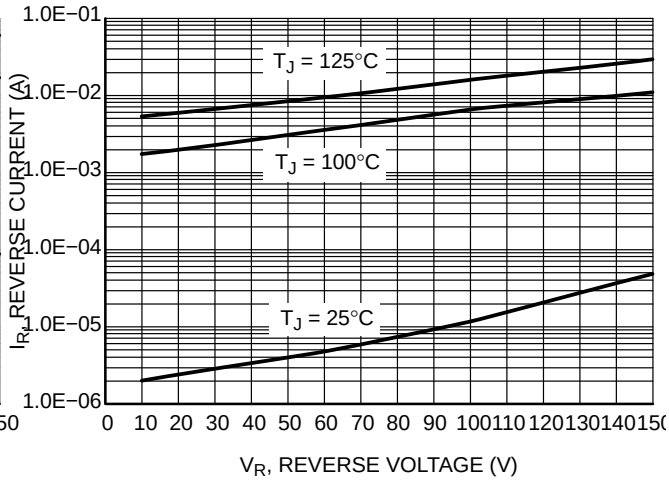


Figure 4. Maximum Reverse Current

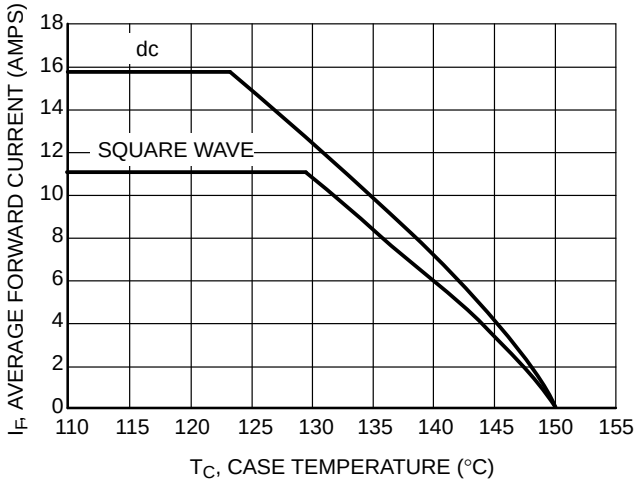


Figure 5. Current Derating

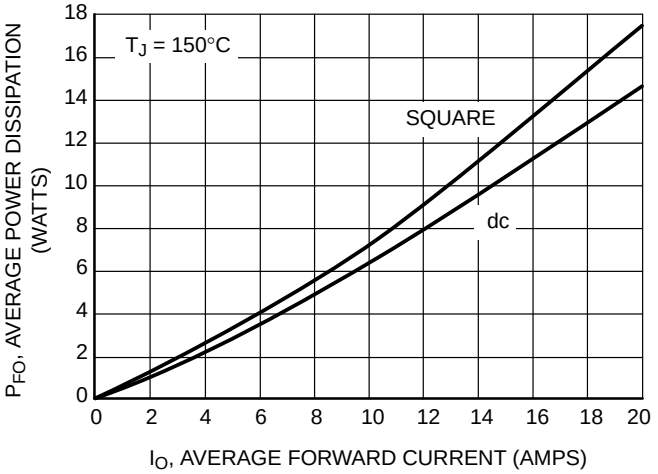


Figure 6. Forward Power Dissipation

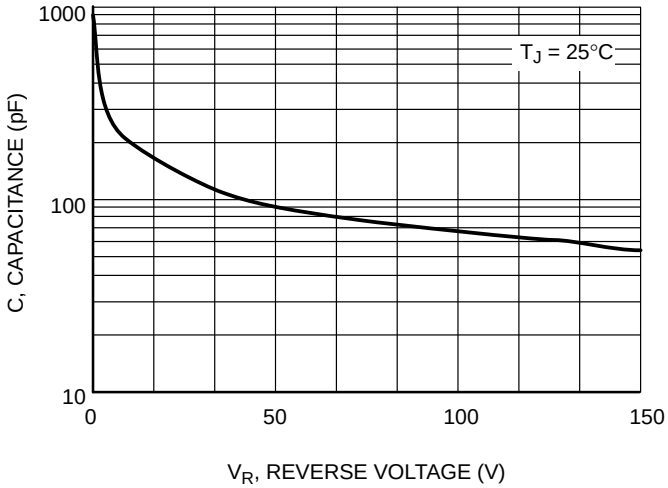


Figure 7. Capacitance

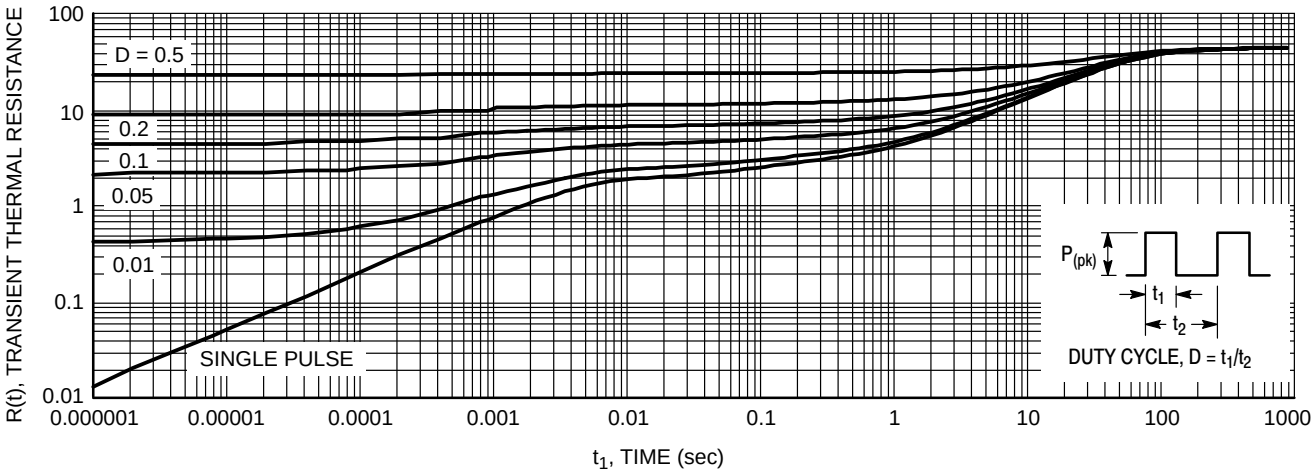


Figure 8. Thermal Response Junction−to−Ambient for MBR20H150CTG

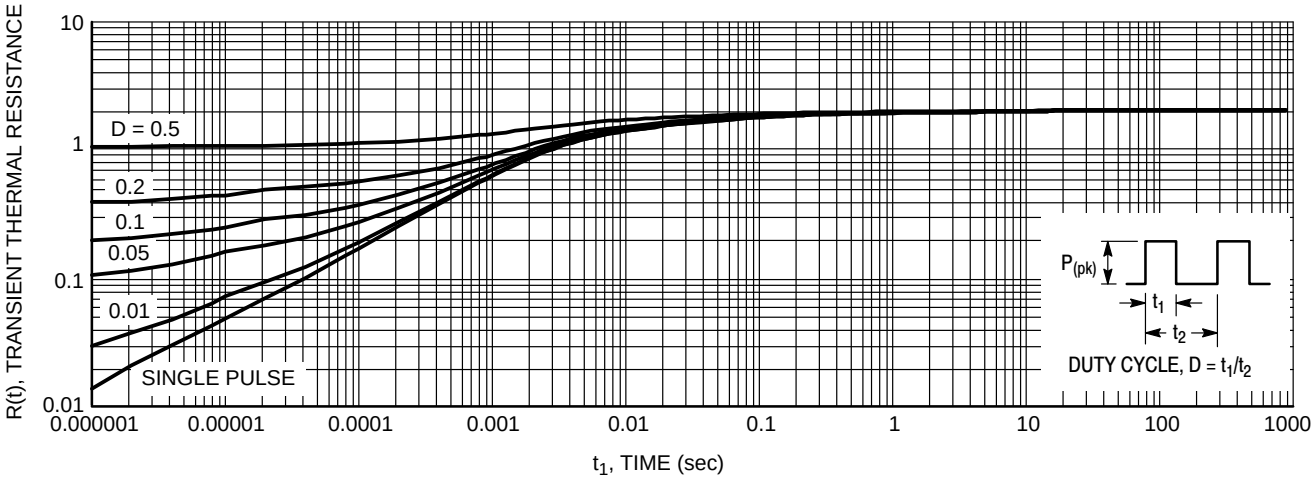


Figure 9. Thermal Response Junction−to−Case for MBR20H150CTG

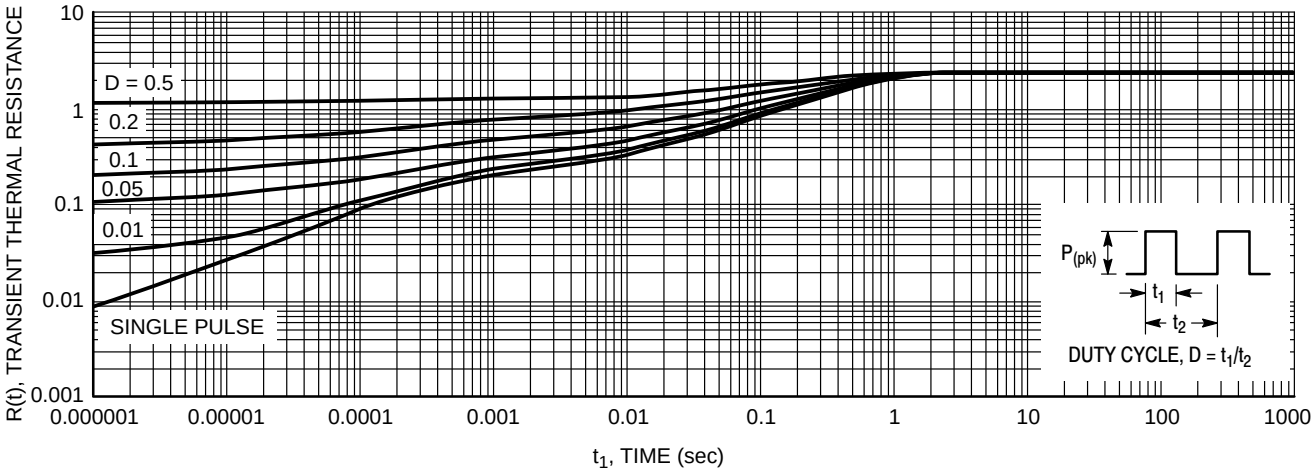
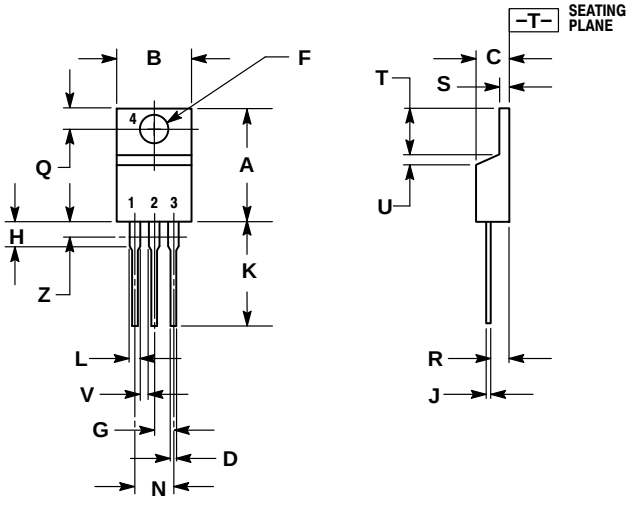


Figure 10. Thermal Response Junction−to−Case for MBRF20H150CTG

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AH



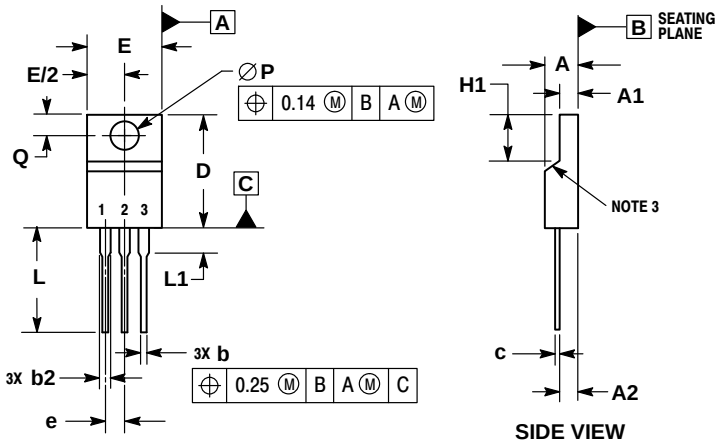
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

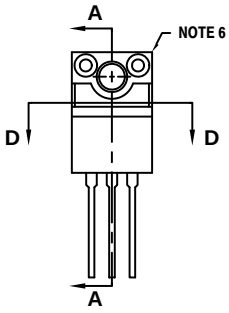
STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

PACKAGE DIMENSIONS

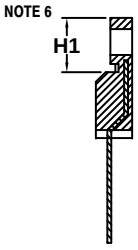
TO−220 FULLPACK, 3−LEAD
CASE 221AH
ISSUE F



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 ENVELOP 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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PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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Email: orderlit@onsemi.com

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Japan Customer Focus Center
Phone: 81−3−5817−1050

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MBRF20H150CT/D

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