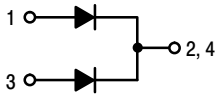
MBRF20H150CTG, MBR20H150CTG

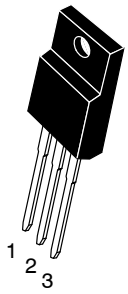
SWITCHMODE Power Rectifier 150 V, 20 A

ON Semiconductor®

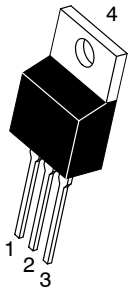
http://onsemi.com

SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 150 VOLTS





TO−220 FULLPAK™
CASE 221D
STYLE 3



TO−220AB
CASE 221A
STYLE 6

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 are Pb−Free Devices

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

MAXIMUM RATINGS

Please See the Table on the Following Page

ORDERING AND MARKING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 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 Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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			°C/W
(MBR20H150CT) − Junction−to−Case	$R_{\theta JC}$	2.0	
− Junction−to−Ambient	$R_{\theta JA}$	45	
(MBRF20H150CT) − Junction−to−Case	$R_{\theta JC}$	2.5	

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

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

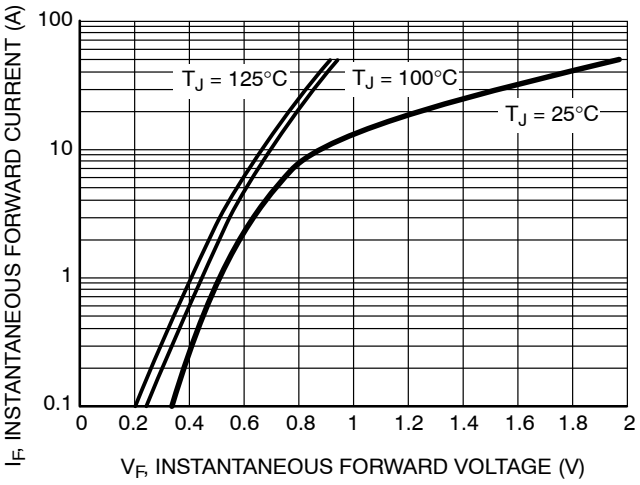


Figure 1. Typical Forward Voltage

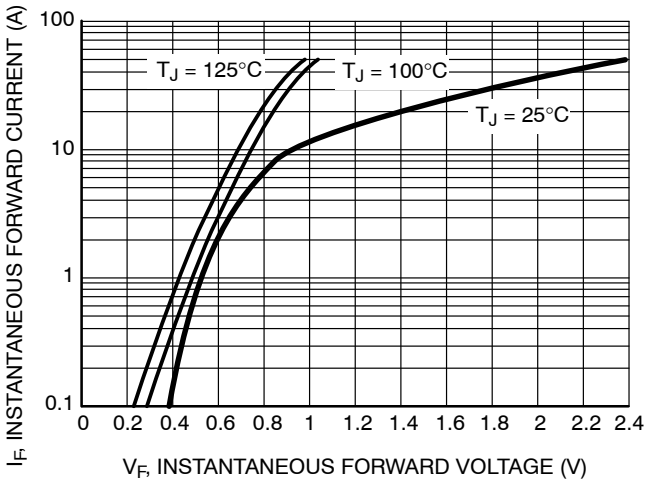


Figure 2. Maximum Forward Voltage

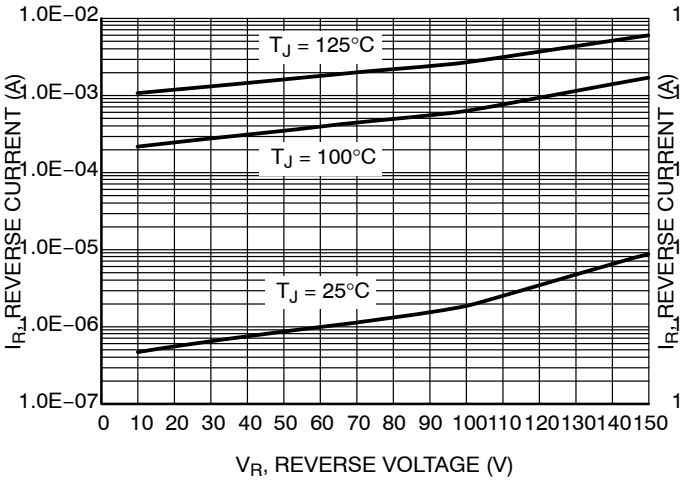


Figure 3. Typical Reverse Current

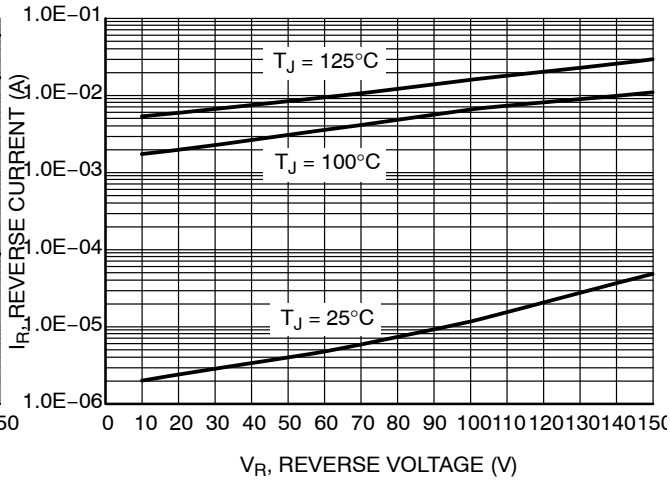


Figure 4. Maximum Reverse Current

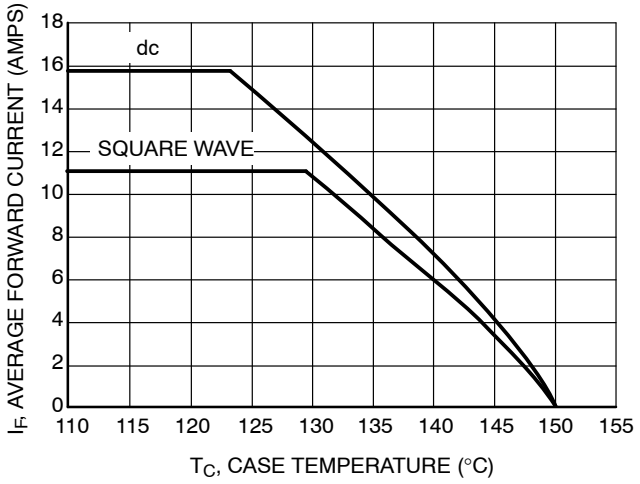


Figure 5. Current Derating

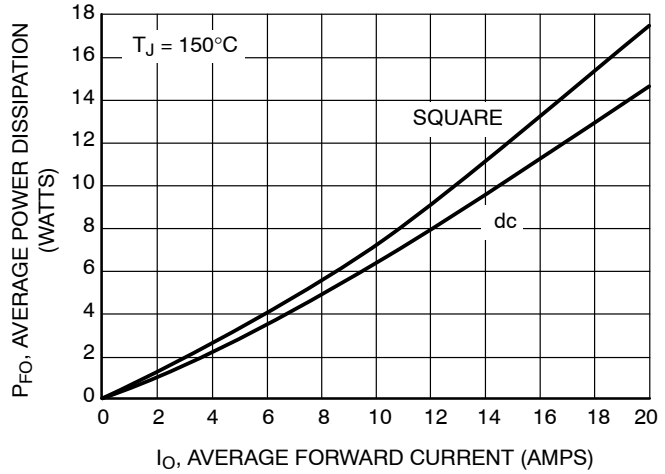


Figure 6. Forward Power Dissipation

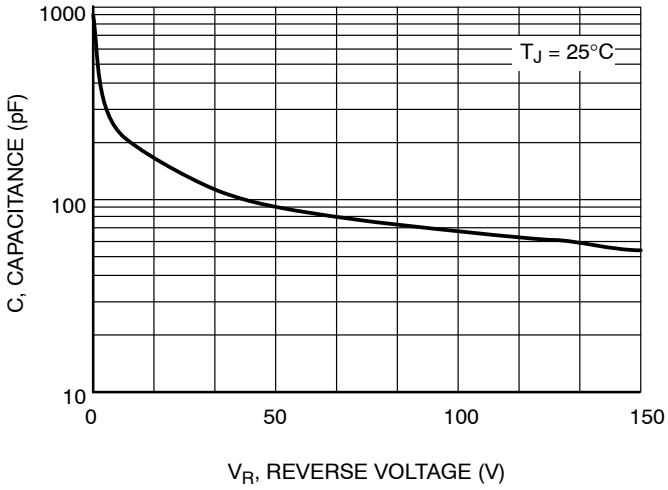


Figure 7. Capacitance

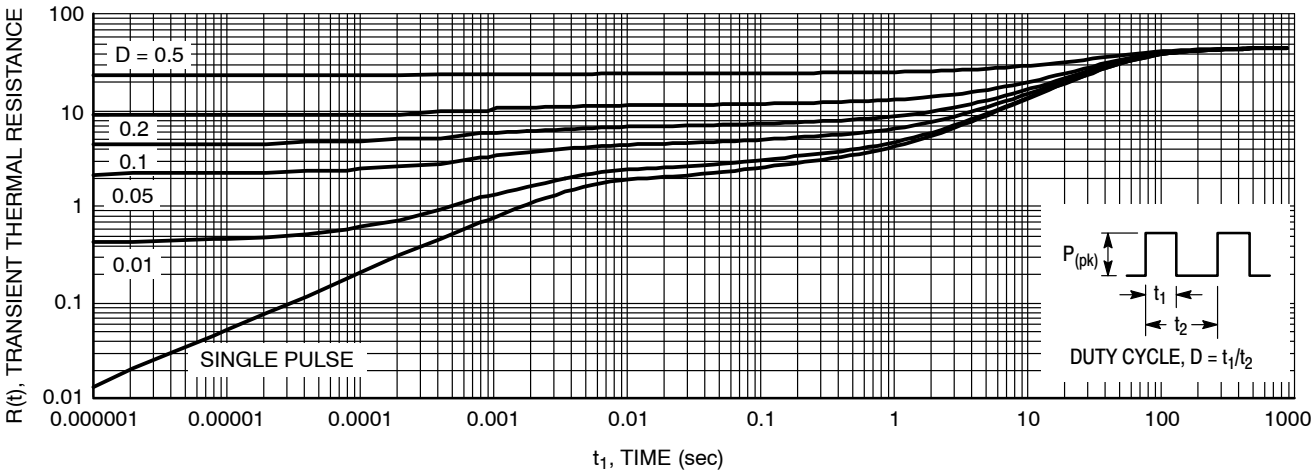


Figure 8. Thermal Response Junction−to−Ambient for MBR20H150CTG

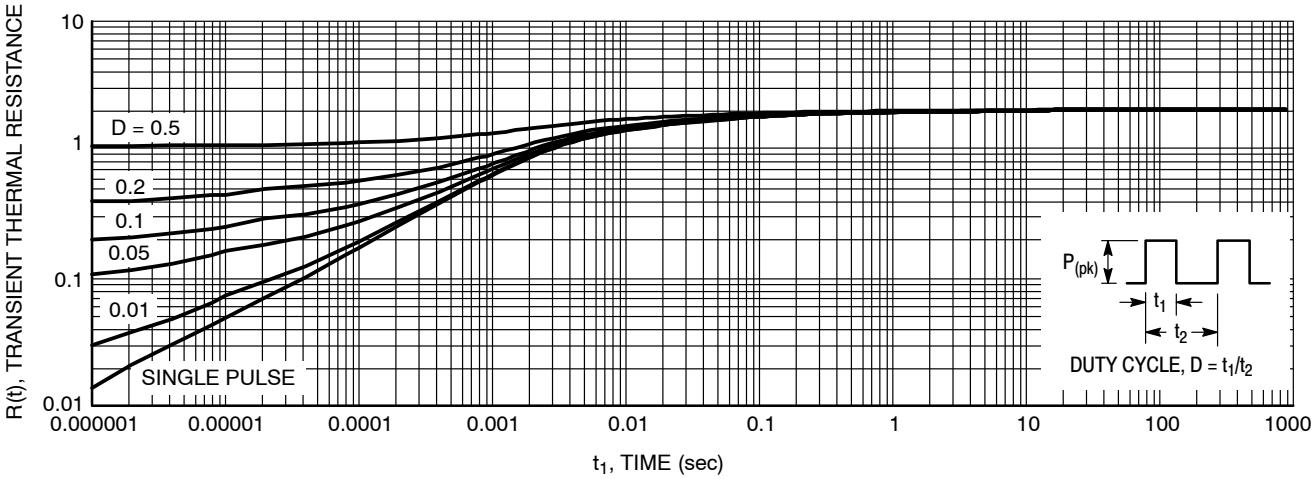


Figure 9. Thermal Response Junction−to−Case for MBR20H150CTG

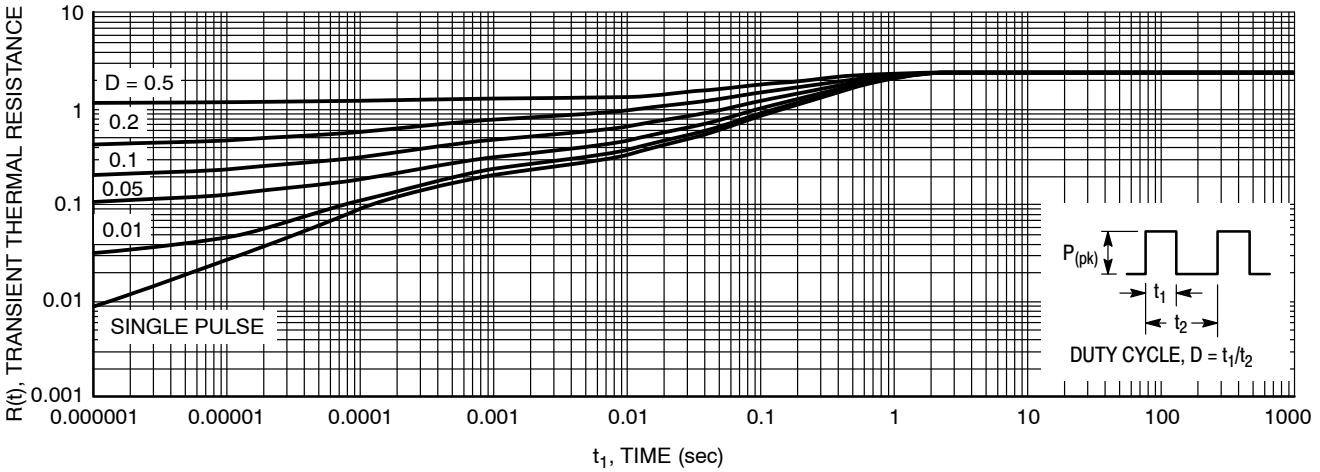
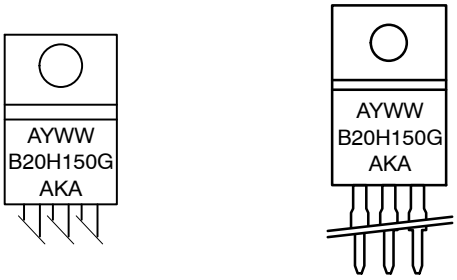


Figure 10. Thermal Response Junction−to−Case for MBRF20H150CTG

MARKING DIAGRAMS



TO−220AB TO−220FP

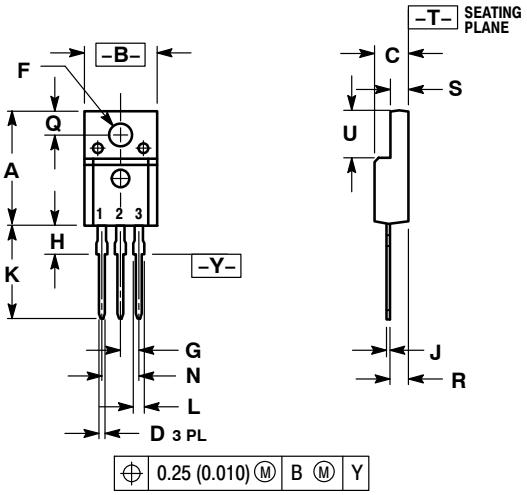
A = Assembly Location
Y = Year
WW = Work Week
B20H150 = Device Code
G = Pb−Free Device
AKA = Polarity Designator

ORDERING INFORMATION

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

PACKAGE DIMENSIONS

TO−220 FULLPAK
CASE 221D−03
ISSUE K

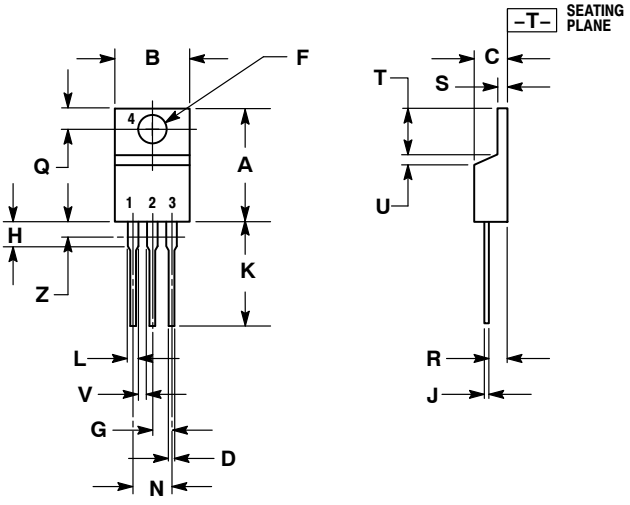


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH
3. 221D−01 THRU 221D−02 OBSOLETE, NEW STANDARD 221D−03.

	INCHES		MILLIMETERS	
DIM	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

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

TO−220
CASE 221A−09
ISSUE AF



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	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	0.64
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

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PUBLICATION ORDERING INFORMATION

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