

# MBRF20H150CTG, MBR20H150CTG

## SWITCHMODE Power Rectifier 150 V, 20 A

### 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

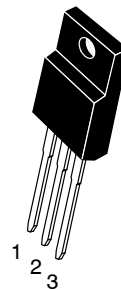
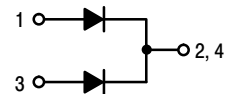
Please See the Table on the Following Page



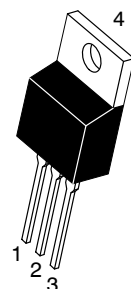
ON Semiconductor®

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## SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 150 VOLTS



TO-220 FULLPAK™  
CASE 221D  
STYLE 3



TO-220AB  
CASE 221A  
STYLE 6

### ORDERING AND MARKING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

# MBRF20H150CTG, MBR20H150CTG

## 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 $V_R$ ) $T_C = 134^\circ\text{C}$ (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	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10,000	V/ $\mu\text{s}$
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.

- 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 (MBR20H150CT) (MBRF20H150CT)	$R_{\theta JC}$ $R_{\theta JA}$ $R_{\theta JC}$	2.0 45 2.5	$^\circ\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ( $I_F = 5\text{ A}$ , $T_C = 25^\circ\text{C}$ ) ( $I_F = 5\text{ A}$ , $T_C = 125^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_C = 25^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_C = 125^\circ\text{C}$ )	$V_F$	0.72 0.57 0.87 0.65	0.60	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 25^\circ\text{C}$ ) (Rated DC Voltage, $T_C = 125^\circ\text{C}$ )	$i_R$		50 30	$\mu\text{A}$ mA

- Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

# MBRF20H150CTG, MBR20H150CTG

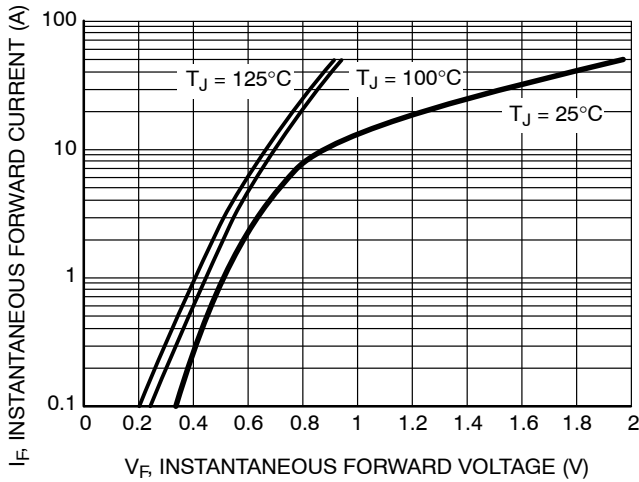


Figure 1. Typical Forward Voltage

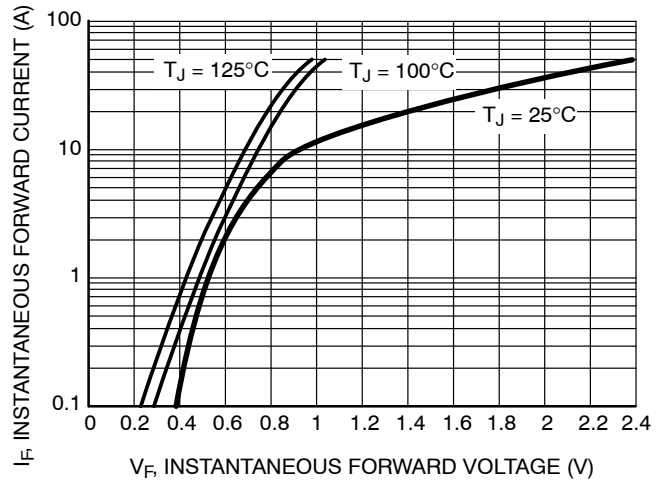


Figure 2. Maximum Forward Voltage

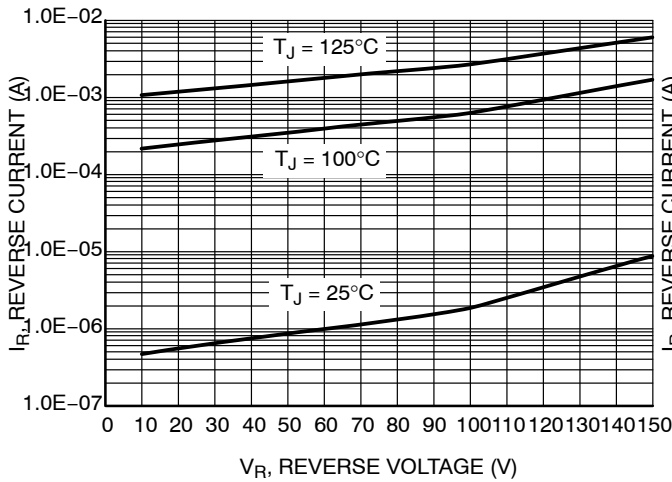


Figure 3. Typical Reverse Current

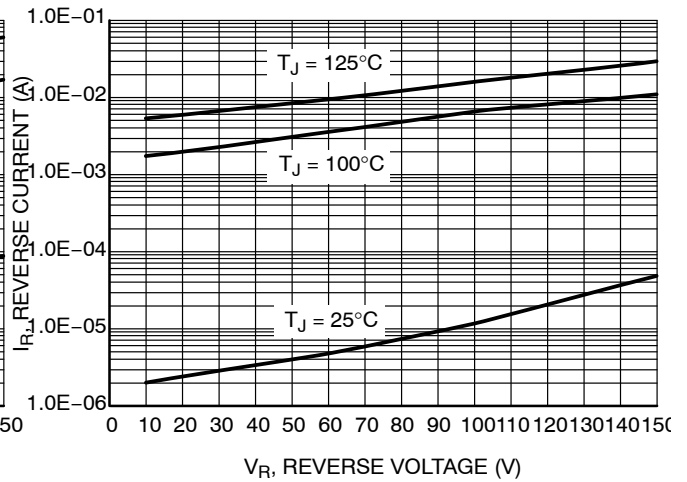


Figure 4. Maximum Reverse Current

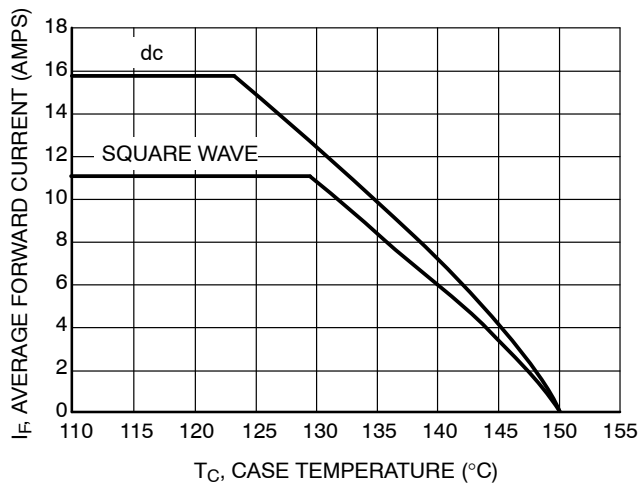


Figure 5. Current Derating

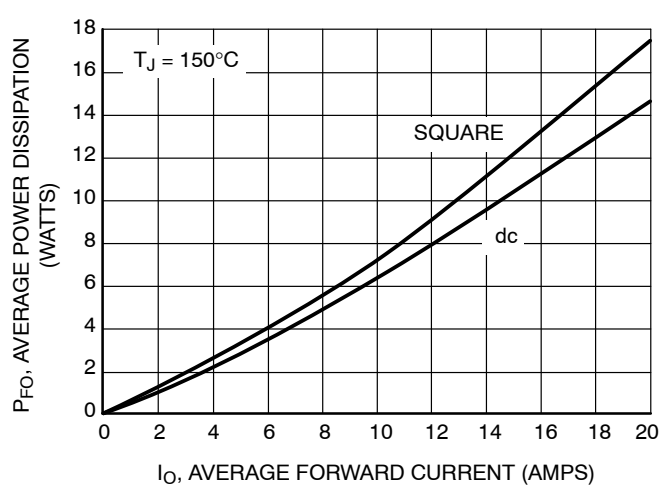


Figure 6. Forward Power Dissipation

# MBRF20H150CTG, MBR20H150CTG

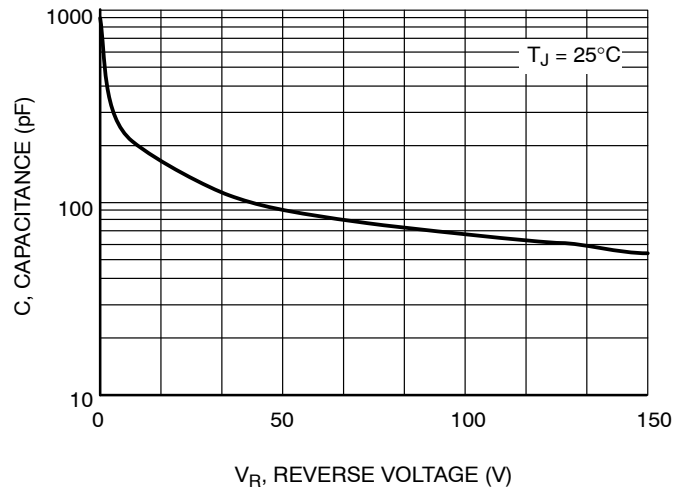


Figure 7. Capacitance

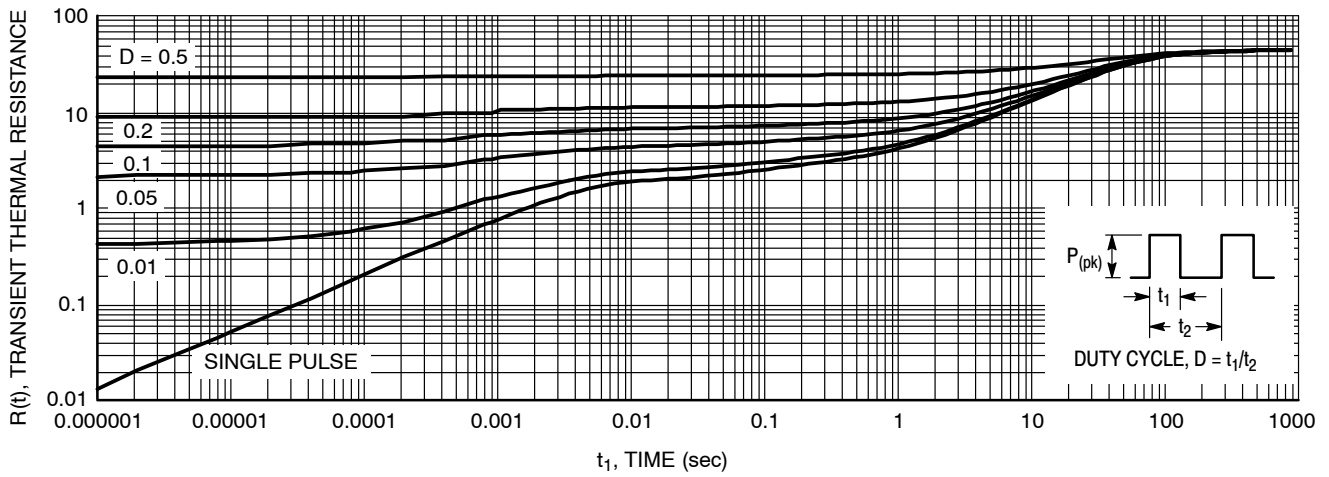


Figure 8. Thermal Response Junction-to-Ambient for MBR20H150CTG

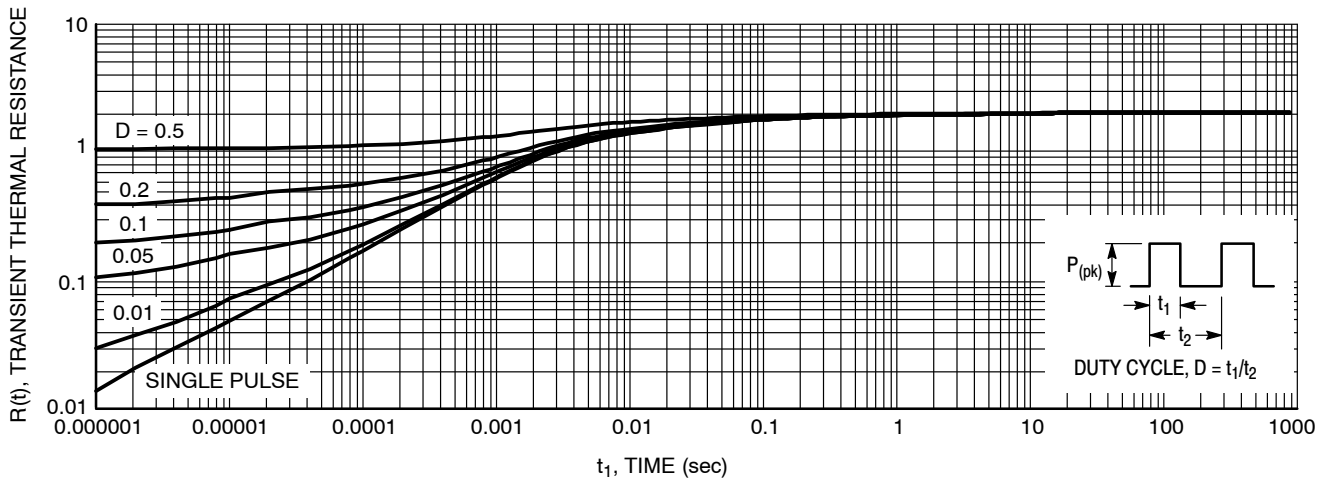


Figure 9. Thermal Response Junction-to-Case for MBR20H150CTG

# MBRF20H150CTG, MBR20H150CTG

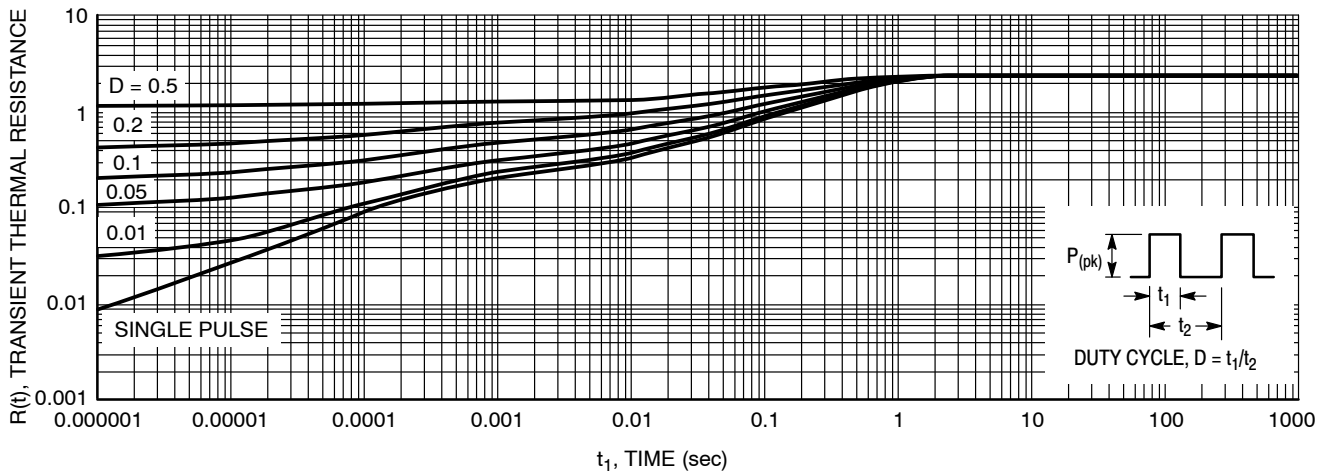
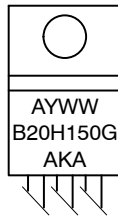


Figure 10. Thermal Response Junction-to-Case for MBRF20H150CTG

## MARKING DIAGRAMS



TO-220AB



TO-220FP

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

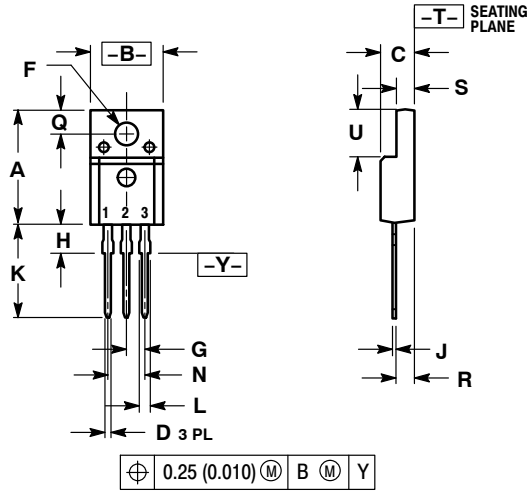
## ORDERING INFORMATION

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

# MBRF20H150CTG, MBR20H150CTG

## PACKAGE DIMENSIONS

### TO-220 FULLPAK CASE 221D-03 ISSUE K

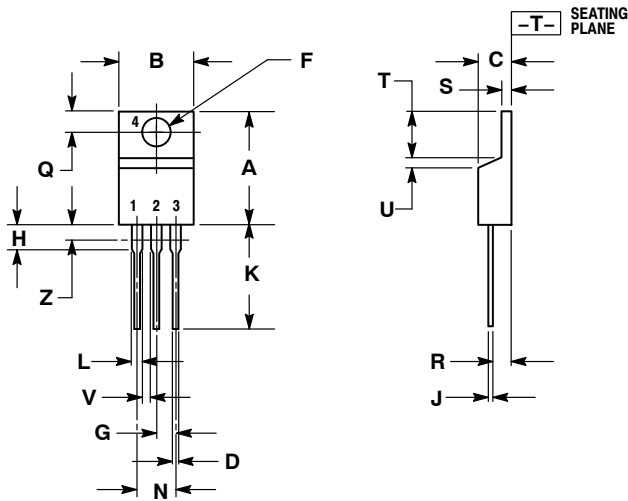


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH
  3. 221D-01 THRU 221D-02 OBSOLETE, NEW STANDARD 221D-03.

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

- 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.

DIM	INCHES		MILLIMETERS	
	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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