

# Switch-mode Power Rectifier

## 150 V, 10 A

### MBRF10H150CTG

#### Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capability
- 10 A Total (5 A Per Diode Leg)
- Guard-Ring for Stress Protection
- This is a Pb-Free Device

#### 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
- 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

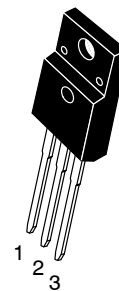
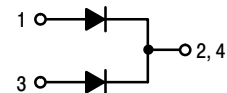


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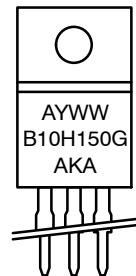
### SCHOTTKY BARRIER RECTIFIER

#### 10 AMPERES, 150 VOLTS



TO-220 FULLPAK™  
CASE 221D

#### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
B10H150 = Device Code  
G = Pb-Free Device  
AKA = Polarity Designator

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

# MBRF10H150CTG

## 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 $V_R$ ) $T_C = 142^\circ\text{C}$ (Per Device)	$I_{F(AV)}$	5 10	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	150	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	10000	V/ $\mu\text{s}$
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 – Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ( $I_F = 5\text{ A}$ , $T_C = 25^\circ\text{C}$ ) ( $I_F = 5\text{ A}$ , $T_C = 125^\circ\text{C}$ )	$V_F$	0.85 0.63	0.69	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 25^\circ\text{C}$ ) (Rated DC Voltage, $T_C = 125^\circ\text{C}$ )	$i_R$		45 20	$\mu\text{A}$ mA

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

## DEVICE ORDERING INFORMATION

Device Order Number	Package Type	Shipping†
MBRF10H150CTG	TO-220FP (Pb-Free)	50 Units / Rail

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

# MBRF10H150CTG

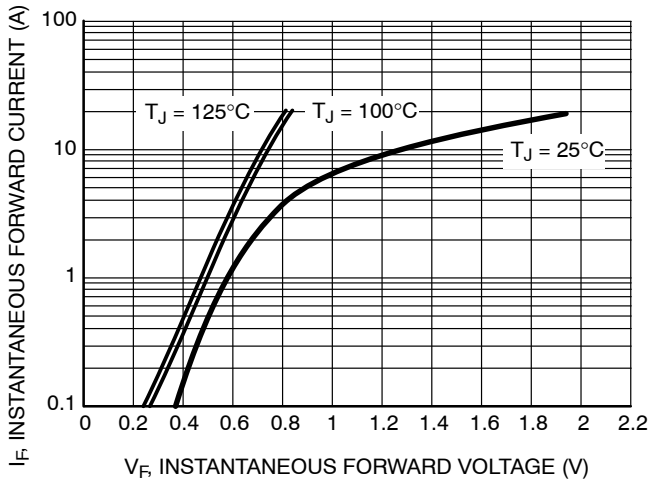


Figure 1. Typical Forward Voltage

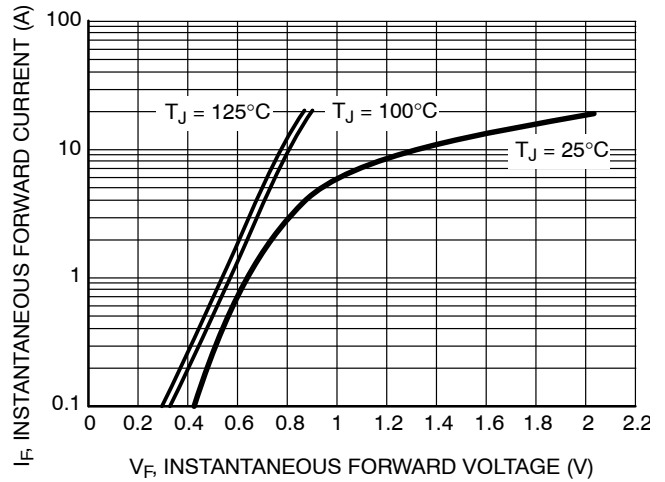


Figure 2. Maximum Forward Voltage

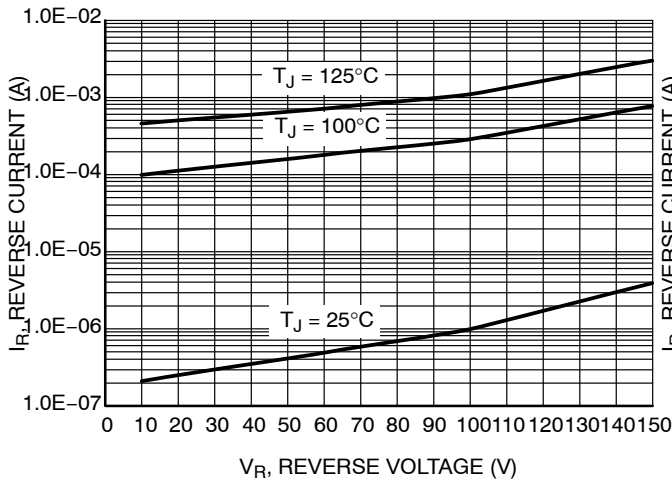


Figure 3. Typical Reverse Current

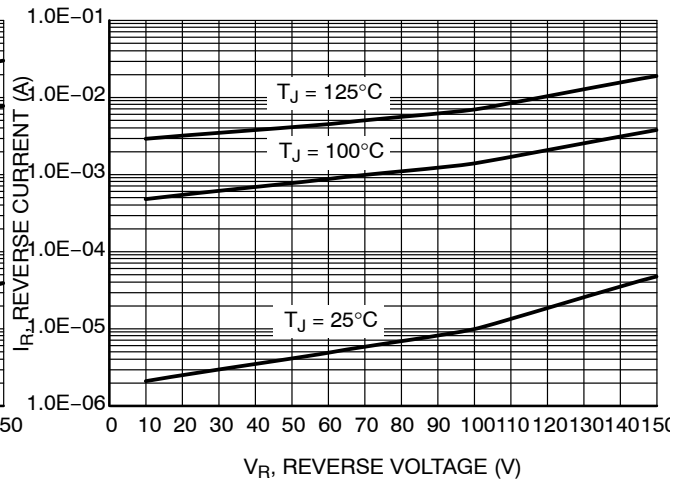


Figure 4. Maximum Reverse Current

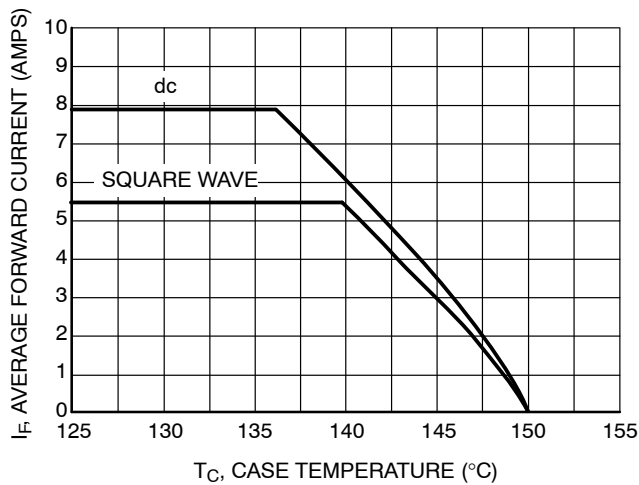


Figure 5. Current Derating

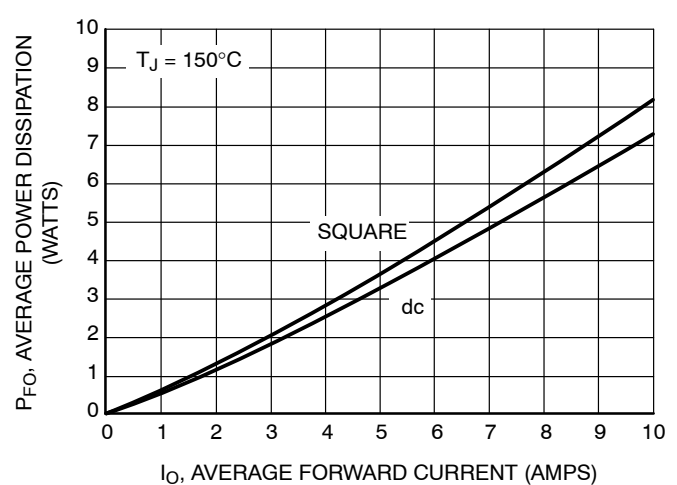


Figure 6. Forward Power Dissipation

# MBRF10H150CTG

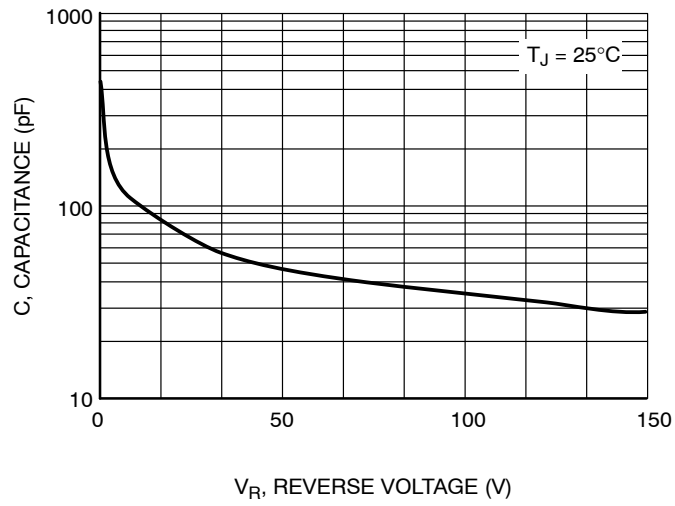


Figure 7. Capacitance

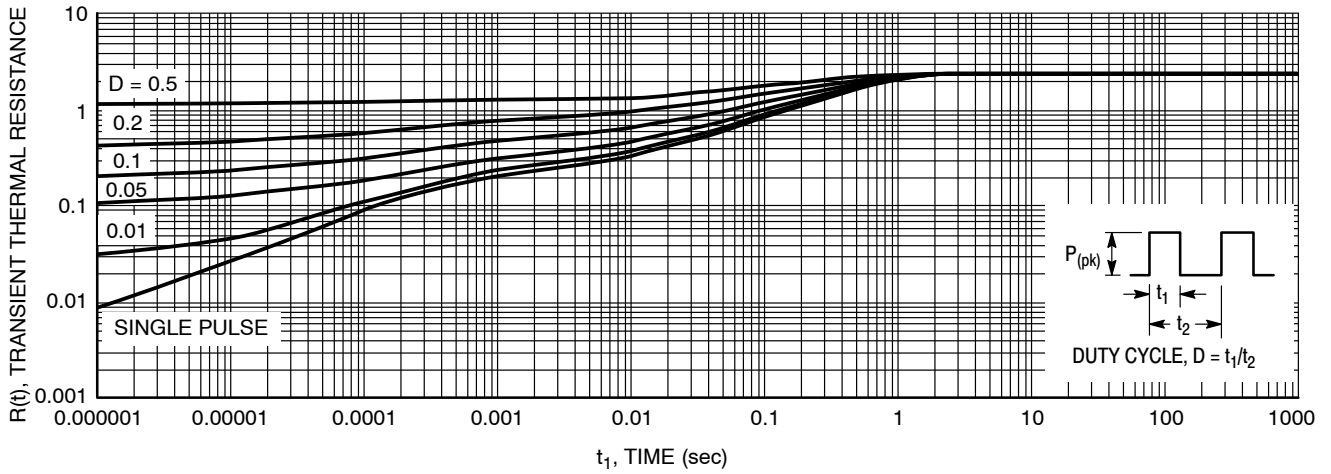
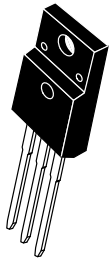


Figure 8. Thermal Response Junction-to-Case for MBRF10H150CTG

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

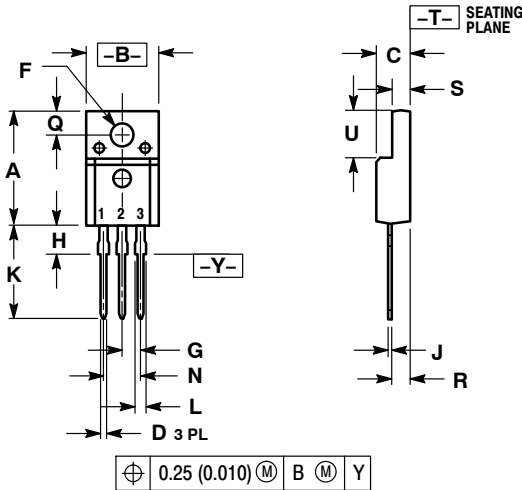
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SCALE 1:1

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

DATE 27 FEB 2009



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

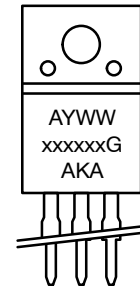
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.617	0.635	15.67	16.12
B	0.392	0.419	9.96	10.63
C	0.177	0.193	4.50	4.90
D	0.024	0.039	0.60	1.00
F	0.116	0.129	2.95	3.28
G	0.100 BSC		2.54 BSC	
H	0.118	0.135	3.00	3.43
J	0.018	0.025	0.45	0.63
K	0.503	0.541	12.78	13.73
L	0.048	0.058	1.23	1.47
N	0.200 BSC		5.08 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:<br>PIN 1. GATE<br>2. DRAIN<br>3. SOURCE     | STYLE 2:<br>PIN 1. BASE<br>2. COLLECTOR<br>3. EMITTER | STYLE 3:<br>PIN 1. ANODE<br>2. CATHODE<br>3. ANODE |
| STYLE 4:<br>PIN 1. CATHODE<br>2. ANODE<br>3. CATHODE | STYLE 5:<br>PIN 1. CATHODE<br>2. ANODE<br>3. GATE     | STYLE 6:<br>PIN 1. MT 1<br>2. MT 2<br>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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