MBRF2060CTG

Switch-mode Schottky Power Rectifier

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
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- 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

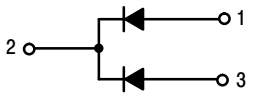
Mechanical Characteristics:

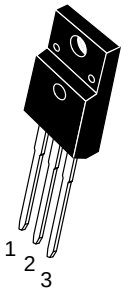
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

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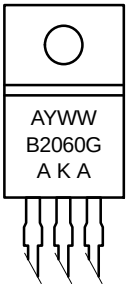
SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 60 VOLTS





TO−220 FULLPAK CASE 221AH

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
B2060 = Device Code
G = Pb−Free Package
AKA = Polarity Designator

ORDERING INFORMATION

Device	Package	Shipping
MBRF2060CTG	TO−220FP (Pb−Free)	50 Units/Rail

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MAXIMUM RATINGS (Per Leg)

Rating		Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage		V_{RRM} V_{RWM} V_R	60	V
Average Rectified Forward Current (Rated V_R), T_C = 133°C	Total Device	$I_{F(AV)}$	10 20	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz), T_C = 133°C		I_{FRM}	20	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)		I_{FSM}	150	A
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)		I_{RRM}	0.5	A
Operating Junction and Storage Temperature Range (Note 1)		T_J, T_{stg}	− 65 to +175	°C
Voltage Rate of Change (Rated V_R)		dv/dt	10000	V/μs
RMS Isolation Voltage (t = 0.3 second, R.H. ≤ 30%, T_A = 25°C) (Note 2)	Per Figure 3	V_{iso1}	4500	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.

THERMAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Value	Unit
Maximum Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	4.0	°C/W
Lead Temperature for Soldering Purposes: 1/8 in from Case for 5 Seconds	T_L	260	°C

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 3) (i_F = 10 Amp, T_C = 25°C) (i_F = 10 Amp, T_C = 125°C) (i_F = 20 Amp, T_C = 25°C) (i_F = 20 Amp, T_C = 125°C)	v_F	 0.85 0.75 0.95 0.85	V
Maximum Instantaneous Reverse Current (Note 3) (Rated DC Voltage, T_C = 25°C) (Rated DC Voltage, T_C = 125°C)	i_R	 0.15 150	mA

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
2. Proper strike and creepage distance must be provided.
3. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%

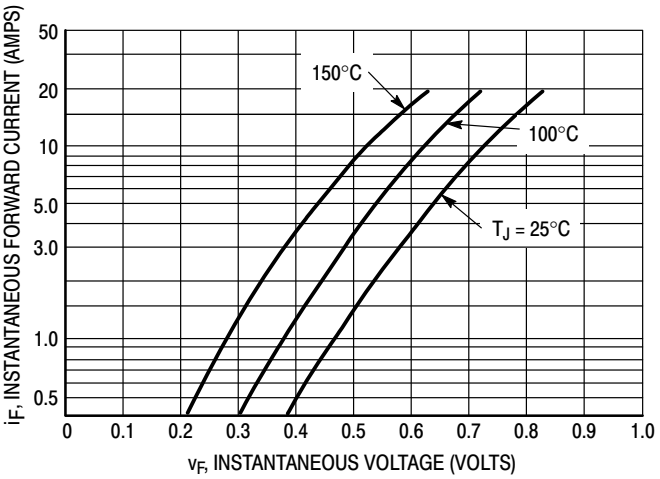


Figure 1. Typical Forward Voltage Per Diode

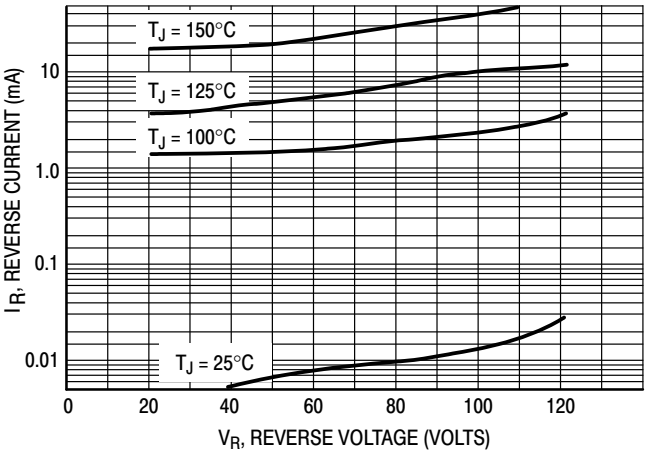


Figure 2. Typical Reverse Current Per Diode

TEST CONDITION FOR ISOLATION TEST*

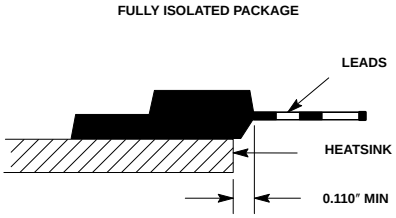
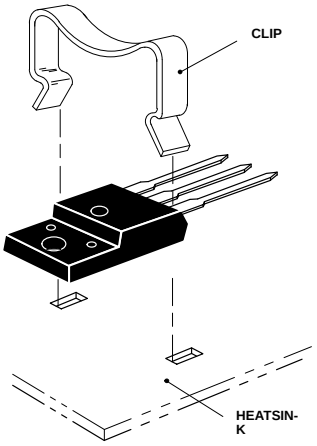


Figure 3. Mounting Position

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

MOUNTING INFORMATION



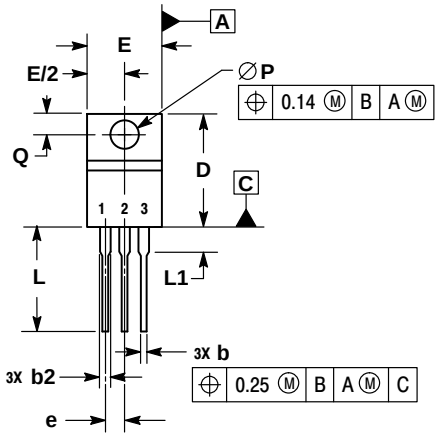
Clip−Mounted

Figure 4. Typical Mounting Technique

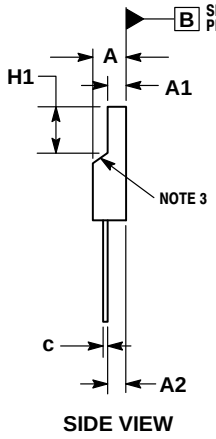
MBRF2060CTG

PACKAGE DIMENSIONS

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



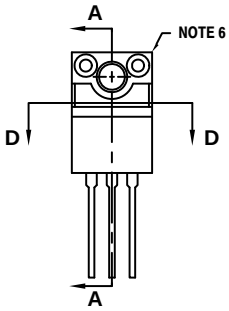
FRONT VIEW



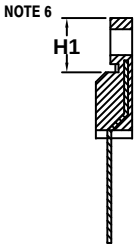
SIDE VIEW



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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