HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

Product Summary

V_{RRM} (V)	I_O (A)	$V_{F\ (MAX)}$ (V) @ +25°C	$I_{R\ (MAX)}$ (mA) @ +25°C
60	2 × 5	0.75	0.1

Description

High voltage dual Schottky rectifier suited for switch mode power supplies and other power converters. This device is intended for use in medium voltage operation, and particularly, in high frequency circuits where low switching losses and low noise are required.

MBR1060C is available in TO-220-3 (2), TO-220F-3 packages.

Applications

- Power Supply Output Rectification
- Power Management
- Instrumentation

Features

- Low Forward Voltage: 0.75V @ +25°C
- High Surge Current Capacity
- +150°C Operating Junction Temperature
- 10A Total (5A Each Diode Leg)
- Guard-Ring for Stress Protection
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q101, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
- **https://www.diodes.com/quality/product-definitions/**

Mechanical Data

- Case: TO-220-3 (2), TO-220F-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight:
  - TO-220-3 (2), TO-220F-3 – 1.9Grams (Approximate)

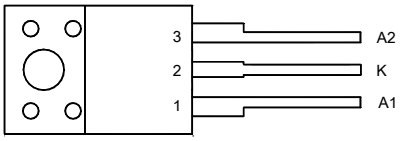
TO-220F-3

TO-220-3 (2)

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

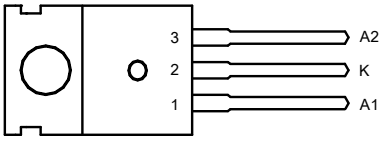
Pin Assignments

(Front View)



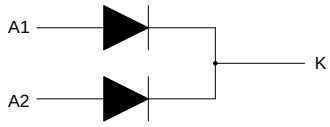
TO-220F-3

(Front View)



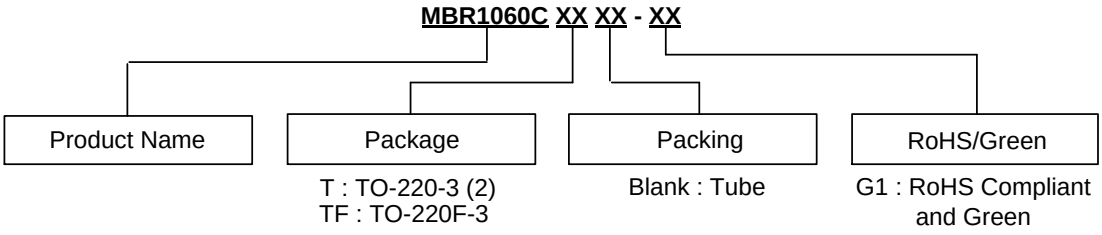
TO-220-3 (2)

Pin Assignments (continued)



Internal Structure of MBR1060C

Ordering Information (Note 4)



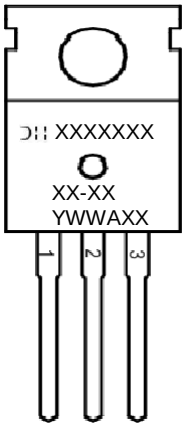
Package	Part Number	Marking ID	Packing
TO-220-3 (2)	MBR1060CT-G1	MBR1060CT-G1	50 Pieces/Tube
TO-220F-3	MBR1060CTF-G1	MBR1060CTF-G1	50 Pieces/Tube

Note: 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

(1) TO-220-3 (2)

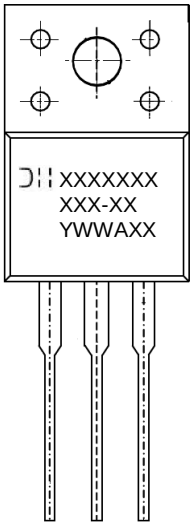
(Front View)



First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

(2) TO-220F-3

(Front View)



First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and 8th Digits of Batch Number

Maximum Ratings (Each Diode Leg)

Characteristic	Symbol	Rating	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 = +140°C	$I_{F(AV)}$	5	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20kHz) T_C = +139°C	I_{FRM}	10	A
Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Half Wave, Single Phase, 60Hz)	I_{FSM}	100	A
Operating Junction Temperature (Note 5)	T_J	+150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10000	V/µs
ESD (Machine Model = C)	—	> 400	V
ESD (Human Body Model = 3B)	—	> 8000	V

Note: 5. The heat generated must be less than the thermal conductivity from Junction to Ambient: $dP_D/dT_J < 1/\theta_{JA}$.

Thermal Characteristics

Characteristic	Symbol	Rating		Unit
Maximum Thermal Resistance (Junction to Case) (Note 6)	$R_{\theta JC}$	TO-220-3 (2)	3.0	°C/W
		TO-220F-3	3.5	
Maximum Thermal Resistance (Junction to Ambient) (Note 6)	$R_{\theta JA}$	TO-220-3 (2)	60	
		TO-220F-3	50	

Electrical Characteristics (Each Diode Leg)

Characteristic	Symbol	Rating	Unit	Test Condition
Maximum Instantaneous Forward Voltage Drop (Note 7)	V_F	0.75	V	I_F = 5A, T_C = +25°C
		0.65		I_F = 5A, T_C = +125°C
		0.90		I_F = 10A, T_C = +25°C
		0.80		I_F = 10A, T_C = +125°C
Maximum Instantaneous Reverse Current (Note 7)	I_R	0.1	mA	Rated DC Voltage, T_C = +25°C
		15.0		Rated DC Voltage, T_C = +125°C

Notes: 6. Device mounted on heat sink, with minimum recommended pad layout per http://www.diodes.com/package-outlines.html.

7. Short duration pulse test used to minimize self-heating effect, Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%.

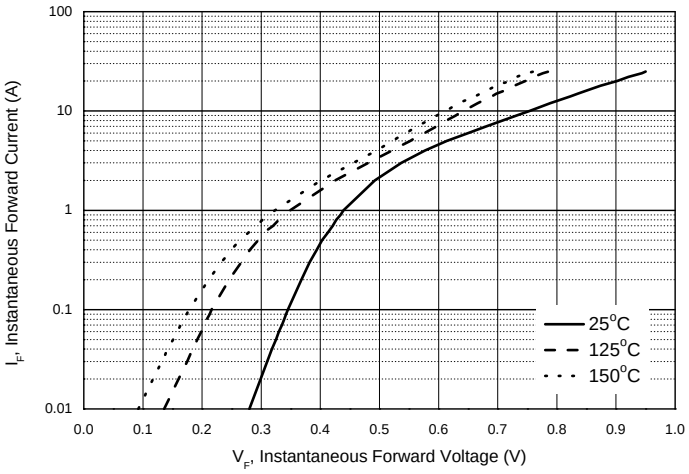


Figure 1. Typical Forward Voltage Per Diode

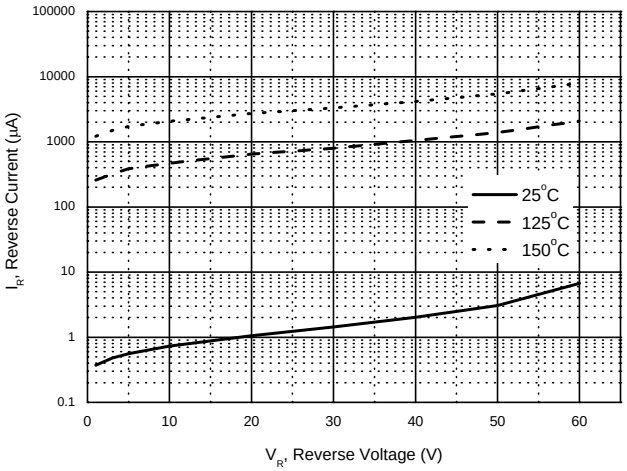


Figure 2. Typical Reverse Current Per Diode

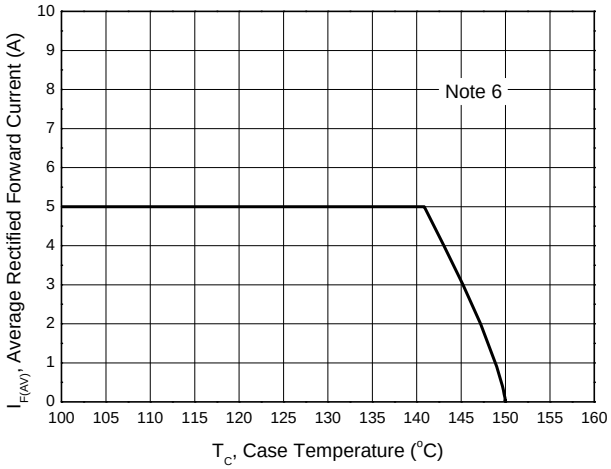
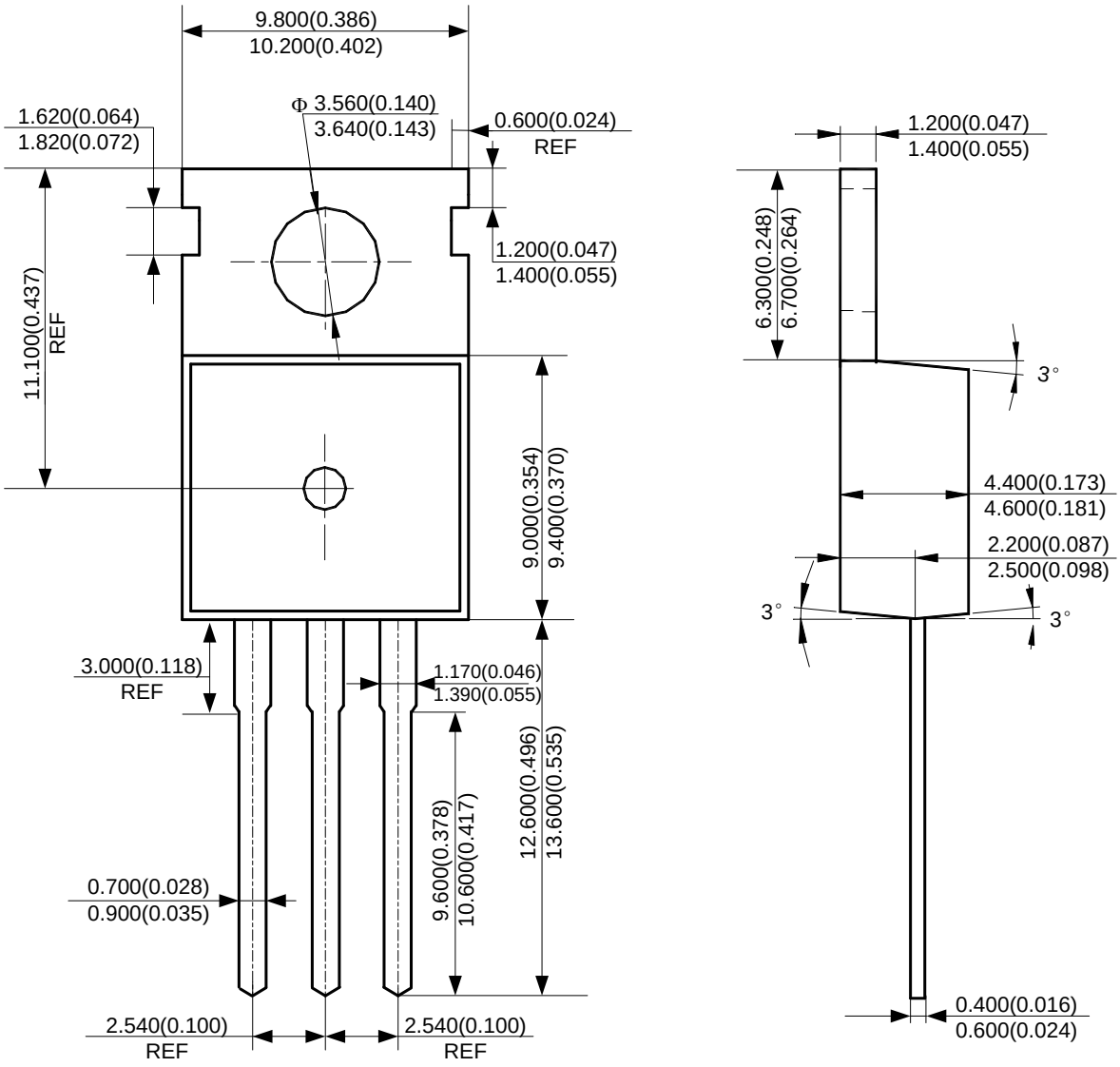


Figure 3. Average Rectified Forward Current vs. Case Temperature (Per Diode)

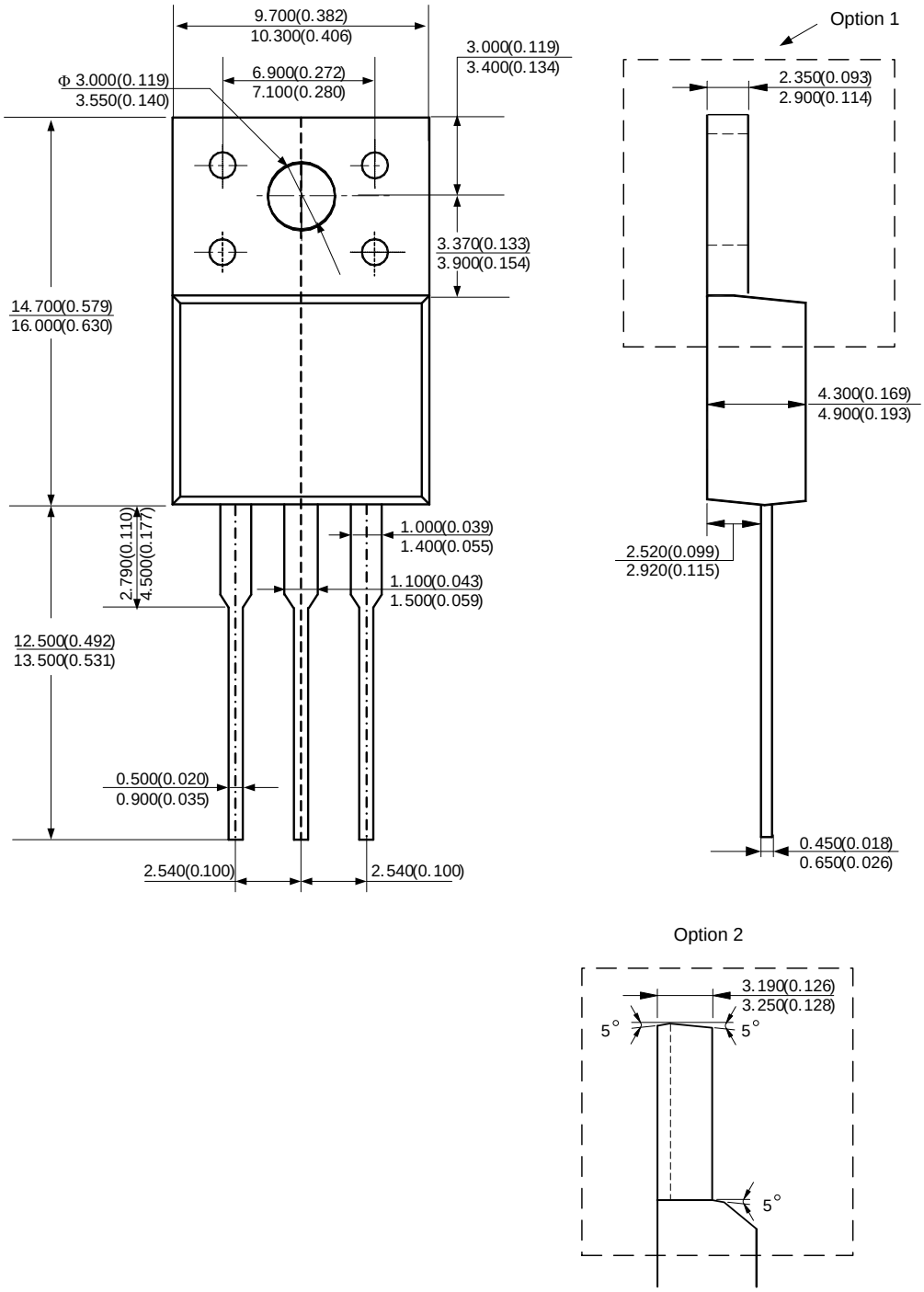
Package Outline Dimensions (All dimensions in mm(inch).)

(1) Package Type: TO-220-3 (2)



Package Outline Dimensions (continued) (All dimensions in mm(inch).)

(2) Package Type: TO-220F-3



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