

# MBR3060

## Axial Lead Rectifier

...employing 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 overlap contact. Ideally suited for use as rectifiers in low-voltage, high-frequency inverters, free wheeling diodes, and polarity protection diodes.

- Extremely Low  $V_f$
- Low Power Loss/High Efficiency
- Highly Stable Oxide Passivated Junction
- Low Stored Charge, Majority Carrier Conduction

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 0.4 gram (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 220°C Max. for 10 Seconds, 1/16" from case
- Shipped in plastic bags, 1000 per bag
- Available Tape and Reeled, 5000 per reel, by adding a "RL" suffix to the part number
- Polarity: Cathode indicated by Polarity Band
- ESD Ratings: Machine Model = A  
Human Body Model = 2
- Marking: MBR3060

### MAXIMUM RATINGS

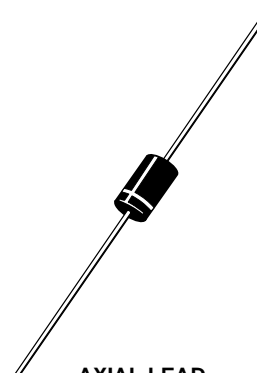
Rating	Symbol	Max	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_r$	60	V
Average Rectified Forward Current $T_L = 125^\circ\text{C}$ ( $R_{\theta JL} = 13^\circ\text{C/W}$ , P.C. Board Mounting)	$I_o$	3.0	A
Non-Repetitive Peak Surge Current	$I_{FSM}$	125	A
Operating and Storage Junction Temperature Range (Reverse Voltage Applied)	$T_J, T_{stg}$	-65 to +150	°C
Peak Operating Junction Temperature (Forward Current Applied)	$T_{J(pk)}$	150	°C



ON Semiconductor™

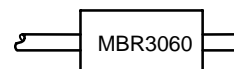
<http://onsemi.com>

## SCHOTTKY BARRIER RECTIFIER 3.0 AMPERES 60 VOLTS



AXIAL LEAD  
CASE 59-09  
PLASTIC

### MARKING DIAGRAM



MBR3060 = Device Code

### ORDERING INFORMATION

Device	Package	Shipping
MBR3060	Axial Lead	1000 Units/Bag
MBR3060RL	Axial Lead	5000/Tape & Reel

# THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Lead (Note 1, see Note 3, Mounting Method 3)	$R_{\theta JL}$	13	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient (see Note 3, Mounting Method 3)	$R_{\theta JA}$	50	$^{\circ}C/W$

# ELECTRICAL CHARACTERISTICS ( $T_L = 25^{\circ}C$ unless otherwise noted) (Note 1)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ( $I_f = 3.0$ Amp), $T_L = 25^{\circ}C$ ( $I_f = 3.0$ Amp), $T_L = 100^{\circ}C$	$V_f$	0.62 0.59	V
Maximum Instantaneous Reverse Current (Note 2) ( $V_r = 60$ V), $T_L = 25^{\circ}C$ ( $V_r = 60$ V), $T_L = 100^{\circ}C$	$I_r$	150 10	$\mu A$ mA

- Lead Temperature reference is cathode lead at printed wiring board.
- Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle = 2.0%.

# TYPICAL CHARACTERISTICS

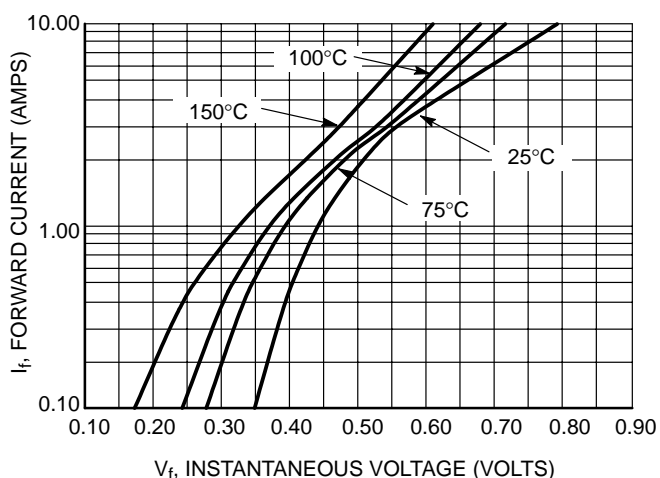


Figure 1. Typical Forward Voltage

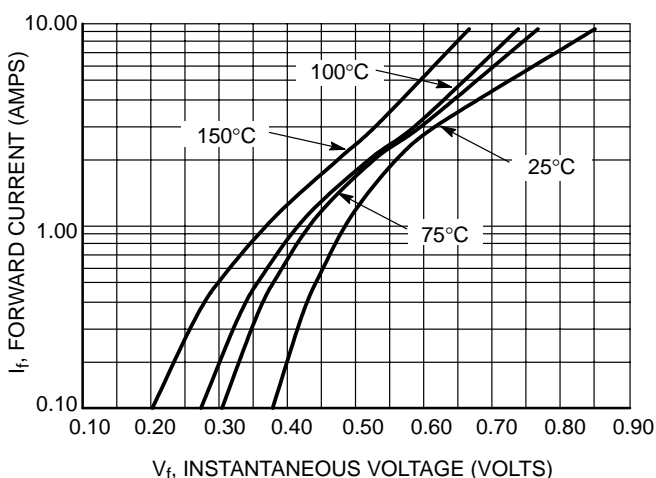


Figure 2. Maximum Forward Voltage

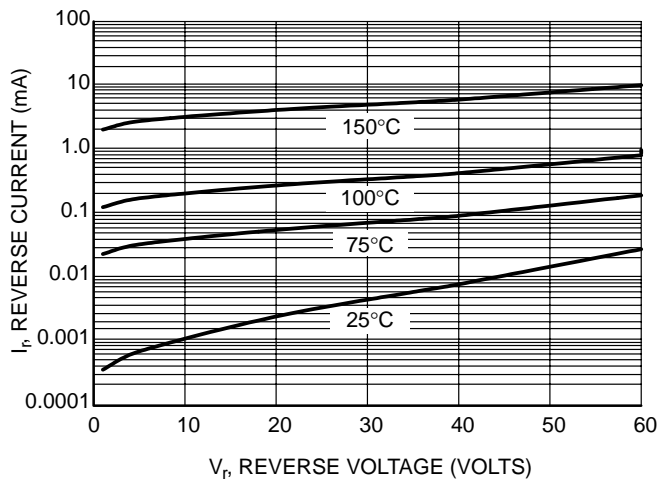


Figure 3. Typical Reverse Current

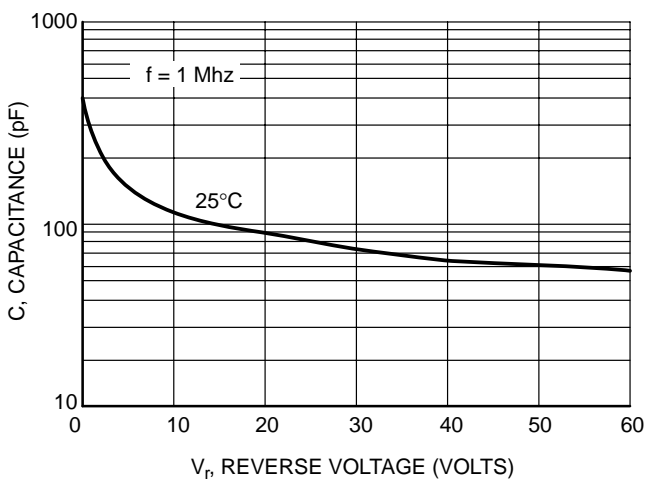


Figure 4. Typical Capacitance

TYPICAL CHARACTERISTICS

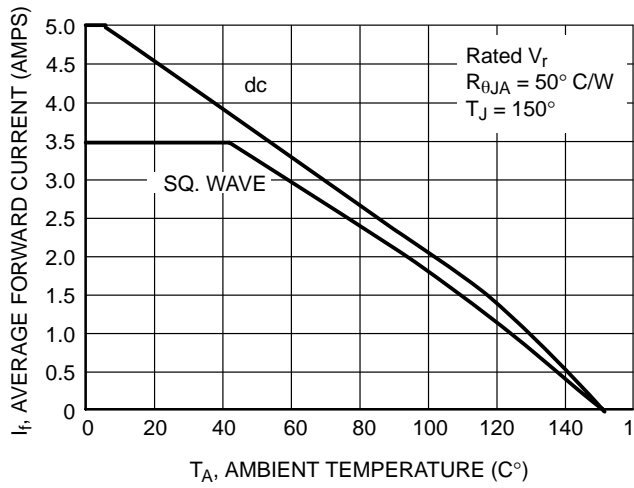


Figure 5. Current Derating – Ambient

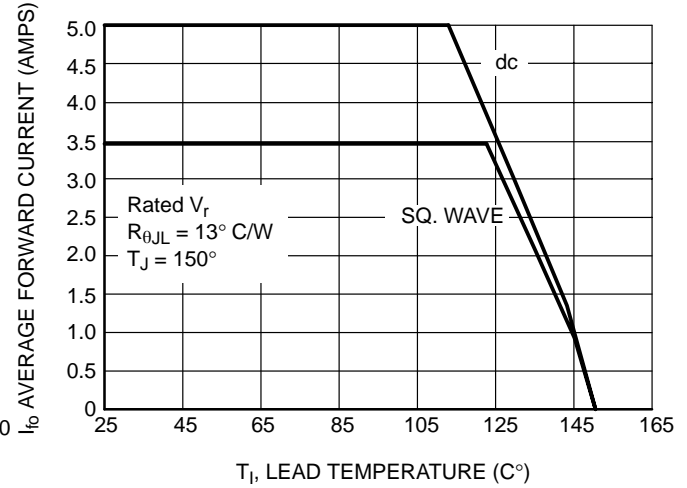


Figure 6. Current Derating – Lead

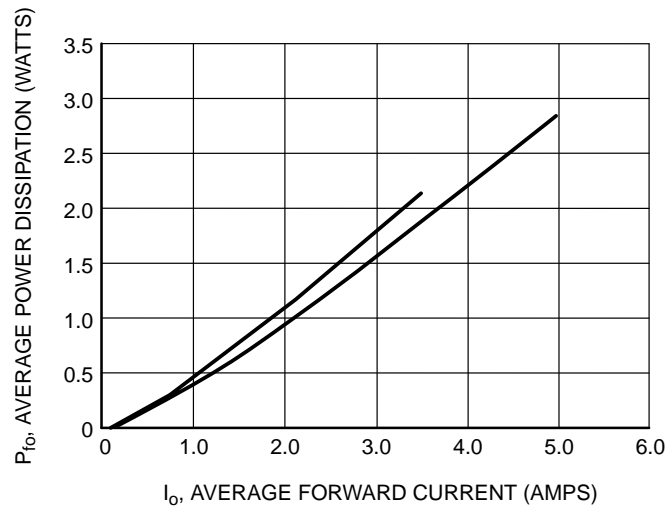


Figure 7. Forward Power Dissipation

# MBR3060

## NOTE 3 — MOUNTING DATA

Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) and thermal resistance junction-to-lead ( $R_{\theta JL}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

TYPICAL VALUES FOR  $R_{\theta JA}$  IN STILL AIR

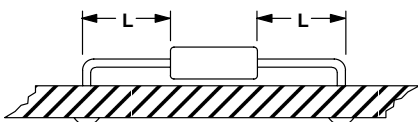
Mounting Method	Lead Length, L (in)				$R_{\theta JA}$
	1/8	1/4	1/2	3/4	
1	52	65	72	85	$^{\circ}\text{C/W}$
2	67	80	87	100	$^{\circ}\text{C/W}$
3	50				$^{\circ}\text{C/W}$

TYPICAL VALUES FOR  $R_{\theta JL}$  IN STILL AIR

Mounting Method	Lead Length, L (in)			$R_{\theta JA}$
	1/8	1/4	1/2	
1	15	23	37	$^{\circ}\text{C/W}$
2	30	38	52	$^{\circ}\text{C/W}$
3	13			$^{\circ}\text{C/W}$

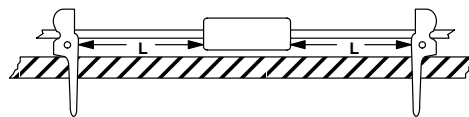
### Mounting Method 1

P.C. Board with  
1-1/2" X 1-1/2" copper surface.



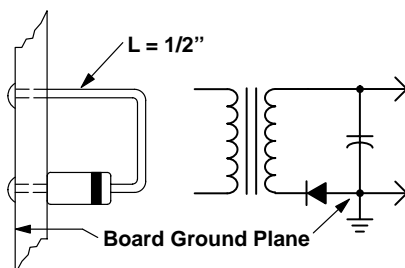
### Mounting Method 2

Vector Push-In  
Terminals T-28



### Mounting Method 3

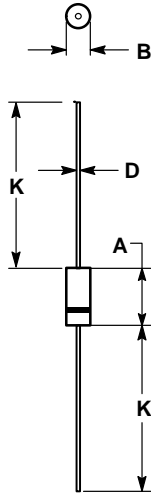
P.C. Board with  
1-1/2" X 1-1/2" copper surface.



# MBR3060

## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 59-09 ISSUE R




#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 59-04 OBSOLETE, NEW STANDARD 59-09.
4. 59-03 OBSOLETE, NEW STANDARD 59-10.
5. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY.
6. POLARITY DENOTED BY CATHODE BAND.
7. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.228	0.299	5.80	7.60
B	0.102	0.142	2.60	3.60
D	0.028	0.034	0.71	0.86
K	1.000	---	25.44	---

## **Notes**

## **Notes**

**ON Semiconductor** and  are trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

## PUBLICATION ORDERING INFORMATION

### Literature Fulfillment:

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** ONlit@hibbertco.com

**N. American Technical Support:** 800-282-9855 Toll Free USA/Canada

**JAPAN:** ON Semiconductor, Japan Customer Focus Center  
4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan 141-0031  
**Phone:** 81-3-5740-2700  
**Email:** r14525@onsemi.com

**ON Semiconductor Website:** <http://onsemi.com>

For additional information, please contact your local Sales Representative.