

# MBR340

Preferred Device

## Axial Lead Rectifier

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

### Features

- Extremely Low  $V_F$
- Low Power Loss/High Efficiency
- Highly Stable Oxide Passivated Junction
- Low Stored Charge, Majority Carrier Conduction
- Pb-Free Packages are Available\*

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Cathode indicated by Polarity Band

### MAXIMUM RATINGS

| Rating                                                                                                                                             | Symbol                          | Max         | Unit             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                                                             | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 40          | V                |
| Average Rectified Forward Current $T_A = 65^\circ\text{C}$<br>( $R_{\theta JA} = 28^\circ\text{C/W}$ , P.C. Board Mounting)                        | $I_O$                           | 3.0         | A                |
| Non-Repetitive Peak Surge Current (Note 1)<br>(Surge Applied at Rated Load Conditions<br>Halfwave, Single Phase, 60 Hz, $T_L = 75^\circ\text{C}$ ) | $I_{FSM}$                       | 80          | A                |
| Operating and Storage Junction Temperature<br>Range (Reverse Voltage Applied) (Note 2)                                                             | $T_J$ , $T_{stg}$               | -65 to +175 | $^\circ\text{C}$ |

### THERMAL CHARACTERISTICS

| Rating                                                                     | Symbol          | Max | Unit               |
|----------------------------------------------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Ambient<br>(see Note 5, Mounting Method 3) | $R_{\theta JA}$ | 28  | $^\circ\text{C/W}$ |

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.

1. Lead Temperature reference is cathode lead 1/32 in from case.
2. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP/dT_J < 1/R_{\theta JA}$ .

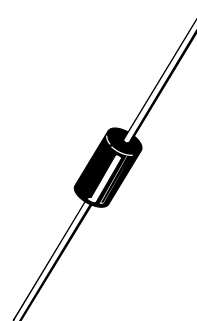
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

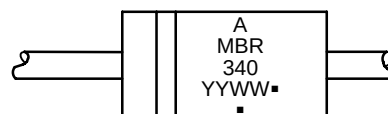
<http://onsemi.com>

## SCHOTTKY BARRIER RECTIFIER 3.0 AMPERES, 40 VOLTS



AXIAL LEAD  
CASE 267-05  
(DO-201AD)  
STYLE 1

### MARKING DIAGRAM



A = Assembly Location  
YY = Year  
WW = Work Week  
■ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device    | Package                 | Shipping†        |
|-----------|-------------------------|------------------|
| MBR340    | Axial Lead              | 500 Units / Bag  |
| MBR340G   | Axial Lead<br>(Pb-Free) | 500 Units / Bag  |
| MBR340RL  | Axial Lead              | 1500/Tape & Reel |
| MBR340RLG | Axial Lead<br>(Pb-Free) | 1500/Tape & Reel |

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

Preferred devices are recommended choices for future use and best overall value.

# MBR340

## ELECTRICAL CHARACTERISTICS ( $T_L = 25^\circ\text{C}$ unless otherwise noted) (Note 3)

| Characteristic                                                                                                             | Symbol | Max                     | Unit |
|----------------------------------------------------------------------------------------------------------------------------|--------|-------------------------|------|
| Maximum Instantaneous Forward Voltage (Note 4)<br>( $i_F = 1.0$ Amp)<br>( $i_F = 3.0$ Amp)<br>( $i_F = 9.4$ Amp)           | $V_F$  | 0.500<br>0.600<br>0.850 | V    |
| Maximum Instantaneous Reverse Current @ Rated dc Voltage (Note 4)<br>$T_L = 25^\circ\text{C}$<br>$T_L = 100^\circ\text{C}$ | $i_R$  | 0.60<br>20              | mA   |

3. Lead Temperature reference is cathode lead 1/32in from case.  
4. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle = 2.0%.

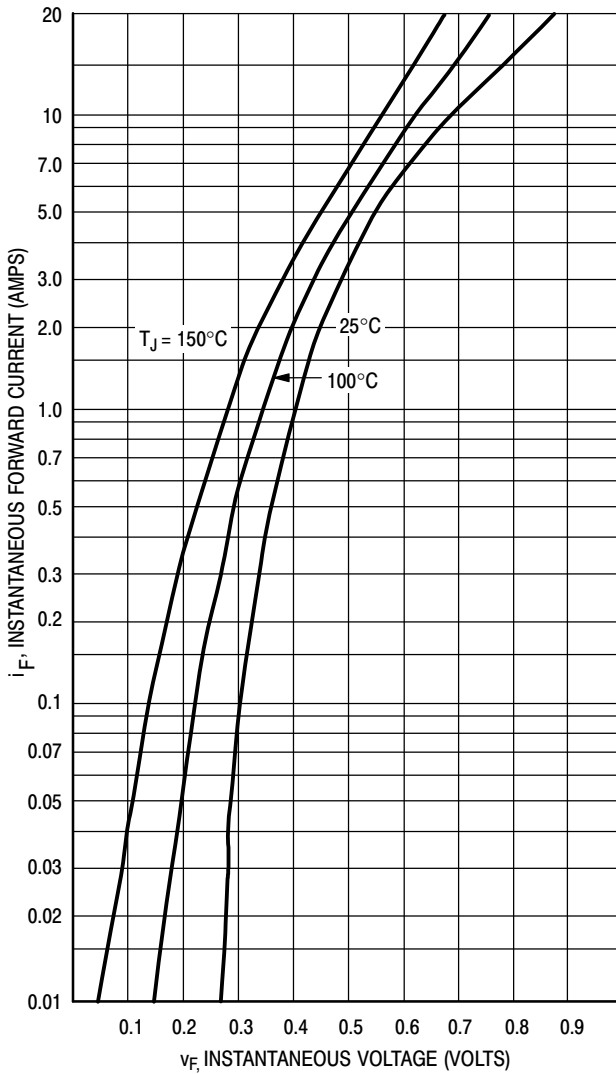


Figure 1. Typical Forward Voltage

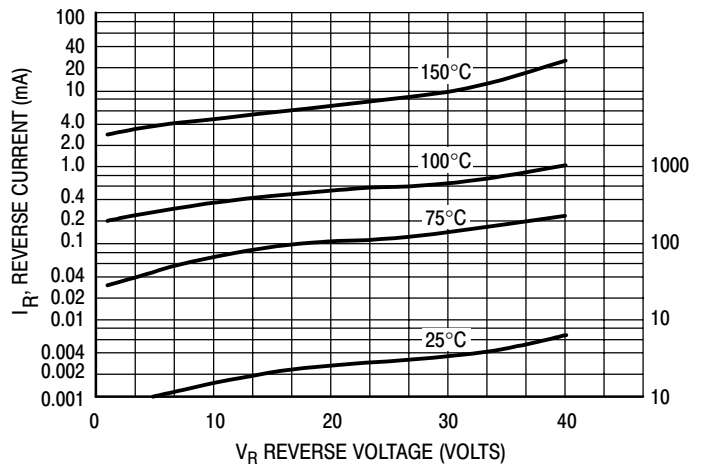


Figure 2. Typical Reverse Current\*

\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .

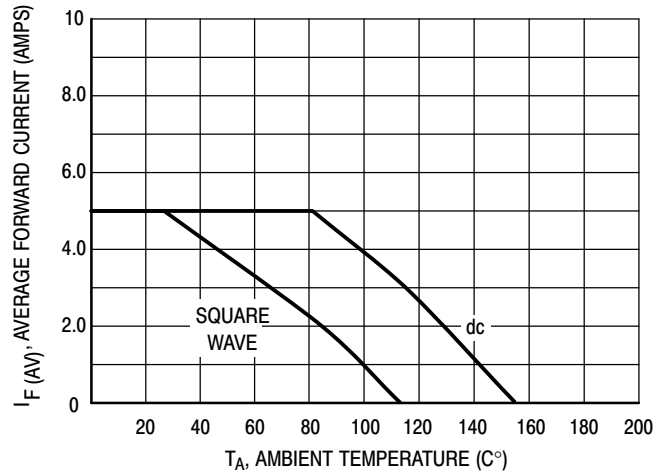


Figure 3. Current Derating  
(Mounting Method #3 per Note 5)

# MBR340

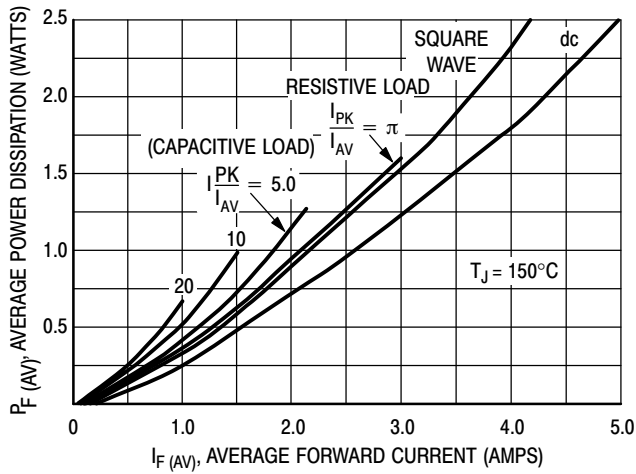


Figure 4. Power Dissipation

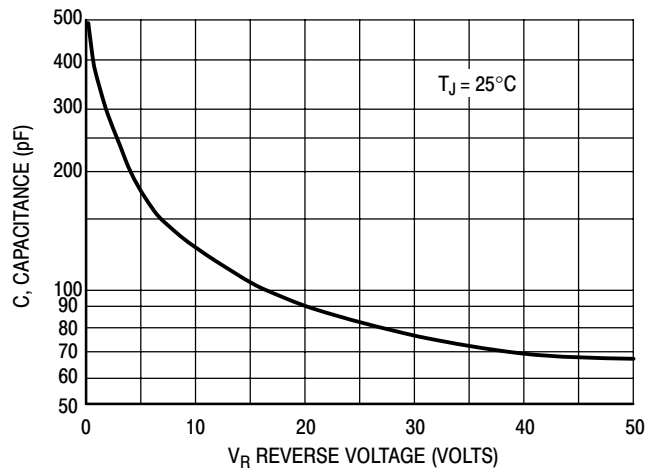


Figure 5. Typical Capacitance

## NOTE 5 — MOUNTING DATA

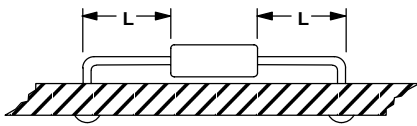
Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

### 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               | 50                  | 51  | 53  | 55  | $^\circ\text{C/W}$ |
| 2               | 58                  | 59  | 61  | 63  | $^\circ\text{C/W}$ |
| 3               | 28                  |     |     |     | $^\circ\text{C/W}$ |

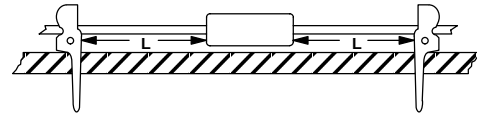
### Mounting Method 1

P.C. Board where available copper surface is small.



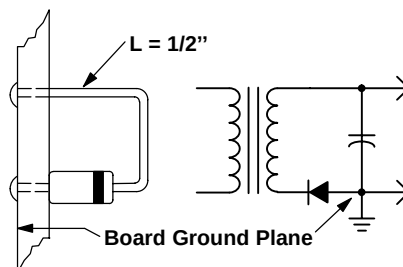
### Mounting Method 2

Vector Push-In  
Terminals T-28



### Mounting Method 3

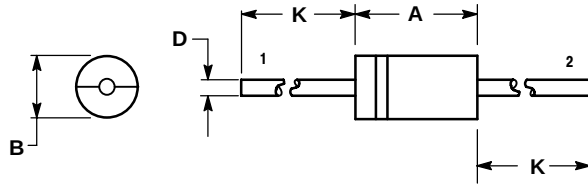
P.C. Board with  
2-1/2" X 2-1/2"  
copper surface.



# MBR340

## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 267-05 ISSUE G



#### NOTES:

1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 267-04 OBSOLETE, NEW STANDARD 267-05.

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.287  | 0.374 | 7.30        | 9.50 |
| B   | 0.189  | 0.209 | 4.80        | 5.30 |
| D   | 0.047  | 0.051 | 1.20        | 1.30 |
| K   | 1.000  | ---   | 25.40       | ---  |

#### STYLE 1:

- PIN 1. CATHODE (POLARITY BAND)  
2. ANODE

ON Semiconductor and  are registered 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. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## 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: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

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

Europe, Middle East and Africa Technical Support:  
Phone: 421 33 790 2910

Japan Customer Focus Center  
Phone: 81-3-5773-3850

ON Semiconductor Website: [www.onsemi.com](http://www.onsemi.com)

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local  
Sales Representative