

# Axial-Lead Glass Passivated Standard Recovery Rectifiers

## 1N5400 thru 1N5408

Lead mounted standard recovery rectifiers are designed for use in power supplies and other applications having need of a device with the following features:

### Features

- High Current to Small Size
- High Surge Current Capability
- Low Forward Voltage Drop
- Void-Free Economical Plastic Package
- Available in Volume Quantities
- Plastic Meets UL 94 V-0 for Flammability
- These are Pb-Free Devices

### Mechanical Characteristics:

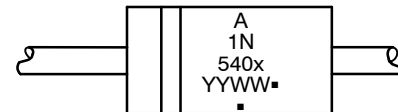
- Case: Epoxy, Molded
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Cathode Indicated by Polarity Band

## STANDARD RECOVERY RECTIFIERS 50–1000 VOLTS 3.0 AMPERES



AXIAL LEAD  
CASE 267-05  
STYLE 1

### MARKING DIAGRAM



A = Assembly Location  
 1N540x = Device Number  
 x = 0, 1, 2, 4, 6, 7 or 8  
 YY = Year  
 WW = Work Week  
 ■ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

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

# 1N5400 thru 1N5408

## MAXIMUM RATINGS

| Rating                                                                                                           | Symbol                          | 1N5400                       | 1N5401 | 1N5402 | 1N5404 | 1N5406 | 1N5407 | 1N5408 | Unit             |
|------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------------|--------|--------|--------|--------|--------|--------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                           | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50                           | 100    | 200    | 400    | 600    | 800    | 1000   | V                |
| Non-repetitive Peak Reverse Voltage                                                                              | $V_{RSM}$                       | 100                          | 200    | 300    | 525    | 800    | 1000   | 1200   | V                |
| Average Rectified Forward Current<br>(Single Phase Resistive Load,<br>1/2 in. Leads, $T_L = 105^\circ\text{C}$ ) | $I_O$                           | 3.0                          |        |        |        |        |        |        | A                |
| Non-repetitive Peak Surge Current<br>(8 ms Single Half-Sine-Wave)                                                | $I_{FSM}$                       | 200 (one cycle)              |        |        |        |        |        |        | A                |
| Operating and Storage Junction<br>Temperature Range                                                              | $T_J$<br>$T_{stg}$              | – 65 to +150<br>– 65 to +175 |        |        |        |        |        |        | $^\circ\text{C}$ |

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

| Characteristic                                                          | Symbol          | Typ | Unit               |
|-------------------------------------------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Ambient (PC Board Mount, 1/2 in. Leads) | $R_{\theta JA}$ | 53  | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

| Characteristic                                                                              | Symbol | Min    | Typ    | Max      | Unit          |
|---------------------------------------------------------------------------------------------|--------|--------|--------|----------|---------------|
| Forward Voltage ( $I_F = 3.0\text{ A}$ , $T_A = 25^\circ\text{C}$ )                         | $V_F$  | –      | –      | 1.0      | V             |
| Reverse Current (Rated DC Voltage)<br>$T_A = 25^\circ\text{C}$<br>$T_A = 100^\circ\text{C}$ | $I_R$  | –<br>– | –<br>– | 10<br>50 | $\mu\text{A}$ |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Ratings at  $25^\circ\text{C}$  ambient temperature unless otherwise specified.

60 Hz resistive or inductive loads.

For capacitive load, derate current by 20%.

# 1N5400 thru 1N5408

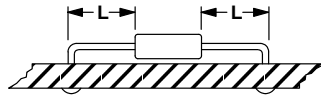
## NOTE 1 — AMBIENT MOUNTING DATA

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.

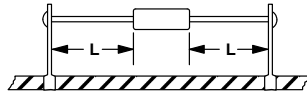
### TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

| 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                  |     |     |     | $^{\circ}\text{C/W}$ |

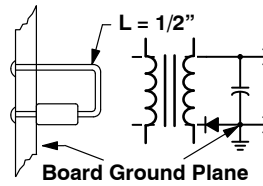
**MOUNTING METHOD 1**  
P.C. Board Where Available  
Copper Surface area is small



**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



# 1N5400 thru 1N5408

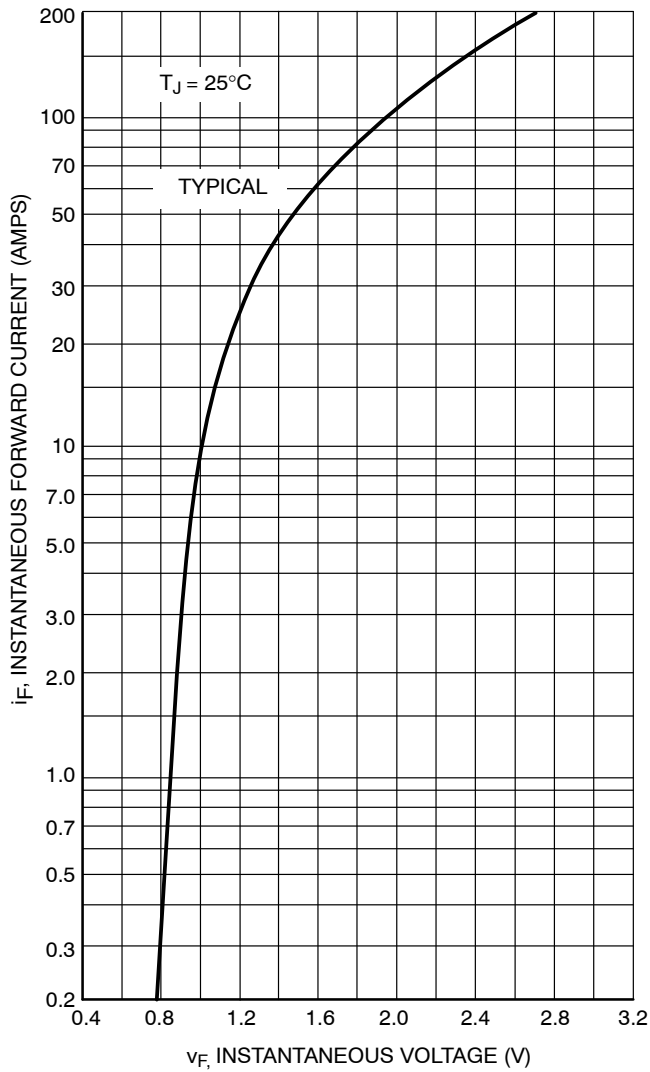


Figure 1. Forward Voltage

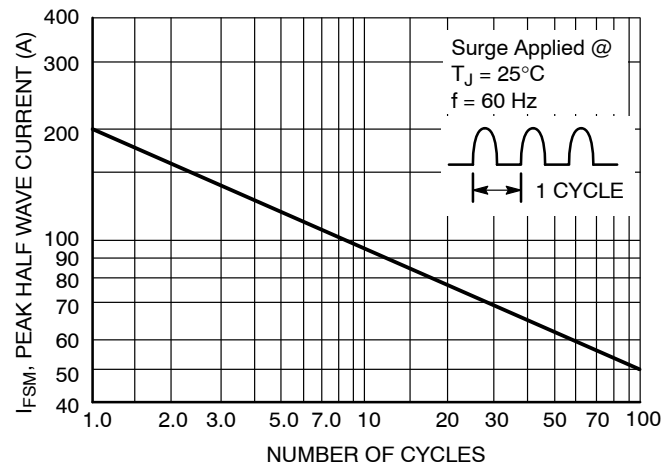


Figure 2. Maximum Nonrepetitive Surge Current

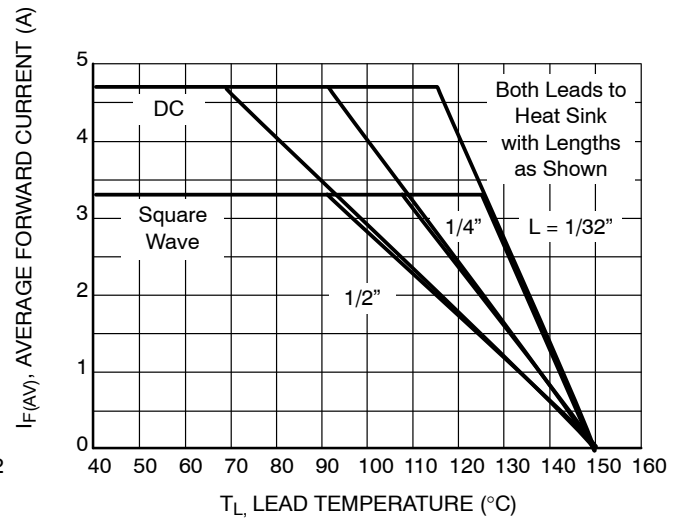


Figure 3. Maximum Current Derating, Lead, Various Lengths

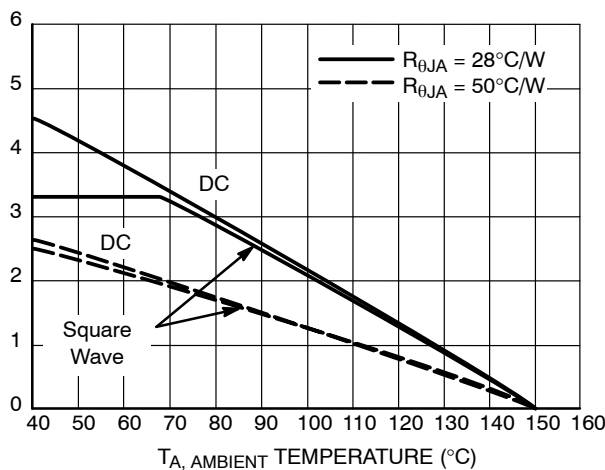


Figure 4. Maximum Current Derating, Ambient, PC Board Mounting

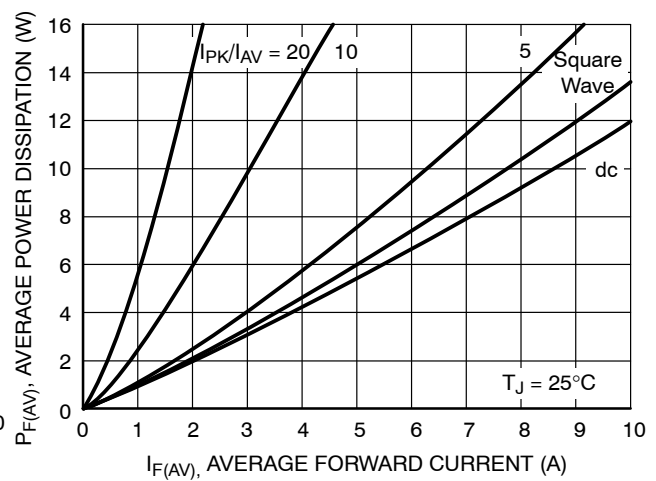


Figure 5. Forward Power Dissipation

## 1N5400 thru 1N5408

### ORDERING INFORMATION

| Device    | Package     | Shipping†        |
|-----------|-------------|------------------|
| 1N5400G   | Axial Lead* | 500 Units/Box    |
| 1N5400RLG | Axial Lead* | 1200/Tape & Reel |
| 1N5401G   | Axial Lead* | 500 Units/Box    |
| 1N5401RLG | Axial Lead* | 1200/Tape & Reel |
| 1N5402G   | Axial Lead* | 500 Units/Box    |
| 1N5402RLG | Axial Lead* | 1200/Tape & Reel |
| 1N5404G   | Axial Lead* | 500 Units/Box    |
| 1N5404RLG | Axial Lead* | 1200/Tape & Reel |
| 1N5406G   | Axial Lead* | 500 Units/Box    |
| 1N5406RLG | Axial Lead* | 1200/Tape & Reel |
| 1N5407G   | Axial Lead* | 500 Units/Box    |
| 1N5407RLG | Axial Lead* | 1200/Tape & Reel |
| 1N5408G   | Axial Lead* | 500 Units/Box    |
| 1N5408RLG | Axial Lead* | 1200/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.

\*This package is inherently Pb-Free.

# MECHANICAL CASE OUTLINE

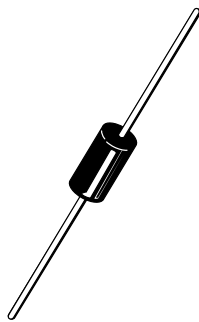
## PACKAGE DIMENSIONS

ON Semiconductor®

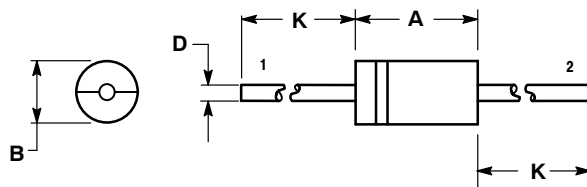


### AXIAL LEAD CASE 267-05 ISSUE G

DATE 06/06/2000



SCALE 1:1



#### 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

STYLE 2:  
NO POLARITY

|                  |             |                                                                                                                                                                                     |
|------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DOCUMENT NUMBER: | 98ASB42170B | Electronic versions are uncontrolled except when accessed directly from the Document Repository.<br>Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION:     | AXIAL LEAD  | PAGE 1 OF 1                                                                                                                                                                         |

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