

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:

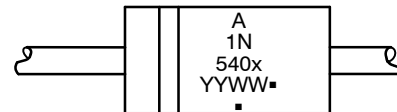
- Case: Epoxy, Molded
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Cathode Indicated by Polarity Band

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 Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} 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 (Single Phase Resistive Load, 1/2 in. Leads, $T_L = 105^\circ\text{C}$) | I_O | 3.0 | | | | | | | A |
| Non-repetitive Peak Surge Current (8 ms Single Half-Sine-Wave) | I_{FSM} | 200 (one cycle) | | | | | | | A |
| Operating and Storage Junction Temperature Range | T_J T_{stg} | - 65 to +150 - 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) $T_A = 25^\circ\text{C}$ $T_A = 100^\circ\text{C}$ | I_R | - | - | 10 50 | μA |

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°C ambient temperature unless otherwise specified.

60 Hz resistive or inductive loads.

For capacitive load, derate current by 20%.

1N5400 thru 1N5408

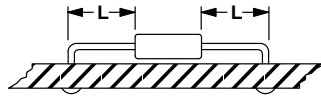
NOTE 1 — AMBIENT MOUNTING DATA

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.

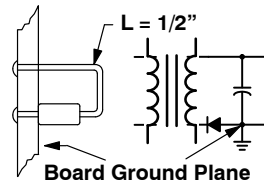
TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

| Mounting Method | Lead Length, L (IN) | | | | $R_{\theta JA}$ |
|-----------------|---------------------|-----|-----|-----|-----------------------------|
| | 1/8 | 1/4 | 1/2 | 3/4 | |
| 1 | 50 | 51 | 53 | 55 | $^{\circ}\text{C}/\text{W}$ |
| 2 | 58 | 59 | 61 | 63 | $^{\circ}\text{C}/\text{W}$ |
| 3 | 28 | | | | $^{\circ}\text{C}/\text{W}$ |

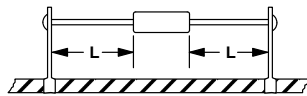
MOUNTING METHOD 1
P.C. Board Where Available
Copper Surface area is small



MOUNTING METHOD 3
P.C. Board with
1-1/2" x 1-1/2" Copper Surface



MOUNTING METHOD 2
Vector Push-In Terminals T-28



1N5400 thru 1N5408



Figure 1. Forward Voltage



Figure 2. Maximum Nonrepetitive Surge Current

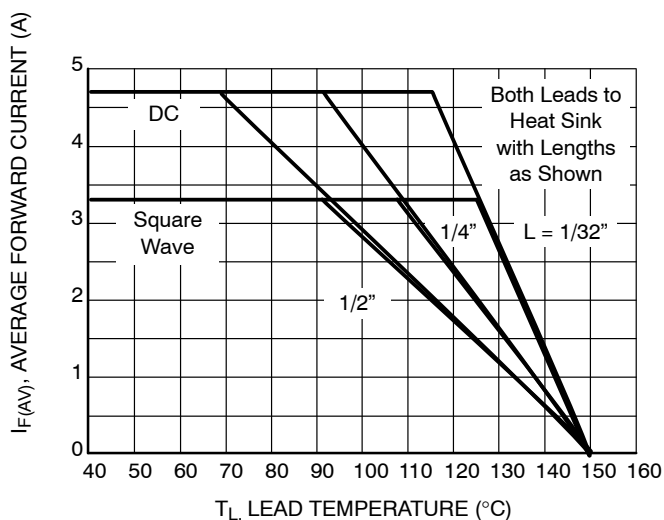


Figure 3. Maximum Current Derating, Lead, Various Lengths



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

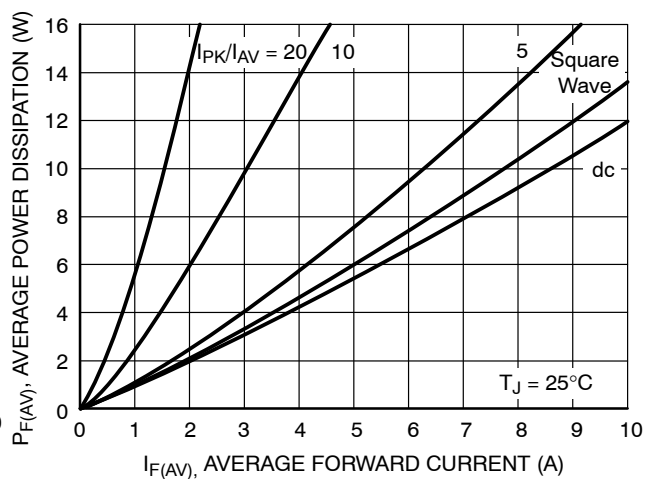


Figure 5. Forward Power Dissipation

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.

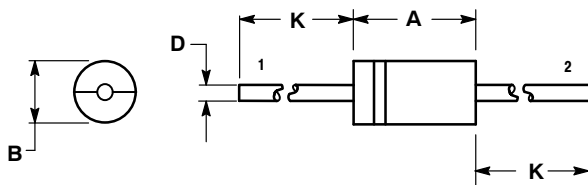


AXIAL LEAD
CASE 267-05
ISSUE G

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. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION: | AXIAL LEAD | PAGE 1 OF 1 |

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** 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:

Email Requests to: orderlit@onsemi.com

onsemi Website: www.onsemi.com

TECHNICAL SUPPORT

North American Technical Support:

Voice Mail: 1 800-282-9855 Toll Free USA/Canada

Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative