

# 1N5400 thru 1N5408

1N5404 and 1N5406 are Preferred Devices

## Axial-Lead Standard Recovery Rectifiers

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 devices are manufactured with a Pb-Free external lead finish only\*

### 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: 220°C Max. for 10 Seconds, 1/16" from case
- Polarity: Cathode Indicated by Polarity Band



**ON Semiconductor®**

<http://onsemi.com>

---

## STANDARD RECOVERY RECTIFIERS 50-1000 VOLTS 3.0 AMPERES

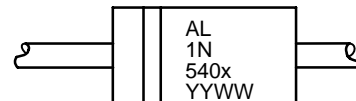
---



AXIAL LEAD  
CASE 267-05  
STYLE 1

---

### MARKING DIAGRAM



AL = Assembly Location  
1N540x = Device Number  
x = 0, 1, 2, 4, 6, 7 or 8  
YY = Year  
WW = Work Week

---

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

---

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

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor 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 (Surge Applied at Rated Load Conditions)	$I_{FSM}$	200 (one cycle)							A
Operating and Storage Junction Temperature Range	$T_J$ $T_{stg}$	- 65 to +170 - 65 to +175							$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, 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	$^\circ\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Forward Voltage ( $I_F = 3.0$ Amp, $T_A = 25^\circ\text{C}$ )	$V_F$	-	-	1.0	V
Reverse Current (Rated DC Voltage) $T_A = 25^\circ\text{C}$ $T_A = 150^\circ\text{C}$	$I_R$	-	-	10 100	$\mu\text{A}$

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

60 Hz resistive or inductive loads.

For capacitive load, derate current by 20%.

## ORDERING INFORMATION

Device	Package	Shipping†
1N5400	Axial Lead	500 Units/Box
1N5400RL	Axial Lead	1200/Tape & Reel
1N5401	Axial Lead	500 Units/Box
1N5401RL	Axial Lead	1200/Tape & Reel
1N5402	Axial Lead	500 Units/Box
1N5402RL	Axial Lead	1200/Tape & Reel
1N5404	Axial Lead	500 Units/Box
1N5404RL	Axial Lead	1200/Tape & Reel
1N5406	Axial Lead	500 Units/Box
1N5406RL	Axial Lead	1200/Tape & Reel
1N5407	Axial Lead	500 Units/Box
1N5407RL	Axial Lead	1200/Tape & Reel
1N5408	Axial Lead	500 Units/Box
1N5408RL	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.

# 1N5400 thru 1N5408

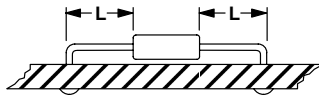
## NOTE 1 — AMBIENT MOUNTING DATA

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.

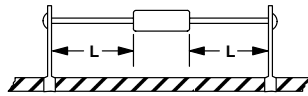
### TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

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

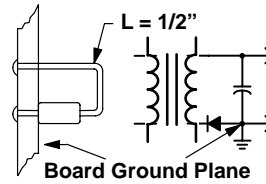
**MOUNTING METHOD 1**  
P.C. Board Where Available  
Copper Surface area is small



**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

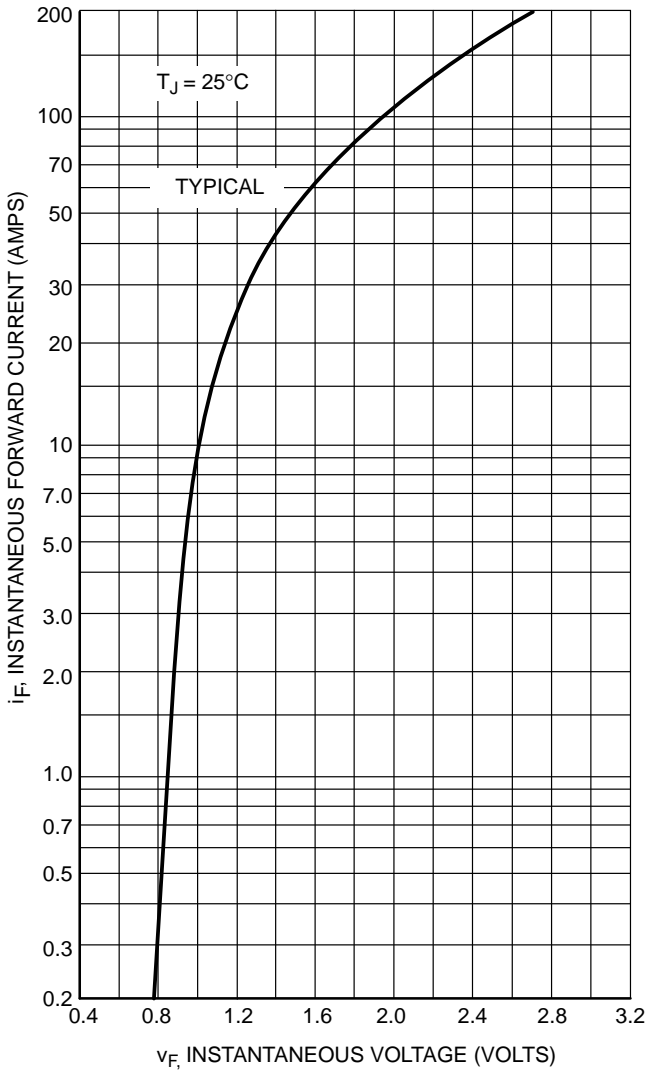


Figure 1. Forward Voltage

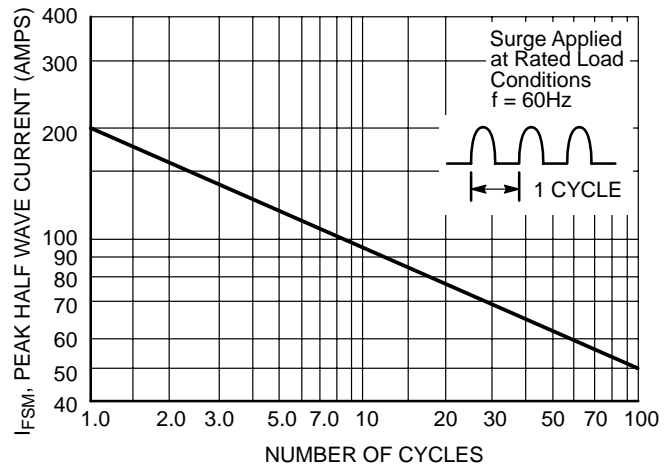


Figure 2. Maximum Nonrepetitive Surge Current

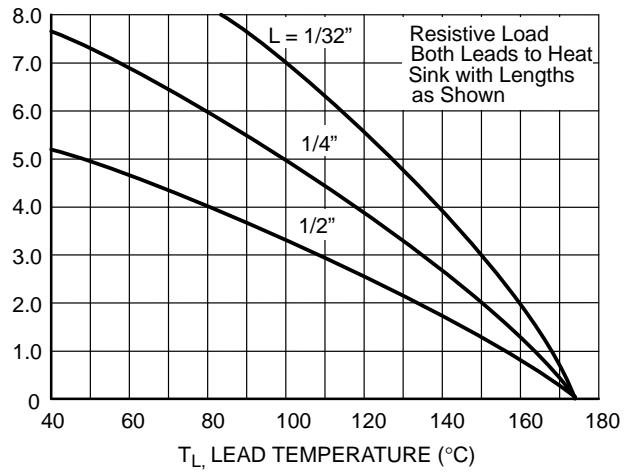


Figure 3. Current Derating Various Lead Lengths

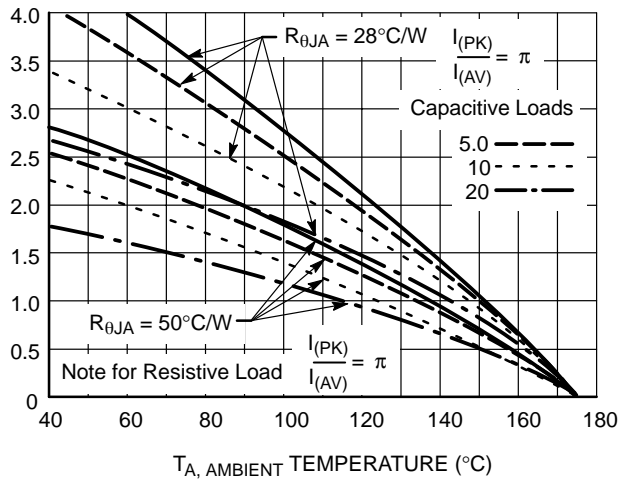
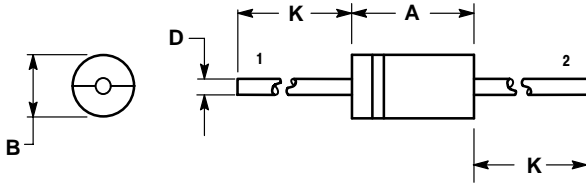


Figure 4. Current Derating PC Board Mounting

# 1N5400 thru 1N5408

## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 267-05 ISSUE G



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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)
- PIN 2. ANODE

# 1N5400 thru 1N5408

**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 61312, Phoenix, Arizona 85082-1312 USA  
**Phone:** 480-829-7710 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 480-829-7709 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

**Japan:** ON Semiconductor, Japan Customer Focus Center  
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051  
**Phone:** 81-3-5773-3850

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

**Order Literature:** <http://www.onsemi.com/litorder>

For additional information, please contact your  
local Sales Representative.