

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®

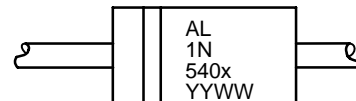
<http://onsemi.com>

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 | μA |

Ratings at 25°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.

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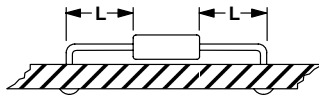
NOTE 1 — AMBIENT MOUNTING DATA

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.

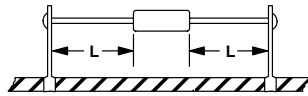
TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

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

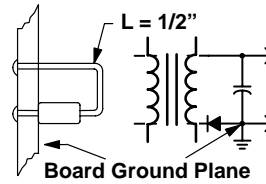
MOUNTING METHOD 1
P.C. Board Where Available
Copper Surface area is small



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



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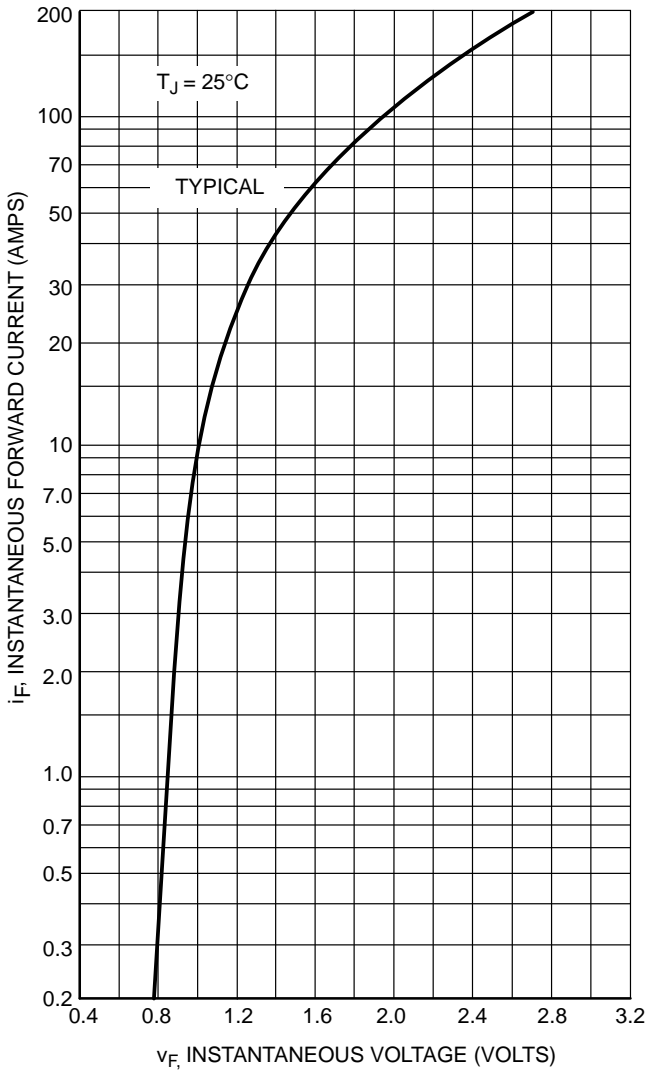


Figure 1. Forward Voltage

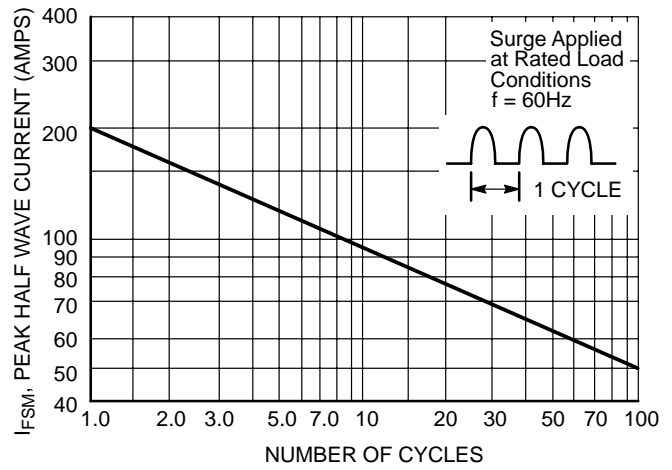


Figure 2. Maximum Nonrepetitive Surge Current

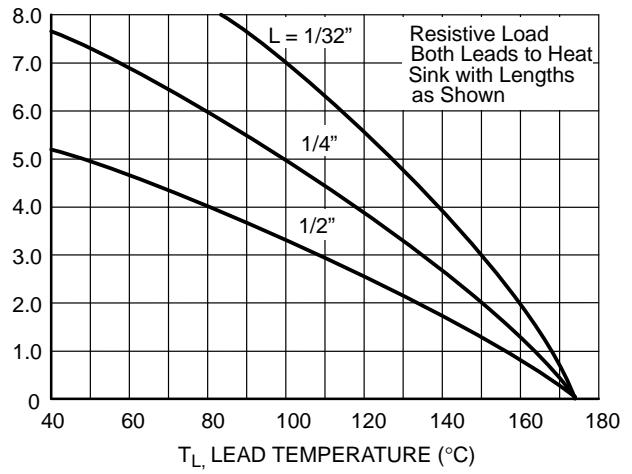


Figure 3. Current Derating Various Lead Lengths

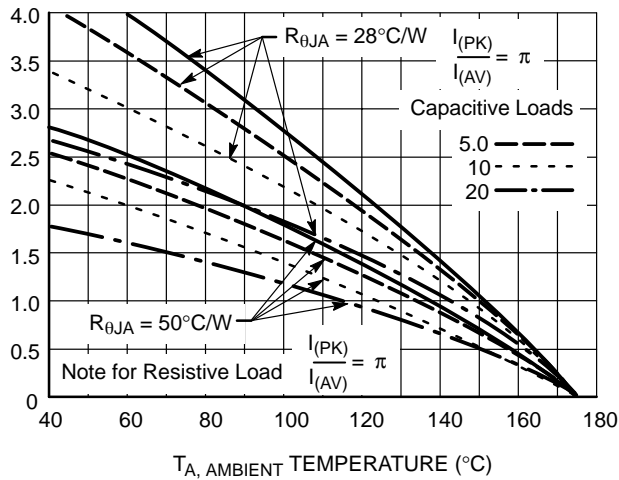
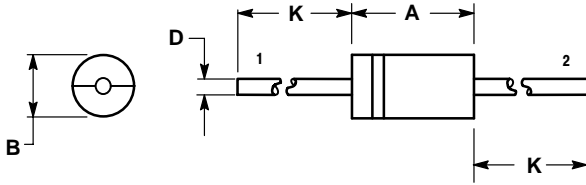


Figure 4. Current Derating PC Board Mounting

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

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