

1N4001, 1N4002, 1N4003, 1N4004, 1N4005, 1N4006, 1N4007

1N4004 and 1N4007 are Preferred Devices

Axial Lead Standard Recovery Rectifiers

This data sheet provides information on subminiature size, axial lead mounted rectifiers for general-purpose low-power applications.

Features

- Shipped in plastic bags, 1000 per bag
- Available Tape and Reeled, 5000 per reel, by adding a "RL" suffix to the part number
- Available in Fan-Fold Packaging, 3000 per box, by adding a "FF" suffix to the part number
- Pb-Free Packages are Available

Mechanical Characteristics

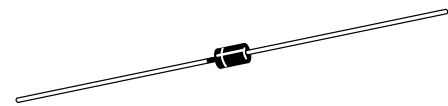
- Case: Epoxy, Molded
- Weight: 0.4 gram (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds, 1/16 in. from case
- Polarity: Cathode Indicated by Polarity Band



ON Semiconductor®

<http://onsemi.com>

LEAD MOUNTED RECTIFIERS 50–1000 VOLTS DIFFUSED JUNCTION



**CASE 59–10
AXIAL LEAD
PLASTIC**

MARKING DIAGRAM



A = Assembly Location
1N400x = Device Number
x = 1, 2, 3, 4, 5, 6 or 7
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 4 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.

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MAXIMUM RATINGS

| Rating | Symbol | 1N4001 | 1N4002 | 1N4003 | 1N4004 | 1N4005 | 1N4006 | 1N4007 | 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 (halfwave, single phase, 60 Hz) | V_{RSM} | 60 | 120 | 240 | 480 | 720 | 1000 | 1200 | V |
| †RMS Reverse Voltage | $V_{R(RMS)}$ | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| †Average Rectified Forward Current (single phase, resistive load, 60 Hz, $T_A = 75^\circ\text{C}$) | I_O | 1.0 | | | | | | | A |
| †Non-Repetitive Peak Surge Current (surge applied at rated load conditions) | I_{FSM} | 30 (for 1 cycle) | | | | | | | A |
| Operating and Storage Junction Temperature Range | T_J T_{stg} | -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.

ELECTRICAL CHARACTERISTICS†

| Rating | Symbol | Typ | Max | Unit |
|--|-------------|-------------|----------|---------------|
| Maximum Instantaneous Forward Voltage Drop, ($i_F = 1.0$ Amp, $T_J = 25^\circ\text{C}$) | V_F | 0.93 | 1.1 | V |
| Maximum Full-Cycle Average Forward Voltage Drop, ($I_O = 1.0$ Amp, $T_L = 75^\circ\text{C}$, 1 inch leads) | $V_{F(AV)}$ | - | 0.8 | V |
| Maximum Reverse Current (rated DC voltage) ($T_J = 25^\circ\text{C}$) ($T_J = 100^\circ\text{C}$) | I_R | 0.05 1.0 | 10 50 | μA |
| Maximum Full-Cycle Average Reverse Current, ($I_O = 1.0$ Amp, $T_L = 75^\circ\text{C}$, 1 inch leads) | $I_{R(AV)}$ | - | 30 | μA |

†Indicates JEDEC Registered Data

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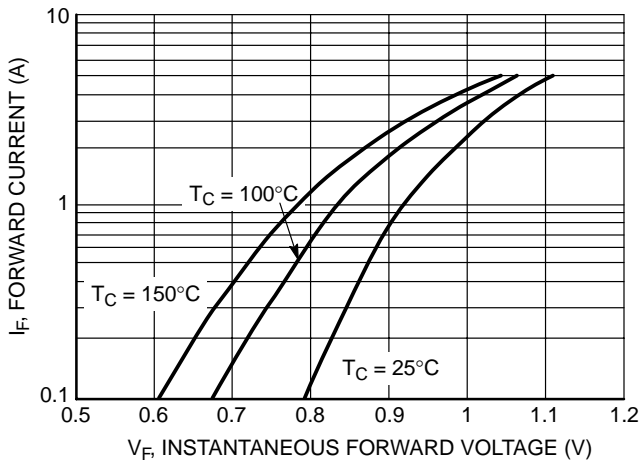


Figure 1. Typical Forward Voltage

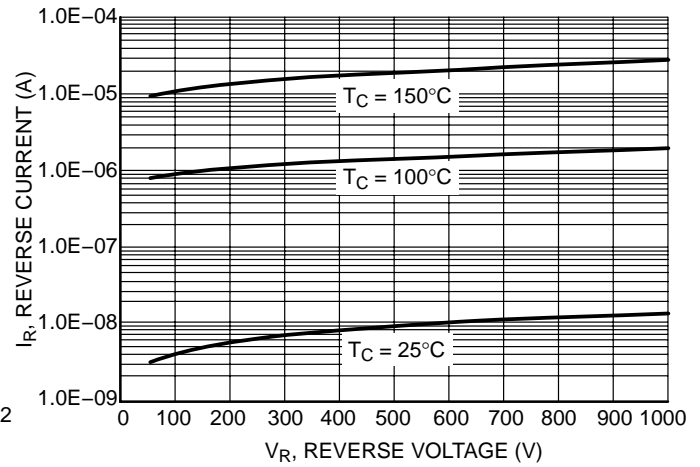


Figure 2. Typical Reverse Current

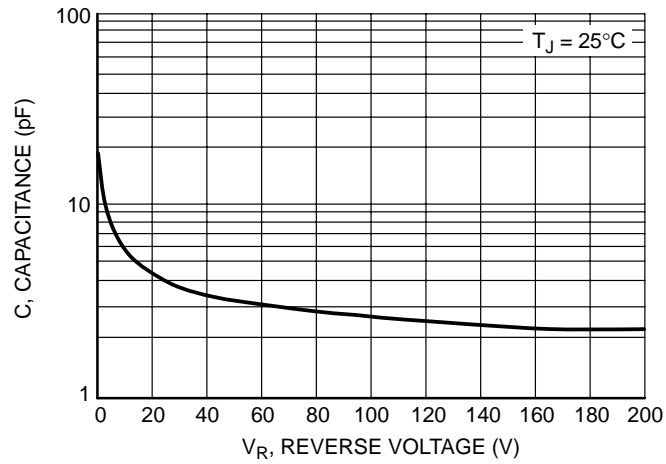


Figure 3. Typical Capacitance

1N4001, 1N4002, 1N4003, 1N4004, 1N4005, 1N4006, 1N4007

ORDERING INFORMATION

| Device | Package | Shipping† |
|-----------|--------------------------|------------------|
| 1N4001 | Axial Lead* | 1000 Units/Bag |
| 1N4001G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4001FF | Axial Lead* | 3000 Units/Box |
| 1N4001FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4001RL | Axial Lead* | 5000/Tape & Reel |
| 1N4001RLG | Axial Lead* (Pb-Free) | 5000/Tape & Reel |
| 1N4002 | Axial Lead* | 1000 Units/Bag |
| 1N4002G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4002FF | Axial Lead* | 3000 Units/Box |
| 1N4002FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4002RL | Axial Lead* | 5000/Tape & Reel |
| 1N4002RLG | Axial Lead* (Pb-Free) | 5000/Tape & Reel |
| 1N4003 | Axial Lead* | 1000 Units/Bag |
| 1N4003G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4003FF | Axial Lead* | 3000 Units/Box |
| 1N4003FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4003RL | Axial Lead* | 5000/Tape & Reel |
| 1N4003RLG | Axial Lead* (Pb-Free) | 5000/Tape & Reel |
| 1N4004 | Axial Lead* | 1000 Units/Bag |
| 1N4004G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4004FF | Axial Lead* | 3000 Units/Box |
| 1N4004FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4004RL | Axial Lead* | 5000/Tape & Reel |
| 1N4004RLG | Axial Lead* (Pb-Free) | 5000/Tape & Reel |
| 1N4005 | Axial Lead* | 1000 Units/Bag |
| 1N4005G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4005FF | Axial Lead* | 3000 Units/Box |
| 1N4005FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4005RL | Axial Lead* | 5000/Tape & Reel |
| 1N4005RLG | Axial Lead* (Pb-Free) | 5000/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.

1N4001, 1N4002, 1N4003, 1N4004, 1N4005, 1N4006, 1N4007

ORDERING INFORMATION

| Device | Package | Shipping† |
|-----------|--------------------------|------------------|
| 1N4006 | Axial Lead* | 1000 Units/Bag |
| 1N4006G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4006FF | Axial Lead* | 3000 Units/Box |
| 1N4006FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4006RL | Axial Lead* | 5000/Tape & Reel |
| 1N4006RLG | Axial Lead* (Pb-Free) | 5000/Tape & Reel |
| 1N4007 | Axial Lead* | 1000 Units/Bag |
| 1N4007G | Axial Lead* (Pb-Free) | 1000 Units/Bag |
| 1N4007FF | Axial Lead* | 3000 Units/Box |
| 1N4007FFG | Axial Lead* (Pb-Free) | 3000 Units/Box |
| 1N4007RL | Axial Lead* | 5000/Tape & Reel |
| 1N4007RLG | Axial Lead* (Pb-Free) | 5000/Tape & Reel |

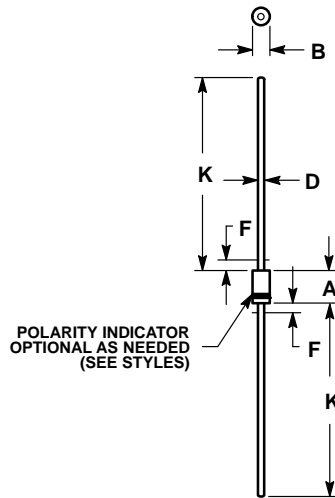
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*This package is inherently Pb-Free.

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PACKAGE DIMENSIONS


AXIAL LEAD
CASE 59-10
ISSUE U



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.161 | 0.205 | 4.10 | 5.20 |
| B | 0.079 | 0.106 | 2.00 | 2.70 |
| D | 0.028 | 0.034 | 0.71 | 0.86 |
| F | --- | 0.050 | --- | 1.27 |
| K | 1.000 | --- | 25.40 | --- |

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