

# 1N4933, 1N4934, 1N4935, 1N4936, 1N4937

1N4935 and 1N4937 are Preferred Devices

## Axial-Lead Fast-Recovery Rectifiers

Axial-lead, fast-recovery rectifiers are designed for special applications such as DC power supplies, inverters, converters, ultrasonic systems, choppers, low RF interference and free wheeling diodes. A complete line of fast recovery rectifiers having typical recovery time of 150 nanoseconds providing high efficiency at frequencies to 250 kHz.

### Features

- Shipped in Plastic Bags; 1,000 per Bag
- Available Tape and Reeled; 5,000 per Reel, by Adding a "RL" Suffix to the Part Number
- These are Pb-Free Devices\*

### Mechanical Characteristics:

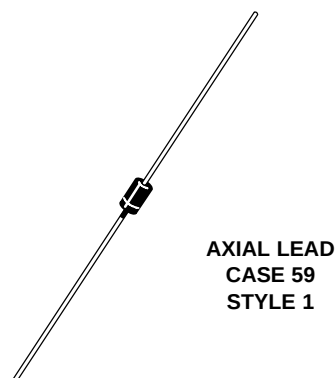
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:  
260°C Max. for 10 Seconds
- Polarity: Cathode Indicated by Polarity Band



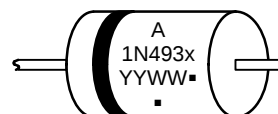
**ON Semiconductor®**

<http://onsemi.com>

## FAST RECOVERY RECTIFIERS 1.0 AMPERE, 50–600 VOLTS



### MARKING DIAGRAM



A = Assembly Location  
1N493x = Device Number  
x = 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 3 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.

# 1N4933, 1N4934, 1N4935, 1N4936, 1N4937

## MAXIMUM RATINGS (Note 1)

| Rating                                                                                                   | Symbol                          | 1N4933       | 1N4934    | 1N4935     | 1N4936     | 1N4937     | 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        | V                |
| †Non-Repetitive Peak Reverse Voltage<br>RMS Reverse Voltage                                              | $V_{RSM}$<br>$V_{R(RMS)}$       | 75<br>35     | 150<br>70 | 250<br>140 | 450<br>280 | 650<br>420 | V                |
| †Average Rectified Forward Current<br>(Single phase, resistive load, $T_A = 75^\circ\text{C}$ ) (Note 2) | $I_O$                           | 1.0          |           |            |            |            | A                |
| †Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions)                           | $I_{FSM}$                       | 30           |           |            |            |            | A                |
| Operating Junction Temperature Range<br>Storage Temperature Range                                        | $T_J, T_{stg}$                  | - 65 to +150 |           |            |            |            | $^\circ\text{C}$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Ratings at  $25^\circ\text{C}$  ambient temperature unless otherwise specified.
2. Derate by 20% for capacitive loads.

## THERMAL CHARACTERISTICS

| Characteristic                                                                   | Symbol          | Max | Unit               |
|----------------------------------------------------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Ambient (Typical Printed Circuit Board Mounting) | $R_{\theta JA}$ | 65  | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

| Characteristic                                                                               | Symbol | Min    | Typ       | Max        | Unit          |
|----------------------------------------------------------------------------------------------|--------|--------|-----------|------------|---------------|
| Instantaneous Forward Voltage ( $I_F = 3.14$ Amp, $T_J = 150^\circ\text{C}$ )                | $V_F$  | -      | 1.0       | 1.2        | V             |
| Forward Voltage ( $I_F = 1.0$ Amp, $T_A = 25^\circ\text{C}$ )                                | $V_F$  | -      | 1.05      | 1.2        | V             |
| †Reverse Current (Rated DC Voltage)<br>$T_A = 25^\circ\text{C}$<br>$T_A = 100^\circ\text{C}$ | $I_R$  | -<br>- | 1.0<br>50 | 5.0<br>100 | $\mu\text{A}$ |

## REVERSE RECOVERY CHARACTERISTICS†

|                                                                                                                       |               |        |            |            |    |
|-----------------------------------------------------------------------------------------------------------------------|---------------|--------|------------|------------|----|
| Reverse Recovery Time<br>( $I_F = 1.0$ Amp to $V_R = 30$ Vdc)<br>( $I_{FM} = 15$ Amp, $di/dt = 10$ A/ $\mu\text{s}$ ) | $t_{rr}$      | -<br>- | 150<br>175 | 200<br>300 | ns |
| Reverse Recovery Current<br>( $I_F = 1.0$ Amp to $V_R = 30$ Vdc)                                                      | $I_{RM(REC)}$ | -      | 1.0        | 2.0        | A  |

†Indicates JEDEC Registered Data for 1N4933 Series.

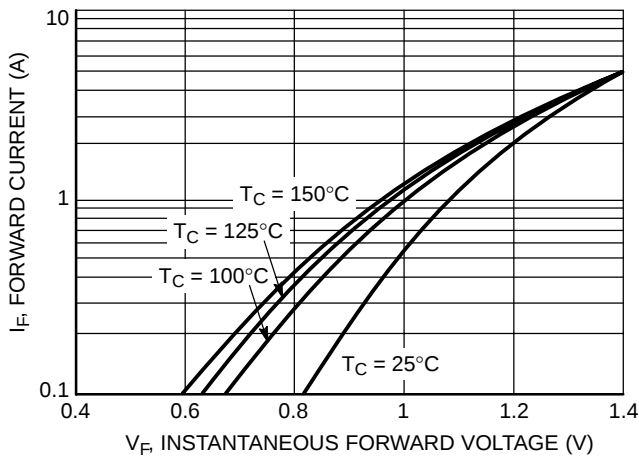


Figure 1. Typical Forward Voltage

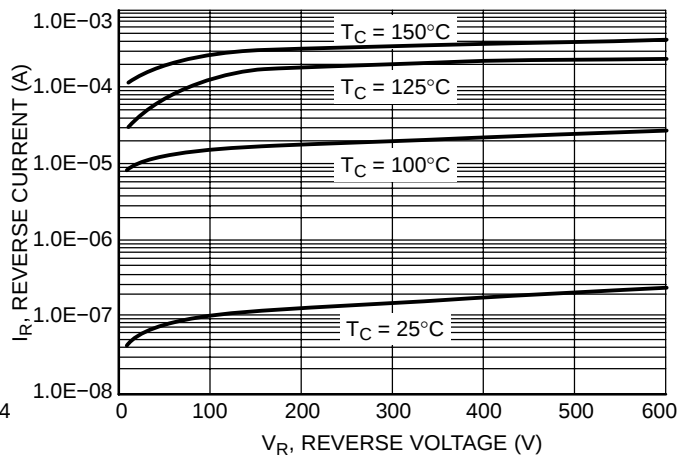


Figure 2. Typical Reverse Current

# 1N4933, 1N4934, 1N4935, 1N4936, 1N4937

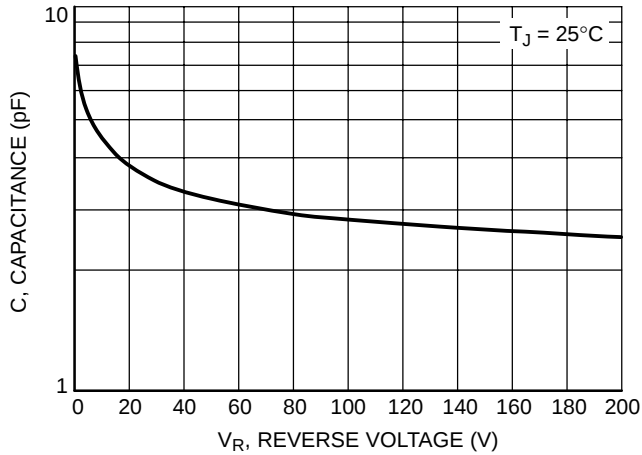


Figure 3. Typical Capacitance

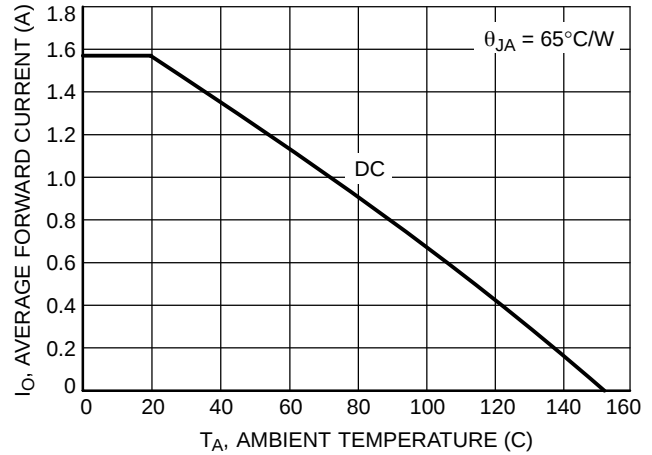


Figure 4. Current Derating

## ORDERING INFORMATION

| Device    | Package     | Shipping <sup>†</sup> |
|-----------|-------------|-----------------------|
| 1N4933    | Axial Lead* | 1000 Units / Bag      |
| 1N4933G   | Axial Lead* | 1000 Units / Bag      |
| 1N4933RL  | Axial Lead* | 5000 / Tape & Reel    |
| 1N4933RLG | Axial Lead* | 5000 / Tape & Reel    |
| 1N4934    | Axial Lead* | 1000 Units / Bag      |
| 1N4934G   | Axial Lead* | 1000 Units / Bag      |
| 1N4934RL  | Axial Lead* | 5000 / Tape & Reel    |
| 1N4934RLG | Axial Lead* | 5000 / Tape & Reel    |
| 1N4935    | Axial Lead* | 1000 Units / Bag      |
| 1N4935G   | Axial Lead* | 1000 Units / Bag      |
| 1N4935RL  | Axial Lead* | 5000 / Tape & Reel    |
| 1N4935RLG | Axial Lead* | 5000 / Tape & Reel    |
| 1N4936    | Axial Lead* | 1000 Units / Bag      |
| 1N4936G   | Axial Lead* | 1000 Units / Bag      |
| 1N4936RL  | Axial Lead* | 5000 / Tape & Reel    |
| 1N4936RLG | Axial Lead* | 5000 / Tape & Reel    |
| 1N4937    | Axial Lead* | 1000 Units / Bag      |
| 1N4937G   | Axial Lead* | 1000 Units / Bag      |
| 1N4937RL  | Axial Lead* | 5000 / Tape & Reel    |
| 1N4937RLG | Axial Lead* | 5000 / Tape & Reel    |

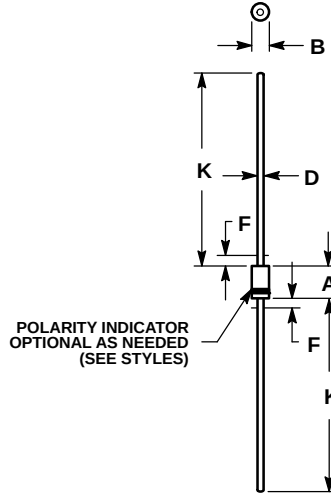
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*This package is inherently Pb-Free.

# 1N4933, 1N4934, 1N4935, 1N4936, 1N4937

## 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       | ---  |

#### STYLE 1:

- PIN 1. CATHODE (POLARITY BAND)
- ANODE

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Components Supply Platform

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