

# 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



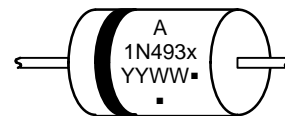
**ON Semiconductor®**

<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 Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	50	100	200	400	600	V
†Non-Repetitive Peak Reverse Voltage RMS Reverse Voltage	$V_{RSM}$ $V_{R(RMS)}$	75 35	150 70	250 140	450 280	650 420	V
†Average Rectified Forward Current (Single phase, resistive load, $T_A = 75^\circ\text{C}$ ) (Note 2)	$I_O$	1.0					A
†Non-Repetitive Peak Surge Current (Surge applied at rated load conditions)	$I_{FSM}$	30					A
Operating Junction Temperature Range 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	$^\circ\text{C}/\text{W}$

## 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)	$I_R$	-	1.0	5.0	$\mu\text{A}$
		-	50	100	$\mu\text{A}$

## REVERSE RECOVERY CHARACTERISTICS†

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

†Indicates JEDEC Registered Data for 1N4933 Series.

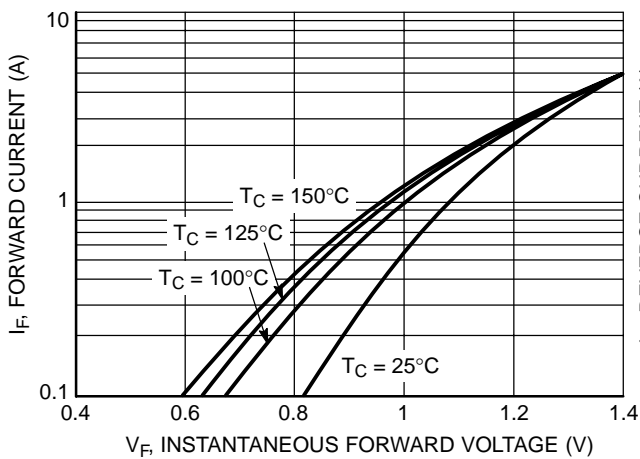


Figure 1. Typical Forward Voltage

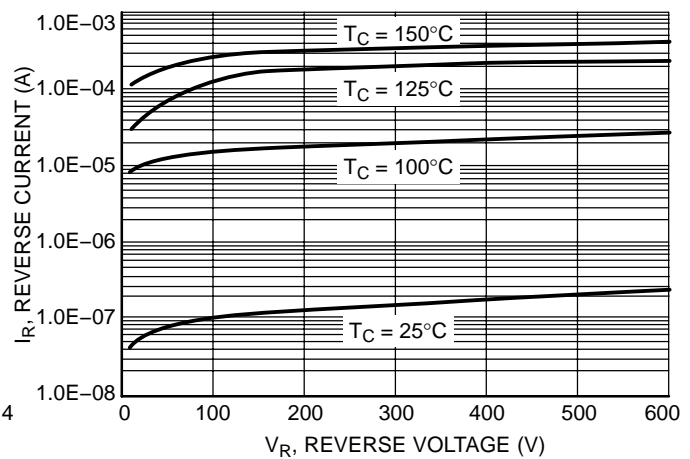


Figure 2. Typical Reverse Current

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

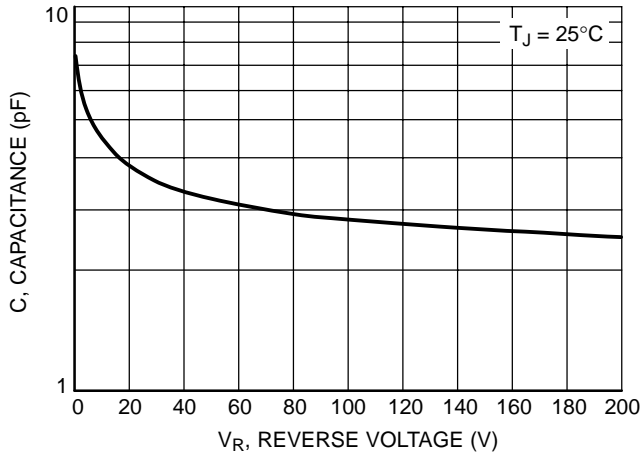


Figure 3. Typical Capacitance

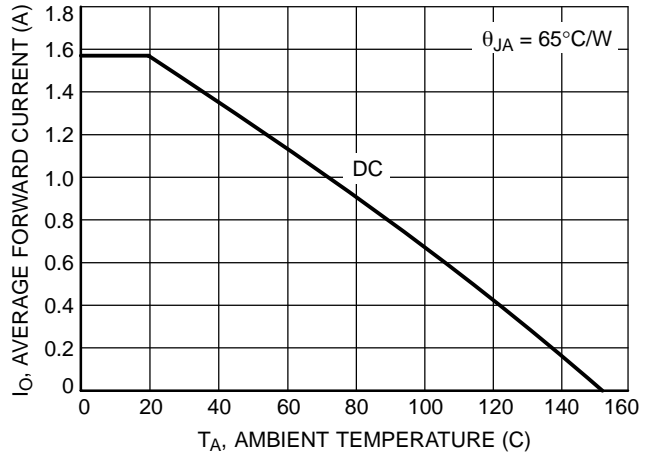


Figure 4. Current Derating

## ORDERING INFORMATION

Device	Package	Shipping†
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

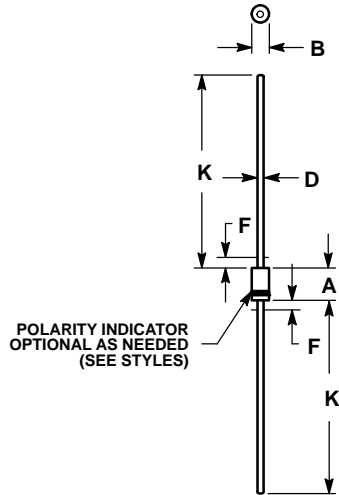
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*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:

1. CATHODE (POLARITY BAND)
2. ANODE

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 5163, Denver, Colorado 80217 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** orderlit@onsemi.com

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local  
Sales Representative