

## 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.

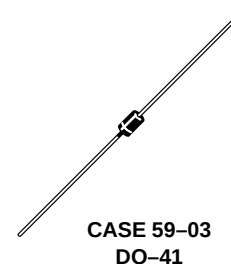
### Mechanical Characteristics

- 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: 220°C Max. for 10 Seconds, 1/16" from case
- Shipped in plastic bags, 1000 per bag.
- Available Tape and Reeled, 5000 per reel, by adding a "RL" suffix to the part number
- Polarity: Cathode Indicated by Polarity Band
- Marking: 1N4933, 1N4934, 1N4935, 1N4936, 1N4937

**1N4933  
thru  
1N4937**

1N4935 and 1N4937 are  
Motorola Preferred Devices

**FAST RECOVERY  
RECTIFIERS  
50–600 VOLTS  
1.0 AMPERE**



### MAXIMUM RATINGS (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        | Volts |
| *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 | Volts |
| *Average Rectified Forward Current<br>(Single phase, resistive load,<br>$T_A = 75^\circ\text{C}$ ) (2) | $I_O$                           | 1.0                          |           |            |            |            | Amp   |
| *Non-Repetitive Peak Surge Current<br>(Surge applied at rated load<br>conditions)                      | $I_{FSM}$                       | 30                           |           |            |            |            | Amps  |
| Operating Junction Temperature Range<br>Storage Temperature Range                                      | $T_J$<br>$T_{stg}$              | – 65 to +150<br>– 65 to +150 |           |            |            |            | °C    |

### THERMAL CHARACTERISTICS

| Characteristic                                                                      | Symbol          | Max | Unit |
|-------------------------------------------------------------------------------------|-----------------|-----|------|
| Thermal Resistance, Junction to Ambient<br>(Typical Printed Circuit Board Mounting) | $R_{\theta JC}$ | 65  | °C/W |

\* Indicates JEDEC Registered Data for 1N4933 Series.

(1) Ratings at 25°C ambient temperature unless otherwise specified.

(2) Derate by 20% for capacitive loads.

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



## ELECTRICAL CHARACTERISTICS

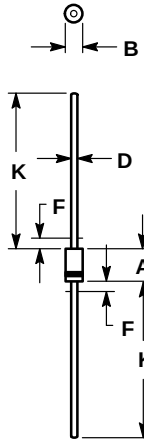
| Characteristic                                                                            | Symbol | Min    | Typ       | Max        | Unit          |
|-------------------------------------------------------------------------------------------|--------|--------|-----------|------------|---------------|
| Instantaneous Forward Voltage<br>( $I_F = 3.14$ Amp, $T_J = 125^\circ\text{C}$ )          | $V_F$  | —      | 1.0       | 1.2        | Volts         |
| Forward Voltage<br>( $I_F = 1.0$ Amp, $T_A = 25^\circ\text{C}$ )                          | $V_F$  | —      | 1.0       | 1.1        | Volts         |
| *Reverse Current (Rated dc Voltage) $T_A = 25^\circ\text{C}$<br>$T_A = 100^\circ\text{C}$ | $I_R$  | —<br>— | 1.0<br>50 | 5.0<br>100 | $\mu\text{A}$ |

## \*REVERSE RECOVERY CHARACTERISTICS

| Characteristic                                                                                                        | Symbol               | Min    | Typ        | Max        | Unit |
|-----------------------------------------------------------------------------------------------------------------------|----------------------|--------|------------|------------|------|
| 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)                                                      | $I_{RM}(\text{REC})$ | —      | 1.0        | 2.0        | Amp  |

\* Indicates JEDEC Registered Data for 1N4933 Series.

## PACKAGE DIMENSIONS



## NOTES:

1. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY.
2. POLARITY DENOTED BY CATHODE BAND.
3. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

| DIM | MILLIMETERS |      | INCHES |       |
|-----|-------------|------|--------|-------|
|     | MIN         | MAX  | MIN    | MAX   |
| A   | 4.07        | 5.20 | 0.160  | 0.205 |
| B   | 2.04        | 2.71 | 0.080  | 0.107 |
| D   | 0.71        | 0.86 | 0.028  | 0.034 |
| F   | —           | 1.27 | —      | 0.050 |
| K   | 27.94       | —    | 1.100  | —     |

CASE 59-03  
(DO-41)  
ISSUE M

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