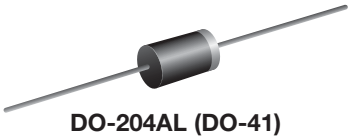
# Fast Switching Plastic Rectifier



DO-204AL (DO-41)

## FEATURES

- Fast switching for high efficiency
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb e3 RoHS COMPLIANT

## TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters and freewheeling diodes for consumer and telecommunication.

**Note**

- These devices are not AEC-Q101 qualified.

## MECHANICAL DATA

**Case:** DO-204AL, molded epoxy body
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** Color band denotes cathode end

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 1.0 A |
| $V_{RRM}$ | 50 V to 600 V |
| $I_{FSM}$ | 30 A |
| $t_{rr}$ | 200 ns |
| $I_R$ | 5.0 µA |
| $V_F$ | 1.2 V |
| $T_J$ max. | 150 °C |

**MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | 1N4933 | 1N4934 | 1N4935 | 1N4936 | 1N4937 | UNIT |
|---|---|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 200 | 400 | 600 | V |
| Maximum RMS voltage | $V_{RMS}$ | 35 | 70 | 145 | 280 | 420 | V |
| Maximum DC blocking voltage | $V_{DC}$ | 50 | 100 | 200 | 400 | 600 | V |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A$= 75 °C | $I_{F(AV)}$ | 1.0 | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 30 | | | | | A |
| Maximum reverse recovery current | $I_{RM}$ | 2.0 | | | | | A |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | - 50 to + 150 | | | | | °C |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | SYMBOL | 1N4933 | 1N4934 | 1N4935 | 1N4936 | 1N4937 | UNIT |
|---|---|---|---|---|---|---|---|---|---|
| Maximum instantaneous forward voltage | 1.0 A | | $V_F$ | 1.2 | | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | | $T_A$= 25 °C | $I_R$ | 5.0 | | | | | µA |
| | | $T_A$= 100 °C | | 100 | | | | | |
| Maximum reverse recovery time | $I_F$ = 1.0 A, $V_R$ = 30 V, dI/dt = 50 A/µs, $I_{rr}$ = 10 % $I_{RM}$ | | $t_{rr}$ | 200 | | | | | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 12 | | | | | pF |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| **THERMAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **1N4933** | **1N4934** | **1N4935** | **1N4936** | **1N4937** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 55 | | | | | °C/W |
| | $R_{\theta JL}$ (1) | 25 | | | | | |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead at 0.375" (9.5 mm) lead length, P.C.B. mounted

| **ORDERING INFORMATION** (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| 1N4933-E3/54 | 0.33 | 54 | 5500 | 13" diameter paper tape and reel |
| 1N4933-E3/73 | 0.33 | 73 | 3000 | Ammo pack packaging |

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

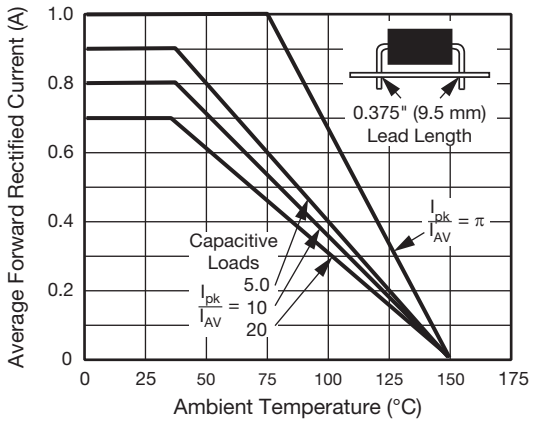


Fig. 1 - Forward Current Derating Curves

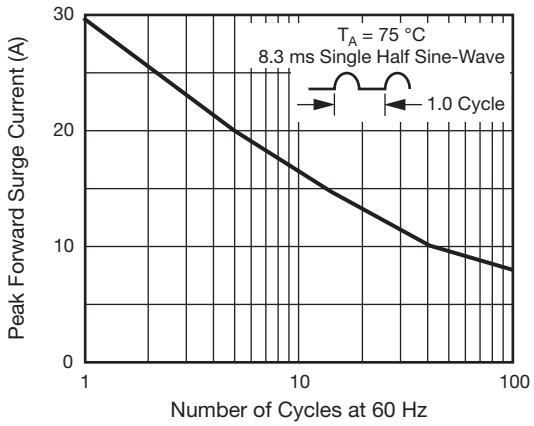


Fig. 3 - Maximum Non-repetitive Peak Forward Surge Current

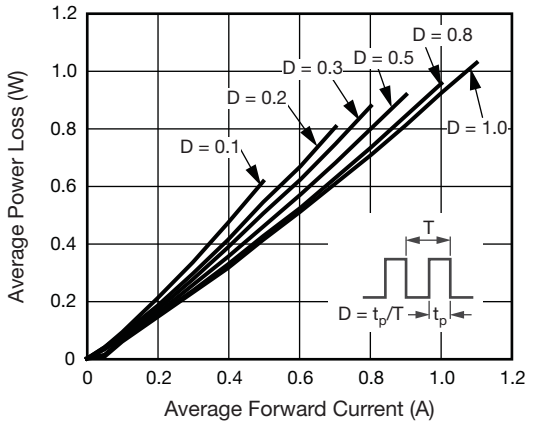


Fig. 2 - Forward Power Loss Characteristics

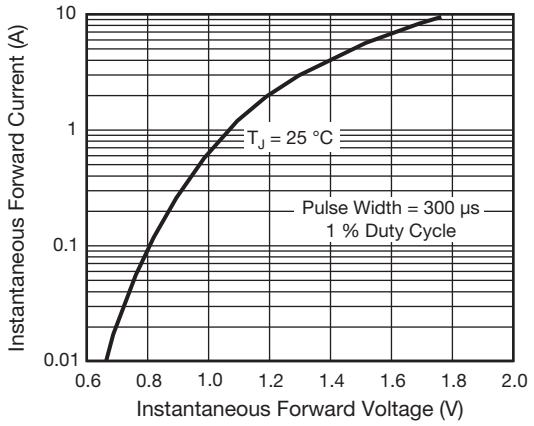


Fig. 4 - Typical Instantaneous Forward Characteristics


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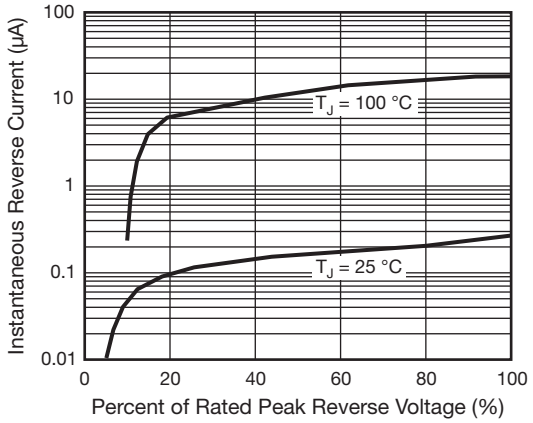



Fig. 5 - Typical Reverse Characteristics

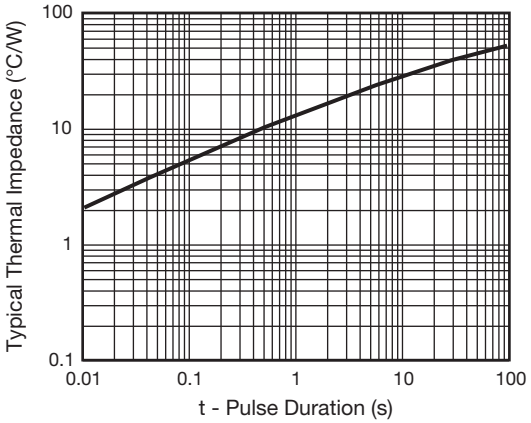



Fig. 7 - Typical Transient Thermal Impedance

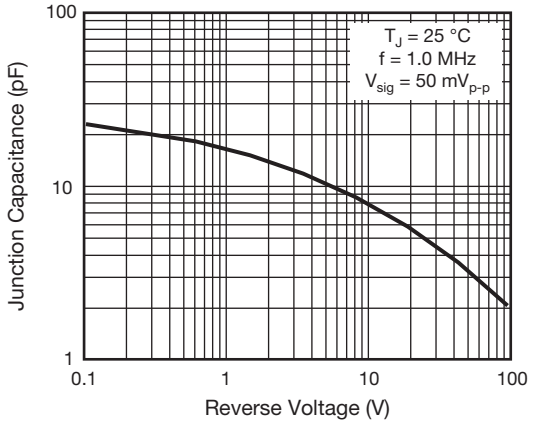
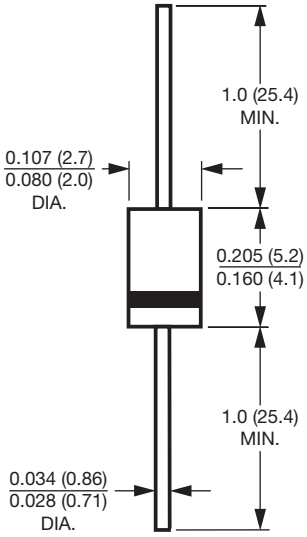



Fig. 6 - Typical Junction Capacitance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-204AL (DO-41)**




**Note**

- Lead diameter is $\frac{0.026\ (0.66)}{0.023\ (0.58)}$ for suffix "E" part numbers



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