

General Purpose Plastic Rectifier



DO-204AL (DO-41)

FEATURES

- 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


RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application.

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 | |
|-------------------------|----------------|
| $I_{F(AV)}$ | 1.5 A |
| V_{RRM} | 50 V to 1000 V |
| I_{FSM} | 50 A |
| V_F | 1.4 V |
| I_R | 5.0 μ A |
| T_J max. | 150 °C |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | | | | | | | | |
|--|----------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| PARAMETER | SYMBOL | 1N5391 | 1N5392 | 1N5393 | 1N5394 | 1N5395 | 1N5396 | 1N5397 | 1N5398 | 1N5399 | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 800 | 1000 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 140 | 210 | 280 | 350 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 800 | 1000 | V |
| Maximum average forward rectified current 0.500" (12.7 mm) lead length at $T_L = 70$ °C | $I_{F(AV)}$ | 1.5 | | | | | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 50 | | | | | | | | | A |
| Maximum full load reverse current, full cycle average 0.375" (9.5 mm) lead length at $T_L = 70$ °C | $I_{R(AV)}$ | 300 | | | | | | | | | μ A |
| Operation 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 | 1N5391 | 1N5392 | 1N5393 | 1N5394 | 1N5395 | 1N5396 | 1N5397 | 1N5398 | 1N5399 | UNIT |
| Maximum instantaneous forward voltage | 1.5 A | T _A = 70 °C | V _F | | | | | | 1.4 | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | | T _A = 25 °C | I _R | | | | | | 5.0 | | | | μA |
| | | T _A = 150 °C | | | | | | | 300 | | | | |
| Typical reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | | | | | | 2.0 | | | | μs |
| Typical junction capacitance | 4.0 V, 1 MHz | | C _J | | | | | | 15 | | | | pF |

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | | | | |
|---|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| PARAMETER | SYMBOL | 1N5391 | 1N5392 | 1N5393 | 1N5394 | 1N5395 | 1N5396 | 1N5397 | 1N5398 | 1N5399 | UNIT | |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | | | | | | | | | | 55 | °C/W |
| | R _{θJL} ⁽¹⁾ | | | | | | | | | | 25 | |

Note

⁽¹⁾ Thermal resistance from junction to ambient 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 |
| 1N5391-E3/54 | 0.336 | 54 | 5500 | 13" diameter paper tape and reel |
| 1N5391-E3/73 | 0.336 | 73 | 3000 | Ammo pack packaging |

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

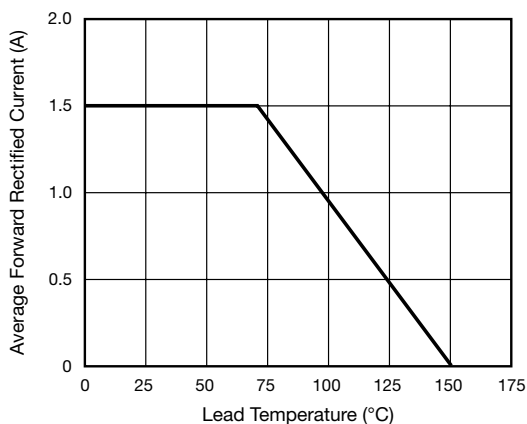


Fig. 1 - Forward Current Derating Curve

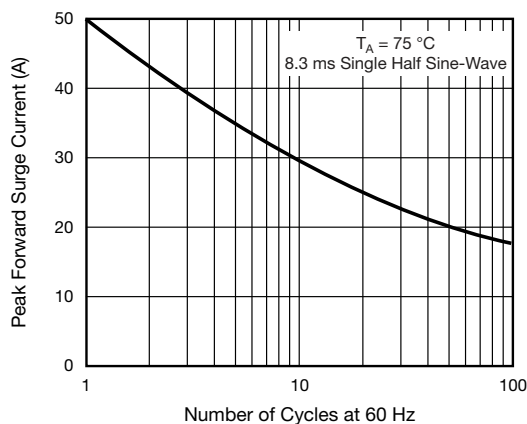


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

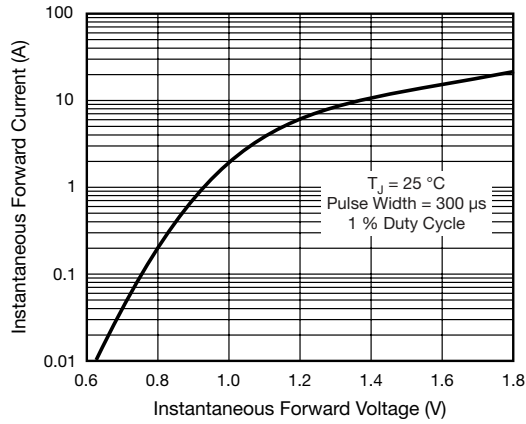


Fig. 3 - Typical Instantaneous Forward Characteristics

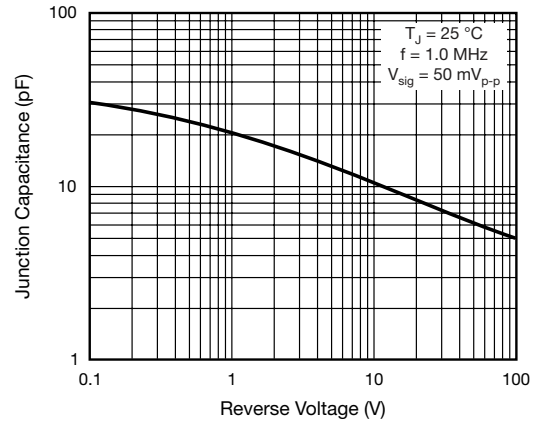


Fig. 5 - Typical Junction Capacitance

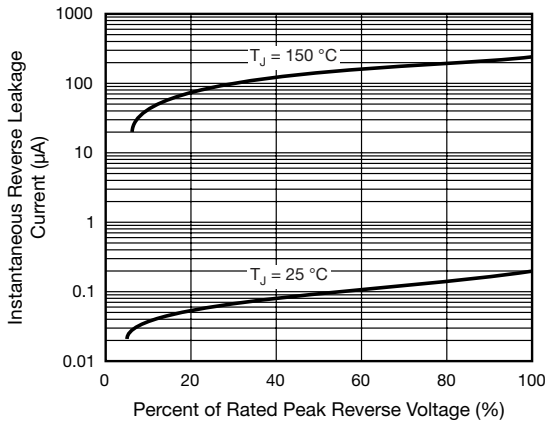


Fig. 4 - Typical Reverse Characteristics

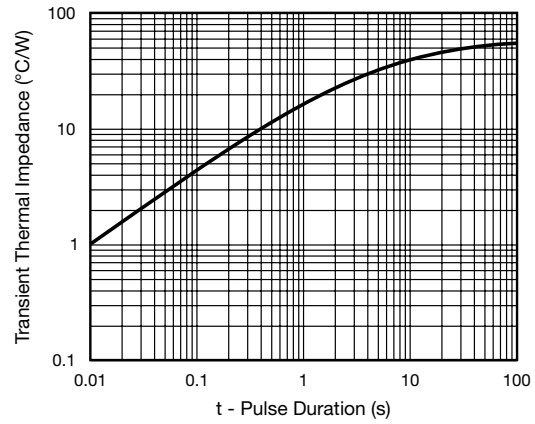
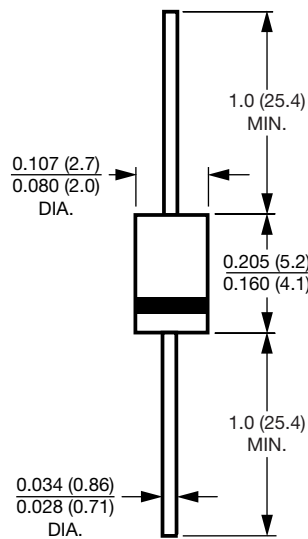


Fig. 6 - Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)





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