

Miniature Ultrafast Plastic Rectifier


DO-204AL (DO-41)

FEATURES

- Glass passivated chip junction
- Ultrafast reverse recovery time
- Soft recovery characteristics
- Low forward voltage drop
- Low switching losses, high efficiency
- 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

PRIMARY CHARACTERISTICS

| | |
|-------------|---------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 50 V to 200 V |
| I_{FSM} | 40 A |
| t_{rr} | 15 ns |
| V_F | 0.95 V |
| T_J max. | 150 °C |

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

MECHANICAL DATA

Case: DO-204AL (DO-41)

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

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | UG1A | UG1B | UG1C | UG1D | UNIT |
|--|----------------|---------------|------|------|------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 1.0 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 40 | | | | A |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 150 | | | | °C |

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | |
|--|--|-------------|-----------------------------------|---------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | VALUE | UNIT |
| Maximum instantaneous forward voltage | $I_F = 1.0\text{ A}$ | $V_F^{(1)}$ | 0.95 | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^\circ\text{C}$ | I_R | 5.0 | μA |
| | $T_A = 100\text{ }^\circ\text{C}$ | | 200 | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | t_{rr} | 15 | ns |
| Maximum reverse recovery time | $I_F = 1.0\text{ A}, V_R = 30\text{ V}, dI/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$ | t_{rr} | $T_J = 25\text{ }^\circ\text{C}$ | 25 |
| | | | $T_J = 100\text{ }^\circ\text{C}$ | 35 |
| Maximum stored charge | $I_F = 1.0\text{ A}, V_R = 30\text{ V}, dI/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$ | Q_{rr} | $T_J = 25\text{ }^\circ\text{C}$ | 8.0 |
| | | | $T_J = 100\text{ }^\circ\text{C}$ | 12 |
| Typical junction capacitance | 4.0 V, 1 MHz | C_J | 7 | pF |

Note

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|-----------------------|------|------|------|------|---------------------------|
| PARAMETER | SYMBOL | UG1A | UG1B | UG1C | UG1D | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 60 | | | | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JL}^{(1)}$ | 20 | | | | |

Note

(1) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| UG1D-E3/54 | 0.334 | 54 | 5500 | 13" diameter paper tape and reel |
| UG1D-E3/73 | 0.334 | 73 | 3000 | Ammo pack packaging |

RATINGS AND CHARACTERISTICS CURVES

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

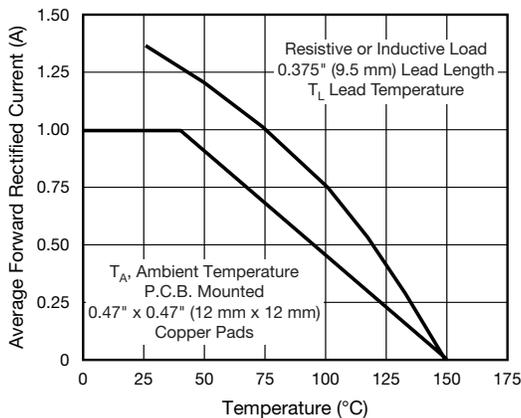


Fig. 1 - Forward Current Derating Curves

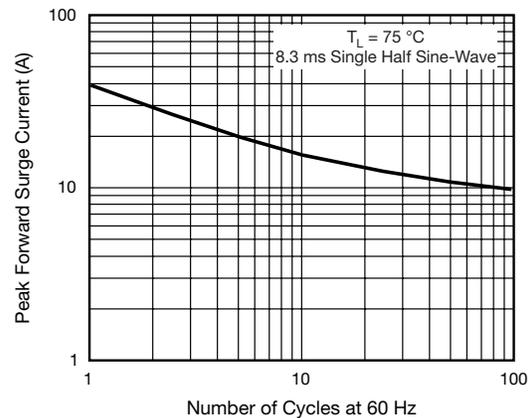


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

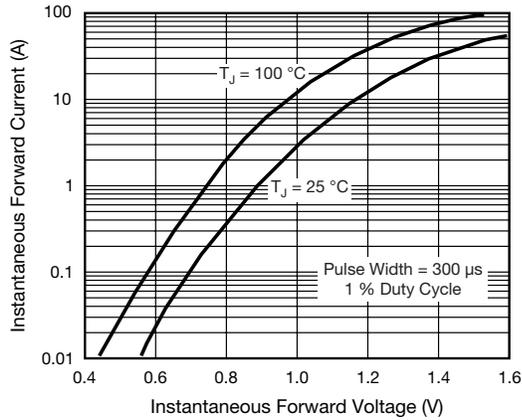


Fig. 3 - Typical Instantaneous Forward Characteristics

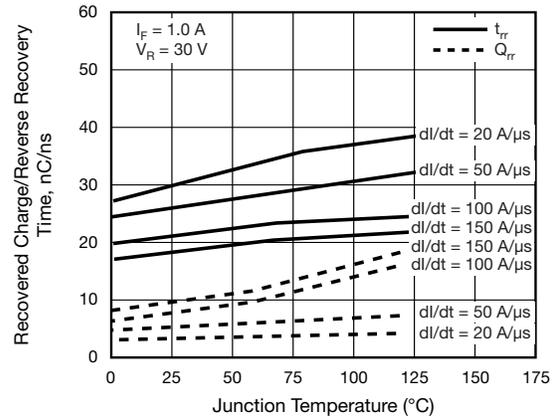


Fig. 5 - Reverse Switching Characteristics

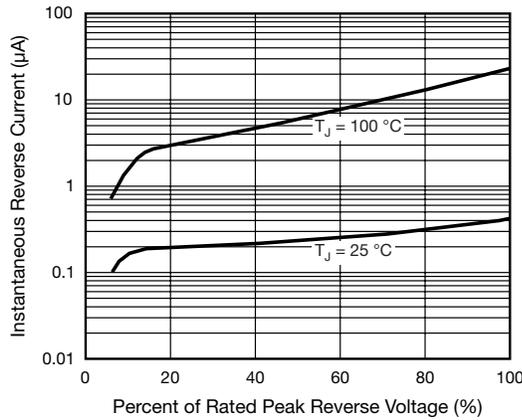


Fig. 4 - Typical Reverse Characteristics

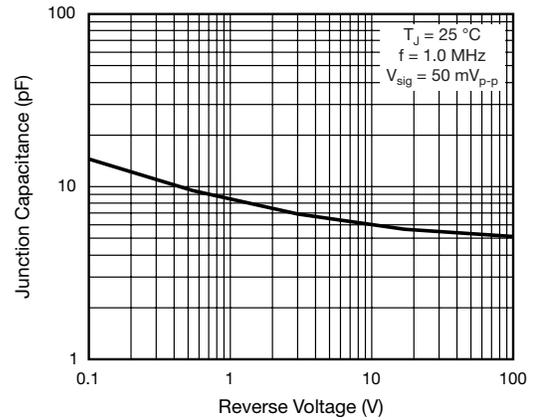
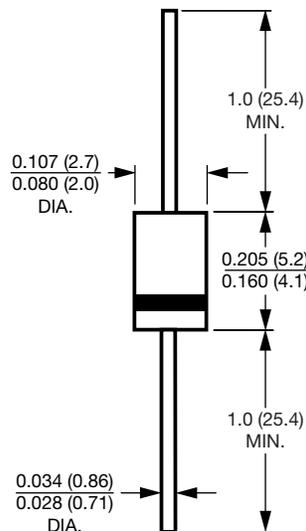


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)





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