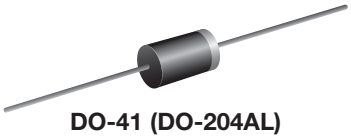
# Miniature Ultrafast Plastic Rectifier



DO-41 (DO-204AL)

## 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 1.0 A |
| $V_{RRM}$ | 50 V, 100 V, 150 V, 200 V |
| $I_{FSM}$ | 40 A |
| $t_{rr}$ | 15 ns |
| $V_F$ | 0.95 V |
| $T_J$ max. | 150 °C |
| Package | DO-41 (DO-204AL) |
| Circuit configuration | Single |

## 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-41 (DO-204AL)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 and M3 suffix meet JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

**MAXIMUM RATINGS** ($T_A$ = 25 °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 °C unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **VALUE** | **UNIT** |
| Maximum instantaneous forward voltage | $I_F$ = 1.0 A | | $V_F$ (1) | 0.95 | V |
| Maximum DC reverse current at rated DC blocking voltage | | $T_A$ = 25 °C | $I_R$ | 5.0 | μA |
| | | $T_A$ = 100 °C | | 200 | |
| Maximum reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{rr}$ = 0.25 A | | $t_{rr}$ | 15 | ns |
| Maximum reverse recovery time | $I_F$ = 1.0 A, $V_R$ = 30 V, dI/dt = 50 A/μs, $I_{rr}$ = 10 % $I_{RM}$ | $T_J$ = 25 °C | $t_{rr}$ | 25 | ns |
| | | $T_J$ = 100 °C | | 35 | |
| Maximum stored charge | $I_F$ = 1.0 A, $V_R$ = 30 V, dI/dt = 50 A/μs, $I_{rr}$ = 10 % $I_{RM}$ | $T_J$ = 25 °C | $Q_{rr}$ | 8.0 | nC |
| | | $T_J$ = 100 °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 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **UG1A** | **UG1B** | **UG1C** | **UG1D** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 60 | | | | °C/W |
| | $R_{\theta JL}$ (1) | 20 | | | | |

**Note**

(2) 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 |
| UG1D-M3/54 | 0.334 | 54 | 5500 | 13" diameter paper tape and reel |
| UG1D-M3/73 | 0.334 | 73 | 3000 | Ammo pack packaging |

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25 °C unless otherwise noted)

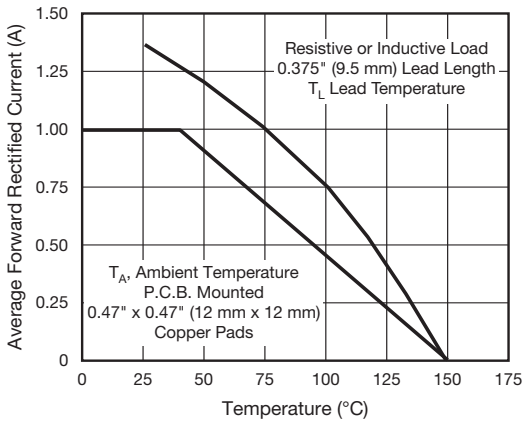



Fig. 1 - Forward Current Derating Curves

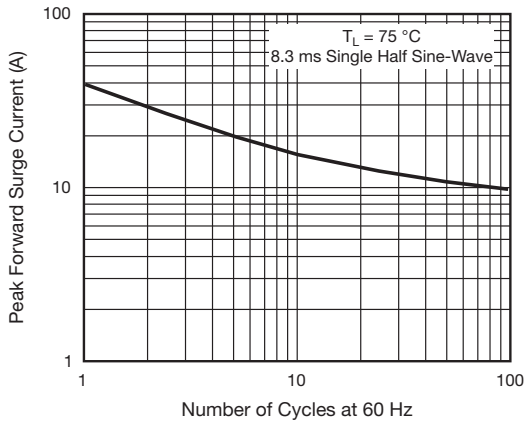



Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

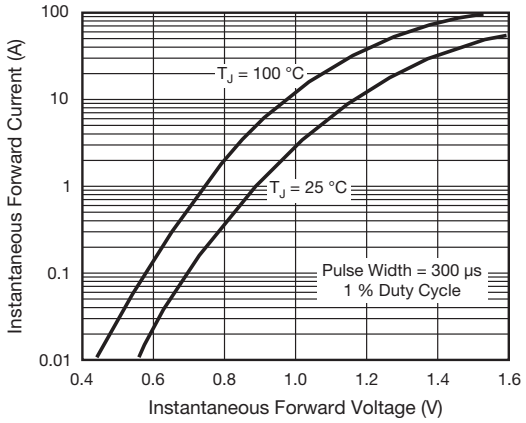



Fig. 3 - Typical Instantaneous Forward Characteristics

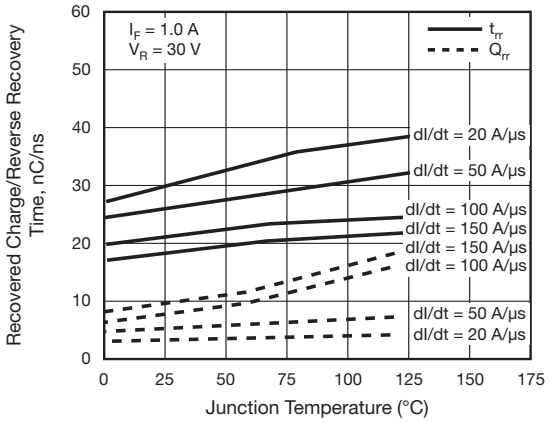



Fig. 5 - Reverse Switching Charateristics

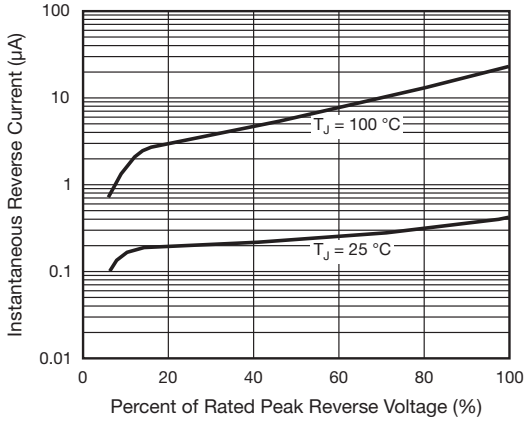



Fig. 4 - Typical Reverse Characteristics

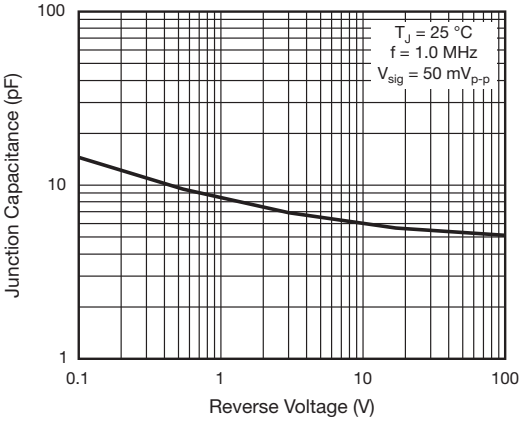
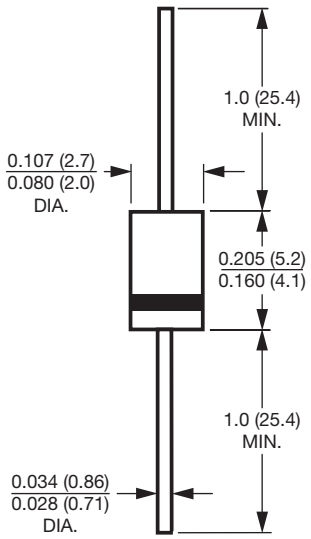



Fig. 6 - Typical Junction Capacitance

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

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



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