

Ultrafast Plastic Rectifier


DO-204AL (DO-41)

FEATURES

- Glass passivated chip junction
- Ultrafast reverse recovery time
- 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

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-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 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, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| I _{FSM} | 30 A |
| t _{rr} | 50 ns, 75 ns |
| V _F | 1.0 V, 1.7 V |
| T _J max. | 150 °C |
| Package | DO-204AL (DO-41) |
| Diode variations | Single die |

| MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted) | | | | | | | | | |
|---|-----------------------------------|---------------|--------|--------|--------|--------|--------|--------|------|
| PARAMETER | SYMBOL | UF4001 | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 | UNIT |
| Maximum repetitive peak reverse voltage | V _{RRM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum RMS voltage | V _{RMS} | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | V _{DC} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at T _A = 55 °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 | |
| Operating junction and storage temperature range | T _J , T _{STG} | - 55 to + 150 | | | | | | °C | |

| ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | | | |
|--|---|---------------------------|----------------------|--------|--------|--------|--------|--------|--------|---------------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | UF4001 | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 | UNIT |
| Maximum instantaneous forward voltage | 1.0 A | | V_F ⁽¹⁾ | 1.0 | | | 1.7 | | | V | |
| Maximum DC reverse current at rated DC blocking voltage | | $T_A = 25^\circ\text{C}$ | I_R | 10 | | | | | | μA | |
| | | $T_A = 100^\circ\text{C}$ | | 50 | | | | | | | |
| Maximum reverse recovery time | $I_F = 0.5 \text{ A}$, $I_R = 1.0 \text{ A}$, $I_{rr} = 0.25 \text{ A}$ | | t_{rr} | 50 | | | 75 | | | ns | |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 17 | | | | | | pF | |

Note

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

| THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | |
|---|--------------------------------|--------|--------|--------|--------|--------|--------|--------------------|------|
| PARAMETER | SYMBOL | UF4001 | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 | UNIT |
| Typical thermal resistance | $R_{\theta JA}$ ⁽¹⁾ | 60 | | | | | | $^\circ\text{C/W}$ | |
| | $R_{\theta JL}$ ⁽¹⁾ | 15 | | | | | | | |

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 |
| UF4007-M3/54 | 0.33 | 54 | 5500 | 13" diameter paper tape and reel |
| UF4007-M3/73 | 0.34 | 73 | 3000 | Ammo pack packaging |

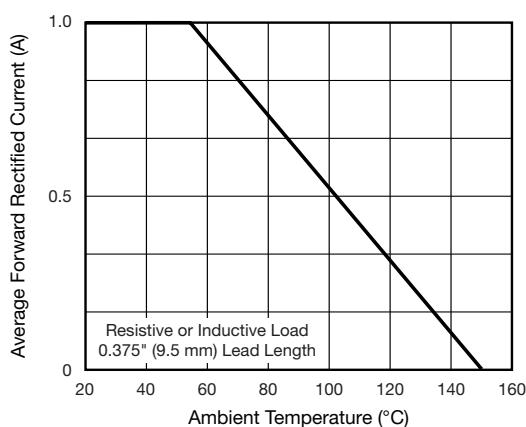
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

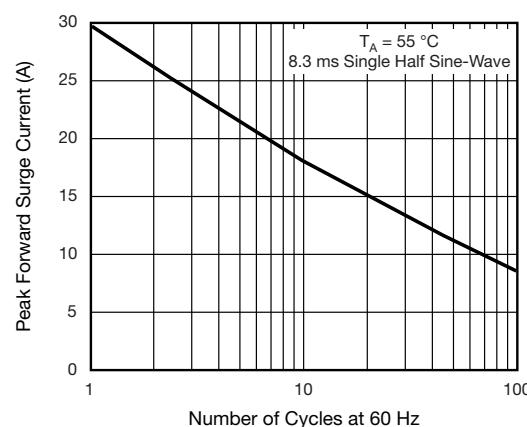


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

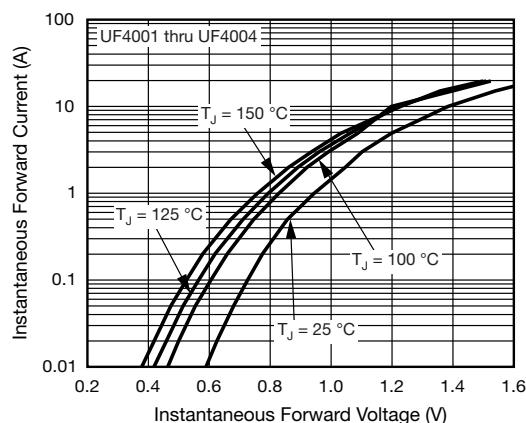


Fig. 3 - Typical Instantaneous Forward Characteristics

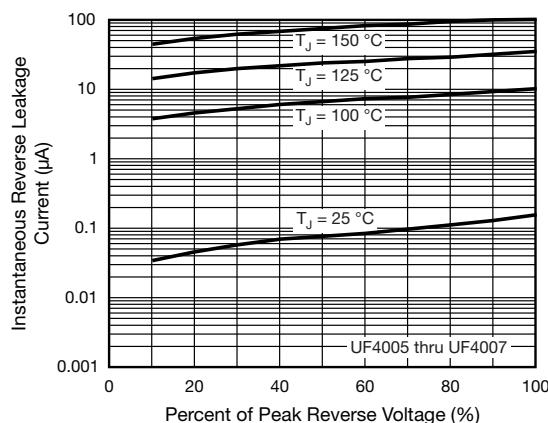


Fig. 6 - Typical Reverse Leakage Characteristics

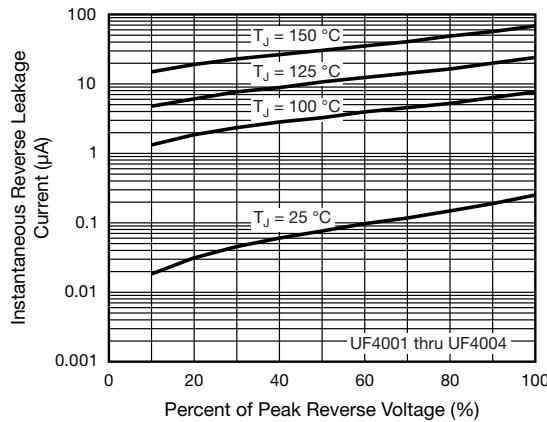


Fig. 4 - Typical Reverse Leakage Characteristics

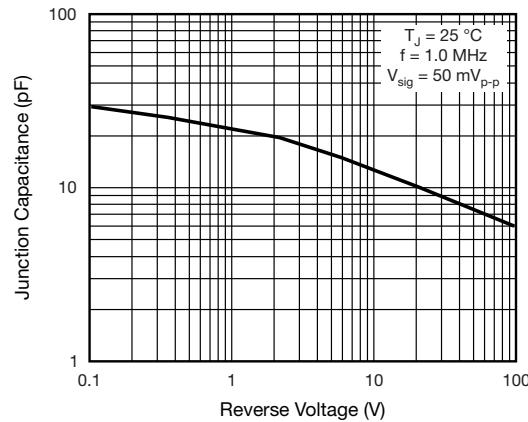


Fig. 7 - Typical Junction Capacitance

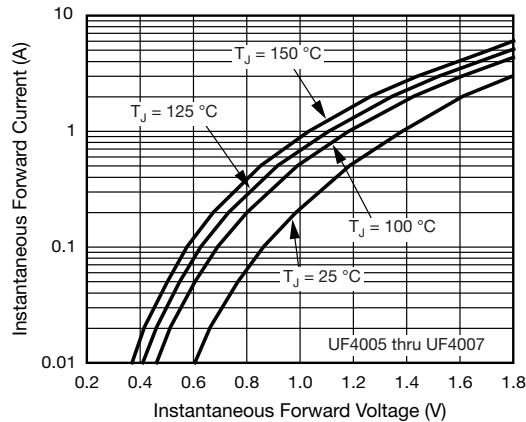
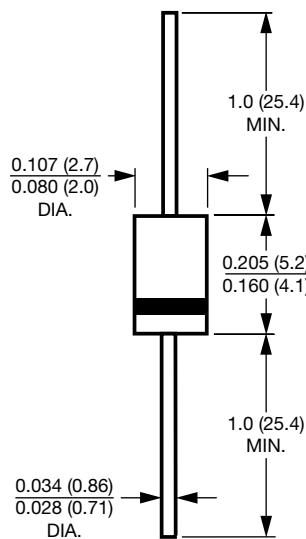


Fig. 5 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)



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