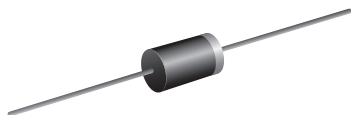


## Ultrafast Plastic Rectifier



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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### 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

| 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                                    |
| $T_J \text{ max.}$      | 150 °C                                          |
| Package                 | DO-204AL (DO-41)                                |
| Diode variations        | Single die                                      |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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 $T_A = 55\text{ °C}$ | $I_{F(AV)}$    | 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 <sub>A</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                               |        |        |        |        |        |        |        |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-------------------------------|--------|--------|--------|--------|--------|--------|--------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL                        | UF4001 | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 | UNIT |
| Maximum instantaneous forward voltage                                      | 1.0 A                                                                    |                         | V <sub>F</sub> <sup>(1)</sup> | 1.0    |        |        |        | 1.7    |        |        | V    |
| Maximum DC reverse current at rated DC blocking voltage                    |                                                                          | T <sub>A</sub> = 25 °C  | I <sub>R</sub>                | 10     |        |        |        |        |        |        | μA   |
|                                                                            |                                                                          | T <sub>A</sub> = 100 °C |                               | 50     |        |        |        |        |        |        |      |
| Maximum reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 50     |        |        |        | 75     |        |        | ns   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                             |                         | C <sub>J</sub>                | 17     |        |        |        |        |        |        | pF   |

**Note**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |        |        |        |        |        |        |        |      |      |
|-------------------------------------------------------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|--------|------|------|
| PARAMETER                                                               | SYMBOL                          | UF4001 | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 | UNIT |      |
| Typical thermal resistance                                              | R <sub>θJA</sub> <sup>(1)</sup> | 60     |        |        |        |        |        |        |      | °C/W |
|                                                                         | R <sub>θJL</sub> <sup>(1)</sup> | 15     |        |        |        |        |        |        |      |      |

**Note**

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

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                  |
|---------------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| UF4007-E3/54                          | 0.33            | 54                     | 5500          | 13" diameter paper tape and reel |
| UF4007-E3/73                          | 0.34            | 73                     | 3000          | Ammo pack packaging              |

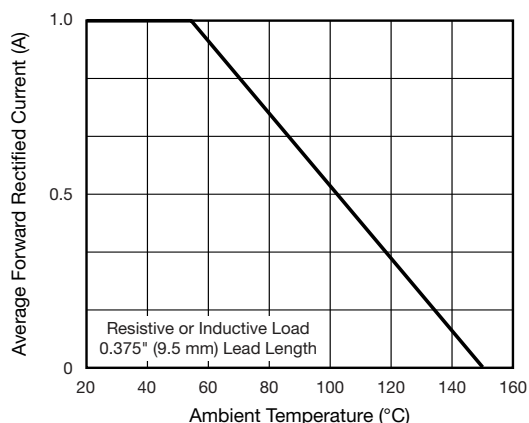
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

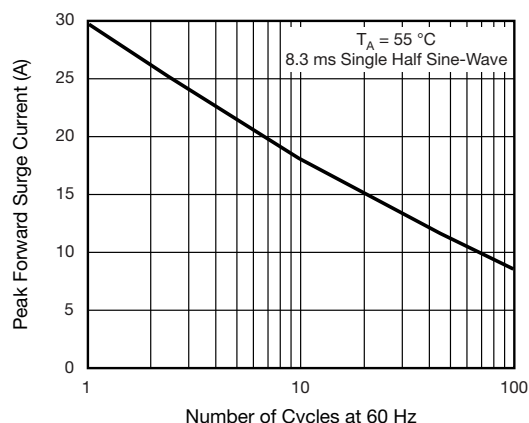


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

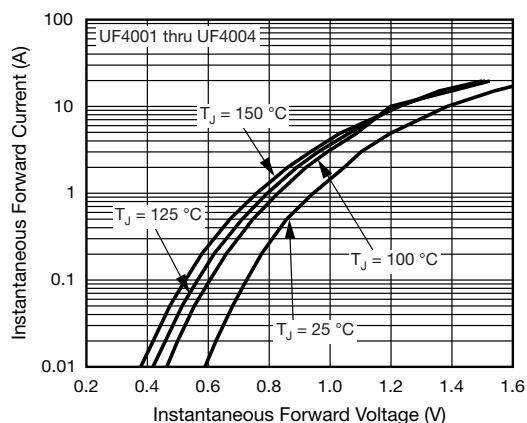


Fig. 3 - Typical Instantaneous Forward Characteristics

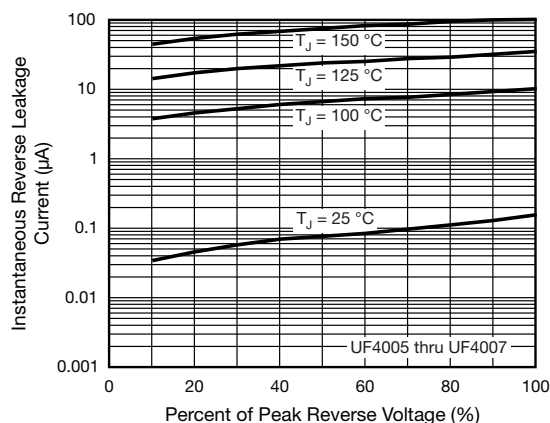


Fig. 6 - Typical Reverse Leakage Characteristics

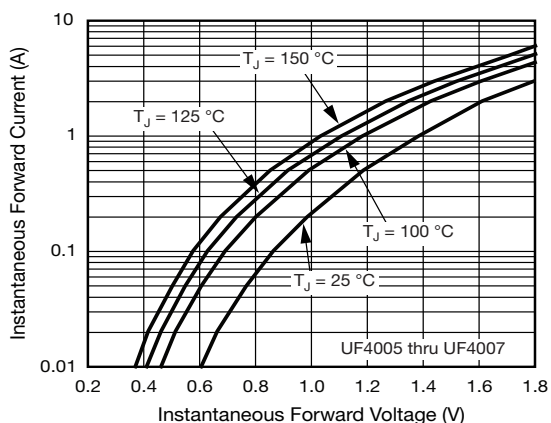


Fig. 4 - Typical Reverse Leakage Characteristics

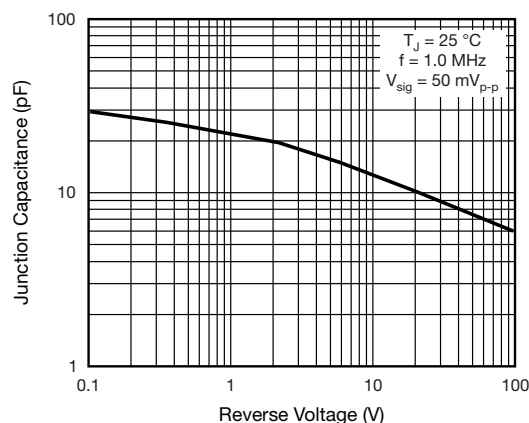


Fig. 7 - Typical Junction Capacitance

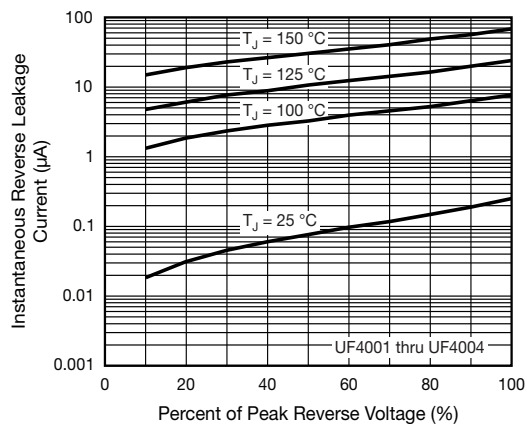
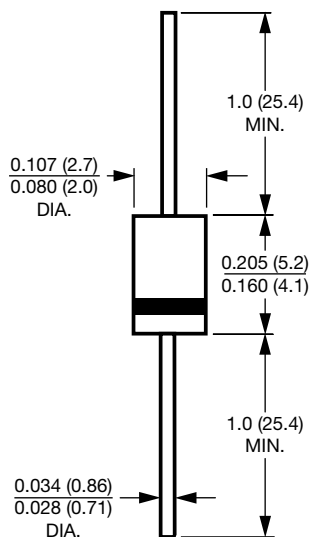


Fig. 5 - Typical Instantaneous Forward Characteristics



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

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





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