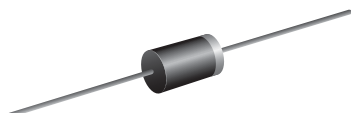


## Ultrafast Plastic Rectifier



DO-41 (DO-204AL)

### 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  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

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

### PRIMARY CHARACTERISTICS

|                       |                  |
|-----------------------|------------------|
| $I_{F(AV)}$           | 1.0 A            |
| $V_{RRM}$             | 600 V to 1000 V  |
| $I_{FSM}$             | 30 A             |
| $t_{rr}$              | 75 ns            |
| $V_F$                 | 1.7 V            |
| $T_J$ max.            | 150 °C           |
| Package               | DO-41 (DO-204AL) |
| Circuit configuration | Single           |

### 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 meets JESD 201 class 1A whisker test

**Polarity:** color band denotes cathode end

### MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER  | SYMBOL         | UF1005      | UF1006 | UF1007 | UNIT |
|--|----------------|-------------|--------|--------|------|
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 600         | 800    | 1000   | V    |
| Maximum RMS voltage  | $V_{RMS}$      | 420         | 560    | 700    | V    |
| Maximum DC blocking voltage  | $V_{DC}$       | 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 <sub>A</sub> = 25 °C unless otherwise noted) |  |                         |                               |        |        |        |      |
|--|--|-------------------------|-------------------------------|--------|--------|--------|------|
| PARAMETER  | TEST CONDITIONS  |                         | SYMBOL                        | UF1005 | UF1006 | UF1007 | UNIT |
| Maximum instantaneous forward voltage                                      | I <sub>F</sub> = 1.0 A   |                         | V <sub>F</sub> <sup>(1)</sup> | 1.7    |        |        | V    |
| Maximum reverse current  | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 5      |        |        | 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>               | 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

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |        |        |        |      |
|---|---------------------------------|--------|--------|--------|------|
| PARAMETER   | SYMBOL                          | UF1005 | UF1006 | UF1007 | 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                    |  |
| UF1007-E3/54                          | 0.33            | 54                     | 5500          | 13" diameter paper tape and reel |  |
| UF1007-E3/73                          | 0.34            | 73                     | 3000          | Ammo pack packaging              |  |
| UF1007-M3/54                          | 0.33            | 54                     | 5500          | 13" diameter paper tape and reel |  |
| UF1007-M3/73                          | 0.34            | 73                     | 3000          | Ammo pack packaging              |  |

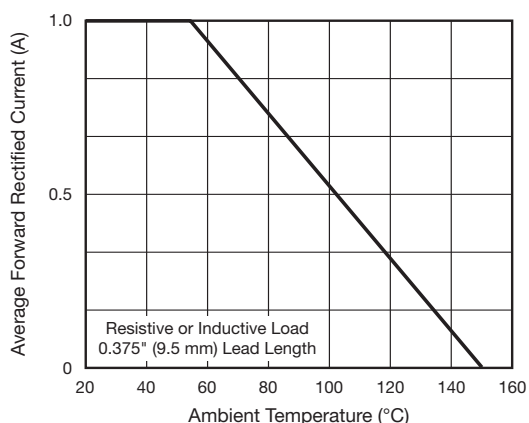
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

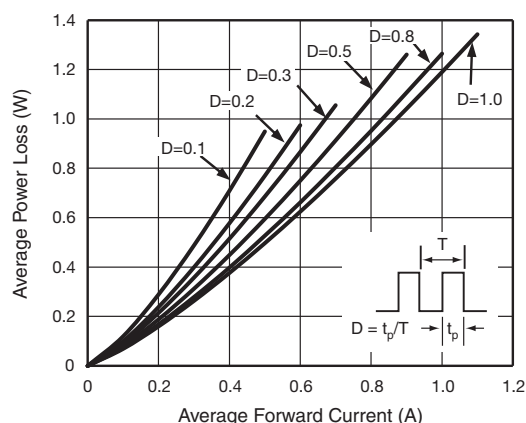


Fig. 2 - Forward Power Loss Characteristics

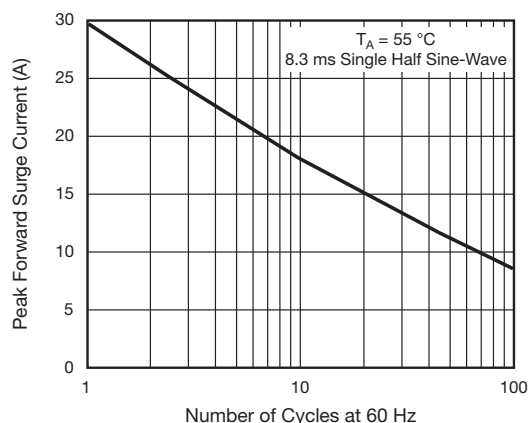


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

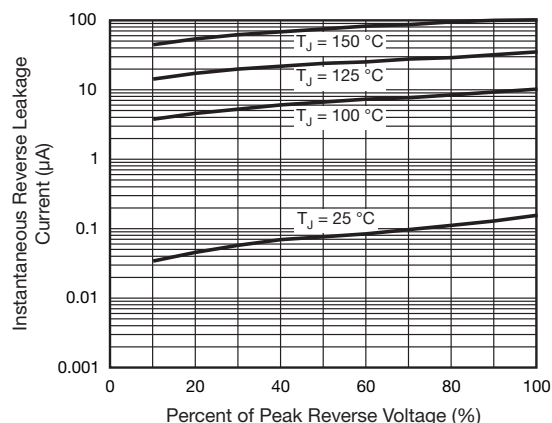


Fig. 5 - Typical Reverse Leakage Characteristics

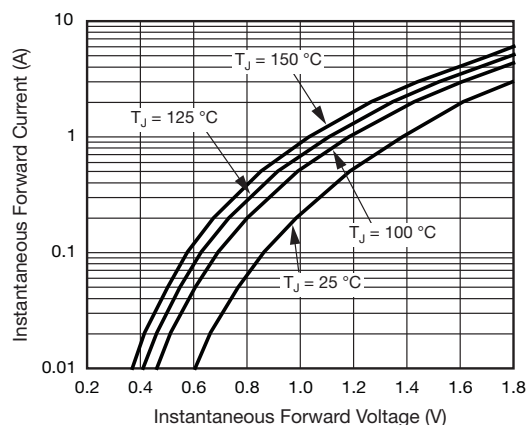


Fig. 4 - Typical Instantaneous Forward Characteristics

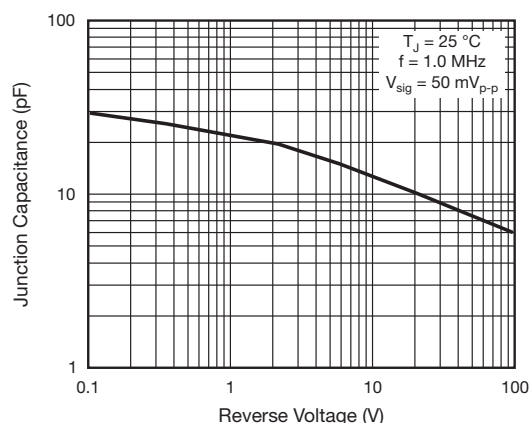
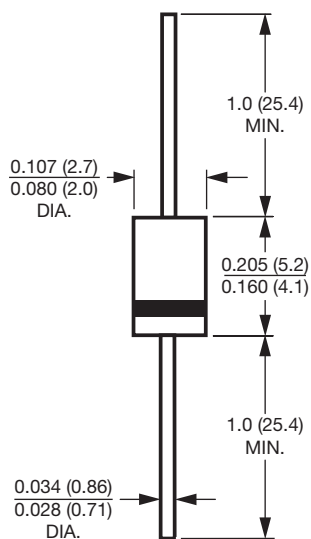


Fig. 6 - Typical Junction Capacitance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### DO-41 (DO-204AL)





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