

## Miniature Ultrafast Plastic Rectifier


**DO-15 (DO-204AC)**

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


**RoHS**  
COMPLIANT

| PRIMARY CHARACTERISTICS |                           |
|-------------------------|---------------------------|
| $I_{F(AV)}$             | 2.0 A                     |
| $V_{RRM}$               | 50 V, 100 V, 150 V, 200 V |
| $I_{FSM}$               | 80 A                      |
| $t_{rr}$                | 15 ns                     |
| $V_F$                   | 0.95 V                    |
| $T_J$ max.              | 150 °C                    |
| Package                 | DO-15 (DO-204AC)          |
| 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-15 (DO-204AC)

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 ( $T_A = 25$ °C unless otherwise noted)  |                |               |      |      |      |      |
|--|----------------|---------------|------|------|------|------|
| PARAMETER  | SYMBOL         | UG2A          | UG2B | UG2C | UG2D | 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 at 0.375" (9.5 mm) lead length at $T_L = 75$ °C (fig. 1) | $I_{F(AV)}$    | 2.0           |      |      |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load                 | $I_{FSM}$      | 80            |      |      |      | A    |
| Operating junction and storage temperature range   | $T_J, T_{STG}$ | - 55 to + 150 |      |      |      | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |   |  |             |                                   |      |               |
|--|---|--|-------------|-----------------------------------|------|---------------|
| PARAMETER  | TEST CONDITIONS   |  | SYMBOL      | VALUE                             | UNIT |               |
| Maximum instantaneous forward voltage  | $I_F = 2.0\text{ A}$  |  | $V_F^{(1)}$ | 0.95                              | V    |               |
| Maximum DC reverse current at rated DC blocking voltage                                      |   |  | $I_R$       | $T_A = 25\text{ }^\circ\text{C}$  | 5.0  | $\mu\text{A}$ |
|  |   |  |             | $T_A = 100\text{ }^\circ\text{C}$ | 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   |               |
| Typical reverse recovery time  | $I_F = 2.0\text{ A}, V_R = 30\text{ V},$<br>$di/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$ |  | $t_{rr}$    | $T_J = 25\text{ }^\circ\text{C}$  | 25   | ns            |
|  |   |  |             | $T_J = 100\text{ }^\circ\text{C}$ | 35   |               |
| Typical stored charge  | $I_F = 2.0\text{ A}, V_R = 30\text{ V},$<br>$di/dt = 50\text{ A}/\mu\text{s}, I_{rr} = 10\% I_{RM}$ |  | $Q_{rr}$    | $T_J = 25\text{ }^\circ\text{C}$  | 10   | nC            |
|  |   |  |             | $T_J = 100\text{ }^\circ\text{C}$ | 22   |               |
| Typical junction capacitance   | 4 V, 1 MHz  |  | $C_J$       | 15                                | pF   |               |

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

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |      |      |      |      |                           |
|---|-----------------------|------|------|------|------|---------------------------|
| PARAMETER   | SYMBOL                | UG2A | UG2B | UG2C | UG2D | UNIT                      |
| Typical thermal resistance  | $R_{\theta JA}^{(1)}$ | 45   |      |      |      | $^\circ\text{C}/\text{W}$ |

**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                    |
| UG2D-E3/54                            | 0.404           | 54                     | 4000          | 13" diameter paper tape and reel |
| UG2D-E3/73                            | 0.404           | 73                     | 2000          | Ammo pack packaging              |



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

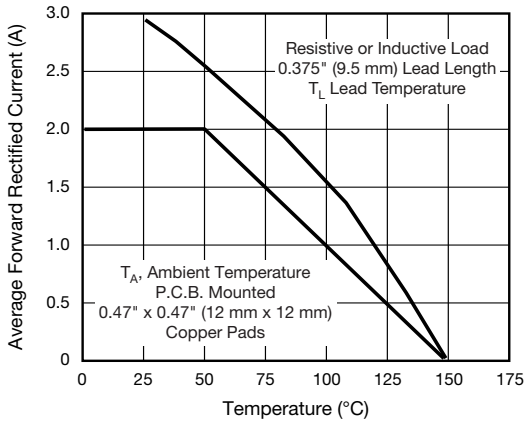


Fig. 1 - Maximum Forward Current Derating Curves

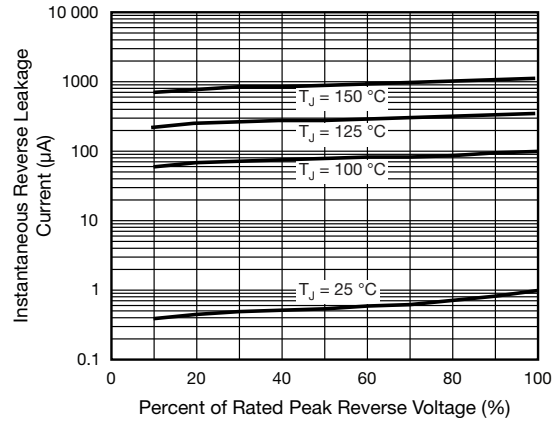


Fig. 4 - Typical Reverse Leakage Characteristics

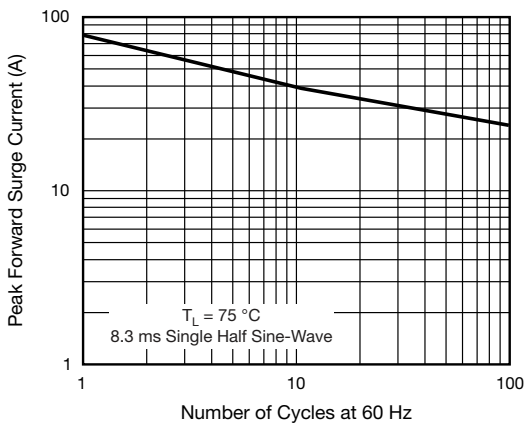


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

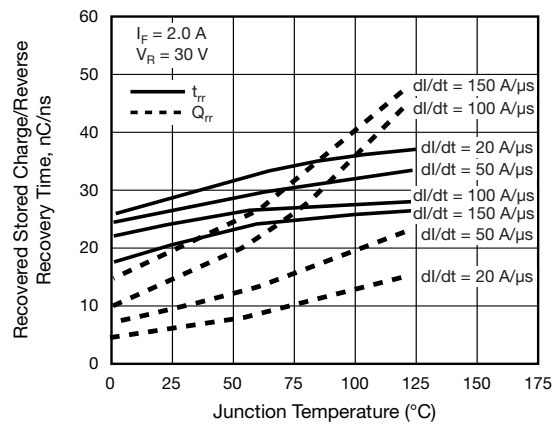


Fig. 5 - Reverse Switching Characteristics

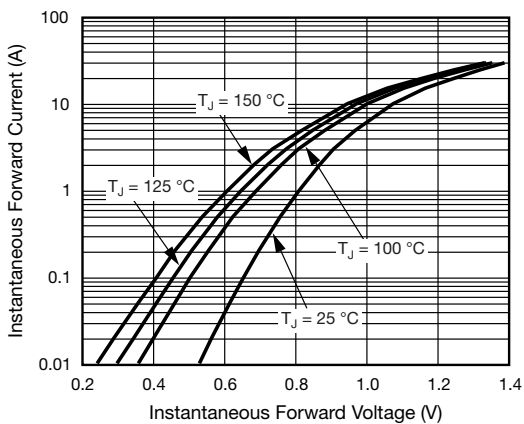


Fig. 3 - Typical Instantaneous Forward Characteristics

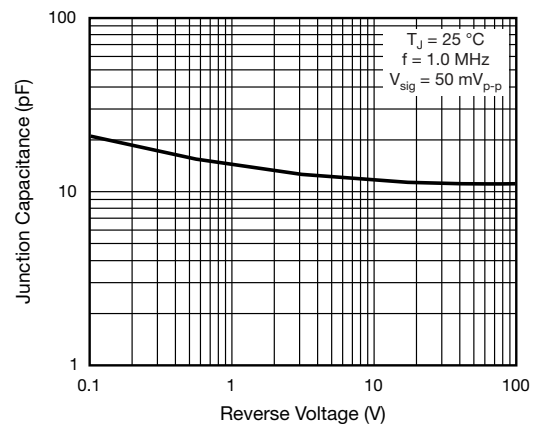
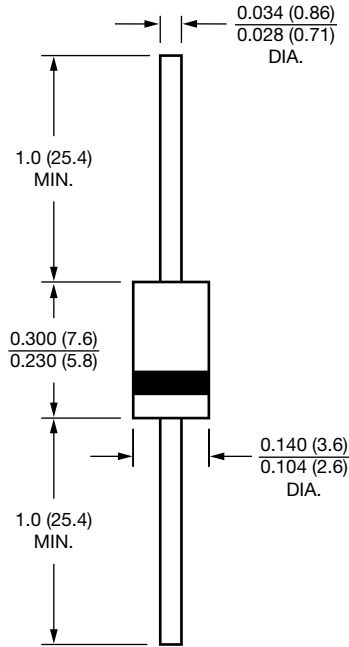


Fig. 6 - Typical Junction Capacitance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-15 (DO-204AC)





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