

## 1A, 50V - 1000V Glass Passivated Rectifier

### FEATURES

- Glass passivated chip junction
- Excellent high temperature switching
- High efficiency, low VF
- Ultrafast recovery time for high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- TV
- Monitor

### MECHANICAL DATA

- Case: DO-204AL (DO-41)
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Pure tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.33 g (approximately)

| KEY PARAMETERS |                  |      |
|----------------|------------------|------|
| PARAMETER      | VALUE            | UNIT |
| $I_{F(AV)}$    | 1                | A    |
| $V_{RRM}$      | 50 - 1000        | V    |
| $I_{FSM}$      | 30               | A    |
| $T_{J\ MAX}$   | 150              | °C   |
| Package        | DO-204AL (DO-41) |      |
| Configuration  | Single Die       |      |



DO-204AL (DO-41)

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |              |              |        |        |        |        |        |        |      |
|-----------------------------------------------------------------------------------------------|--------------|--------------|--------|--------|--------|--------|--------|--------|------|
| PARAMETER                                                                                     | SYMBOL       | UF4001       | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 | UNIT |
| Marking code on the device                                                                    |              | UF4001       | UF4002 | UF4003 | UF4004 | UF4005 | UF4006 | UF4007 |      |
| Repetitive peak reverse voltage                                                               | $V_{RRM}$    | 50           | 100    | 200    | 400    | 600    | 800    | 1000   | V    |
| Reverse voltage, total rms value                                                              | $V_{R(RMS)}$ | 35           | 70     | 140    | 280    | 420    | 560    | 700    | V    |
| Maximum DC blocking voltage                                                                   | $V_{DC}$     | 50           | 100    | 200    | 400    | 600    | 800    | 1000   | V    |
| Forward current                                                                               | $I_{F(AV)}$  | 1            |        |        |        |        |        |        | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 30           |        |        |        |        |        |        | A    |
| Junction temperature                                                                          | $T_J$        | - 55 to +150 |        |        |        |        |        |        | °C   |
| Storage temperature                                                                           | $T_{STG}$    | - 55 to +150 |        |        |        |        |        |        | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | LIMIT | UNIT |
|----------------------------------------|-----------------|-------|------|
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 60    | °C/W |
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 15    | °C/W |

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| PARAMETER                                                       |        | CONDITIONS                                                            | SYMBOL          | TYP | MAX | UNIT |
|-----------------------------------------------------------------|--------|-----------------------------------------------------------------------|-----------------|-----|-----|------|
| Forward voltage per diode <sup>(1)</sup>                        | UF4001 | I <sub>F</sub> = 1A,T <sub>J</sub> = 25°C                             | V <sub>F</sub>  | -   | 1.0 | V    |
|                                                                 | UF4002 |                                                                       |                 |     |     | V    |
|                                                                 | UF4003 |                                                                       |                 |     |     | V    |
|                                                                 | UF4004 |                                                                       |                 |     |     | V    |
|                                                                 | UF4005 |                                                                       |                 | -   | 1.7 | V    |
|                                                                 | UF4006 |                                                                       |                 |     |     | V    |
|                                                                 | UF4007 |                                                                       |                 |     |     | V    |
| Reverse current @ rated V <sub>R</sub> per diode <sup>(2)</sup> |        | T <sub>J</sub> = 25°C                                                 | I <sub>R</sub>  | -   | 5   | μA   |
|                                                                 |        | T <sub>J</sub> = 125°C                                                |                 | -   | 150 | μA   |
| Junction capacitance                                            |        | 1 MHz, V <sub>R</sub> =4.0V                                           | C <sub>J</sub>  | 17  | -   | pF   |
| Reverse recovery time                                           | UF4001 | I <sub>F</sub> =0.5A , I <sub>R</sub> =1.0A<br>I <sub>RR</sub> =0.25A | t <sub>rr</sub> | -   | 50  | ns   |
|                                                                 | UF4002 |                                                                       |                 |     |     |      |
|                                                                 | UF4003 |                                                                       |                 |     |     |      |
|                                                                 | UF4004 |                                                                       |                 |     |     |      |
|                                                                 | UF4005 |                                                                       |                 | -   | 75  |      |
|                                                                 | UF4006 |                                                                       |                 |     |     |      |
| UF4007                                                          |        |                                                                       |                 |     |     |      |

**Notes:**

1. Pulse test with  $PW = 0.3\text{ ms}$
2. Pulse test with  $PW = 30\text{ ms}$

**ORDERING INFORMATION**

| PART NO.           | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX(*) | PACKAGE | PACKING                             |
|--------------------|-----------------|--------------|------------------------|---------|-------------------------------------|
| UF400x<br>(Note 1) | H               | A0           | G                      | DO-41   | 3,000 / Ammo box<br>(52mm taping)   |
|                    |                 | R0           |                        | DO-41   | 5,000 / 13" Paper reel              |
|                    |                 | R1           |                        | DO-41   | 5,000 / 13" Paper reel<br>(Reverse) |
|                    |                 | B0           |                        | DO-41   | 1,000 / Bulk packing                |

**Notes:**

1. "x" defines voltage from 50V (UF4001) to 1000V (UF4007)
- \*: Optional available

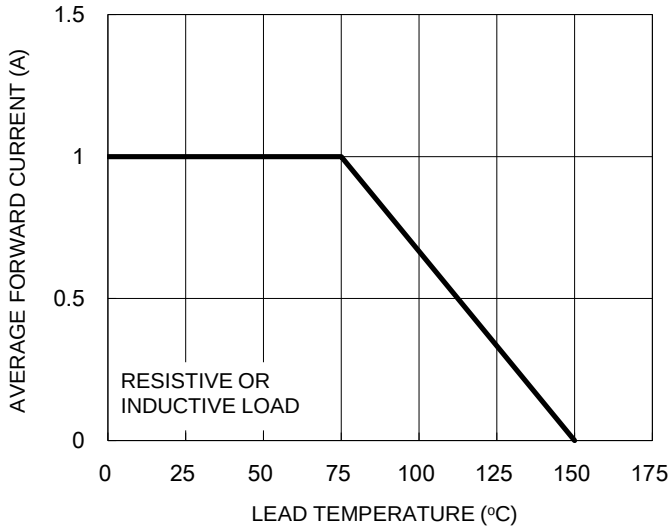
**EXAMPLE P/N**

| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION                          |
|-------------|----------|-----------------|--------------|---------------------|--------------------------------------|
| UF4001HA0G  | UF4001   | H               | A0           | G                   | AEC-Q101 qualified<br>Green compound |

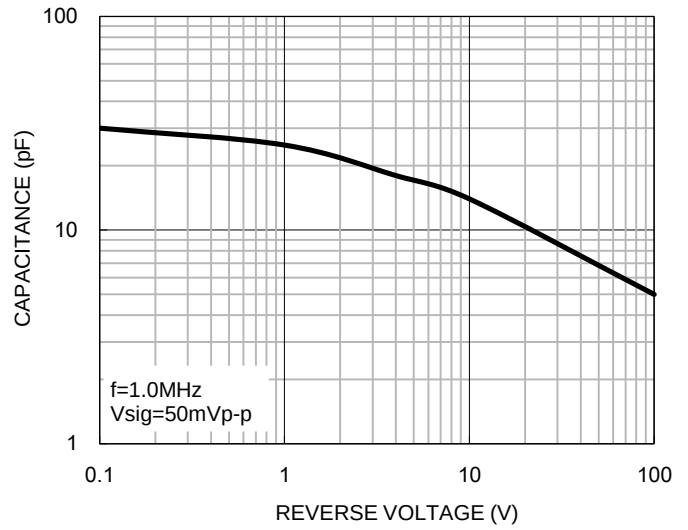
## CHARACTERISTICS CURVES

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

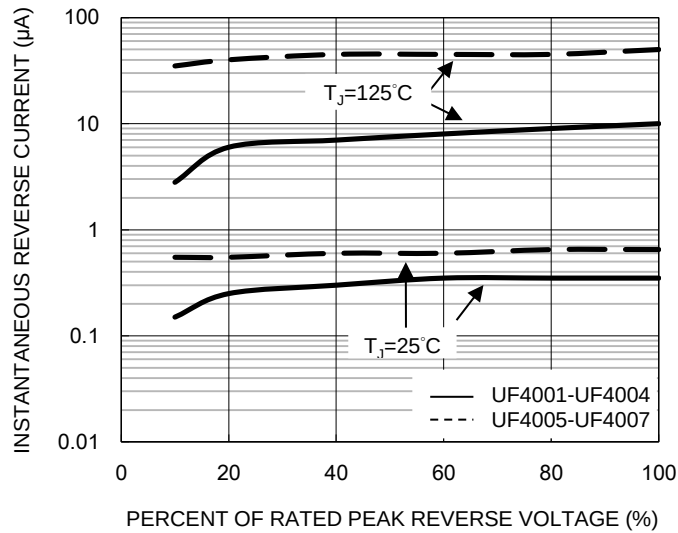
**Fig.1 Forward Current Derating Curve**



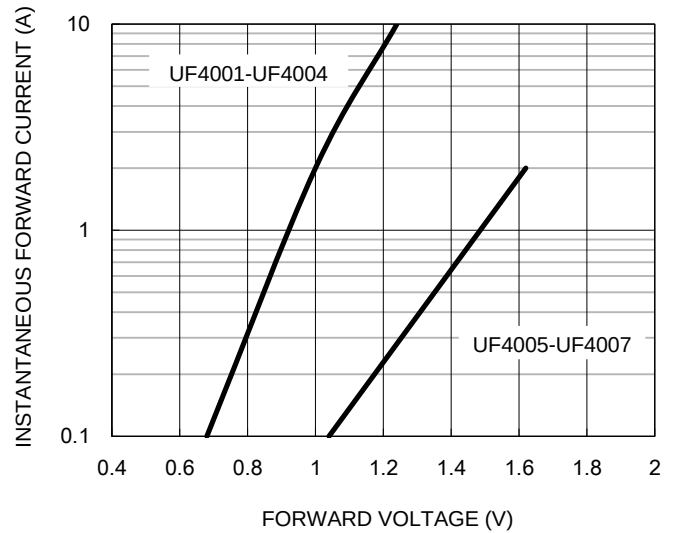
**Fig.2 Typical Junction Capacitance**



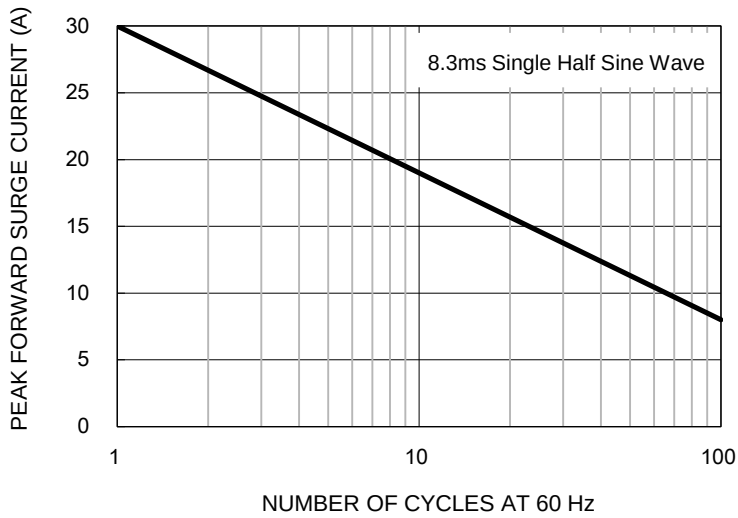
**Fig.3 Typical Reverse Characteristics**



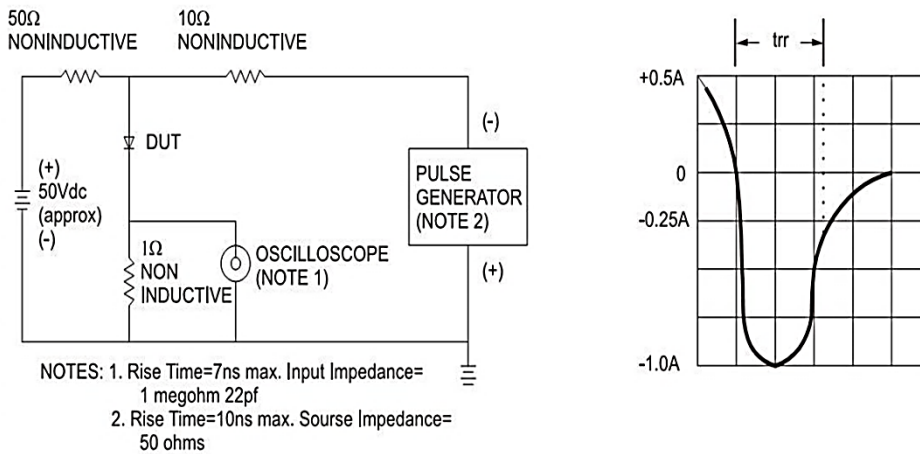
**Fig.4 Typical Forward Characteristics**



**Fig.5 Maximum Non-repetitive Forward Surge Current**

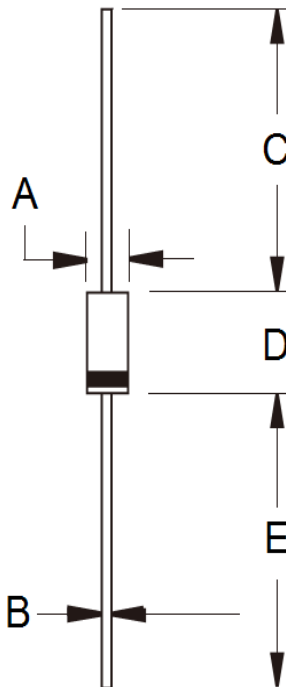


**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



## PACKAGE OUTLINE DIMENSIONS

DO-204AL (DO-41)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 2.00      | 2.70 | 0.079       | 0.106 |
| B    | 0.71      | 0.86 | 0.028       | 0.034 |
| C    | 25.40     | -    | 1.000       | -     |
| D    | 4.20      | 5.20 | 0.165       | 0.205 |
| E    | 25.40     | -    | 1.000       | -     |

## MARKING DIAGRAM



P/N = Marking Code  
 G = Green Compound  
 YWW = Date Code  
 F = Factory Code

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