

## 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    |
| $T_{JMAX}$     | 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   |

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

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |        |   |               |            |            |               |
|---|--------|---|---------------|------------|------------|---------------|
| <b>PARAMETER</b>  |        | <b>CONDITIONS</b>   | <b>SYMBOL</b> | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b>   |
| Forward voltage per diode <sup>(1)</sup>  | UF4001 | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$                         | $V_F$         | -          | 1.0        | V             |
|   | UF4002 |   |               |            |            | V             |
|   | UF4003 |   |               |            |            | V             |
|   | UF4004 |   |               |            |            | V             |
|   | UF4005 |   |               |            | 1.7        | V             |
|   | UF4006 |   |               |            |            | V             |
|   | UF4007 |   |               |            |            | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup>                              |        | $T_J = 25^\circ\text{C}$  | $I_R$         | -          | 5          | $\mu\text{A}$ |
|   |        | $T_J = 125^\circ\text{C}$   |               | -          | 150        | $\mu\text{A}$ |
| Junction capacitance  |        | 1 MHz, $V_R = 4.0\text{V}$  | $C_J$         | 17         | -          | pF            |
| Reverse recovery time   | UF4001 | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{RR} = 0.25\text{A}$ | $t_{rr}$      | -          | 50         | ns            |
|   | UF4002 |   |               |            |            |               |
|   | UF4003 |   |               |            |            |               |
|   | UF4004 |   |               |            |            |               |
|   | UF4005 |   |               |            | 75         |               |
| UF4006  |        |   |               |            |            |               |
| UF4007  |        |   |               |            |            |               |

**Notes:**

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

| <b>ORDERING INFORMATION</b> |                        |                     |                               |                |                                     |
|-----------------------------|------------------------|---------------------|-------------------------------|----------------|-------------------------------------|
| <b>PART NO.</b>             | <b>PART NO. SUFFIX</b> | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX(*)</b> | <b>PACKAGE</b> | <b>PACKING</b>                      |
| 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

| <b>EXAMPLE P/N</b> |                 |                        |                     |                            |                                      |
|--------------------|-----------------|------------------------|---------------------|----------------------------|--------------------------------------|
| <b>EXAMPLE P/N</b> | <b>PART NO.</b> | <b>PART NO. SUFFIX</b> | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>DESCRIPTION</b>                   |
| 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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