

## 2A, 50V - 1000V Glass Passivated Fast Recovery Rectifier

### FEATURES

- Glass passivated chip junction
- High current capability, Low  $V_F$
- High reliability
- High surge current capability
- Low power loss, 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-204AC (DO-15)
- Molding compound meets UL 94V-0 flammability rating
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Pure tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 0.4 g (approximately)

| KEY PARAMETERS |                  |      |
|----------------|------------------|------|
| PARAMETER      | VALUE            | UNIT |
| $I_{F(AV)}$    | 2                | A    |
| $V_{RRM}$      | 50 - 1000        | V    |
| $I_{FSM}$      | 55               | A    |
| $T_{JMAX}$     | 150              | °C   |
| Package        | DO-204AC (DO-15) |      |
| Configuration  | Single die       |      |



DO-204AC (DO-15)

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |              |              |              |              |              |              |              |              |      |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|
| PARAMETER   | SYMBOL       | FR201<br>G-T | FR202<br>G-T | FR203<br>G-T | FR204<br>G-T | FR205<br>G-T | FR206<br>G-T | FR207<br>G-T | UNIT |
| Marking code on the device  |              | FR201G       | FR202G       | FR203G       | FR204G       | FR205G       | FR206G       | FR207G       |      |
| 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    |
| Forward current   | $I_{F(AV)}$  | 2            |              |              |              |              |              |              | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 55           |              |              |              |              |              |              | 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 | $R_{\theta JA}$ | 70           | °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>  | $I_F = 2\text{A}, T_J = 25^\circ\text{C}$                         | $V_F$         | -          | 1.3        | V             |          |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup>                              | $T_J = 25^\circ\text{C}$  | $I_R$         | -          | 5          | $\mu\text{A}$ |          |
|   | $T_J = 125^\circ\text{C}$   |               | -          | 100        | $\mu\text{A}$ |          |
| Junction capacitance  | 1 MHz, $V_R = 4.0\text{V}$  | $C_J$         | 10         | -          | pF            |          |
| Reverse recovery time   | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{RR} = 0.25\text{A}$ | $t_{rr}$      | -          | 150        | ns            |          |
|   |   |               |            |            |               | FR201G-T |
|   |   |               |            |            |               | FR202G-T |
|   |   |               | -          | 250        | ns            |          |
|   |   |               |            |            |               | FR203G-T |
|   |   |               |            |            |               | FR204G-T |
| -   | 500   | ns            |            |            |               |          |
|   |   |               | FR205G-T   |            |               |          |
| FR206G-T  |   |               |            |            |               |          |
| FR207G-T  |   |               |            |            |               |          |

**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>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>PACKAGE</b> | <b>PACKING</b>         |
| FR20xG-T<br>(Note 1, 2)     | A0                  | G                          | DO-15          | 1,500 / Ammo box       |
|                             | R0                  |                            | DO-15          | 3,500 / 13" Paper reel |
|                             | B0                  |                            | DO-15          | 1,000 / Bulk packing   |

**Notes:**

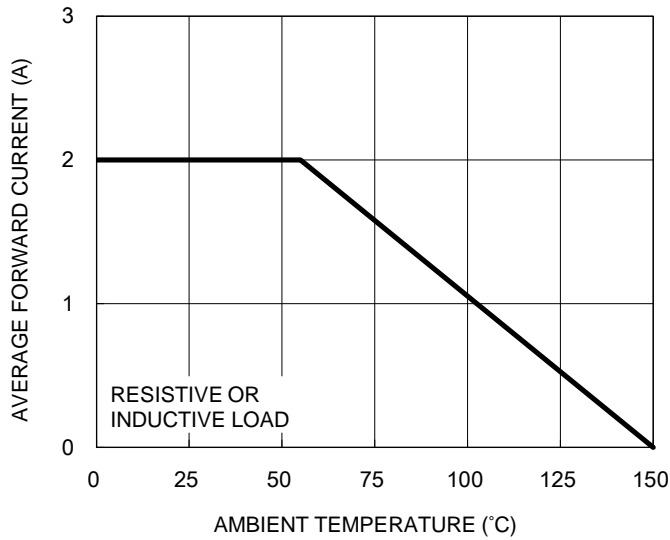
1. "x" defines voltage from 50V (FR201G-T) to 1000V (FR207G-T)
2. Whole series with green compound (halogen-free)

| <b>EXAMPLE P/N</b> |                 |                     |                            |                    |
|--------------------|-----------------|---------------------|----------------------------|--------------------|
| <b>EXAMPLE P/N</b> | <b>PART NO.</b> | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>DESCRIPTION</b> |
| FR201G-T A0G       | FR201G-T        | A0                  | G                          | Green compound     |

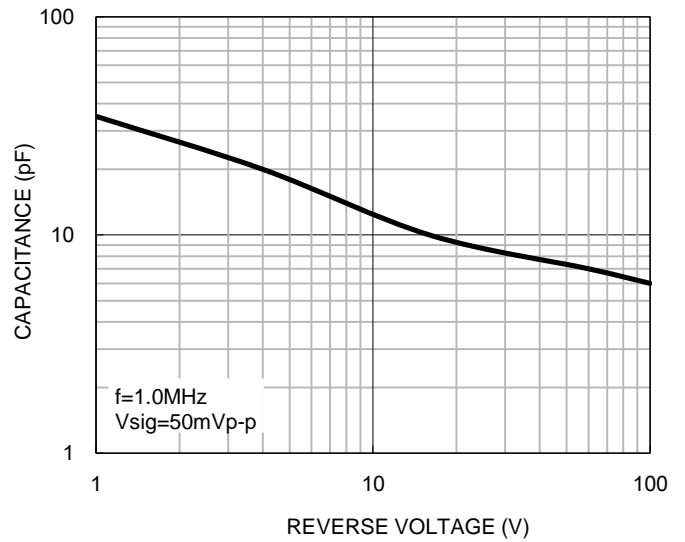
**CHARACTERISTICS CURVES**

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

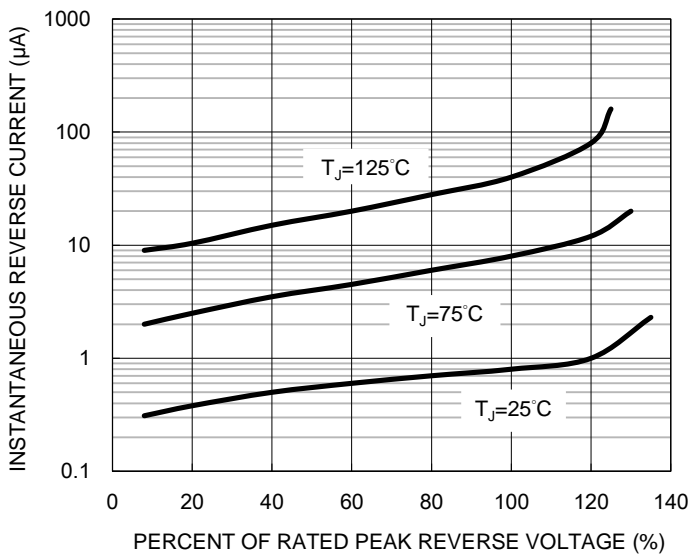
**Fig.1 Forward Current Derating Curve**



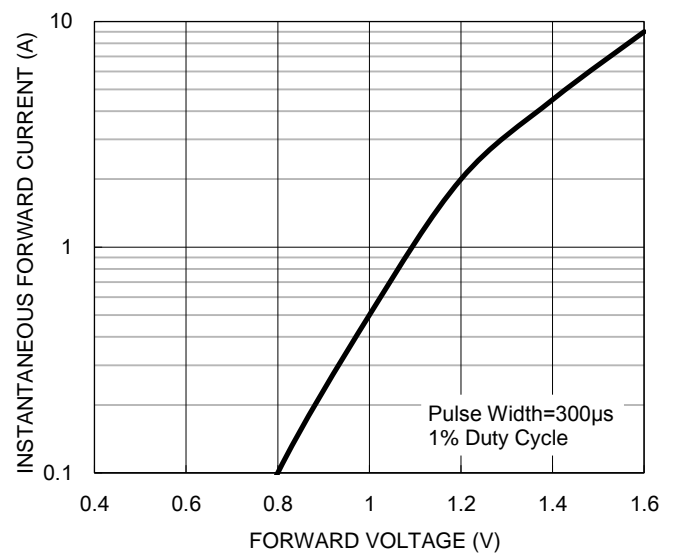
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



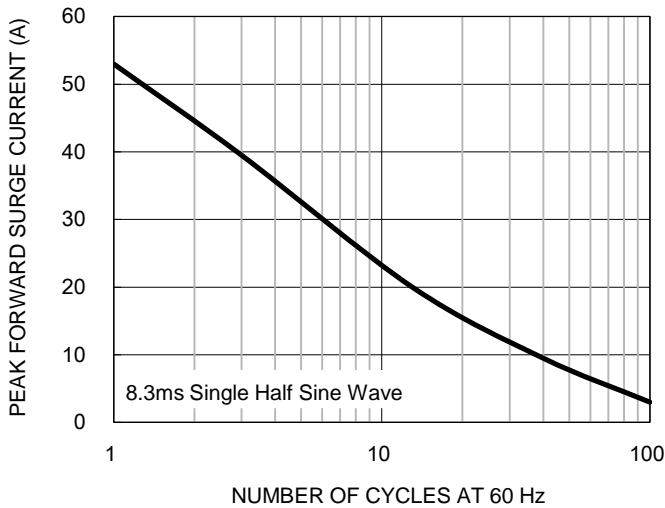
**Fig.4 Typical Forward Characteristics**



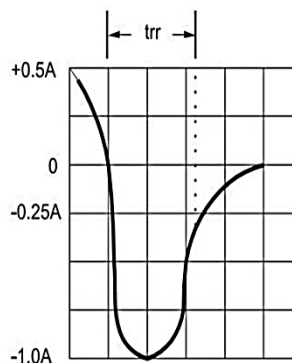
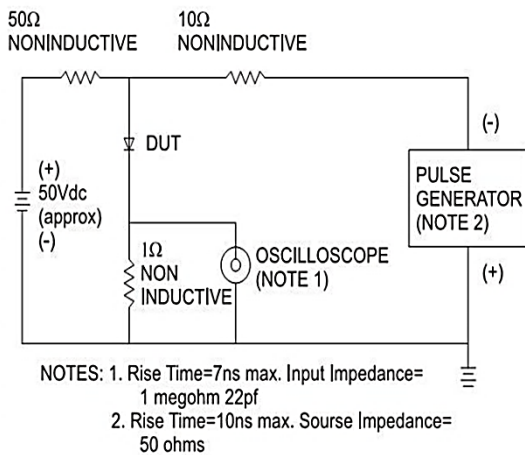
**CHARACTERISTICS CURVES**

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

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

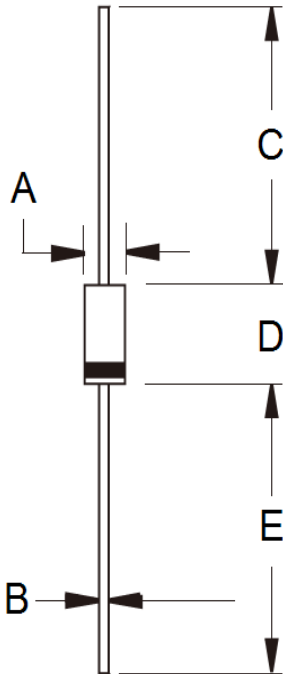


**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



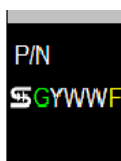
**PACKAGE OUTLINE DIMENSIONS**

DO-204AC (DO-15)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 2.60      | 3.60 | 0.102       | 0.142 |
| B    | 0.70      | 0.90 | 0.028       | 0.035 |
| C    | 25.40     | -    | 1.000       | -     |
| D    | 5.80      | 7.60 | 0.228       | 0.299 |
| E    | 25.40     | -    | 1.000       | -     |

**MARKING DIAGRAM**



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

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