

## 1.5A, 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 |
| $I_{F(AV)}$    | 1.5              | A    |
| $V_{RRM}$      | 50 - 1000        | V    |
| $I_{FSM}$      | 50               | A    |
| $T_{J\ MAX}$   | 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       | FR151<br>G-T | FR152<br>G-T | FR153<br>G-T | FR154<br>G-T | FR155<br>G-T | FR156<br>G-T | FR157<br>G-T | UNIT |
|-----------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|
| Marking code on the device                                                                    |              | FR151G       | FR152G       | FR153G       | FR154G       | FR155G       | FR156G       | FR157G       |      |
| 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                                                                               | $I_{F(AV)}$  | 1.5          |              |              |              |              |              |              | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 50           |              |              |              |              |              |              | 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 |

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

| PARAMETER                                                       |          | CONDITIONS                                                            | SYMBOL          | TYP | MAX | UNIT |
|-----------------------------------------------------------------|----------|-----------------------------------------------------------------------|-----------------|-----|-----|------|
| Forward voltage per diode <sup>(1)</sup>                        |          | I <sub>F</sub> = 1.5A, T <sub>J</sub> = 25°C                          | V <sub>F</sub>  | -   | 1.3 | 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                                                |                 | -   | 100 | μA   |
| Junction capacitance                                            |          | 1 MHz, V <sub>R</sub> =4.0V                                           | C <sub>J</sub>  | 20  | -   | pF   |
| Reverse recovery time                                           | FR151G-T | I <sub>F</sub> =0.5A , I <sub>R</sub> =1.0A<br>I <sub>RR</sub> =0.25A | t <sub>rr</sub> | -   | 150 | ns   |
|                                                                 | FR152G-T |                                                                       |                 |     |     |      |
|                                                                 | FR153G-T |                                                                       |                 |     |     |      |
|                                                                 | FR154G-T |                                                                       |                 | -   | 250 | ns   |
|                                                                 | FR155G-T |                                                                       |                 |     |     |      |
|                                                                 | FR156G-T |                                                                       |                 | -   | 500 | ns   |
|                                                                 | FR157G-T |                                                                       |                 |     |     |      |

**Notes:**

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

**ORDERING INFORMATION**

| PART NO.                | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING                |
|-------------------------|--------------|---------------------|---------|------------------------|
| FR15xG-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 (FR151G-T) to 1000V (FR157G-T)
2. Whole series with green compound (halogen-free)

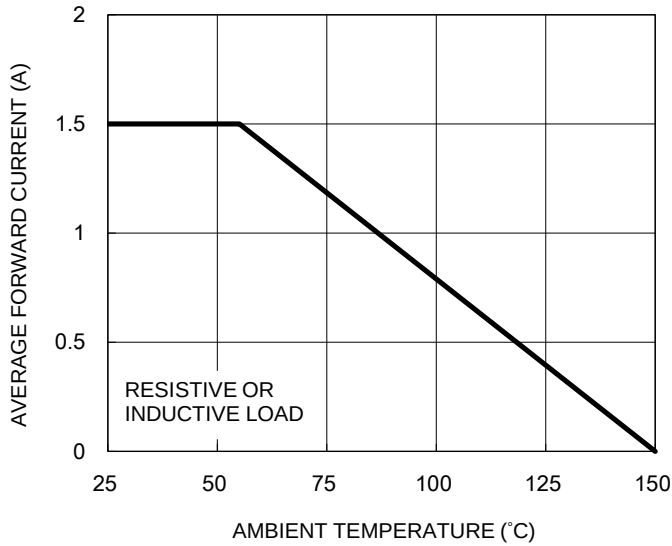
**EXAMPLE P/N**

| EXAMPLE P/N  | PART NO. | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION    |
|--------------|----------|--------------|---------------------|----------------|
| FR151G-T A0G | FR151G-T | A0           | G                   | Green compound |

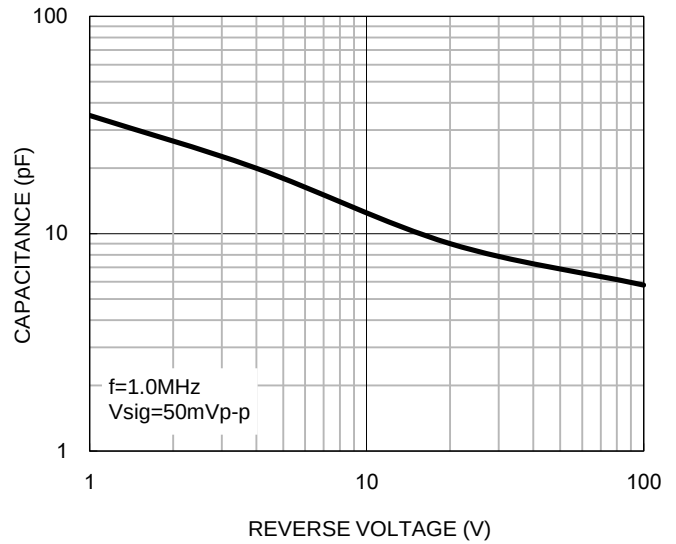
## CHARACTERISTICS CURVES

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

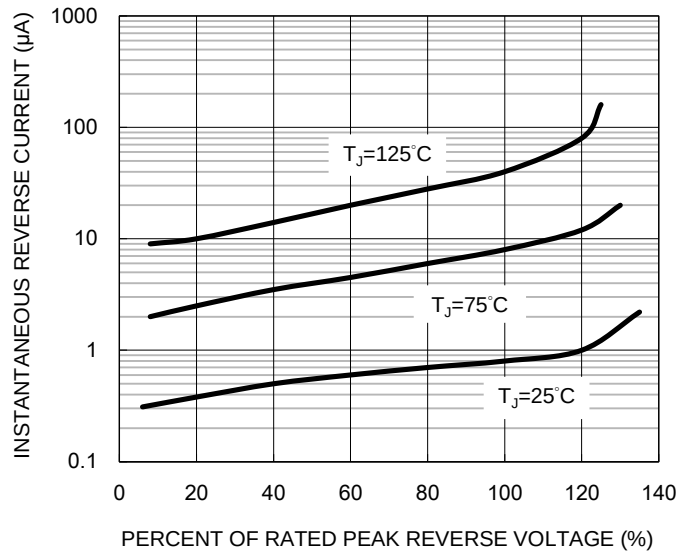
**Fig.1 Forward Current Derating Curve**



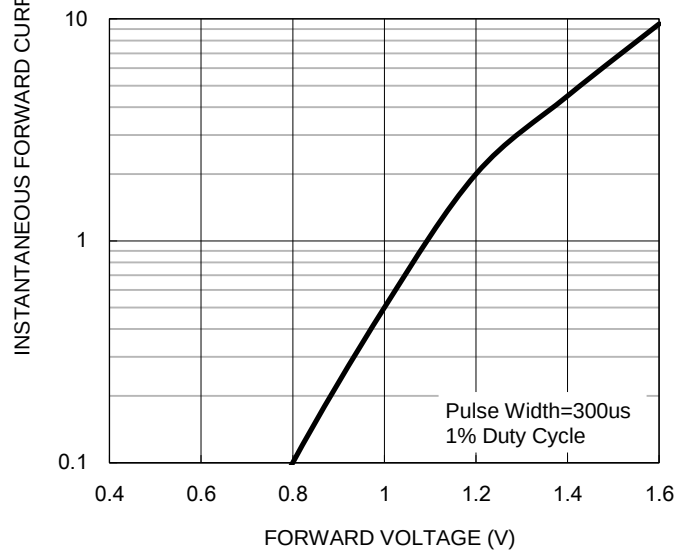
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



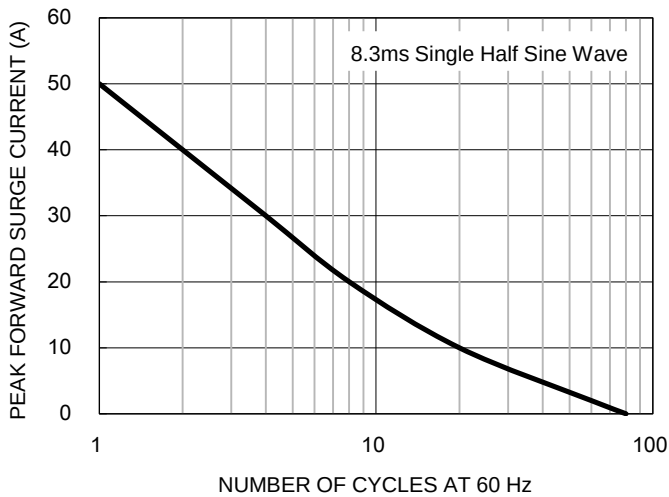
**Fig.4 Typical Forward Characteristics**



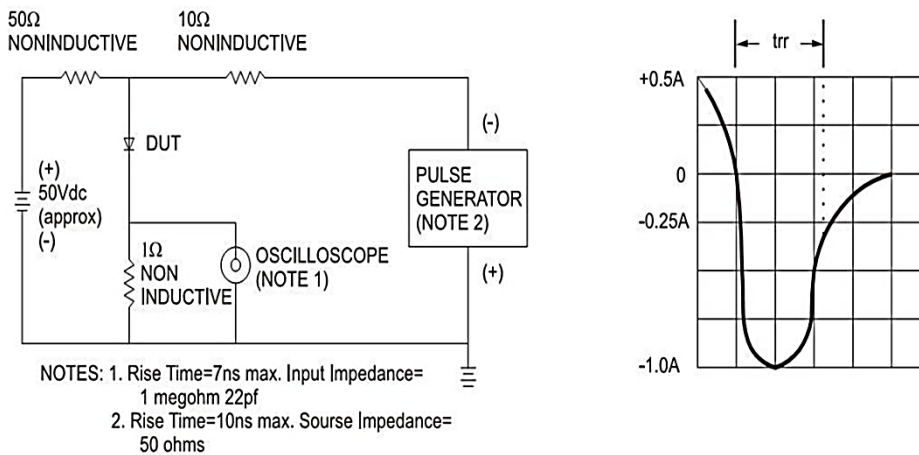
## CHARACTERISTICS CURVES

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

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

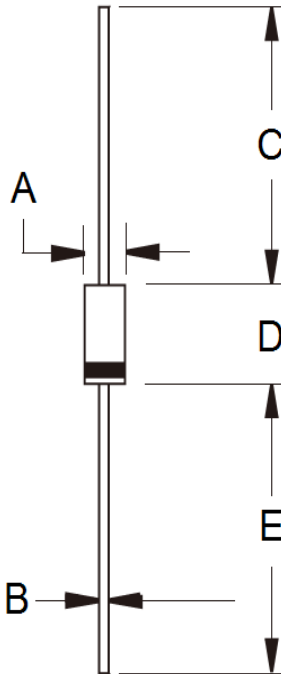


**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



## 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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