

## 5A, 600V Ultrafast Rectifier

### FEATURES

- High efficiency, low  $V_F$
- High current capability
- High reliability
- High surge current capability
- Low power loss
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

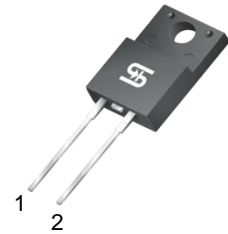
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board AC/DC converter

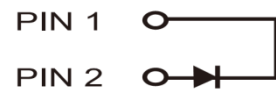
### MECHANICAL DATA

- Case: ITO-220AC
- Molding compound meets UL 94V-0 flammability rating
- Packing code with suffix "G" means green compound (halogen-free)
- Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Mounting torque: 0.56 Nm max.
- Weight: 1.8g (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_{F(AV)}$    | 5          | A    |
| $V_{RRM}$      | 600        | V    |
| $I_{FSM}$      | 55         | A    |
| $T_{JMAX}$     | 150        | °C   |
| Package        | ITO-220AC  |      |
| Configuration  | Single Die |      |



ITO-220AC



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |              |             |      |
|---|--------------|-------------|------|
| PARAMETER   | SYMBOL       | UF5JFC      | UNIT |
| Marking code on the device  |              | UF5JFC      |      |
| Repetitive peak reverse voltage   | $V_{RRM}$    | 600         | V    |
| Reverse voltage, total rms value  | $V_{R(RMS)}$ | 420         | V    |
| Forward current   | $I_{F(AV)}$  | 5           | 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-lead Thermal Resistance per diode    | $R_{\theta JL}$ | 6.3          | °C/W        |
| Junction-to-ambient Thermal Resistance per diode | $R_{\theta JA}$ | 12           | °C/W        |
| Junction-to-case Thermal Resistance per diode    | $R_{\theta JC}$ | 7.3          | °C/W        |

**Thermal Performance Note:** Mounted on Heat sink Size of 4"x6"x0.25" Al-Plate

| <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>  | $I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$                       | $V_F$         | 1.3        | 1.8        | V             |
|   | $I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$                       |               | 1.5        | 2.8        | V             |
|   | $I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$                      |               | 1.1        | 1.6        | V             |
|   | $I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$                      |               | 1.3        | 2.3        | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup>                              | $T_J = 25^\circ\text{C}$  | $I_R$         | -          | 30         | $\mu\text{A}$ |
|   | $T_J = 125^\circ\text{C}$   |               | -          | 200        | $\mu\text{A}$ |
| Junction capacitance  | 1 MHz, $V_R = 4.0\text{V}$  | $C_J$         | 30         | -          | pF            |
| Reverse recovery time   | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{RR} = 0.25\text{A}$ | $t_{rr}$      | -          | 25         | ns            |

**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> |
| UF5JFC<br>(Note 1)          | C0                  | G                          | ITO-220AC      | 50 / Tube      |

**Note:**

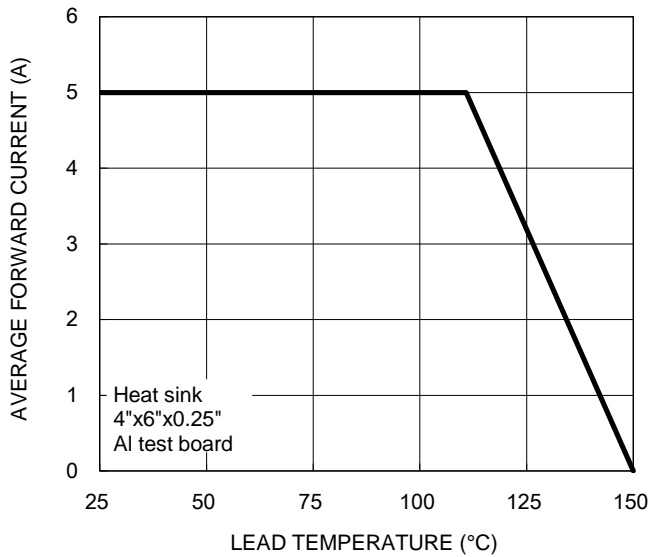
1. Whole series with green compound (halogen-free)

| <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> |
| UF5JFC C0G         | UF5JFC          | C0                  | G                          | Green compound     |

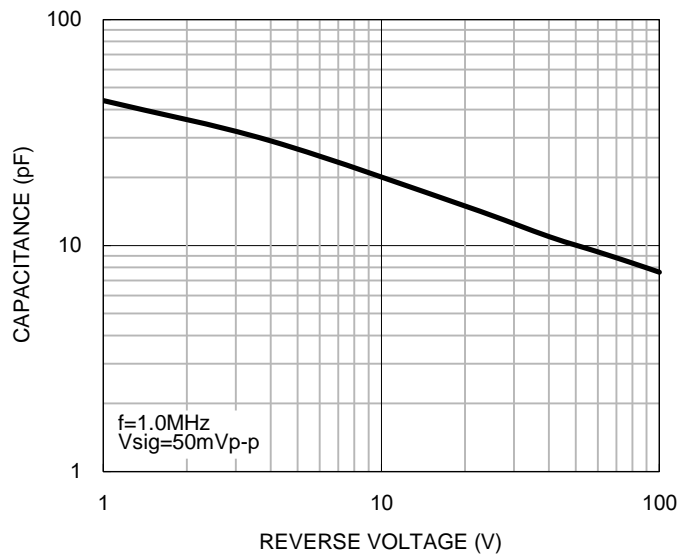
**CHARACTERISTICS CURVES**

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

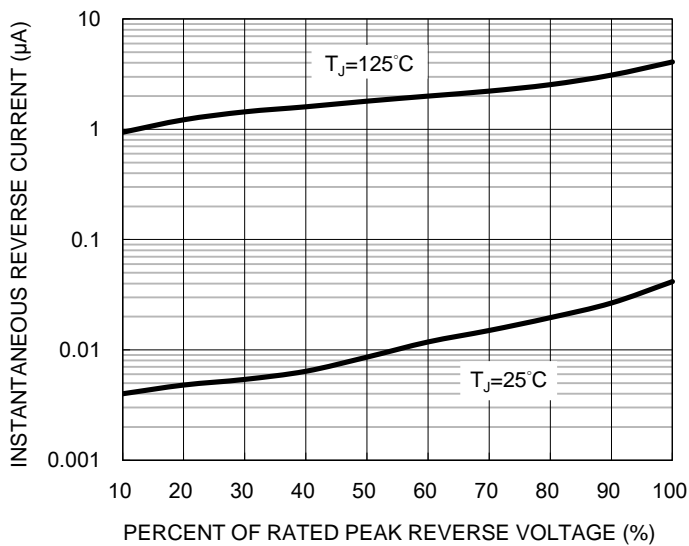
**Fig.1 Forward Current Derating Curve**



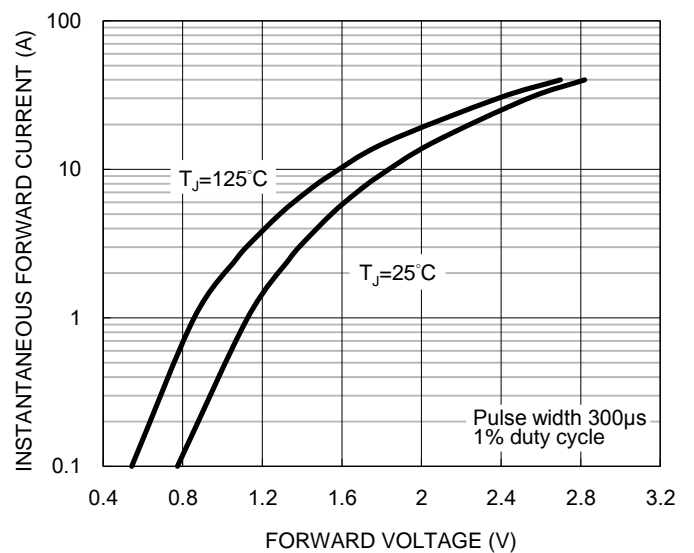
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**

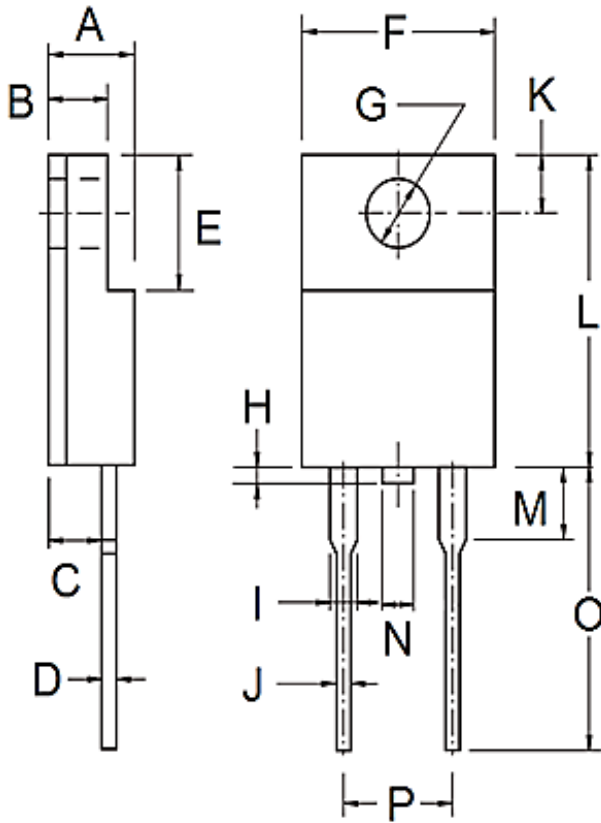


**Fig.4 Typical Forward Characteristics**



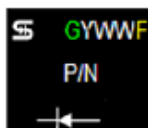
**PACKAGE OUTLINE DIMENSIONS**

ITO-220AC



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | 4.30      | 4.70  | 0.169       | 0.185 |
| B    | 2.50      | 3.10  | 0.098       | 0.122 |
| C    | 2.30      | 2.90  | 0.091       | 0.114 |
| D    | 0.46      | 0.76  | 0.018       | 0.030 |
| E    | 6.30      | 6.90  | 0.248       | 0.272 |
| F    | 9.60      | 10.30 | 0.378       | 0.406 |
| G    | 3.00      | 3.40  | 0.118       | 0.134 |
| H    | 0.00      | 1.60  | 0.000       | 0.063 |
| I    | 0.95      | 1.45  | 0.037       | 0.057 |
| J    | 0.50      | 0.90  | 0.020       | 0.035 |
| K    | 2.40      | 3.20  | 0.094       | 0.126 |
| L    | 14.80     | 15.50 | 0.583       | 0.610 |
| M    | -         | 4.10  | -           | 0.161 |
| N    | -         | 1.80  | -           | 0.071 |
| O    | 12.60     | 13.80 | 0.496       | 0.543 |
| P    | 4.95      | 5.20  | 0.195       | 0.205 |

**MARKING DIAGRAM**



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

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.