

20A, 50V - 600V Super Fast Rectifier

FEATURES

- AEC-Q101 qualified available
- Glass passivated chip junction
- High efficiency, Low V_F
- High current capability
- High reliability
- High surge current capability
- Low power loss
- UL Recognized File # E-326243
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

| KEY PARAMETERS | | |
|----------------|------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 20 | A |
| V_{RRM} | 50 - 600 | V |
| I_{FSM} | 200 | A |
| $T_{J\ MAX}$ | 150 | °C |
| Package | ITO-220AC | |
| Configuration | Single die | |

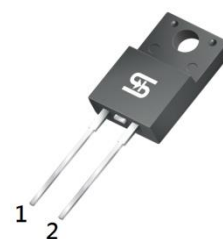


APPLICATIONS

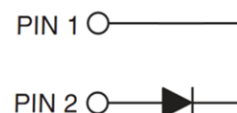
- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

MECHANICAL DATA

- Case: ITO-220AC
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.70g (approximately)



ITO-220AC



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

| PARAMETER | SYMBOL | SFAF 2001G | SFAF 2002G | SFAF 2003G | SFAF 2004G | SFAF 2005G | SFAF 2006G | SFAF 2007G | SFAF 2008G | UNIT |
|--|--------------|-------------|------------|------------|------------|------------|------------|------------|------------|------|
| Marking code on the device | | SFAF 2001G | SFAF 2002G | SFAF 2003G | SFAF 2004G | SFAF 2005G | SFAF 2006G | SFAF 2007G | SFAF 2008G | |
| Repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | V |
| Reverse voltage total rms value | $V_{R(RMS)}$ | 35 | 70 | 105 | 140 | 210 | 280 | 350 | 420 | V |
| Forward current | I_F | 20 | | | | | | | | A |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | I_{FSM} | 200 | | | | | | | | A |
| Junction temperature | T_J | -55 to +150 | | | | | | | | °C |
| Storage temperature | T_{STG} | -55 to +150 | | | | | | | | °C |

THERMAL PERFORMANCE

| PARAMETER | SYMBOL | TYP | UNIT |
|-----------------------------|-----------------|-----|------|
| Junction-to-case resistance | $R_{\theta JC}$ | 3 | °C/W |

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

| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
|--|---|----------|-----|-------|---------------|
| Forward voltage ⁽¹⁾ | $I_F = 20\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 0.975 | V |
| | | | - | 1.300 | V |
| | | | - | 1.700 | V |
| | | | - | - | - |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 10 | μA |
| | $T_J = 125^\circ\text{C}$ | | - | 400 | μA |
| Junction capacitance | 1MHz, $V_R = 4.0\text{V}$ | C_J | 170 | - | pF |
| | | | 150 | - | pF |
| | | | - | - | - |
| | | | - | - | - |
| Reverse recovery time | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$ | t_{rr} | - | 35 | ns |

Notes:

- Pulse test with $PW = 0.3\text{ms}$
- Pulse test with $PW = 30\text{ms}$

ORDERING INFORMATION

| ORDERING CODE ⁽¹⁾⁽²⁾ | PACKAGE | PACKING |
|---------------------------------|-----------|-----------|
| SFAF20xG | ITO-220AC | 50 / Tube |
| SFAF20xGH | ITO-220AC | 50 / Tube |

Notes:

- "x" defines voltage from 50V(SFAF2001G) to 600V(SFAF2008G)
- "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

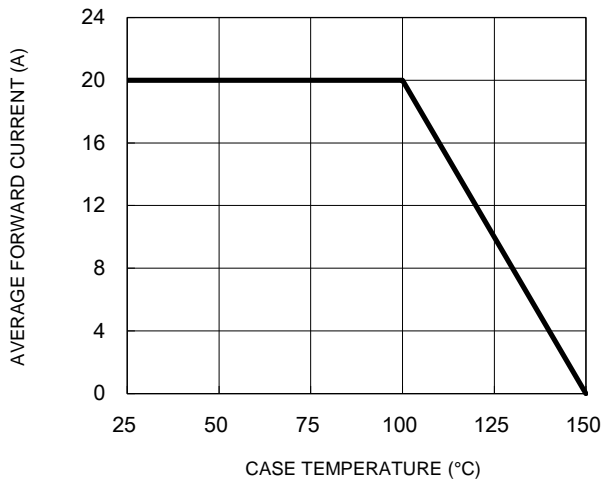


Fig.2 Typical Junction Capacitance

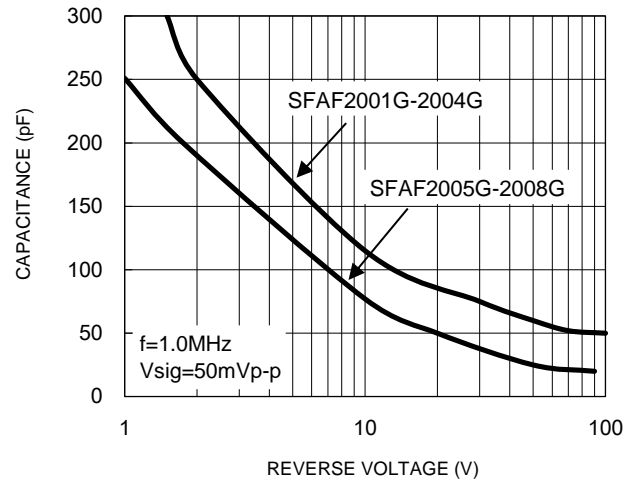


Fig.3 Typical Reverse Characteristics

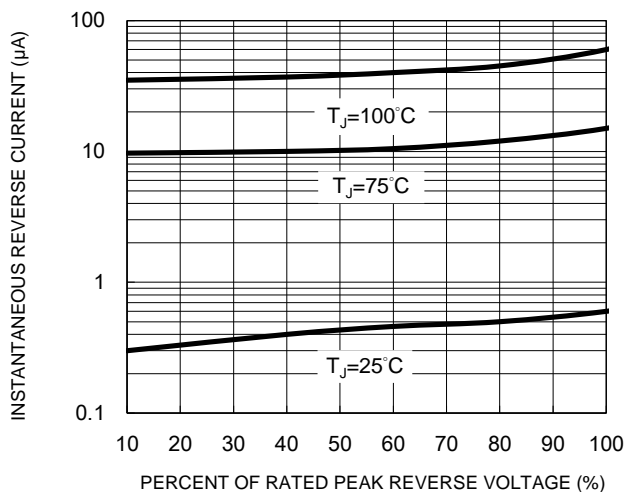


Fig.4 Typical Forward Characteristics

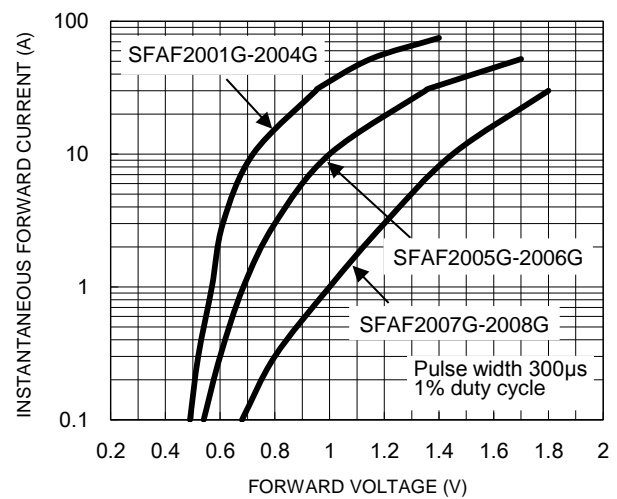


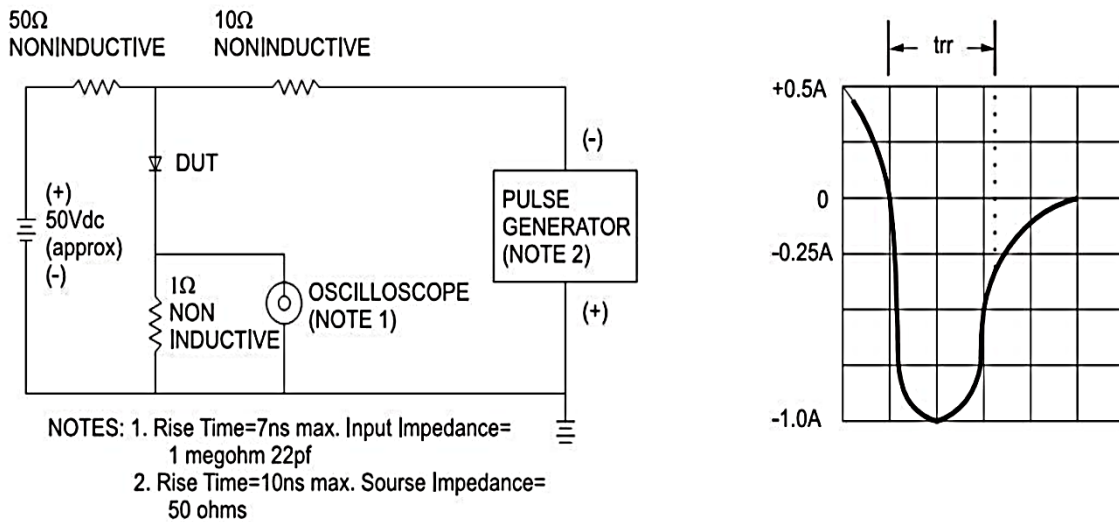
Fig.5 Maximum Non-Repetitive Forward Surge Current



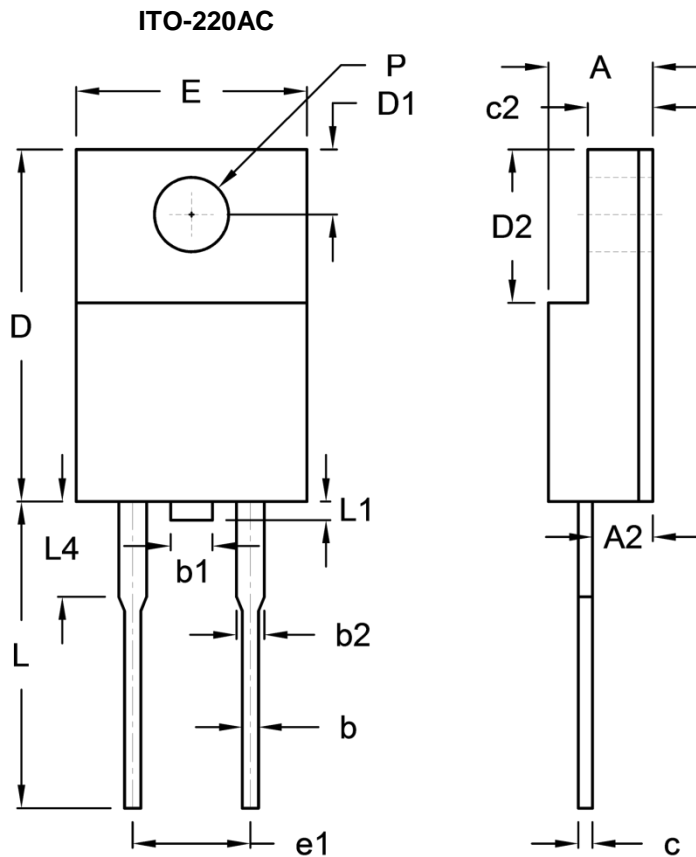
CHARACTERISTICS CURVES

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

Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram



PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.30 | 4.70 | 0.169 | 0.185 |
| A2 | 2.30 | 2.90 | 0.091 | 0.114 |
| b | 0.50 | 0.90 | 0.020 | 0.035 |
| b1 | - | 1.80 | - | 0.071 |
| b2 | 0.95 | 1.45 | 0.037 | 0.057 |
| c | 0.46 | 0.76 | 0.018 | 0.030 |
| c2 | 2.50 | 3.10 | 0.098 | 0.114 |
| D | 14.80 | 15.50 | 0.583 | 0.610 |
| D1 | 2.40 | 3.20 | 0.094 | 0.126 |
| D2 | 6.30 | 6.90 | 0.248 | 0.272 |
| E | 9.60 | 10.30 | 0.378 | 0.406 |
| e1 | 4.95 | 5.20 | 0.195 | 0.205 |
| L | 12.60 | 13.80 | 0.496 | 0.543 |
| L1 | 0.00 | 1.60 | 0.000 | 0.063 |
| L4 | - | 4.10 | - | 0.161 |
| P | 3.00 | 3.40 | 0.118 | 0.134 |

MARKING DIAGRAM



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

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