

10A, 50V - 600V Super Fast Rectifier

FEATURES

- AEC-Q101 qualified available
- 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 | 10 | A |
| V_{RRM} | 50 - 600 | V |
| I_{FSM} | 125 | A |
| $T_{J\ MAX}$ | 150 | °C |
| Package | ITO-220AB | |
| Configuration | Dual dies | |

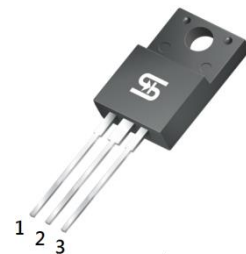
APPLICATIONS

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

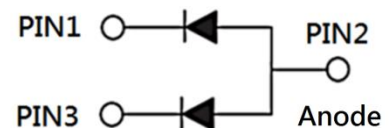


MECHANICAL DATA

- Case: ITO-220AB
- 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: 1.80g (approximately)



ITO-220AB



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | | |
|--|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| PARAMETER | SYMBOL | SFF 1001 GA | SFF 1002 GA | SFF 1003 GA | SFF 1004 GA | SFF 1005 GA | SFF 1006 GA | SFF 1007 GA | SFF 1008 GA | UNIT |
| Marking code on the device | | SFF 1001 GA | SFF 1002 GA | SFF 1003 GA | SFF 1004 GA | SFF 1005 GA | SFF 1006 GA | SFF 1007 GA | SFF 1008 GA | |
| 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 | 10 | | | | | | | | A |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | I_{FSM} | 125 | | | | | | | | 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 thermal resistance | $R_{\theta JC}$ | 8 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | |
|---|--|---|---------------|--|---------------------------|-------------|-----|---------------|----|
| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT | | | |
| Forward voltage per diode ⁽¹⁾ | SFF1001GA SFF1002GA SFF1003GA SFF1004GA | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 0.975 | V | | | |
| | SFF1005GA SFF1006GA | | | - | 1.300 | V | | | |
| | SFF1007GA SFF1008GA | | | - | 1.700 | V | | | |
| | Reverse current @ rated V_R per diode ⁽²⁾ | | | $T_J = 25^\circ\text{C}$ | I_R | - | 10 | μA | |
| | | | | $T_J = 125^\circ\text{C}$ | | - | 400 | μA | |
| | Junction capacitance per diode | | | SFF1001GA SFF1002GA SFF1003GA SFF1004GA | 1MHz, $V_R = 4.0\text{V}$ | C_J | 70 | - | pF |
| SFF1005GA SFF1006GA SFF1007GA SFF1008GA | | 50 | - | 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:

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

| ORDERING INFORMATION | | |
|--|----------------|----------------|
| ORDERING CODE ⁽¹⁾⁽²⁾ | PACKAGE | PACKING |
| SFF10xGA | ITO-220AB | 50 / Tube |
| SFF10xGAH | ITO-220AB | 50 / Tube |

Notes:

1. "x" defines voltage from 50V(SFF1001GA) to 600V(SFF1008GA)
2. "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

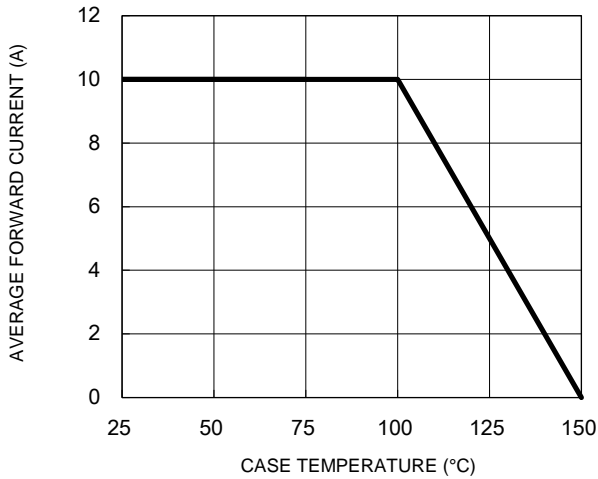


Fig.2 Typical Junction Capacitance

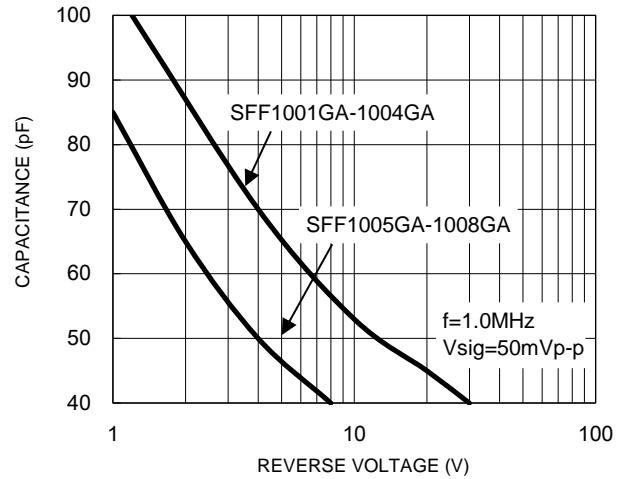


Fig.3 Typical Reverse Characteristics

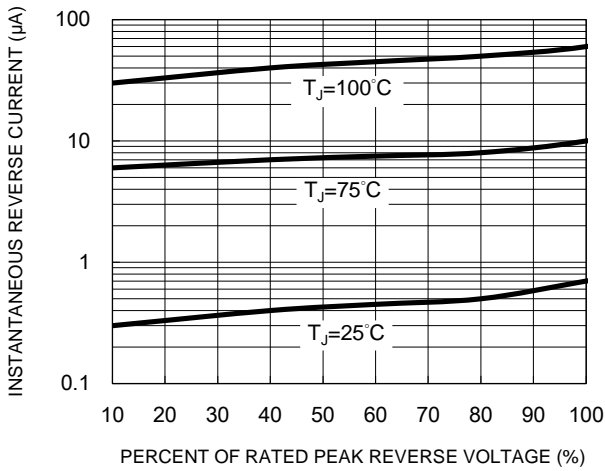


Fig.4 Typical Forward Characteristics

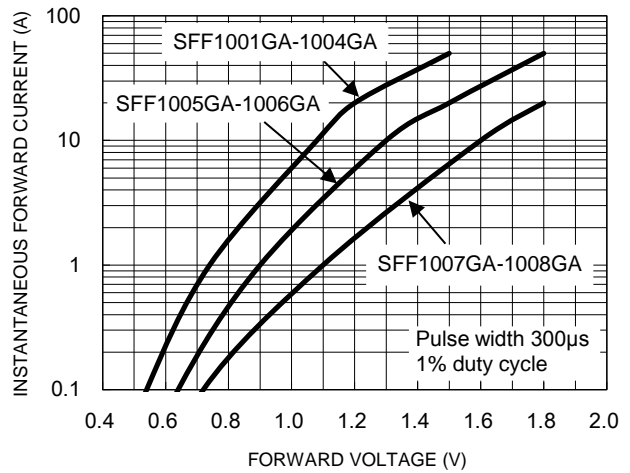
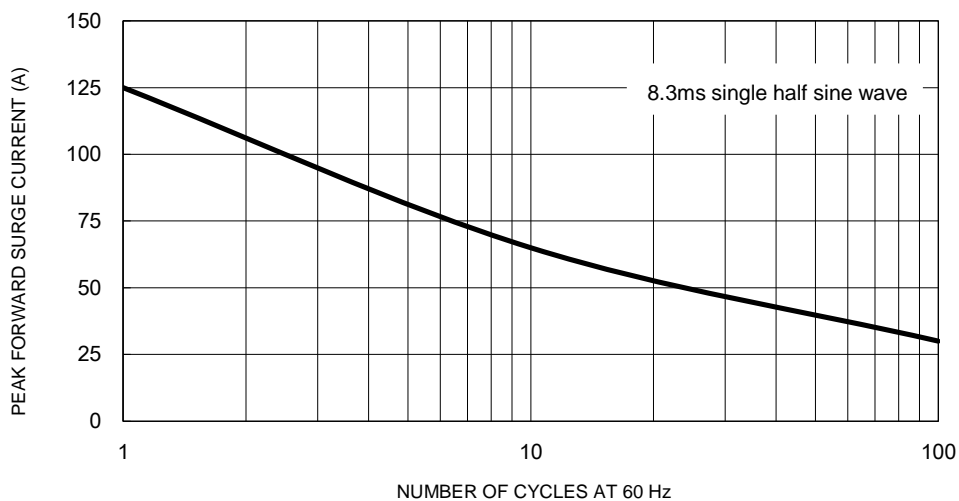


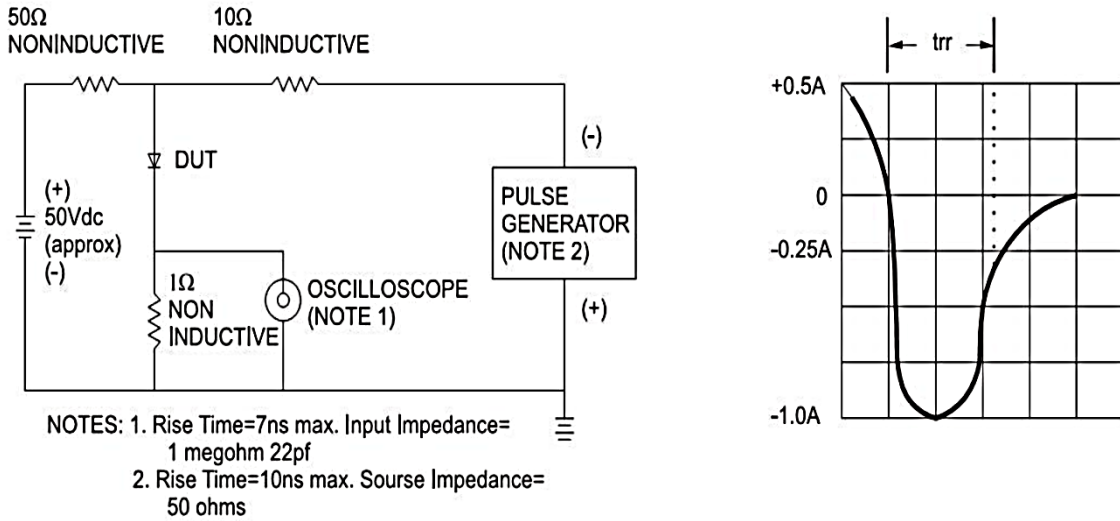
Fig.5 Maximum Non-Repetitive Forward Surge Current



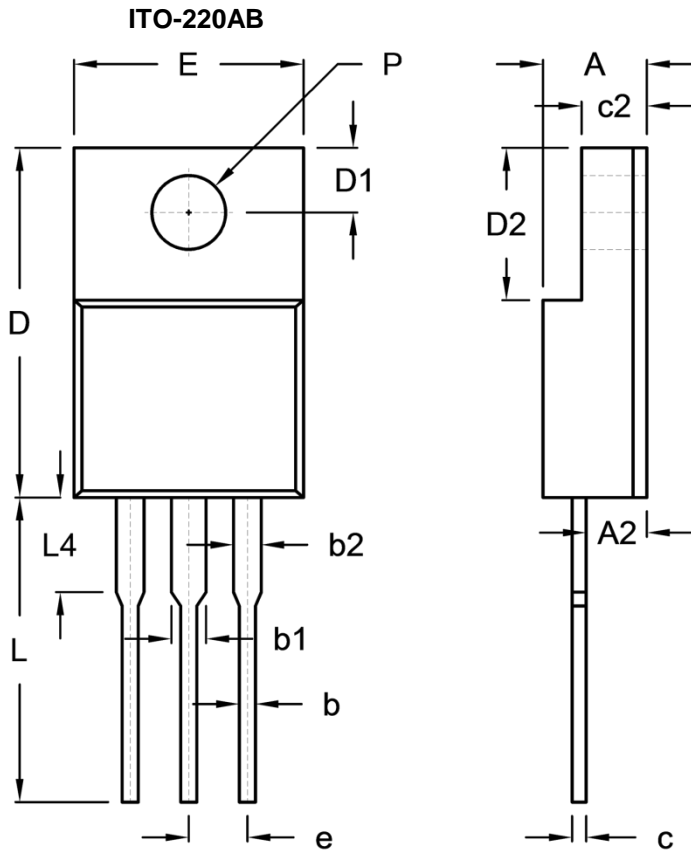
CHARACTERISTICS CURVES

(T_A = 25°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 | 2.96 | 0.091 | 0.117 |
| 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 | 3.16 | 0.098 | 0.124 |
| 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 |
| e | 2.41 | 2.67 | 0.095 | 0.105 |
| L | 12.60 | 13.80 | 0.496 | 0.543 |
| 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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