

## 2A, 50V - 600V Super Fast Rectifier

### FEATURES

- AEC-Q101 qualified available
- Glass passivated chip junction
- High efficiency, Low  $V_F$
- High current capability
- High surge current capability
- Low power loss
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

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

### MECHANICAL DATA

- Case: DO-204AC (DO-15)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Pure tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.400g (approximately)

| KEY PARAMETERS |                  |      |
|----------------|------------------|------|
| PARAMETER      | VALUE            | UNIT |
| $I_F$          | 2                | A    |
| $V_{RRM}$      | 50 - 600         | 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       | SF 21G      | SF 22G | SF 23F | SF 24G | SF 25G | SF 26G | SF 27G | SF 28G | UNIT |
| Marking code on the device                                                         |              | SF21G       | SF22G  | SF23F  | SF24G  | SF25G  | SF26G  | SF27G  | SF28G  |      |
| 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                                                                    | $I_F$        | 2           |        |        |        |        |        |        |        | A    |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | $I_{FSM}$    | 50          |        |        |        |        |        |        |        | 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-ambient thermal resistance | $R_{\theta JA}$ | 65  | °C/W |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 16  | °C/W |

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

| PARAMETER                                    | CONDITIONS | SYMBOL   | TYP | MAX  | UNIT          |
|----------------------------------------------|------------|----------|-----|------|---------------|
| Forward voltage <sup>(1)</sup>               | SF21G      | $V_F$    | -   | 0.95 | V             |
|                                              | SF22G      |          |     |      |               |
|                                              | SF23G      |          |     |      |               |
|                                              | SF24G      |          |     |      |               |
|                                              | SF25G      |          |     |      |               |
| Reverse current @ rated $V_R$ <sup>(2)</sup> | SF26G      | $I_R$    | -   | 5    | $\mu\text{A}$ |
|                                              | SF27G      |          |     |      |               |
|                                              | SF28G      |          |     |      |               |
|                                              |            |          |     |      |               |
|                                              |            |          |     |      |               |
| Junction capacitance                         | SF21G      | $C_J$    | 40  | -    | pF            |
|                                              | SF22G      |          |     |      |               |
|                                              | SF23G      |          |     |      |               |
|                                              | SF24G      |          |     |      |               |
|                                              | SF25G      |          |     |      |               |
| Reverse recovery time                        | SF26G      | $t_{rr}$ | -   | 35   | ns            |
|                                              | SF27G      |          |     |      |               |
|                                              | SF28G      |          |     |      |               |
|                                              |            |          |     |      |               |
|                                              |            |          |     |      |               |

**Notes:**

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

**ORDERING INFORMATION**

| ORDERING CODE <sup>(1)(2)</sup> | PACKAGE          | PACKING             |
|---------------------------------|------------------|---------------------|
| SF2xG                           | DO-204AC (DO-15) | 3,500 / Tape & Reel |
| SF2xG A0G                       | DO-204AC (DO-15) | 1,500 / Ammo box    |
| SF2xGH                          | DO-204AC (DO-15) | 3,500 / Tape & Reel |
| SF2xGHA0G                       | DO-204AC (DO-15) | 1,500 / Ammo box    |

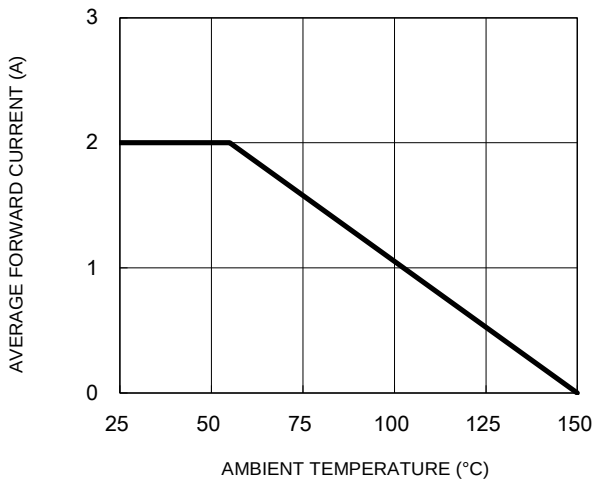
**Notes:**

1. "x" defines voltage from 50V (SF21G) to 600V (SF28G)
2. "H" means AEC-Q101 qualified

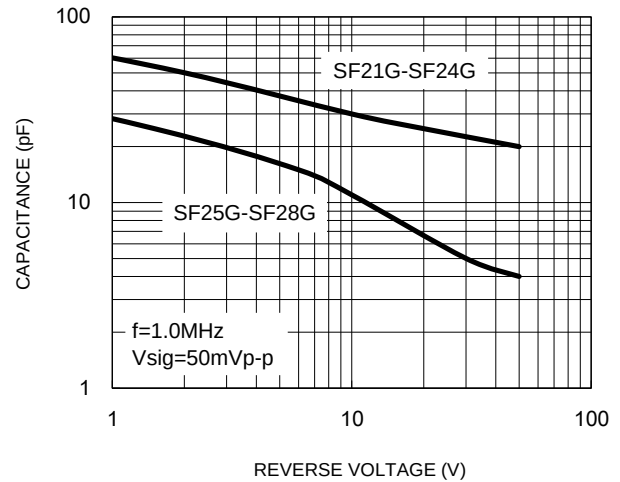
## CHARACTERISTICS CURVES

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

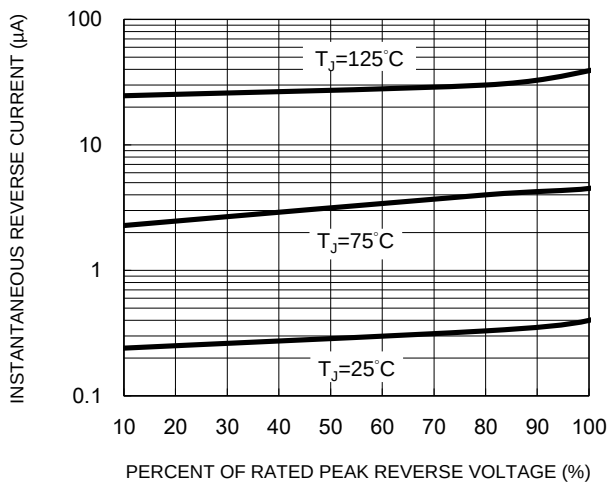
**Fig.1 Forward Current Derating Curve**



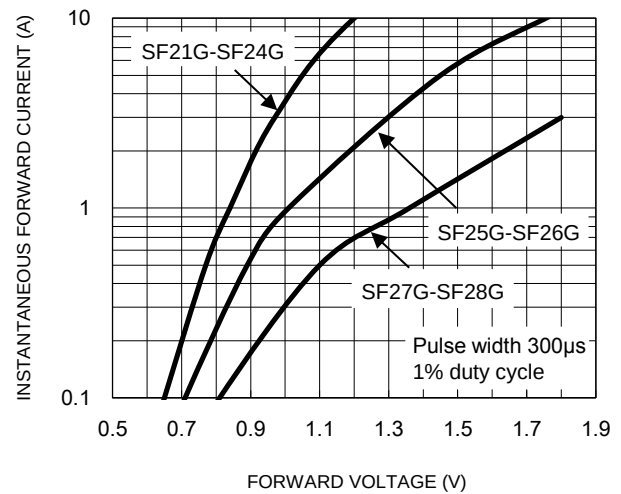
**Fig.2 Typical Junction Capacitance**



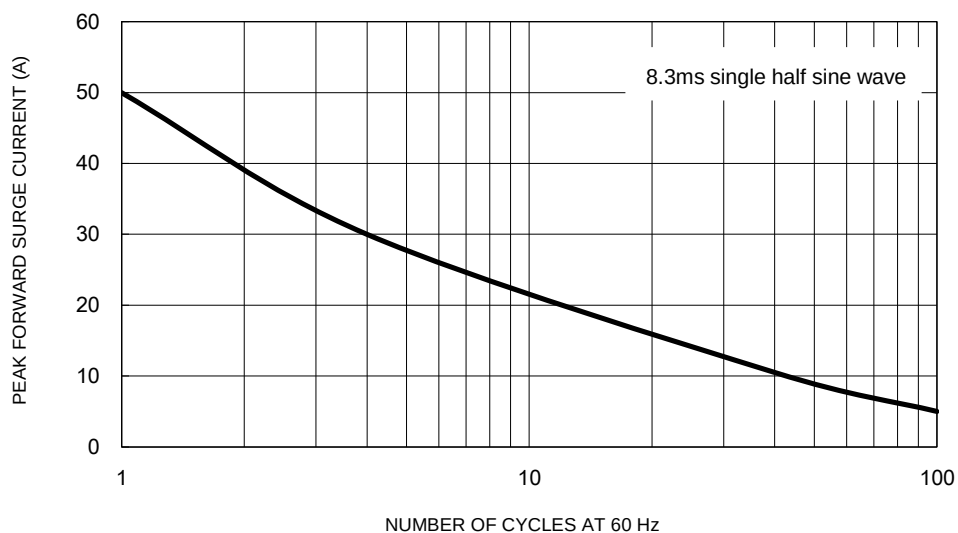
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



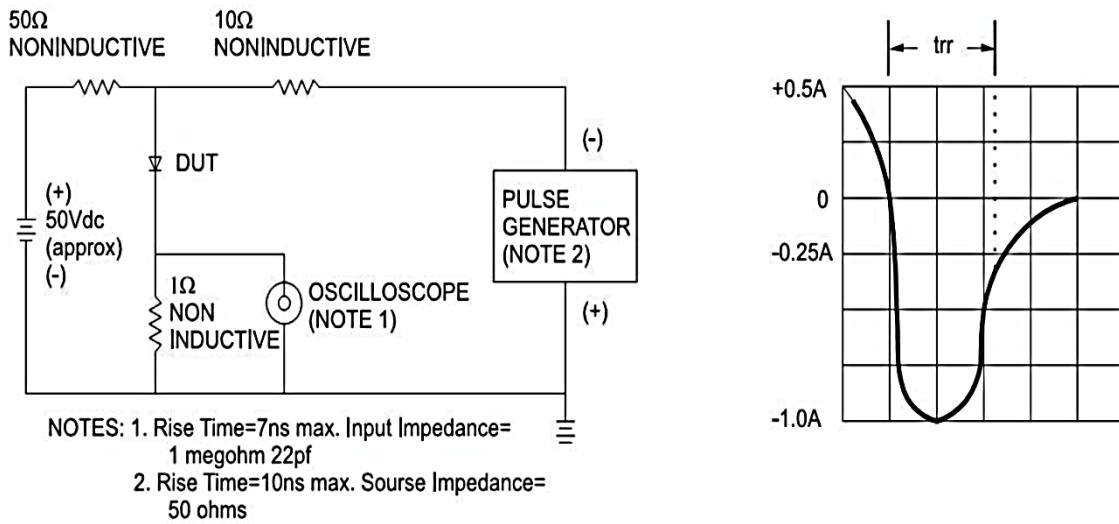
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



## CHARACTERISTICS CURVES

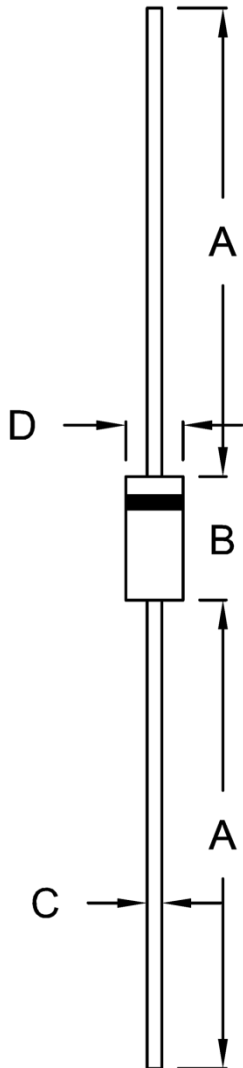
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**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    | 25.40     | -    | 1.000       | -     |
| B    | 5.80      | 7.60 | 0.228       | 0.299 |
| C    | 0.70      | 0.90 | 0.028       | 0.035 |
| D    | 2.60      | 3.60 | 0.102       | 0.142 |

## MARKING DIAGRAM



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

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