

4A, 50V - 600V Super Fast Rectifier

FEATURES

- AEC-Q101 qualified available
- High current capability, Low V_F
- High reliability
- 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-201AD
- 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: 1.10g (approximately)

| KEY PARAMETERS | | |
|----------------|------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 4 | A |
| V_{RRM} | 50 - 600 | V |
| I_{FSM} | 125 | A |
| T_{JMAX} | 150 | °C |
| Package | DO-201AD | |
| Configuration | Single die | |



DO-201AD



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | | | | | |
|--|--------------|-------------|--------|--------|--------|--------|--------|--------|--------|------|
| PARAMETER | SYMBOL | SF 41G | SF 42G | SF 43G | SF 44G | SF 45G | SF 46G | SF 47G | SF 48G | UNIT |
| Marking code on the device | | SF 41G | SF 42G | SF 43G | SF 44G | SF 45G | SF 46G | SF 47G | SF 48G | |
| 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 | 4 | | | | | | | | 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-ambient thermal resistance | $R_{\theta JA}$ | 25 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|-------|---|---------------|------------|------------|---------------|
| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage ⁽¹⁾ | SF41G | $I_F = 4\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 1.0 | V |
| | SF42G | | | - | 1.3 | V |
| | SF43G | | | - | 1.7 | V |
| | SF44G | | | - | 1.7 | V |
| Reverse current @ rated V_R ⁽²⁾ | SF45G | $T_J = 25^\circ\text{C}$ | I_R | - | 5 | μA |
| | SF46G | $T_J = 125^\circ\text{C}$ | | - | 500 | μA |
| Junction capacitance | SF47G | 1MHz, $V_R = 4.0\text{V}$ | C_J | 100 | - | pF |
| | SF48G | | | 80 | - | pF |
| | SF41G | | | 80 | - | pF |
| | SF42G | | | 80 | - | 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 |
| SF4xG | DO-201AD | 1,250 / Tape & Reel |
| SF4xG A0G | DO-201AD | 500 / Ammo box |
| SF4xGH | DO-201AD | 1,250 / Tape & Reel |
| SF4xGHA0G | DO-201AD | 500 / Ammo box |

Notes:

1. "x" defines voltage from 50V (SF41G) to 600V (SF48G)
2. "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

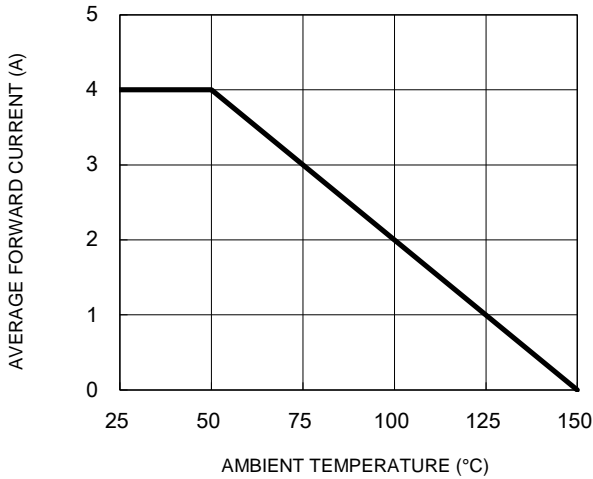


Fig.2 Typical Junction Capacitance

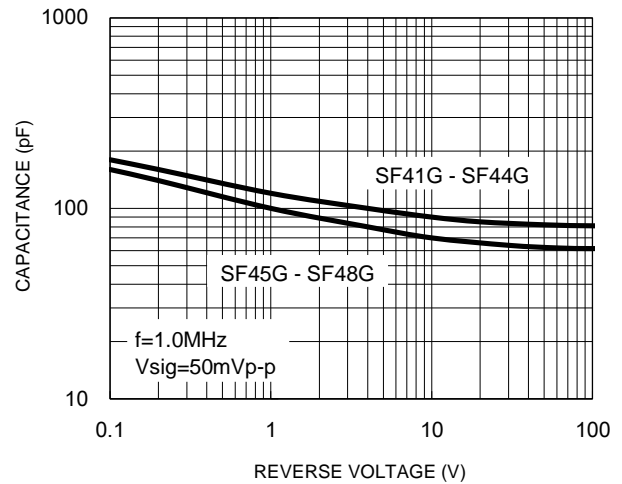


Fig.3 Typical Reverse Characteristics

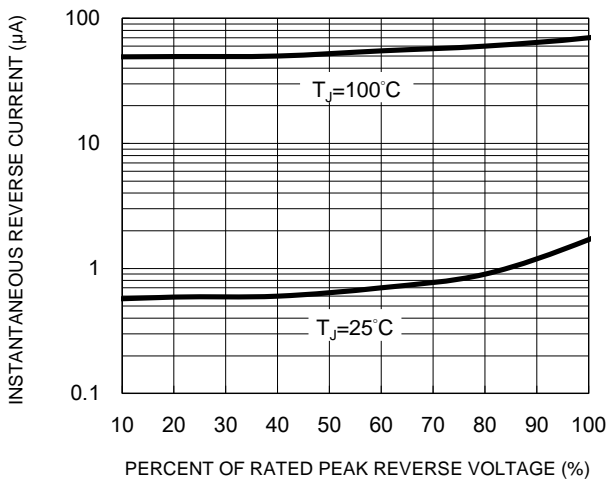


Fig.4 Typical Forward Characteristics

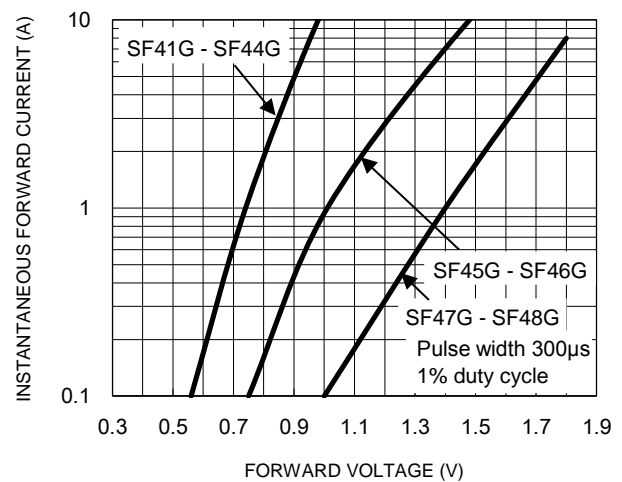
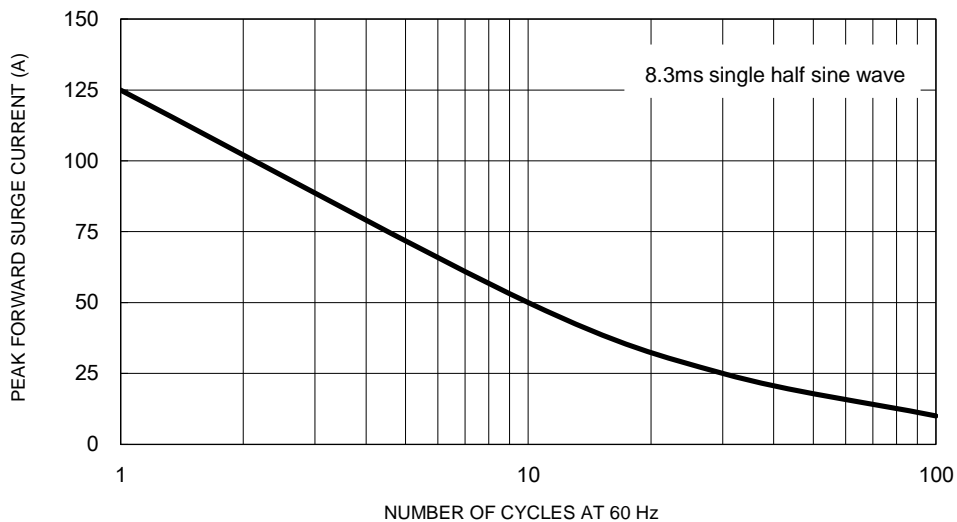


Fig.5 Maximum Non-Repetitive Forward Surge Current



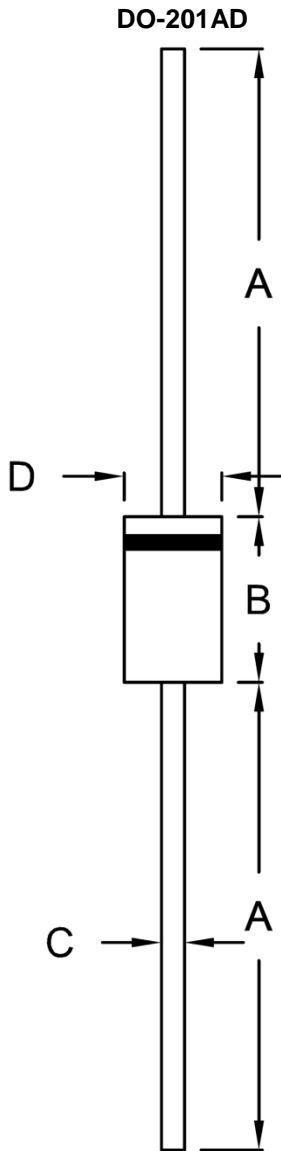
CHARACTERISTICS CURVES

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

Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram



PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 25.40 | - | 1.000 | - |
| B | 8.50 | 9.50 | 0.335 | 0.374 |
| C | 1.20 | 1.30 | 0.047 | 0.051 |
| D | 5.00 | 5.60 | 0.197 | 0.220 |

MARKING DIAGRAM



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

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