

1A, 400V - 1000V Standard Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- General purpose

MECHANICAL DATA

- Case: SOD-123FL
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 0.016g (approximately)

| KEY PARAMETERS | | |
|----------------|------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 1 | A |
| V_{RRM} | 400 - 1000 | V |
| I_{FSM} | 30 | A |
| $T_{J\ MAX}$ | 150 | °C |
| Package | SOD-123FL | |
| Configuration | Single die | |



SOD-123FL



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|--------------|--------------|-------|-------|------|
| PARAMETER | SYMBOL | S1GFL | S1JFL | S1MFL | UNIT |
| Marking code on the device | | SGF | SJF | SMF | |
| Repetitive peak reverse voltage | V_{RRM} | 400 | 600 | 1000 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 280 | 420 | 700 | V |
| Forward current | I_F | 1 | | | A |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | I_{FSM} | 30 | | | 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-lead thermal resistance | $R_{\theta JL}$ | 25 | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 85 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|---|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage ⁽¹⁾ | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 1.1 | V |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 1 | μA |
| | $T_J = 125^\circ\text{C}$ | | - | 50 | μA |
| Junction capacitance | 1MHz, $V_R = 4.0\text{V}$ | C_J | 7 | - | pF |

Notes:

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

| ORDERING INFORMATION | | |
|------------------------------------|----------------|----------------------|
| ORDERING CODE⁽¹⁾ | PACKAGE | PACKING |
| S1xFL | SOD-123FL | 10,000 / Tape & Reel |

Notes:

1. "x" defines voltage from 400V(S1GFL) to 1000V(S1MFL)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

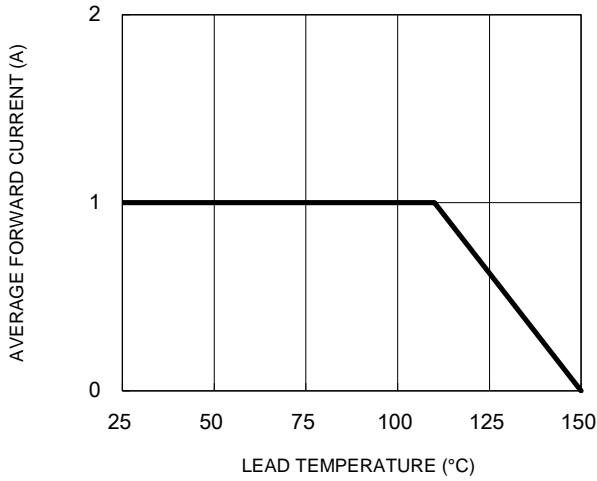


Fig.2 Typical Junction Capacitance

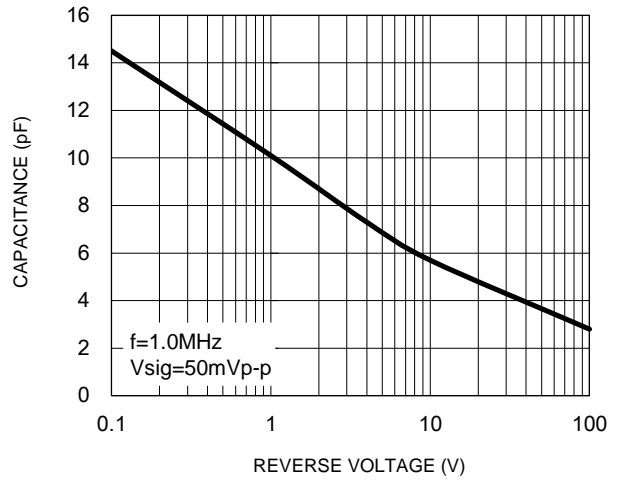


Fig.3 Typical Reverse Characteristics

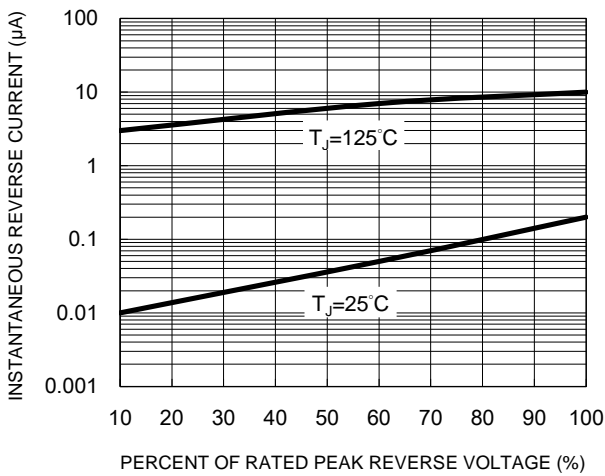


Fig.4 Typical Forward Characteristics

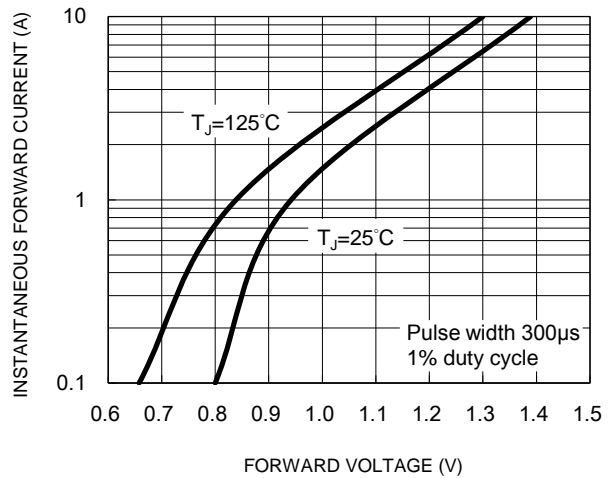
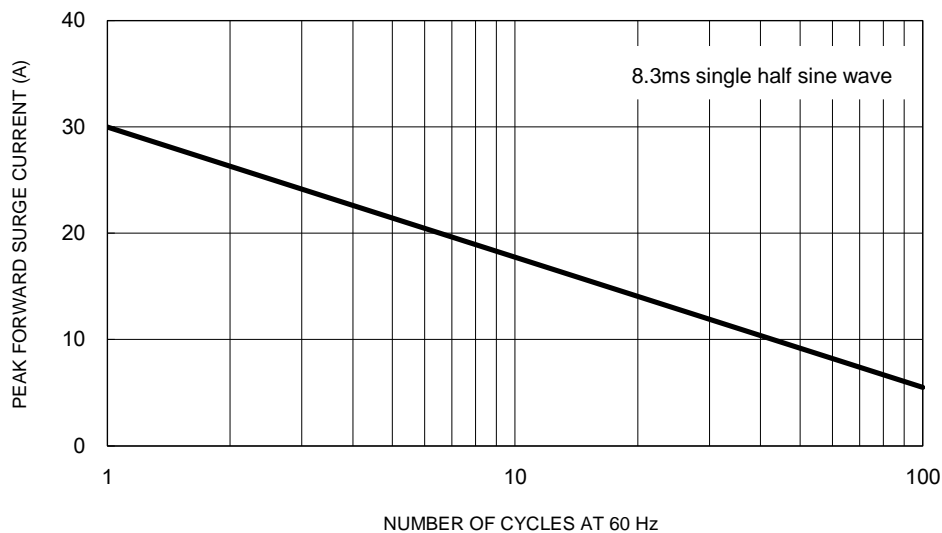


Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

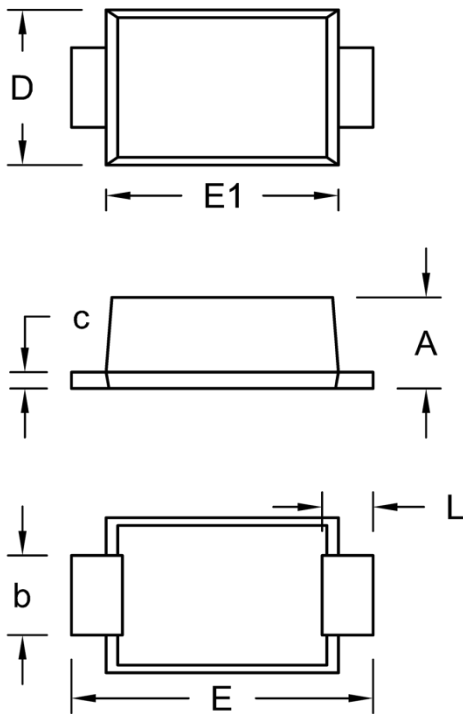
(T_A = 25°C unless otherwise noted)

Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram



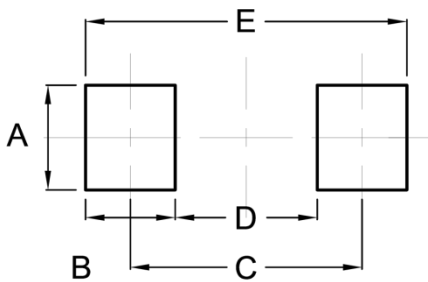
PACKAGE OUTLINE DIMENSIONS

SOD-123FL



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.88 | 1.35 | 0.035 | 0.053 |
| b | 0.80 | 1.15 | 0.031 | 0.045 |
| c | 0.10 | 0.30 | 0.004 | 0.012 |
| D | 1.70 | 2.10 | 0.067 | 0.083 |
| E | 3.45 | 3.95 | 0.136 | 0.156 |
| E1 | 2.60 | 3.10 | 0.102 | 0.122 |
| L | 0.30 | 0.90 | 0.012 | 0.035 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 1.40 | 0.055 |
| B | 1.20 | 0.047 |
| C | 3.10 | 0.122 |
| D | 1.90 | 0.075 |
| E | 4.30 | 0.169 |

MARKING DIAGRAM



- P/N = Marking Code
- YW = Date Code
- F = Factory Code

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