

1A, 200V - 600V Surface Mount Super Fast Rectifier

FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in computer, automotive and telecommunication.

MECHANICAL DATA

- Case: SOD-123FL
- Molding compound meets UL 94 V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 16 mg (approximately)

| KEY PARAMETERS | | |
|----------------|-------------|------|
| PARAMETER | VALUE | UNIT |
| $I_{F(AV)}$ | 1 | A |
| V_{RRM} | 200 - 600 | V |
| I_{FSM} | 30 | A |
| T_{JMAX} | 150 | °C |
| Package | SOD-123FL | |
| Configuration | Single dice | |



SOD-123FL

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

| PARAMETER | SYMBOL | ES1DFL | ES1GFL | ES1JFL | UNIT |
|---|-------------|--------------|--------|--------|------|
| Marking code on the device | | EDF | EGF | EJF | |
| Repetitive peak reverse voltage | V_{RRM} | 200 | 400 | 600 | V |
| Reverse voltage, total rms value | V_{RMS} | 140 | 280 | 420 | V |
| Maximum DC blocking voltage | V_{DC} | 200 | 400 | 600 | |
| Forward current | $I_{F(AV)}$ | 1 | | | A |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | 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 | $R_{\theta JL}$ | 35 | °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⁾ | ES1DFL | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 1.0 | V |
| | ES1GFL | | | - | 1.3 | V |
| | ES1JFL | | | - | 1.7 | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | | $T_J = 25^\circ\text{C}$ | I_R | - | 5 | μA |
| | | $T_J = 125^\circ\text{C}$ | | - | 100 | μA |
| Junction capacitance | | 1 MHz, $V_R = 4\text{V}$ | C_J | 8 | - | 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 | | | | |
|-----------------------------|---------------------|----------------------------|----------------|-------------------------|
| PART NO. | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING |
| ES1xFL (Note1) | RV | G | SOD-123FL | 3,000 / 7" Plastic reel |
| | RQ | | SOD-123FL | 10,000 / 13" Paper reel |

Notes:

1. "x" defines voltage from 200V (ES1DFL) to 600V (ES1JFL)
2. Whole series with green compound

| EXAMPLE | | | | |
|--------------------|-----------------|---------------------|----------------------------|--------------------|
| EXAMPLE P/N | PART NO. | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
| ES1JFL RVG | ES1JFL | RV | G | Green compound |

CHARACTERISTICS CURVES

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

Fig1. Forward Current Derating Curve

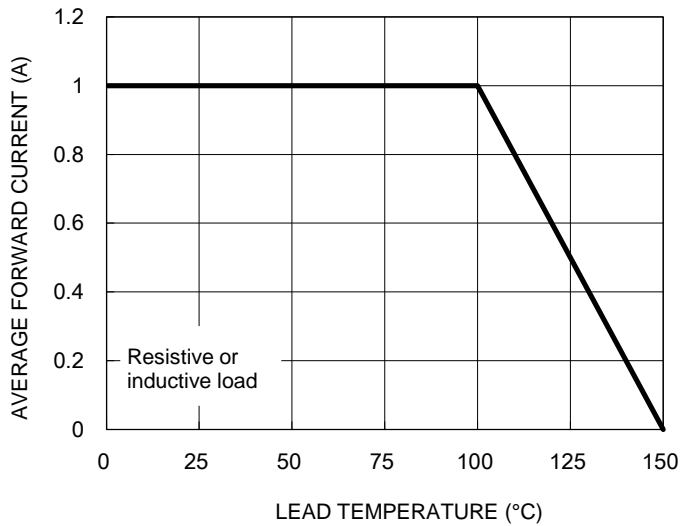


Fig2. Typical Junction Capacitance

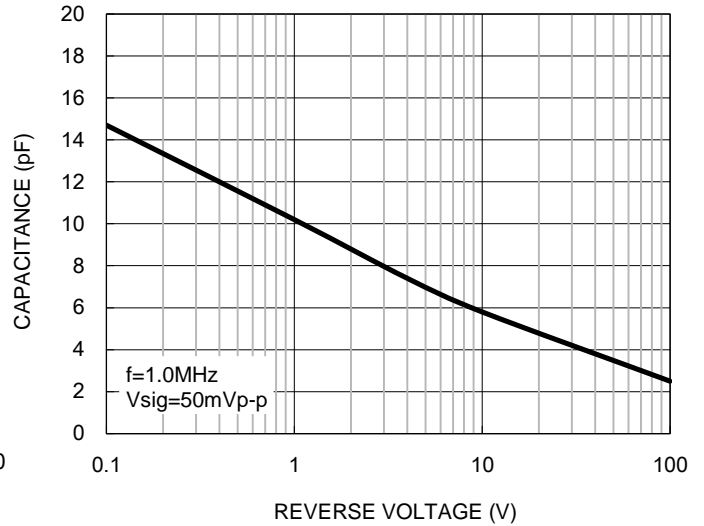


Fig3. Typical Reverse Characteristics

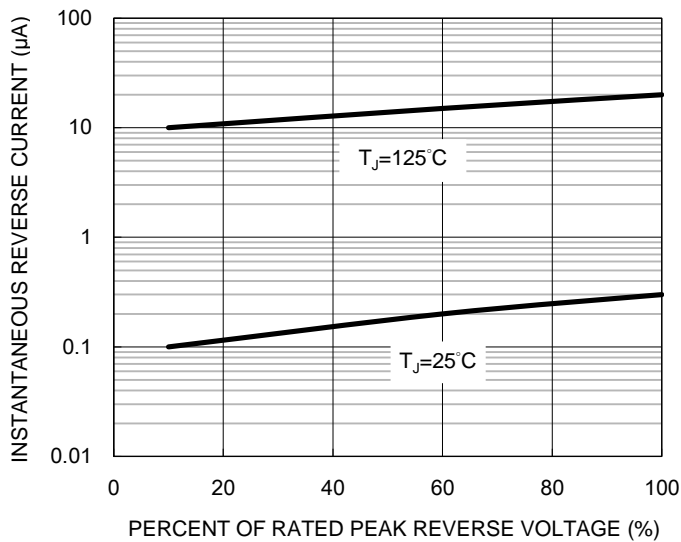
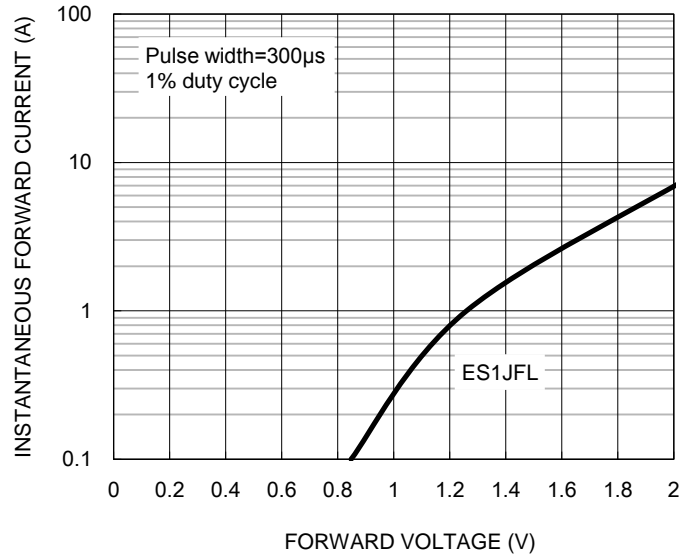


Fig4. Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig5. Maximum Non-repetitive Forward Surge Current

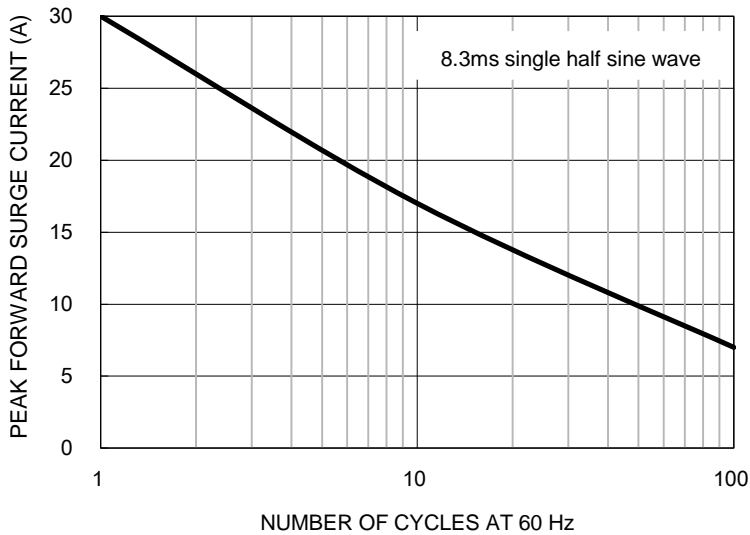
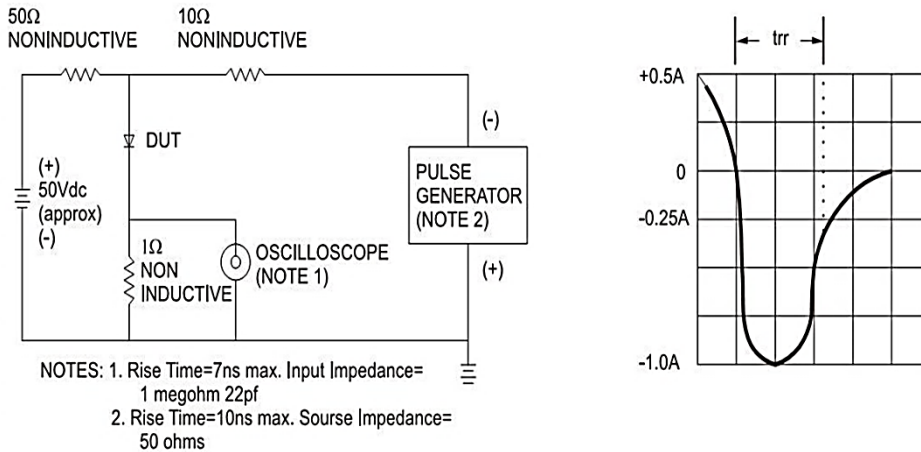
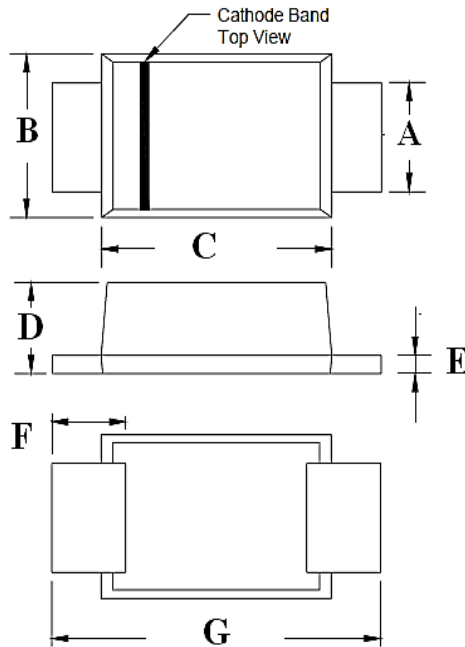


Fig6. Reverse Recovery Time Characteristic And Test Circuit Diagram



PACKAGE OUTLINE DIMENSIONS

SOD-123FL



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

MARKING DIAGRAM



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

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