# 0.8A, 50V - 1000V Fast Recovery Surface Mount Rectifier

## FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Fast switching for high efficiency
- 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: Sub SMA
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.019g (approximately)

| KEY PARAMETERS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| $I_F$ | 0.8 | A |
| $V_{RRM}$ | 50 - 1000 | V |
| $I_{FSM}$ | 30 | A |
| $T_{J\ MAX}$ | 150 | °C |
| Package | Sub SMA | |
| Configuration | Single die | |

Pb-Free RoHS COMPLIANT HALOGEN FREE



**Sub SMA**




| **ABSOLUTE MAXIMUM RATINGS** ($T_A$ = 25°C unless otherwise noted) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **RS 1AL** | **RS 1BL** | **RS 1DL** | **RS 1GL** | **RS 1JL** | **RS 1KL** | **RS 1ML** | **UNIT** |
| Marking code on the device | | RAL | RBL | RDL | RGL | RJL | RKL | RML | |
| Repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Forward current | $I_F$ | 0.8 | | | | | | | 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 | $R_{\Theta JL}$ | 32 | °C/W |
| Junction-to-ambient thermal resistance | $R_{\Theta JA}$ | 105 | °C/W |

## ELECTRICAL SPECIFICATIONS ($T_A$ = 25°C unless otherwise noted)

| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Forward voltage[1] | | $I_F$ = 0.8A, $T_J$ = 25°C | $V_F$ | - | 1.3 | V |
| Reverse current @ rated $V_R$[2] | | $T_J$ = 25°C | $I_R$ | - | 5 | μA |
| | | $T_J$ = 125°C | | - | 50 | μA |
| Junction capacitance | | 1MHz, $V_R$ = 4.0V | $C_J$ | 10 | - | pF |
| Reverse recovery time | RS1AL<br>RS1BL<br>RS1DL<br>RS1GL | $I_F$ = 0.5A, $I_R$ = 1.0A,<br>$I_{rr}$ = 0.25A | $t_{rr}$ | - | 150 | ns |
| | RS1JL | | | - | 250 | ns |
| | RS1KL<br>RS1ML | | | - | 500 | ns |

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

## ORDERING INFORMATION

| ORDERING CODE[1] | PACKAGE | PACKING |
|---|---|---|
| RS1xL | Sub SMA | 10,000 / Tape & Reel |

**Notes:**

1. “x” defines voltage from 50V(RS1AL) to 1000V(RS1ML)

## CHARACTERISTICS CURVES

($T_A$ = 25°C unless otherwise noted)

**Fig.1 Forward Current Derating Curve**

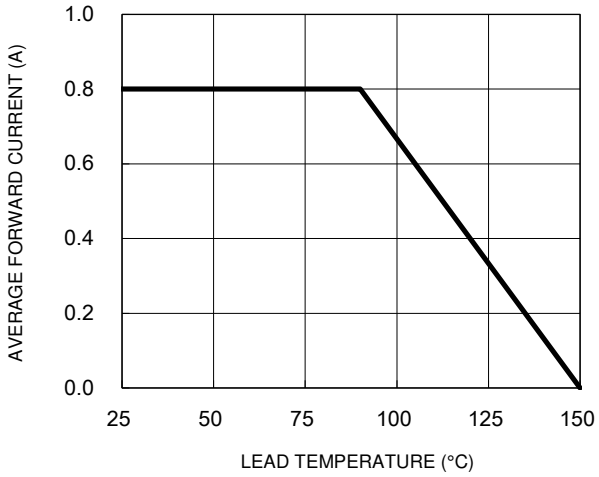



**Fig.2 Typical Junction Capacitance**

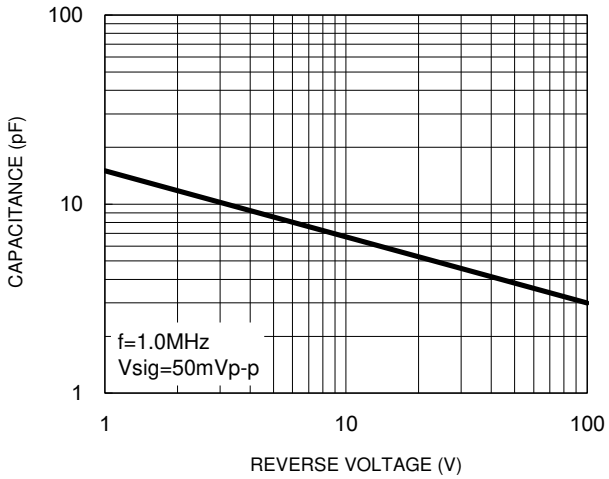



**Fig.3 Typical Reverse Characteristics**

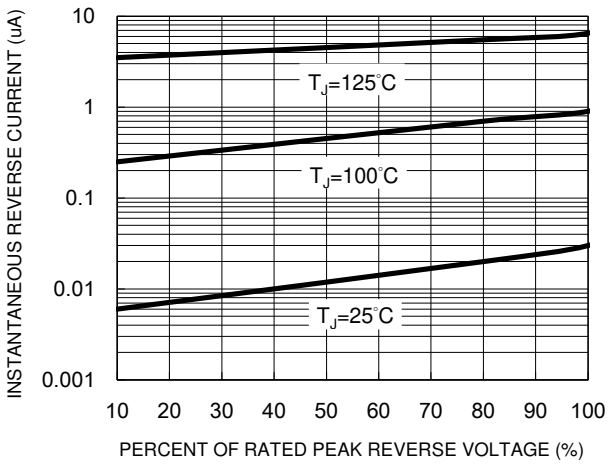



**Fig.4 Typical Forward Characteristics**

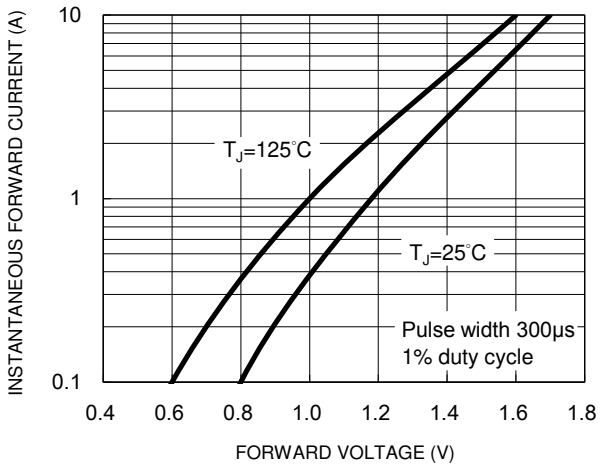
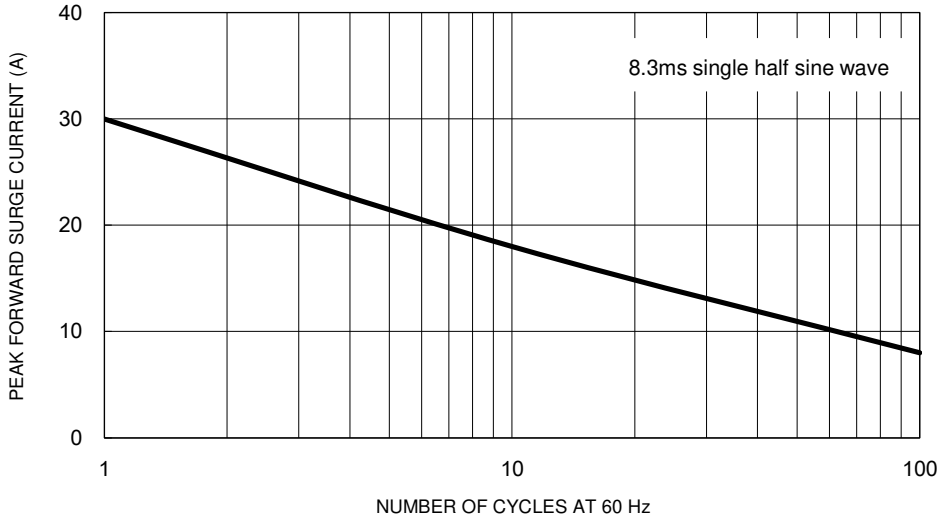


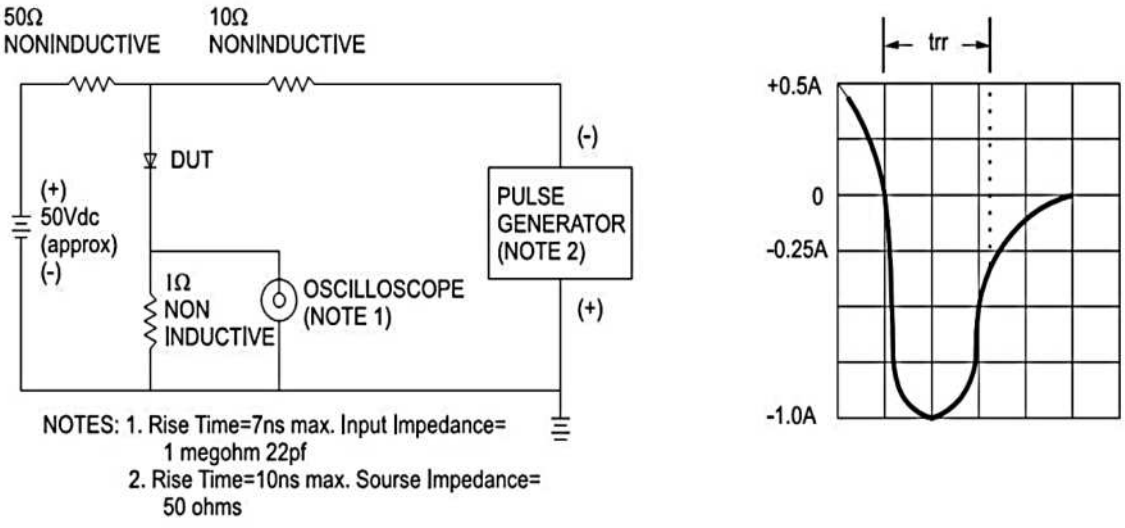

**Fig.5 Maximum Non-Repetitive Forward Surge Current**



## CHARACTERISTICS CURVES

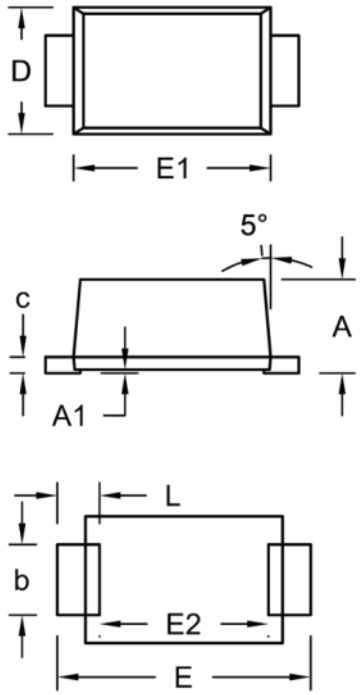
($T_A$ = 25°C unless otherwise noted)

**Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram**



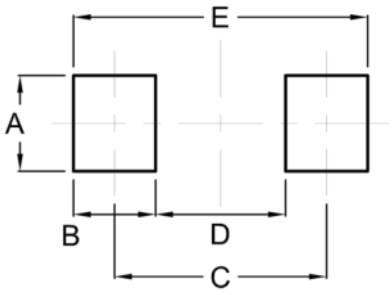
## PACKAGE OUTLINE DIMENSIONS

**Sub SMA**




| DIM. | Unit (mm) | | Unit (inch) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.23 | 1.43 | 0.048 | 0.056 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| b | 0.80 | 1.20 | 0.031 | 0.047 |
| c | 0.16 | 0.30 | 0.006 | 0.012 |
| D | 1.70 | 1.90 | 0.067 | 0.075 |
| E | 3.40 | 3.80 | 0.134 | 0.150 |
| E1 | 2.70 | 2.90 | 0.106 | 0.114 |
| E2 | 2.45 | 2.60 | 0.096 | 0.102 |
| L | 0.35 | 0.85 | 0.014 | 0.033 |

## 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
G = Green Compound
YW = Date Code
F = Factory Code

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