# 2A, 200V-1000V Surface Mount Rectifiers

## FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

## APPLICATIONS

- Freewheeling application
- Switching mode converters and inverters, computer and telecommunication.

## MECHANICAL DATA

- Case: Thin SMA
- 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: As marked
- Weight: 0.029 g (approximately)

| KEY PARAMETERS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| $I_F$ | 2 | A |
| $V_{RRM}$ | 200-1000 | V |
| $I_{FSM}$ | 50 | A |
| $T_{J\ MAX}$ | 150 | °C |
| Package | Thin SMA | |
| Configuration | Single Die | |

Pb-Free RoHS COMPLIANT HALOGEN FREE

**Thin SMA**

| **ABSOLUTE MAXIMUM RATINGS** ($T_A$ = 25°C unless otherwise noted) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | | **SYMBOL** | **S2DAL** | **S2GAL** | **S2JAL** | **S2KAL** | **S2MAL** | **UNIT** |
| Marking code on the device | | | S2DAL | S2GAL | S2JAL | S2KAL | S2MAL | |
| Repetitive peak reverse voltage | | $V_{RRM}$ | 200 | 400 | 600 | 800 | 1000 | V |
| Reverse voltage, total rms value | | $V_{R(RMS)}$ | 140 | 280 | 420 | 560 | 700 | V |
| Forward current | | $I_F$ | 2 | | | | | A |
| Surge peak forward current, single half sine-wave superimposed on rated load per diode | 8.3ms at $T_A$ = 25°C | $I_{FSM}$ | 50 | | | | | A |
| | 1.0ms at $T_A$ = 25°C | | 140 | | | | | 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 | $R_{\Theta JL}$ | 14 | °C/W |
| Junction-to-ambient thermal resistance | $R_{\Theta JA}$ | 74 | °C/W |
| Junction-to-case thermal resistance | $R_{\Theta JC}$ | 20 | °C/W |

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm Cu pad test board)

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

| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| Forward voltage (1) | $I_F$ = 1.0A, $T_J$ = 25°C | $V_F$ | 0.91 | - | V |
| | $I_F$ = 2.0A, $T_J$ = 25°C | | 0.98 | 1.10 | V |
| | $I_F$ = 1.0A, $T_J$ = 125°C | | 0.79 | - | V |
| | $I_F$ = 2.0A, $T_J$ = 125°C | | 0.88 | 0.98 | V |
| Reverse current @ rated $V_R$ (2) | $T_J$ = 25°C | $I_R$ | - | 1 | μA |
| | $T_J$ = 125°C | | - | 33 | μA |
| Junction capacitance | 1 MHz, $V_R$=4.0V | $C_J$ | 12 | - | pF |

**Notes:**

(1) Pulse test with PW=0.3 ms

(2) Pulse test with PW=30 ms

## ORDERING INFORMATION

| ORDERING CODE(1) | PACKAGE | PACKING |
|---|---|---|
| S2xAL M3G | Thin SMA | 3,500 / 7” reel |
| S2xAL M2G | Thin SMA | 14,000 / 13” reel |

**Notes:**

(1) “x” defines voltage from 200V(S2DAL) to 1000V(S2MAL)

## CHARACTERISTICS CURVES

($T_A$ = 25°C unless otherwise noted)

**Fig.1 Forward Current Derating Curve**

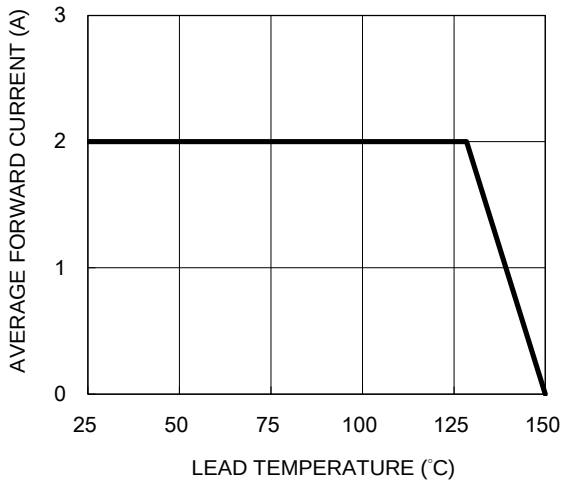



**Fig.2 Typical Junction Capacitance**

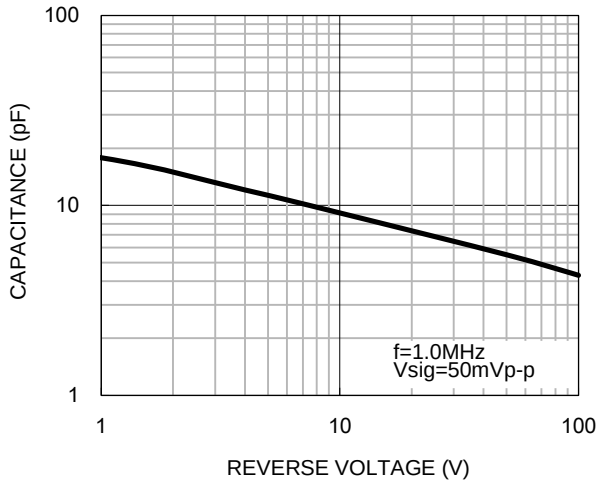



**Fig.3 Typical Reverse Characteristics**

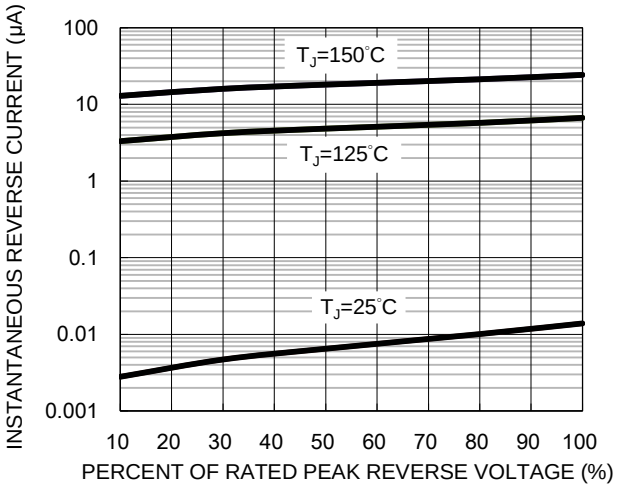



**Fig.4 Typical Forward Characteristics**

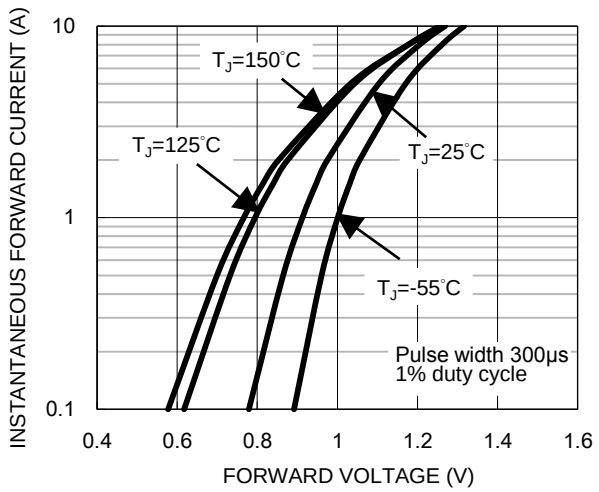
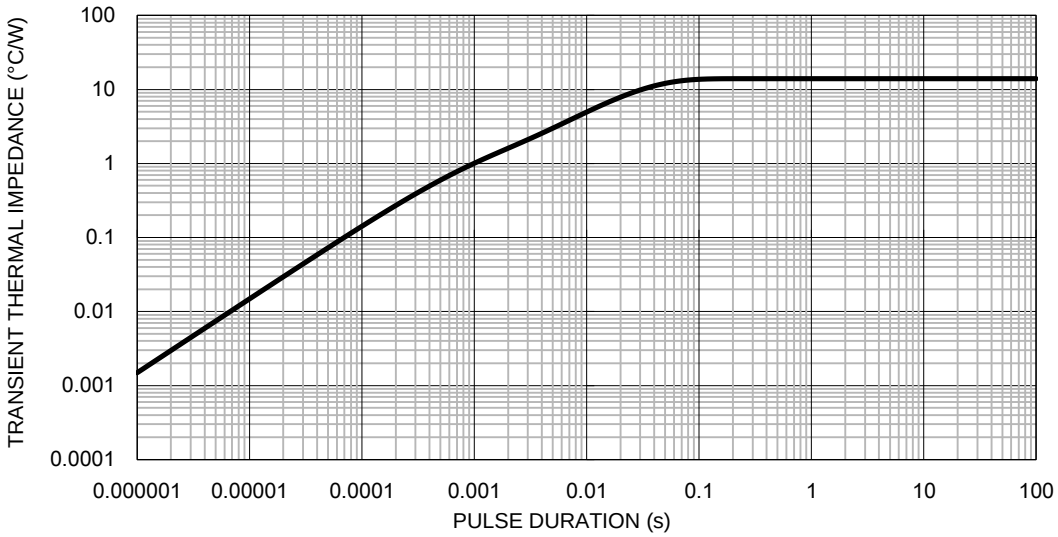
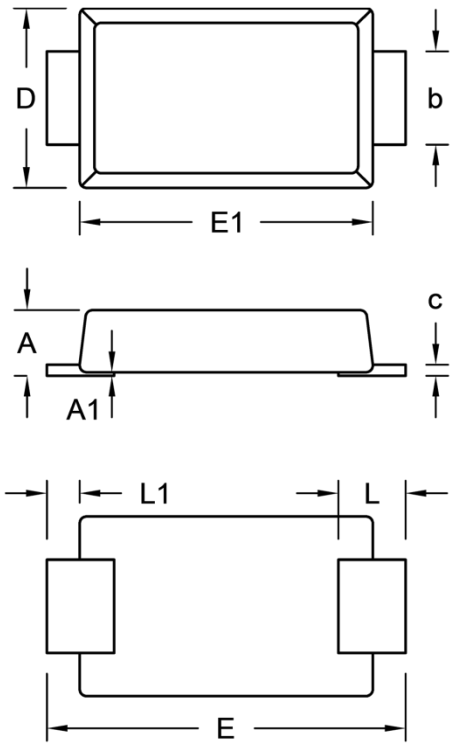



**Fig.5 Typical Transient Thermal Impedance**



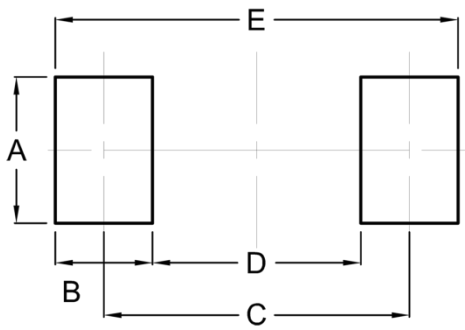
## PACKAGE OUTLINE DIMENSIONS

**Thin SMA**




| DIM. | Unit (mm) | | Unit (inch) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.90 | 1.00 | 0.035 | 0.039 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| b | 1.25 | 1.45 | 0.049 | 0.057 |
| c | 0.10 | 0.22 | 0.004 | 0.009 |
| D | 2.50 | 2.70 | 0.098 | 0.106 |
| E | 5.05 | 5.35 | 0.199 | 0.211 |
| E1 | 4.15 | 4.35 | 0.163 | 0.171 |
| L | 0.75 | 1.20 | 0.030 | 0.047 |
| L1 | 0.30 | 0.60 | 0.012 | 0.024 |

## SUGGESTED PAD LAYOUT




| Symbol | Unit (mm) | Unit (inch) |
|---|---|---|
| A | 2.10 | 0.083 |
| B | 1.40 | 0.055 |
| C | 4.40 | 0.173 |
| D | 3.00 | 0.118 |
| E | 5.80 | 0.228 |

## MARKING DIAGRAM


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

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