

## 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: SOD-128
- 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: 0.027 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        | SOD-128    |      |
| Configuration  | Single Die |      |



SOD-128

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)            |                                   |             |       |       |       |       |      |   |
|--|-----------------------------------|-------------|-------|-------|-------|-------|------|---|
| PARAMETER  | SYMBOL                            | S2DFS       | S2GFS | S2JFS | S2KFS | S2MFS | UNIT |   |
| Marking code on the device   |                                   | S2DFS       | S2GFS | S2JFS | S2KFS | S2MFS |      |   |
| 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 $T_A = 25^\circ\text{C}$ | $I_{FSM}$   |       |       |       |       | 50   | A |
|  | 1.0ms at $T_A = 25^\circ\text{C}$ |             |       |       |       |       | 140  | A |
| Junction temperature   | $T_J$                             | -55 to +150 |       |       |       |       | °C   |   |
| Storage temperature  | $T_{STG}$                         | -55 to +150 |       |       |       |       | °C   |   |

| <b>THERMAL PERFORMANCE</b>             |                 |            |             |
|--|-----------------|------------|-------------|
| <b>PARAMETER</b>                       | <b>SYMBOL</b>   | <b>TYP</b> | <b>UNIT</b> |
| 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)

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |  |               |            |            |               |
|---|--|---------------|------------|------------|---------------|
| <b>PARAMETER</b>  | <b>CONDITIONS</b>                            | <b>SYMBOL</b> | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b>   |
| Forward voltage <sup>(1)</sup>  | $I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$  | $V_F$         | 0.91       | -          | V             |
|   | $I_F = 2.0\text{A}, T_J = 25^\circ\text{C}$  |               | 0.98       | 1.10       | V             |
|   | $I_F = 1.0\text{A}, T_J = 125^\circ\text{C}$ |               | 0.79       | -          | V             |
|   | $I_F = 2.0\text{A}, T_J = 125^\circ\text{C}$ |               | 0.88       | 0.98       | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup>  | $T_J = 25^\circ\text{C}$                     | $I_R$         | -          | 1          | $\mu\text{A}$ |
|   | $T_J = 125^\circ\text{C}$                    |               | -          | 33         | $\mu\text{A}$ |
| Junction capacitance  | 1 MHz, $V_R = 4.0\text{V}$                   | $C_J$         | 12         | -          | pF            |

**Notes:**

- (1) Pulse test with PW=0.3 ms
- (2) Pulse test with PW=30 ms

| <b>ORDERING INFORMATION</b>        |                |                   |
|------------------------------------|----------------|-------------------|
| <b>ORDERING CODE<sup>(1)</sup></b> | <b>PACKAGE</b> | <b>PACKING</b>    |
| S2xFS M3G                          | SOD-128        | 3,500 / 7" reel   |
| S2xFS M2G                          | SOD-128        | 14,000 / 13" reel |

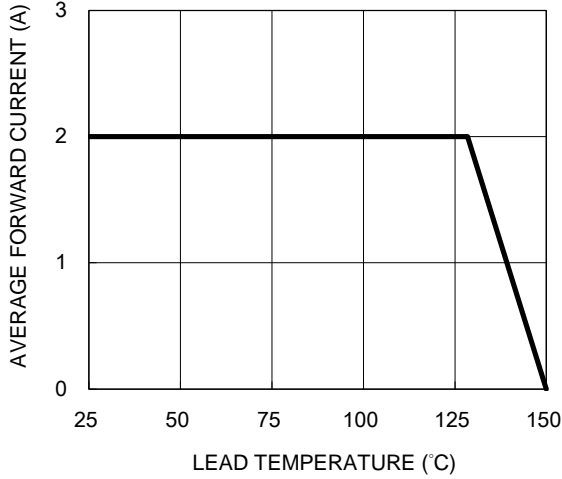
**Notes:**

- (1) "x" defines voltage from 200V(S2DFS) to 1000V(S2MFS)

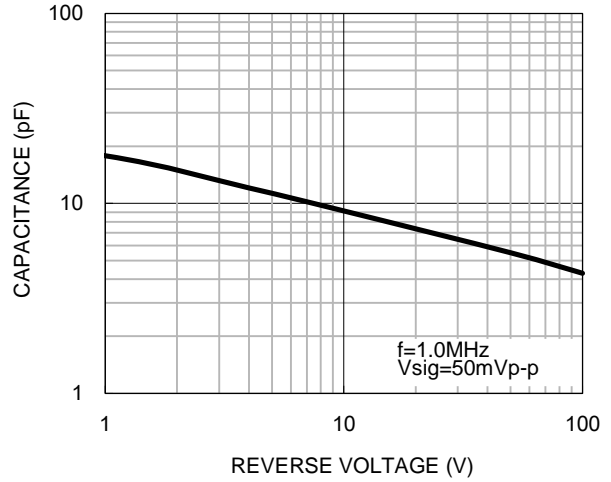
**CHARACTERISTICS CURVES**

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

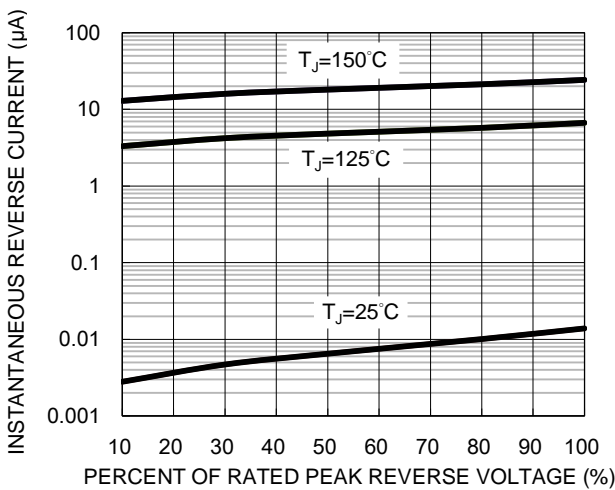
**Fig.1 Forward Current Derating Curve**



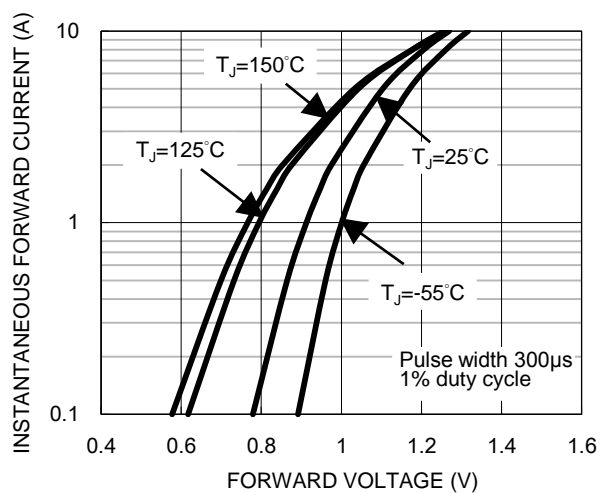
**Fig.2 Typical Junction Capacitance**



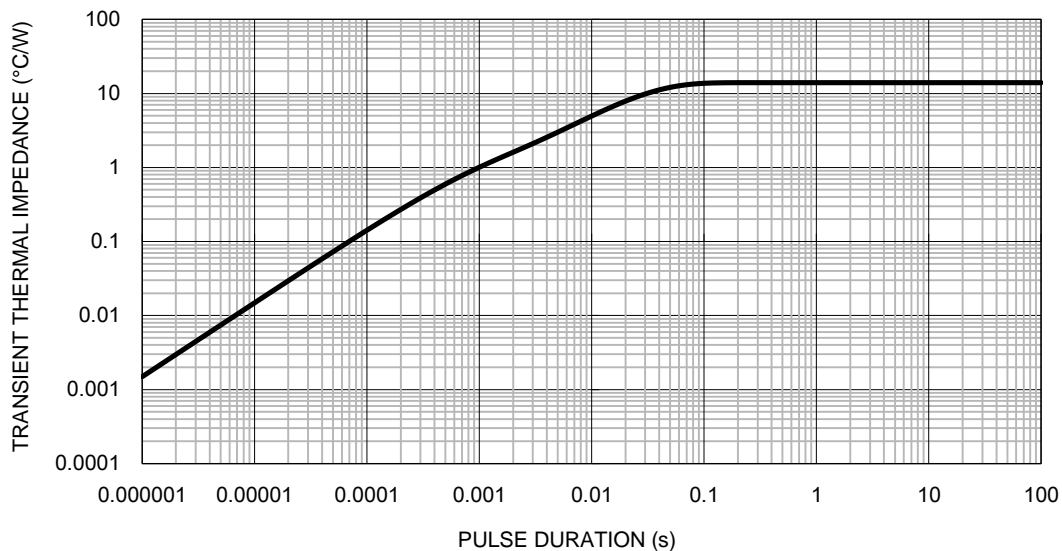
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

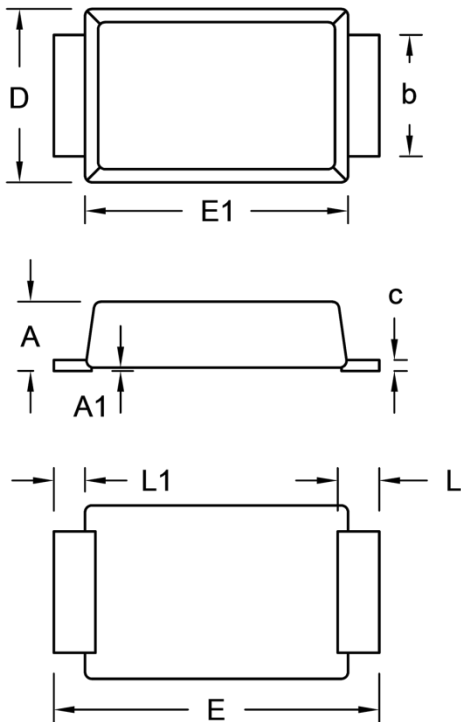


**Fig.5 Typical Transient Thermal Impedance**



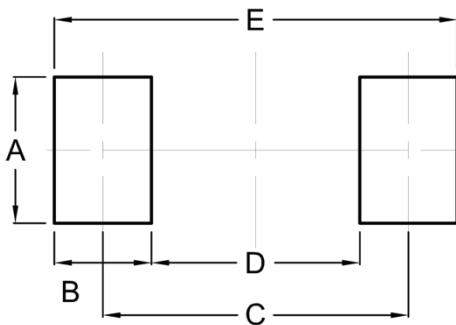
**PACKAGE OUTLINE DIMENSIONS**

SOD-128



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 0.90      | 1.10 | 0.035       | 0.043 |
| A1   | 0.00      | 0.10 | 0.000       | 0.004 |
| b    | 1.60      | 1.90 | 0.063       | 0.075 |
| c    | 0.10      | 0.22 | 0.004       | 0.009 |
| D    | 2.30      | 2.70 | 0.091       | 0.106 |
| E    | 4.40      | 5.00 | 0.173       | 0.197 |
| E1   | 3.60      | 4.00 | 0.142       | 0.157 |
| L    | 0.40      | 0.80 | 0.016       | 0.031 |
| 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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