

## 1A, 400V - 600V Standard Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Ideal for automated placement
- Low forward voltage drop
- Glass passivated chip junction
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- DC to DC converter
- Automotive application
- Car lighting
- Snubber
- General purpose

### MECHANICAL DATA

- Case: Micro 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: 0.006g (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_F$          | 1          | A    |
| $V_{RRM}$      | 400 - 600  | V    |
| $I_{FSM}$      | 20         | A    |
| $T_{J\ MAX}$   | 175        | °C   |
| Package        | Micro SMA  |      |
| Configuration  | Single die |      |



Micro SMA



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)       |              |             |       |      |
|-----------------------------------------------------------------------------------|--------------|-------------|-------|------|
| PARAMETER                                                                         | SYMBOL       | S1GMH       | S1JMH | UNIT |
| Marking code on the device                                                        |              | A5          | A7    |      |
| Repetitive peak reverse voltage                                                   | $V_{RRM}$    | 400         | 600   | V    |
| Reverse voltage, total rms value                                                  | $V_{R(RMS)}$ | 280         | 420   | V    |
| Forward current                                                                   | $I_F$        | 1           |       | A    |
| Surge peak forward current 8.3ms single half sine wave superimposed on rated load | $I_{FSM}$    | 20          |       | A    |
| Junction temperature                                                              | $T_J$        | -55 to +175 |       | °C   |
| Storage temperature                                                               | $T_{STG}$    | -55 to +175 |       | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | TYP | UNIT |
|----------------------------------------|-----------------|-----|------|
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 30  | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 110 | °C/W |

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

| PARAMETER                                    | CONDITIONS                                                           | SYMBOL   | TYP | MAX  | UNIT          |
|----------------------------------------------|----------------------------------------------------------------------|----------|-----|------|---------------|
| Forward voltage <sup>(1)</sup>               | $I_F = 1\text{A}$ , $T_J = 25^\circ\text{C}$                         | $V_F$    | -   | 1.10 | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup> | $T_J = 25^\circ\text{C}$                                             | $I_R$    | -   | 1    | $\mu\text{A}$ |
|                                              | $T_J = 125^\circ\text{C}$                                            |          | -   | 50   | $\mu\text{A}$ |
| Junction capacitance                         | 1MHz, $V_R = 4.0\text{V}$                                            | $C_J$    | 5   | -    | pF            |
| Reverse recovery time                        | $I_F = 0.5\text{A}$ , $I_R = 1.0\text{A}$<br>$I_{rr} = 0.25\text{A}$ | $t_{rr}$ | 780 | -    | ns            |

**Notes:**

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

**ORDERING INFORMATION**

| ORDERING CODE <sup>(1)</sup> | PACKAGE   | PACKING              |
|------------------------------|-----------|----------------------|
| S1xMH                        | Micro SMA | 12,000 / Tape & Reel |

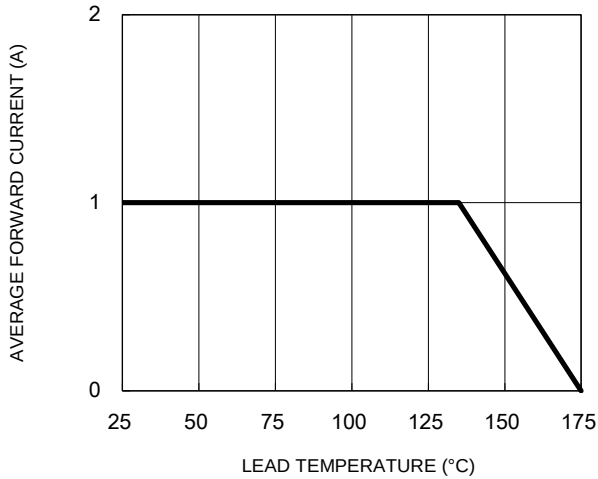
**Notes:**

1. "x" defines voltage from 400V(S1GMH) to 600V(S1JMH)

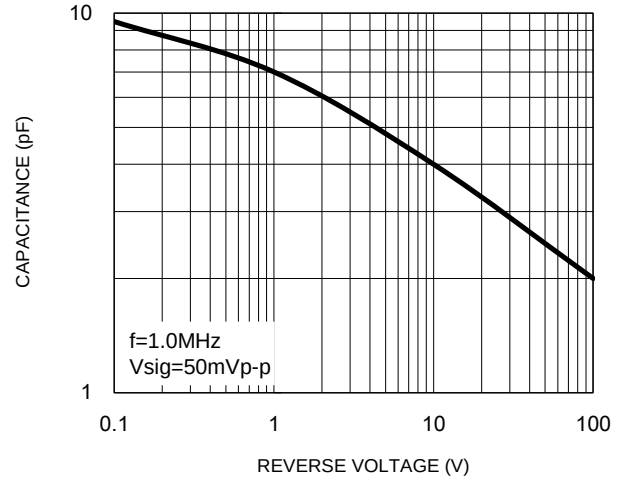
## CHARACTERISTICS CURVES

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

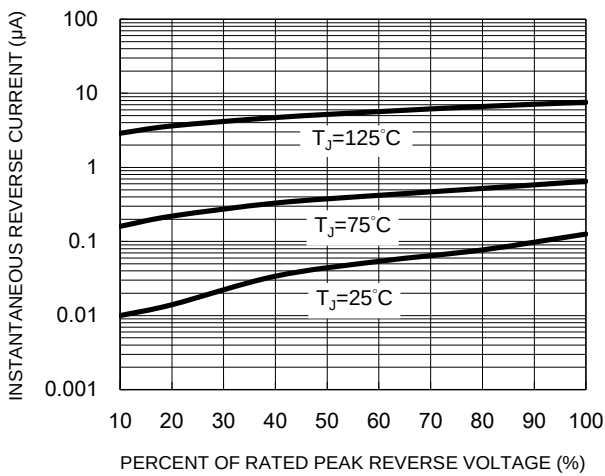
**Fig.1 Forward Current Derating Curve**



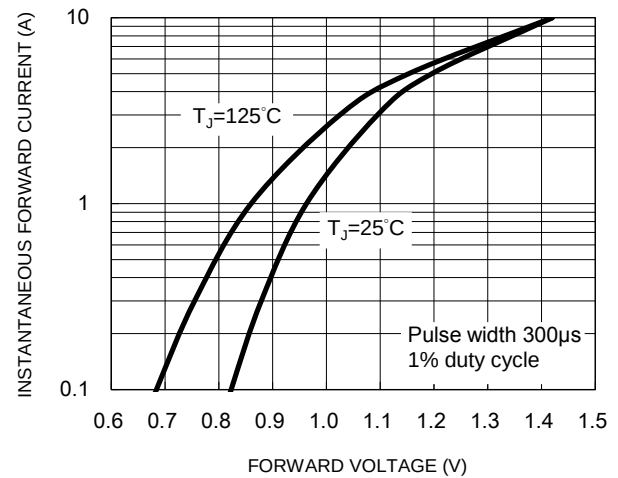
**Fig.2 Typical Junction Capacitance**



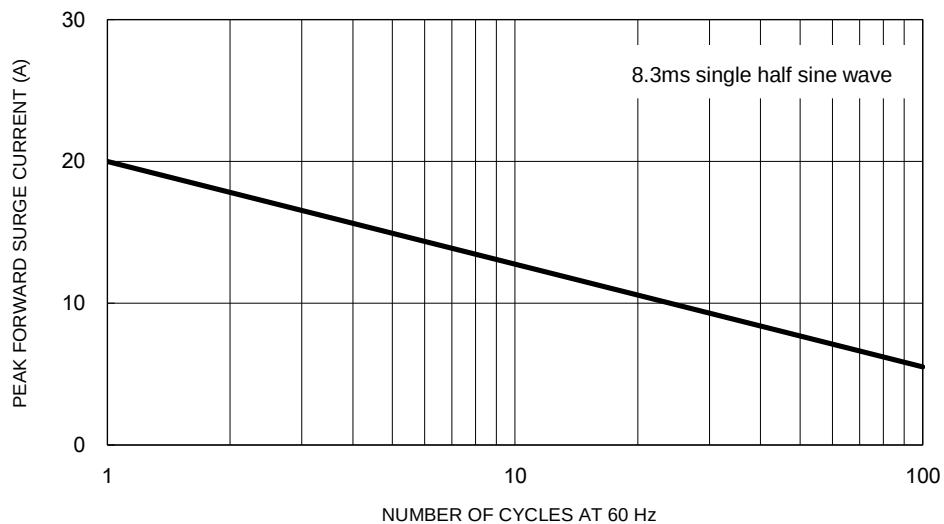
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



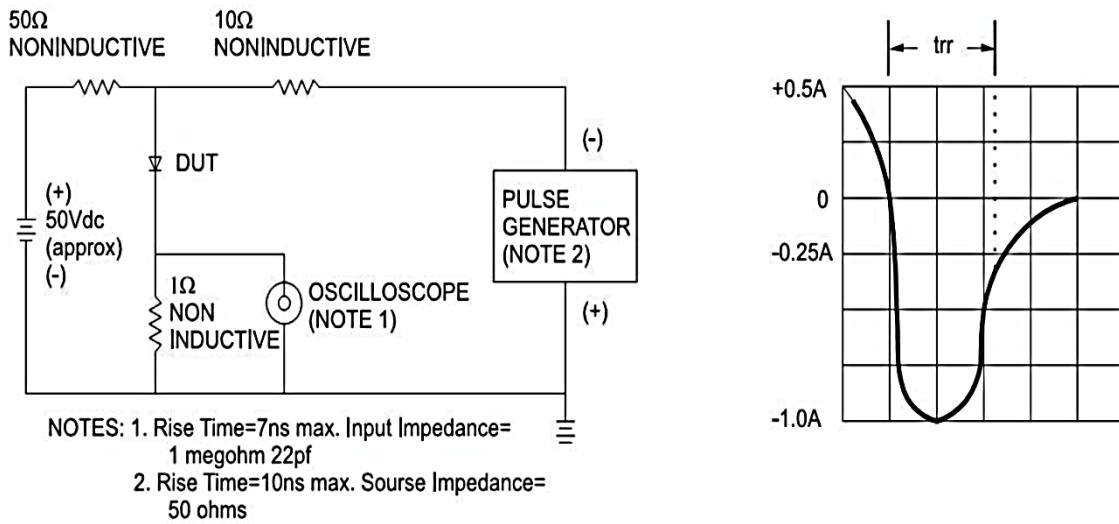
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



## CHARACTERISTICS CURVES

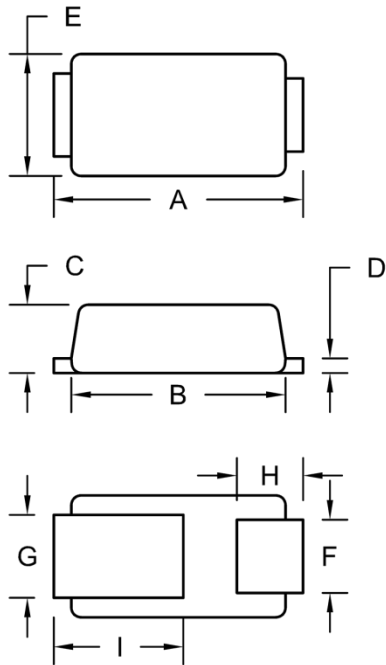
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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



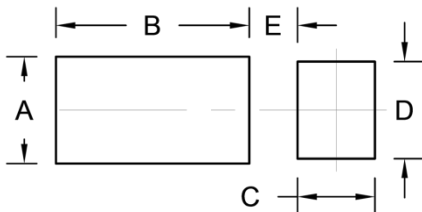
## PACKAGE OUTLINE DIMENSIONS

Micro SMA



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 2.30      | 2.70 | 0.091       | 0.106 |
| B    | 2.10      | 2.30 | 0.083       | 0.091 |
| C    | 0.63      | 0.73 | 0.025       | 0.029 |
| D    | 0.10      | 0.20 | 0.004       | 0.008 |
| E    | 1.15      | 1.35 | 0.045       | 0.053 |
| F    | 0.65      | 0.85 | 0.026       | 0.034 |
| G    | 0.75      | 0.95 | 0.030       | 0.037 |
| H    | 0.55      | 0.75 | 0.022       | 0.030 |
| I    | 1.10      | 1.50 | 0.043       | 0.059 |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.10      | 0.043       |
| B      | 2.00      | 0.079       |
| C      | 0.80      | 0.031       |
| D      | 1.00      | 0.039       |
| E      | 0.50      | 0.020       |

## MARKING DIAGRAM



P/N = Marking Code  
YW = Data Code

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