

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_{JMAX} | 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 ⁽¹⁾ | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 1.10 | V |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 1 | μA |
| | $T_J = 125^\circ\text{C}$ | | - | 50 | μA |
| Junction capacitance | 1MHz, $V_R = 4.0\text{V}$ | C_J | 5 | - | pF |
| Reverse recovery time | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$ | 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⁽¹⁾ | 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

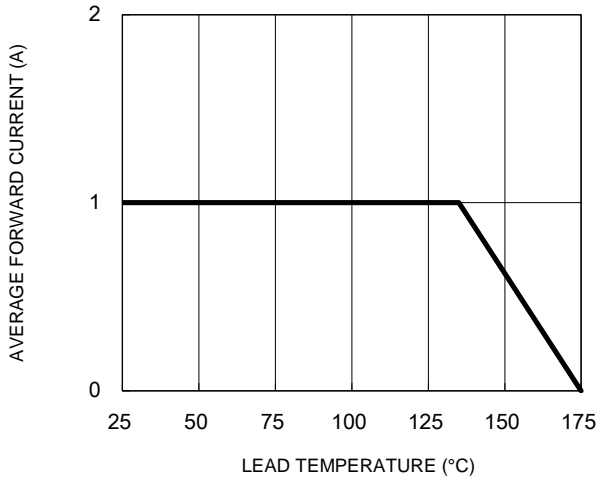


Fig.2 Typical Junction Capacitance

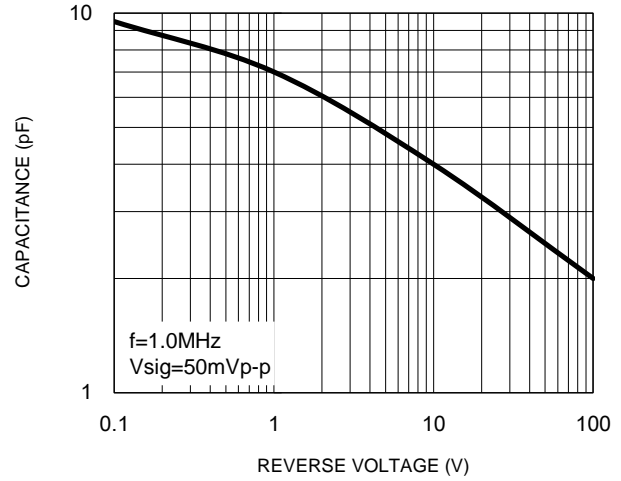


Fig.3 Typical Reverse Characteristics

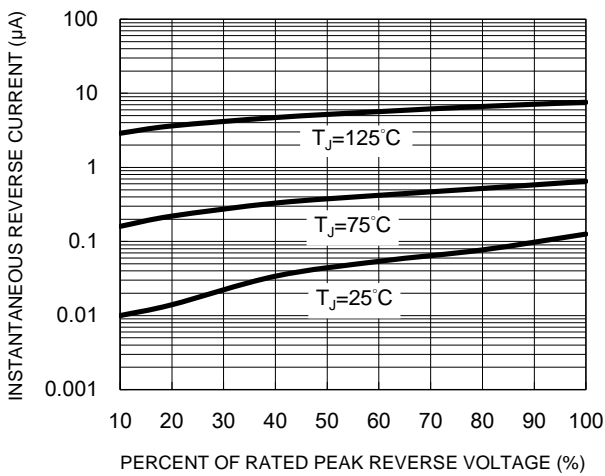


Fig.4 Typical Forward Characteristics

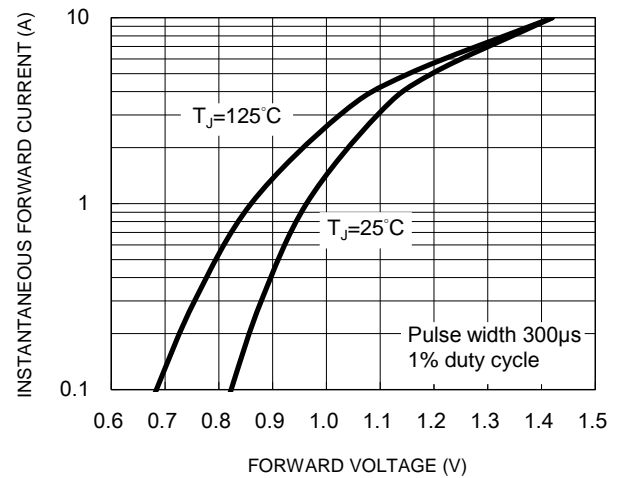
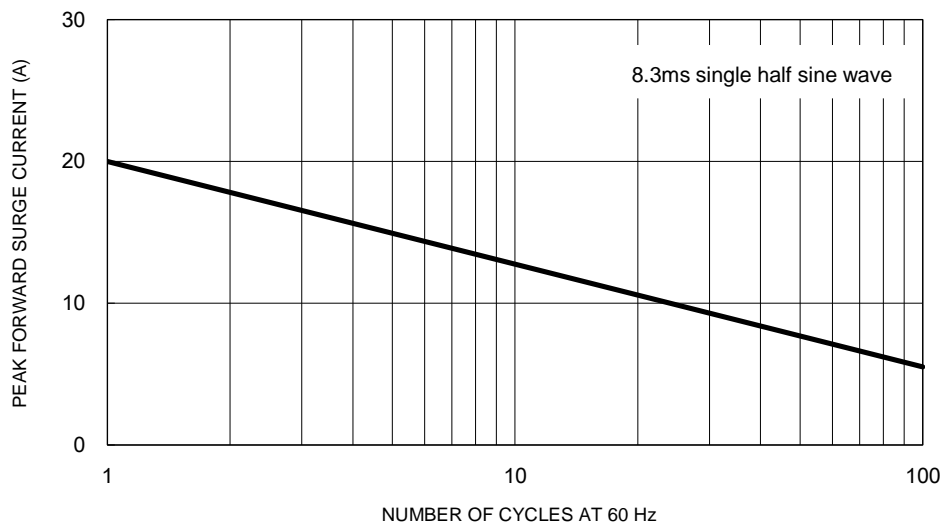


Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

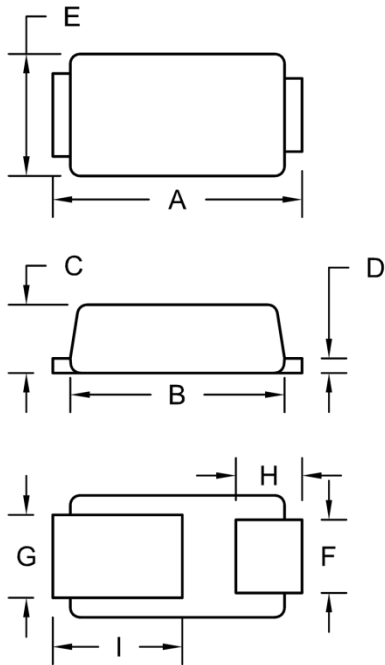
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram



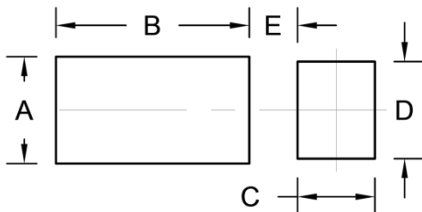
PACKAGE OUTLINE DIMENSIONS

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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