

1A, 400V ESD Capability Rectifier

FEATURES

- High ESD capability
- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- converter

MECHANICAL DATA

- Case: SOD-123W
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 19mg (approximately)

| KEY PARAMETERS | | |
|-------------------|------------|------|
| PARAMETER | VALUE | UNIT |
| $I_{F(AV)}$ | 1 | A |
| V_{RRM} | 400 | V |
| I_{FSM} | 40 | A |
| V_F at $I_F=1A$ | 1 | V |
| T_{JMAX} | 175 | °C |
| Package | SOD-123W | |
| Configuration | Single die | |



SOD-123W

| SOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | |
|---|--------------|--------------|------|
| PARAMETER | SYMBOL | TSDGLW | UNIT |
| Marking code on the device | | TSDGLW | |
| Repetitive peak reverse voltage | V_{RRM} | 400 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 280 | V |
| Forward current | $I_{F(AV)}$ | 1 | A |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 40 | A |
| Junction temperature | T_J | - 55 to +175 | °C |
| Storage temperature | T_{STG} | - 55 to +175 | °C |

| THERMAL PERFORMANCE | | | |
|--|-----------------|--------------|-------------|
| PARAMETER | SYMBOL | LIMIT | UNIT |
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 52 | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 84 | °C/W |
| Junction-to-case thermal resistance | $R_{\theta JC}$ | 54 | °C/W |

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

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|--|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | $I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$ | V_F | 0.86 | 0.95 | V |
| | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$ | | 0.90 | 1.00 | V |
| | $I_F = 0.5\text{A}, T_J = 125^\circ\text{C}$ | | 0.72 | 0.90 | V |
| | $I_F = 1\text{A}, T_J = 125^\circ\text{C}$ | | 0.77 | 1.00 | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 1 | μA |
| | $T_J = 125^\circ\text{C}$ | | - | 50 | μA |
| Junction capacitance | 1 MHz, $V_R = 4.0\text{V}$ | C_J | 15 | - | pF |

Notes:

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

| IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|--------------------------------|---|---------------|--------------|--------------------|----------------|
| Standard | Test Type | Test Conditions | SYMBOL | CLASS | Value | Typical |
| AEC-Q101-001 | Human body model(contact mode) | $C = 100\text{pF}, R = 1.5\text{k}\Omega$ | V_C | H3B | $\geq 8\text{kV}$ | N/A |
| IEC 61000-4-2 | Contact mode | $C = 150\text{pF}, R = 330\Omega$ | | 4 | $\geq 8\text{kV}$ | 20kV |
| | Air-discharge mode | $C = 150\text{pF}, R = 330\Omega$ | | 4 | $\geq 15\text{kV}$ | 25kV |
| ISO 10605 | Contact mode | $C = 330\text{pF}, R = 330\Omega$ | | L4 | $\geq 15\text{kV}$ | 20kV |
| | Air-discharge mode | $C = 330\text{pF}, R = 330\Omega$ | | L4 | $\geq 25\text{kV}$ | 25kV |

| ORDERING INFORMATION | | | | | |
|-----------------------------|------------------------|---------------------|----------------------------|----------------|--|
| PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING |
| TSDGLW (Note 1) | H | RV RQ | G | SOD-123W | 3,000 / 7" Plastic reel 10,000 / 13" Paper reel |

Note:

1. Whole series with green compound (halogen-free)

| EXAMPLE | | | | | |
|--------------------|-----------------|------------------------|---------------------|----------------------------|--------------------------------------|
| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
| TSDGLWHRVG | TSDGLW | H | RV | G | AEC-Q101 qualified Green compound |

CHARACTERISTICS CURVES

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

Fig1. Forward Current Derating Curve

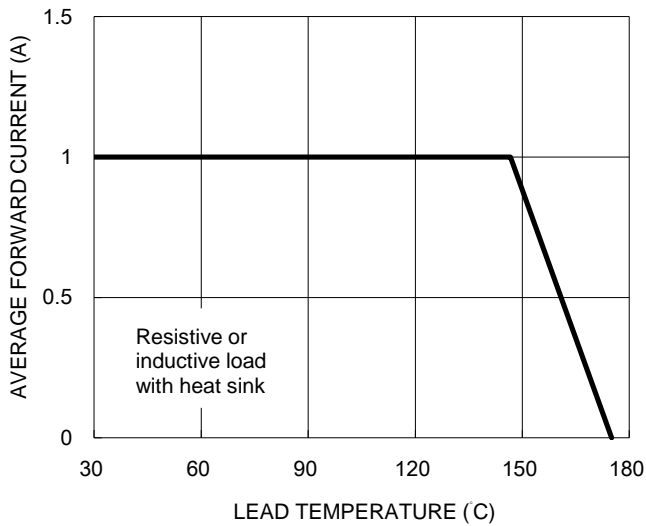


Fig2. Typical Junction Capacitance

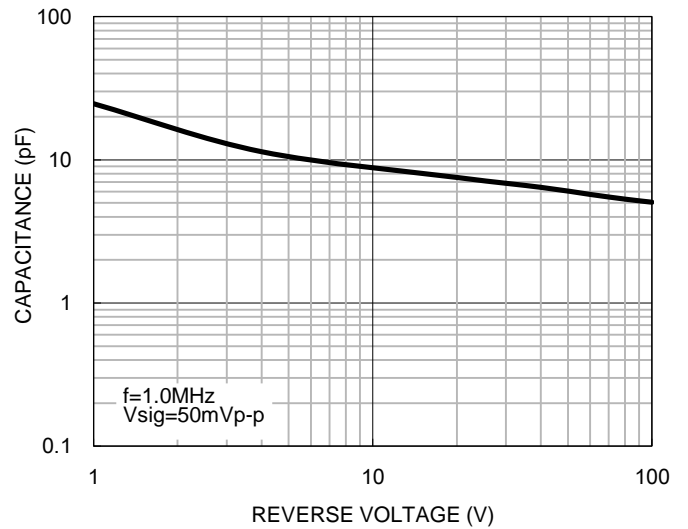


Fig3. Typical Reverse Characteristics

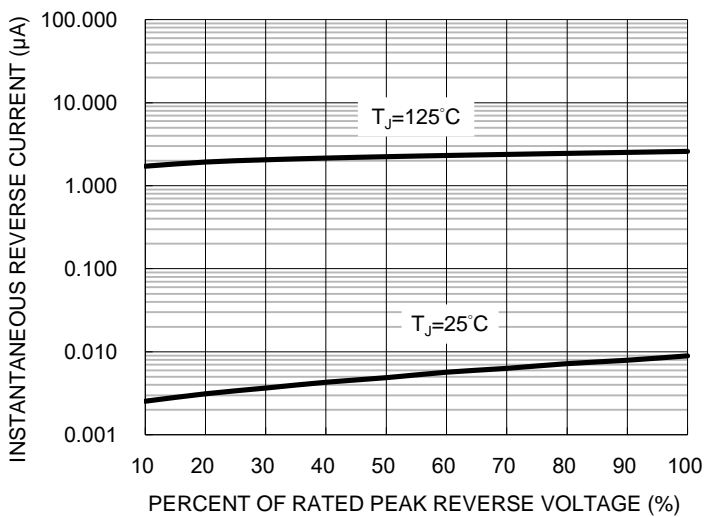
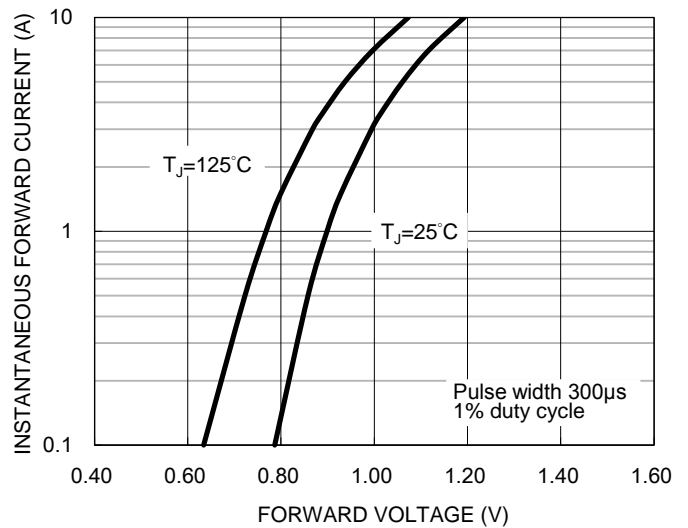
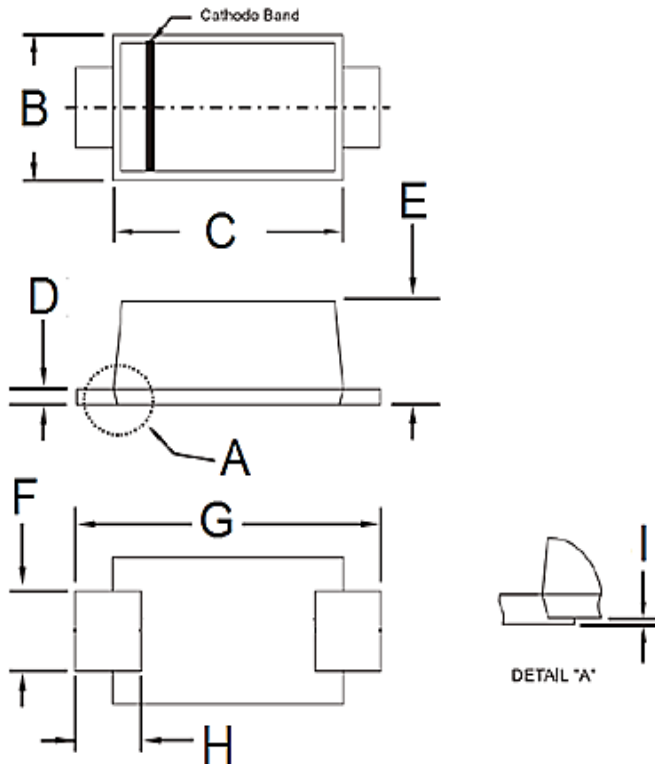


Fig4. Typical Forward Characteristics

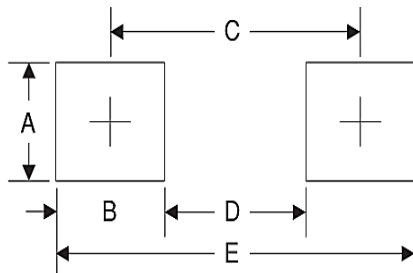


PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min | Max | Min | Max |
| B | 1.70 | 1.90 | 0.067 | 0.075 |
| C | 2.60 | 2.90 | 0.102 | 0.114 |
| D | 0.10 | 0.22 | 0.004 | 0.009 |
| E | 0.90 | 1.02 | 0.035 | 0.040 |
| F | 0.90 | 1.05 | 0.035 | 0.041 |
| G | 3.60 | 3.80 | 0.142 | 0.150 |
| H | 0.50 | 0.85 | 0.020 | 0.033 |
| I | 0.00 | 0.10 | 0.000 | 0.004 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 1.4 | 0.055 |
| B | 1.2 | 0.047 |
| C | 3.1 | 0.122 |
| D | 1.9 | 0.075 |
| E | 4.3 | 0.169 |

MARKING DIAGRAM



- P/N =Marking Code
- G =Green Compound
- YW =Date Code
- F =Factory Code

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