

1A, 1200V SiC Merged PIN Schottky Diode

FEATURES

- AEC-Q101 qualified
- Max junction temperature 175°C
- Minimum creepage distance 3.2 mm guaranteed by design
- High-speed switching possible
- High forward surge capability
- High-frequency operation
- Positive temperature coefficient on V_F
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS compliant
- Halogen-free

APPLICATIONS

- General purpose
- Switch mode power supplies
- Power factor correction

MECHANICAL DATA

- Case: SOD-128
- 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: 0.022g (approximately)

| KEY PARAMETERS | | |
|----------------|------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 1 | A |
| V_{RRM} | 1200 | V |
| I_{FSM} | 15 | A |
| $T_{J\ MAX}$ | 175 | °C |
| Package | SOD-128 | |
| Configuration | Single die | |



SOD-128



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | |
|---|---|-------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Repetitive peak reverse voltage | V_{RRM} | 1200 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 840 | V |
| Forward Current | I_F | 1 | A |
| Surge non-repetitive forward current, sine halfwave | $T_C=25^\circ\text{C}, t_p=10\mu\text{s}$ | 256 | A |
| | $T_C=25^\circ\text{C}, t_p=10\text{ms}$ | 15 | A |
| | $T_C=150^\circ\text{C}, t_p=10\text{ms}$ | 14 | A |
| Junction temperature | T_J | -55 to +175 | °C |
| Storage temperature | T_{STG} | -55 to +175 | °C |

| THERMAL PERFORMANCE | | | | |
|-------------------------------------|-----------------|------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | MAX | UNIT |
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 8.6 | 10.3 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|--|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage ⁽¹⁾ | $I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$ | V_F | 1.15 | - | V |
| | $I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$ | | 1.36 | 1.50 | V |
| | $I_F = 0.5\text{A}, T_J = 150^\circ\text{C}$ | | 1.30 | - | V |
| | $I_F = 1.0\text{A}, T_J = 150^\circ\text{C}$ | | 1.80 | 2.10 | V |
| | $I_F = 0.5\text{A}, T_J = 175^\circ\text{C}$ | | 1.35 | - | V |
| | $I_F = 1.0\text{A}, T_J = 175^\circ\text{C}$ | | 1.95 | - | V |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 3 | μA |
| | $T_J = 175^\circ\text{C}$ | | - | 5 | μA |
| Junction capacitance | $f = 1\text{MHz}, V_R = 1\text{V}$ | C_J | 85 | - | pF |
| | $f = 1\text{MHz}, V_R = 400\text{V}$ | | 3.5 | - | pF |
| | $f = 1\text{MHz}, V_R = 800\text{V}$ | | 2.0 | - | pF |
| Capacitive Charge | $V_R = 800\text{V}$ | Q_C | 4.3 | - | nC |

Notes:

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

| ORDERING INFORMATION | | |
|-----------------------------|----------------|----------------------|
| ORDERING CODE | PACKAGE | PACKING |
| TSCDFS01120G2H | SOD-128 | 14,000 / Tape & Reel |

CHARACTERISTICS CURVES

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

Fig.1 Typical Forward Characteristics

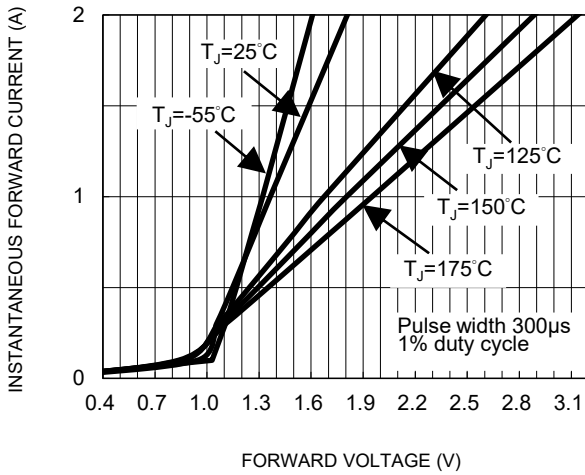


Fig.2 Typical Reverse Characteristics

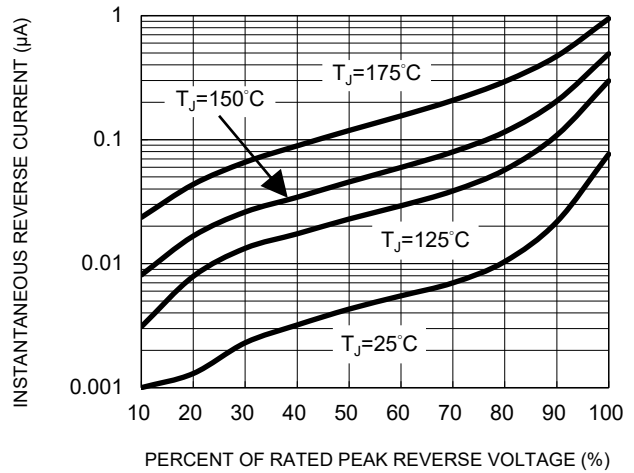


Fig.3 Peak forward current versus case temperature

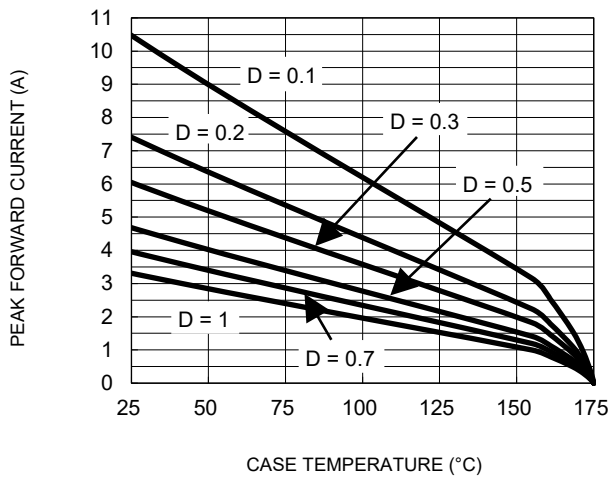


Fig.4 Typical Junction Capacitance

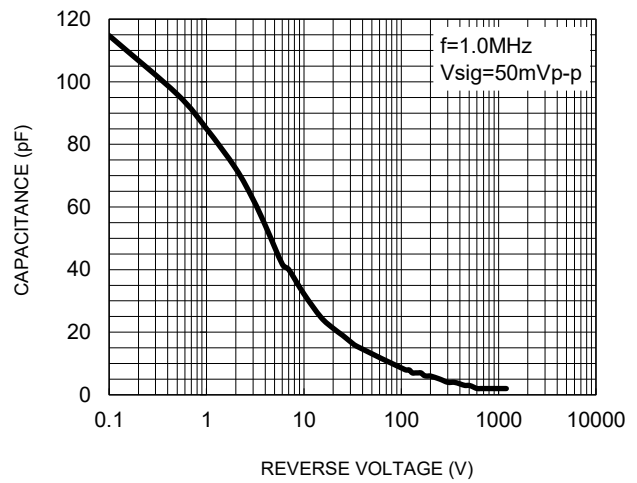


Fig.5 Typical Capacitive Charge

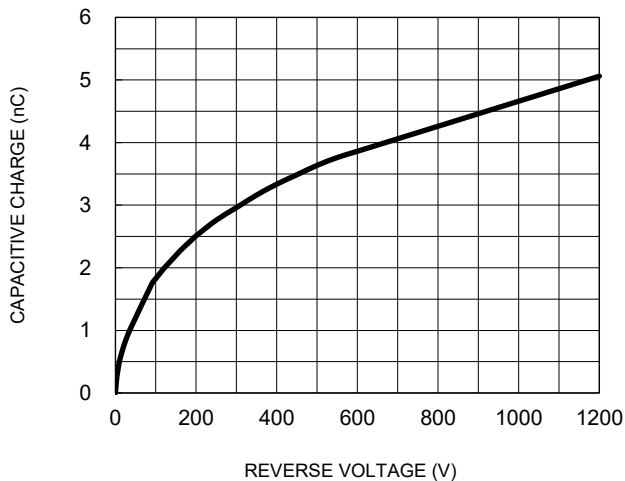
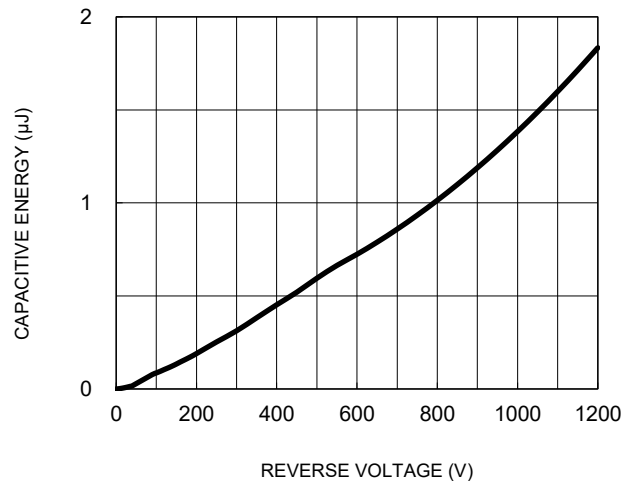


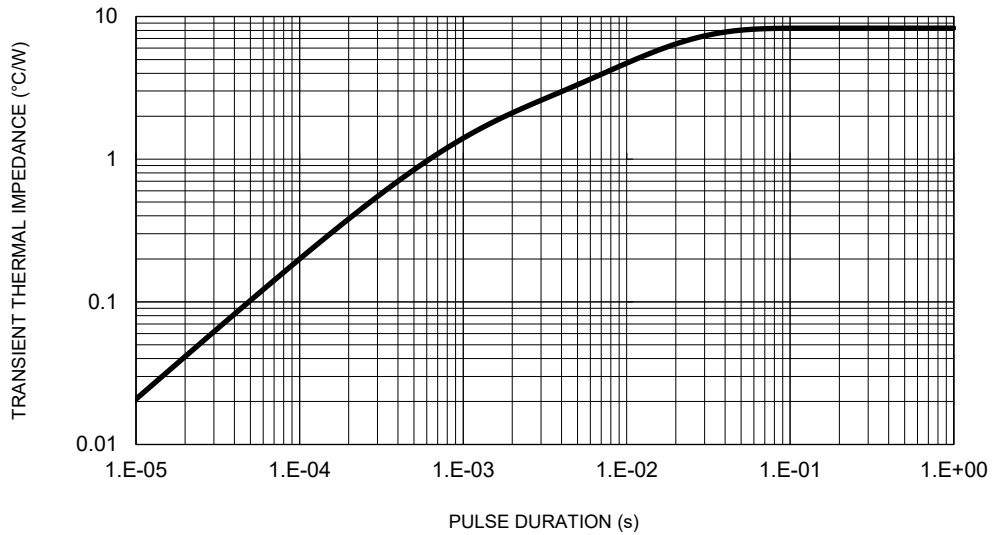
Fig.6 Typical Capacitance Stored Energy



CHARACTERISTICS CURVES

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

Fig.7 Typical Transient Thermal Characteristics



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