# 5A, 60V Trench Schottky Surface Mount Rectifier

## FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

## APPLICATIONS

- Low voltage, high frequency
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting

## MECHANICAL DATA

- Case: Thin 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: 0.029g (approximately)

| KEY PARAMETERS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| $I_F$ | 5 | A |
| $V_{RRM}$ | 60 | V |
| $I_{FSM}$ | 150 | A |
| $T_{J\ MAX}$ | 175 | °C |
| Package | Thin SMA | |
| Configuration | Single die | |

Pb-Free RoHS COMPLIANT HALOGEN FREE

**Thin SMA**

| **ABSOLUTE MAXIMUM RATINGS** ($T_A$ = 25°C unless otherwise noted) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **VALUE** | **UNIT** |
| Repetitive peak reverse voltage | $V_{RRM}$ | 60 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 42 | V |
| Forward current | $I_F$ | 5 | A |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 150 | 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 | $R_{\Theta JL}$ | 13.7 | °C/W |
| Junction-to-ambient thermal resistance | $R_{\Theta JA}$ | 72.1 | °C/W |
| Junction-to-case thermal resistance | $R_{\Theta JC}$ | 14.4 | °C/W |

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

## ELECTRICAL SPECIFICATIONS ($T_A$ = 25°C unless otherwise noted)

| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| Forward voltage(1) | $I_F$ = 2.5A, $T_J$ = 25°C | $V_F$ | 0.51 | - | V |
| | $I_F$ = 5.0A, $T_J$ = 25°C | | 0.58 | 0.66 | V |
| | $I_F$ = 2.5A, $T_J$ = 125°C | | 0.42 | - | V |
| | $I_F$ = 5.0A, $T_J$ = 125°C | | 0.51 | 0.59 | V |
| Reverse current @ rated $V_R$(2) | $T_J$ = 25°C | $I_R$ | - | 30 | μA |
| | $T_J$ = 125°C | | - | 10 | mA |
| Junction capacitance | 1MHz, VR = 4.0V | $C_J$ | 450 | - | pF |

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

## ORDERING INFORMATION

| ORDERING CODE | PACKAGE | PACKING |
|---|---|---|
| TSAL5M60H | Thin SMA | 14,000 / Tape & Reel |

## CHARACTERISTICS CURVES

($T_A$ = 25°C unless otherwise noted)

**Fig.1 Forward Current Derating Curve**

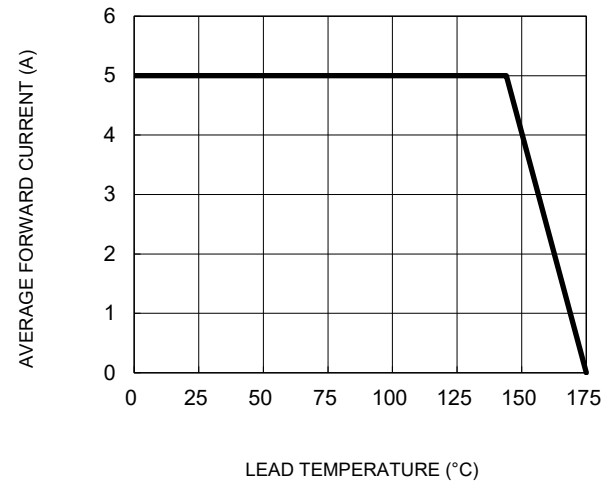



**Fig.2 Typical Junction Capacitance**

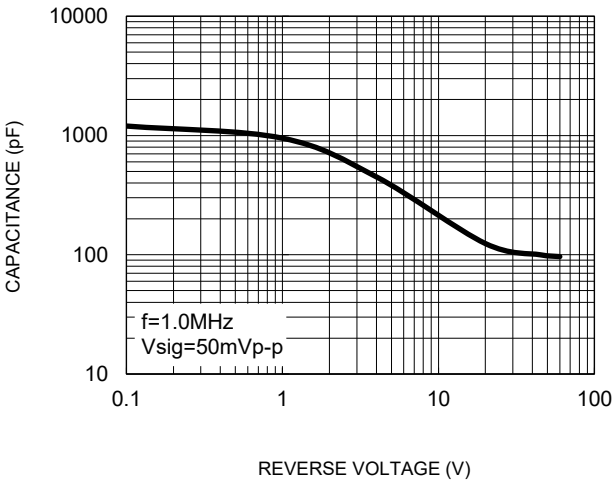



**Fig.3 Typical Reverse Characteristics**

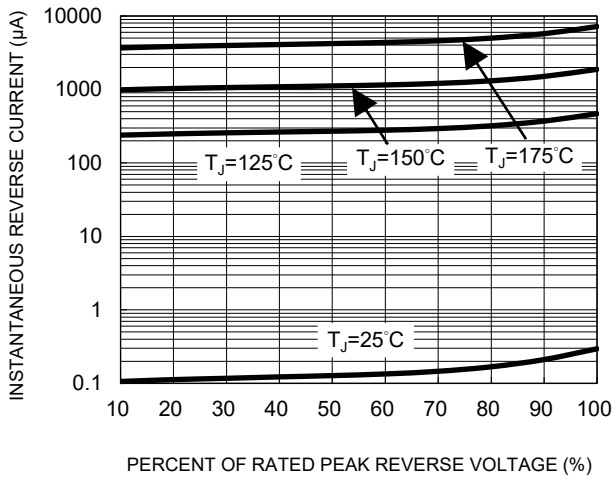



**Fig.4 Typical Forward Characteristics**

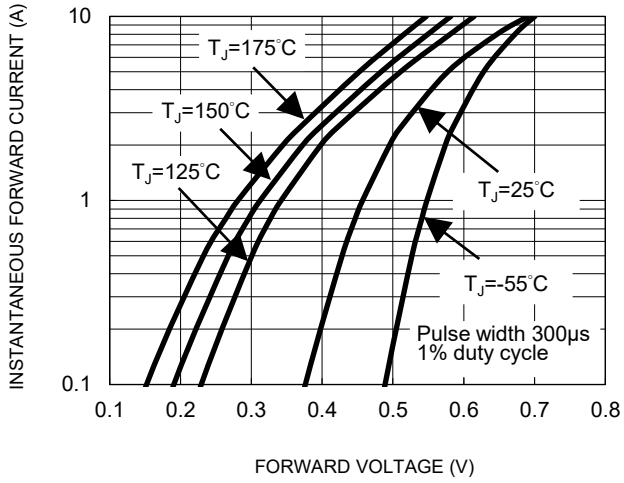
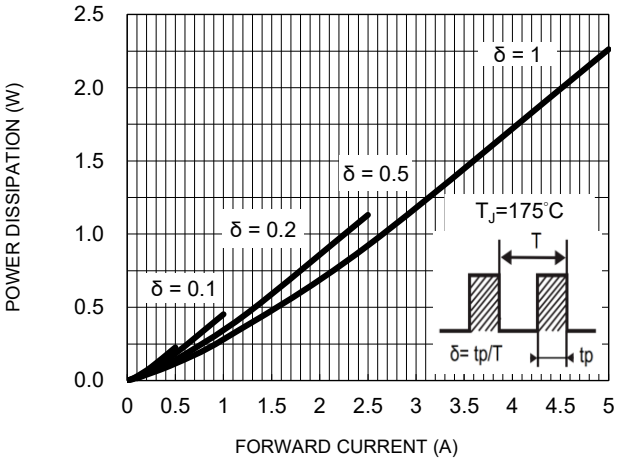


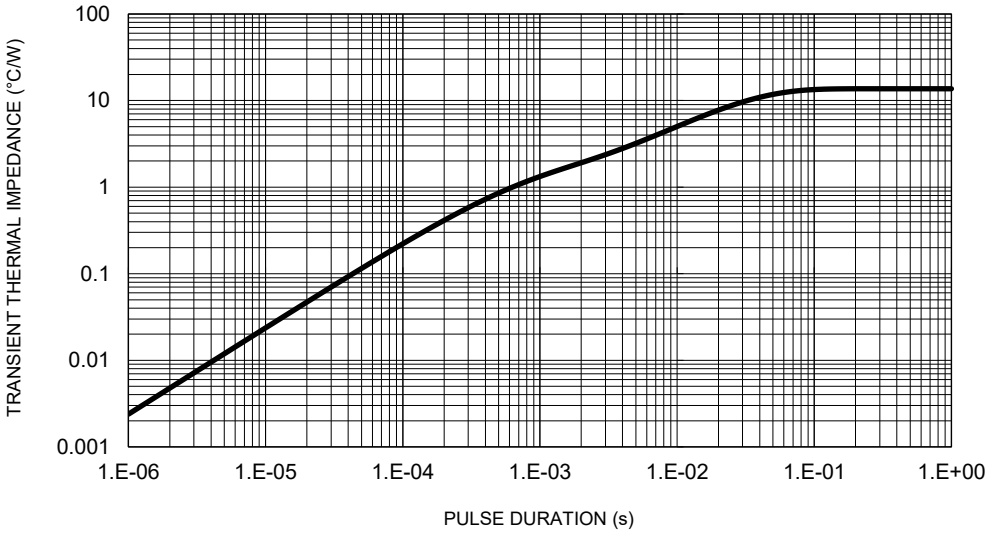

**Fig.5 Typical Forward Power Dissipation vs. Forward Current**



## CHARACTERISTICS CURVES

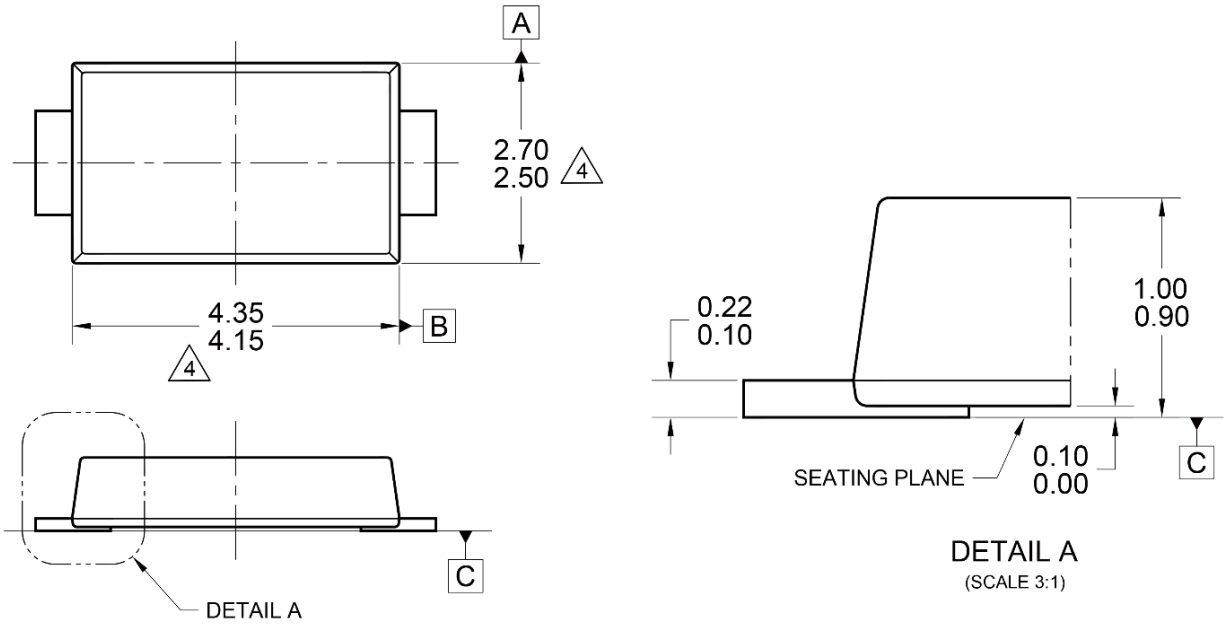
($T_A$ = 25°C unless otherwise noted)

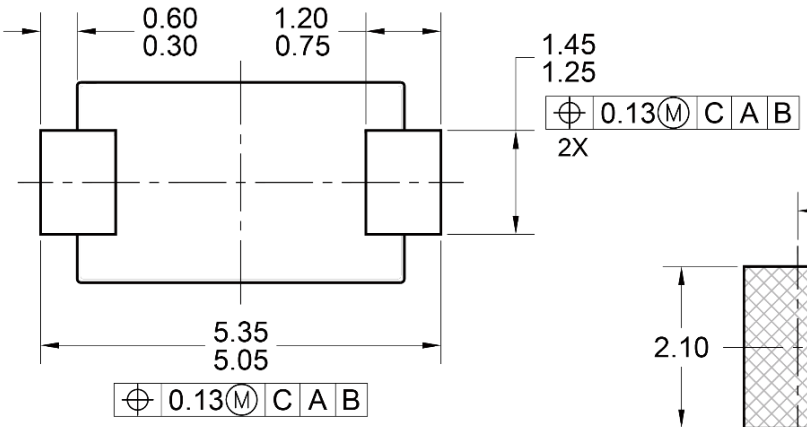
**Fig.6 Typical Transient Thermal Characteristics**

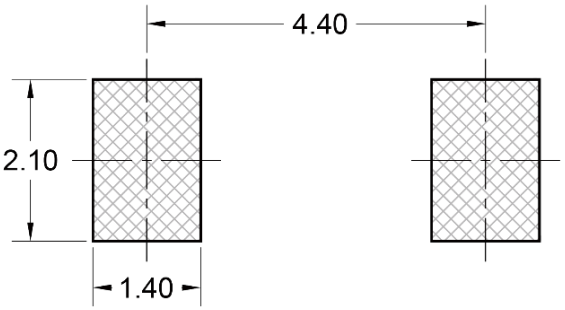


## PACKAGE OUTLINE DIMENSIONS

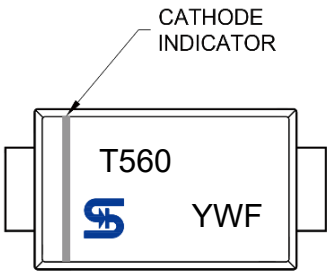
**Thin SMA**




SUGGESTED PAD LAYOUT




MARKING DIAGRAM

YW = DATE CODE
F = FACTORY CODE

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
3. PACKAGE OUTLINE REFERENCE: JEDEC DO-221, VARIATION AC, ISSUE B.
4. MODED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. SUGGESTED PAD LAYOUT IS FOR REFERENCE PURPOSE ONLY.
6. DWG NO. REF: HQ2SD07-TSMA-074 REV A.

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