

## 10A, 45V 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

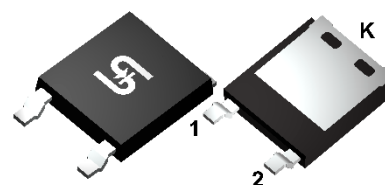
### APPLICATIONS

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

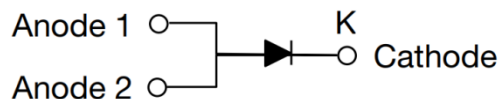
### MECHANICAL DATA

- Case: ThinDPAK
- 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: 0.19g (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_F$          | 10         | A    |
| $V_{RRM}$      | 45         | V    |
| $I_{FSM}$      | 215        | A    |
| $T_{J\ MAX}$   | 175        | °C   |
| Package        | ThinDPAK   |      |
| Configuration  | Single die |      |



ThinDPAK



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)        |              |              |      |
|--|--------------|--------------|------|
| PARAMETER  | SYMBOL       | VALUE        | UNIT |
| Repetitive peak reverse voltage  | $V_{RRM}$    | 45           | V    |
| Reverse voltage, total rms value   | $V_{R(RMS)}$ | 31           | V    |
| Forward current  | $I_F$        | 10           | A    |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | $I_{FSM}$    | 215          | A    |
| Junction temperature   | $T_J$        | - 55 to +175 | °C   |
| Storage temperature  | $T_{STG}$    | - 55 to +175 | °C   |

| <b>THERMAL PERFORMANCE</b>                            |                  |            |             |
|---|------------------|------------|-------------|
| <b>PARAMETER</b>                                      | <b>SYMBOL</b>    | <b>TYP</b> | <b>UNIT</b> |
| Junction-to-lead thermal resistance <sup>(1)</sup>    | R <sub>θJL</sub> | 1.5        | °C/W        |
| Junction-to-ambient thermal resistance <sup>(2)</sup> | R <sub>θJA</sub> | 11.1       | °C/W        |
| Junction-to-case thermal resistance <sup>(2)</sup>    | R <sub>θJC</sub> | 3.2        | °C/W        |

**Thermal Performance Note:**

1. With ideal heat sink
2. Mounted on Heat sink with 4" x 6" x 0.25" Al-Plate

| <b>ELECTRICAL SPECIFICATIONS</b> (T <sub>A</sub> = 25°C unless otherwise noted) |  |                |            |            |             |
|---|--|----------------|------------|------------|-------------|
| <b>PARAMETER</b>  | <b>CONDITIONS</b>                            | <b>SYMBOL</b>  | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b> |
| Forward voltage <sup>(1)</sup>  | I <sub>F</sub> = 5A, T <sub>J</sub> = 25°C   | V <sub>F</sub> | 0.50       | -          | V           |
|   | I <sub>F</sub> = 10A, T <sub>J</sub> = 25°C  |                | 0.56       | 0.63       | V           |
|   | I <sub>F</sub> = 5A, T <sub>J</sub> = 125°C  |                | 0.41       | -          | V           |
|   | I <sub>F</sub> = 10A, T <sub>J</sub> = 125°C |                | 0.49       | 0.55       | V           |
| Reverse current @ rated V <sub>R</sub> <sup>(2)</sup>                           | T <sub>J</sub> = 25°C                        | I <sub>R</sub> | -          | 30         | μA          |
|   | T <sub>J</sub> = 125°C                       |                | -          | 10         | mA          |
| Junction capacitance  | 1MHz, V <sub>R</sub> = 4.0V                  | C <sub>J</sub> | 1110       | -          | pF          |

**Notes:**

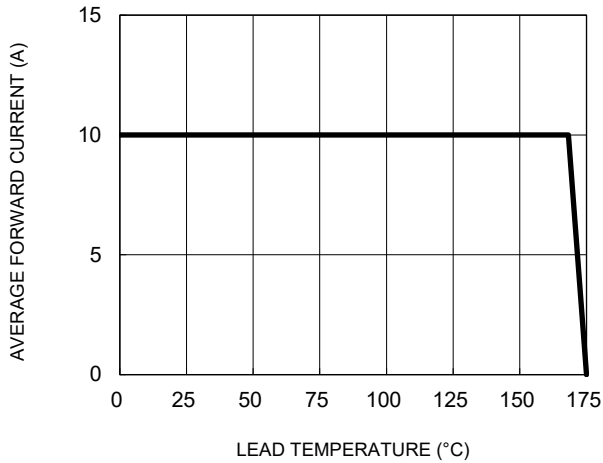
1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

| <b>ORDERING INFORMATION</b> |                |                     |
|-----------------------------|----------------|---------------------|
| <b>ORDERING CODE</b>        | <b>PACKAGE</b> | <b>PACKING</b>      |
| TSAD10M45H                  | ThinDPAK       | 4,500 / Tape & Reel |

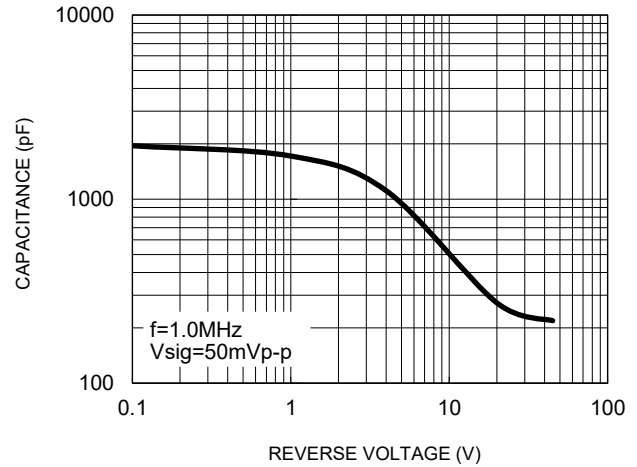
**CHARACTERISTICS CURVES**

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

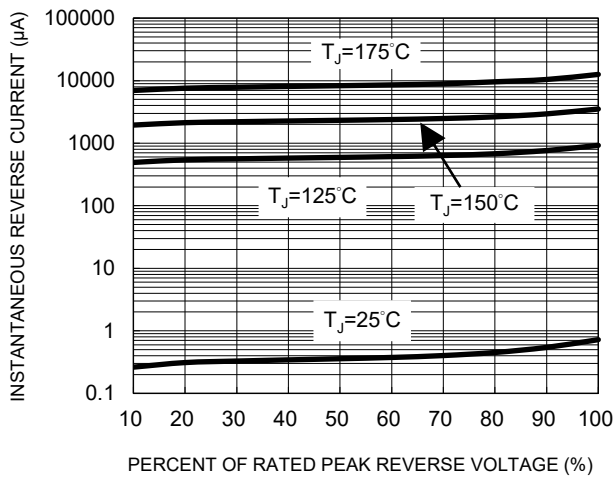
**Fig.1 Forward Current Derating Curve**



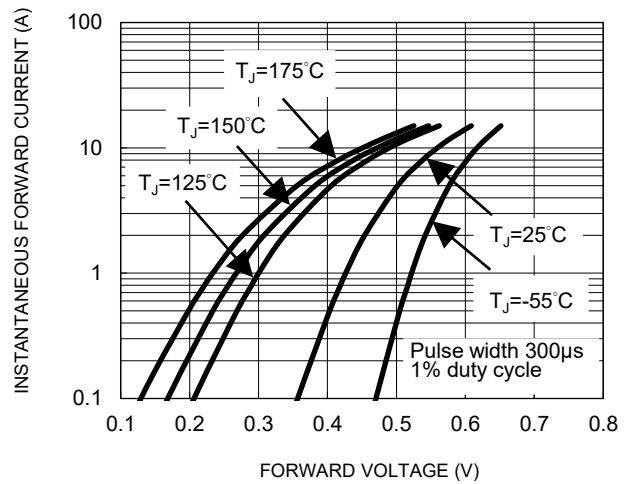
**Fig.2 Typical Junction Capacitance**



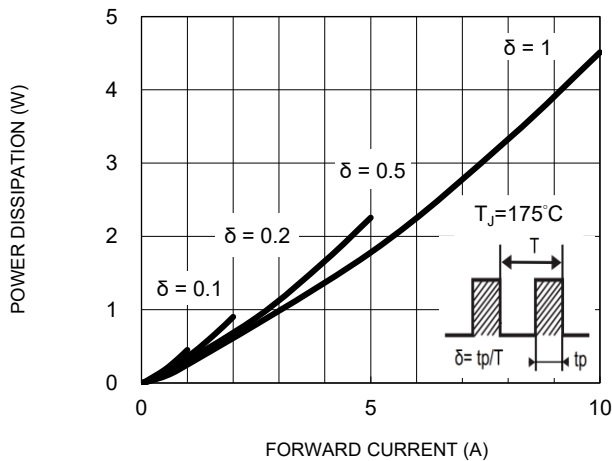
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



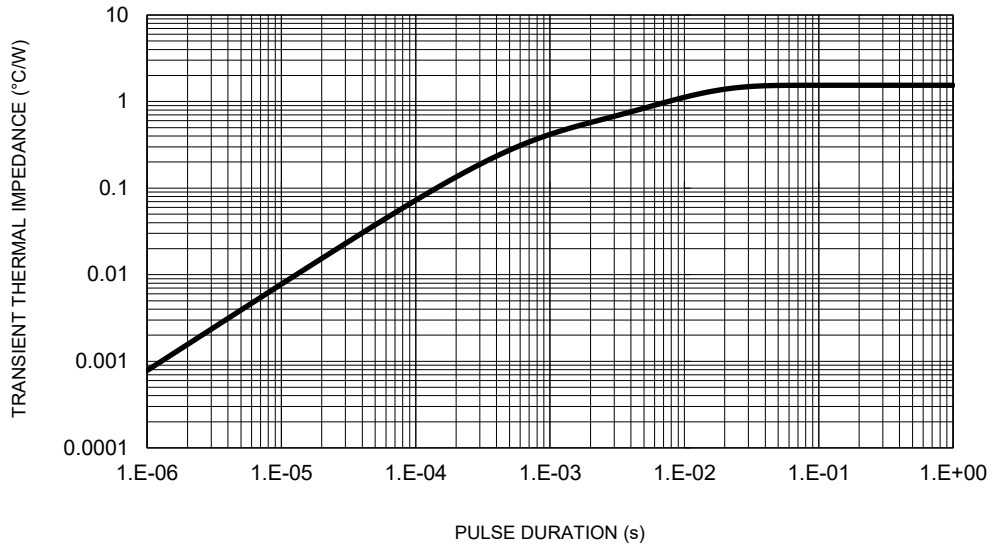
**Fig.5 Typical Forward Power Dissipation vs. Forward Current**



**CHARACTERISTICS CURVES**

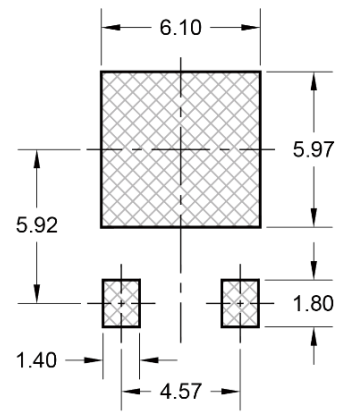
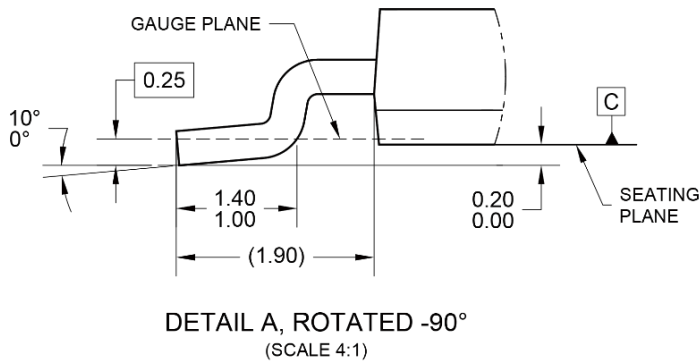
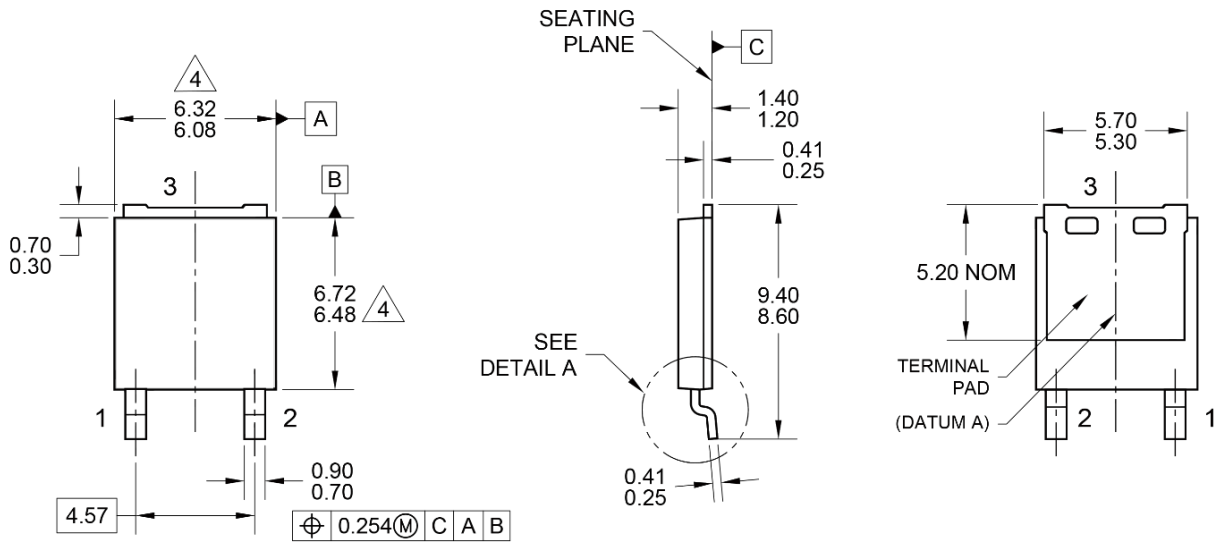
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.6 Typical Transient Thermal Characteristics**

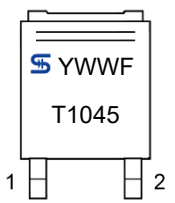


**PACKAGE OUTLINE DIMENSIONS**

**ThinDPAK**



**SUGGESTED PAD LAYOUT**



**MARKING DIAGRAM**

YWW = DATE CODE  
F = FACTORY CODE

**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PACKAGE OUTLINE REFERENCE: JEDEC TO-252, VARIATION AE, ISSUE F.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSION, OR GATE BURRS.
5. DWG NO. REF: HQ2SD07-TDPAK-065 REV A.

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