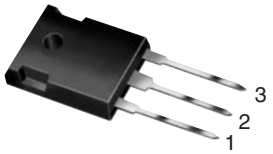
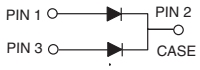
# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

## Ultra Low $V_F$ = 0.372 V at $I_F$ = 5 A

TO-247AD (TO-3P)




## Major Ratings and Characteristics

| | |
|---|---|
| $I_{F(AV)}$ | 2 x 25 A |
| $V_{RRM}$ | 100 V |
| $I_{FSM}$ | 250 A |
| $V_F$ at $I_F$ = 20 A | 0.64 V |
| $T_J$ max. | 150 °C |

## Features

- Trench MOS Schottky Technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Solder Dip 260 °C, 40 seconds

## Typical Applications

For use in high frequency inverters, switching power supplies, freewheeling diodes, Oring diode, dc-to-dc converters and reverse battery protection.

## Mechanical Data

**Case:** TO-247AD (TO-3P)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs Maximum

## Maximum Ratings

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

| Parameter | | Symbol | V50100P | Unit |
|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 100 | V |
| RMS reverse voltage for sine wave | | $V_{RMS}$ | 70 | V |
| DC blocking voltage | | $V_R$ | 100 | V |
| Maximum average forward rectified current (see Fig. 1) | per device<br>per leg | $I_{F(AV)}$ | 50<br>25 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | per leg | $I_{FSM}$ | 250 | A |
| Peak repetitive reverse current per leg at $t_p$ = 2 µs, 1 kHz | | $I_{RRM}$ | 1.0 | A |
| Operating junction and storage temperature range | | $T_J$, $T_{STG}$ | - 20 to + 150 | °C |

## Electrical Characteristics

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

| Parameter | Test condition | | Symbol | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Breakdown voltage | at $I_R$ = 1.0 mA | $T_J$ = 25 °C | $V_{(BR)}$ | 100 (minimum) | - | V |
| Instantaneous forward voltage (1) per leg | at $I_F$ = 5 A | $T_J$ = 25 °C | $V_F$ | 0.463 | - | V |
| | $I_F$ = 10 A | | | 0.535 | - | |
| | $I_F$ = 20 A | | | 0.664 | - | |
| | $I_F$ = 25 A | | | 0.700 | 0.78 | |
| | $I_F$ = 5 A | $T_J$ = 125 °C | | 0.375 | - | |
| | $I_F$ = 10 A | | | 0.445 | - | |
| | $I_F$ = 20 A | | | 0.605 | - | |
| | $I_F$ = 25 A | | | 0.635 | 0.70 | |
| Reverse current at rated $V_{RM}$ (1) per leg | at $V_R$ = 70 V | $T_J$ = 25 °C | $I_R$ | 13.7 | 500 | µA |
| | | $T_J$ = 125 °C | | 8.4 | 15 | mA |
| | at $V_R$ = 100 V | $T_J$ = 25 °C | | 69.6 | 1000 | µA |
| | | $T_J$ = 125 °C | | 22.5 | 45 | mA |

## Thermal Characteristics

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

| Parameter | Symbol | V50100P | Unit |
|---|---|---|---|
| Typical thermal resistance per leg | $R_{\theta JC}$ | 1.5 | °C/W |

Notes:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

## Ratings and Characteristics Curves

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

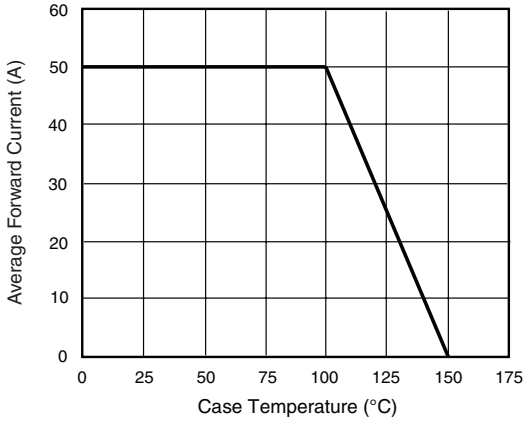



Figure 1. Forward Current Derating Curve

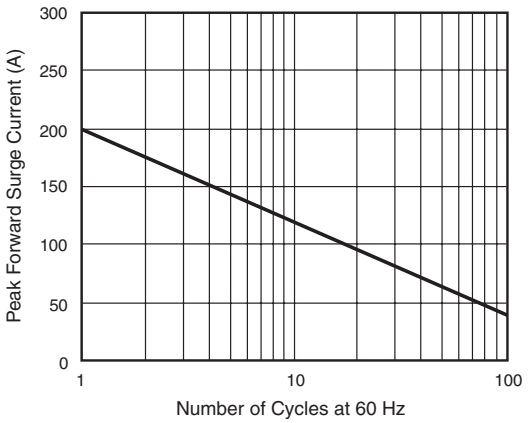



Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

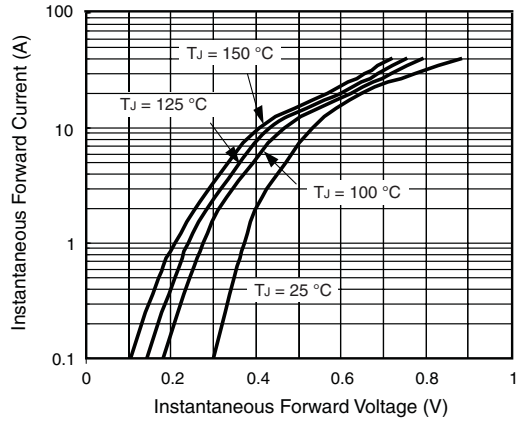



Figure 3. Typical Instantaneous Forward Characteristics Per Leg

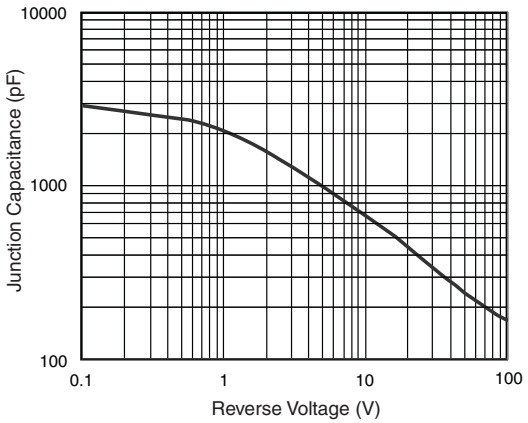



Figure 5. Typical Junction Capacitance

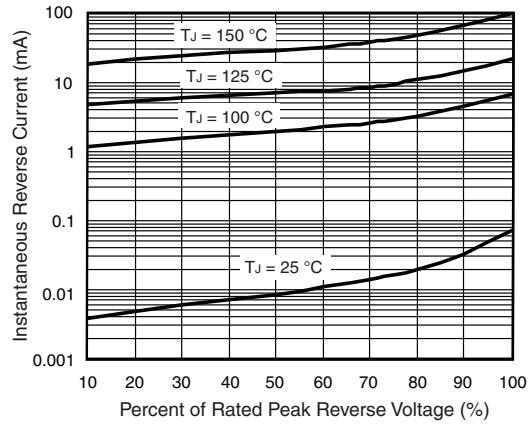



Figure 4. Typical Reverse Characteristics

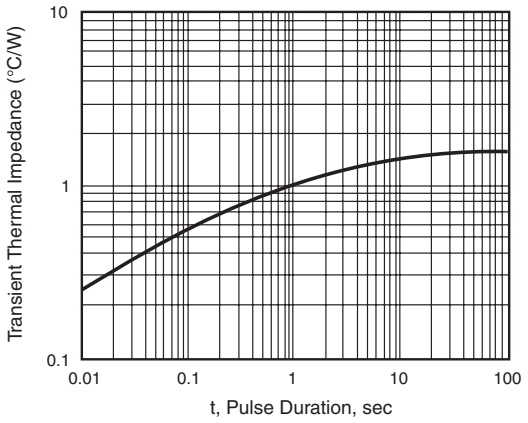
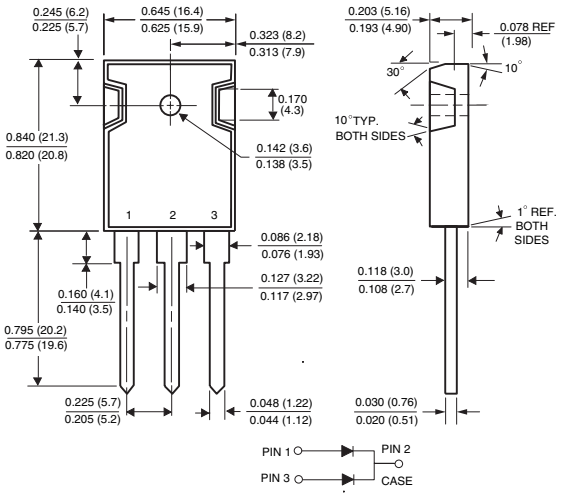



Figure 6. Typical Transient Thermal Impedance

## Package outline dimensions in inches (millimeters)

**TO-247AD (TO-3P)**



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