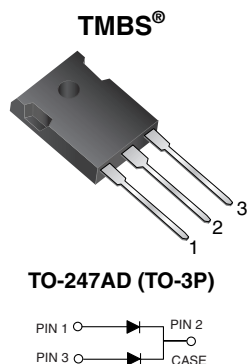


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.375$  V at  $I_F = 5$  A



## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

## TYPICAL APPLICATIONS

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

## PRIMARY CHARACTERISTICS

|                       |          |
|-----------------------|----------|
| $I_{F(AV)}$           | 2 x 25 A |
| $V_{RRM}$             | 100 V    |
| $I_{FSM}$             | 350 A    |
| $V_F$ at $I_F = 25$ A | 0.64 V   |
| $T_J$ max.            | 150 °C   |

## MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

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

## MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER                                                                                    | SYMBOL         | V50100P       | UNIT |
|----------------------------------------------------------------------------------------------|----------------|---------------|------|
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$      | 100           | V    |
| Maximum average forward rectified current (Fig. 1) per device per diode                      | $I_{F(AV)}$    | 50<br>25      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 350           | A    |
| Peak repetitive reverse current per diode at $t_p = 2$ $\mu$ s, 1 kHz                        | $I_{RRM}$      | 1.0           | A    |
| Operating junction and storage temperature range                                             | $T_J, T_{STG}$ | - 40 to + 150 | °C   |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |                                     |          |       |      |               |
|------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------|----------|-------|------|---------------|
| PARAMETER                                                                                      | TEST CONDITIONS       |                                     | SYMBOL   | TYP.  | MAX. | UNIT          |
| Breakdown voltage                                                                              | $I_R = 1.0\text{ mA}$ | $T_J = 25\text{ }^{\circ}\text{C}$  | $V_{BR}$ | 100   | -    | V             |
| Instantaneous forward voltage per diode <sup>(1)</sup>                                         | $I_F = 5\text{ A}$    | $T_J = 25\text{ }^{\circ}\text{C}$  | $V_F$    | 0.463 | -    | V             |
|                                                                                                | $I_F = 10\text{ A}$   |                                     |          | 0.535 | -    |               |
|                                                                                                | $I_F = 20\text{ A}$   |                                     |          | 0.664 | -    |               |
|                                                                                                | $I_F = 25\text{ A}$   |                                     |          | 0.700 | 0.78 |               |
|                                                                                                | $I_F = 5\text{ A}$    | $T_J = 125\text{ }^{\circ}\text{C}$ | $V_F$    | 0.375 | -    | V             |
|                                                                                                | $I_F = 10\text{ A}$   |                                     |          | 0.445 | -    |               |
|                                                                                                | $I_F = 20\text{ A}$   |                                     |          | 0.605 | -    |               |
|                                                                                                | $I_F = 25\text{ A}$   |                                     |          | 0.635 | 0.70 |               |
| Reverse current per diode <sup>(2)</sup>                                                       | $V_R = 70\text{ V}$   | $T_J = 25\text{ }^{\circ}\text{C}$  | $I_R$    | 13.7  | 500  | $\mu\text{A}$ |
|                                                                                                |                       | $T_J = 125\text{ }^{\circ}\text{C}$ |          | 8.4   | 15   | mA            |
|                                                                                                | $V_R = 100\text{ V}$  | $T_J = 25\text{ }^{\circ}\text{C}$  |          | 69.6  | 1000 | $\mu\text{A}$ |
|                                                                                                |                       | $T_J = 125\text{ }^{\circ}\text{C}$ |          | 22.5  | 45   | mA            |

**Notes:**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |         |                      |
|---------------------------------------------------------------------------------------------|-----------------|---------|----------------------|
| PARAMETER                                                                                   | SYMBOL          | V50100P | UNIT                 |
| Typical thermal resistance per diode                                                        | $R_{\theta JC}$ | 1.5     | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> |                 |                        |               |               |
|-----------------------------|-----------------|------------------------|---------------|---------------|
| PREFERRED P/N               | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V50100P-E3/45               | 6.056           | 45                     | 30/tube       | Tube          |

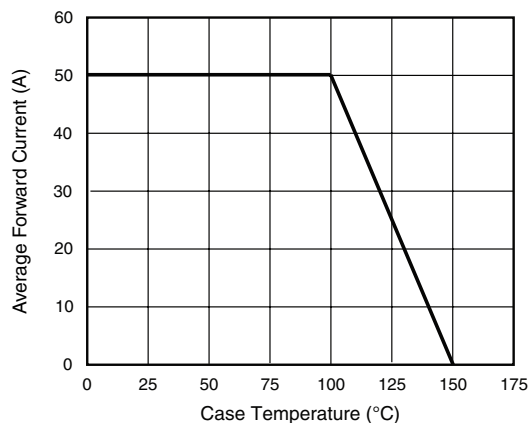
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Figure 1. Forward Current Derating Curve

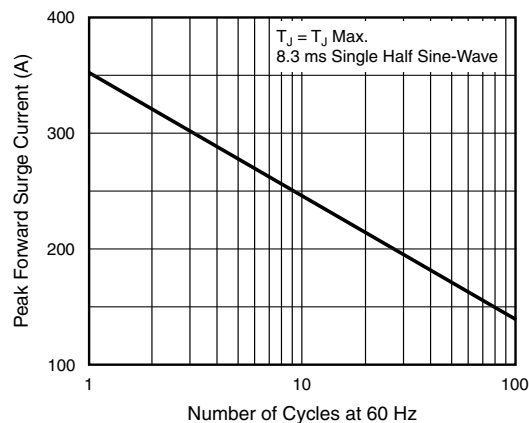


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

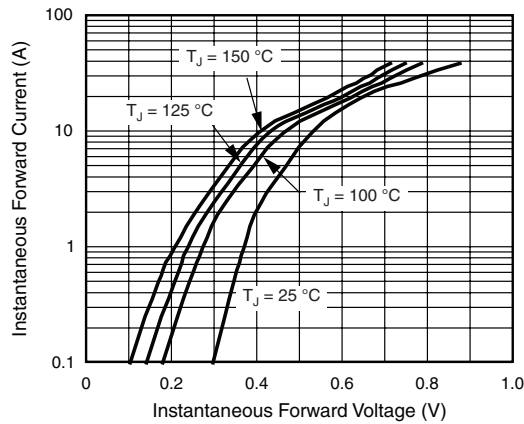


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

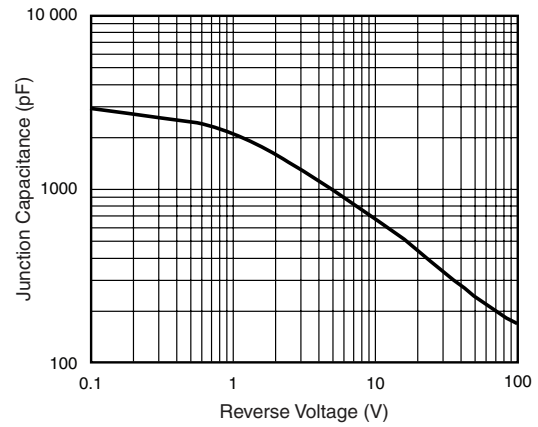


Figure 5. Typical Junction Capacitance Per Diode

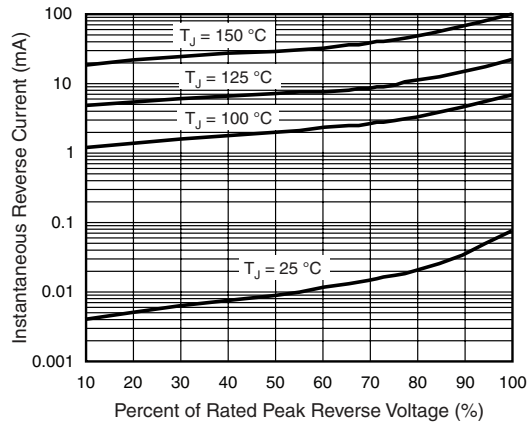


Figure 4. Typical Reverse Characteristics Per Diode

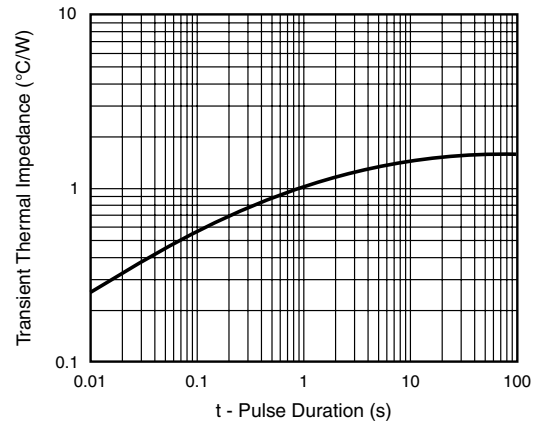
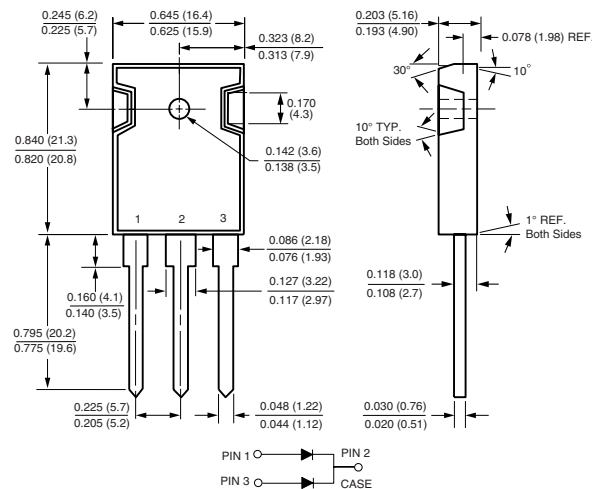


Figure 6. Typical Transient Thermal Impedance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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





### Disclaimer

All product specifications and data are subject to change without notice.

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