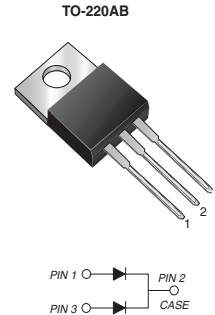


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

**Ultra Low  $V_F = 0.375\text{ V}$  at  $I_F = 5\text{ A}$**

## Major Ratings and Characteristics

|                              |          |
|------------------------------|----------|
| $I_{F(AV)}$                  | 2 x 20 A |
| $V_{RRM}$                    | 100 V    |
| $I_{FSM}$                    | 250 A    |
| $V_F$ at $I_F = 20\text{ A}$ | 0.61 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



## Mechanical Data

**Case:** TO-220AB

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

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

## Typical Applications

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

## Maximum Ratings

$T_A = 25\text{ °C}$  unless otherwise specified

| Parameter  | Symbol         | VTS40100CT    | Unit |
|--|----------------|---------------|------|
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 100           | V    |
| RMS reverse voltage  | $V_{RMS}$      | 70            | V    |
| DC blocking voltage  | $V_R$          | 100           | V    |
| Maximum average forward rectified current (see Fig. 1)                             | $I_{F(AV)}$    | 40<br>20      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 250           | A    |
| Peak repetitive reverse current per leg at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz    | $I_{RRM}$      | 1.0           | A    |
| Voltage rate of change (rated $V_R$ )  | dv/dt          | 10000         | V    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 20 to + 150 | °C   |

### Electrical Characteristics

$T_A = 25\text{ }^\circ\text{C}$  unless otherwise specified

| Parameter  | Test condition  |                                   | Symbol     | Typ.          | Max. | Unit          |
|--|---|-----------------------------------|------------|---------------|------|---------------|
| Breakdown voltage  | at $I_R = 1.0\text{ mA}$  | $T_J = 25\text{ }^\circ\text{C}$  | $V_{(BR)}$ | 100 (minimum) | -    | V             |
| Instantaneous forward voltage <sup>(1)</sup> per leg     | at $I_F = 5\text{ A}$<br>$I_F = 10\text{ A}$<br>$I_F = 20\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$  | $V_F$      | 0.463         | -    | V             |
|  |   |                                   |            | 0.535         | -    |               |
|  |   |                                   |            | 0.664         | 0.73 |               |
|  | $T_J = 125\text{ }^\circ\text{C}$                                   | 0.375                             |            | -             |      |               |
|  |   | 0.445                             |            | -             |      |               |
|  |   | 0.605                             |            | 0.67          |      |               |
| Reverse current at rated $V_{RM}$ <sup>(1)</sup> per leg | at $V_R = 70\text{ V}$  | $T_J = 25\text{ }^\circ\text{C}$  | $I_R$      | 13.7          | 500  | $\mu\text{A}$ |
|  |   | $T_J = 125\text{ }^\circ\text{C}$ |            | 8.4           | 15   | mA            |
|  | at $V_R = 100\text{ V}$   | $T_J = 25\text{ }^\circ\text{C}$  |            | 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

### Thermal Characteristics

$T_A = 25\text{ }^\circ\text{C}$  unless otherwise specified

| Parameter                          | Symbol          | VTS40100CT | Unit               |
|------------------------------------|-----------------|------------|--------------------|
| Typical thermal resistance per leg | $R_{\theta JC}$ | 2.0        | $^\circ\text{C/W}$ |

### Ratings and Characteristics Curves

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

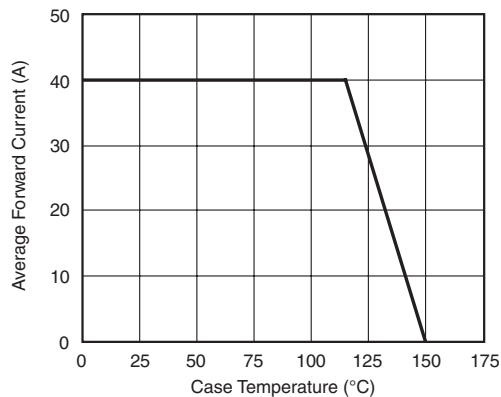


Figure 1. Forward Current Derating Curve

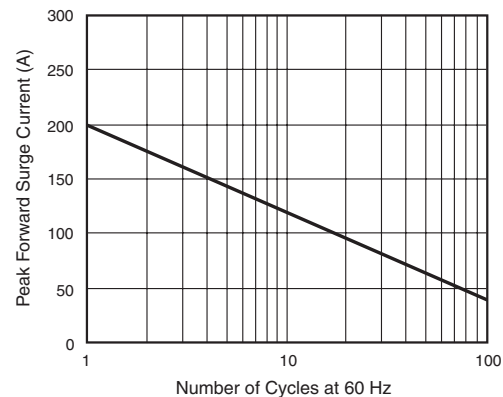


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

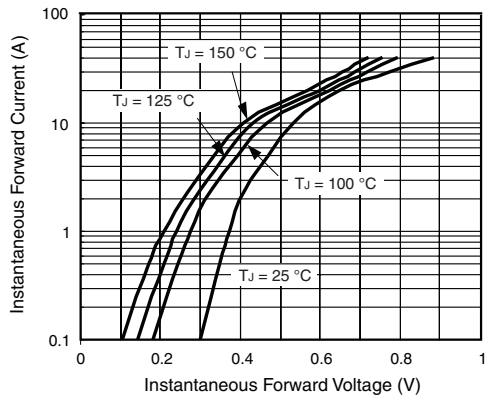


Figure 3. Typical Instantaneous Forward Characteristics Per Leg

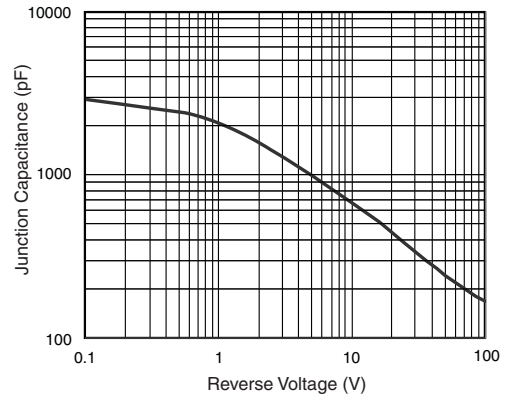


Figure 5. Typical Junction Capacitance

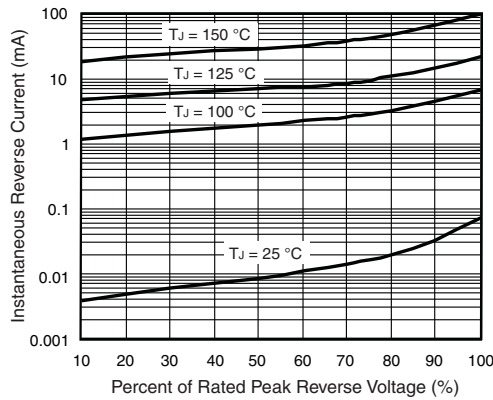


Figure 4. Typical Reverse Characteristics

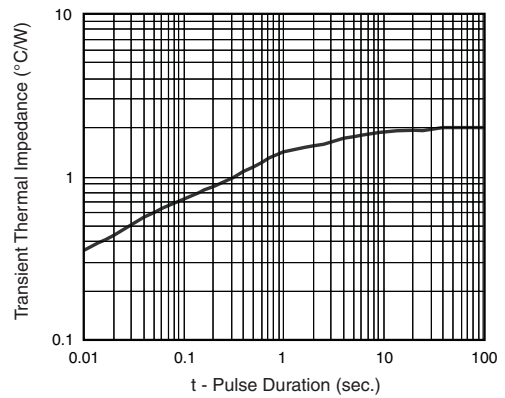
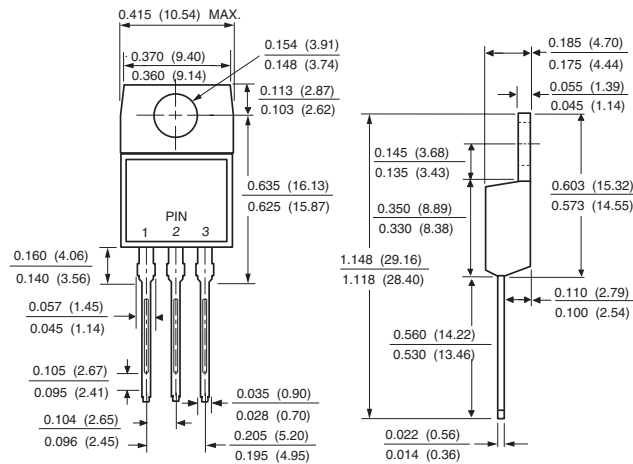


Figure 6. Typical Transient Thermal Impedance

### Package outline dimensions in inches (millimeters)

#### TO-220AB





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