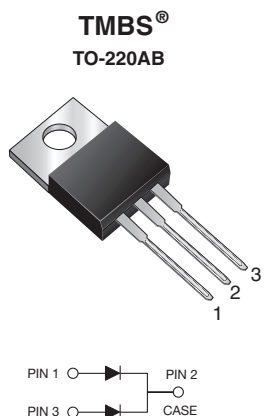


# Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.49\text{ V}$  at  $I_F = 5\text{ A}$



## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** TO-220AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

**Polarity:** as marked

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

| PRIMARY CHARACTERISTICS               |                |
|---------------------------------------|----------------|
| $I_{F(AV)}$                           | 2 x 15 A       |
| $V_{RRM}$                             | 120 V          |
| $I_{FSM}$                             | 160 A          |
| $V_F$ at $I_F = 15\text{ A}$ (125 °C) | 0.66 V         |
| $T_J$ max.                            | 150 °C         |
| Package                               | TO-220AB       |
| Diode variation                       | Common cathode |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                               |                      |             |      |
|----------------------------------------------------------------------------------------------|----------------------|-------------|------|
| PARAMETER                                                                                    | SYMBOL               | V30120CI    | UNIT |
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$            | 120         | V    |
| Maximum average forward rectified current (fig. 1)                                           | $I_{F(AV)}$          | 30          | A    |
|                                                                                              |                      | 15          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$            | 160         | A    |
| Operating junction temperature range                                                         | $T_J$ <sup>(1)</sup> | -40 to +150 | °C   |
| Storage temperature range                                                                    | $T_{STG}$            | -55 to +150 |      |

### Note

<sup>(1)</sup> The heat generated must be less than the thermal conductivity from junction to ambient:  $dP_D/dT_J < 1/R_{\theta JA}$



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.55 | -    | V    |
|                                                                            | I <sub>F</sub> = 7.5 A |                         |                               | 0.62 | -    |      |
|                                                                            | I <sub>F</sub> = 15 A  |                         |                               | 0.82 | 0.90 |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.49 | -    |      |
|                                                                            | I <sub>F</sub> = 7.5 A |                         |                               | 0.55 | -    |      |
|                                                                            | I <sub>F</sub> = 15 A  |                         |                               | 0.66 | 0.74 |      |
| Reverse current per diode                                                  | V <sub>R</sub> = 90 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 0.01 | -    | mA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 5.0  | -    |      |
|                                                                            | V <sub>R</sub> = 120 V | T <sub>A</sub> = 25 °C  |                               | -    | 0.5  |      |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 11.0 | 25   |      |
| Junction capacitance                                                       | 4 V, 1MHz              |                         | C <sub>J</sub>                | 1300 | -    | pF   |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 5\text{ ms}$ 

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |          |                      |
|--------------------------------------------------------------------------------------|-----------------|----------|----------------------|
| PARAMETER                                                                            | SYMBOL          | V30120CI | UNIT                 |
| Typical thermal resistance per device                                                | $R_{\theta JC}$ | 1.8      | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) |                 |              |               |               |
|--------------------------------|-----------------|--------------|---------------|---------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V30120CI-M3/P                  | 1.88            | P            | 50/tube       | Tube          |

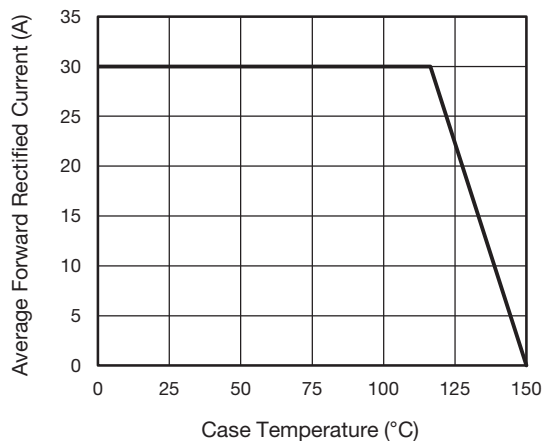
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

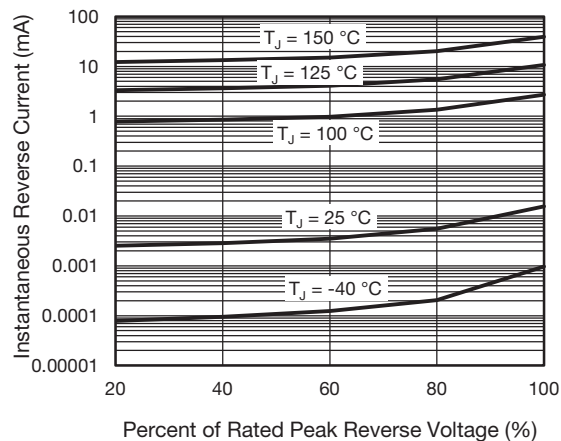


Fig. 4 - Typical Reverse Characteristics Per Diode

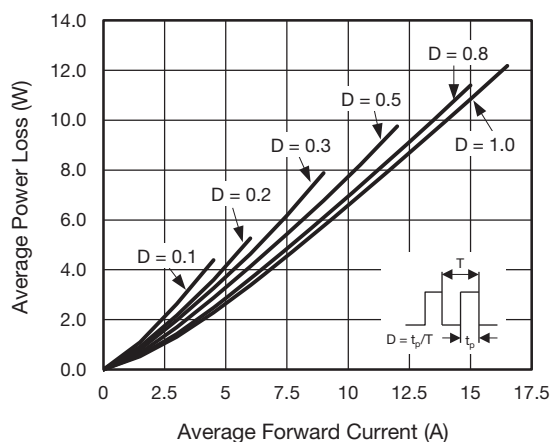


Fig. 2 - Forward Power Loss Characteristics Per Diode

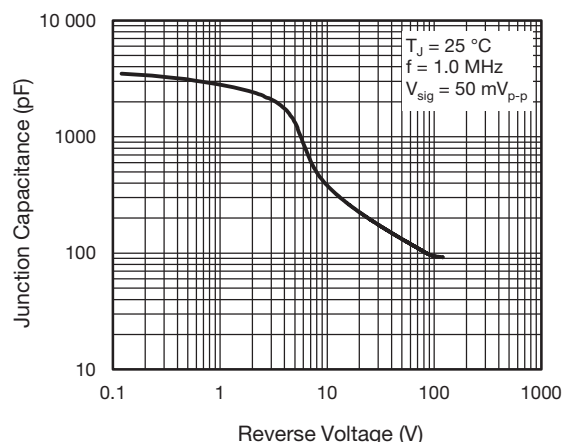


Fig. 5 - Typical Junction Capacitance

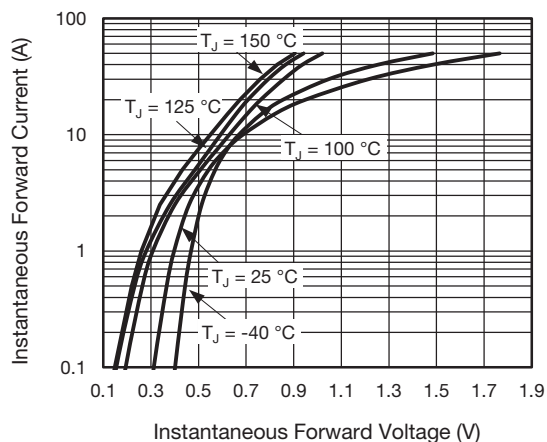


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

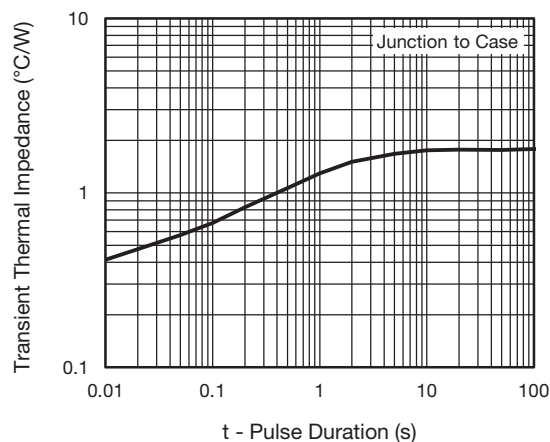
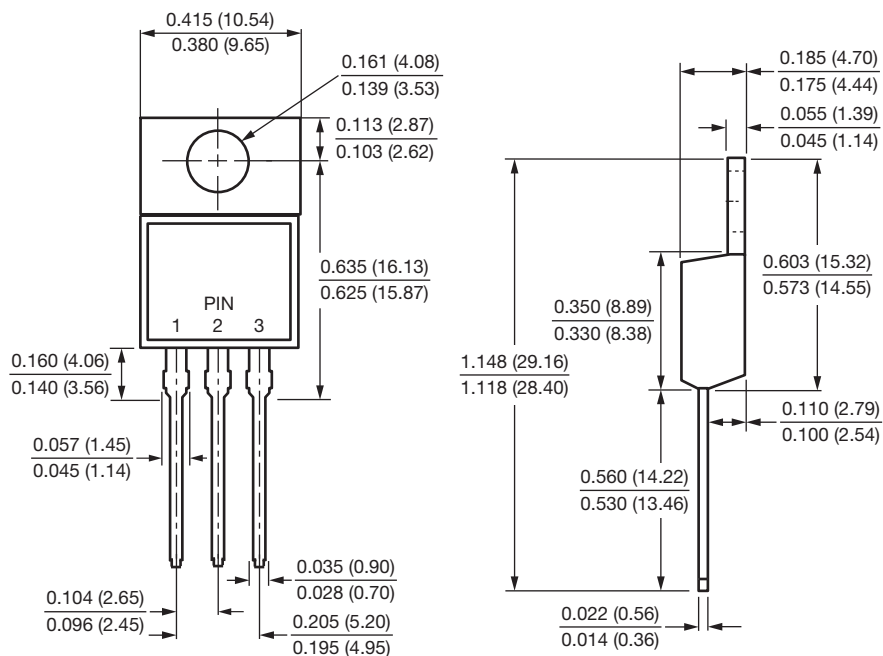


Fig. 6 - Typical Transient Thermal Impedance Per Device

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-220AB**




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