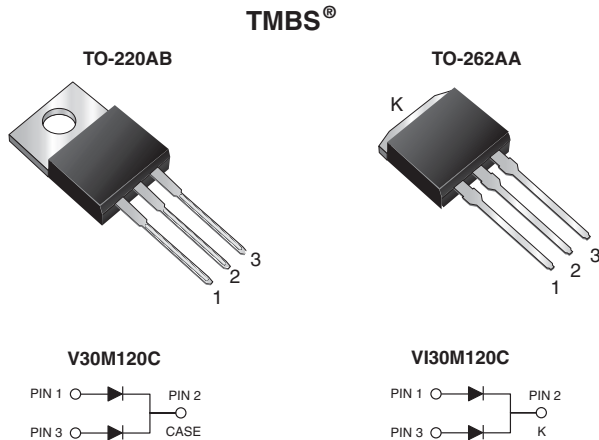


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.52 \text{ V}$  at  $I_F = 5 \text{ A}$ 


## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder dip 275 °C max. 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 DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

## MECHANICAL DATA

**Case:** TO-220AB and TO-262AA

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
$I_{FSM}$	150 A
$V_F$ at $I_F = 15 \text{ A}$	0.68 V
$T_J \text{ max.}$	175 °C
Package	TO-220AB, TO-262AA
Diode variations	Common cathode

## MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	V30M120C	VI30M120C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	120		V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	30	A
		per diode	15	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	150		
Voltage rate of change (rated $V_R$ )	dV/dt	10 000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +175		°C



### 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>	0.60	-	V
	I <sub>F</sub> = 7.5 A			0.67	-	
	I <sub>F</sub> = 15 A			0.87	0.98	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.52	-	
	I <sub>F</sub> = 7.5 A			0.57	-	
	I <sub>F</sub> = 15 A			0.68	0.76	
Reverse current per diode	V <sub>R</sub> = 90 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	3.5	-	μA
		T <sub>A</sub> = 125 °C		2	-	mA
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 25 °C		-	800	μA
		T <sub>A</sub> = 125 °C		5	27	mA

#### Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 5 ms

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

PARAMETER	SYMBOL	V30M120C	VI30M120C	UNIT	
Typical thermal resistance <sup>(1)</sup>	per diode	R <sub>θJC</sub>	2.2		°C/W
			1.3		
	per device	R <sub>θJA</sub> <sup>(2)</sup>	45	55	

#### Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient  $dP_D/dT_J < 1/R_{\theta JA}$
- (2) Free air, without heatsink

### ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30M120C-M3/4W	1.89	4W	50/tube	Tube
TO-262AA	VI30M120C-M3/4W	1.45	4W	50/tube	Tube



RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

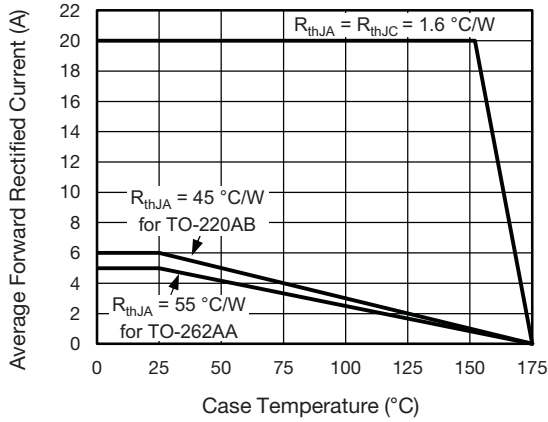


Fig. 1 - Maximum Forward Current Derating Curve

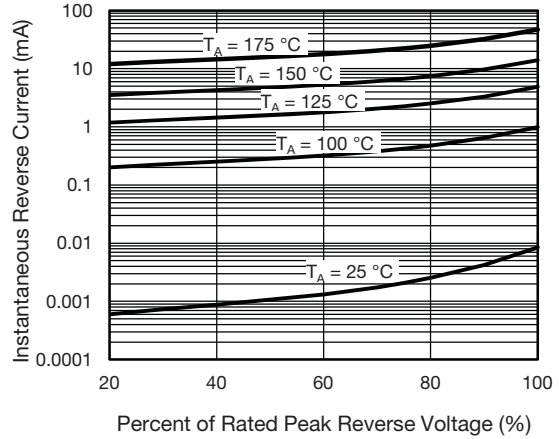


Fig. 4 - Typical Reverse Characteristics Per Diode

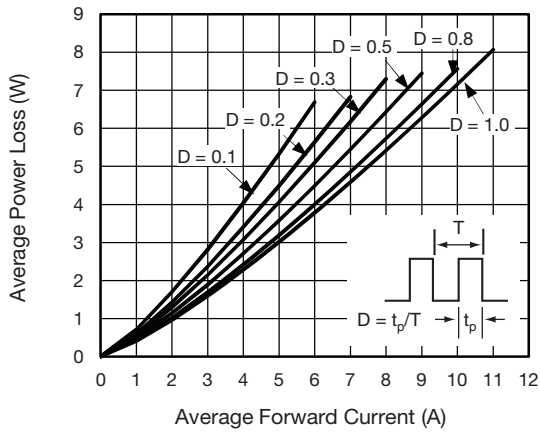


Fig. 2 - Forward Power Loss Characteristics Per Diode

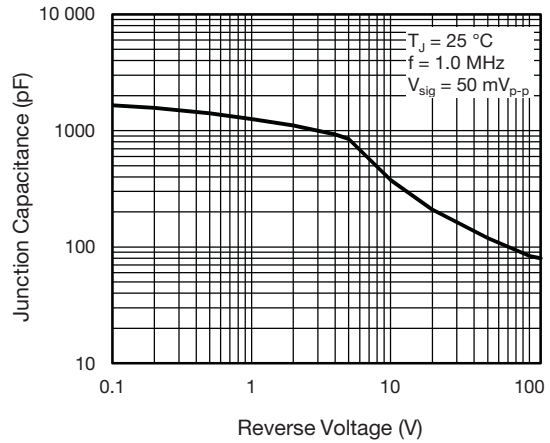


Fig. 5 - Typical Junction Capacitance Per Diode

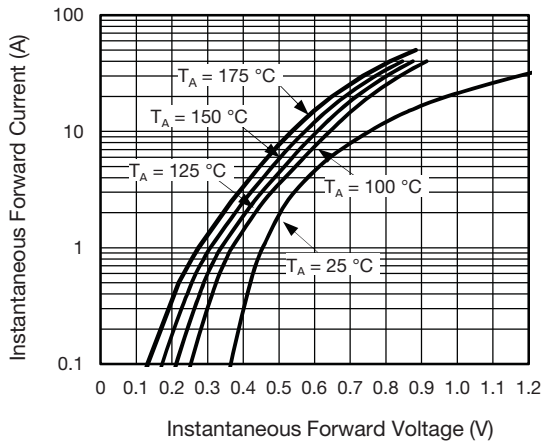


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

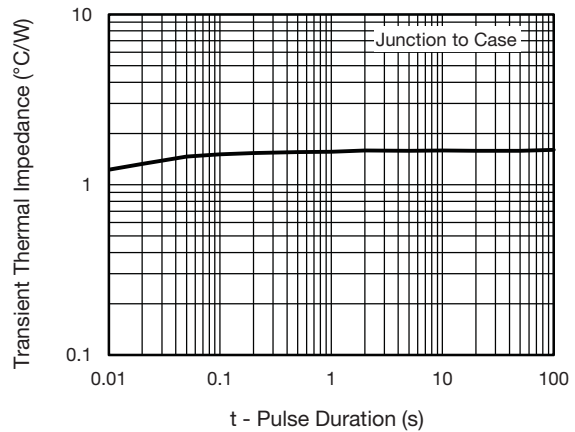
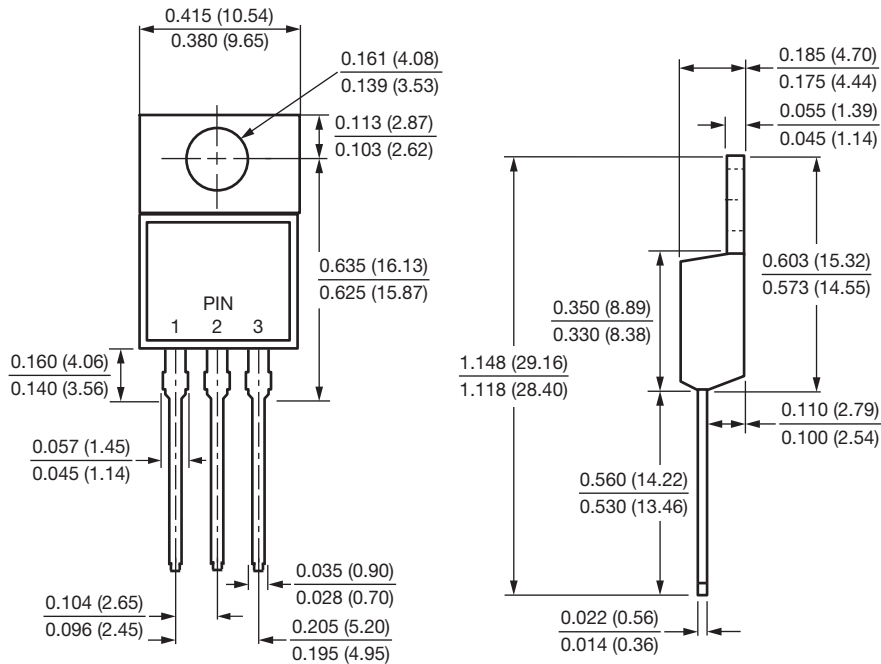


Fig. 6 - Typical Transient Thermal Impedance Per Diode

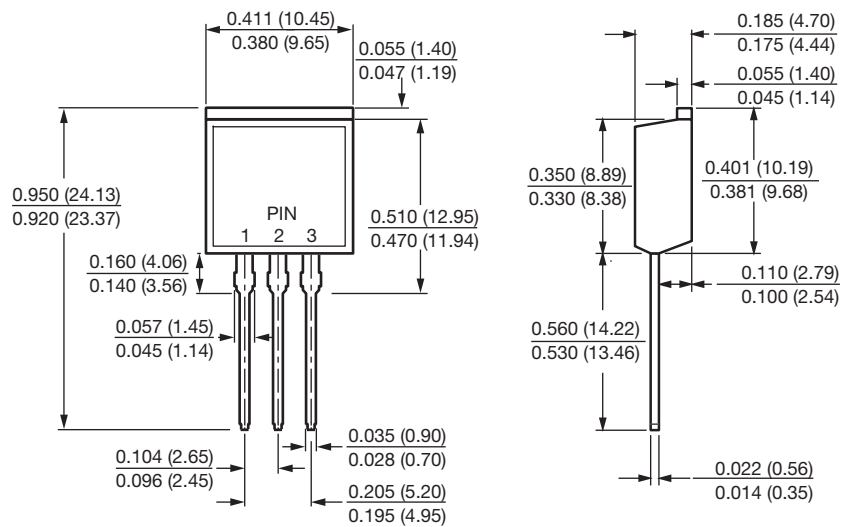


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### TO-220AB



#### TO-262AA





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