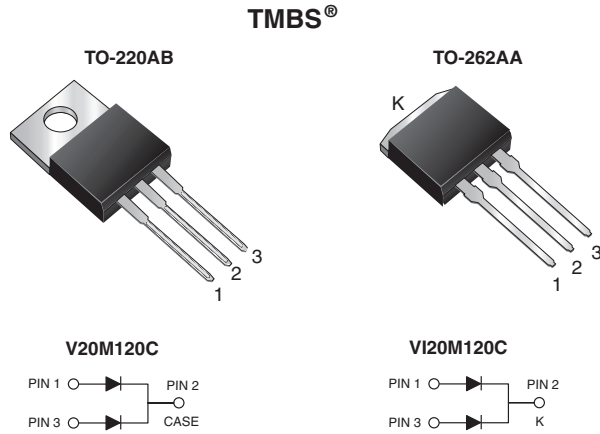


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.55 \text{ V}$  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 10 A
$V_{RRM}$	120 V
$I_{FSM}$	120 A
$V_F$ at $I_F = 10 \text{ A}$	0.64 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	V20M120C	VI20M120C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	120		V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	20	A
		per diode	10	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	120		
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000		V/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +175		°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.65	-	V
	$I_F = 10\text{ A}$			0.82	0.91	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.55	-	
	$I_F = 10\text{ A}$			0.64	0.72	
Reverse current per diode	$V_R = 90\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	3	-	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		1.5	-	mA
	$V_R = 120\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	700	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		4	25	mA

**Notes**

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER		SYMBOL	V20M120C	VI20M120C	UNIT
Typical thermal resistance <sup>(1)</sup>	per diode	$R_{\theta JC}$	2.8		$^\circ\text{C/W}$
	per device		1.6		
	per device	$R_{\theta JA}^{(2)}$	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

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20M120C-M3/4W	1.88	4W	50/tube	Tube
TO-262AA	VI20M120C-M3/4W	1.45	4W	50/tube	Tube



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

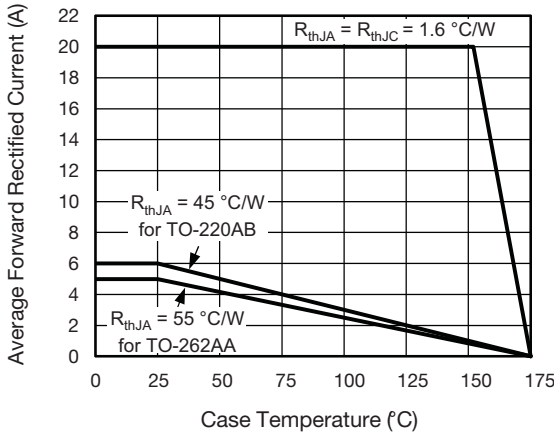


Fig. 1 - Maximum Forward Current Derating Curve

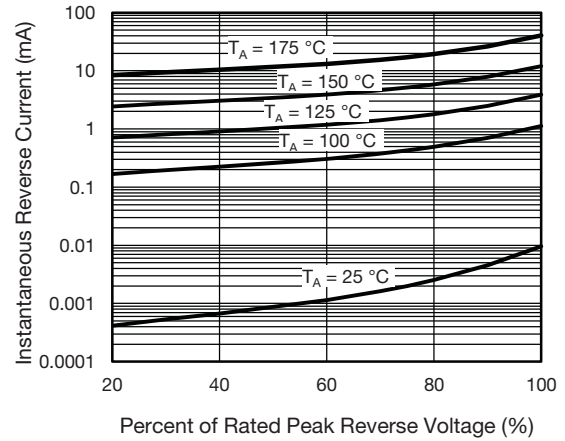


Fig. 4 - Typical Reverse Characteristics Per Diode

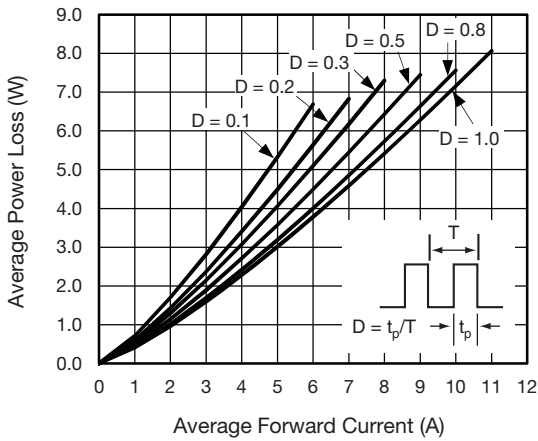


Fig. 2 - Forward Power Loss Characteristics Per Diode

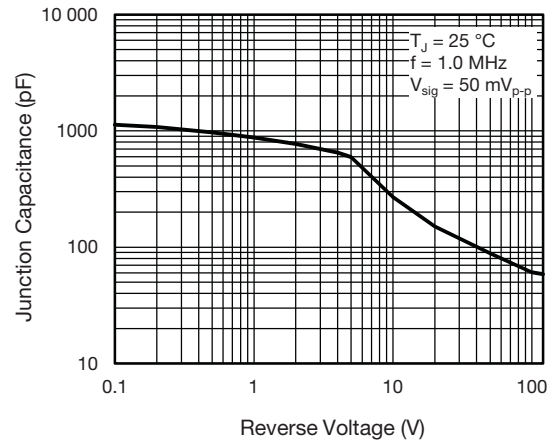


Fig. 5 - Typical Junction Capacitance Per Diode

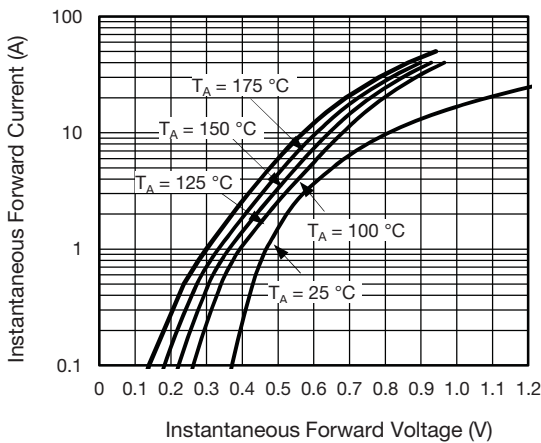


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

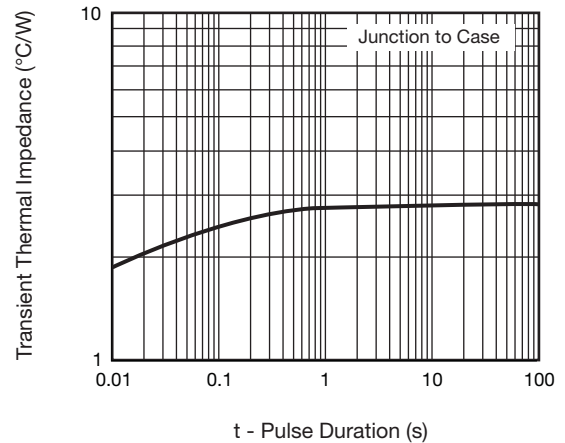
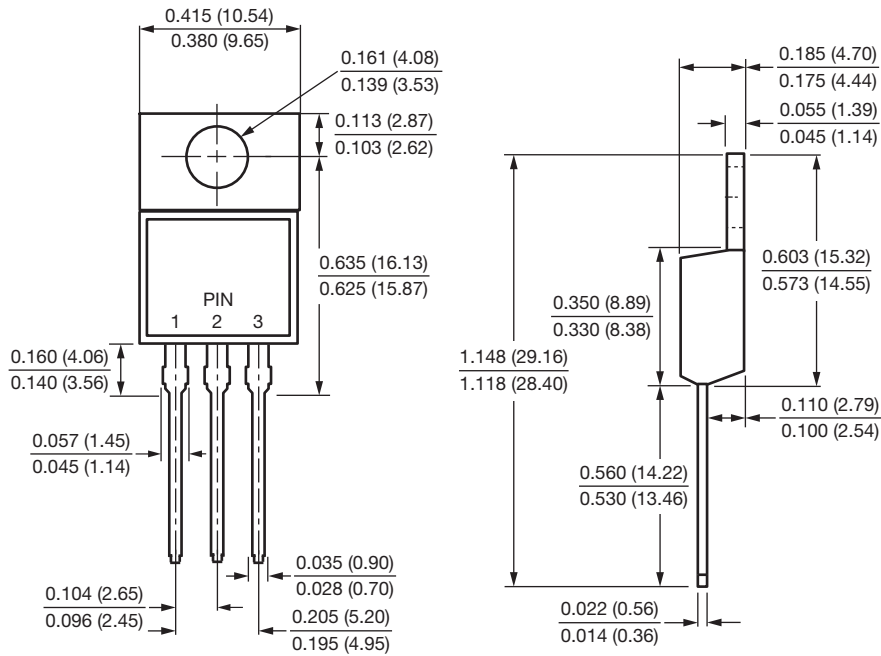


Fig. 6 - Typical Transient Thermal Impedance Per Diode

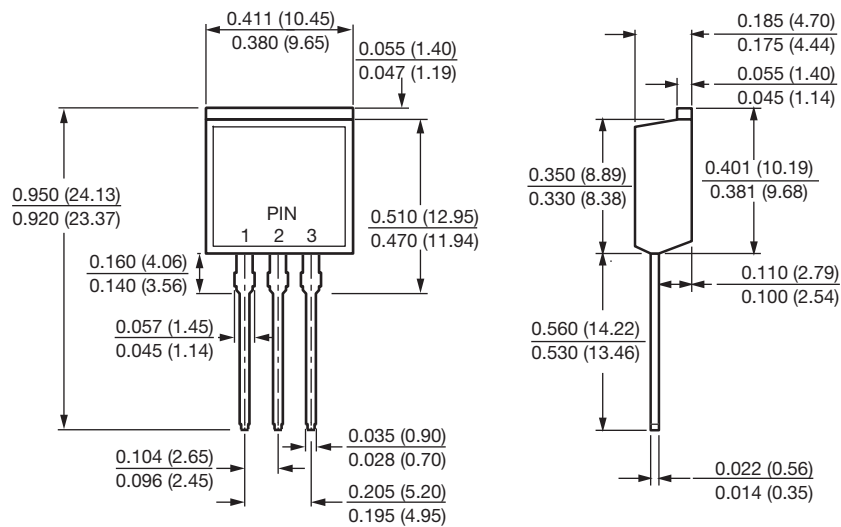


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### TO-220AB



#### TO-262AA





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