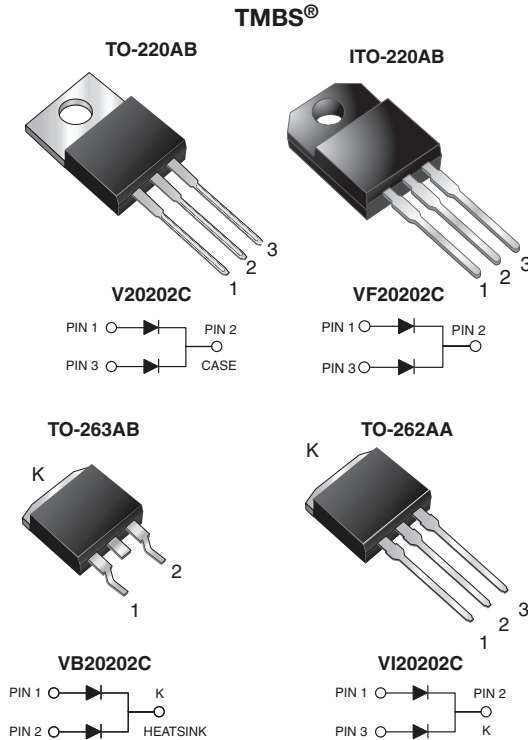


# Dual High Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.59\text{ V}$  at  $I_F = 5\text{ A}$ 


## FEATURES

- Trench MOS Schottky technology Gen 2
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB, ITO-220-AB, and TO-262AA package)
- 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, ITO-220AB, TO-263AB, 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 max.

## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
$V_{RRM}$	200 V
$I_{FSM}$	150 A
$V_F$ at $I_F = 10\text{ A}$ ( $T_A = 125\text{ °C}$ )	0.68 V
$T_J$ max.	175 °C
Package	TO-220AB, ITO-220AB, TO-263AB, TO-262AA
Diode variations	Common cathode

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

PARAMETER	SYMBOL	V20202C	VF20202C	VB20202C	VI20202C	UNIT	
Maximum repetitive peak reverse voltage	$V_{RRM}$	200				V	
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device				20	A
		per diode				10	
Maximum DC reverse voltage	$V_{DC}$	160				V	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	150				A	
Voltage rate of change (rated $V_R$ )	dV/dt	10 000				V/ $\mu$ s	
Isolation voltage (ITO-220AB only) from terminal to heatsink, $t = 1\text{ min}$	$V_{AC}$	1500				V	
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 <sup>(1)</sup>	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	0.75	-	V
	$I_F = 10\text{ A}$			0.81	0.90	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.59	-	
	$I_F = 10\text{ A}$			0.68	0.76	
Reverse current per diode <sup>(2)</sup>	$V_R = 160\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R$	0.4	-	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		0.8	-	mA
	$V_R = 200\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	150	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		1.6	10	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	V20202C	VF20202C	VB20202C	VI20202C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	2.2	4.5	2.2		$^\circ\text{C/W}$
	per device	$R_{\theta JC}$	1.3	3.2	1.3		
	per device	$R_{\theta JA}$ <sup>(1)(2)</sup>	52	60	52		

**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	V20202C-M3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF20202C-M3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB20202C-M3/4W	1.37	4W	50/tube	Tube
TO-263AB	VB20202C-M3/8W	1.37	8W	800/reel	Tape and reel
TO-262AA	VI20202C-M3/4W	1.45	4W	50/tube	Tube



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

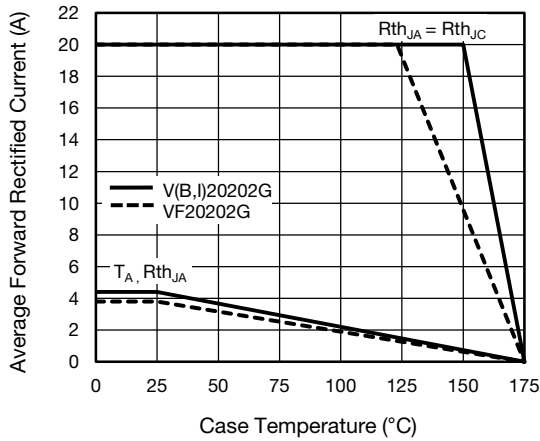


Fig. 1 - Maximum Forward Current Derating Curve (D = Duty Cycle = 0.5)

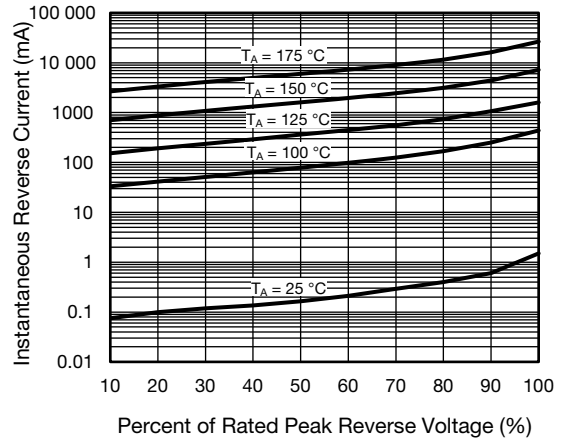


Fig. 4 - Typical Reverse Characteristics Per Diode

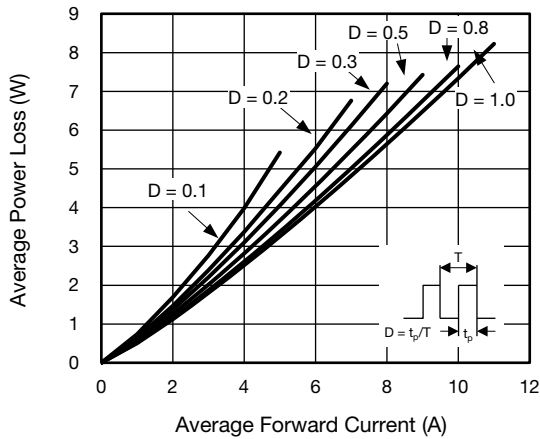


Fig. 2 - Forward Power Loss Characteristics Per Diode

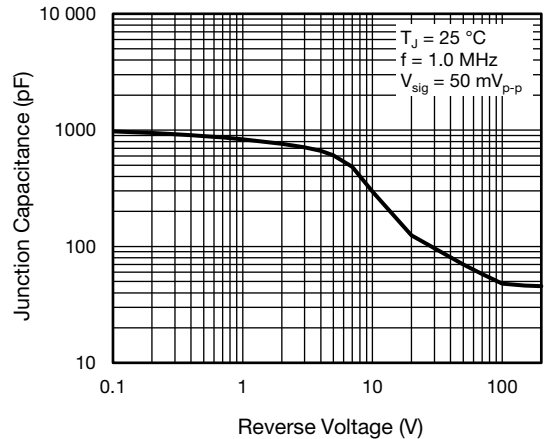


Fig. 5 - Typical Junction Capacitance Per Diode

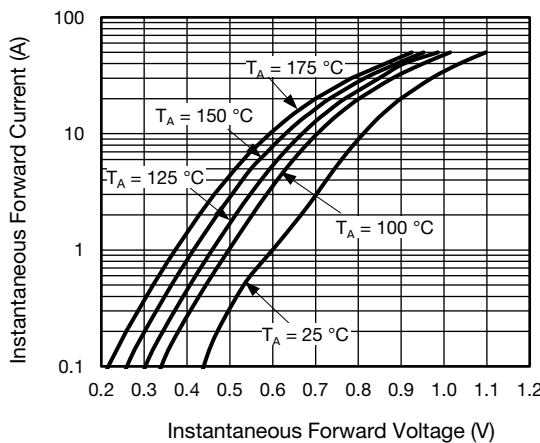


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

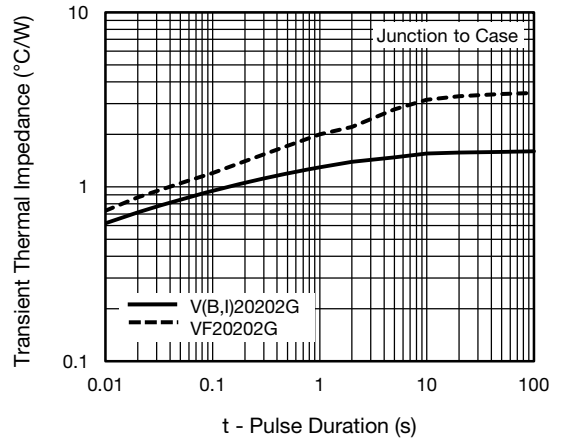
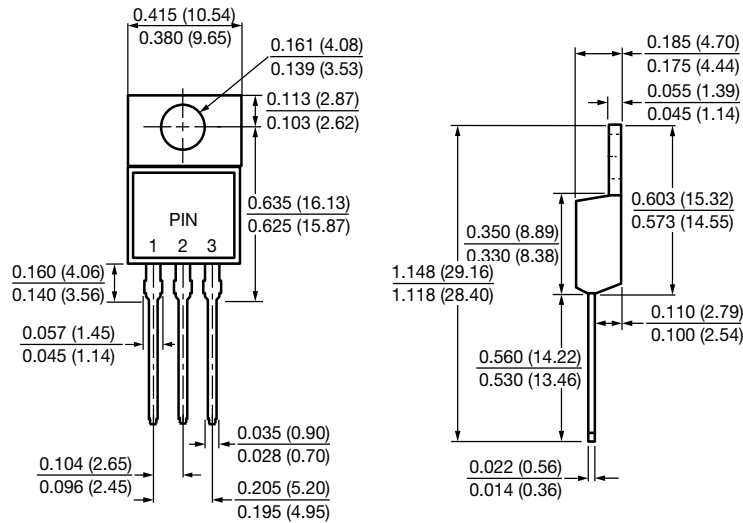


Fig. 6 - Typical Transient Thermal Impedance Per Device

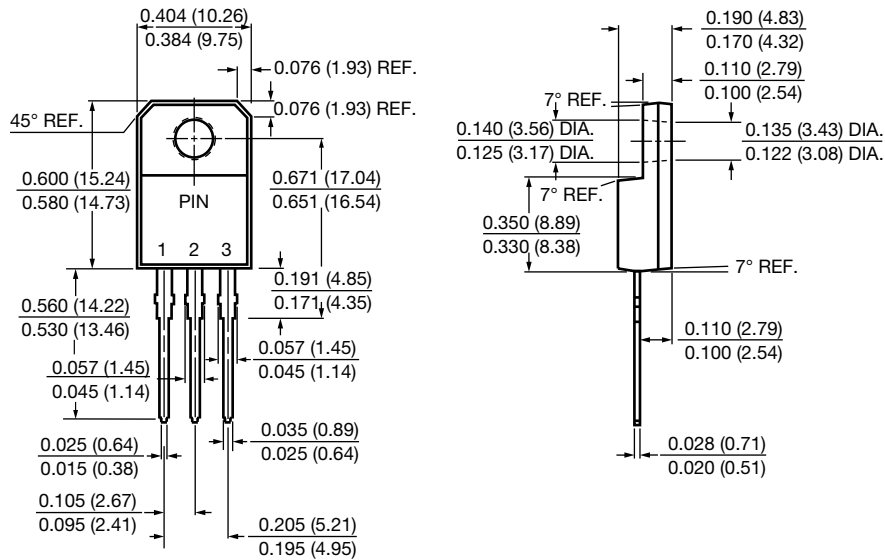


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

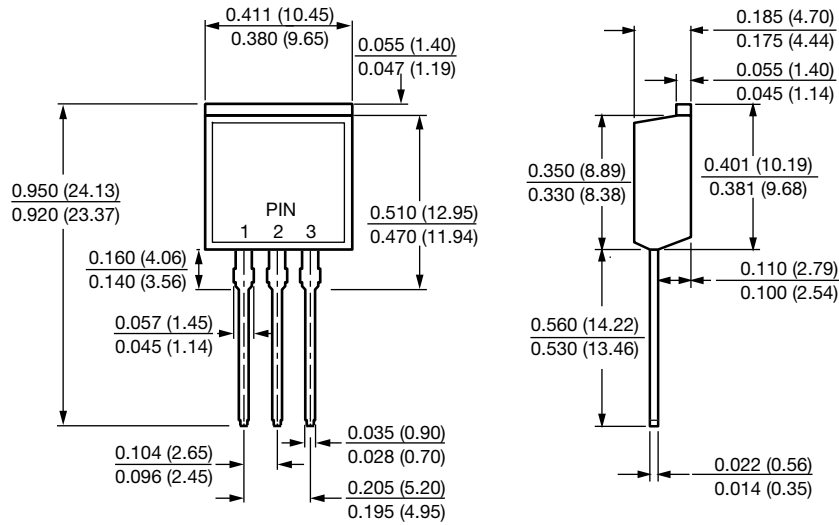
#### TO-220AB



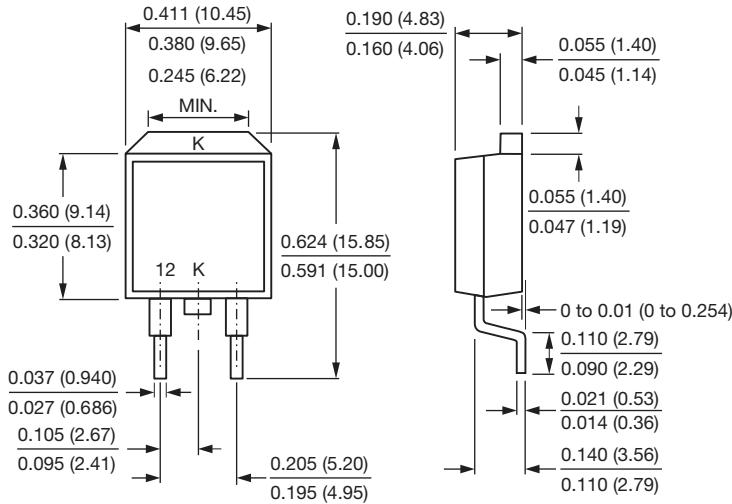
#### ITO-220AB



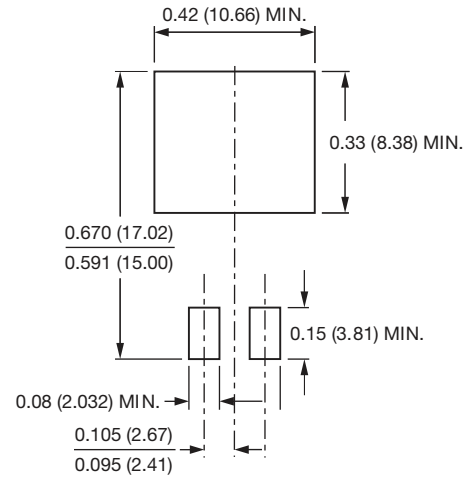
TO-262AA



TO-263AB



Mounting Pad Layout





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