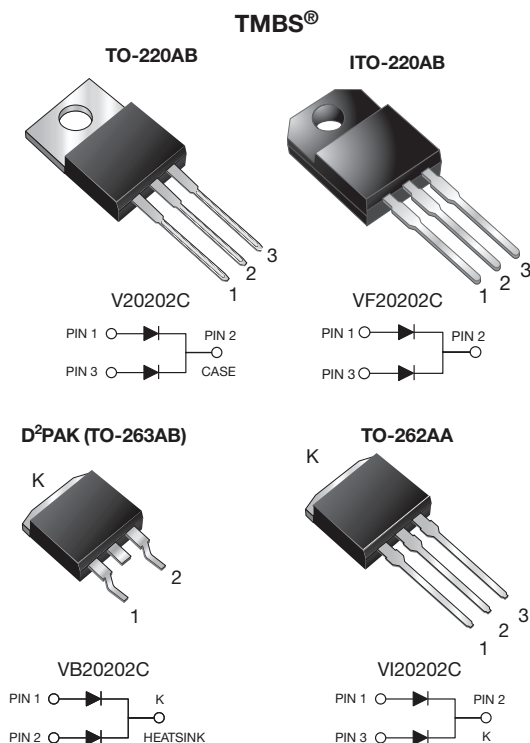


## Dual High Voltage Trench MOS Barrier Schottky Rectifier

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 D²PAK (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, D²PAK (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, D²PAK (TO-263AB), TO-262AA
Circuit configuration	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 <sub>RRM</sub>	200				V
Maximum average forward rectified current (fig. 1)	per device	I <sub>F(AV)</sub>	20			A
	per diode		10			
Maximum DC reverse voltage	V <sub>DC</sub>	160				V
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	150				A
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000				V/μs
Isolation voltage (ITO-220AB only) from terminal to heatsink, t = 1 min	V <sub>AC</sub>	1500				V
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-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 <sup>(1)</sup>	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.75	-	V
	I <sub>F</sub> = 10 A			0.81	0.90	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.59	-	
	I <sub>F</sub> = 10 A			0.68	0.76	
Reverse current per diode <sup>(2)</sup>	V <sub>R</sub> = 160 V	T <sub>A</sub> = 25 °C	I <sub>R</sub>	0.4	-	μA
		T <sub>A</sub> = 125 °C		0.8	-	mA
	V <sub>R</sub> = 200 V	T <sub>A</sub> = 25 °C		-	150	μA
		T <sub>A</sub> = 125 °C		1.6	10	mA

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER		SYMBOL	V20202C	VF20202C	VB20202C	VI20202C	UNIT
Typical thermal resistance	per diode	R <sub>θJC</sub>	2.2	4.5	2.2		°C/W
	per device	R <sub>θJC</sub>	1.3	3.2	1.3		
	per device	R <sub>θJA</sub> <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
D <sup>2</sup> PAK (TO-263AB)	VB20202C-M3/4W	1.37	4W	50/tube	Tube
D <sup>2</sup> PAK (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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

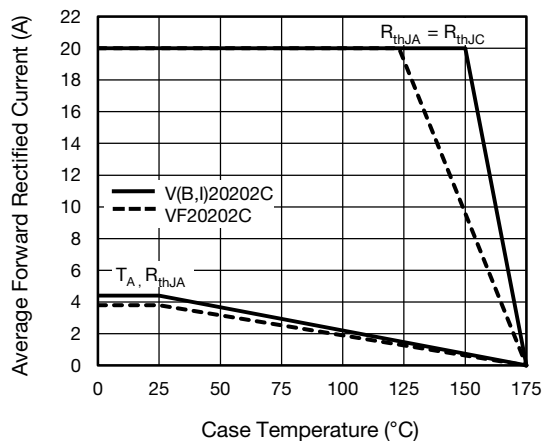


Fig. 1 - Maximum Forward Current Derating Curve ( $D = \text{Duty Cycle} = 0.5$ )

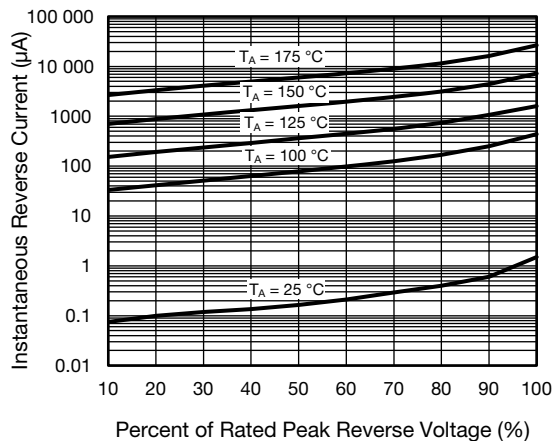


Fig. 4 - Typical Reverse Characteristics Per Diode

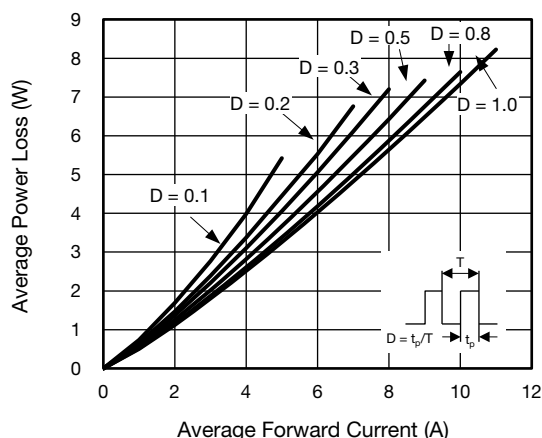


Fig. 2 - Forward Power Loss Characteristics Per Diode

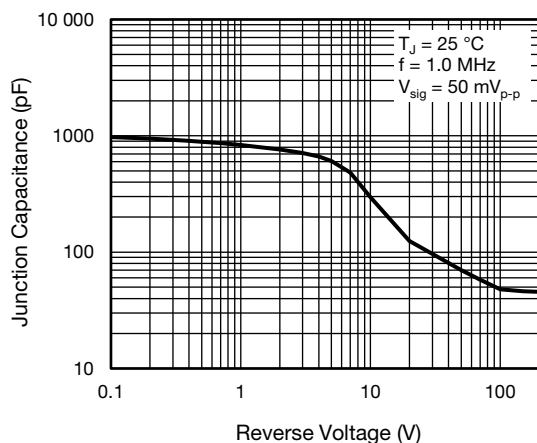


Fig. 5 - Typical Junction Capacitance Per Diode

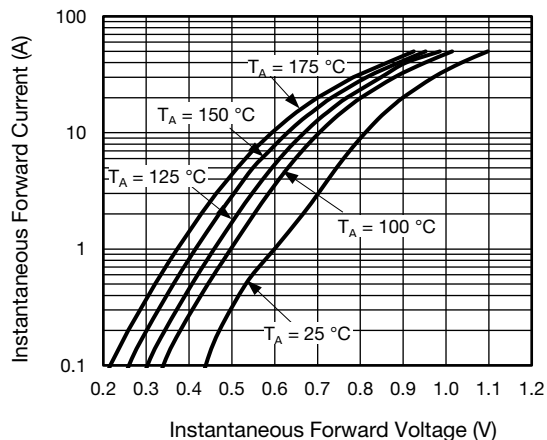


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

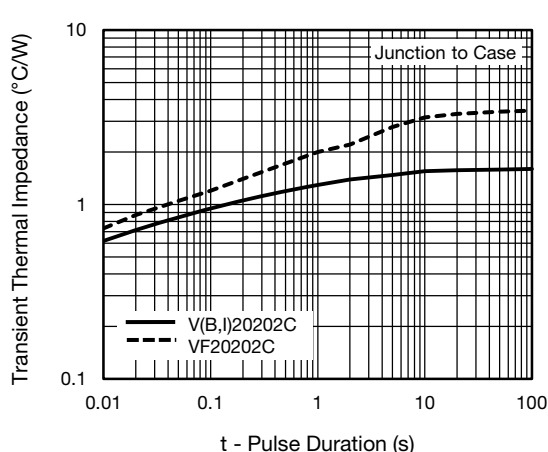
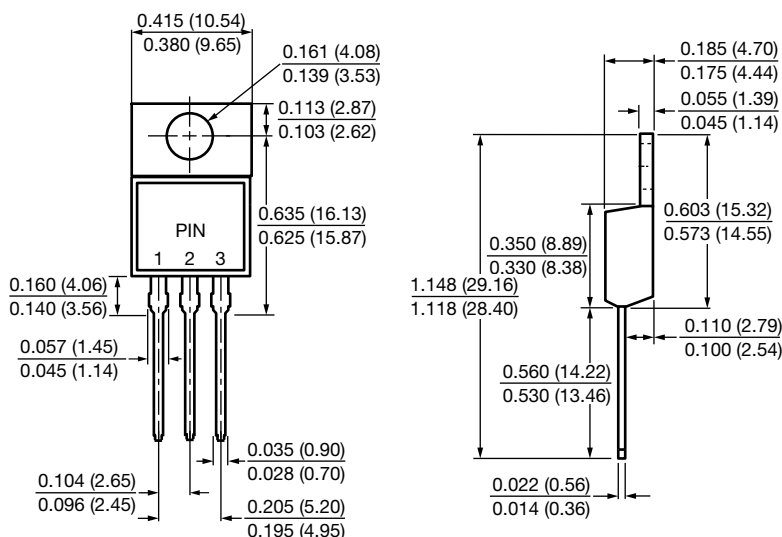


Fig. 6 - Typical Transient Thermal Impedance Per Device

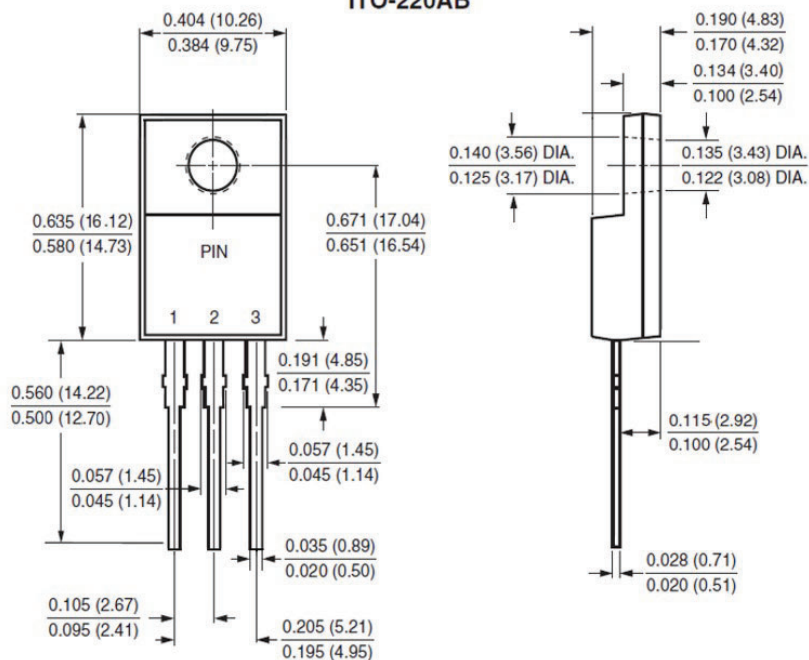


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

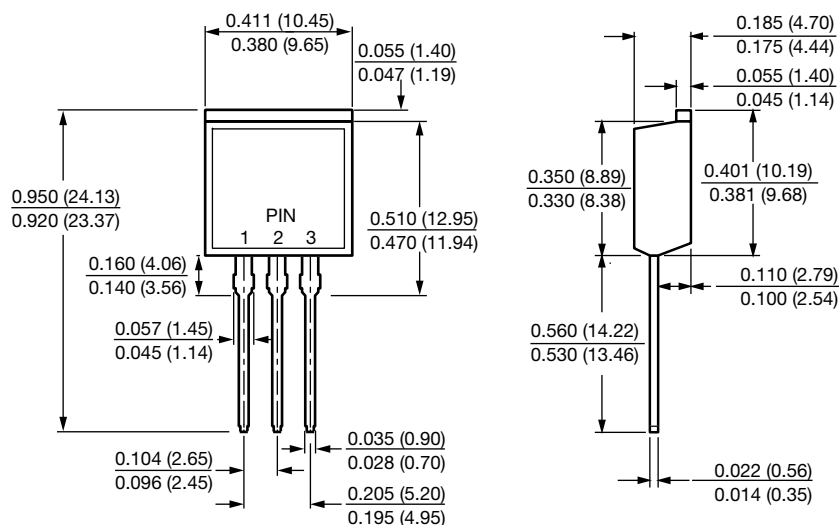


### ITO-220AB

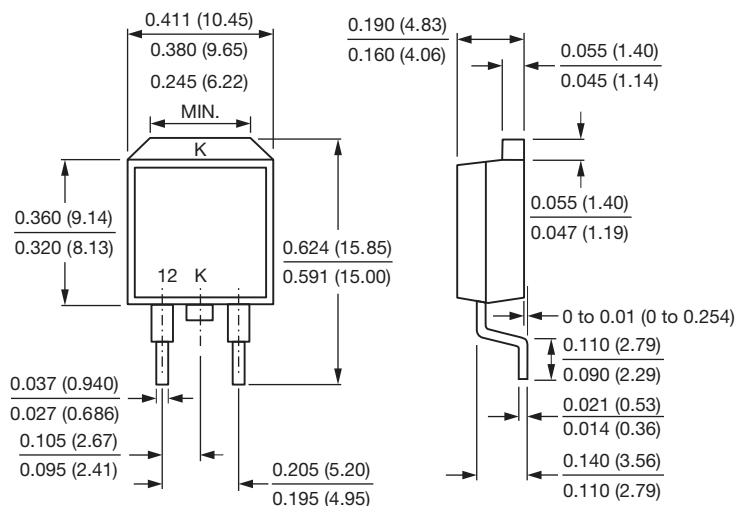




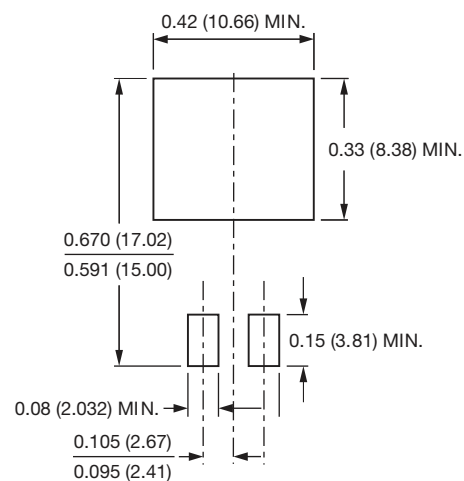
## TO-262AA



## D<sup>2</sup>PAK (TO-263AB)



## Mounting Pad Layout





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