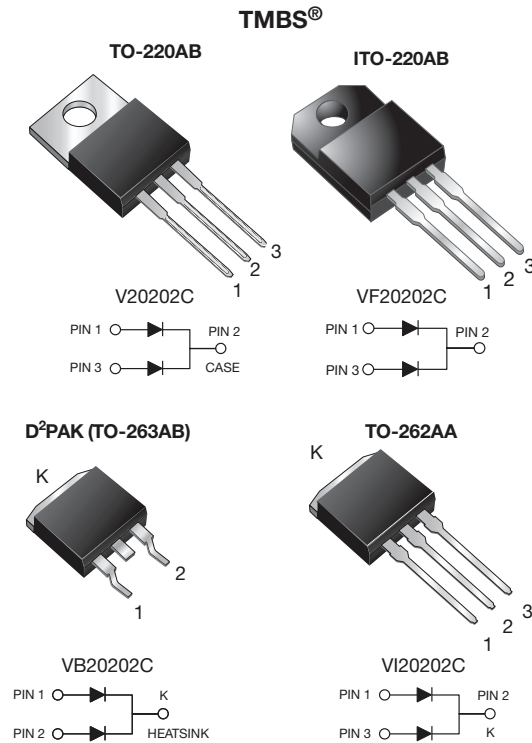




**THE DATASHEET OF
VB20202C-M3/8W**



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


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, D ² PAK (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_{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/ μ 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



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	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 ⁽²⁾	$V_R = 160\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	I_R	0.4	-	μA
		$T_A = 125\text{ }^\circ\text{C}$		0.8	-	mA
	$V_R = 200\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	150	μA
		$T_A = 125\text{ }^\circ\text{C}$		1.6	10	mA

Notes

- (1) Pulse test: 300 μs 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	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	$R_{\theta JA}$ ⁽¹⁾⁽²⁾	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

ORDERING INFORMATION (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 ² PAK (TO-263AB)	VB20202C-M3/4W	1.37	4W	50/tube	Tube
D ² 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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

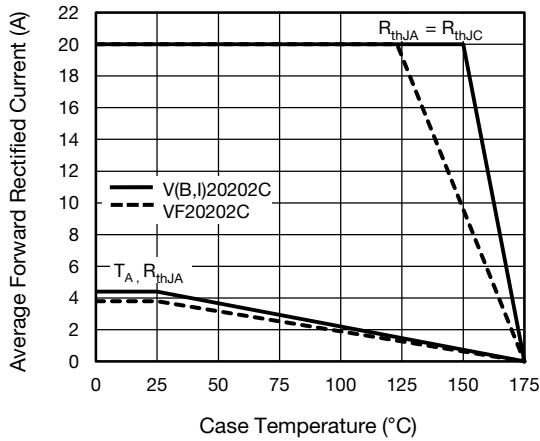


Fig. 1 - Maximum Forward Current Derating Curve (D = Duty Cycle = 0.5)

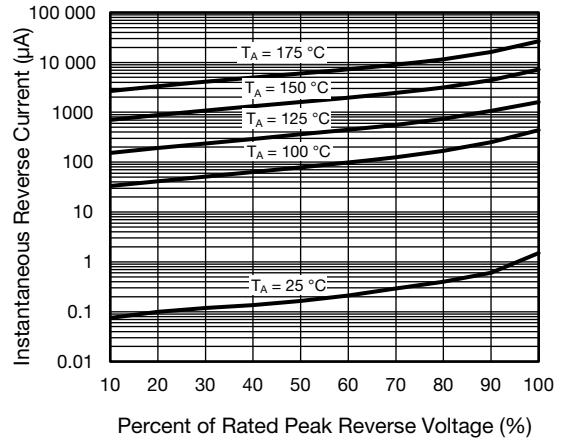


Fig. 4 - Typical Reverse Characteristics Per Diode

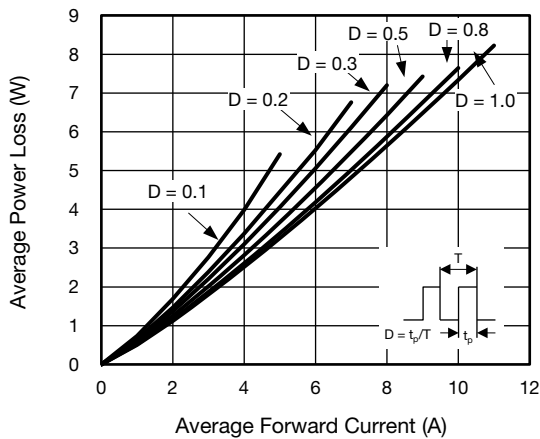


Fig. 2 - Forward Power Loss Characteristics Per Diode

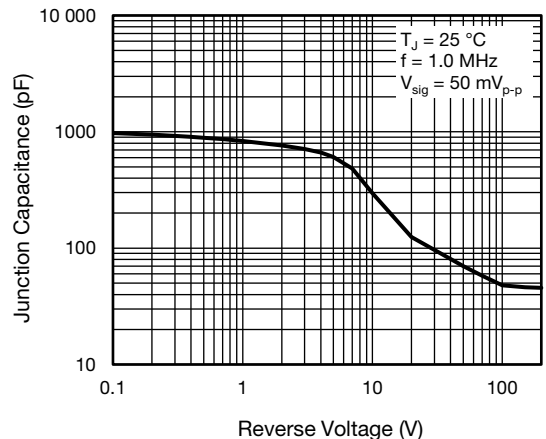


Fig. 5 - Typical Junction Capacitance Per Diode

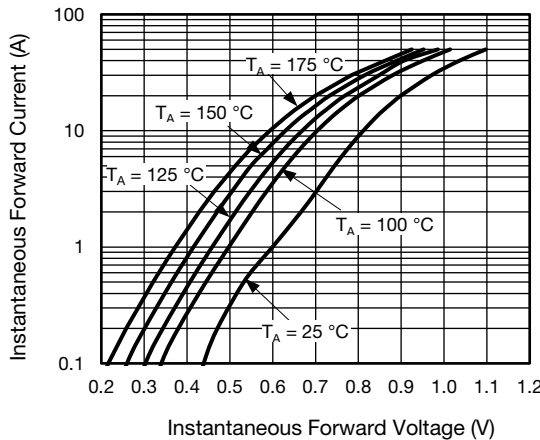


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

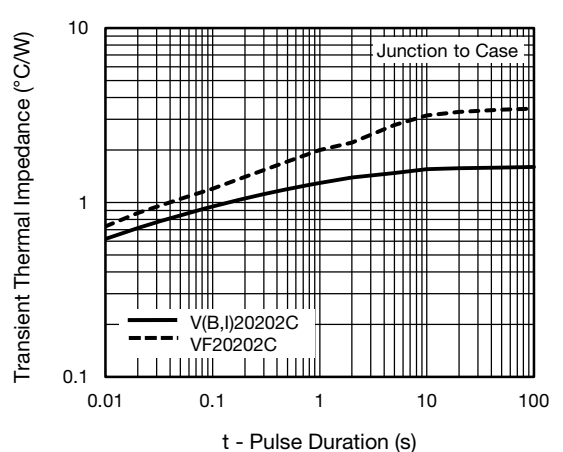
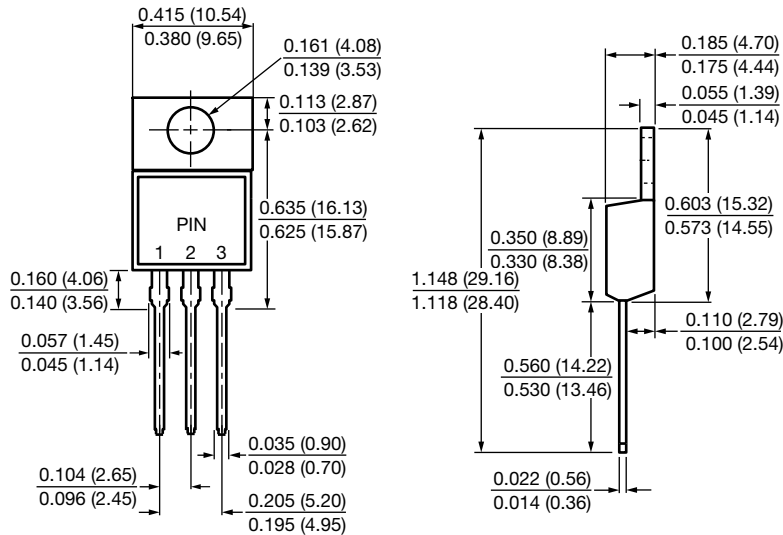


Fig. 6 - Typical Transient Thermal Impedance Per Device

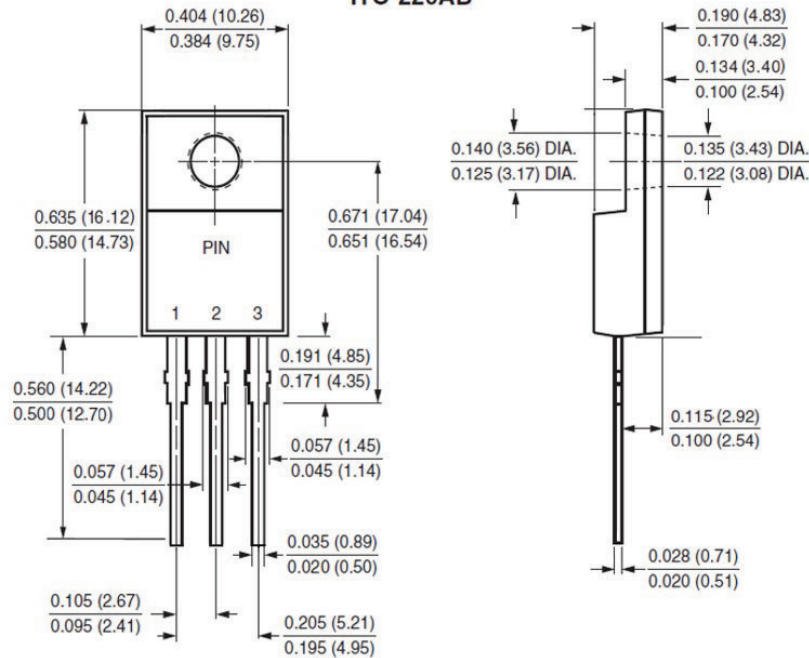


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

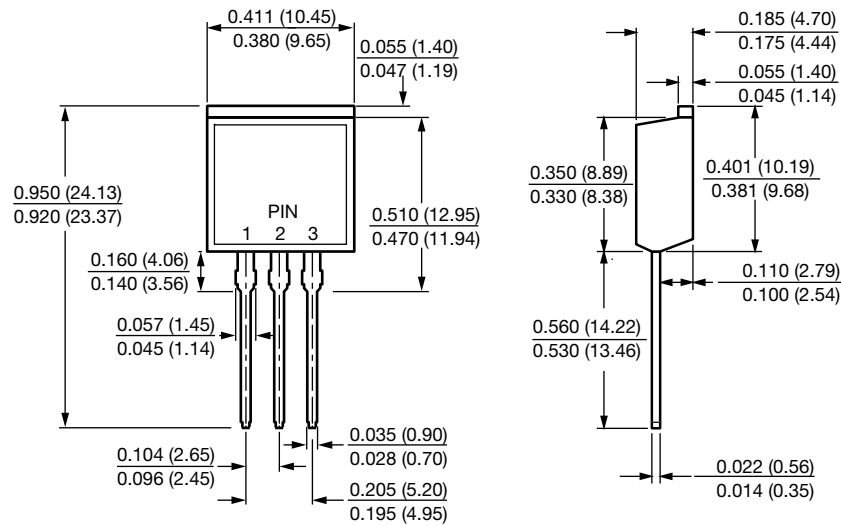
TO-220AB



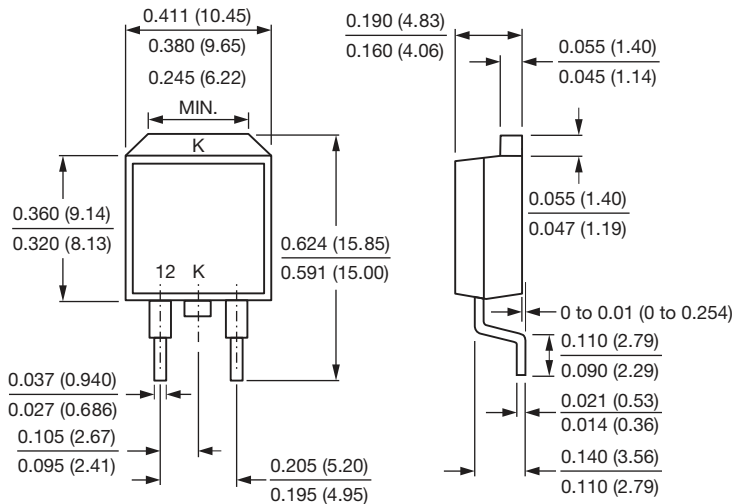
ITO-220AB



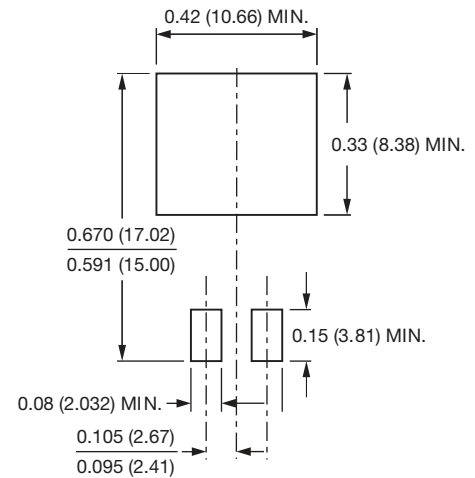
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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