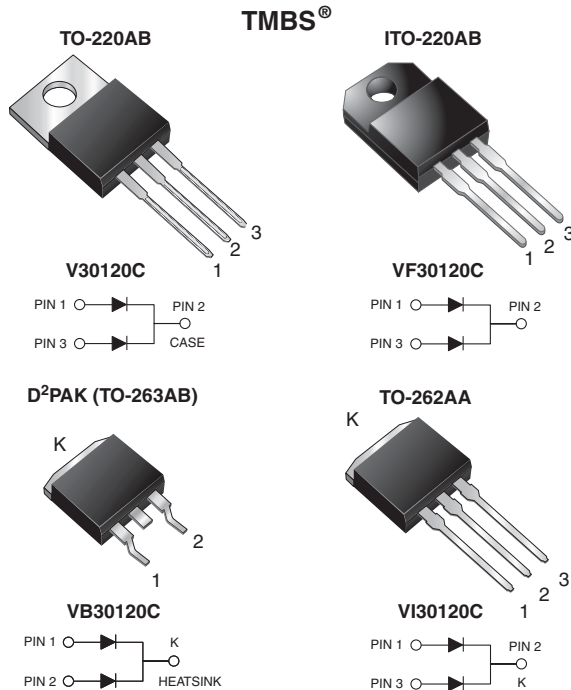




Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.50\text{ V}$ at $I_F = 5\text{ A}$



FEATURES

- Trench MOS Schottky technology
- 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-220AB and TO-262AA package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, DC/DC converters 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-E3 - RoHS compliant, commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs max.

DESIGN SUPPORT TOOLS

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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 max.	150 °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	V30120C	VF30120C	VB30120C	VI30120C	UNIT
Max. repetitive peak reverse voltage	V_{RRM}			120		V
Max. 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		A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $L = 60\text{ mH}$ per diode	E_{AS}			130		mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$, 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode	I_{RRM}			0.5		A
Voltage rate of change (rated V_R)	dV/dt			10 000		V/ μs
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 +150		°C

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Breakdown voltage	$I_R = 1.0\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	V_{BR}	120 (min.)	-	V	
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	V_F	0.56	-	V	
				$I_F = 7.5\text{ A}$	0.71		-
				$I_F = 15\text{ A}$	0.86		0.97
	$T_A = 125\text{ }^\circ\text{C}$	$I_F = 5\text{ A}$		0.50	-		
		$I_F = 7.5\text{ A}$		0.60	-		
		$I_F = 15\text{ A}$		0.68	0.76		
Reverse current per diode ⁽²⁾	$V_R = 90\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	I_R	11	-	μA	
		$T_A = 125\text{ }^\circ\text{C}$		8	-	mA	
	$V_R = 120\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	800	μA	
		$T_A = 125\text{ }^\circ\text{C}$		17	50	mA	

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	V30120C	VF30120C	VB30120C	VI30120C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.2	4.5	2.2	2.2	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30120C-E3/4W	1.89	4W	50/tube	Tube
ITO-220AB	VF30120C-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB30120C-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB30120C-E3/8W	1.38	8W	800/reel	Tape and reel
TO-262AA	VI30120C-E3/4W	1.46	4W	50/tube	Tube

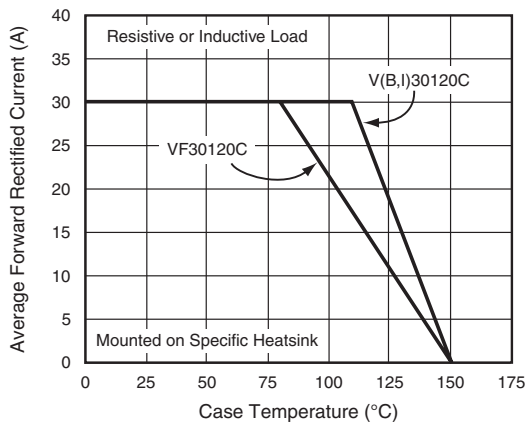
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

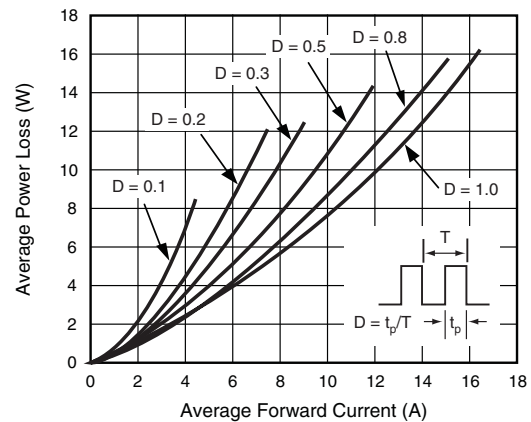


Fig. 2 - Forward Power Loss Characteristics Per Diode

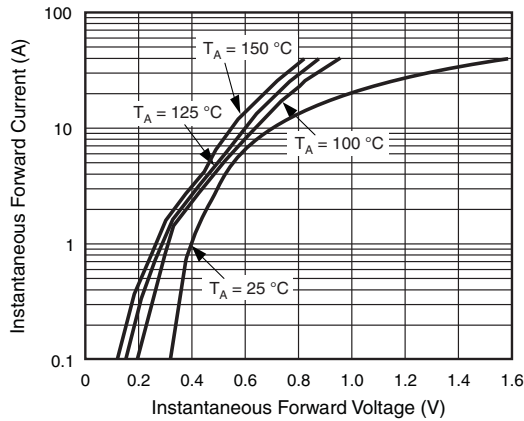


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

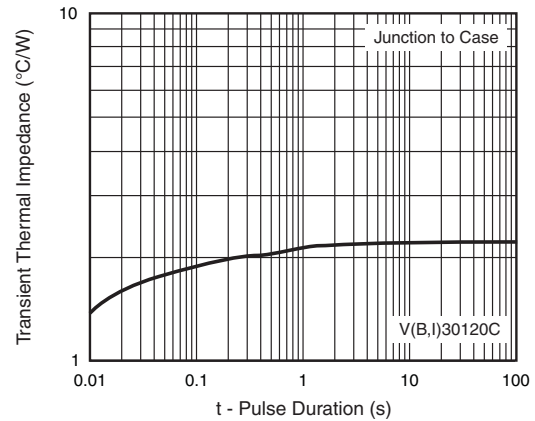


Fig. 6 - Typical Transient Thermal Impedance Per Diode

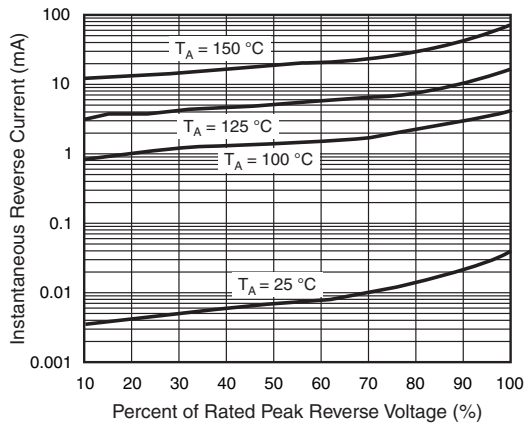


Fig. 4 - Typical Reverse Characteristics Per Diode

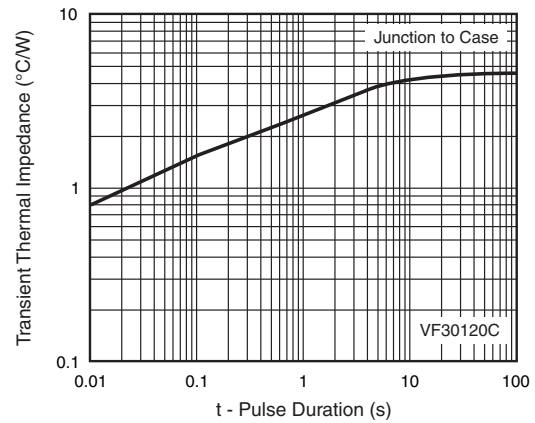


Fig. 7 - Typical Transient Thermal Impedance Per Diode

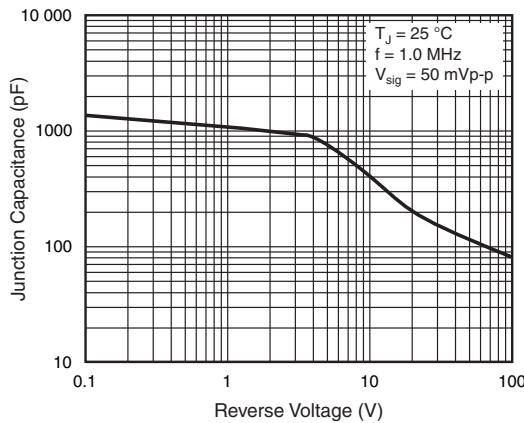
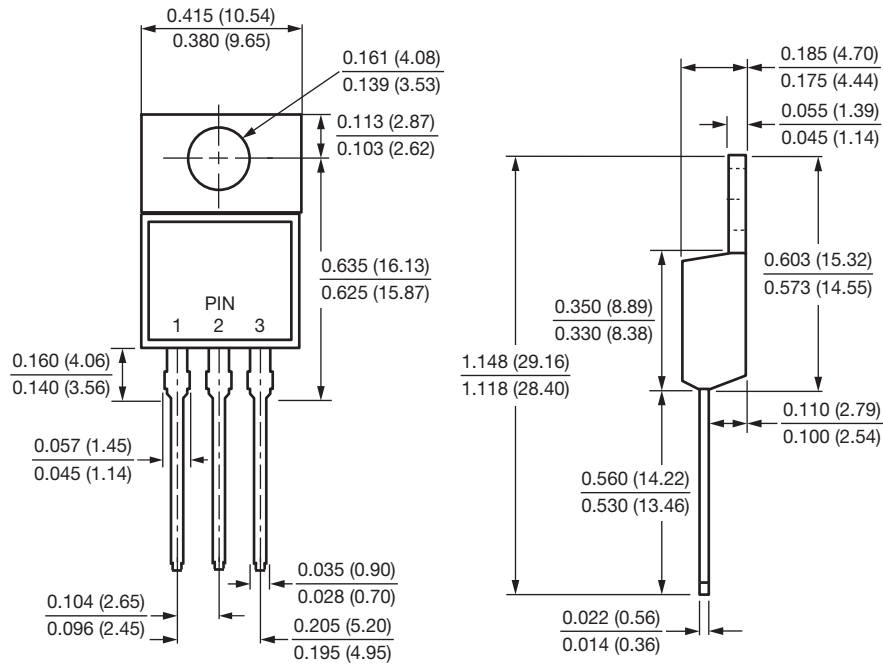


Fig. 5 - Typical Junction Capacitance Per Diode

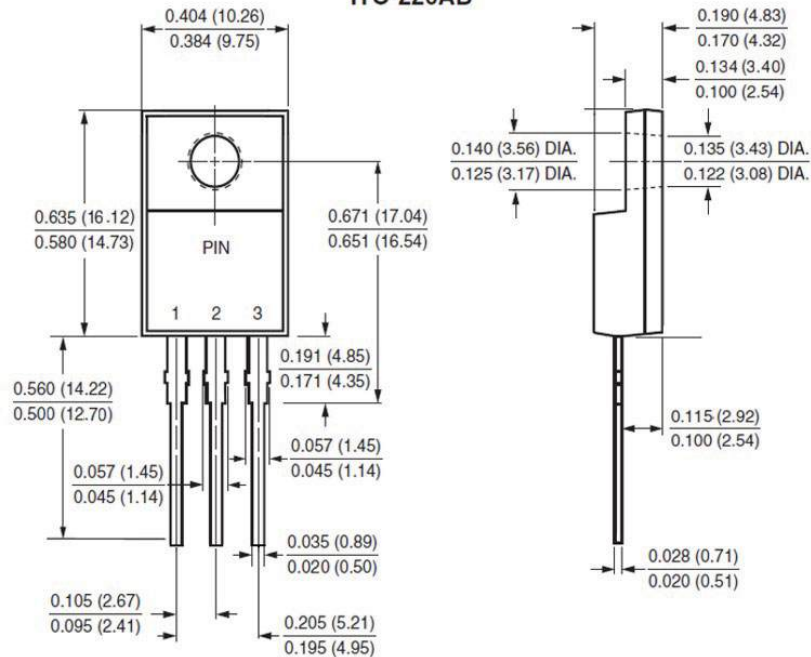


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

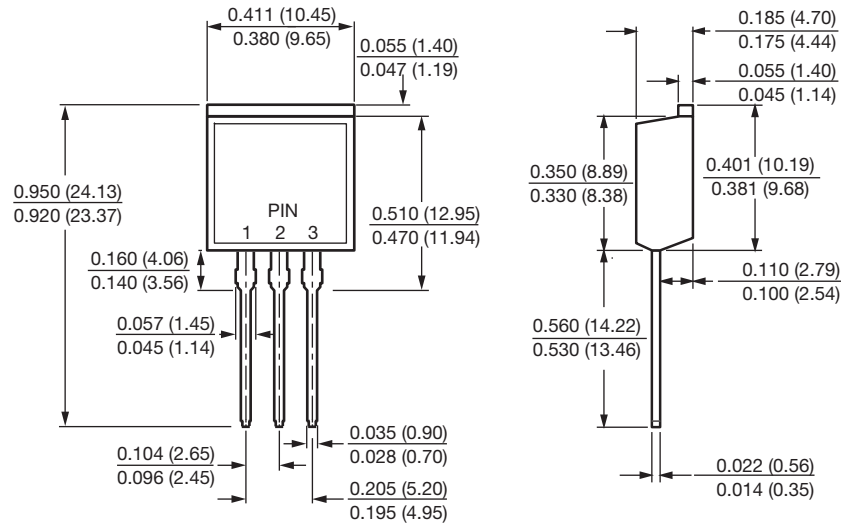
TO-220AB



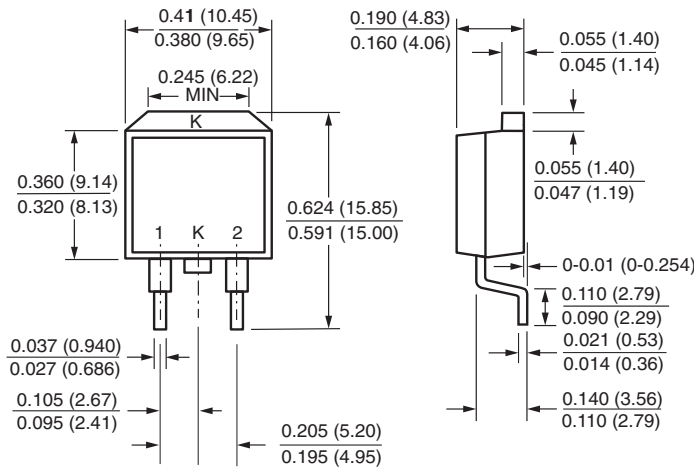
ITO-220AB



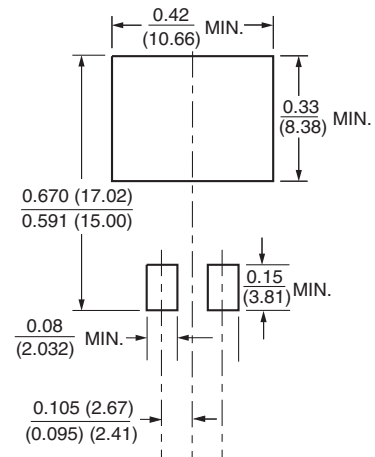
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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