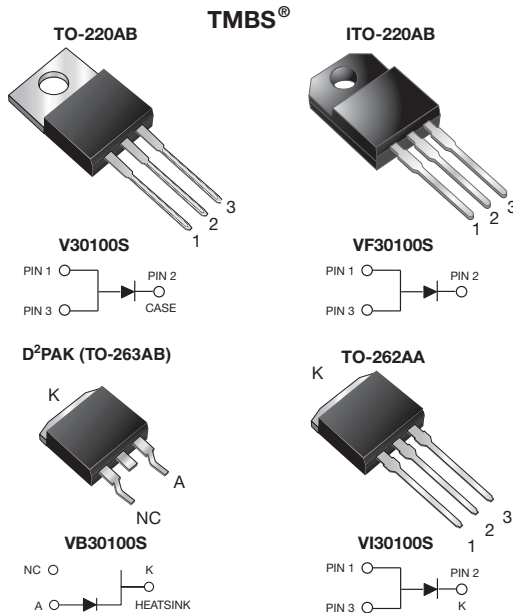




High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.39\text{ V}$ at $I_F = 5\text{ A}$



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- 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 maximum

DESIGN SUPPORT TOOLS

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PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	30 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at $I_F = 30\text{ A}$	0.69 V
T_J max.	150 °C
Package	TO-220AB, ITO-220AB, D ² PAK (TO-263AB), TO-262AA
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	V30100S	VF30100S	VB30100S	VI30100S	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}			100		V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$			30		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}			250		A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $L = 90\text{ mH}$	E_{AS}			230		mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$, 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$	I_{RRM}			1.0		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	$I_R = 10\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	V_{BR}	105 (minimum)	-	V	
Instantaneous forward voltage	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.47	-	V	
				$I_F = 10\text{ A}$	0.55		-
				$I_F = 30\text{ A}$	0.80		0.91
	$T_A = 125\text{ }^\circ\text{C}$	$I_F = 5\text{ A}$		0.39	-		
		$I_F = 10\text{ A}$		0.49	-		
		$I_F = 30\text{ A}$		0.69	0.78		
Reverse current	$V_R = 70\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	27	-	μA	
		$T_A = 125\text{ }^\circ\text{C}$		11	-	mA	
	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		70	1000	μA	
		$T_A = 125\text{ }^\circ\text{C}$		23	45	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	V30100S	VF30100S	VB30100S	VI30100S	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.0	4.0	2.0	2.0	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30100S-E3/4W	1.875	4W	50/tube	Tube
ITO-220AB	VF30100S-E3/4W	1.805	4W	50/tube	Tube
TO-263AB	VB30100S-E3/4W	1.380	4W	50/tube	Tube
TO-263AB	VB30100S-E3/8W	1.380	8W	800/reel	Tape and reel
TO-262AA	VI30100S-E3/4W	1.455	4W	50/tube	Tube

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

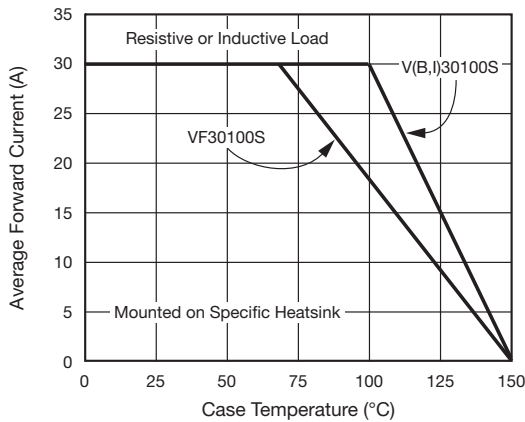


Fig. 1 - Forward Current Derating Curve

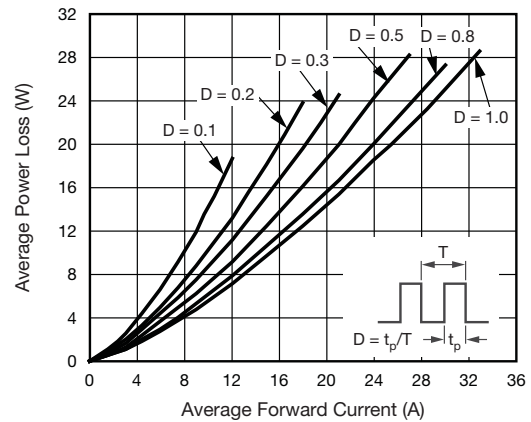


Fig. 2 - Forward Power Loss Characteristics

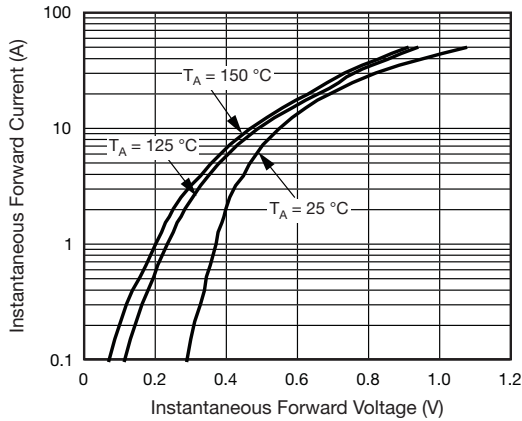


Fig. 3 - Typical Instantaneous Forward Characteristics

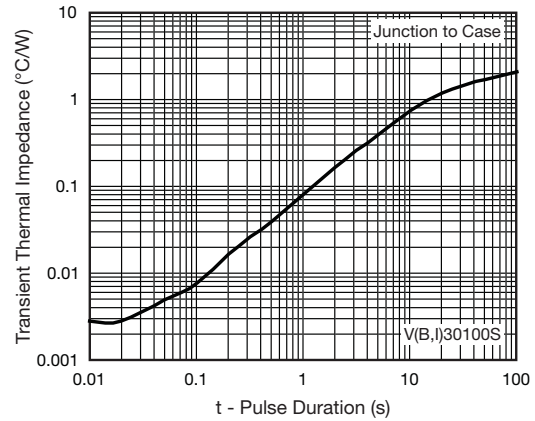


Fig. 6 - Typical Transient Thermal Impedance

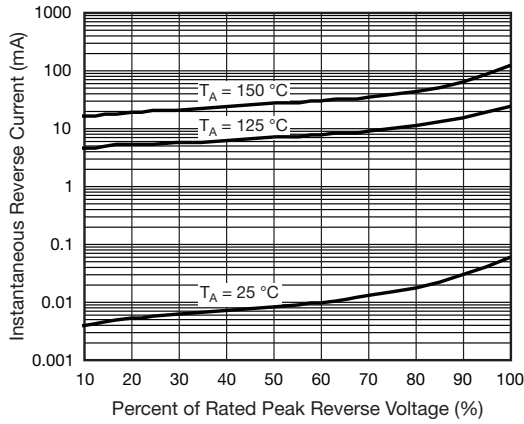


Fig. 4 - Typical Reverse Characteristics

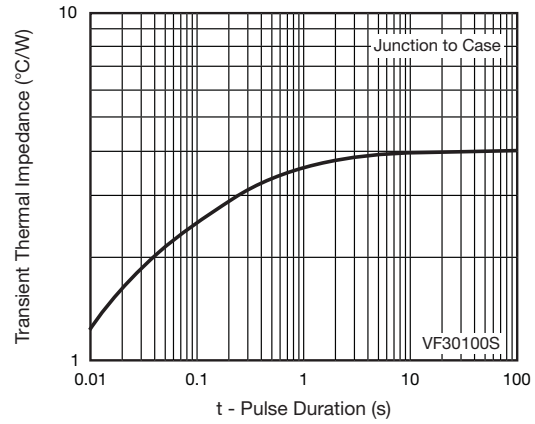


Fig. 7 - Typical Transient Thermal Impedance

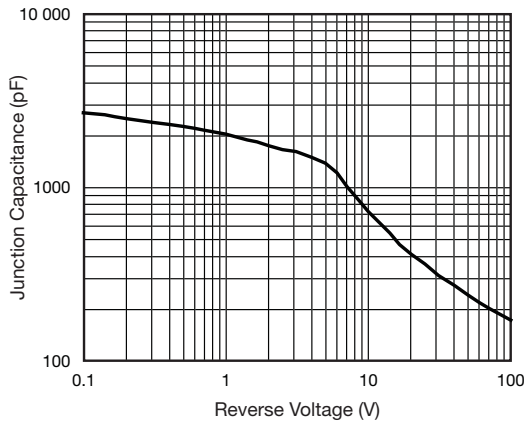
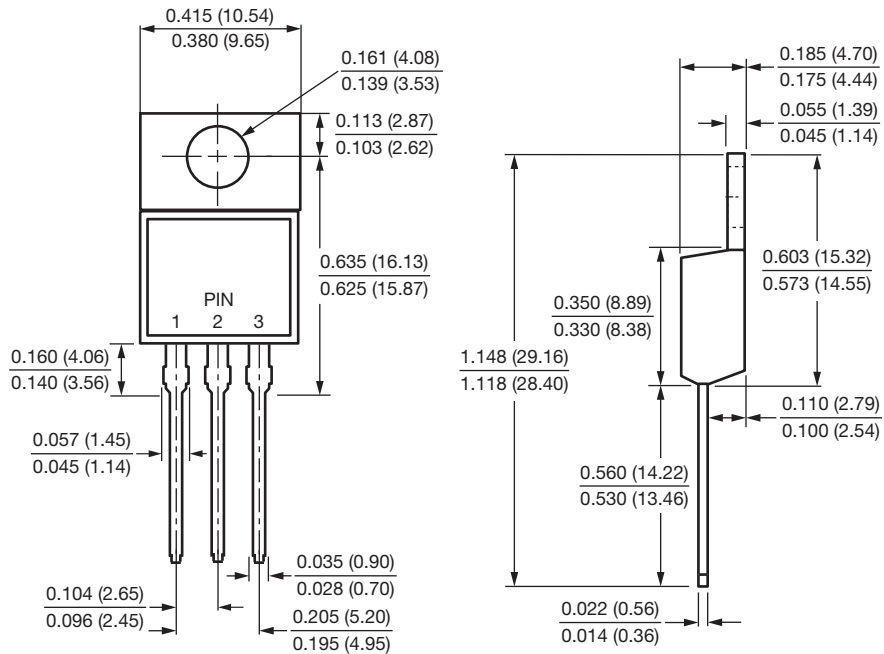


Fig. 5 - Typical Junction Capacitance

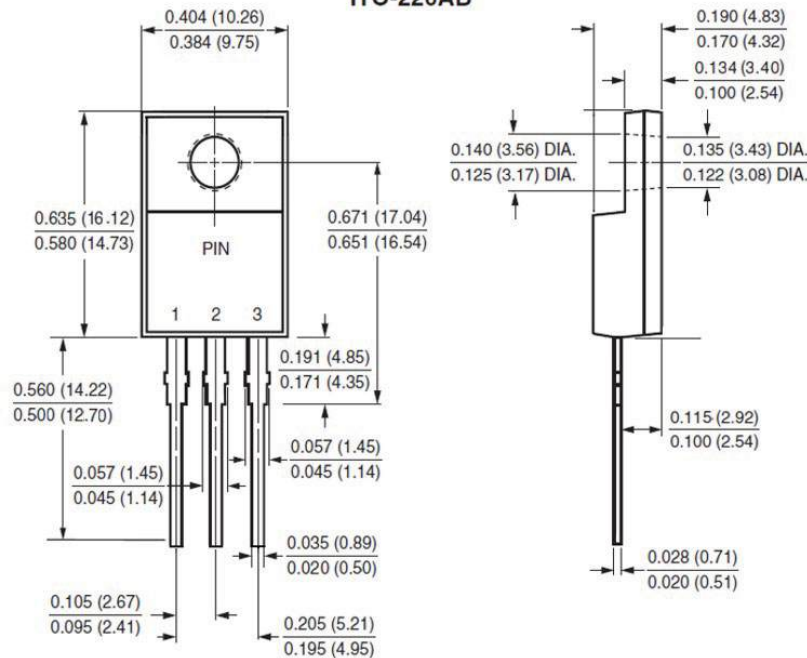


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

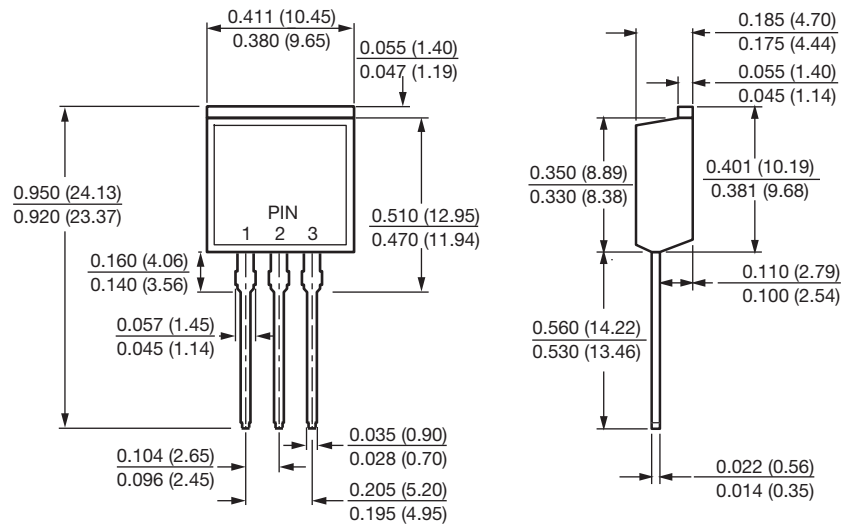
TO-220AB



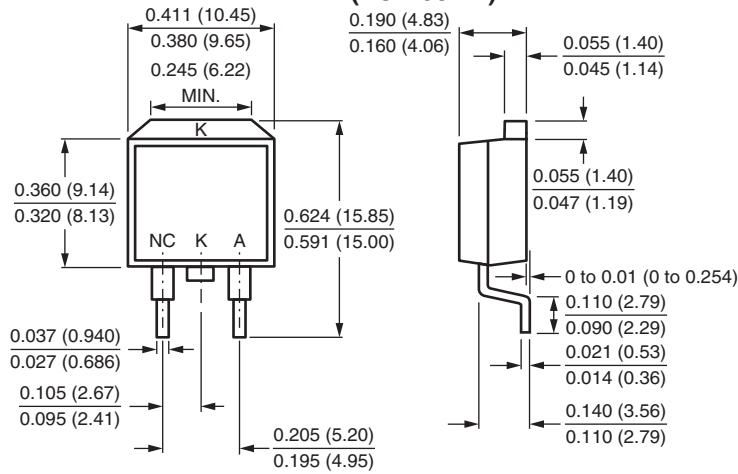
ITO-220AB



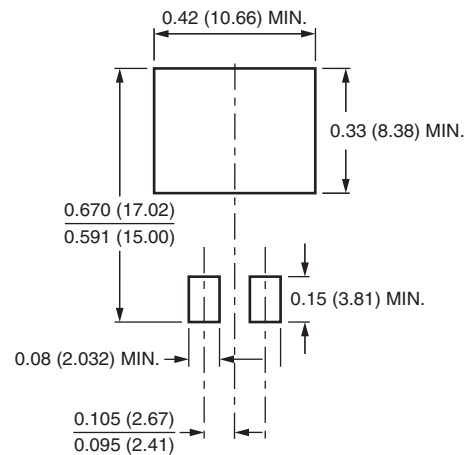
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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