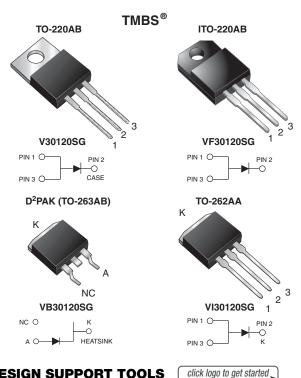
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High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.47 \text{ V}$ at $I_F = 5 \text{ A}$



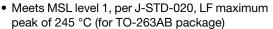
DESIGN SUPPORT TOOLS

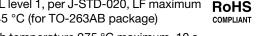


PRIMARY CHARACTERISTICS						
I _{F(AV)}	30 A					
V_{RRM}	120 V					
I _{FSM}	220 A					
V _F at I _F = 30 A	0.81 V					
T _J max.	150 °C					
Package	TO-220AB, ITO-220AB, D ² PAK (TO-263AB), TO-262AA					
Circuit configurations	Single					

FEATURES

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





- 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

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.

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	V30120SG	VF30120SG	VB30120SG	VI30120SG	UNIT		
Max. repetitive peak reverse voltage	V_{RRM}	120				V		
Max. average forward rectified current (fig. 1)	I _{F(AV)}	30				Α		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	220			Α			
Non-repetitive avalanche energy at T _J = 25 °C, L = 60 mH	E _{AS}	175			mJ			
Peak repetitive reverse current at t_p = 2 μ s, 1 kHz, T_J = 38 °C \pm 2 °C	I _{RRM}		().5		Α		
Voltage rate of change (rated V _R)	dV/dt	10 000			V/µs			
Isolation voltage (ITO-220AB only) from terminal to heatsink $t=1$ min	V _{AC}	1500			V			
Operating junction and storage temperature range	T _J , T _{STG}		-40 t	o +150		°C		

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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CO	NDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Breakdown voltage	I _R = 1.0 mA	T _A = 25 °C	V_{BR}	120 (min.)	-	V	
Instantaneous forward voltage (1)	I _F = 5 A	T _A = 25 °C	- V _F	0.54	-	V	
	I _F = 15 A			0.80	-		
	I _F = 30 A			1.16	1.28		
	I _F = 5 A	T _A = 125 °C		0.47	-		
	I _F = 15 A			0.66	-		
	I _F = 30 A			0.81	0.90		
Reverse current (2)	V _R = 90 V	T _A = 25 °C	I _R	13	-	μA	
		T _A = 125 °C		13	-	mA	
	V _R = 120 V	T _A = 25 °C		-	500	μA	
		T _A = 125 °C		23	55	mA	

Notes

⁽²⁾ Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	V30120SG	VF30120SG	VB30120SG	VI30120SG	UNIT	
Typical thermal resistance	$R_{\theta JC}$	1.6	4.0	1.6	1.6	°C/W	

ORDERING INFORMATION (Example)								
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
TO-220AB	V30120SG-E3/4W	1.88	4W	50/tube	Tube			
ITO-220AB	VF30120SG-E3/4W	1.75	4W	50/tube	Tube			
TO-263AB	VB30120SG-E3/4W	1.39	4W	50/tube	Tube			
TO-263AB	VB30120SG-E3/8W	1.39	8W	800/reel	Tape and reel			
TO-262AA	VI30120SG-E3/4W	1.45	4W	50/tube	Tube			

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

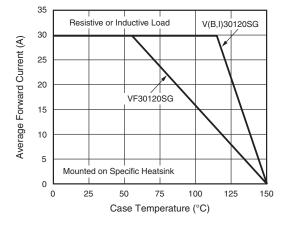


Fig. 1 - Forward Current Derating Curve

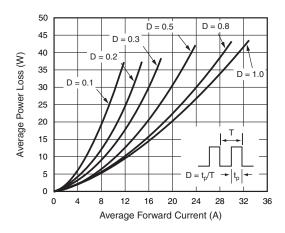


Fig. 2 - Forward Power Loss Characteristics

 $^{^{(1)}\,}$ Pulse test: 300 μs pulse width, 1 % duty cycle

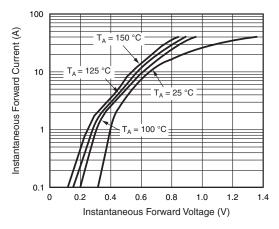


Fig. 3 - Typical Instantaneous Forward Characteristics

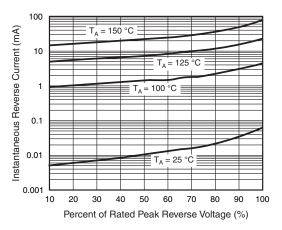


Fig. 4 - Typical Reverse Characteristics

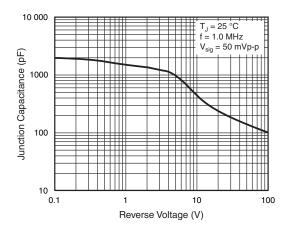


Fig. 5 - Typical Junction Capacitance

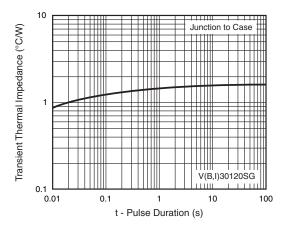


Fig. 6 - Typical Transient Thermal Impedance

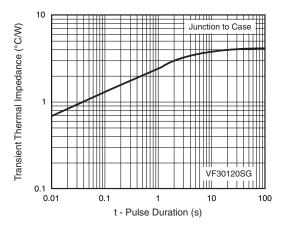
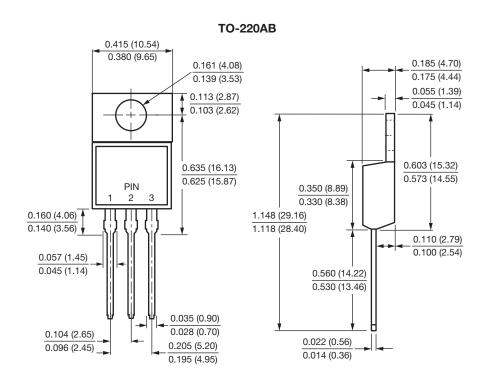


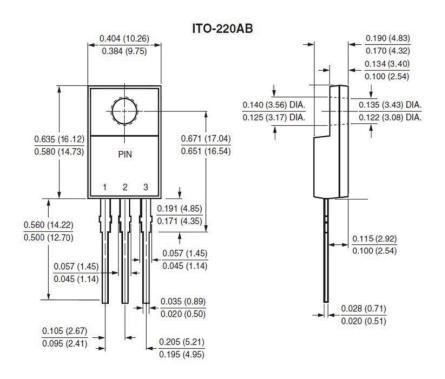
Fig. 7 - Typical Transient Thermal Impedance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

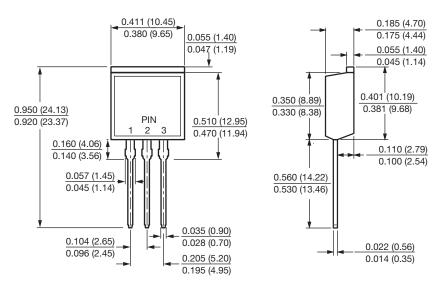
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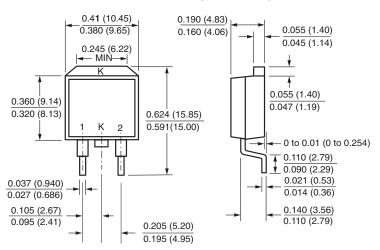


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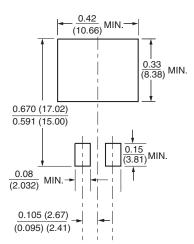
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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