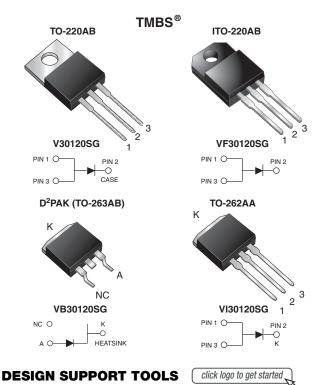
Vishay General Semiconductor

High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.47$ V at $I_F = 5$ A



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Models Available

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
- Meets MSL level 1, per J-STD-020, LF maximum RoHS peak of 245 °C (for TO-263AB package) COMPLIANT



- 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		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				А		
Non-repetitive avalanche energy at T_J = 25 °C, L = 60 mH	E _{AS}	175			mJ			
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T _J = 38 °C ± 2 °C	I _{RRM}		C	.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}	V _{AC} 1500			V			
Operating junction and storage temperature range	T _J , T _{STG}		-40 to	o +150		°C		

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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		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		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

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

⁽²⁾ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ 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)

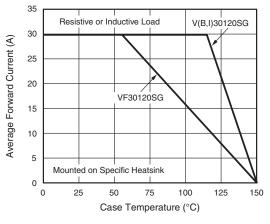


Fig. 1 - Forward Current Derating Curve

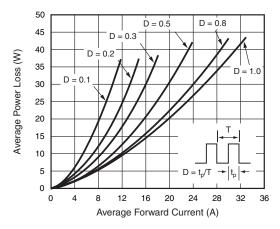
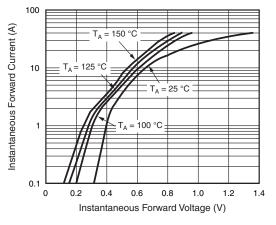


Fig. 2 - Forward Power Loss Characteristics

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Fig. 3 - Typical Instantaneous Forward Characteristics

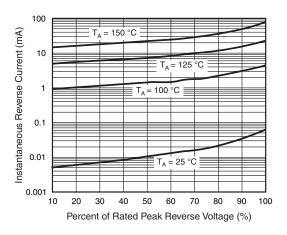


Fig. 4 - Typical Reverse Characteristics

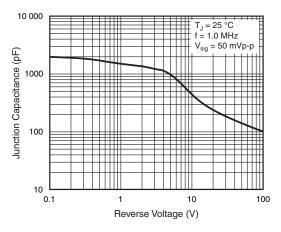


Fig. 5 - Typical Junction Capacitance

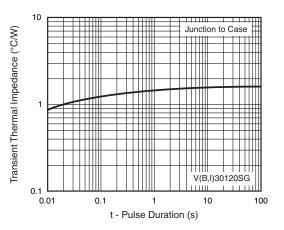


Fig. 6 - Typical Transient Thermal Impedance

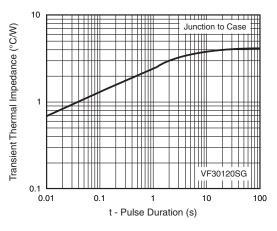


Fig. 7 - Typical Transient Thermal Impedance

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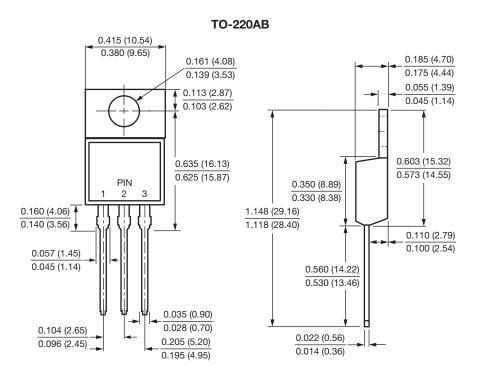
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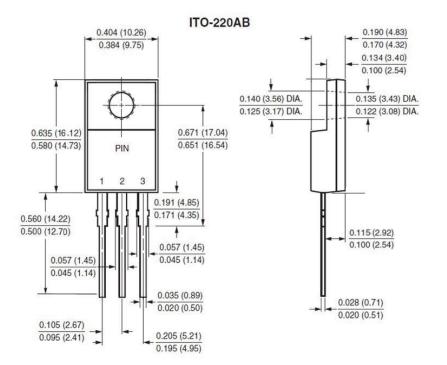


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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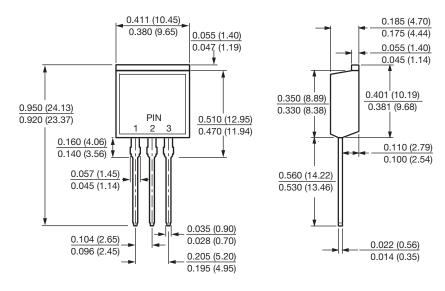
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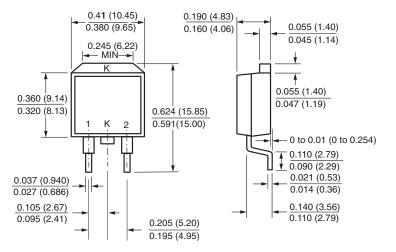
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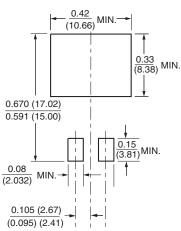
TO-262AA



D²PAK (TO-263AB)









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