

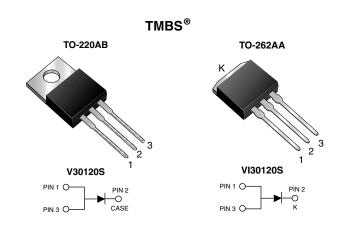
COMPLIANT



Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.43 \text{ V}$ at $I_F = 5 \text{ A}$



PRIMARY CHARACTERISTICS					
I _{F(AV)}	30 A				
V _{RRM}	120 V				
I _{FSM}	300 A				
V _F at I _F = 30 A	0.74 V				
T _J max.	150 °C				

FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses

• High efficiency operation

• Solder dip 275 °C max. 10 s, per JESD 22-B106 FREE

• AEC-Q101 qualified

- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

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 and TO-262AA

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V30120S VI30120S		UNIT		
Maximum repetitive peak reverse voltage	V_{RRM}	120		V		
Maximum 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}	300		А		
Voltage rate of change (rated V _R)	dV/dt	10 000		V/µs		
Operating junction and storage temperature range	T _J , T _{STG}	- 40 to + 150		°C		

V30120S, VI30120S

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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.50	-	V	
	I _F = 15 A			0.70	-		
	I _F = 30 A			0.99	1.10		
	I _F = 5 A	T _A = 125 °C		0.43	-		
	I _F = 15 A			0.60	-		
	I _F = 30 A			0.74	0.82		
Reverse current	V _R = 90 V	T _A = 25 °C	I _R ⁽²⁾	18	-	μΑ	
		T _A = 125 °C		12	-	mA	
	V _R = 120 V	T _A = 25 °C		-	500	μΑ	
		T _A = 125 °C		22	35	mA	

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL			UNIT	
Typical thermal resistance	$R_{ heta JC}$	1.6		°C/W	

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AB	V30120S-M3/4W	1.88	4W	50/tube	Tube		
TO-262AA	VI30120S-M3/4W	1.45	4W	50/tube	Tube		
TO-220AB	V30120SHM3/4W (1)	1.88	4W	50/tube	Tube		
TO-262AA	VI30120SHM3/4W (1)	1.45	4W	50/tube	Tube		

Note

(1) AEC-Q101 qualified



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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

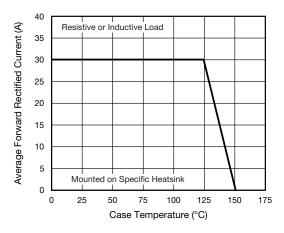


Fig. 1 - Forward Current Derating Curve

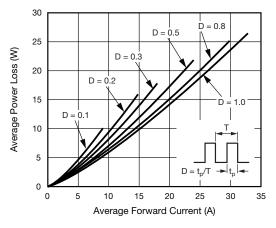


Fig. 2 - Forward Power Loss Characteristics

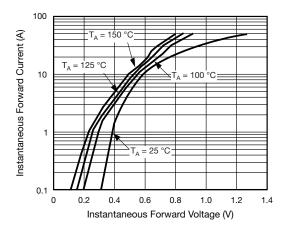


Fig. 3 - Typical Instantaneous Forward Characteristics

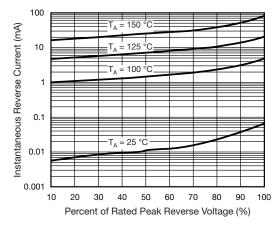


Fig. 4 - Typical Reverse Characteristics

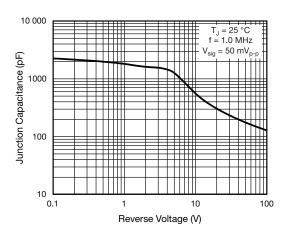


Fig. 5 - Typical Junction Capacitance

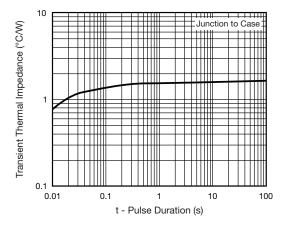


Fig. 6 - Typical Transient Thermal Impedance

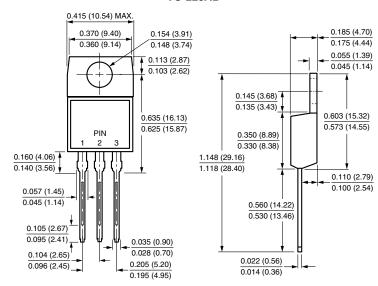
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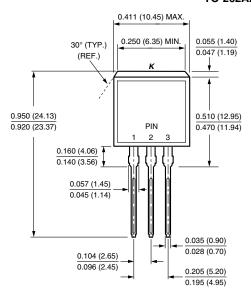


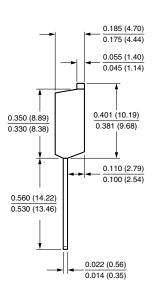
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA









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