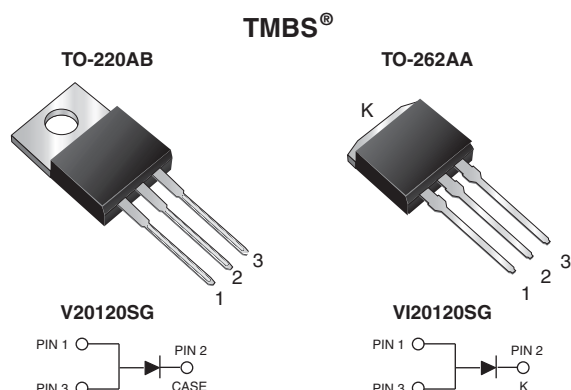




High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.54 \text{ V}$ at $I_F = 5 \text{ A}$



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 275 °C max. 10 s, per JESD 22-B106
- 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



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	20 A
V_{RRM}	120 V
I_{FSM}	150 A
V_F at $I_F = 20 \text{ A}$	0.78 V
$T_J \text{ max.}$	150 °C

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 commercial grade

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 ($T_A = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	V20120SG	VI20120SG	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120		V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	20		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150		A
Voltage rate of change (rated V_R)	dV/dt	10 000		V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150		°C

V20120SG, VI20120SG

Vishay General Semiconductor



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⁾	0.62	-	V
	I _F = 10 A			0.81	-	
	I _F = 20 A			1.20	1.33	
	I _F = 5 A	T _A = 125 °C		0.54	-	
	I _F = 10 A			0.65	-	
	I _F = 20 A			0.78	0.88	
Reverse current	V _R = 90 V	T _A = 25 °C	I _R ⁽²⁾	10	-	μA
		T _A = 125 °C		7	-	mA
	V _R = 120 V	T _A = 25 °C		-	250	μA
		T _A = 125 °C		12	25	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	V20120SG	VI20120SG	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.2		$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20120SG-M3/4W	1.88	4W	50/tube	Tube
TO-262AA	VI20120SG-M3/4W	1.45	4W	50/tube	Tube
TO-220AB	V20120SGHM3/4W ⁽¹⁾	1.88	4W	50/tube	Tube
TO-262AA	VI20120SGHM3/4W ⁽¹⁾	1.45	4W	50/tube	Tube

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

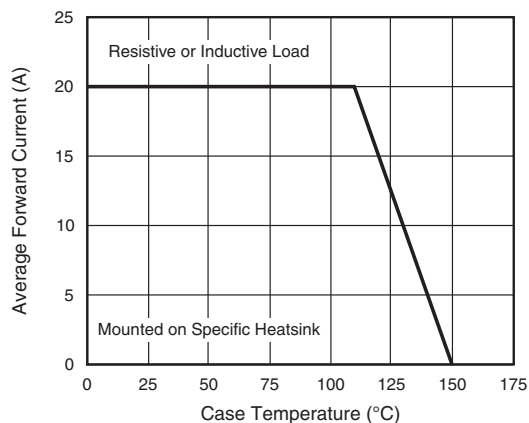


Fig. 1 - Maximum Forward Current Derating Curve

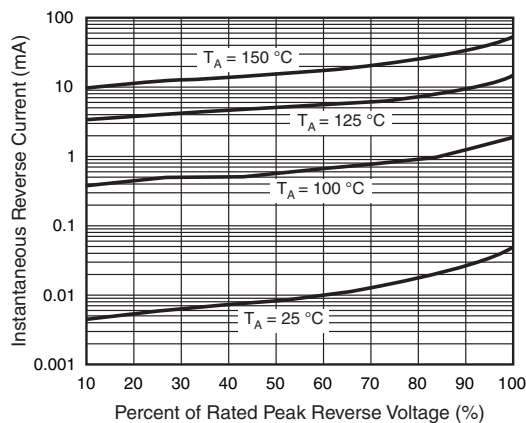


Fig. 4 - Typical Reverse Characteristics

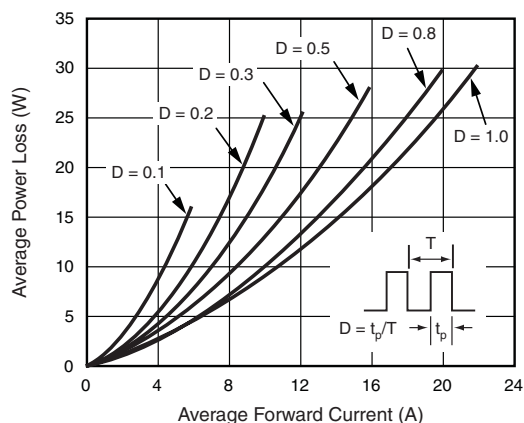


Fig. 2 - Forward Power Dissipation Characteristics

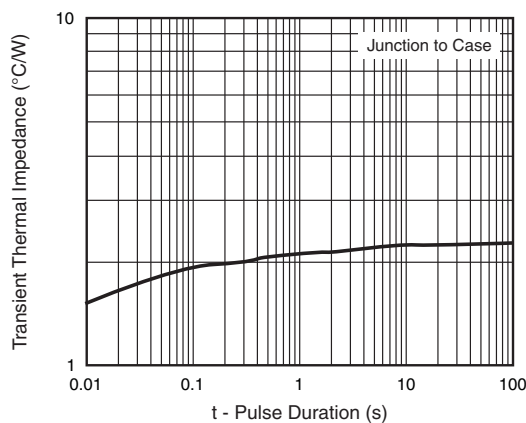


Fig. 5 - Typical Transient Thermal Impedance

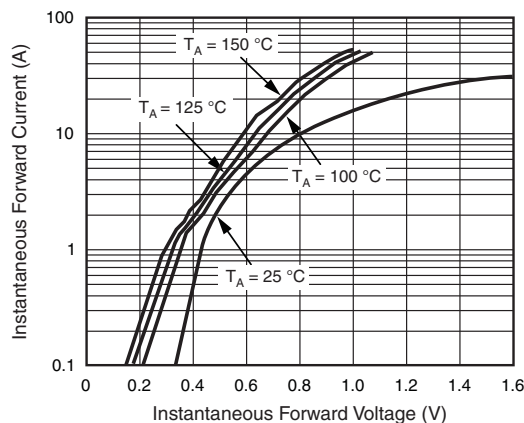


Fig. 3 - Typical Instantaneous Forward Characteristics

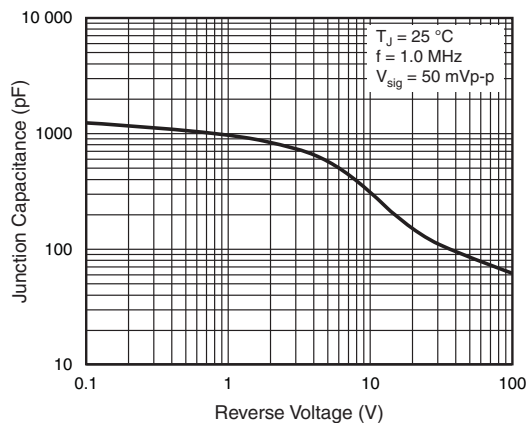
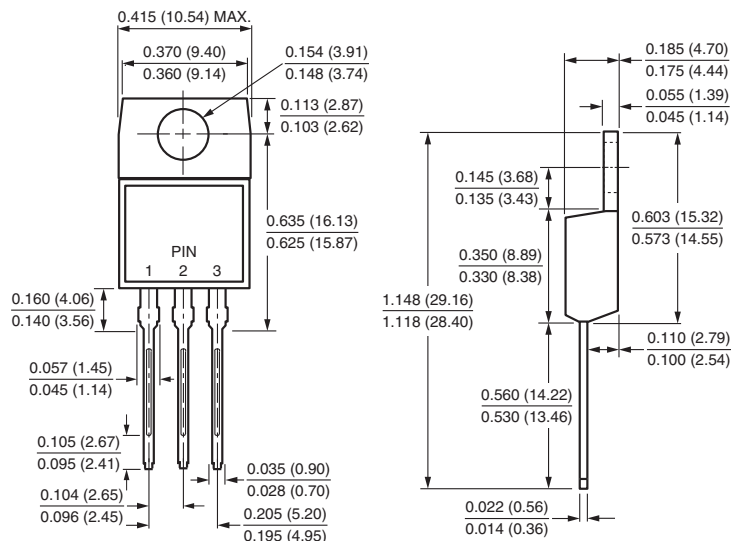
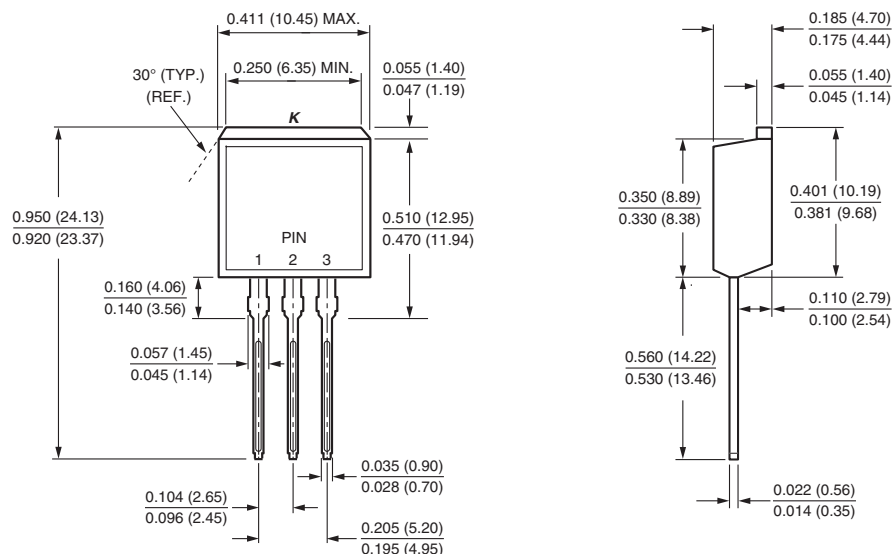


Fig. 6 - Typical Junction Capacitance

V20120SG, VI20120SG

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**TO-220AB****TO-262AA**



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