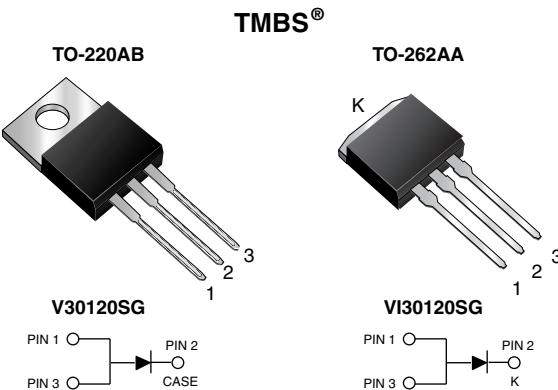


High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.47 V at I_F = 5 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.

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

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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	V30120SG	VI30120SG	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120		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}	220		A
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

V30120SG, VI30120SG

Vishay General Semiconductor

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.54	-	V	
	$I_F = 15 \text{ A}$			0.80	-		
	$I_F = 30 \text{ A}$			1.16	1.28		
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.47	-		
	$I_F = 15 \text{ A}$			0.66	-		
	$I_F = 30 \text{ A}$			0.81	0.90		
Reverse current	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	13	-	μA	
		$T_A = 125^\circ\text{C}$		13	-	mA	
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$		-	500	μA	
		$T_A = 125^\circ\text{C}$		23	55	mA	

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40 \text{ ms}$ THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	V30120SG	VI30120SG	UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	1.6		$^\circ\text{C}/\text{W}$

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30120SG-M3/4W	1.88	4W	50/tube	Tube
TO-262AA	VI30120SG-M3/4W	1.45	4W	50/tube	Tube
TO-220AB	V30120SGHM3/4W ⁽¹⁾	1.88	4W	50/tube	Tube
TO-262AA	VI30120SGHM3/4W ⁽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)

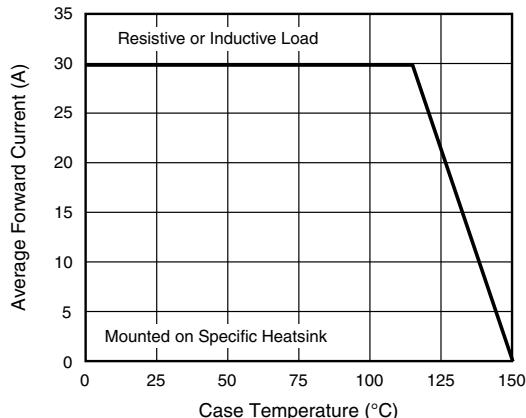


Fig. 1 - Maximum Forward Current Derating Curve

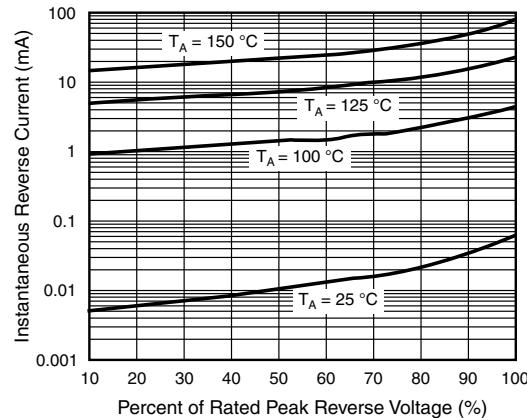


Fig. 4 - Typical Reverse Characteristics

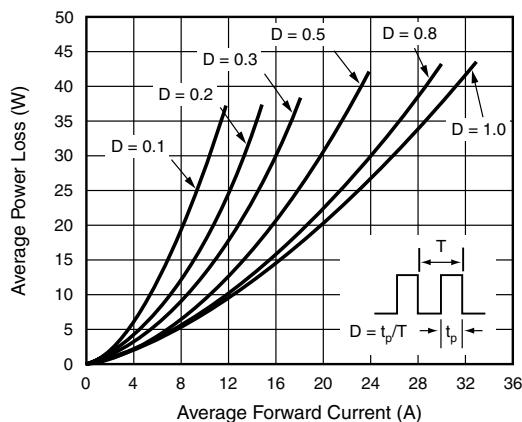


Fig. 2 - Forward Power Dissipation Characteristics

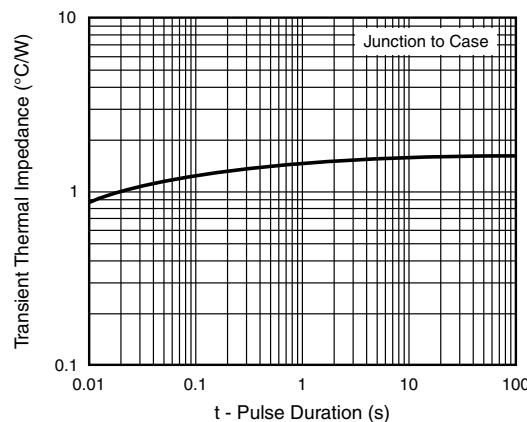


Fig. 5 - Typical Transient Thermal Impedance

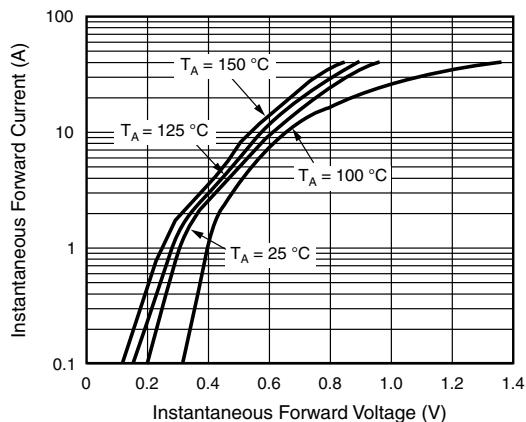


Fig. 3 - Typical Instantaneous Forward Characteristics

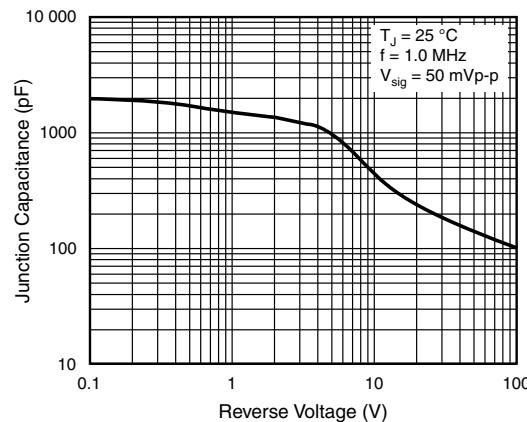
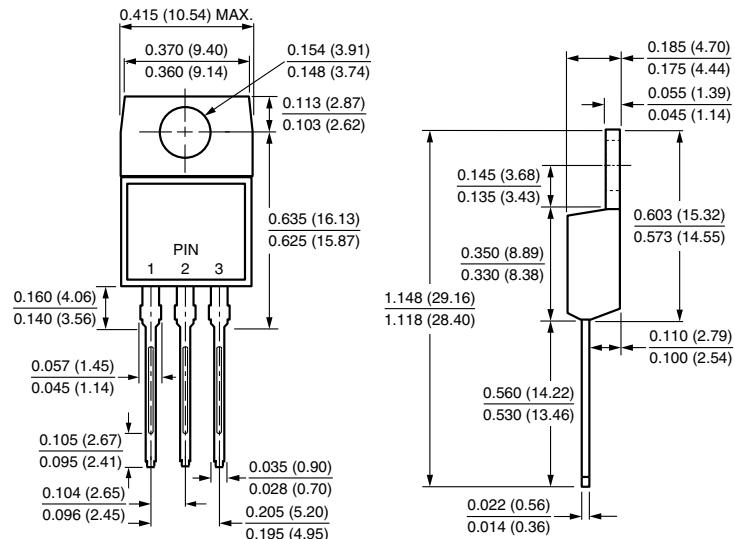


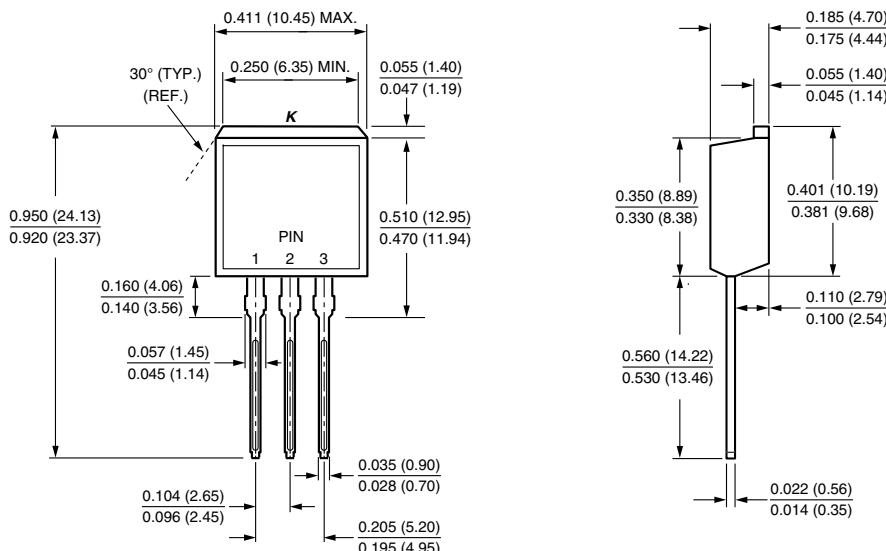
Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA



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