

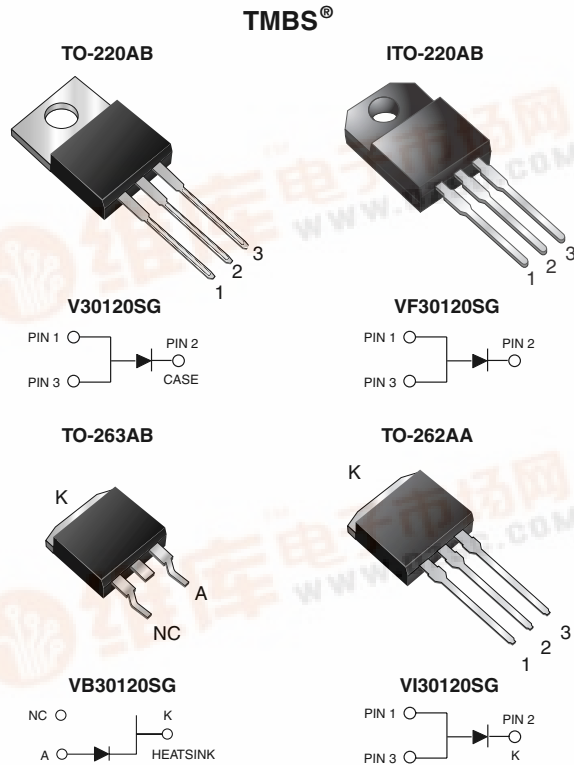


V30120SG, VF30120SG, VB30120SG & VI30120SG

Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

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



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 peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB, ITO-220AB and TO-262AA package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB and TO-262AA

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A 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 $I_F = 30 \text{ A}$	0.81 V
$T_J \text{ max.}$	150 °C

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

PARAMETER	SYMBOL	V30120SG	VF30120SG	VB30120SG	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
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1 \text{ min}$	V_{AC}	1500				V
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150				°C



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ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 1.0\text{ mA}$	$T_A = 25\text{ }^{\circ}\text{C}$	V_{BR}	120 (minimum)	-	V
Instantaneous forward voltage ⁽¹⁾	$I_F = 5\text{ A}$	$T_A = 25\text{ }^{\circ}\text{C}$	V_F	0.54	-	V
	$I_F = 15\text{ A}$			0.80	-	
	$I_F = 30\text{ A}$			1.16	1.28	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^{\circ}\text{C}$		0.47	-	
Reverse current ⁽²⁾	$V_R = 90\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$	I_R	13	-	μA
		$T_A = 125\text{ }^{\circ}\text{C}$		13	-	mA
	$V_R = 120\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$		-	500	μA
		$T_A = 125\text{ }^{\circ}\text{C}$		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 ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	V30120SG	VF30120SG	VB30120SG	VI30120SG	UNIT
Typical thermal resistance	$R_{\theta JC}$	1.6	4.0	1.6	1.6	$^{\circ}\text{C/W}$

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

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

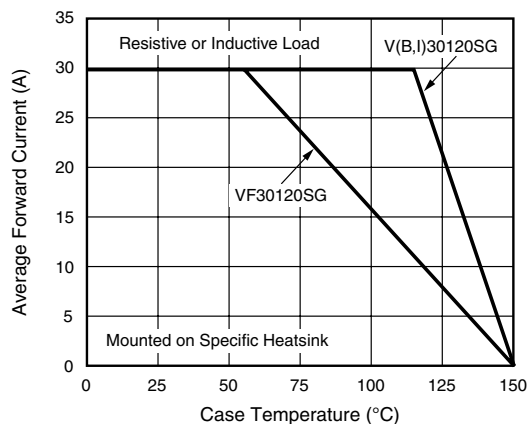


Figure 1. Forward Current Derating Curve

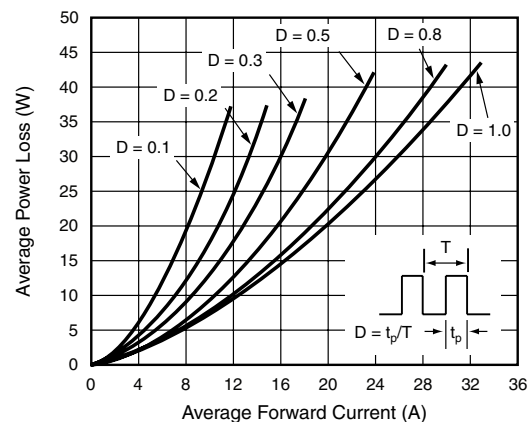


Figure 2. Forward Power Loss Characteristics



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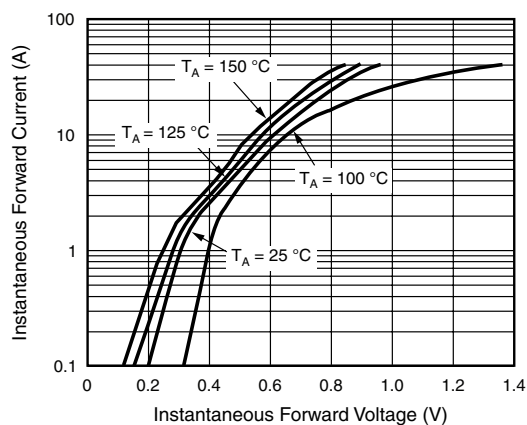


Figure 3. Typical Instantaneous Forward Characteristics

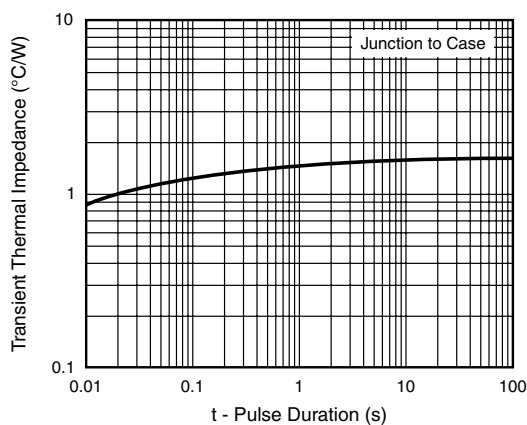


Figure 6. Typical Transient Thermal Impedance

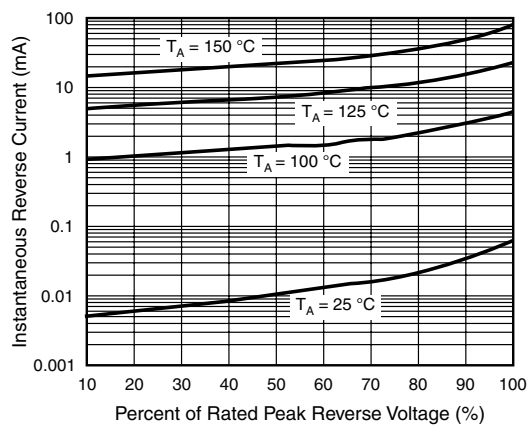


Figure 4. Typical Reverse Characteristics

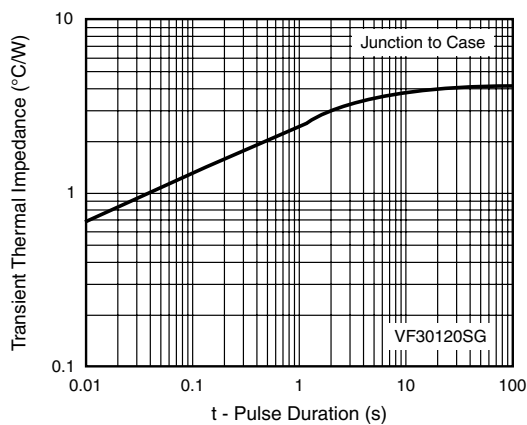


Figure 7. Typical Transient Thermal Impedance

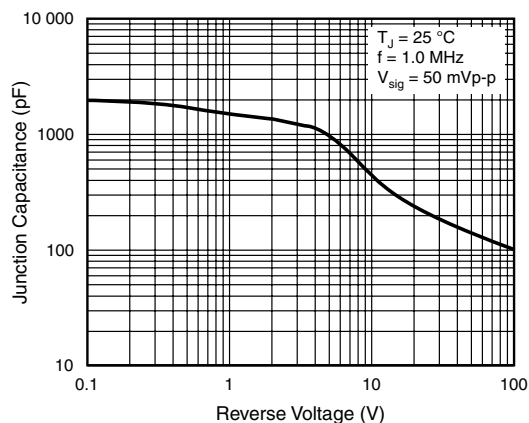


Figure 5. Typical Junction Capacitance

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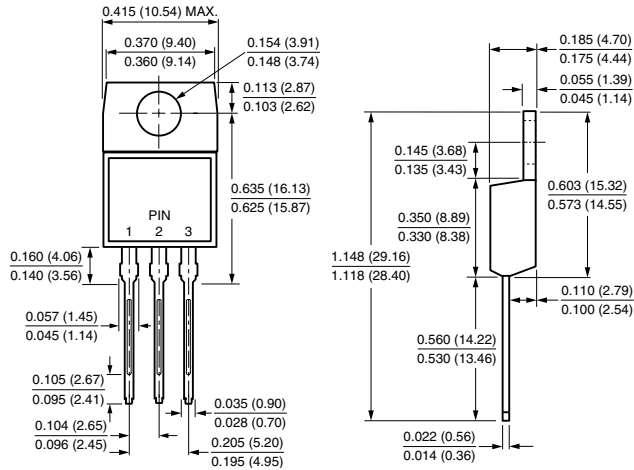
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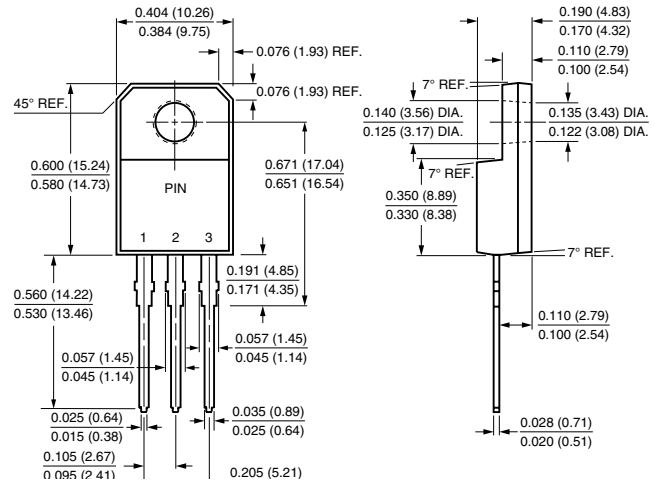


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

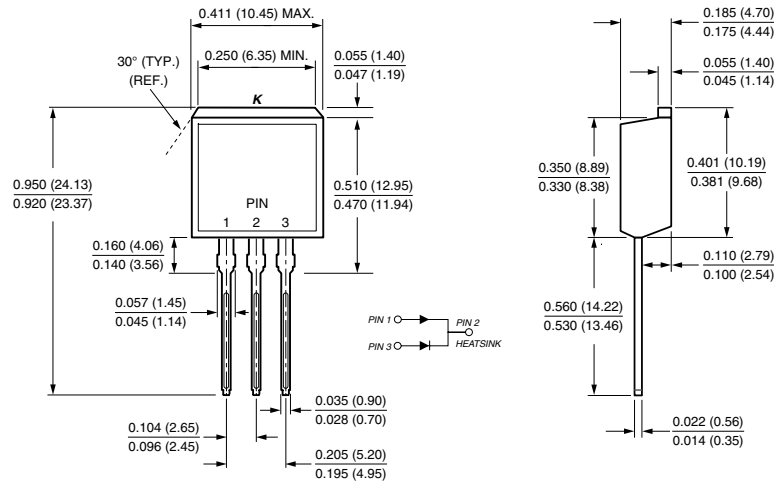
TO-220AB



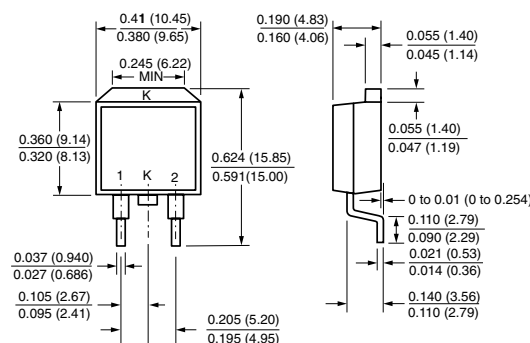
ITO-220AB



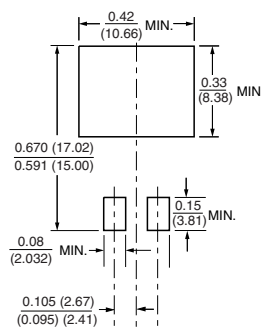
TO-262AA



TO-263AB



Mounting Pad Layout





Disclaimer

All product specifications and data are subject to change without notice.

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