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[VB20120SG-M3/8W](#)

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VB20120SG-M3

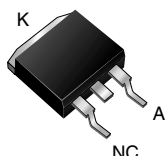
Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

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

TMBS®

TO-263AB



VB20120SG



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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

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-263AB

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - 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

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

Package	TO-263AB
$I_{F(AV)}$	20 A
V_{RRM}	120 V
I_{FSM}	150 A
V_F at $I_F = 20\text{ A}$	0.78 V
T_J max.	150 °C
Diode variations	Single die

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

PARAMETER	SYMBOL	VB20120SG	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	
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150	°C

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

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT			
Instantaneous forward voltage (1)	$I_F = 5\text{ A}$	V_F			V			
						$T_A = 25\text{ °C}$	0.62	-
							0.81	-
	$T_A = 125\text{ °C}$					1.20	1.33	
						$I_F = 5\text{ A}$	0.54	-
							0.65	-
Reverse current (2)	$V_R = 60\text{ V}$	I_R						
						$T_A = 25\text{ °C}$	10	-
	$T_A = 125\text{ °C}$					7	-	mA
	$V_R = 120\text{ V}$					$T_A = 25\text{ °C}$	-	250
$T_A = 125\text{ °C}$		12	25	mA				

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms



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THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VB20120G	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-263AB	VB20120SG-M3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB20120SG-M3/8W	1.38	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES

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

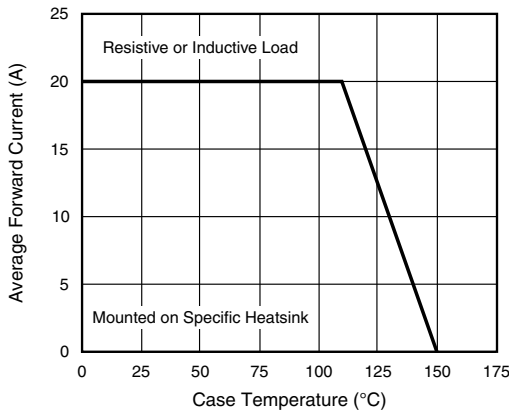


Fig. 1 - Forward Current Derating Curve

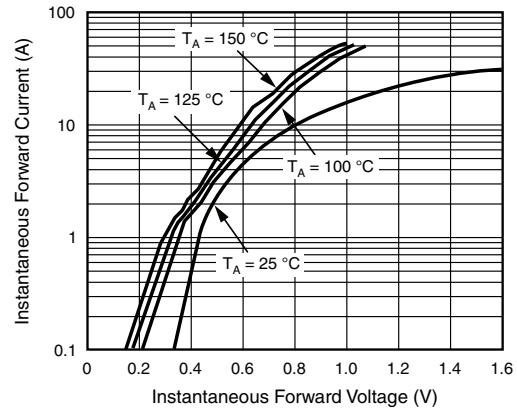


Fig. 3 - Typical Instantaneous Forward Characteristics

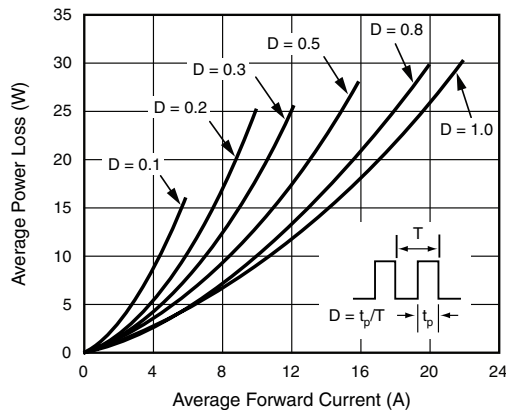


Fig. 2 - Forward Power Loss Characteristics

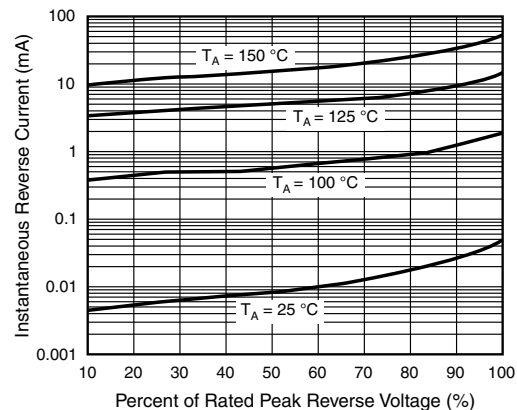


Fig. 4 - Typical Reverse Characteristics



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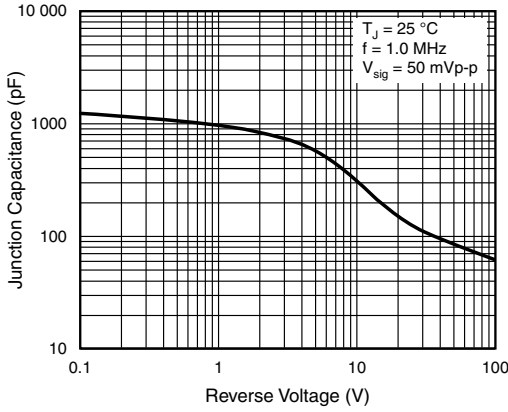


Fig. 5 - Typical Junction Capacitance

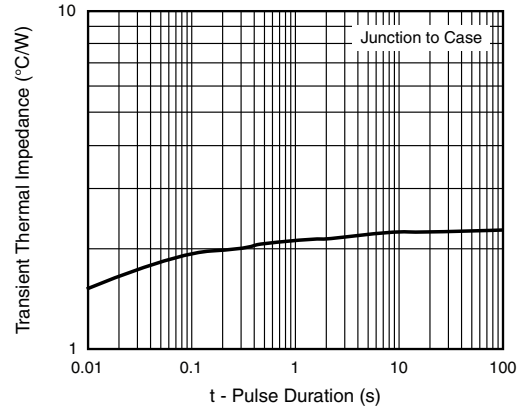
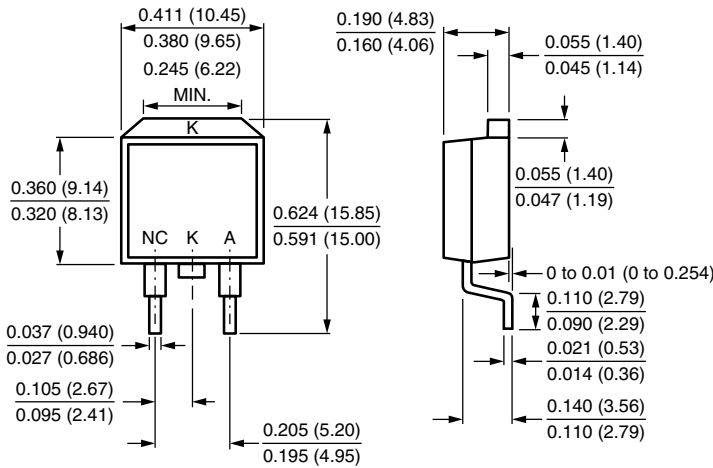


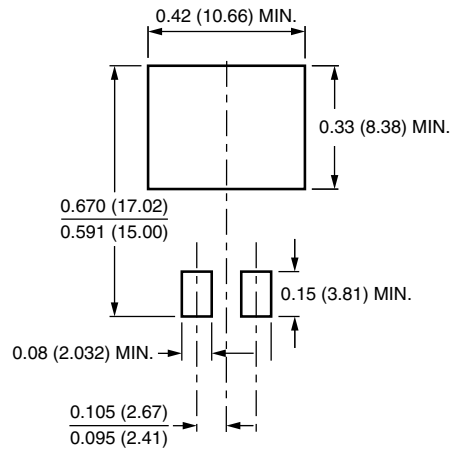
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AB



Mounting Pad Layout





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