HALOGEN

FREE

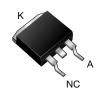


Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.39 \text{ V}$ at $I_F = 5 \text{ A}$

TMBS®



VB30100S					
NC O	_I K				
	⊢ ∘				
A 0	├─ HEATSINK				

PRIMARY CHARACTERISTICS			
Package	TO-263AB		
I _{F(AV)}	30 A		
V _{RRM}	100 V		
I _{FSM}	250 A		
V _F at I _F = 30 A	0.69 V		
T _J max.	150 °C		
Diode variations	Common cathode		

FEATURES

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- High efficiency operation
- · Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: For definitions of compliance please see <u>www.vishav.com/doc?99912</u>

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

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VB30100S	UNIT
Maximum repetitive peak reverse voltage	V _{RRM}	100	V
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	30	А
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	250	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

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	NDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage (1)	I _F = 5 A	T _A = 25 °C	V _F	0.47	-	V
	I _F = 10 A			0.55	-	
	I _F = 30 A			0.80	0.91	
	I _F = 5 A	T _A = 125 °C		0.39	-	
	I _F = 10 A			0.49	-	
	I _F = 30 A			0.69	0.78	
Reverse current (2)	V _R = 70 V	T _A = 25 °C	I _R	27	-	μΑ
	v _R = 70 v	T _A = 125 °C		11	-	mA
	\/ 100\/	T _A = 25 °C		70	1000	μΑ
	V _R = 100 V	T _A = 125 °C		23	45	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 °C unless otherwise noted)			
PARAMETER	SYMBOL	VB30100S	UNIT
Typical thermal resistance	$R_{ heta JC}$	2.0	°C/W

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-263AB	VB30100S-M3/4W	1.380	4W	50/tube	Tube	
TO-263AB	VB30100S-M3/8W	1.380	8W	800/reel	Tape and reel	

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

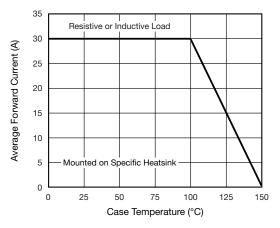


Fig. 1 - Forward Current Derating Curve

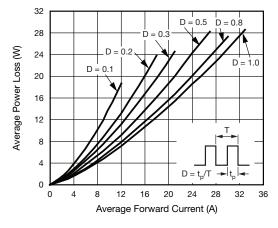


Fig. 2 - Forward Power Loss Characteristics

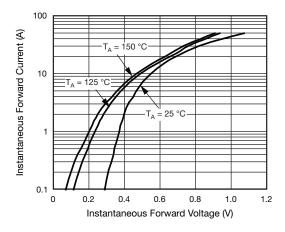


Fig. 3 - Typical Instantaneous Forward Characteristics

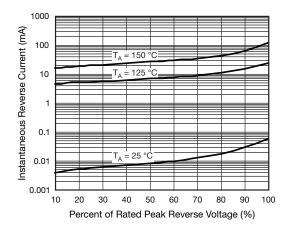


Fig. 4 - Typical Reverse Characteristics



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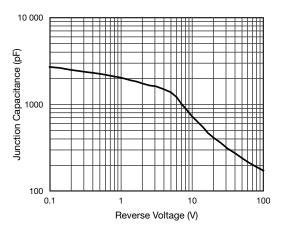


Fig. 5 - Typical Junction Capacitance

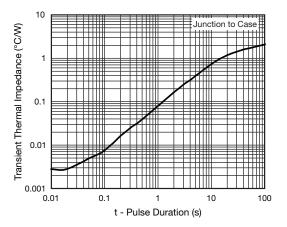
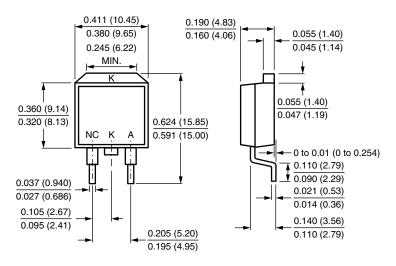


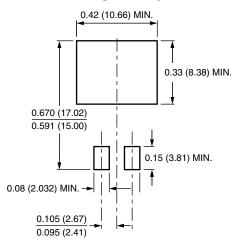
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AB



Mounting Pad Layout





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