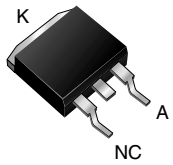
High-Voltage Trench MOS Barrier Schottky Rectifier

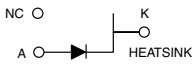
Ultra Low V_F = 0.437 V at I_F = 5 A

TMBS®

TO-263AB



VB30100SG



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 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
$I_{F(AV)}$	30 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at I_F = 30 A	0.76 V
T_J max.	150 °C
Diode variation	Single die

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

PARAMETER	SYMBOL	VB30100SG	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	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}	250	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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage (1)	I_F = 5 A	T_A = 25 °C	V_F	0.50	-	V
	I_F = 10 A			0.60	-	
	I_F = 30 A			0.92	1.00	
	I_F = 5 A	T_A = 125 °C		0.44	-	
	I_F = 10 A			0.55	-	
	I_F = 30 A			0.76	0.83	
Reverse current (2)	V_R = 70 V	T_A = 25 °C	I_R	8.8	-	µA
		T_A = 125 °C		6.5	-	mA
	V_R = 100 V	T_A = 25 °C		43	350	µA
		T_A = 125 °C		18	35	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**	**VB30100SG**	**UNIT**
Typical thermal resistance per leg	$R_{\theta JC}$	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-263AB	VB30100SG-M3/4W	1.37	4W	50/tube	Tube
TO-263AB	VB30100SG-M3/8W	1.37	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

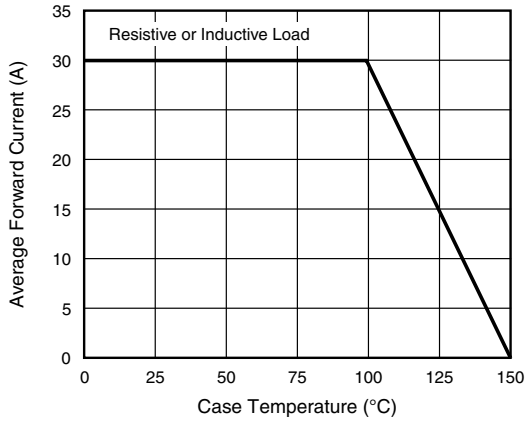


Fig. 1 - Forward Current Derating Curve

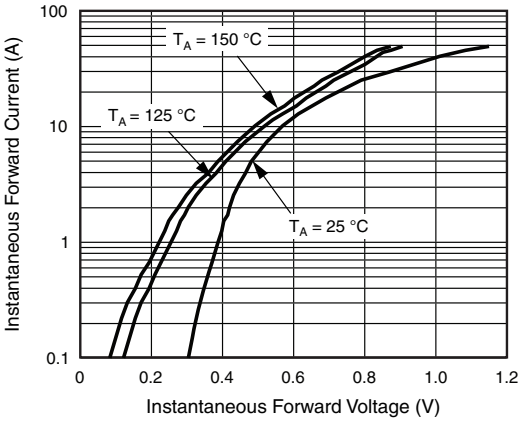


Fig. 3 - Typical Instantaneous Forward Characteristics

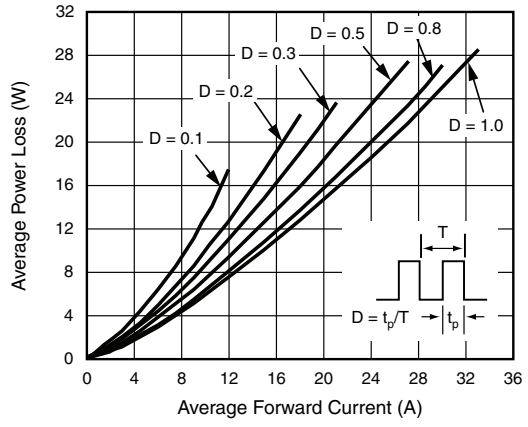


Fig. 2 - Forward Power Loss Characteristics

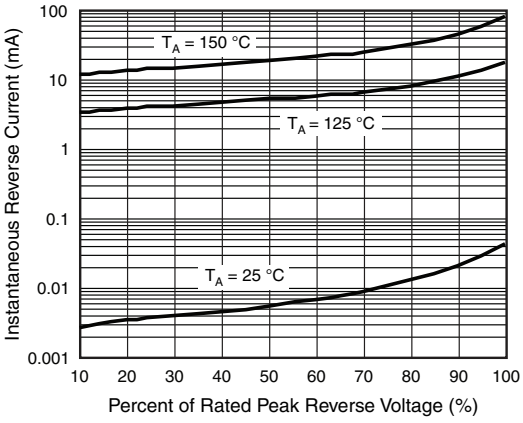


Fig. 4 - Typical Reverse Characteristics

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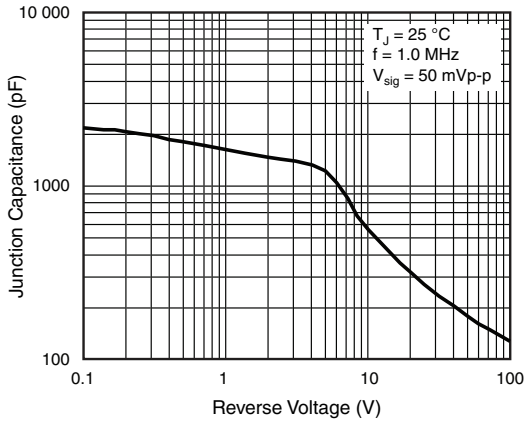


Fig. 5 - Typical Junction Capacitance

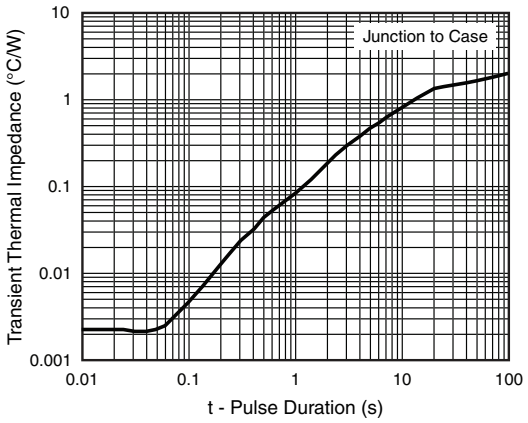
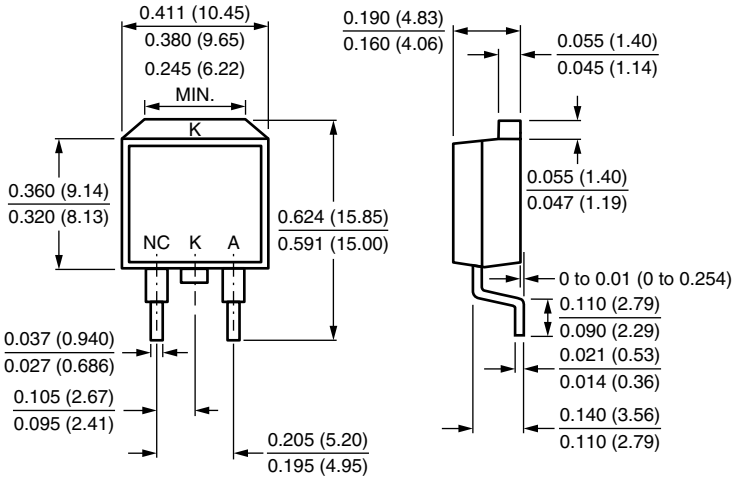


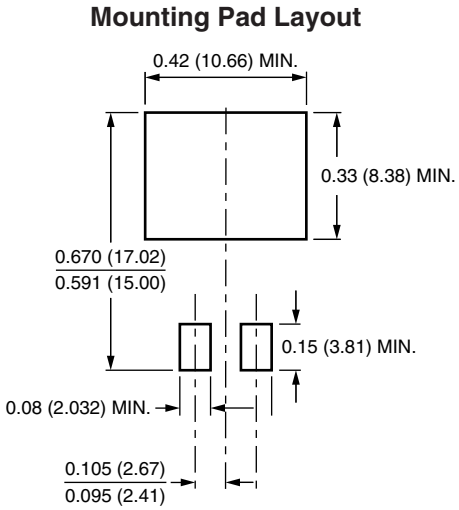
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AB



Mounting Pad Layout



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