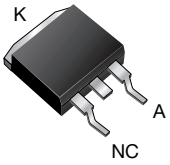
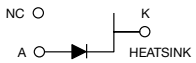
High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.39 V at I_F = 5 A

D^2PAK (TO-263AB)



VB30100S



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: D^2PAK (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

LINKS TO ADDITIONAL RSESOURCES

3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	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
Package	D^2PAK (TO-263AB)
Circuit configuration	Single

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	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	0.47	-	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	-	µA
		T_A = 125 °C		11	-	mA
	V_R = 100 V	T_A = 25 °C		70	1000	µA
		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	$R_{\theta JC}$	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
D^2PAK (TO-263AB)	VB30100S-M3/4W	1.380	4W	50/tube	Tube
D^2PAK (TO-263AB)	VB30100S-M3/8W	1.380	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

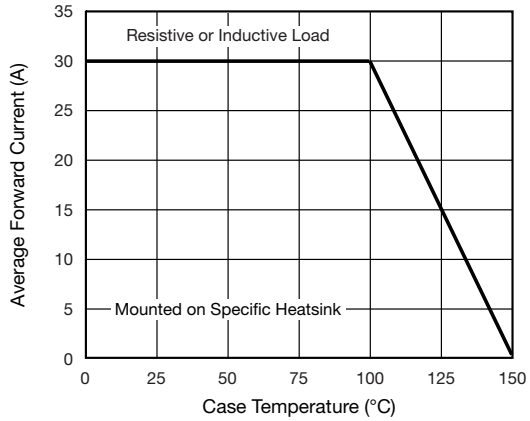

Fig. 1 - Forward Current Derating Curve

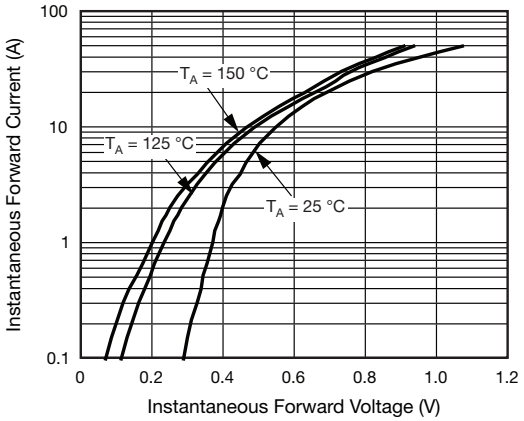

Fig. 3 - Typical Instantaneous Forward Characteristics

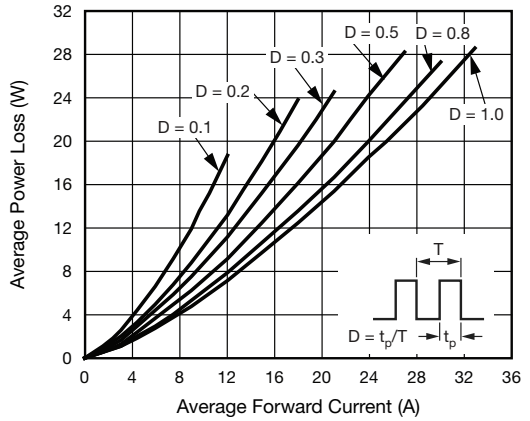

Fig. 2 - Forward Power Loss Characteristics

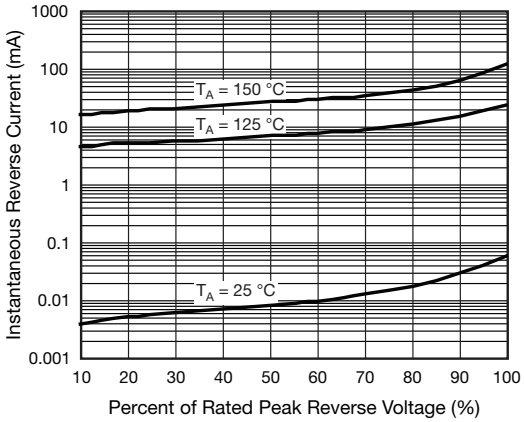

Fig. 4 - Typical Reverse Characteristics

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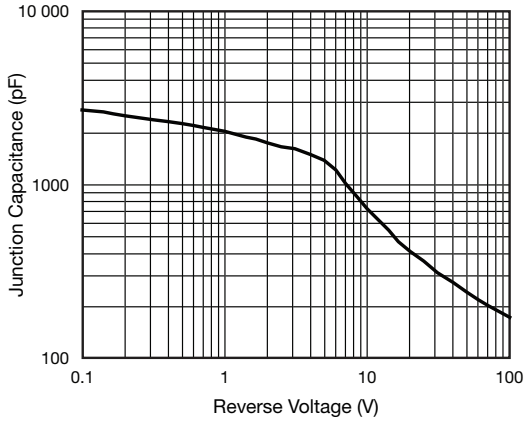


Fig. 5 - Typical Junction Capacitance

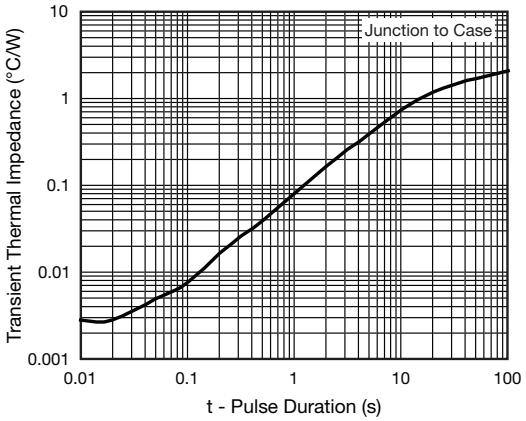
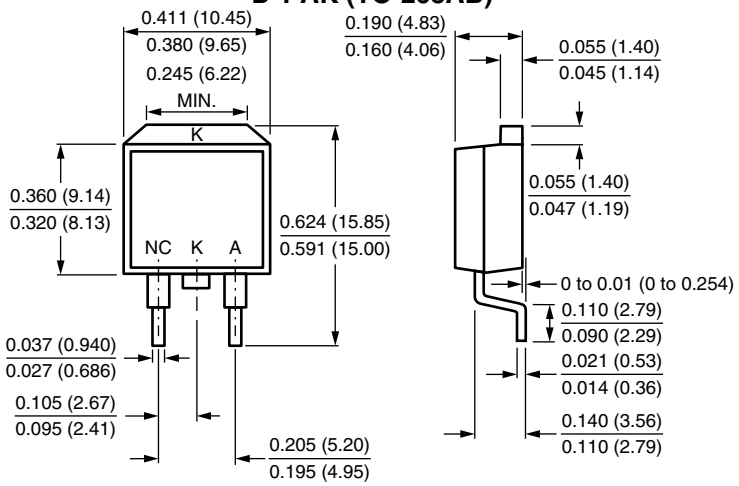


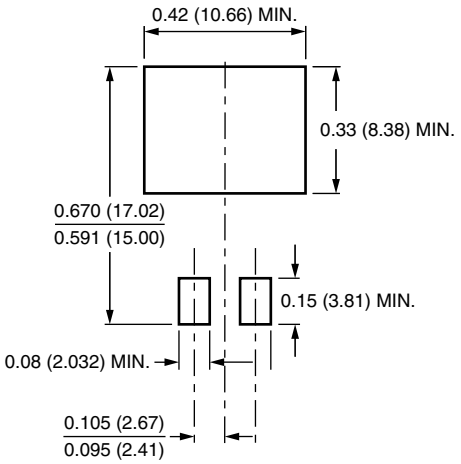
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout



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