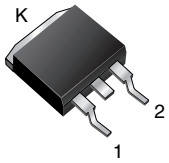
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

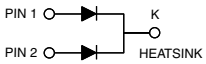
Ultra Low V_F = 0.38 V at I_F = 5 A

TMBS®

D²PAK (TO-263AB)



VB40100C



LINKS TO ADDITIONAL RESOURCES

3D Models

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: D²PAK (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 2 whisker test

Polarity: as marked

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at I_F = 20 A	0.61 V
T_J max.	150 °C
Package	D²PAK (TO-263AB)
Circuit configuration	Common cathode

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

PARAMETER		SYMBOL	VB40100C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	40	A
	per diode		20	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	250	A
Voltage rate of change (rated V_R)		dV/dt	10 000	V/μs
Operating junction temperature range		T_J	-40 to +150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode	I_F = 5 A	T_A = 25 °C	V_F	0.47	-	V
	I_F = 10 A			0.54	-	
	I_F = 20 A			0.67	0.73	
	I_F = 5 A	T_A = 125 °C		0.38	-	
	I_F = 10 A			0.45	-	
	I_F = 20 A			0.61	0.67	
Reverse current at rated V_R per diode (2)	V_R = 70 V	T_A = 25 °C	I_R	9	-	μA
		T_A = 125 °C		10	-	mA
	V_R = 100 V	T_A = 25 °C		-	1000	μA
		T_A = 125 °C		21	45	mA

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VB40100C**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
D^2PAK (TO-263AB)	VB40100C-M3/4W	1.39	4W	50/tube	Tube
D^2PAK (TO-263AB)	VB40100C-M3/8W	1.39	8W	800/reel	Tape and reel

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

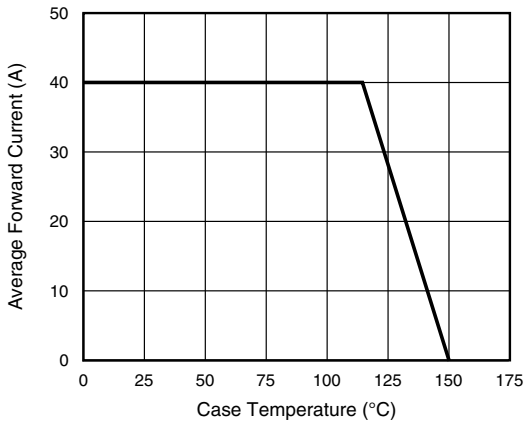

Fig. 1 - Forward Current Derating Curve

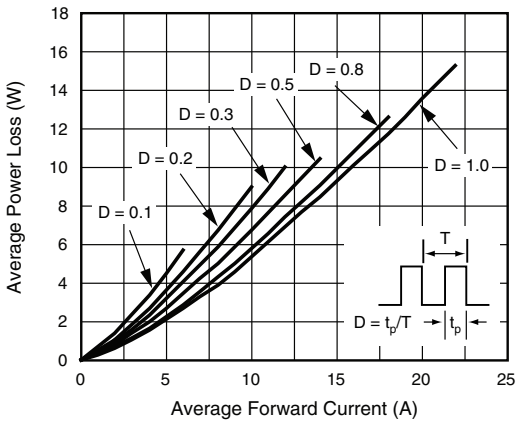

Fig. 2 - Forward Power Loss Characteristics Per Diode

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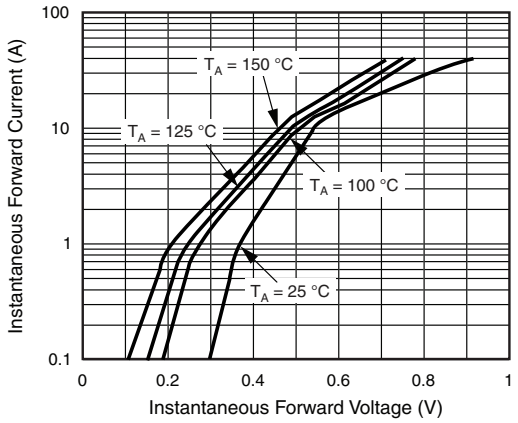


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

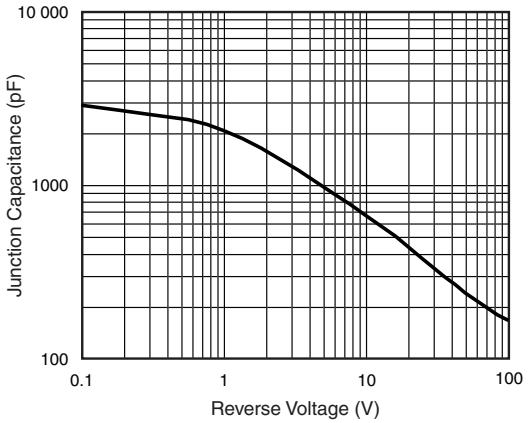


Fig. 5 - Typical Junction Capacitance Per Diode

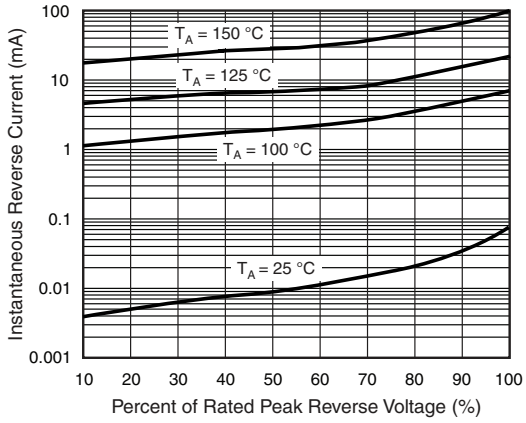


Fig. 4 - Typical Reverse Characteristics Per Diode

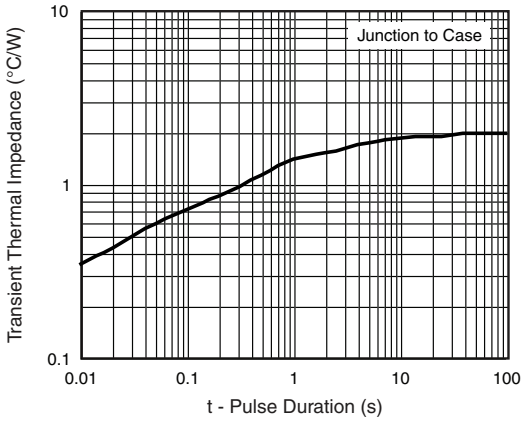
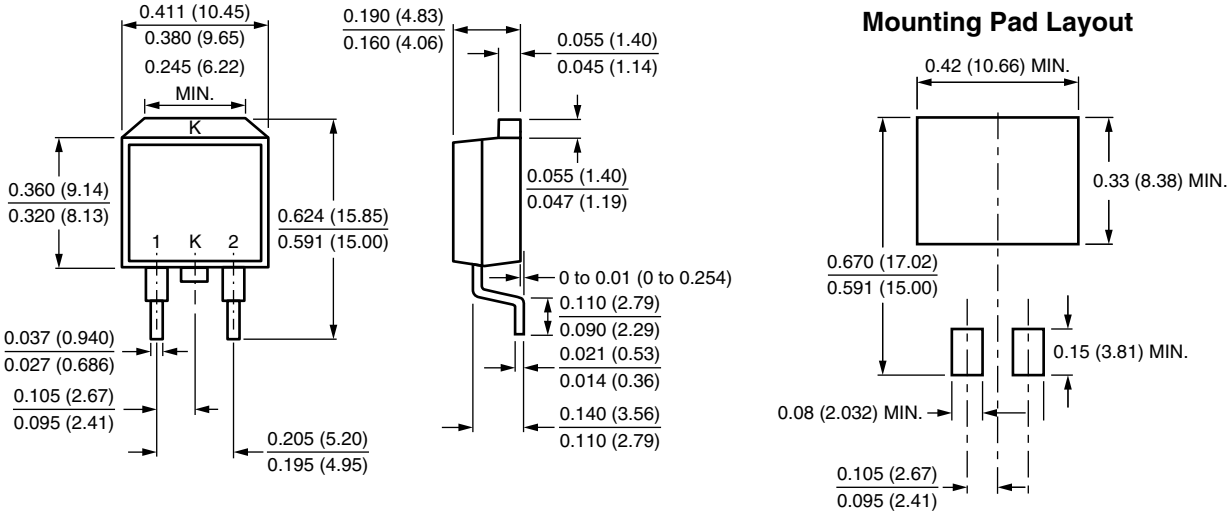


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



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