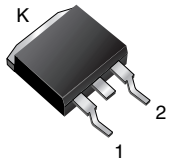
Dual High Voltage Trench MOS Barrier Schottky Rectifier

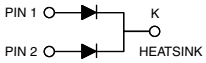
Ultra Low V_F = 0.57 V at I_F = 2.5 A

TMBS®

D^2PAK (TO-263AB)



VB10170C



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 Available

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

MECHANICAL DATA

Case: D^2PAK (TO-263AB)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
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
E3 and M3 suffix meet JESD 201 class 2 whisker test

Polarity: as marked

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 5 A
V_{RRM}	170 V
I_{FSM}	80 A
V_F at I_F = 5.0 A	0.65 V
T_J max.	175 °C
Package	D^2PAK (TO-263AB)
Circuit configuration	Common cathode

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

PARAMETER		SYMBOL	VB10170C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	170	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	10	A
	per diode		5	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I_{FSM}	80	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 +175	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	I_F = 2.5 A	T_A = 25 °C	V_F (1)	0.74	-	V
	I_F = 5.0 A			0.84	1.03	
	I_F = 2.5 A	T_A = 125 °C		0.57	-	
	I_F = 5.0 A			0.65	0.74	
Reverse current per diode	V_R = 136 V	T_A = 25 °C	I_R (2)	0.3	-	µA
		T_A = 125 °C		0.9	-	mA
	V_R = 170 V	T_A = 25 °C		-	90	µA
		T_A = 125 °C		1.3	10	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	VB10170C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	3.0	°C/W
	per device		1.7	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
D^2PAK (TO-263AB)	VB10170C-E3/4W	1.38	4W	50/tube	Tube
D^2PAK (TO-263AB)	VB10170C-E3/8W	1.38	8W	800/reel	Tape and reel
D^2PAK (TO-263AB)	VB10170C-M3/I	1.38	I	800/reel	Tape and reel

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

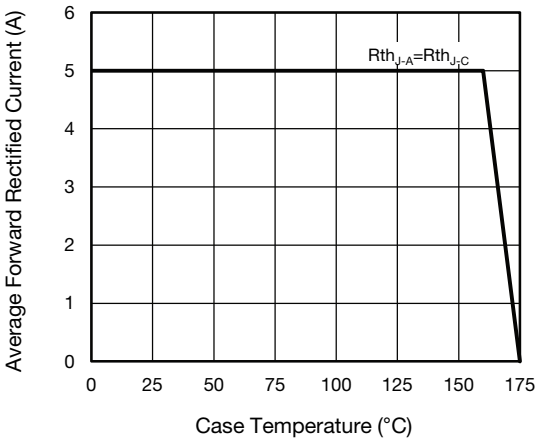


Fig. 1 - Maximum Forward Current Derating Curve

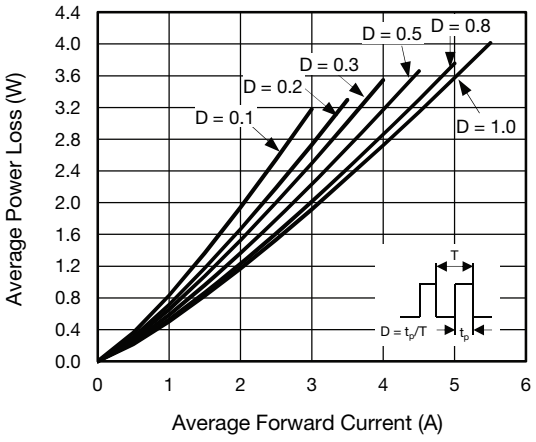


Fig. 2 - Forward Power Loss Characteristics Per Diode

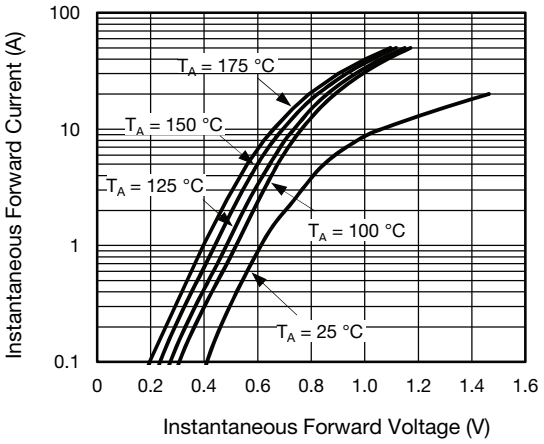


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

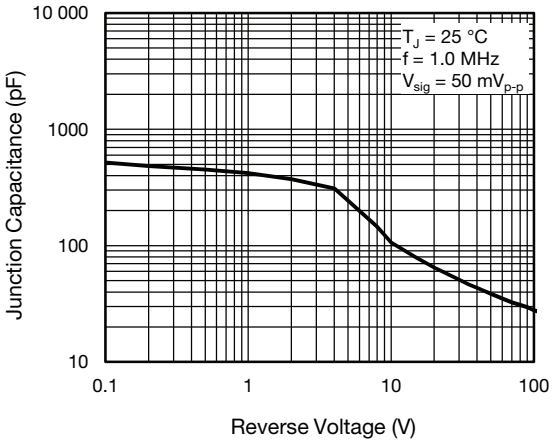


Fig. 5 - Typical Junction Capacitance Per Diode

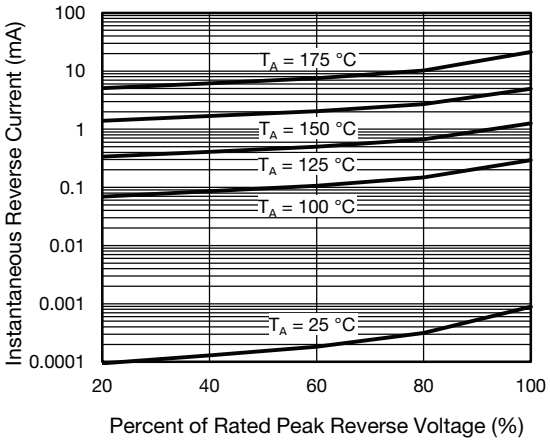


Fig. 4 - Typical Reverse Characteristics Per Diode

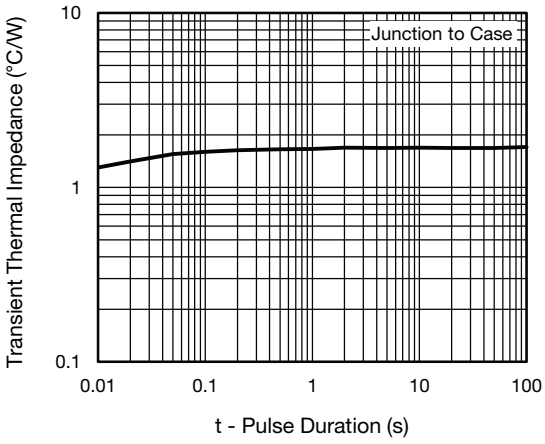
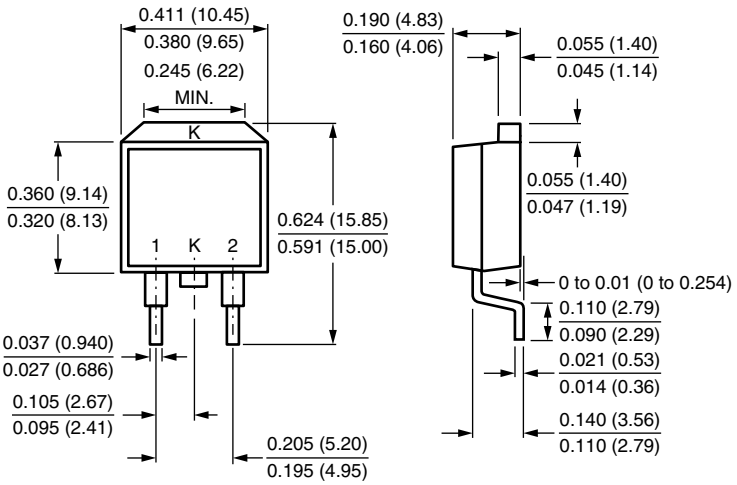


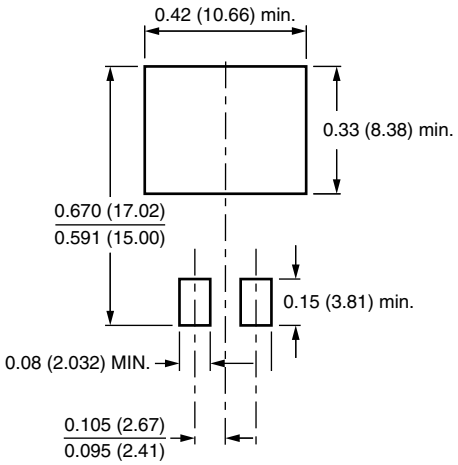
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout



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