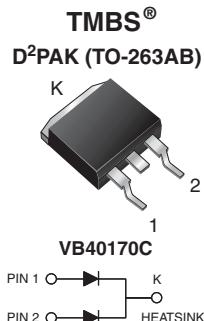


Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.52 V at I_F = 5 A



DESIGN SUPPORT TOOLS



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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



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: D²PAK (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

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

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	170 V
I_{FSM}	200 A
V_F at I_F = 20 A	0.68 V
T_J max.	175 °C
Package	D²PAK (TO-263AB)
Circuit configuration	Common cathode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	VB40170C		UNIT
Maximum repetitive peak reverse voltage			V_{RRM}		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		I_{FSM}	200		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 = 5 A	T_A = 25 °C	0.66	-	V
	I_F = 10 A		0.75	-	
	I_F = 20 A		0.86	1.20	
	I_F = 5 A	T_A = 125 °C	0.52	-	
	I_F = 10 A		0.59	-	
	I_F = 20 A		0.68	0.76	
Reverse current per diode	V_R = 136 V	T_A = 25 °C	1.3	-	μA
		T_A = 125 °C	2.2	-	mA
	V_R = 170 V	T_A = 25 °C	-	250	μA
		T_A = 125 °C	4.2	50	mA

Notes

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

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VB40170C	UNIT
Typical thermal resistance	per diode	1.2	°C/W
	per device	0.85	

Note

(1) Mounted on infinite heat sink; thermal resistance $R_{\theta\text{JC}}$ - junction-to-case

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AB	VB40170C-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB40170C-E3/8W	1.38	8W	800/reel	Tape and reel
TO-263AB	VB40170C-M3/I	1.38	I	800/reel	13" diameter plastic tape and reel

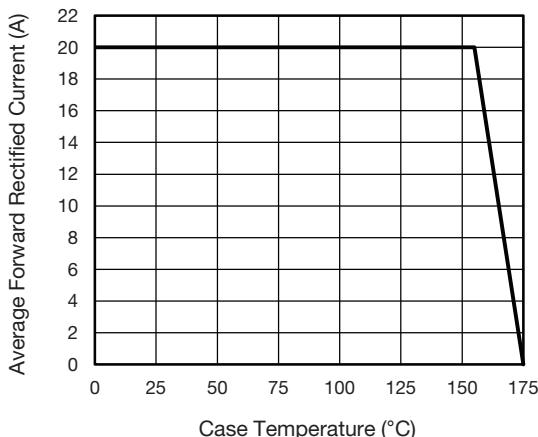
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

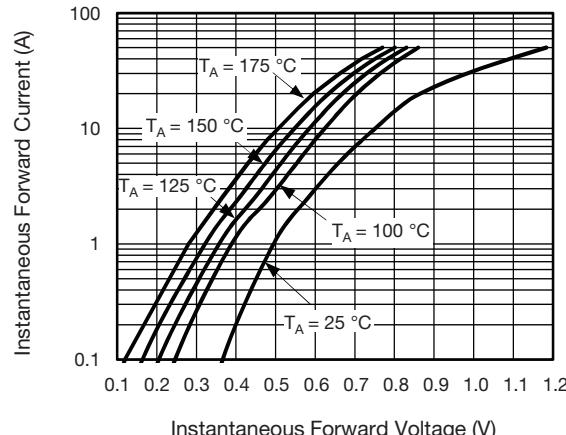


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

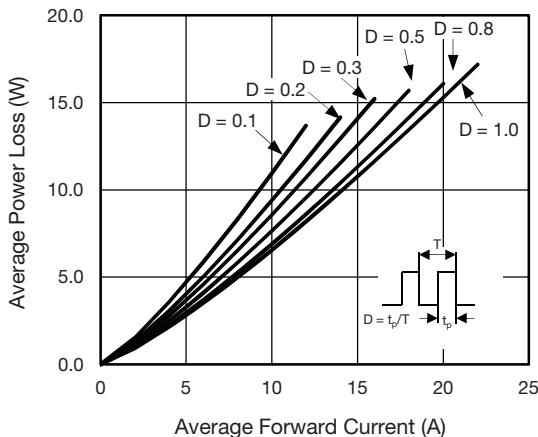


Fig. 2 - Forward Power Loss Characteristics Per Diode

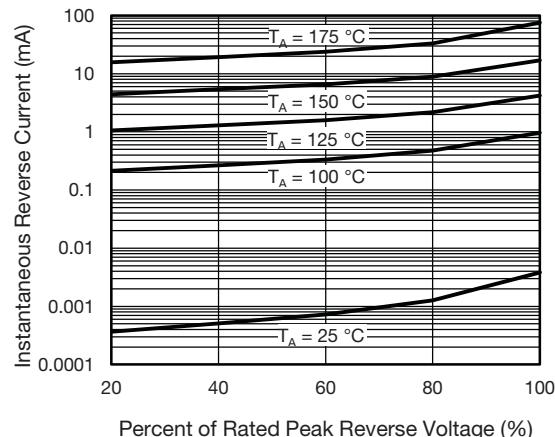


Fig. 4 - Typical Reverse Characteristics Per Diode

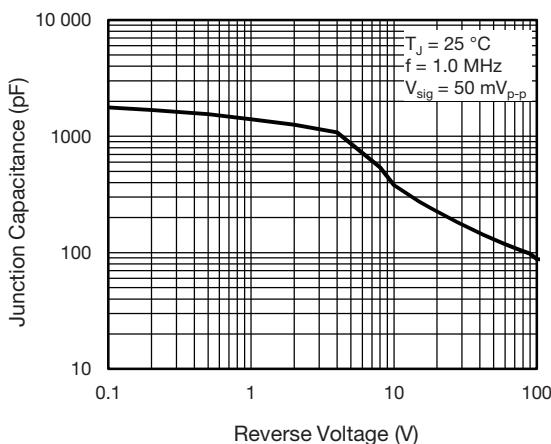


Fig. 5 - Typical Junction Capacitance Per Diode

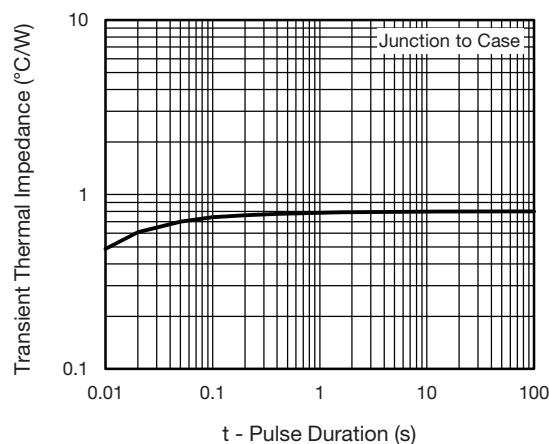
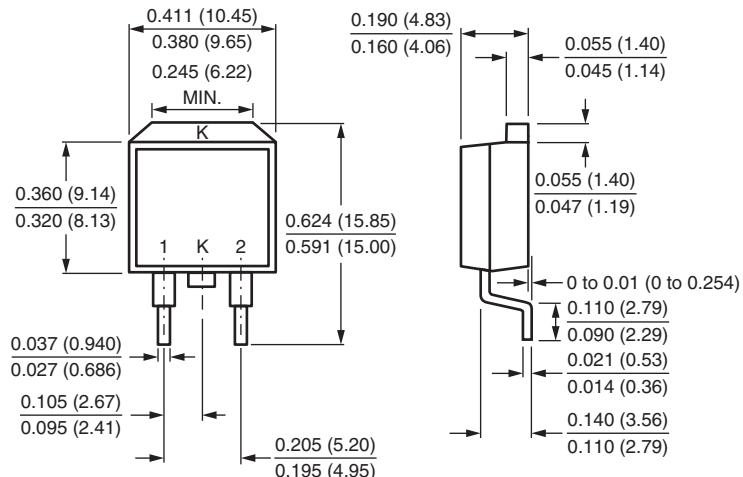


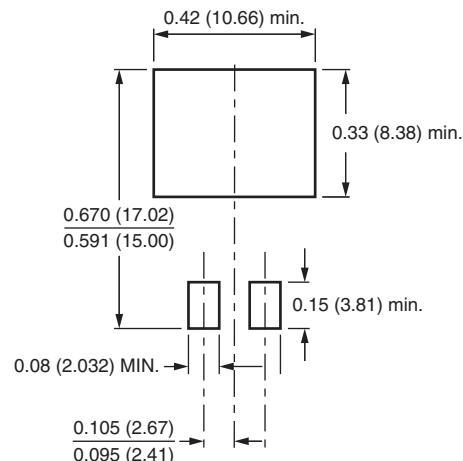
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout



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