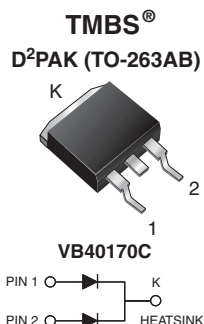


Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.52 \text{ V}$ at $I_F = 5 \text{ A}$



DESIGN SUPPORT TOOLS

[click logo to get started](#)

3D
Models
Available

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: 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 $I_F = 20 \text{ A}$	0.68 V
$T_J \text{ max.}$	175 °C
Package	D ² PAK (TO-263AB)
Circuit configuration	Common cathode

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	VB40170C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	170	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	40	A
		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/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +175	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ 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 ⁽¹⁾	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	I _R ⁽²⁾	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 μ s pulse width, 1 % duty cycle

(2) Pulse test: pulse width $\leq 5 \text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	VB40170C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}^{(1)}$	1.2	$^{\circ}\text{C/W}$
	per device		0.85	

Note
⁽¹⁾ Mounted on infinite heat sink; thermal resistance $R_{\theta JC}$ - 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

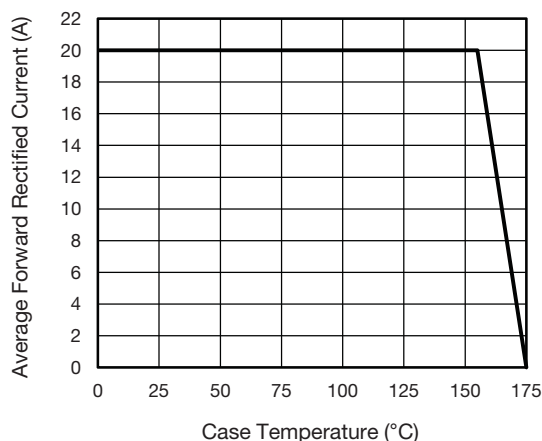
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

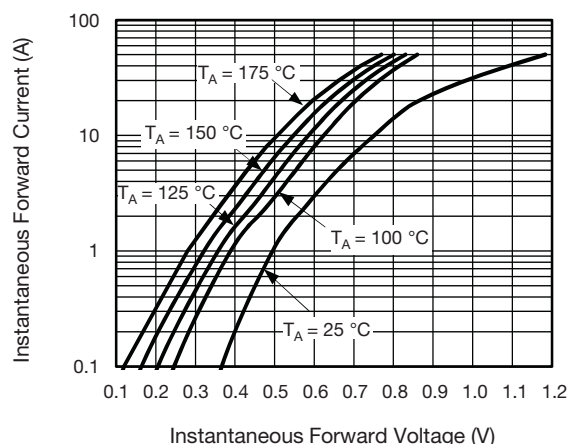


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

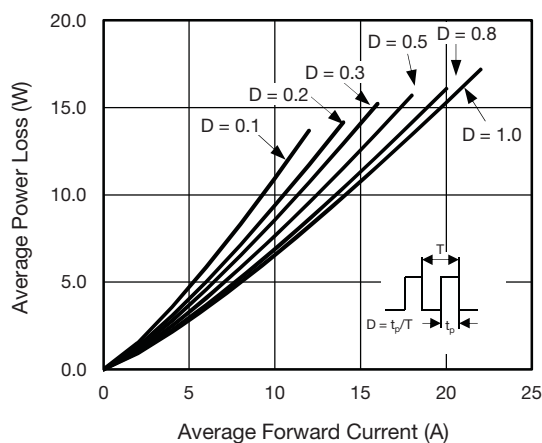


Fig. 2 - Forward Power Loss Characteristics Per Diode

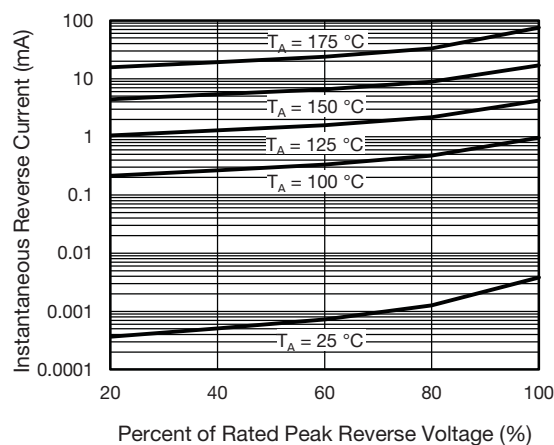


Fig. 4 - Typical Reverse Characteristics Per Diode

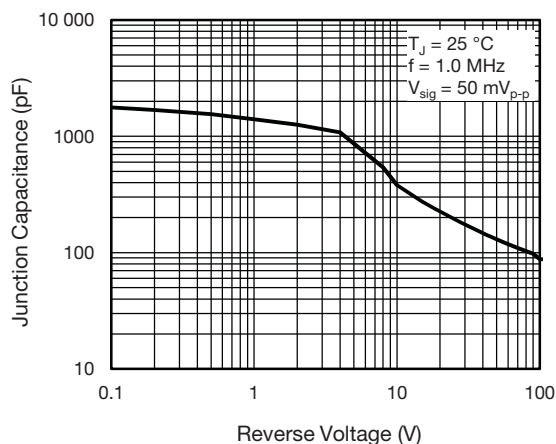


Fig. 5 - Typical Junction Capacitance Per Diode

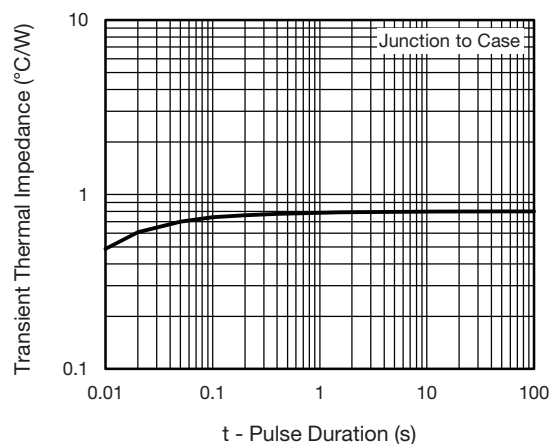
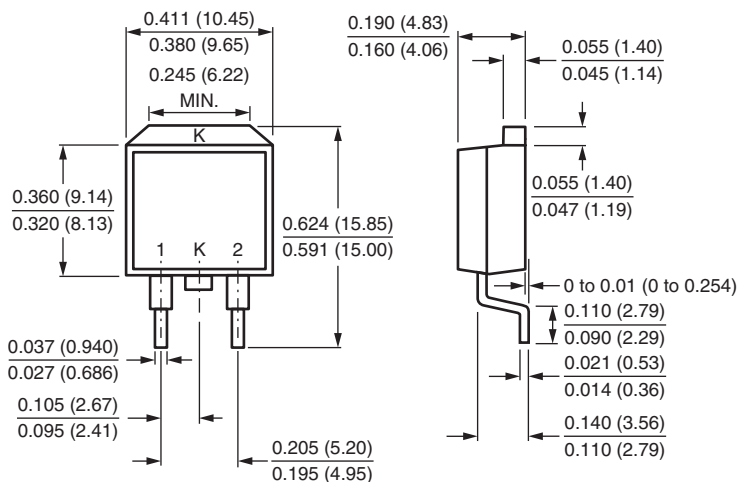


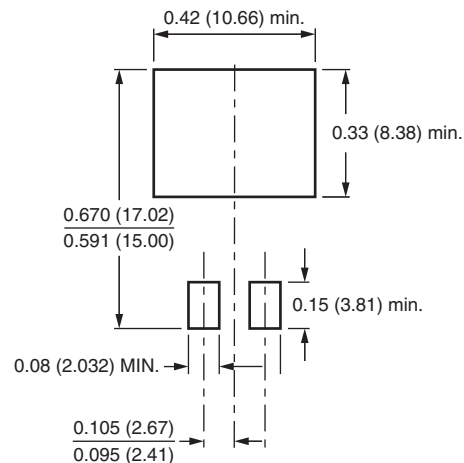
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout





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