

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.59$ V at $I_F = 5.0$ A



DESIGN SUPPORT TOOLS

3D
Models
Available

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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



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 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_F(AV)$	10 A
V_{RRM}	150 V
I_{FSM}	120 A
V_F at $I_F = 10$ A	0.69 V
T_J max.	150 °C
Package	D2PAK (TO-263AB)
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	VB10150S		UNIT	
Maximum repetitive peak reverse voltage	V_{RRM}	150		V	
Maximum average forward rectified current (fig. 1)	$I_F(AV)$	10		A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	120		A	
Voltage rate of change (rated V_R)	dV/dt	10 000		V/μs	
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150		°C	

ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5.0$ A	V_F	0.79	-	V
	$I_F = 10$ A		1.05	1.20	
	$I_F = 5.0$ A		0.59	-	
	$I_F = 10$ A		0.69	0.75	
Reverse current per diode ⁽²⁾	$V_R = 100$ V	I_R	1.3	-	μA
	$T_A = 125$ °C		1.2	-	mA
	$T_A = 25$ °C	I_R	-	150	μA
	$V_R = 150$ V		3	15	mA
	$T_A = 125$ °C				

Notes

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

⁽²⁾ Pulse test: Pulse width ≤ 40 ms

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

PARAMETER	SYMBOL	VB10150S	UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	2.0	$^\circ\text{C}/\text{W}$

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AB	VB10150S-M3/4W	1.37	4W	50/tube	Tube
TO-263AB	VB10150S-M3/8W	1.37	8W	800/reel	Tape and reel

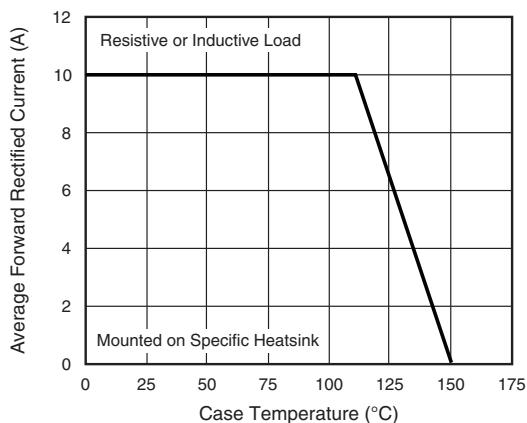
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

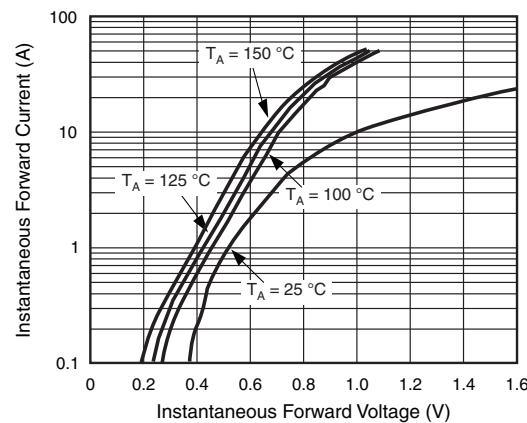


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

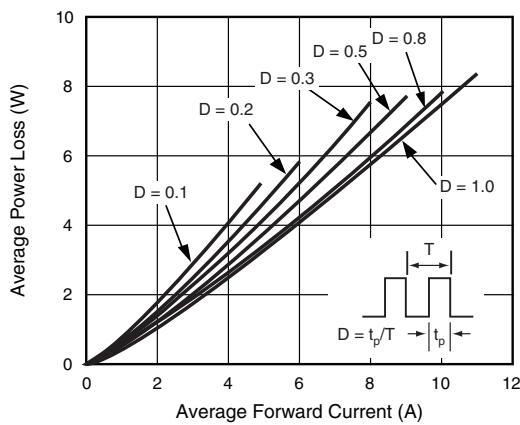


Fig. 2 - Forward Power Dissipation Characteristics Per Diode

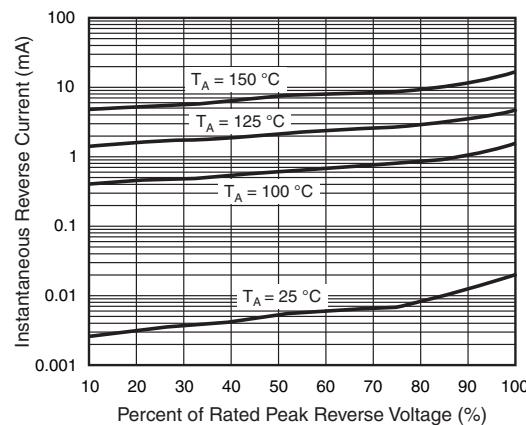


Fig. 4 - Typical Reverse Characteristics Per Diode

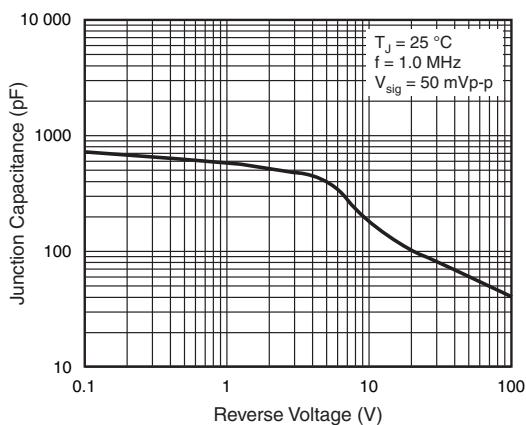


Fig. 5 - Typical Junction Capacitance Per Diode

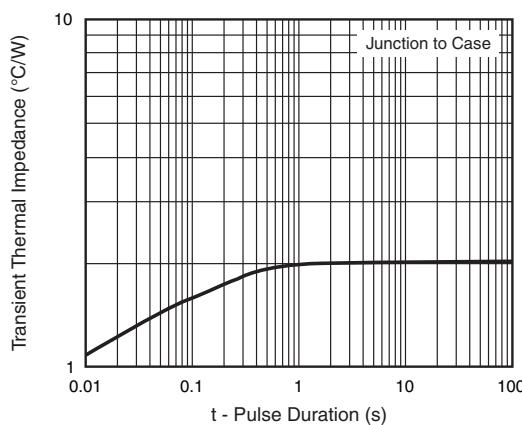
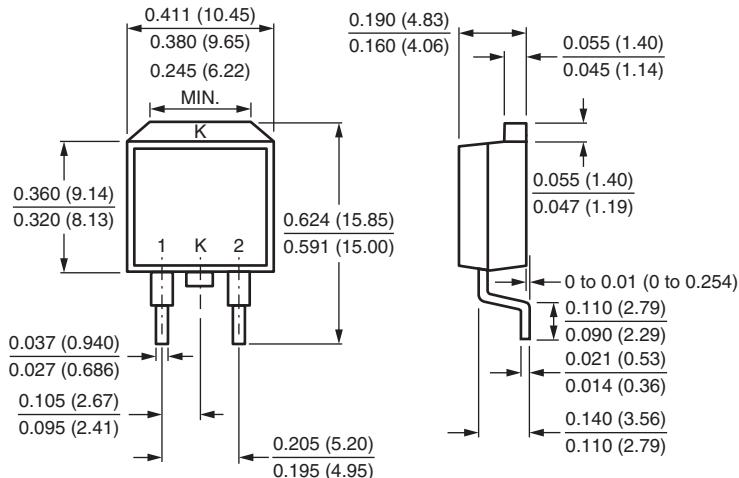


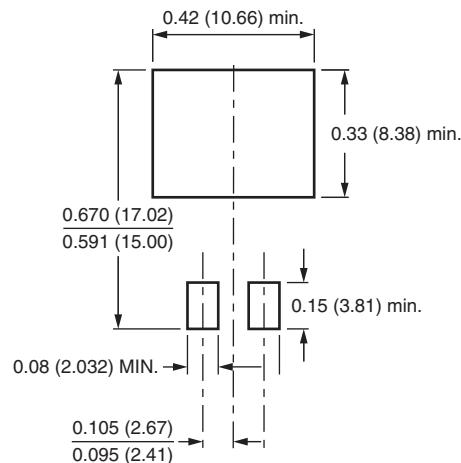
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout



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