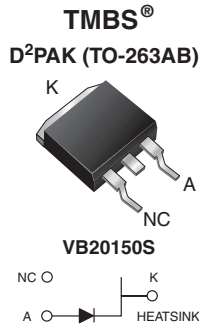


High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.55\text{ V}$ at $I_F = 5.0\text{ A}$


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

DESIGN SUPPORT TOOLS

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PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
V_{RRM}	150 V
I_{FSM}	160 A
V_F at $I_F = 20\text{ A}$	0.75 V
T_J max.	150 °C
Package	D ² PAK (TO-263AB)
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VB20150S	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	150	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	20	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	160	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}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ °C}$ unless otherwise noted)								
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT			
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5.0\text{ A}$	V_F			V			
						$T_A = 25\text{ °C}$	0.69	-
							$I_F = 10\text{ A}$	0.84
	$I_F = 20\text{ A}$					1.15	1.43	
	$T_A = 125\text{ °C}$					$I_F = 5.0\text{ A}$	0.55	-
						$I_F = 10\text{ A}$	0.64	-
$I_F = 20\text{ A}$		0.75	0.82					
Reverse current per diode ⁽²⁾	$V_R = 100\text{ V}$	I_R						
						$T_A = 25\text{ °C}$	2	-
	$T_A = 125\text{ °C}$					2.5	-	mA
	$V_R = 150\text{ V}$					$T_A = 25\text{ °C}$	-	250
$T_A = 125\text{ °C}$		5	25	mA				

Notes

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

⁽²⁾ Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VB20150S	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AB	VB20150S-M3/4W	1.39	4W	50/tube	Tube
TO-263AB	VB20150S-M3/8W	1.39	8W	800/reel	Tape and reel

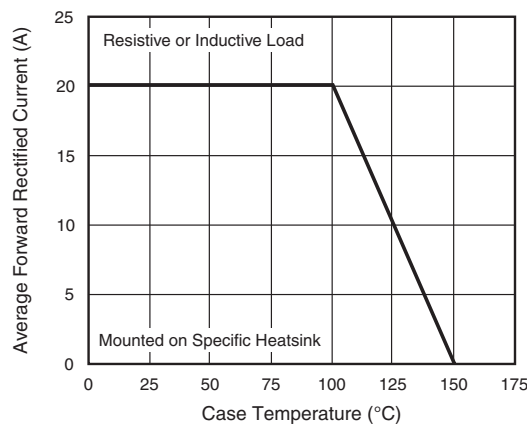
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

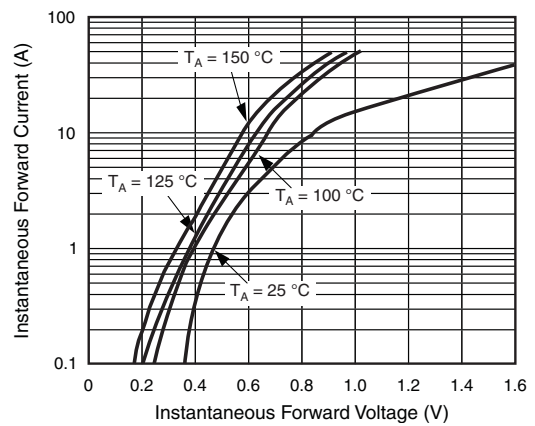


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

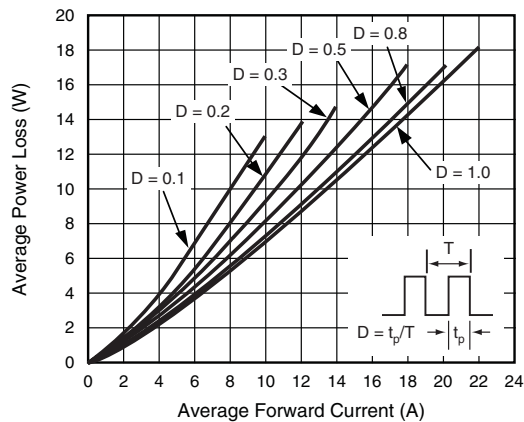


Fig. 2 - Forward Power Dissipation Characteristics Per Diode

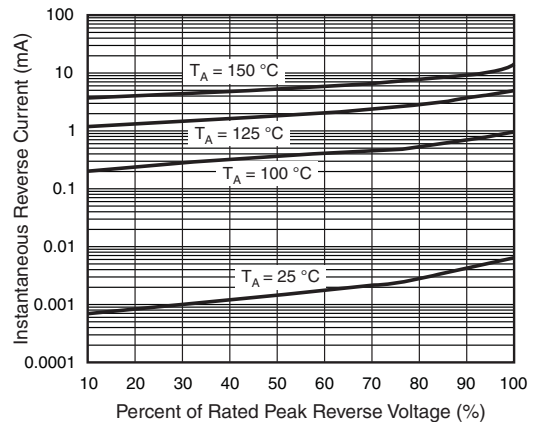


Fig. 4 - Typical Reverse Characteristics Per Diode

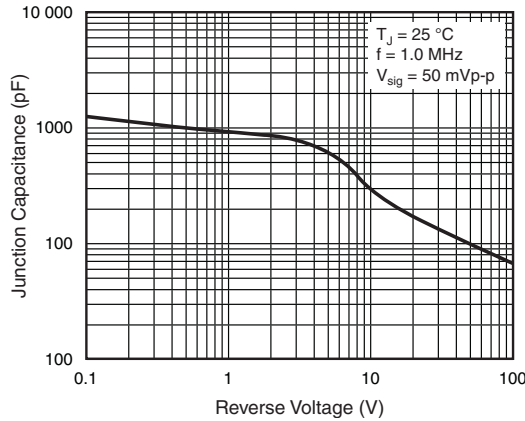


Fig. 5 - Typical Junction Capacitance Per Diode

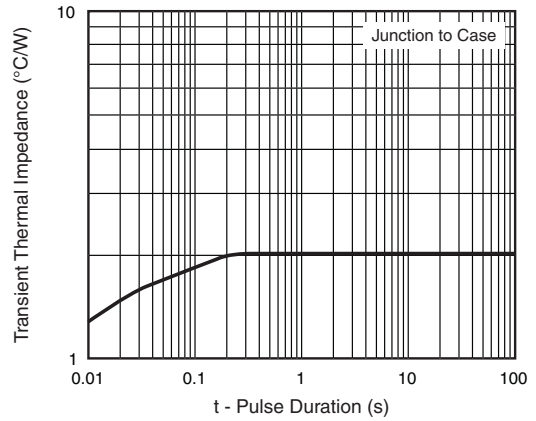
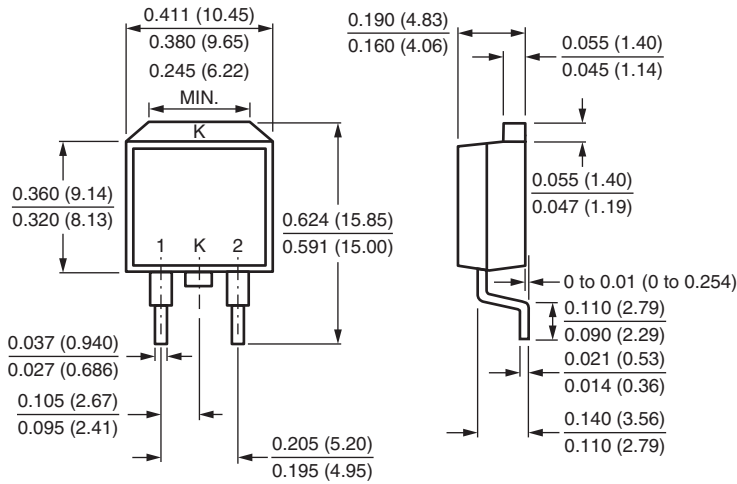


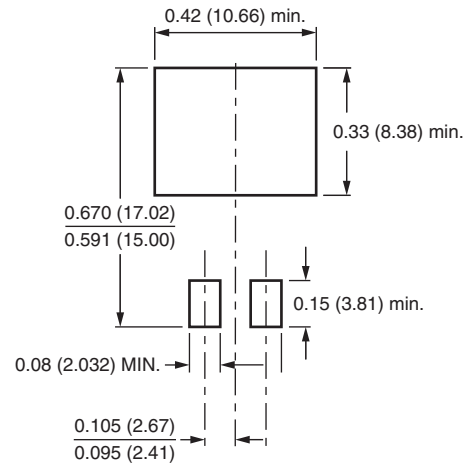
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout





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