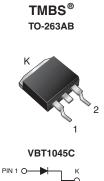
Vishay General Semiconductor

# **Dual Low-Voltage Trench MOS Barrier Schottky Rectifier**

Ultra Low V<sub>F</sub> = 0.34 V at I<sub>F</sub> = 2.5 A



HEATSINK

PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 5.0 A			
V <sub>RRM</sub>	45 V			
I <sub>FSM</sub>	100 A			
$V_F$ at $I_F = 5.0$ A	0.41 V			
T <sub>J</sub> max.	150 °C			
Package	TO-263AB			
Diode variations	s Common cathode			

## **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 RoHS peak of 245 °C COMPLIANT
- · 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: TO-263AB

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

<b>MAXIMUM RATINGS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VBT1045C	UNIT	
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	45	V	
Maximum average forward rectified current (fig. 1)	per device	I <sub>F(AV)</sub>	10	٨	
	per diode		5	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	100	А	
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-40 to +150	°C	





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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25$ °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I <sub>F</sub> = 2.5 A	– T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.44	-	V	
	I <sub>F</sub> = 5.0 A			0.49	0.58		
	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 125 °C		0.34	-		
	I <sub>F</sub> = 5.0 A			0.41	0.50		
Reverse current per diode		T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	500	μA	
		T <sub>A</sub> = 125 °C		5	15	mA	

Notes

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	VBT1045C	UNIT	
Typical thermal resistance	per diode	R <sub>θJC</sub>	3.5	°C/W	
	per device		2.5	C/W	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-263AB	VBT1045C-E3/4W	1.38	4W	50/tube	Tube	
TO-263AB	VBT1045C-E3/8W	1.38	8W	800/reel	Tape and reel	

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

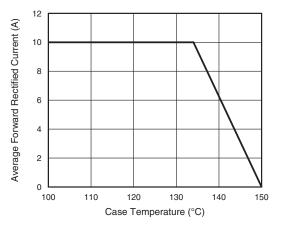


Fig. 1 - Maximum Forward Current Derating Curve

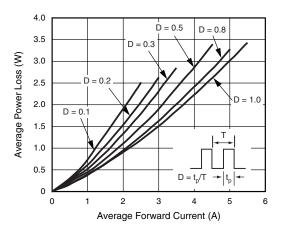
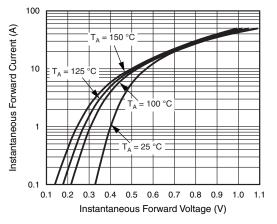


Fig. 2 - Forward Power Loss Characteristics Per Diode

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Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

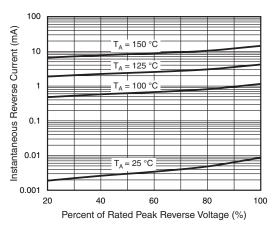
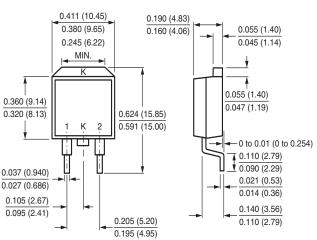


Fig. 4 - Typical Reverse Characteristics Per Diode





#### **TO-263AB**

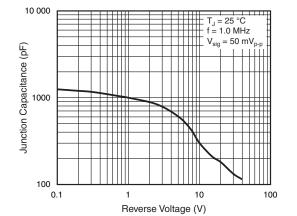


Fig. 5 - Typical Junction Capacitance Per Diode

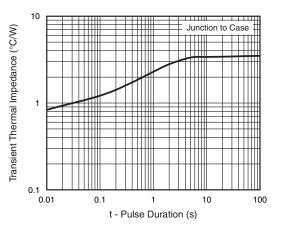
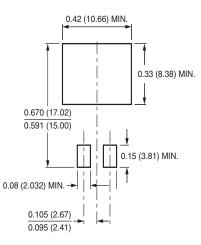


Fig. 6 - Typical Transient Thermal Impedance Per Diode

## **Mounting Pad Layout**



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3

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