

## Vishay General Semiconductor

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

Ultra Low  $V_F = 0.33 \text{ V}$  at  $I_F = 10 \text{ A}$ 





HEATSINK

PRIMARY CHARACTERISTICS				
$I_{F(AV)}$	2 x 30 A			
$V_{RRM}$	45 V			
I <sub>FSM</sub>	320 A			
$V_F$ at $I_F = 30 A$	0.47 V			
T <sub>J</sub> max.	150 °C			
Package	TO-263AB			
Diode variations	Common cathode			

#### **FEATURES**

Trench MOS Schottky technology



· Low forward voltage drop, low power losses

• High efficiency operation

RoHS

 Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C

 Material categorization: For definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

#### **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

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	VBT6045C	UNIT	
Maximum repetitive peak reverse voltage		$V_{RRM}$	45	V	
Maximum average forward rectified current (fig. 1)	per device	I <sub>F(AV)</sub>	60	А	
	per diode		30		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	320	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 <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I <sub>F</sub> = 10 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.44	-	. V	
	$I_F = 15 A$			0.47	-		
	I <sub>F</sub> = 30 A			0.54	0.64		
	I <sub>F</sub> = 10 A	T <sub>A</sub> = 125 °C		0.33	-		
	I <sub>F</sub> = 15 A			0.37	-		
	I <sub>F</sub> = 30 A			0.47	0.56		
Reverse current per diode	V - 45 V	$V_R = 45 \text{ V}$ $T_A = 25 \text{ °C}$ $T_A = 125 \text{ °C}$	I <sub>R</sub> <sup>(2)</sup>	-	3000	μA	
	v <sub>R</sub> = 45 V			18	50	mA	

#### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	VBT64045C	UNIT	
Typical thermal resistance	per diode	$R_{ heta JC}$	1.5	°C/W	
	per device		0.8	- C/VV	

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-263AB	VBT6045C-E3/4W	1.38	4W	50/tube	Tube		
TO-263AB	VBT6045C-E3/8W	1.38	8W	800/reel	Tape and reel		

### RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

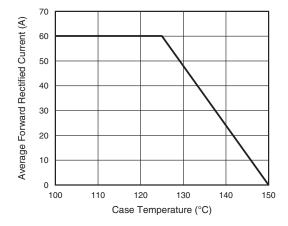


Fig. 1 - Maximum Forward Current Derating Curve

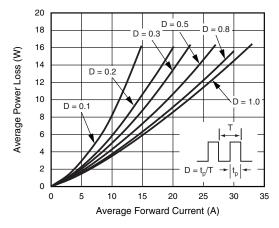


Fig. 2 - Forward Power Loss Characteristics Per Diode



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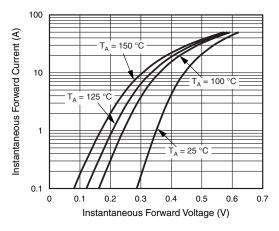


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

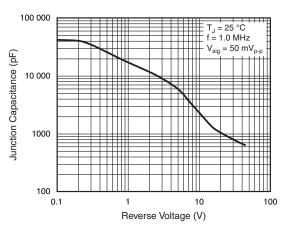


Fig. 5 - Typical Junction Capacitance Per Diode

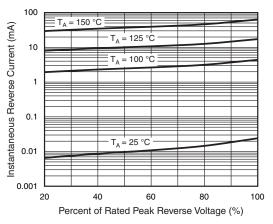


Fig. 4 - Typical Reverse Characteristics Per Diode

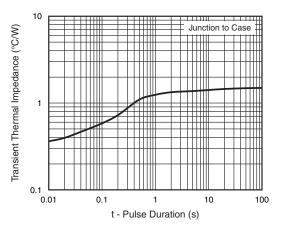
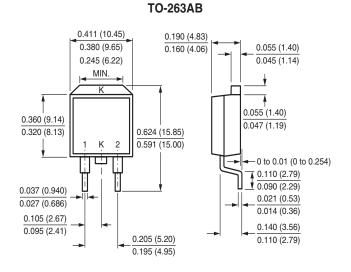
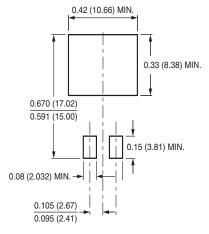


Fig. 6 - Typical Transient Thermal Impedance Per Diode

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



### **Mounting Pad Layout**





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