**HALOGEN** 

FREE



# Vishay General Semiconductor

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

Ultra Low  $V_F = 0.36 \text{ V}$  at  $I_F = 5 \text{ A}$ 





VB60100C				
PIN 1 O	К			
PIN 2 O	HEATSINK			

PRIMARY CHARACTERISTICS			
Package	TO-263AB		
I <sub>F(AV)</sub>	2 x 30 A		
$V_{RRM}$	100 V		
I <sub>FSM</sub>	320 A		
V <sub>F</sub> at I <sub>F</sub> = 30 A	0.66 V		
T <sub>J</sub> max.	150 °C		
Diode variation	Common cathode		

#### **FEATURES**

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- High efficiency operation
- · Low thermal resistance
- 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.vishav.com/doc?99912">www.vishav.com/doc?99912</a>

### **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: 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

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER		SYMBOL	VB60100C	UNIT
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	100	V
Maximum average forward rectified current (fig. 1)	per device	I <sub>F(AV)</sub>	60	Α
	per diode		30	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I <sub>FSM</sub>	320	А
Voltage rate of change (rated VR)		dV/dt	10 000	V/µs
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 CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	- V <sub>F</sub>	0.45	-	V
	I <sub>F</sub> = 10 A			0.52	-	
	I <sub>F</sub> = 15 A			0.58	0.63	
	I <sub>F</sub> = 20 A			0.63	-	
	I <sub>F</sub> = 30 A			0.73	0.79	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.36	-	
	I <sub>F</sub> = 10 A			0.45	-	
	I <sub>F</sub> = 15 A			0.53	0.58	
	I <sub>F</sub> = 20 A			0.58	-	
	$I_F = 30 \text{ A}$			0.66	0.70	
Reverse current at rated V <sub>R</sub> per diode <sup>(2)</sup>	V <sub>R</sub> = 80 V	T <sub>A</sub> = 25 °C	I <sub>R</sub>	24	500	μΑ
	V <sub>R</sub> = 60 V	T <sub>A</sub> = 125 °C		13	20	mA
	$V_{\rm P} = 100  {\rm V}$	T <sub>A</sub> = 25 °C		65	1000	μΑ
		T <sub>A</sub> = 125 °C		30	-	mA

#### **Notes**

 $^{(1)}$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VB60100C	UNIT
Typical thermal resistance per diode	$R_{ heta JC}$	2.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AB	VB60100C-M3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB60100C-M3/8W	1.38	8W	50/tube	Tape and reel

### **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

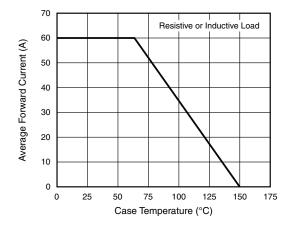


Fig. 1 - Forward Current Derating Curve

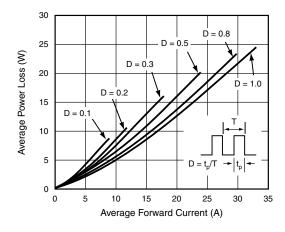


Fig. 2 - Forward Power Loss Characteristics Per Diode



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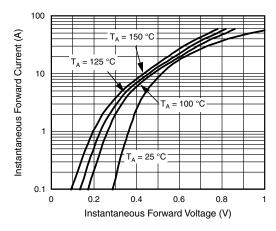


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

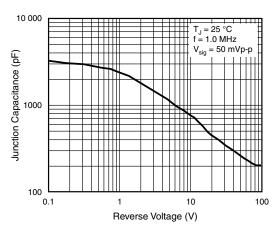


Fig. 5 - Typical Junction Capacitance Per Diode

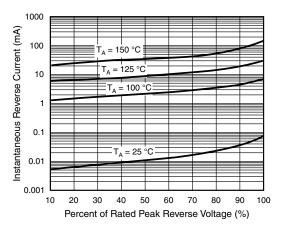


Fig. 4 - Typical Reverse Characteristics Per Diode

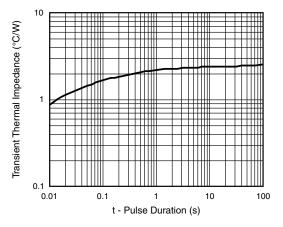
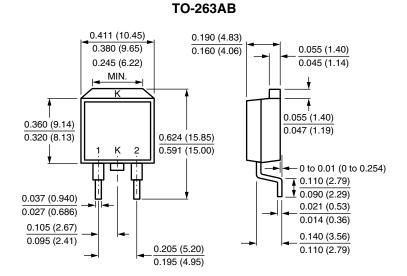
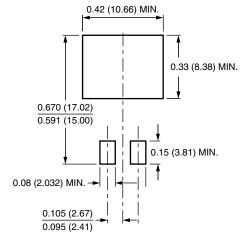


Fig. 6 - Typical Transient Thermal Impedance Per Diode

### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



### **Mounting Pad Layout**



Revision: 15-May-13 3 Document Number: 87988



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Revision: 13-Jun-16 1 Document Number: 91000