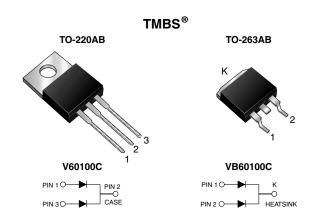




Vishay General Semiconductor

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

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



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 30 A			
$V_{RRM}$	100 V			
I <sub>FSM</sub>	320 A			
$V_F$ at $I_F = 30 A$	0.66 V			
T <sub>J</sub> max.	150 °C			

#### **FEATURES**





Low forward voltage drop, low power losses



· High efficiency operation

ROHS

- · Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

#### **TYPICAL APPLICATIONS**

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, dc-to-dc converters and reverse battery protection.

#### **MECHANICAL DATA**

Case: TO-220AB and 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	V60100C	VB60100C	UNIT	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100		V	
Maximum average forward rectified current (fig. 1) per device per diode	I <sub>F(AV)</sub>	60 30		А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	320		А	
Non-repetitive avalanche energy at $T_J = 25$ °C, $L = 140$ mH per diode	E <sub>AS</sub>	450		mJ	
Peak repetitive reverse current at $t_p$ = 2 $\mu$ s, 1 kHz, $T_J$ = 38 °C $\pm$ 2 °C per diode	I <sub>RRM</sub>	1.0		А	
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000		V/µs	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 40 to + 150		°C	

## V60100C & VB60100C

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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	NDITIONS	SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	$V_{BR}$	100 (minimum)	-	
Instantaneous forward voltage per diode $^{(1)}$ Reverse current at rated $V_R$ per diode $^{(2)}$	I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A I <sub>F</sub> = 15 A I <sub>F</sub> = 20 A I <sub>F</sub> = 30 A I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A I <sub>F</sub> = 15 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.45 0.52 0.58 0.63 0.73	- 0.63 - 0.79 -	V
	I <sub>F</sub> = 20 A I <sub>F</sub> = 30 A	T <sub>A</sub> = 125 °C  T <sub>A</sub> = 25 °C		0.53 0.58 0.66	0.58 - 0.70 500	
	$V_R = 80 \text{ V}$	T <sub>A</sub> = 125 °C	l <sub>R</sub>	13	20	mA
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C		65 30	1000 -	μA mA

#### Notes

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V60100C	VB60100C	UNIT
Typical thermal resistance per diode	$R_{ heta JC}$	2.5	2.5	°C/W

ORDERING INFORMATION							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AB	V60100C-E3/4W	1.89	4W	50/tube	Tube		
TO-263AB	VB60100C-E3/4W	1.38	4W	50/tube	Tube		
TO-263AB	VB60100C-E3/8W	1.38	8W	800/reel	Tape and reel		

#### **RATINGS AND CHARACTERISTICS CURVES**

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

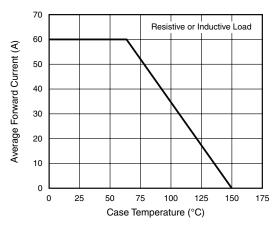


Figure 1. Forward Current Derating Curve

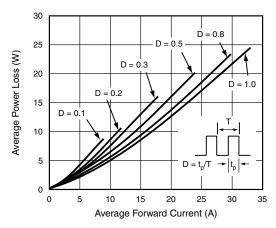


Figure 2. Forward Power Loss Characteristics Per Diode

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





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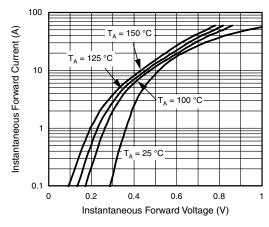


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

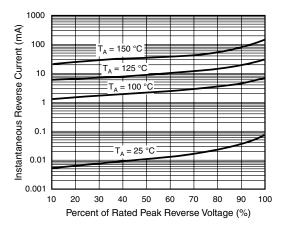


Figure 4. Typical Reverse Characteristics Per Diode

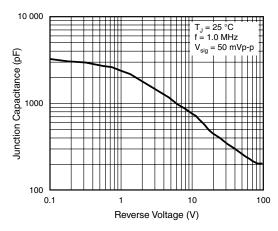


Figure 5. Typical Junction Capacitance Per Diode

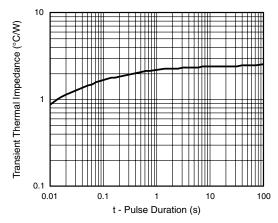


Figure 6. Typical Transient Thermal Impedance Per Diode

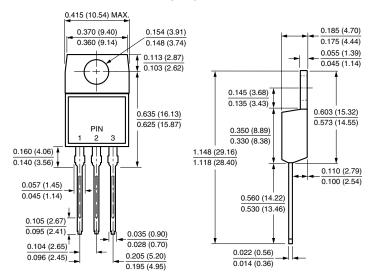
# V60100C & VB60100C

## Vishay General Semiconductor

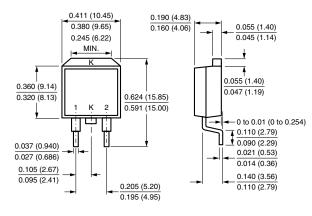


#### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

#### **TO-220AB**



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



# 0.42 (10.66) MIN. 0.33 (8.38) MIN. 0.670 (17.02) 0.591 (15.00) 0.08 (2.032) MIN.

0.105 (2.67) 0.095 (2.41)



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