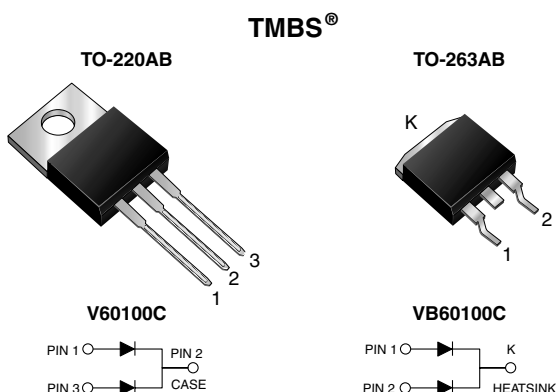




# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

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



## 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 (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



**RoHS**  
COMPLIANT

## TYPICAL APPLICATIONS

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

## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
$V_{RRM}$	100 V
$I_{FSM}$	320 A
$V_F$ at $I_F = 30 \text{ A}$	0.66 V
$T_J \text{ max.}$	150 °C

## 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 ( $T_A = 25 \text{ °C}$ 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	$I_{F(AV)}$	60 30		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	320		A
Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$ , $L = 140 \text{ mH}$ per diode	$E_{AS}$	450		mJ
Peak repetitive reverse current at $t_p = 2 \text{ } \mu\text{s}$ , 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$ per diode	$I_{RRM}$	1.0		A
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000		V/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	- 40 to + 150		°C

## V60100C &amp; VB60100C

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ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	100 (minimum)	-	V
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	-	
	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 <sub>F</sub> = 30 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 T <sub>A</sub> = 125 °C	I <sub>R</sub>	24 13	500 20	μA 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>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ 

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V60100C	VB60100C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.5	2.5	$^{\circ}\text{C/W}$

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

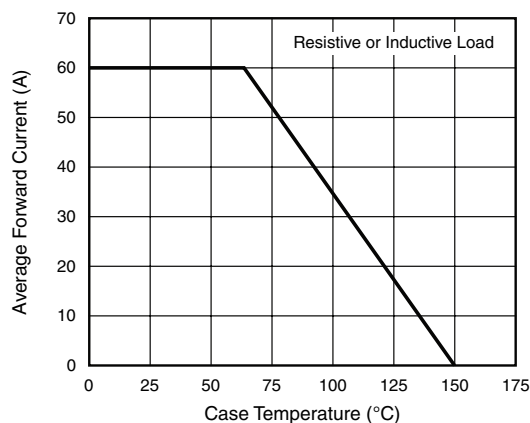
 $(T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Figure 1. Forward Current Derating Curve

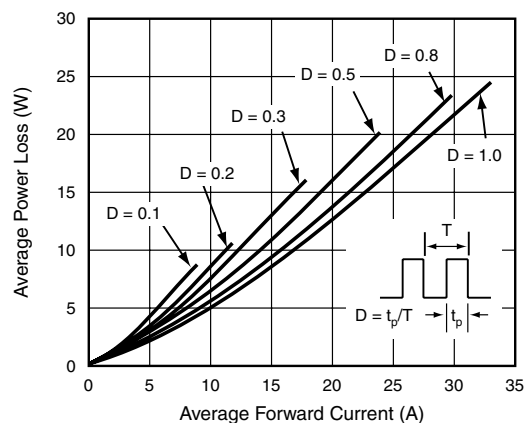


Figure 2. Forward Power Loss Characteristics Per Diode

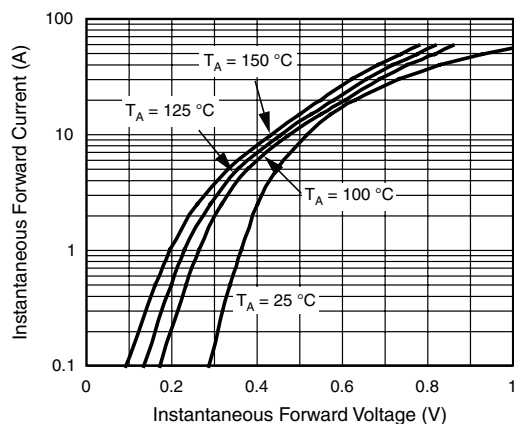


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

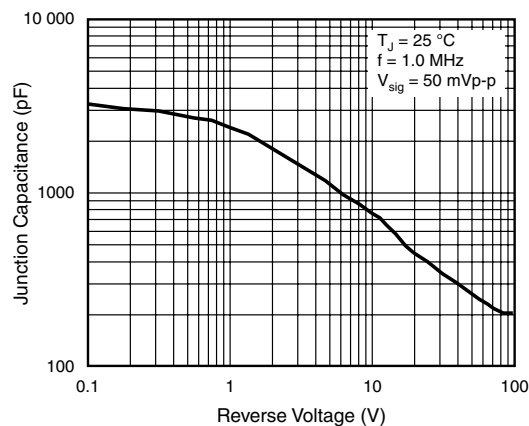


Figure 5. Typical Junction Capacitance Per Diode

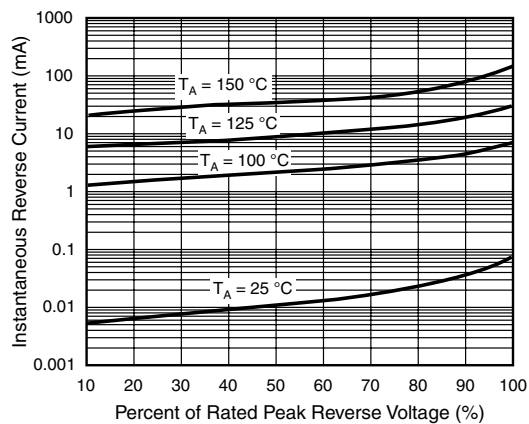


Figure 4. Typical Reverse Characteristics Per Diode

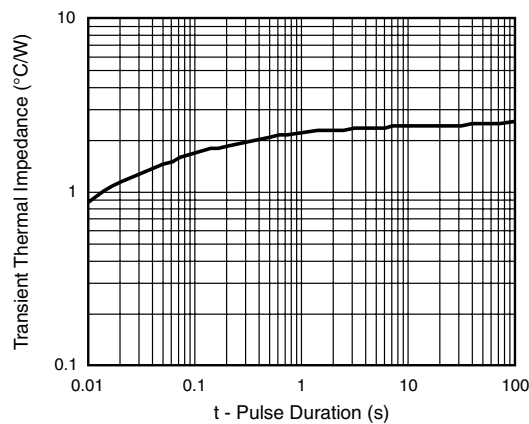
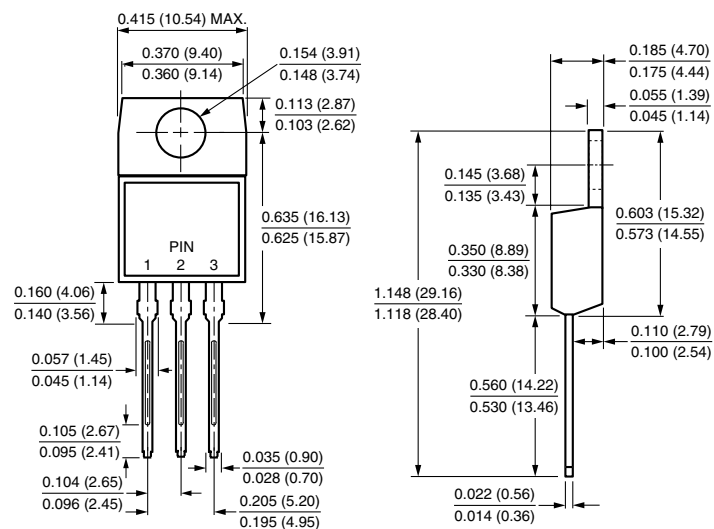
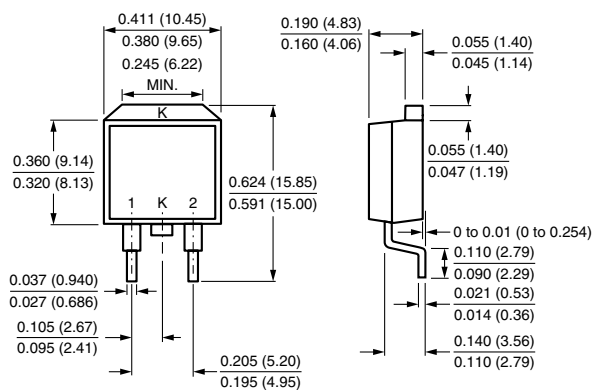
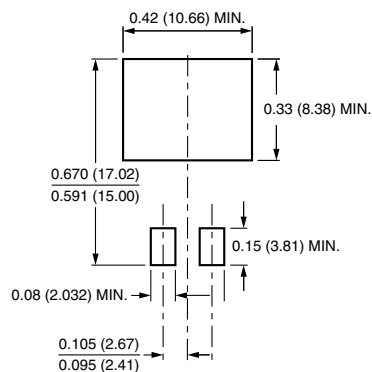


Figure 6. Typical Transient Thermal Impedance Per Diode

**V60100C & VB60100C**

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**TO-220AB****TO-263AB****Mounting Pad Layout**



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