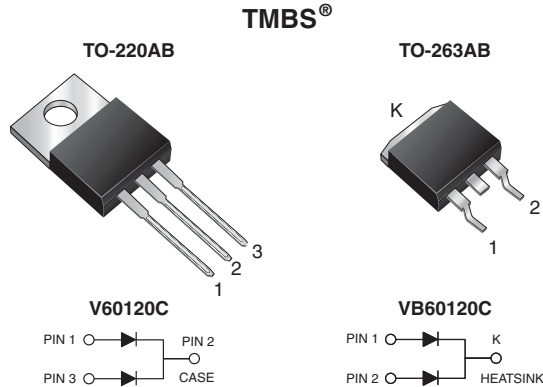


# Dual High Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.41\text{ V}$  at  $I_F = 5\text{ A}$ 

**RoHS**  
COMPLIANT

## 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 package)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

## 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-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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 30 A
$V_{RRM}$	120 V
$I_{FSM}$	300 A
$V_F$ at $I_F = 30\text{ A}$	0.71 V
$T_J$ max.	150 °C
Package	TO-220AB, TO-263AB
Diode variations	Dual Common Cathode

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V60120C	VB60120C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	120		V
Maximum average forward rectified current (fig. 1)		per device	60	A
		per diode	30	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	300		A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 100\text{ mH}$ per diode	$E_{AS}$	260		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	$I_{RRM}$	0.5		A
Voltage rate of change (rated $V_F$ )	$dV/dt$	10 000		V/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150		°C

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Breakdown voltage	$I_R = 1.0\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	$V_{BR}$	120 (minimum)	-	V	
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.48	-	V	
				$I_F = 15\text{ A}$	0.66		-
				$I_F = 30\text{ A}$	0.88		0.95
	$T_A = 125\text{ }^\circ\text{C}$	$I_F = 5\text{ A}$		0.41	-		
		$I_F = 15\text{ A}$		0.58	-		
		$I_F = 30\text{ A}$		0.71	0.75		
Reverse current at rated $V_R$ per diode	$V_R = 90\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	14	-	$\mu\text{A}$	
		$T_A = 125\text{ }^\circ\text{C}$		11	-	mA	
	$V_R = 120\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		40	500	$\mu\text{A}$	
		$T_A = 125\text{ }^\circ\text{C}$		15	45	mA	

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V60120C	VB60120C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.2	2.2	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V60120C-E3/4W	1.89	4W	50/tube	Tube
TO-263AB	VB60120C-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB60120C-E3/8W	1.38	8W	800/reel	Tape and reel

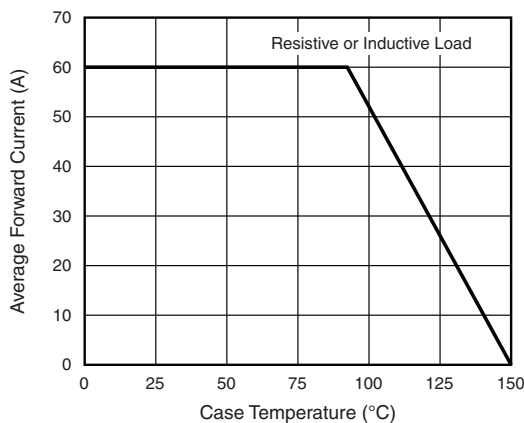
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

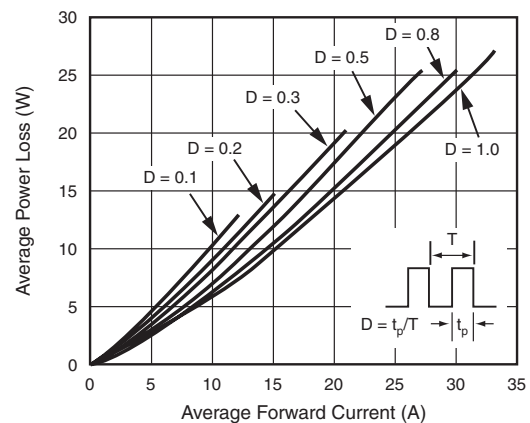


Fig. 2 - Forward Power Loss Characteristics Per Diode

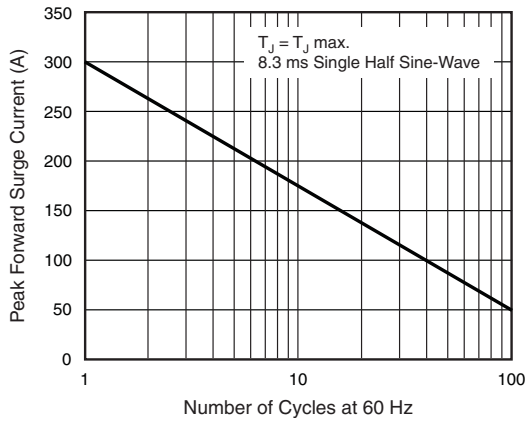


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

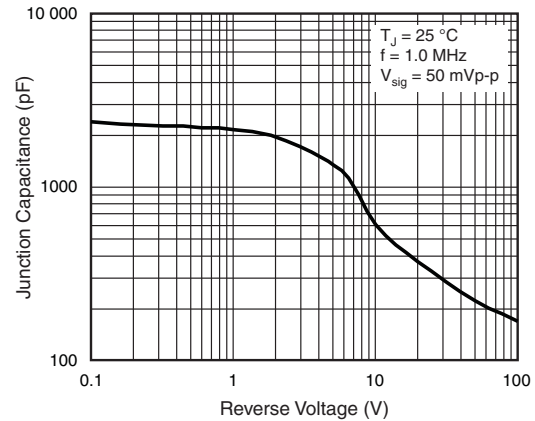


Fig. 6 - Typical Junction Capacitance Per Diode

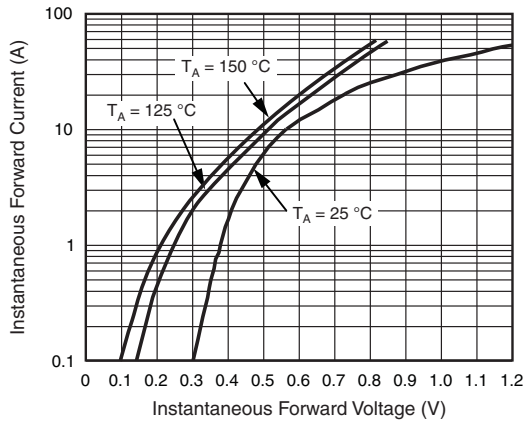


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

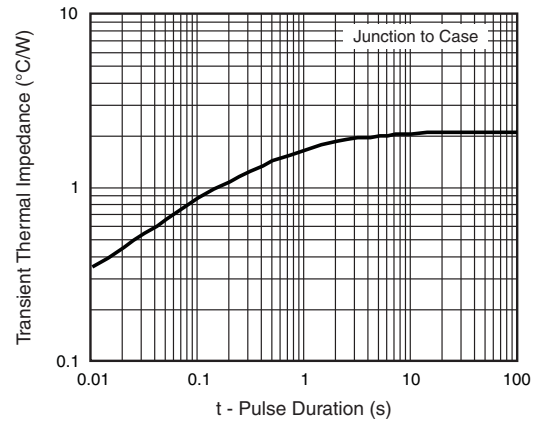


Fig. 7 - Typical Transient Thermal Impedance Per Diode

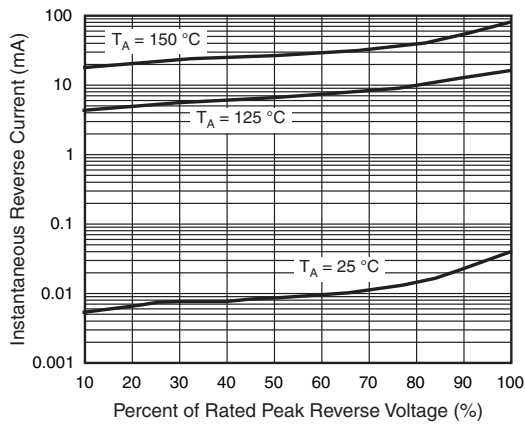
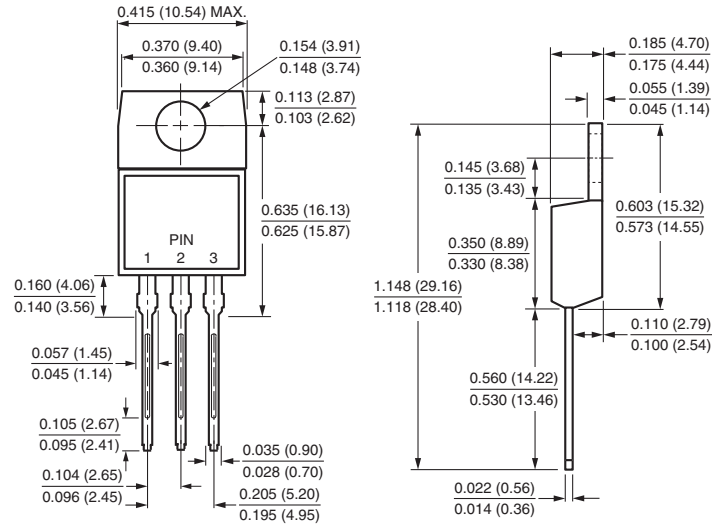


Fig. 5 - Typical Reverse Characteristics Per Diode

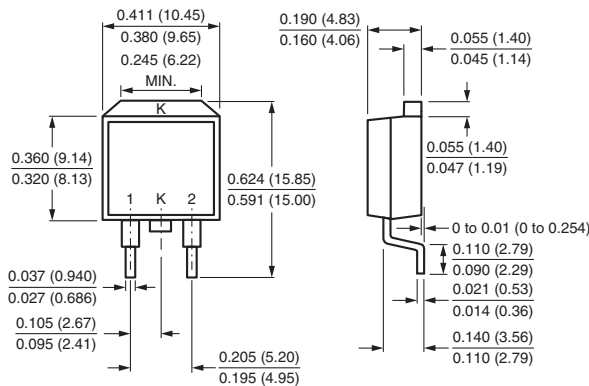


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

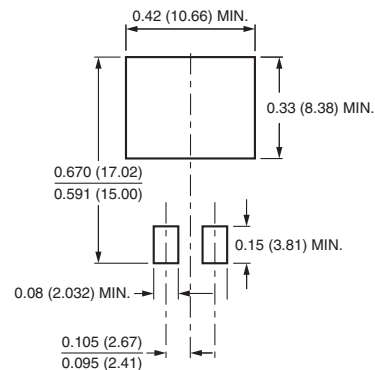
#### TO-220AB



#### TO-263AB



#### Mounting Pad Layout





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