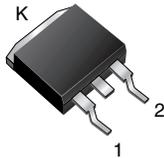
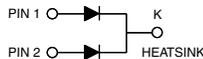


## Dual High Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.57 \text{ V}$  at  $I_F = 2.5 \text{ A}$ 
**TMBS®**  
**TO-263AB**

**VB10170C**


PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 5 A
$V_{RRM}$	170 V
$I_{FSM}$	80 A
$V_F$ at $I_F = 5.0 \text{ A}$	0.65 V
$T_J \text{ max.}$	175 °C
Package	TO-263AB
Diode variations	Common cathode

### FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- AEC-Q101 qualified available  
- Automotive ordering code: base P/NHM3
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT

### 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  
 Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade  
 Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3, M3, and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VB10170C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	170	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device	10
		per diode	5
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	80	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 +175	°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 2.5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.74	-	V
	$I_F = 5.0\text{ A}$			0.84	1.03	
	$I_F = 2.5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.57	-	
	$I_F = 5.0\text{ A}$			0.65	0.74	
Reverse current per diode	$V_R = 136\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	0.3	-	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		0.9	-	mA
	$V_R = 170\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	90	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		1.3	10	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	VB10170C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	3.0	$^\circ\text{C/W}$
	per device		1.7	

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-263AB	VB10170C-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB10170C-E3/8W	1.38	8W	800/reel	Tape and reel
TO-263AB	VB10170C-M3/I	1.38	I	800/reel	Tape and reel
TO-263AB	VB10170CHM3/I <sup>(1)</sup>	1.38	I	800/reel	Tape and reel

**Note**

- (1) AEC-Q101 qualified

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

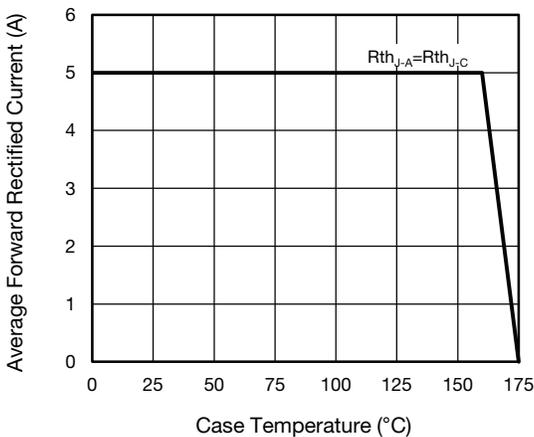


Fig. 1 - Maximum Forward Current Derating Curve

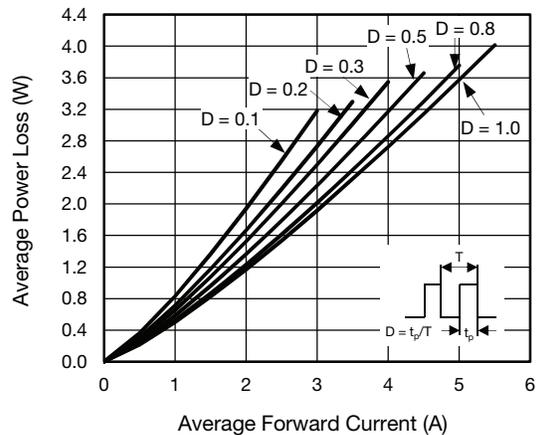


Fig. 2 - Forward Power Loss Characteristics Per Diode

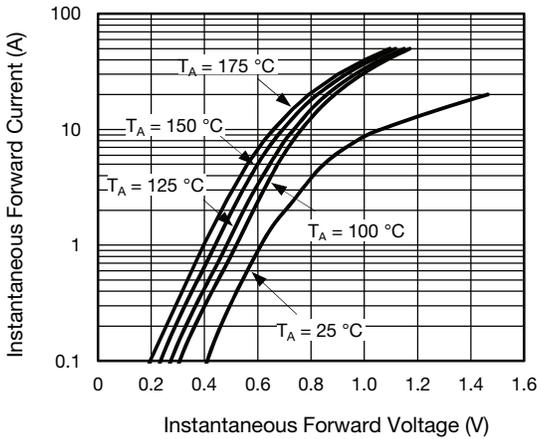


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

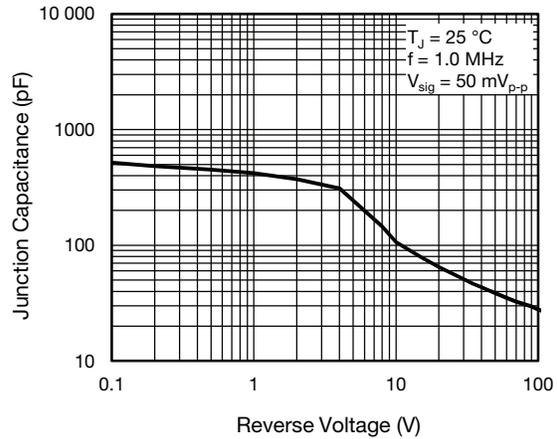


Fig. 5 - Typical Junction Capacitance Per Diode

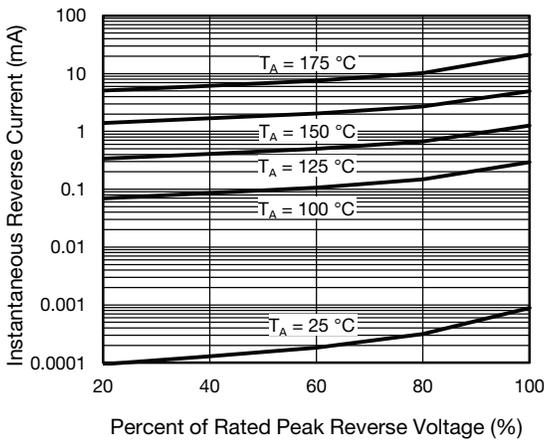


Fig. 4 - Typical Reverse Characteristics Per Diode

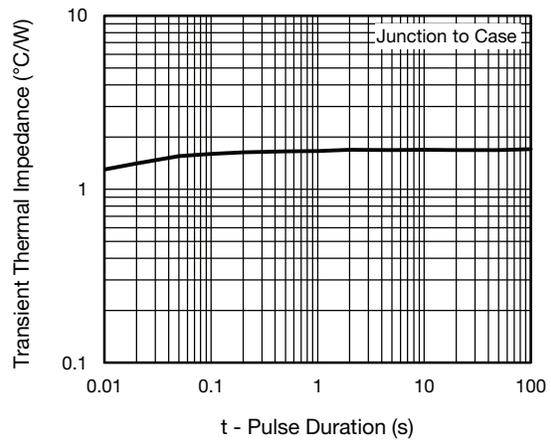
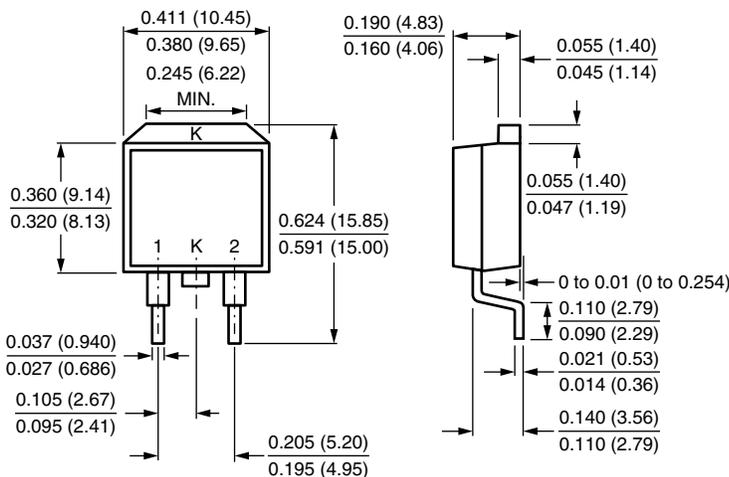


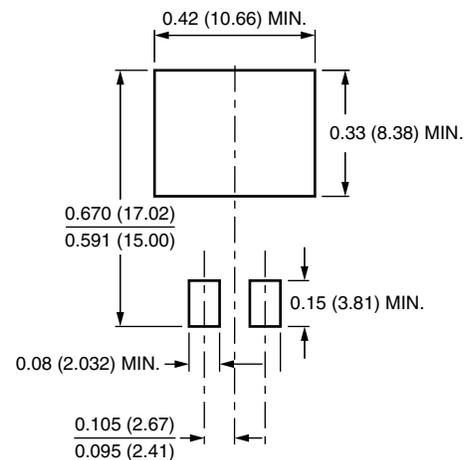
Fig. 6 - Typical Transient Thermal Impedance Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-263AB



### Mounting Pad Layout





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