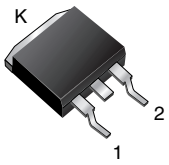
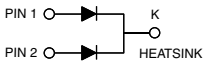
Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.52 V at I_F = 5 A

TMBS®
TO-263AB



VB40170C



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base PN/HM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

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
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

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	170 V
I_{FSM}	200 A
V_F at I_F = 20 A	0.68 V
T_J max.	175 °C
Package	TO-263AB
Diode variations	Common cathode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	VB40170C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	170	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	40	A
	per diode		20	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I_{FSM}	200	A
Voltage rate of change (rated V_R)		dV/dt	10 000	V/µs
Operating junction and storage temperature range		T_J, T_{STG}	-40 to +175	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode	I_F = 5 A	T_A = 25 °C	V_F (1)	0.66	-	V
	I_F = 10 A			0.75	-	
	I_F = 20 A			0.86	1.20	
	I_F = 5 A	T_A = 125 °C		0.52	-	
	I_F = 10 A			0.59	-	
	I_F = 20 A			0.68	0.76	
Reverse current per diode	V_R = 136 V	T_A = 25 °C	I_R (2)	1.3	-	µA
		T_A = 125 °C		2.2	-	mA
	V_R = 170 V	T_A = 25 °C		-	250	µA
		T_A = 125 °C		4.2	50	mA

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**VB40170C**	**UNIT**
Typical thermal resistance	per diode	$R_{\theta JC}$ (1)	1.2	°C/W
	per device		0.85	

Note

(1) Mounted on infinite heat sink; thermal resistance $R_{\theta JC}$ - junction-to-case

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-263AB	VB40170C-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB40170C-E3/8W	1.38	8W	800/reel	Tape and reel
TO-263AB	VB40170C-M3/I	1.38	I	800/reel	13" diameter plastic tape and reel
TO-263AB	VB40170CHM3/I (1)	1.38	I	800/reel	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

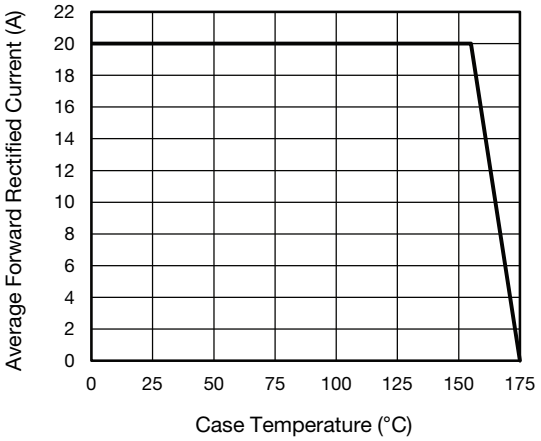


Fig. 1 - Maximum Forward Current Derating Curve

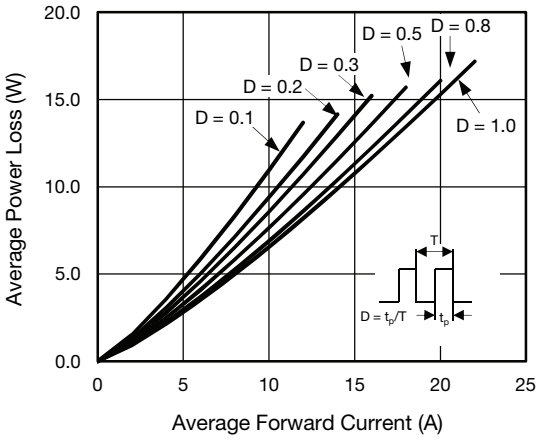


Fig. 2 - Forward Power Loss Characteristics Per Diode

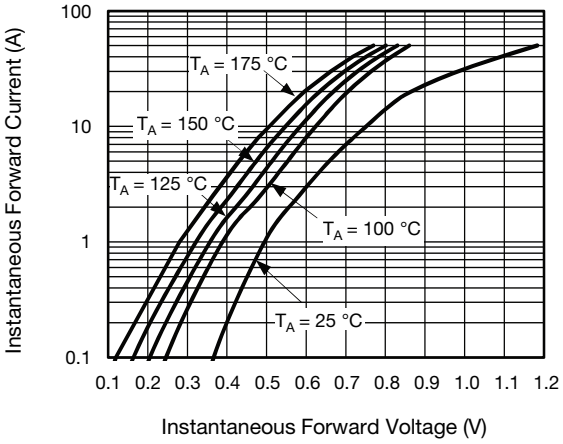


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

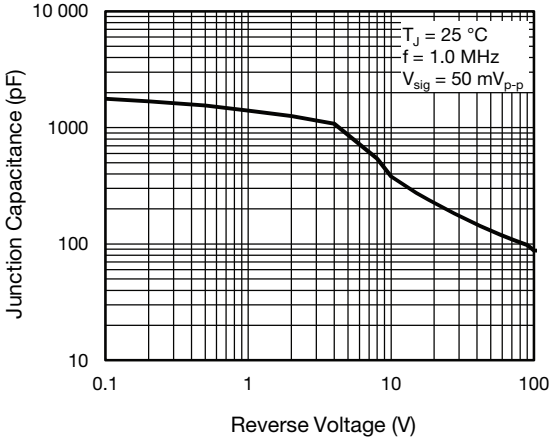


Fig. 5 - Typical Junction Capacitance Per Diode

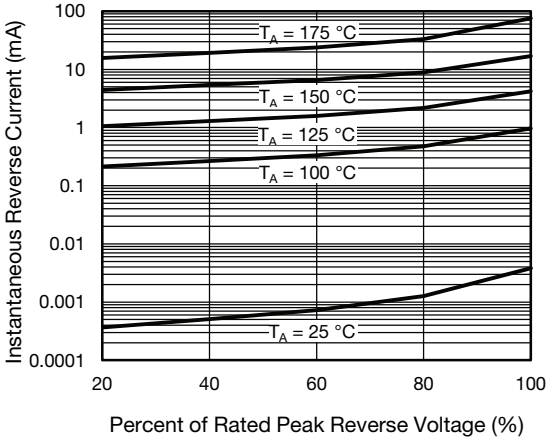


Fig. 4 - Typical Reverse Characteristics Per Diode

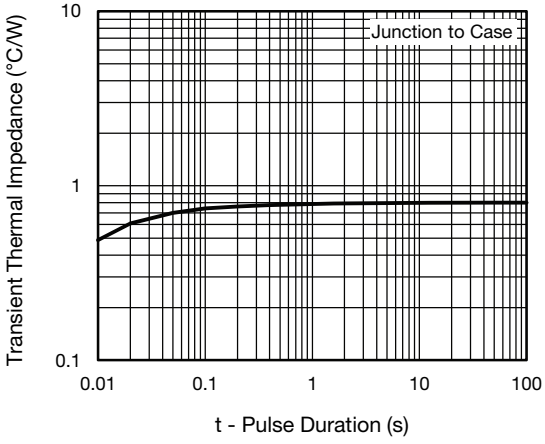
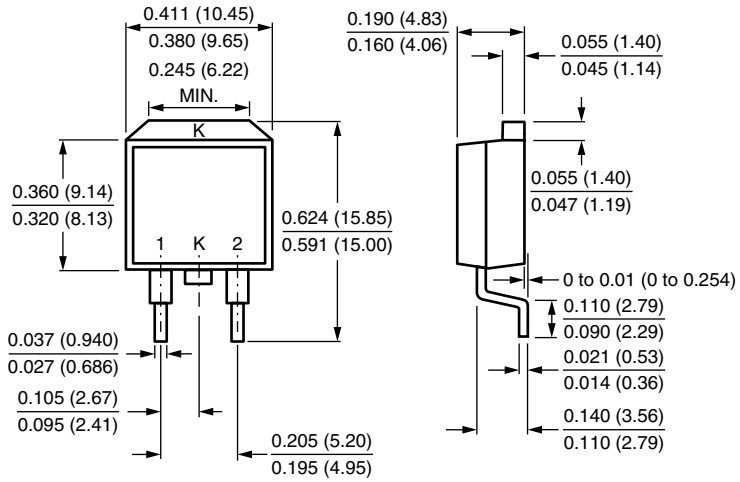


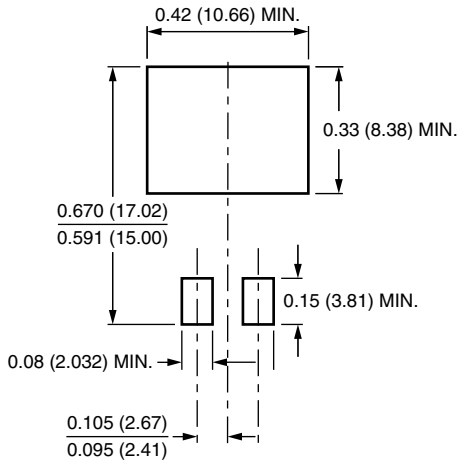
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AB



Mounting Pad Layout



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