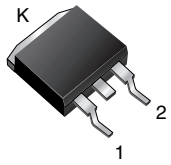
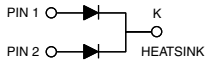
Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.52 V at I_F = 5 A

TMBS®
TO-263AB



VB30M120C



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
V_{RRM}	120 V
I_{FSM}	150 A
V_F at I_F = 15 A	0.68 V
T_J max.	150 °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

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

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 °C unless otherwise noted)

PARAMETER		SYMBOL	VB30M120C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	120	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	30	A
	per diode		15	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	150	
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 +150	°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)	0.60	-	V
	I_F = 7.5 A			0.67	-	
	I_F = 15 A			0.87	0.98	
	I_F = 5 A	T_A = 125 °C		0.52	-	
	I_F = 7.5 A			0.57	-	
	I_F = 15 A			0.68	0.76	
Reverse current per diode	V_R = 90 V	T_A = 25 °C	I_R (2)	3.5	-	µA
		T_A = 125 °C		2	-	mA
	V_R = 120 V	T_A = 25 °C		-	800	µA
		T_A = 125 °C		5	27	mA

Notes
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 20 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VB30M120C**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JC}$	2.2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-263AB	VB30M120C-E3/4W	1.37	4W	50/tube	Tube
TO-263AB	VB30M120C-E3/8W	1.37	8W	800/reel	Tape and reel
TO-263AB	VB30M120C-M3/I	1.37	I	800/reel	Tape and reel
TO-263AB	VB30M120CHM3/I (1)	1.37	I	800/reel	Tape and reel

Note
(1) AEC-Q101 qualified

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

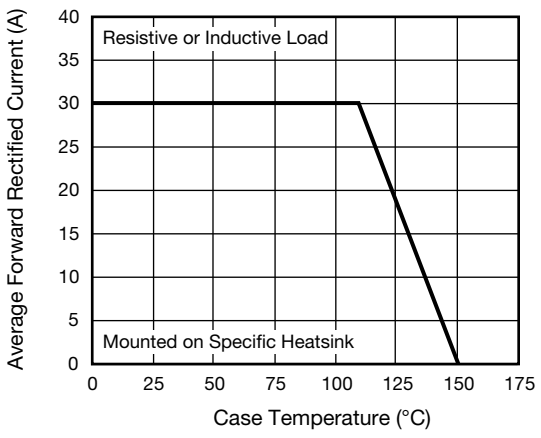


Fig. 1 - Maximum Forward Current Derating Curve

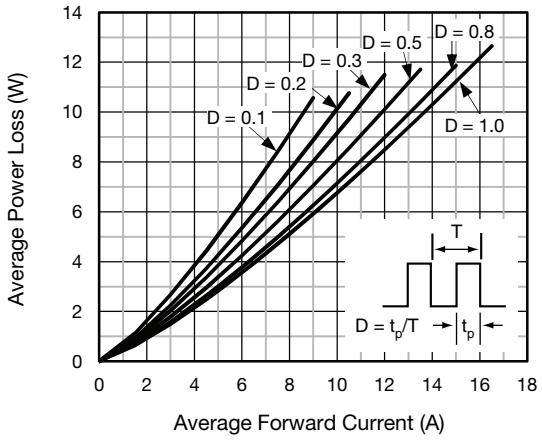


Fig. 2 - Forward Power Loss Characteristics Per Diode

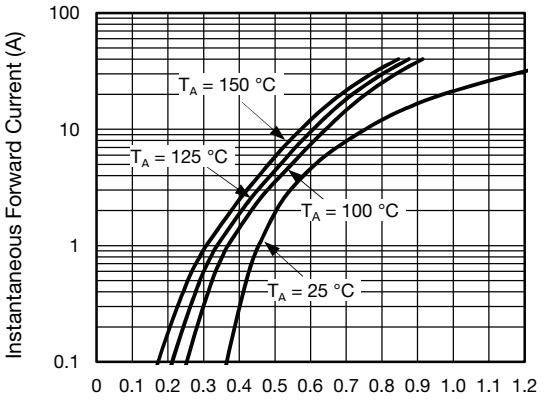


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

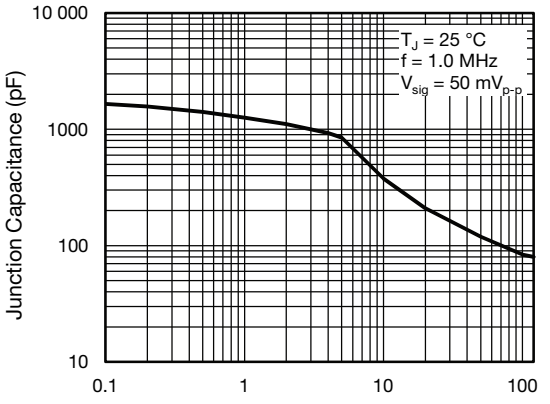


Fig. 5 - Typical Junction Capacitance Per Diode

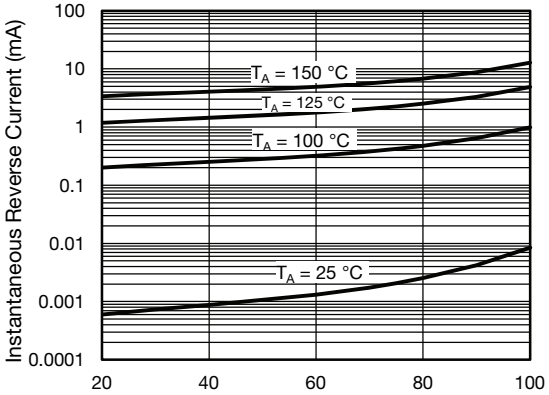


Fig. 4 - Typical Reverse Characteristics Per Diode

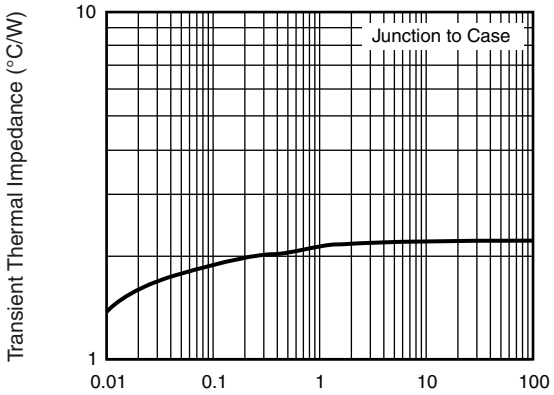
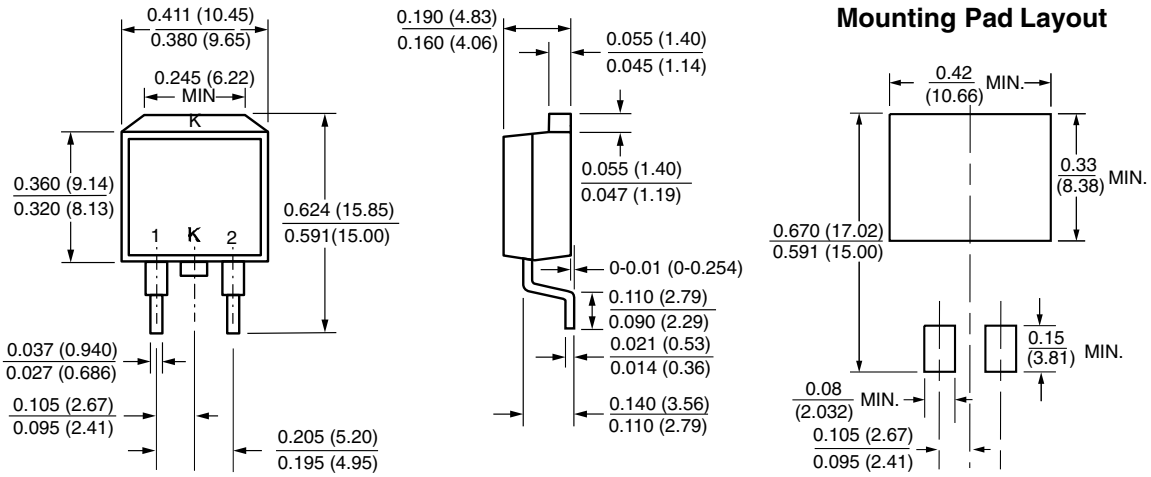


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AB



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