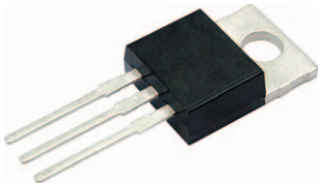
Dual High Voltage Trench MOS Barrier Schottky Rectifier

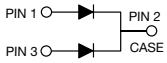
Ultra Low V_F = 0.55 V at I_F = 5 A

TMBS®

TO-220AB



V30M120M



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb e3 **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-220AB
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 15 A
V_{RRM}	120 V
I_{FSM}	120 A
V_F at I_F = 15 A (T_A = 125 °C)	0.70 V
T_J max.	175 °C
Package	TO-220AB
Diode variations	Common cathode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**V30M120M**	**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		I_{FSM}	120	A
Voltage rate of change (rated V_R)		dV/dt	10 000	V/µs
Operating junction and storage temperature range		T_J, T_{STG}	-55 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)	0.64	-	V
	I_F = 7.5 A			0.73	-	
	I_F = 15 A			0.98	1.07	
	I_F = 5 A	T_A = 125 °C		0.55	-	
	I_F = 7.5 A			0.60	-	
	I_F = 15 A			0.70	0.78	
Reverse current per diode	V_R = 100 V	T_A = 25 °C	I_R (2)	6.0	-	µA
		T_A = 125 °C		2.0	-	mA
	V_R = 120 V	T_A = 25 °C		-	1000	µA
		T_A = 125 °C		3.4	26	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**	**V30M120M**	**UNIT**
Typical thermal resistance	per diode	$R_{\theta JC}$	1.8	°C/W
	per device		0.9	
	per device	$R_{\theta JA}$ (1)(2)	40	

Notes

(1) The heat generated must be less than the thermal conductivity from junction-to-ambient $dP_D/dT_J < 1/R_{\theta JA}$

(2) Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	V30M120M-E3/4W	1.88	4W	50/tube	Tube

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

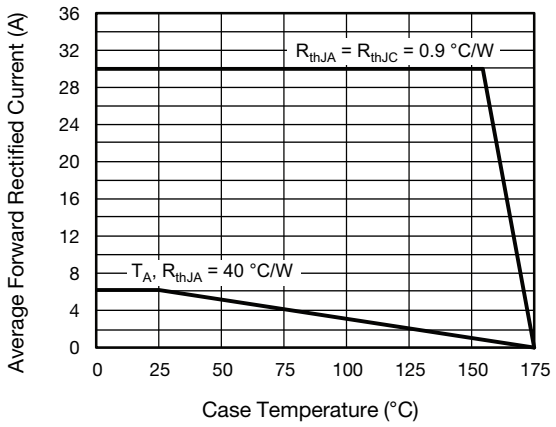


Fig. 1 - Maximum Forward Current Derating Curve

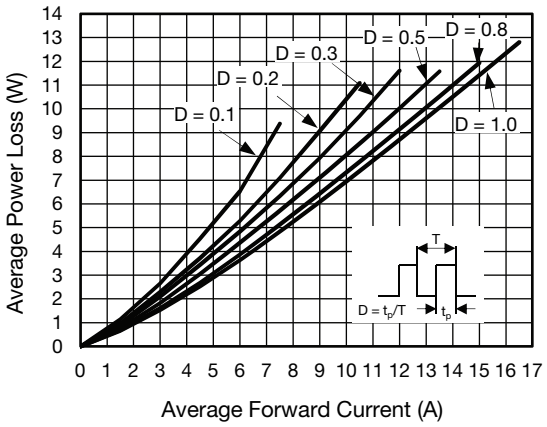


Fig. 2 - Forward Power Loss Characteristics Per Diode

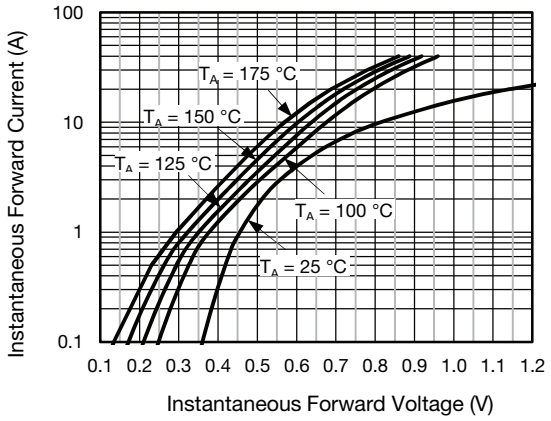


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

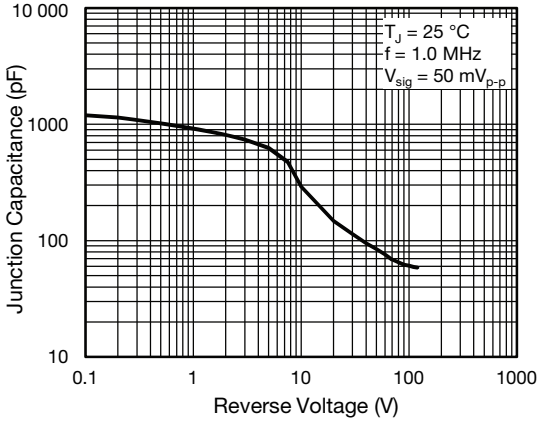


Fig. 5 - Typical Junction Capacitance Per Diode

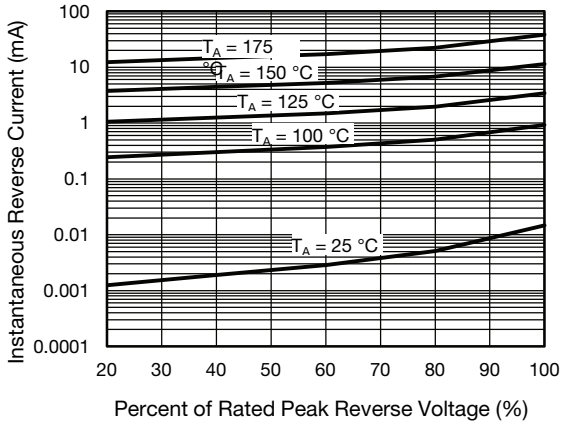


Fig. 4 - Typical Reverse Characteristics Per Diode

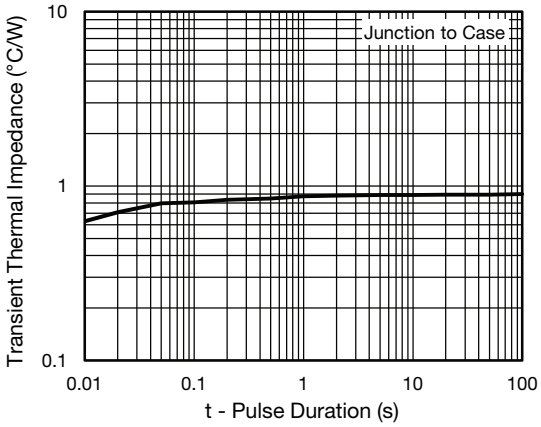
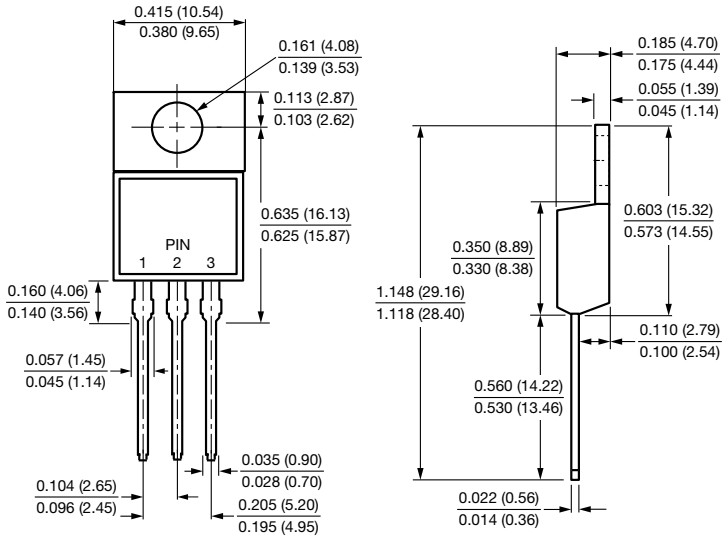


Fig. 6 - Typical Transient Thermal Impedance Per Device

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



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