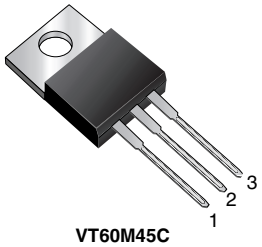
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

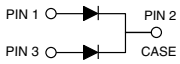
Ultra Low V_F = 0.32 V at I_F = 5 A

TMBS®

TO-220AB



VT60M45C



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
- AEC-Q101 qualified
- 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-220AB

Molding compound meets UL 94 V-0 flammability rating

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

M3 suffix meets JESD 201 class 1A whisker test, 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 30 A
V_{RRM}	45 V
I_{FSM}	320 A
V_F at I_F = 30 A (T_A = 125 °C)	0.50 V
T_J max.	175 °C
Package	TO-220AB
Diode variations	Dual common cathode

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

PARAMETER		SYMBOL	VT60M45C	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	45	V
Maximum average forward rectified current (fig. 1)	per device	$I_{F(AV)}$	60	A
	per diode		30	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	320	
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)	0.45	-	V
	I_F = 15 A			0.51	-	
	I_F = 30 A			0.58	0.68	
	I_F = 5 A	T_A = 125 °C		0.32	-	
	I_F = 15 A			0.41	-	
	I_F = 30 A			0.50	0.60	
Reverse current per diode	V_R = 45 V	T_A = 25 °C	I_R (2)	-	450	µA
		T_A = 125 °C		5.4	25	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**	**VT60M45C**	**UNIT**
Typical thermal resistance (1)	per diode	$R_{\theta JC}$	1.0	°C/W
	per device		0.7	
	per device	$R_{\theta JA}$ (2)	52	

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	VT60M45C-M3/4W	1.89	4W	50/tube	Tube
TO-220AB	VT60M45CHM3/4W (1)	1.89	4W	50/tube	Tube

Note

(1) AEC-Q101 qualified

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

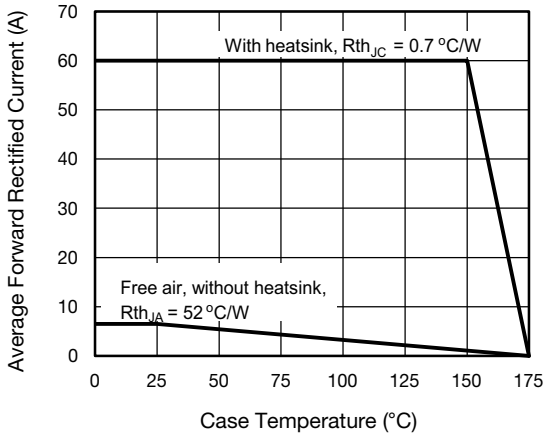


Fig. 1 - Maximum Forward Current Derating Curve
(D = Duty Cycle = 0.5)

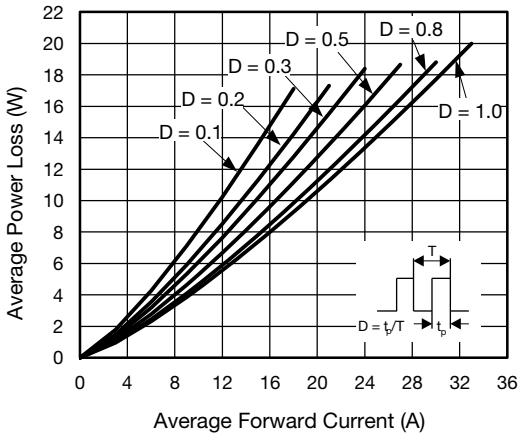


Fig. 2 - Forward Power Loss Characteristics Per Diode

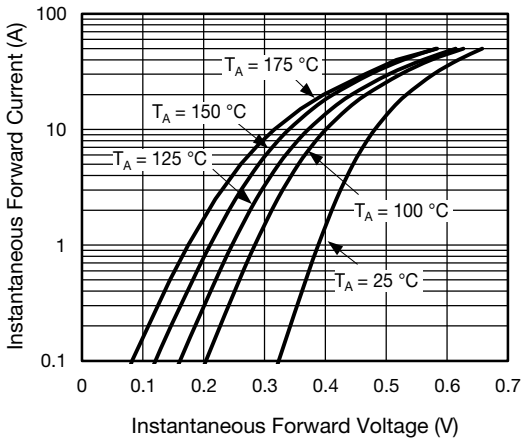


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

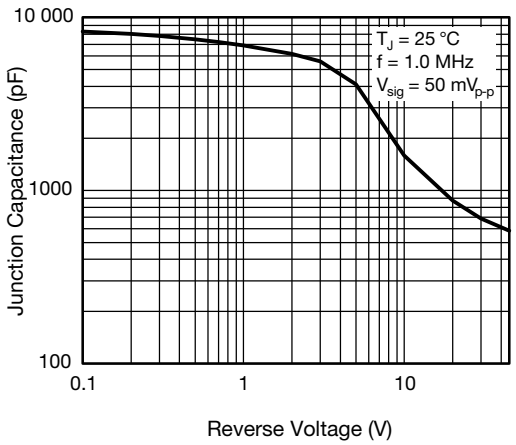


Fig. 5 - Typical Junction Capacitance Per Diode

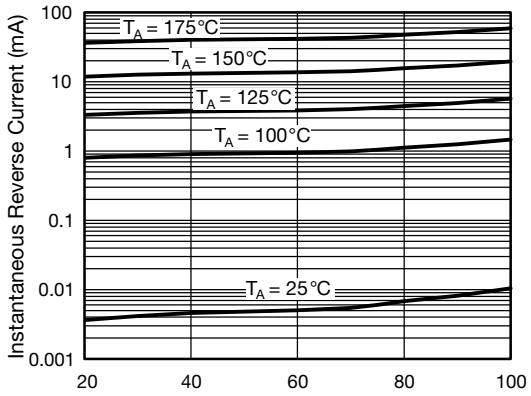


Fig. 4 - Typical Reverse Characteristics Per Diode

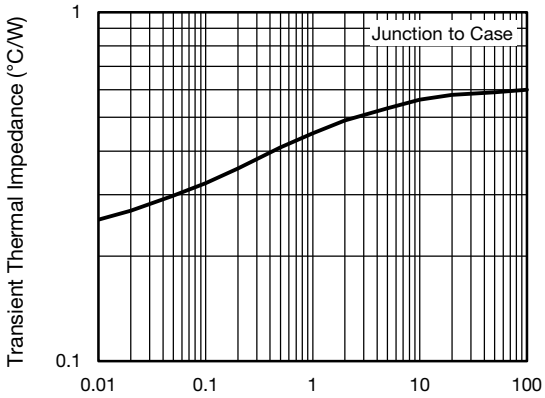
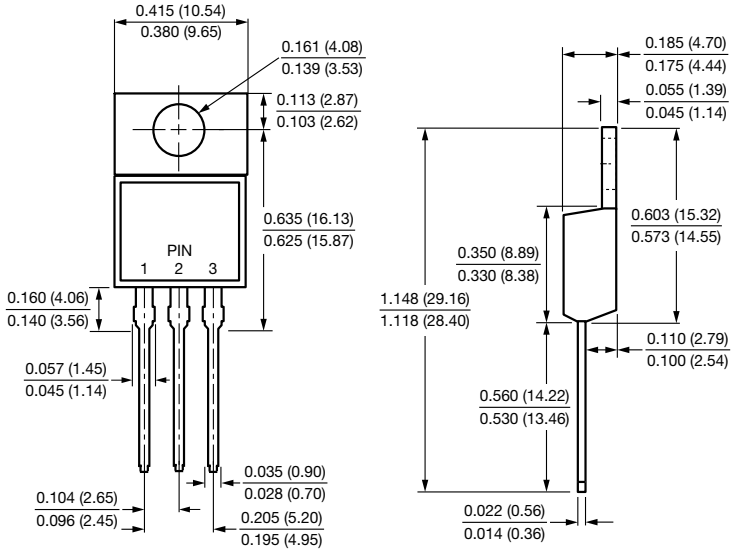


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



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