

Vishay General Semiconductor

Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.32 \text{ V}$ at $I_F = 5 \text{ A}$



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	Common cathode				

FEATURES

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses

High efficiency operation

RoHS COMPLIANT HALOGEN

Solder dip 275 °C max. 10 s, per JESD 22-B106

 Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

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

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

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	А	
	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	



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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	-		
	$I_F = 30 \text{ A}$			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	μΑ	
	v _R = 45 v	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 ₀ JC	1.0		
	per device		0.7	°C/W	
	per device		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	

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

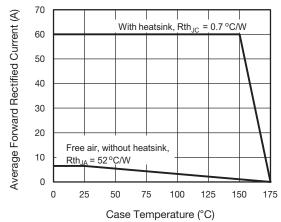


Fig. 1 - Maximum Forward Current Derating Curve (D = Duty Cycle = 0.5)

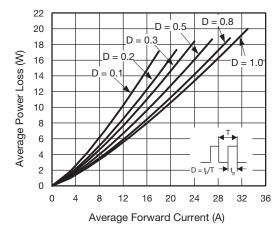


Fig. 2 - Forward Power Loss Characteristics Per Diode



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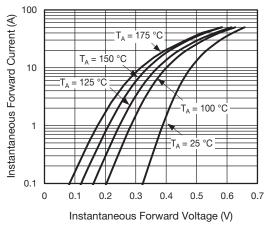


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

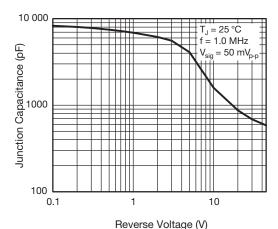
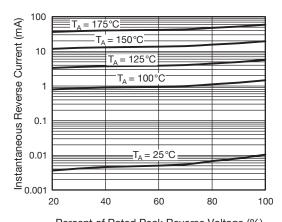


Fig. 5 - Typical Junction Capacitance Per Diode



Percent of Rated Peak Reverse Voltage (%) Fig. 4 - Typical Reverse Characteristics Per Diode

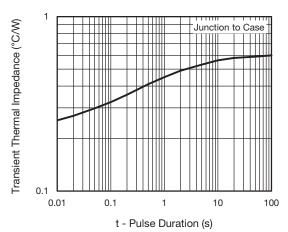


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB 0.415 (10.54) 0.380 (9.65) 0.185 (4.70) 0.161 (4.08) 0.139 (3.53) 0.175 (4.44) 0.055 (1.39) 0.113 (2.87) 0.045 (1.14) 0.103 (2.62) 0.603 (15.32) 0.635 (16.13) 0.573 (14.55) 0.625 (15.87) PIN 0.350 (8.89) 2 0.330 (8.38) 0.160 (4.06) 1.148 (29.16) 0.140 (3.56) 1.118 (28.40) 0.110 (2.79) 0.100 (2.54) 0.057 (1.45) 0.045 (1.14) 0.560 (14.22) 0.530 (13.46) 0.035 (0.90) 0.104 (2.65) 0.028 (0.70) 0.022 (0.56) 0.096 (2.45) 0.205 (5.20) 0.014 (0.36) 0.195 (4.95)



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