

Vishay General Semiconductor

Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.58 \text{ V}$ at $I_F = 5 \text{ A}$





V20M120M



PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 x 10 A			
V _{RRM}	120 V			
I _{FSM}	110 A			
V _F at I _F = 10 A (T _A = 125 °C)	0.68 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

Solder dip 275 °C max. 10 s, per JESD 22-B106
Material categorization: for definitions of

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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

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	V20M120M	UNIT	
Maximum repetitive peak reverse voltage		V_{RRM}	120	V	
Maximum average forward rectified current (fig. 1)	per device	I _{F(AV)}	20	^	
	per diode		10	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I _{FSM}	110	А	
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	



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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⁾	0.70	-	V		
	I _F = 10 A			0.93	1.01			
	I _F = 5 A	T _A = 125 °C		0.58	-			
	I _F = 10 A			0.68	0.76			
Reverse current per diode	V _R = 100 V	T _A = 25 °C	I _R ⁽²⁾	2.0	-	μA		
		T _A = 125 °C		1.5	-	mA		
	V _R = 120 V	T _A = 25 °C		-	500	μΑ		
		T _A = 125 °C		2.0	12	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	V20M120M	UNIT	
Typical thermal resistance	per diode	R _{θJC}	2.8		
	per device		1.4	°C/W	
	per device	R ₀ JA (1)(2)	40		

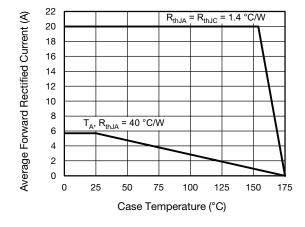
Notes

(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	V20M120M-E3/4W	1.88	4W	50/tube	Tube		

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





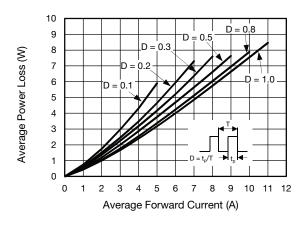


Fig. 2 - Forward Power Loss Characteristics Per Diode



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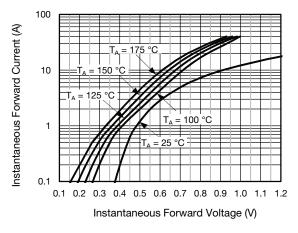


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

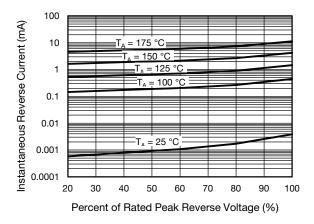


Fig. 4 - Typical Reverse Characteristics Per Diode

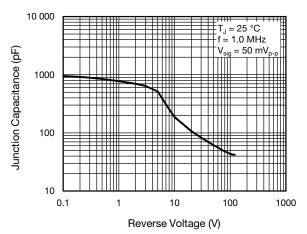


Fig. 5 - Typical Junction Capacitance Per Diode

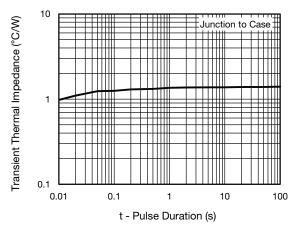
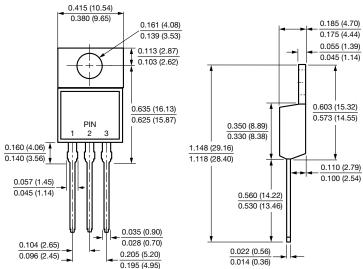


Fig. 6 - Typical Transient Thermal Impedance Per Device

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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