Vishay General Semiconductor

Dual High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.39$ V at $I_F = 5$ A





LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 x 30 A			
V _{RRM}	120 V			
I _{FSM}	320 A			
V_F at I_F = 30 A (T_A = 125 °C)	0.70 V			
T _J max.	150 °C			
Package	SMPD (TO-263AC)			
Circuit configuration	Common cathode			

FEATURES

- Trench MOS Schottky technology
- Very low profile typical height of 1.7 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available:
 Automotive ordering code: base P/NHM3
- 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 in commercial, industrial, and automotive application.

MECHANICAL DATA

Case: SMPD (TO-263AC)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant

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 and HM3 suffix meets JESD 201 class 2 whisker test **Polarity:** as marked

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	V60D120C	UNIT	
Maximum repetitive peak reverse voltage		V _{RRM}	120	V	
Maximum average forward rectified current (fig. 1)	per device		60	^	
	per diode	IF(AV)	30	- A	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		I _{FSM}	320	А	
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	

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RoHS COMPLIANT HALOGEN



V60D120C



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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⁾	0.48	-	V	
	I _F = 15 A			0.68	-		
	I _F = 30 A			0.91	0.96		
	I _F = 5 A	T _A = 125 °C		0.39	-		
	I _F = 15 A			0.59	-		
	I _F = 30 A			0.70	0.76		
Reverse current at rated V_R per diode	V _R = 90 V	T _A = 25 °C	I _R (2)	14	-	μA	
		T _A = 125 °C		11	-	mA	
	V _R = 120 V	T _A = 25 °C		-	800	μA	
		T _A = 125 °C		27	75	mA	

Notes

⁽¹⁾ Pulse test: 300 µs pulse width, 1 % duty cycle

⁽²⁾ Pulse test: Pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER		SYMBOL	V60D120C	UNIT	
Typical thermal resistance	per diode	R _{θJC}	1.8		
	per device		0.95	°C/W	
	per device	R _{0JA} (1)(2)	45		

Notes

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

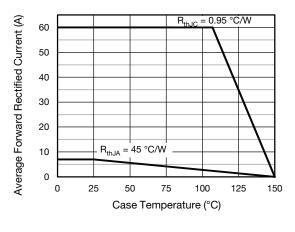
⁽²⁾ Free air, without heatsink

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMPD (TO-263AC)	V60D120C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel
SMPD (TO-263AC)	V60D120CHM3/I (1)	0.55	I	2000/reel	13" diameter plastic tape and reel

Note

⁽¹⁾ AEC-Q101 qualified

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





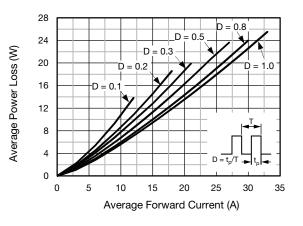


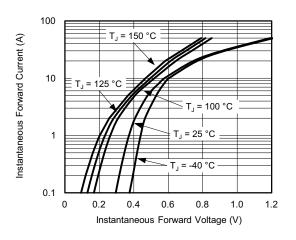
Fig. 2 - Forward Power Loss Characteristics Per Diode

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Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

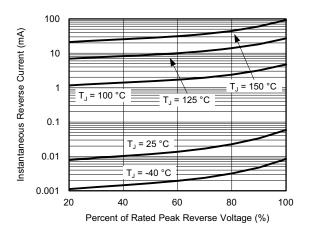


Fig. 4 - Typical Reverse Characteristics Per Diode

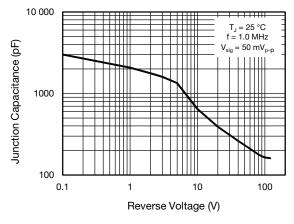


Fig. 5 - Typical Junction Capacitance Per Diode

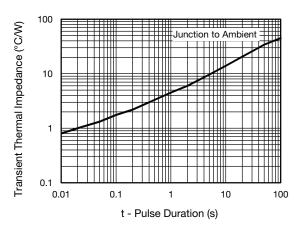


Fig. 6 - Typical Transient Thermal Impedance Per Device

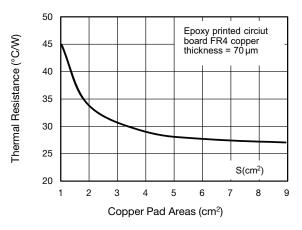


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

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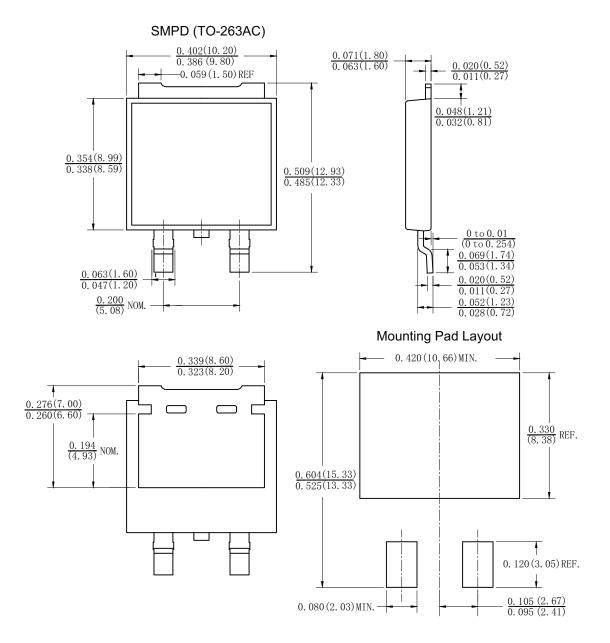
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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