AUTOMOTIV

COMPLIANT

HALOGEN FREE

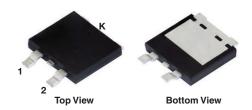


Vishay General Semiconductor

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

Ultra Low $V_F = 0.37 \text{ V}$ at $I_F = 5.0 \text{ A}$

eSMP[®] Series SMPD (TO-263AC)





LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 x 10 A			
V _{RRM}	60 V			
I _{FSM}	120 A			
V _F at I _F = 10 A (T _J = 125 °C)	0.49 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 www.vishay.com/doc?99912

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 meet JESD 201 class 2 whisker test

Polarity: as marked

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	V20DL63C	UNIT	
Device marking code			V20DL63C		
Maximum repetitive peak reverse voltage		V _{RRM}	60	V	
Maximum average forward rectified current (fig. 1)	per device	I _{F(AV)} (1)	20	^	
	per diode	'F(AV) (1)	10	A	
Peak forward surge current 8.3 ms single half s superimposed on rated load per diode	ine-wave	I _{FSM}	120	А	
Operating junction temperature range		T _J ⁽²⁾	-40 to +150	- °C	
Storage temperature range		T _{STG}	-55 to +150		

Notes

- (1) Mounted on infinite heatsink
- $^{(2)}$ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$



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ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	I _F = 5 A	T _J = 25 °C	V _E (1)	0.46	-	V
	I _F = 10 A			0.53	0.61	
	I _F = 5 A	T _J = 125 °C	VF (·)	0.37	-	
	I _F = 10 A			0.49	0.56	
Reverse current at rated V _R per diode		T _J = 25 °C	I _R ⁽²⁾	-	0.18	- mA
		T _J = 125 °C		6.5	16	
Typical junction capacitance per diode	4.0 V, 1 MHz		CJ	1450	-	pF

Notes

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

 $^{(2)}$ Pulse test: Pulse width $\leq 5 \text{ ms}$

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	V20DL63C	UNIT		
Turning of the sum of vacintaries and vides	R ₀ JC ⁽¹⁾	1.8	°C/W		
Typical thermal resistance per device	R _{0JA} (2)(3)	58	C/VV		

Notes

- (1) Mounted on infinite heatsink
- $^{(2)} \ \ \, \text{The heat generated must be less than the thermal conductivity from junction-to-ambient:} \ \, dP_D/dT_J < 1/R_{\theta JA} \text{junction-to-ambient}$
- (3) Free air, without heatsink

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
V20DL63C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel		
V20DL63CHM3/I (1)	0.55	I	2000/reel	13" diameter plastic tape and reel		

Note

(1) AEC-Q101 qualified



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

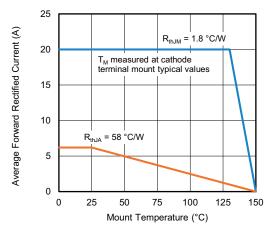


Fig. 1 - Maximum Forward Current Derating Curve

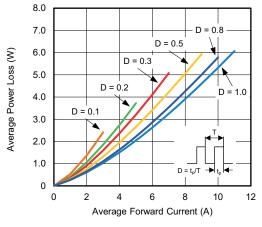


Fig. 2 - Average Power Loss Characteristics Per Diode

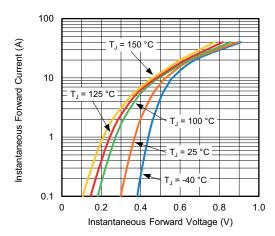


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

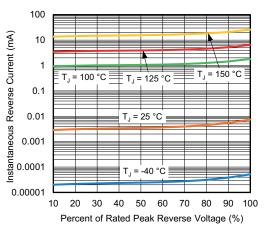


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

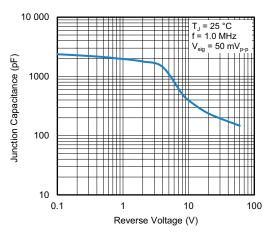


Fig. 5 - Typical Junction Capacitance Per Diode

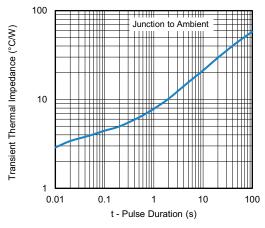


Fig. 6 - Typical Transient Thermal Impedance





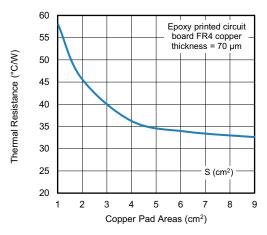
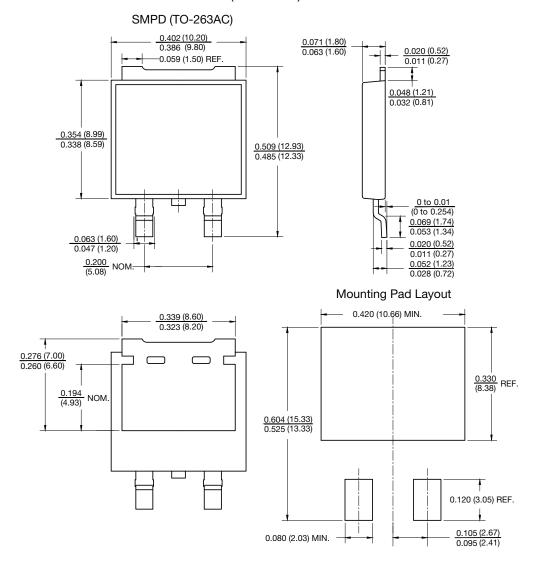


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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