AUTOMOTIV

COMPLIANT

HALOGEN FREE



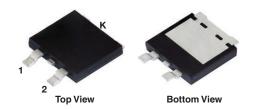
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Vishay General Semiconductor

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

Ultra Low $V_F = 0.44 \text{ V}$ at $I_F = 2.5 \text{ A}$

eSMP[®] Series SMPD (TO-263AC)





LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 x 5 A			
V_{RRM}	60 V			
I _{FSM}	100 A			
V_F at $I_F = 5$ A ($T_J = 125$ °C)	0.54 V			
T _J max.	175 °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 ur		SYMBOL	V10DM63C	UNIT
Device marking code		STWIDOL	V10DM63C	ONT
Maximum repetitive peak reverse voltage		V _{RRM}	60	V
Maximum average forward rectified current (fig. 1)	per device	ı (1)	10	^
	per diode	I _{F(AV)} ⁽¹⁾	5	A
Peak forward surge current 8.3 ms single half s superimposed on rated load per diode	ine-wave	I _{FSM}	100	А
Operating junction temperature range		T _J ⁽²⁾	-40 to +175	°C
Storage temperature range		T _{STG}	-55 to +175	

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 = 2.5 A	- T _J = 25 °C	$T_{J} = 25 ^{\circ}\text{C}$ $V_{F}^{(1)}$ $V_{F}^{(1)}$	0.53	-	V
	I _F = 5 A			0.60	0.66	
	I _F = 2.5 A	T _J = 125 °C		0.44	-	
	I _F = 5 A			0.54	0.60	
Reverse current at rated V _R per diode	V _R = 60 V	T _J = 25 °C	I _R ⁽²⁾	-	0.01	mA
	v _R = 60 v	T _J = 125 °C	IR (=)	0.5	3	l IIIA
Typical junction capacitance per diode	4.0 V, 1 MHz		CJ	715	-	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	V10DM63C	UNIT	
Typical thermal resistance per device	R ₀ JC ⁽¹⁾	2.5	°C/W	
	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			
V10DM63C-M3/I	0.55	I	2000/reel	13" diameter plastic tape and reel		
V10DM63CHM3/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)

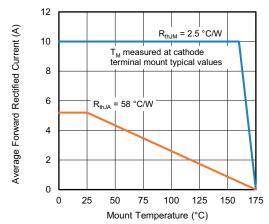
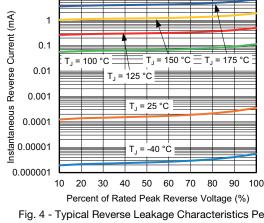


Fig. 1 - Maximum Forward Current Derating Curve



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Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

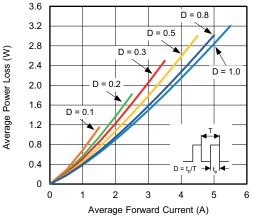


Fig. 2 - Average Power Loss Characteristics Per Diode

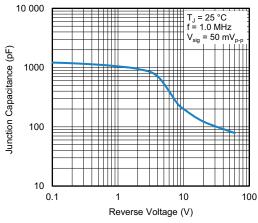


Fig. 5 - Typical Junction Capacitance Per Diode

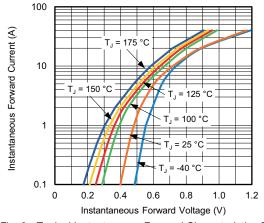


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

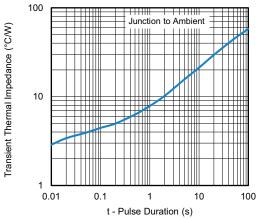


Fig. 6 - Typical Transient Thermal Impedance



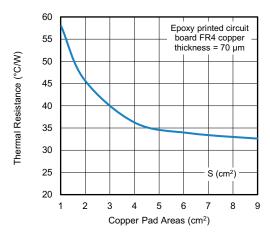
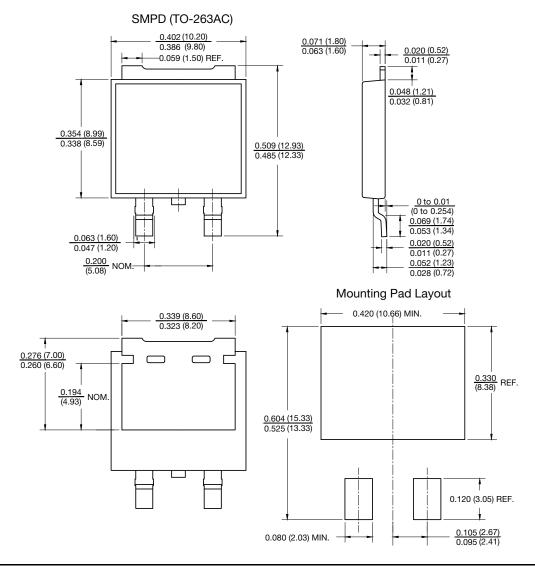


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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