V15P10

Vishay General Semiconductor

High Current Density Surface Mount TMBS[®] (Trench MOS Barrier Schottky) Rectifier

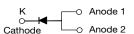
Ultra Low $V_F = 0.41$ V at $I_F = 5$ A

eSMP[®] Series

www.vishay.com



SMPC (TO-277A)



ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	15 A			
V _{RRM}	100 V			
I _{FSM}	220 A			
V _F at I _F = 15 A (125 °C)	0.60 V			
T _J max.	150 °C			
Package	SMPC (TO-277A)			
Circuit configuration	Single			

FEATURES

- Very low profile typical height of 1.1 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- · 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 low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

MECHANICAL DATA

Case: SMPC (TO-277A)

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

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

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	V15P10	UNIT		
Device marking code		V1510			
Maximum repetitive peak reverse voltage	V _{RRM}	100	V		
Maximum DC forward current	I _{F(AV)} ⁽¹⁾	15	٨		
	I _{F(AV)} ⁽²⁾	4.2	- A		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	220	А		
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C		

Notes

⁽¹⁾ Mounted on 30 mm x 30 mm pad areas aluminum PCB

⁽²⁾ Free air, mounted on recommended pad area

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ROHS COMPLIANT

HALOGEN

V15P10



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ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 5 A	T _A = 25 °C	• V _F (1)	0.48	-	V
	I _F = 7.5 A			0.53	-	
	I _F = 15 A			0.66	0.71	
	I _F = 5 A	T _A = 125 °C		0.41	-	
	I _F = 7.5 A			0.47	-	
	I _F = 15 A			0.60	0.64	
Reverse current	V _R = 70 V	T _A = 25 °C	I _R (2)	0.02	-	mA
	v _R = 70 v	T _A = 125 °C		9	-	
	$V_{\rm R} = 100 {\rm V}$	T _A = 25 °C		-	0.5	
		T _A = 125 °C		17	50	

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	V15P10		
Typical thermal resistance	$R_{ ext{ heta}JA}$ ⁽¹⁾	75	°C/W	
	R _{0JM} ⁽²⁾	4	C/W	

Notes

 $^{(1)}\,$ Free air, mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction-to-ambient

 $^{(2)}$ Mounted on 30 mm x 30 mm pad areas aluminum PCB, thermal resistance $R_{\theta JM}$ - junction-to-mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V15P10-M3/H	0.10	Н	1500	7" diameter plastic tape and reel	
V15P10-M3/I	0.10	I	6500	13" diameter plastic tape and reel	
V15P10HM3/H ⁽¹⁾	0.10	Н	1500	7" diameter plastic tape and reel	
V15P10HM3/I ⁽¹⁾	0.10	I	6500	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 specified)

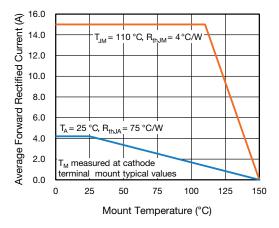


Fig. 1 - Maximum Forward Current Derating Curve

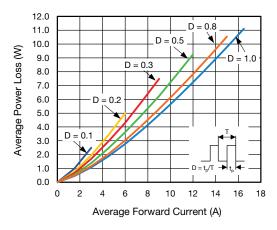


Fig. 2 - Forward Power Loss Characteristics

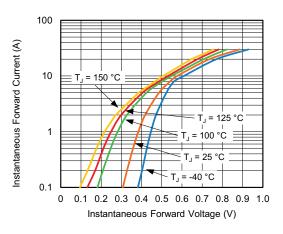


Fig. 3 - Typical Instantaneous Forward Characteristics

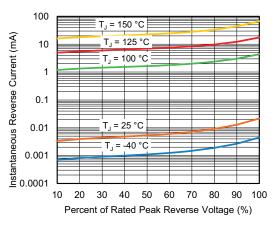


Fig. 4 - Typical Reverse Characteristics

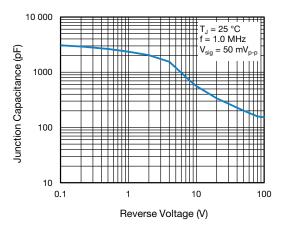


Fig. 5 - Typical Junction Capacitance

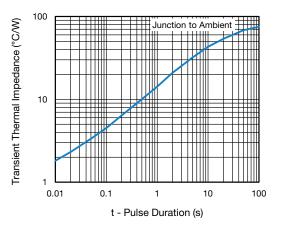


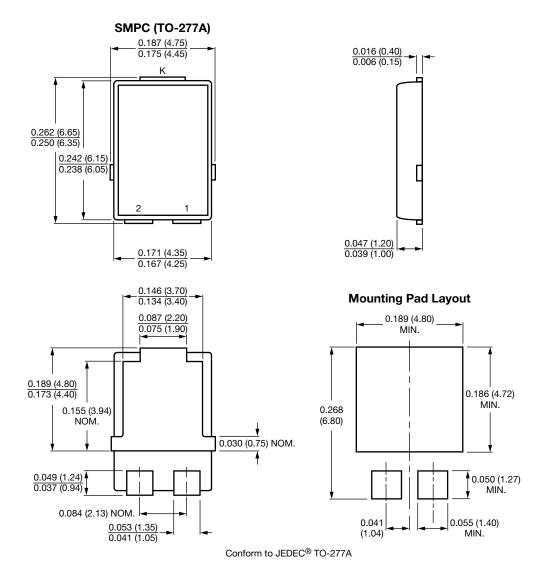
Fig. 6 - Typical Transient Thermal Impedance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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