

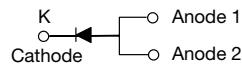
High Current Density Surface Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.36 V at I_F = 5 A

eSMP® Series



SMPC (TO-277A)



ADDITIONAL RESOURCES



 AUTOMOTIVE GRADE Available



RoHS
COMPLIANT
HALOGEN
FREE

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 www.vishay.com/doc?99912

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_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified
(“_X” denotes revision code e.g. A, B,.....)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	15 A
V_{RRM}	80 V
I_{FSM}	220 A
V_F at I_F = 15 A (T_A = 125 °C)	0.55 V
T_J max.	150 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	V15P8	UNIT
Device marking code		V158	
Maximum repetitive peak reverse voltage	V_{RRM}	80	V
Maximum average forward rectified current (fig. 1)	I_F (1)	15	A
	I_F (2)	4.6	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	220	A
Voltage rate of change (rated V_R)	dV/dt	10 000	$V/\mu s$
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 copper pad area

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5.0 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.45	-	V	
	$I_F = 7.5 \text{ A}$			0.49	-		
	$I_F = 15 \text{ A}$			0.58	0.66		
	$I_F = 5.0 \text{ A}$	$T_A = 125^\circ\text{C}$		0.36	-		
	$I_F = 7.5 \text{ A}$			0.42	-		
	$I_F = 15 \text{ A}$			0.55	0.63		
	Reverse current	$V_R = 80 \text{ V}$	$I_R^{(2)}$	-	1.2	mA	
		$T_A = 125^\circ\text{C}$		20	50		

Notes

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

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

 THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	V15P8		UNIT	
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	75		$^\circ\text{C/W}$	
	$R_{\theta JM}^{(3)}$	4			

Notes

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

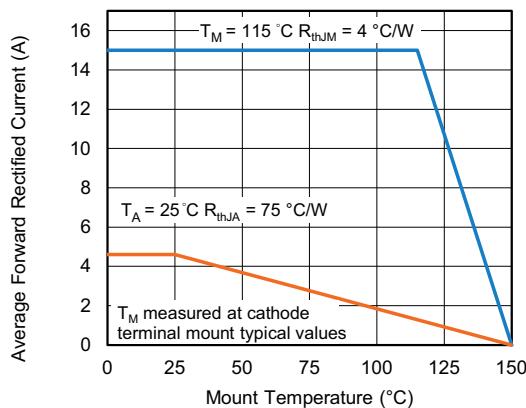
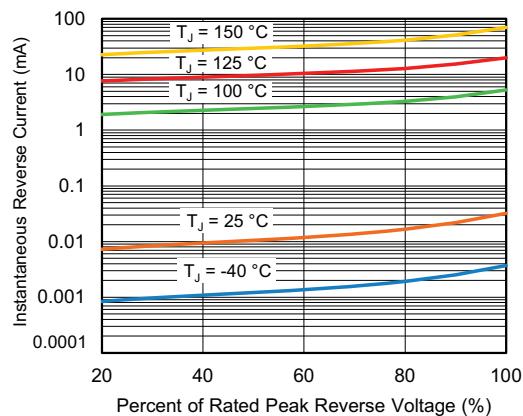
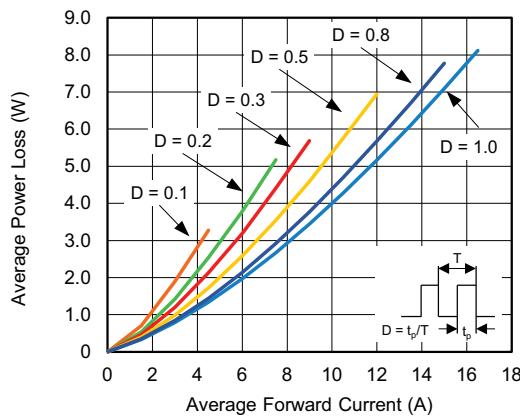
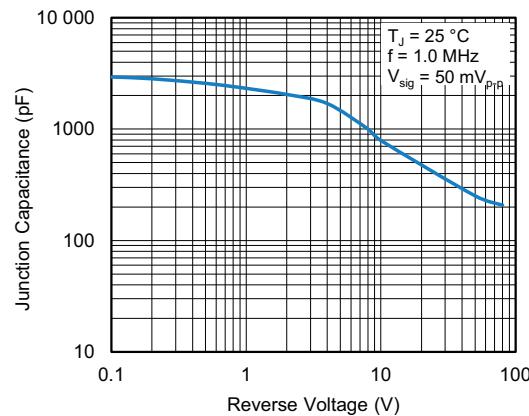
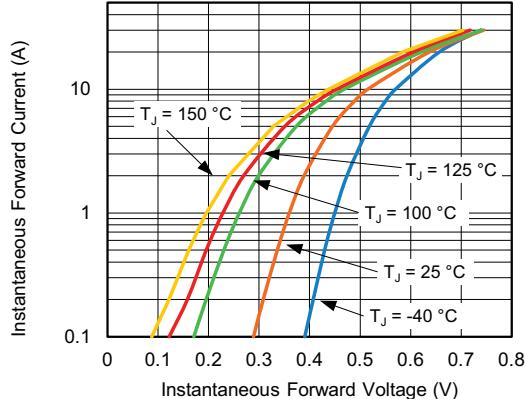
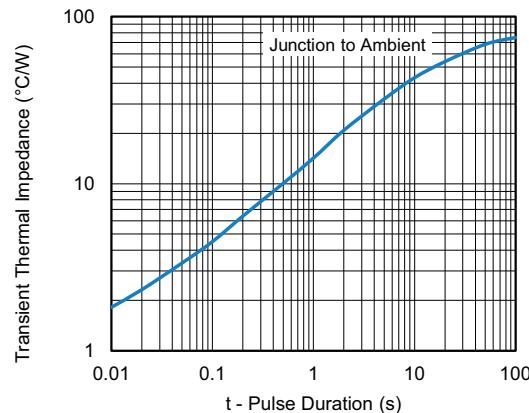
(2) Free air mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

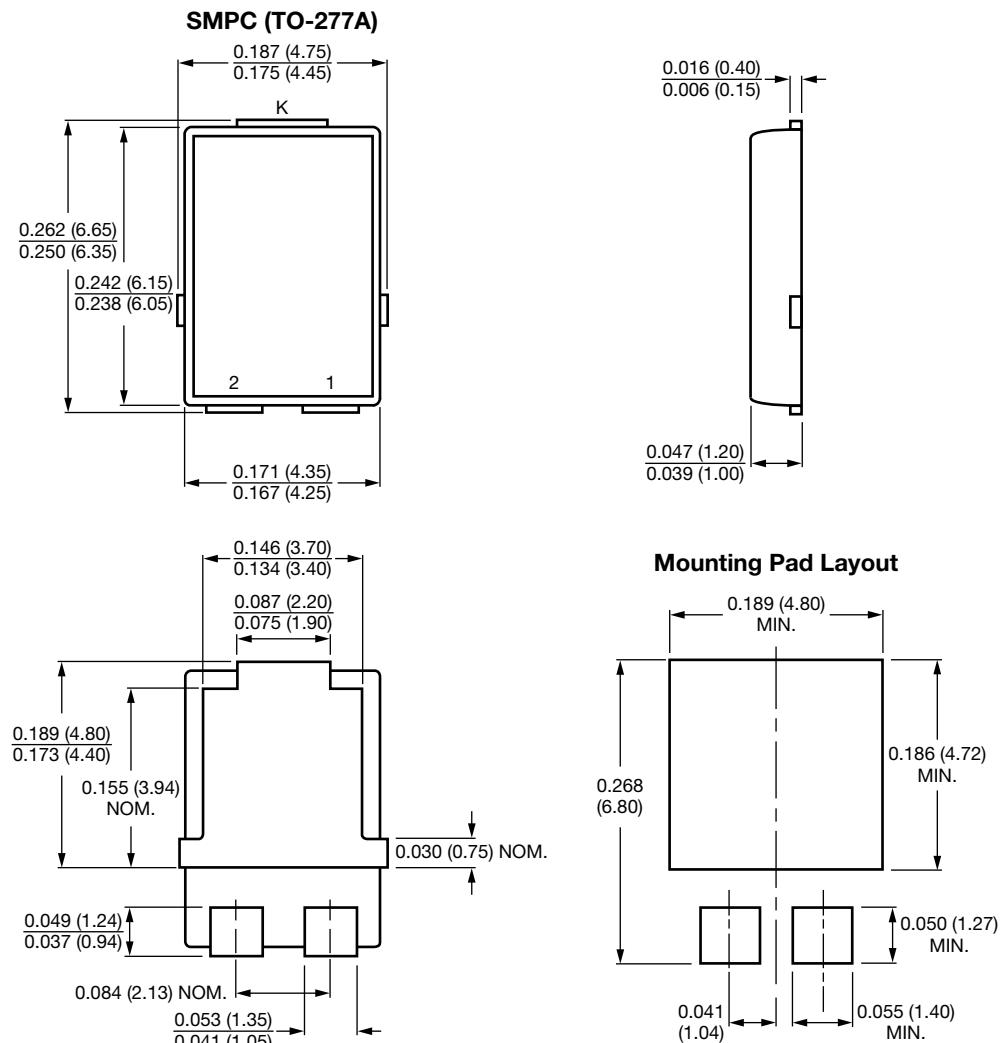
(3) Mounted on 30 mm x 30 mm aluminum PCB; thermal resistance $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V15P8-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
V15P8-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
V15P8HM3_A/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
V15P8HM3_A/I ⁽¹⁾	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

Fig. 4 - Typical Reverse Leakage Characteristics

Fig. 2 - Forward Power Loss Characteristics

Fig. 5 - Typical Junction Capacitance

Fig. 3 - Typical Instantaneous Forward Characteristics

Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)


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