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[V15P45-M3/87A](#)

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## V15P45-M3, V15P45HM3

Vishay General Semiconductor

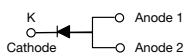
### High Current Density Surface Mount Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.31$  V at  $I_F = 5$  A

TMBS® eSMP® Series



TO-277A (SMPC)



#### 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](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE  
Available



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

#### TYPICAL APPLICATIONS

For use in low voltage high frequency DC/DC converters, freewheeling, and polarity protection applications.

#### MECHANICAL DATA

**Case:** TO-277A (SMPC)

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

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
$V_{RRM}$	45 V
$I_{FSM}$	210 A
$V_F$ at $I_F = 15$ A	0.42 V
$T_J$ max.	150 °C
Package	TO-277A (SMPC)
Diode variations	Single die

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V15P45	UNIT
Device marking code		V1545	
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	V
Maximum DC forward current	$I_F^{(1)}$	15	A
	$I_F^{(2)}$	4.8	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	210	A
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



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ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.40	-	V
	$I_F = 7.5\text{ A}$			0.45	-	
	$I_F = 15\text{ A}$			0.49	0.58	
	$I_F = 5.0\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.31	-	
	$I_F = 7.5\text{ A}$			0.34	-	
	$I_F = 15\text{ A}$			0.42	0.51	
Reverse current	$V_R = 45\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	1500	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		15	50	mA

### Notes

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: pulse width  $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V15P45	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	75	$^\circ\text{C/W}$
	$R_{\theta JM}^{(2)}$	4	

### 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 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
V15P45-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
V15P45-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
V15P45HM3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
V15P45HM3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel
V15P45HM3_A/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel
V15P45HM3_A/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel

### Note

- (1) AEC-Q101 qualified

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

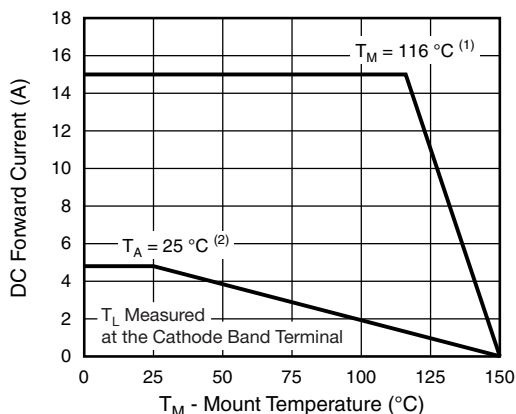


Fig. 1 - Forward Current Derating Curve

### Notes

- (1) Mounted on 30 mm x 30 mm aluminum PCB;  $T_M$  measured at the terminal of cathode band ( $R_{\theta JM} = 4\text{ }^\circ\text{C/W}$ )  
 (2) Free air, mounted on recommended copper pad area ( $R_{\theta JA} = 75\text{ }^\circ\text{C/W}$ )



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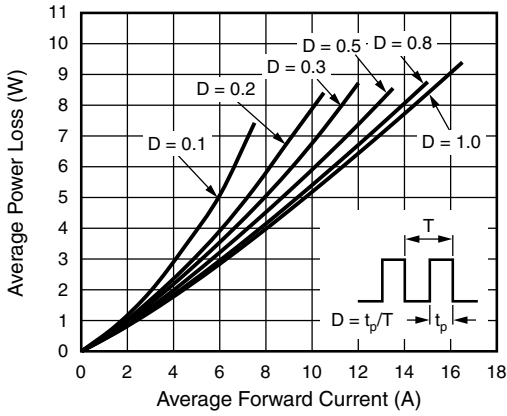


Fig. 2 - Forward Power Loss Characteristics Per Diode

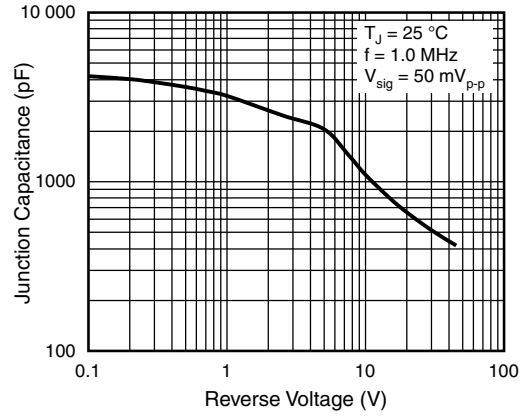


Fig. 5 - Typical Junction Capacitance

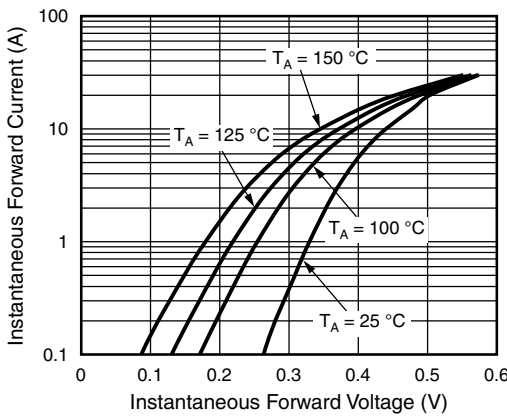


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

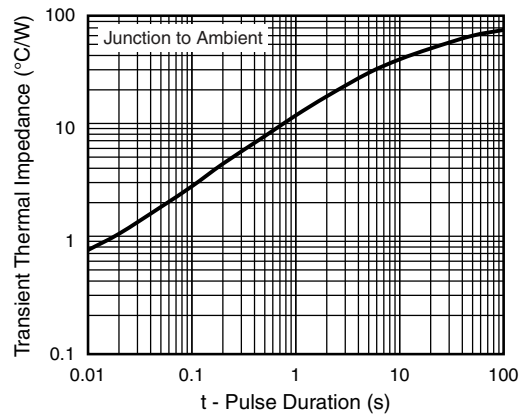


Fig. 6 - Typical Transient Thermal Impedance Per Diode

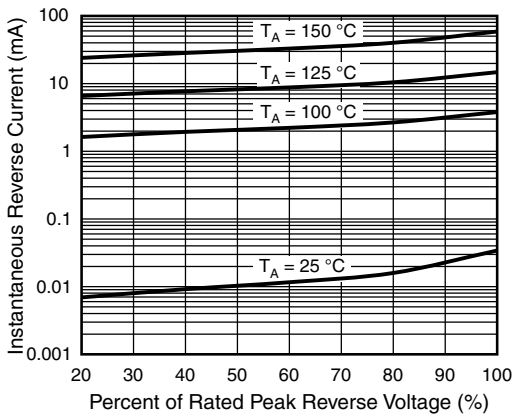


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

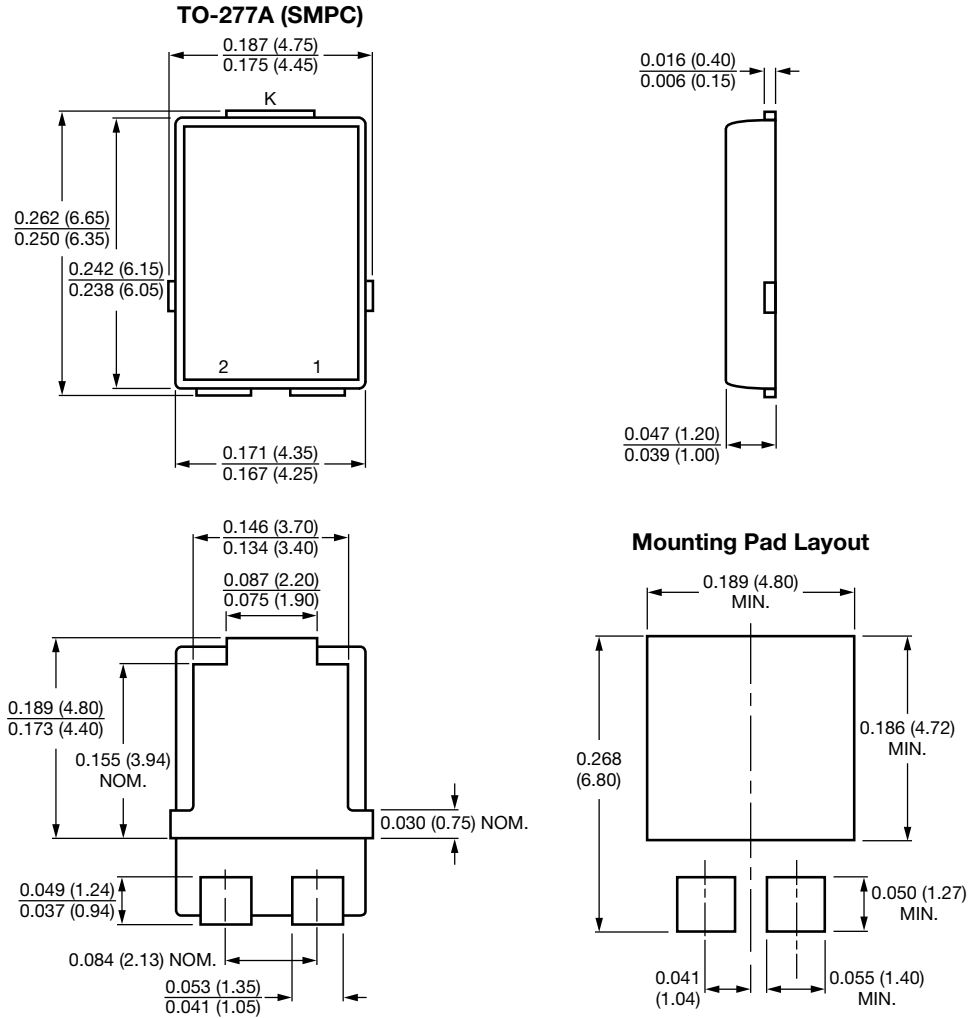


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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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