

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

Ultra Low  $V_F$  = 0.33 V at  $I_F$  = 5 A



### ADDITIONAL RESOURCES



### 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)



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

### 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
$V_{RRM}$	60 V
$I_{FSM}$	220 A
$V_F$ at $I_F$ = 15 A ( $T_A$ = 125 °C)	0.48 V
$T_J$ max.	150 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

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

PARAMETER	SYMBOL	V15P6	UNIT
Device marking code		V156	
Maximum repetitive peak reverse voltage	$V_{RRM}$	60	V
Maximum average forward rectified current (fig. 1)	$I_F$ (1)	15	A
	$I_F$ (2)	4.8	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	220	A
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000	V/μs
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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 5.0 \text{ A}$	$T_A = 25^\circ\text{C}$	0.43	-	V
	$I_F = 7.5 \text{ A}$		0.46	-	
	$I_F = 15 \text{ A}$		0.54	0.62	
	$I_F = 5.0 \text{ A}$	$T_A = 125^\circ\text{C}$	0.33	-	
	$I_F = 7.5 \text{ A}$		0.37	-	
	$I_F = 15 \text{ A}$		0.48	0.57	
Reverse current	$V_R = 60 \text{ V}$	$T_A = 25^\circ\text{C}$	-	3.6	mA
		$T_A = 125^\circ\text{C}$	20	65	

**Notes**

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

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V15P6	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	75	°C/W
	$R_{\theta JM}^{(3)}$	4	

**Notes**

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

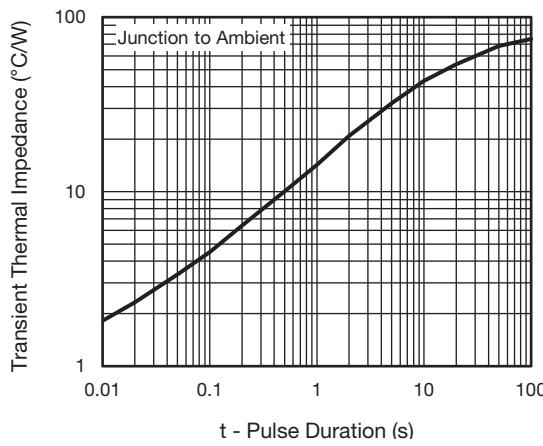
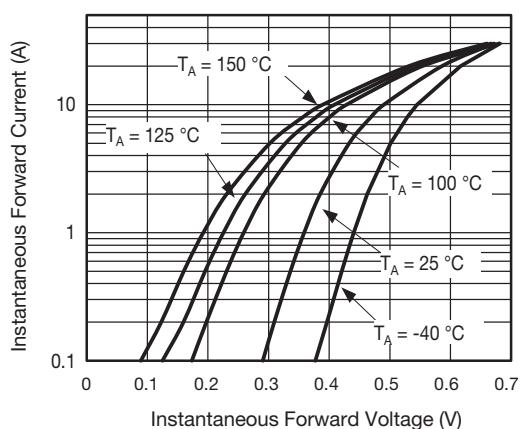
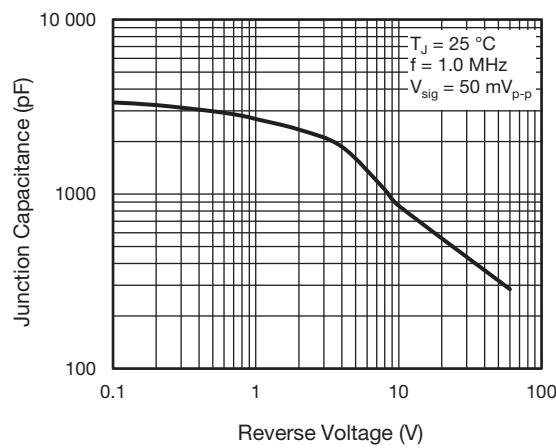
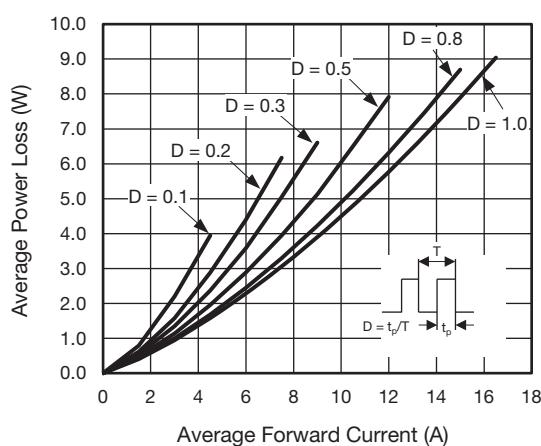
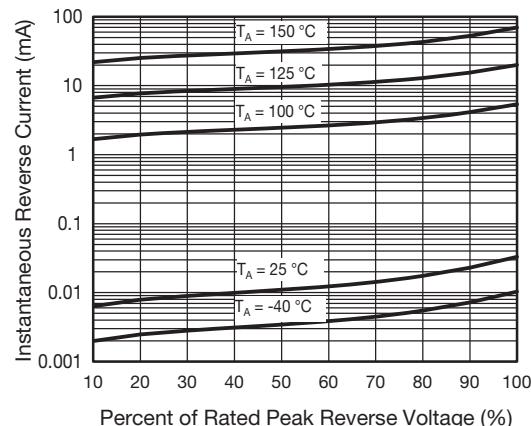
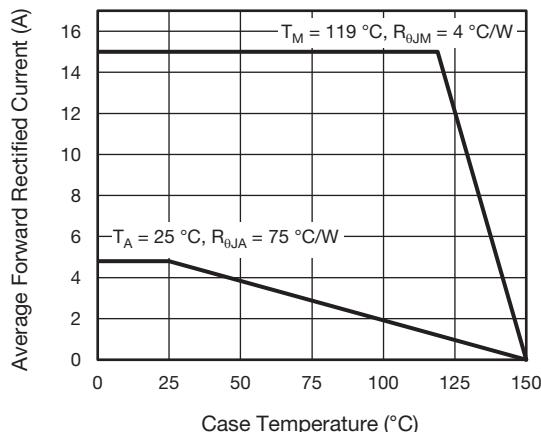
(2) Free air mounted on recommended copper pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient

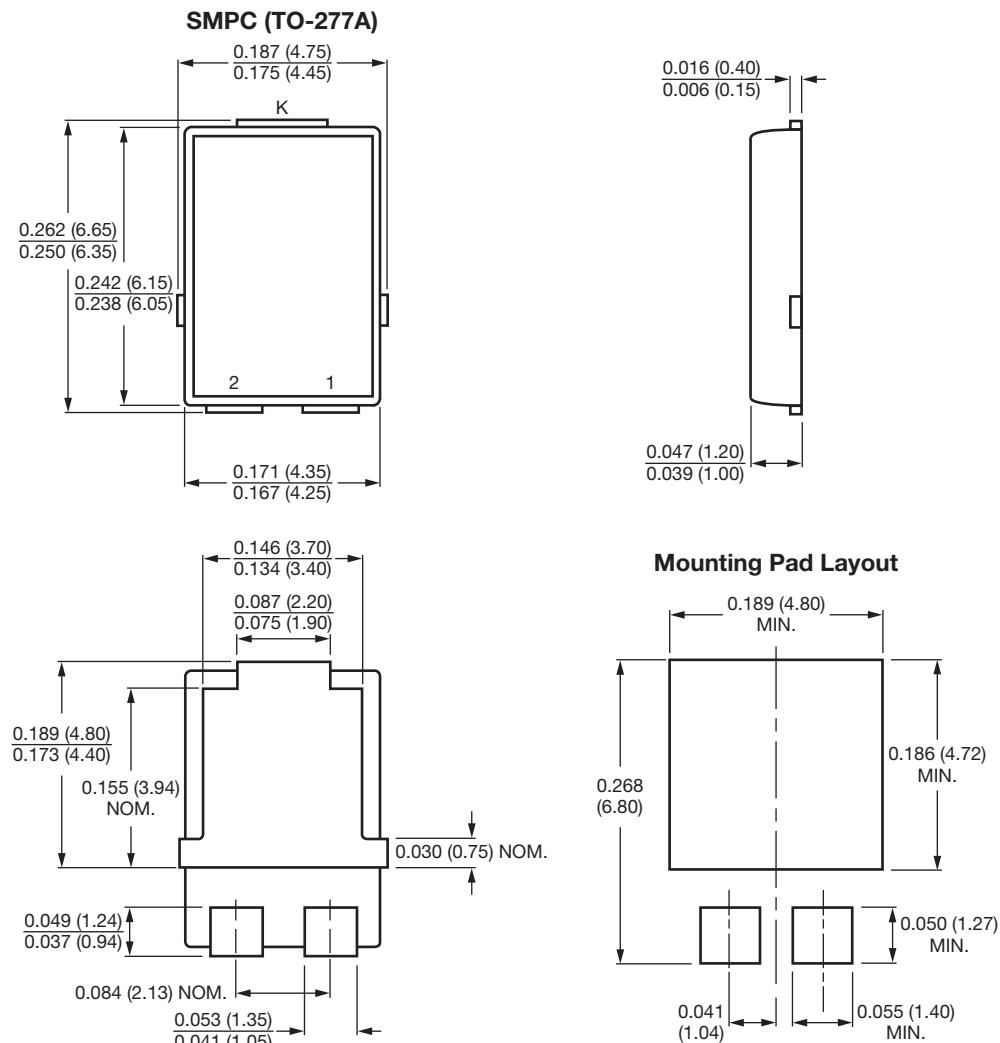
(3) Mounted on 30 mm x 30 mm aluminum PCB; thermal resistance  $R_{\theta JM}$  - junction to mount

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V15P6-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
V15P6-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
V15P6HM3_A/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel
V15P6HM3_A/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

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


**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)


Conform to JEDEC® TO-277A

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