

V15PM15-M3/H Datasheet

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DiGi Electronics Part Number	V15PM15-M3/H-DG
Manufacturer	Vishay General Semiconductor - Diodes Division
Manufacturer Product Number	V15PM15-M3/H
Description	DIODE SCHOTTKY 150V 15A TO277A
Detailed Description	Diode 150 V 15A Surface Mount TO-277A (SMPC)

This model V15PM15-M3/H is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

V15PM15-M3/H

Series:

eSMP®, TMBS®

Technology:

Schottky

Current - Average Rectified (Io):

15A

Speed:

Fast Recovery =< 500ns, > 200mA (Io)

Capacitance @ Vr, F:

1030pF @ 4V, 1MHz

Package / Case:

TO-277, 3-PowerDFN

Operating Temperature - Junction:

-40°C ~ 175°C

Manufacturer:

Vishay General Semiconductor - Diodes Division

Product Status:

Active

Voltage - DC Reverse (Vr) (Max):

150 V

Voltage - Forward (Vf) (Max) @ If:

1.08 V @ 15 A

Current - Reverse Leakage @ Vr:

300 µA @ 150 V

Mounting Type:

Surface Mount

Supplier Device Package:

TO-277A (SMPC)

Base Product Number:

V15PM15

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

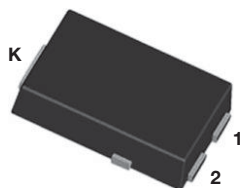
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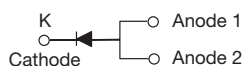
High Current Density Surface-Mount TMBS[®] (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.54$ V at $I_F = 5$ A

eSMP[®] Series



SMPC (TO-277A)



DESIGN SUPPORT TOOLS

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PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	15.0 A
V_{RRM}	150 V
I_{FSM}	220 A
V_F at $I_F = 15.0$ A ($T_A = 125$ °C)	0.66 V
T_J max.	175 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

FEATURES

- Very low profile - typical height of 1.1 mm
- 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



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 - 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 ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V15PM15	UNIT
Device marking code		15M15	
Maximum repetitive peak reverse voltage	V_{RRM}	150	V
Maximum average forward rectified current (fig. 1)	$I_F^{(1)}$	15.0	A
	$I_F^{(2)}$	3.7	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	220	A
Operating junction temperature range	$T_J^{(3)}$	-40 to +175	°C
Storage temperature range	T_{STG}	-55 to +175	°C

Notes

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

(2) Free air, mounted on recommended copper pad area

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



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 5.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.66	-	V
	$I_F = 7.5\text{ A}$			0.80	-	
	$I_F = 15\text{ A}$			1.00	1.08	
	$I_F = 5.0\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.54	-	
	$I_F = 7.5\text{ A}$			0.60	-	
	$I_F = 15\text{ A}$			0.66	0.72	
Reverse current	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	0.02	-	mA
		$T_A = 125\text{ }^\circ\text{C}$		3.0	-	
Reverse current	$V_R = 150\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	0.30	mA
		$T_A = 125\text{ }^\circ\text{C}$		6	18	
Typical junction capacitance	4.0 V, 1 MHz		C_J	1030	-	pF

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: pulse width $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V15PM15	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
V15PM15-M3/H	0.10	H	1500	7" diameter plastic tape and reel
V15PM15-M3/I	0.10	I	6500	13" diameter plastic tape and reel
V15PM15HM3/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
V15PM15HM3/I ⁽¹⁾	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)

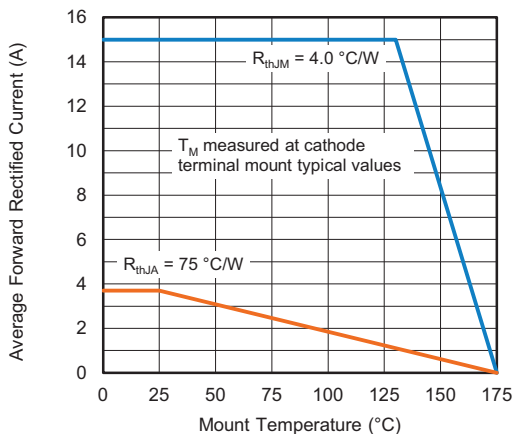


Fig. 1 - Forward Current Derating Curve

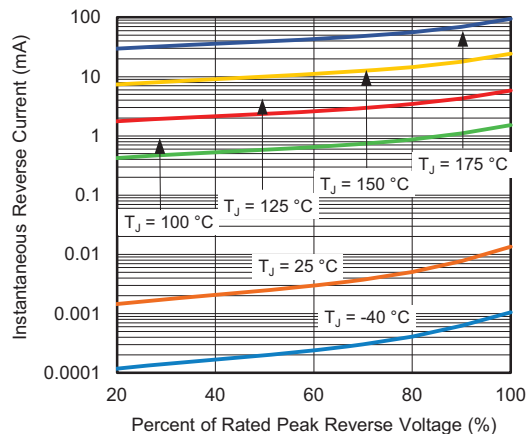


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

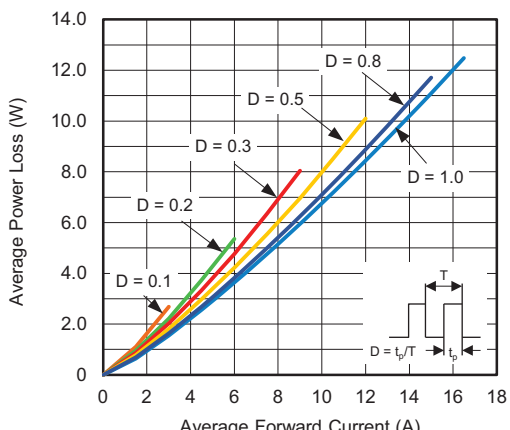


Fig. 2 - Forward Power Loss Characteristics

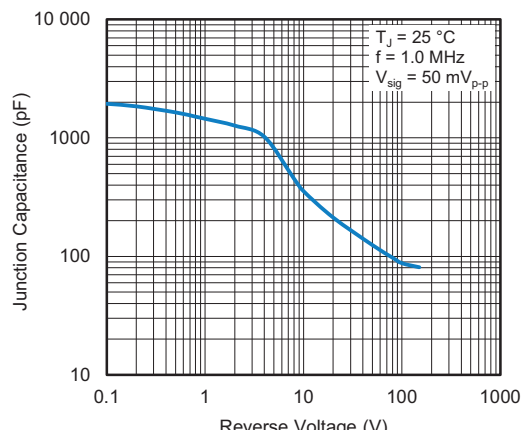


Fig. 5 - Typical Junction Capacitance

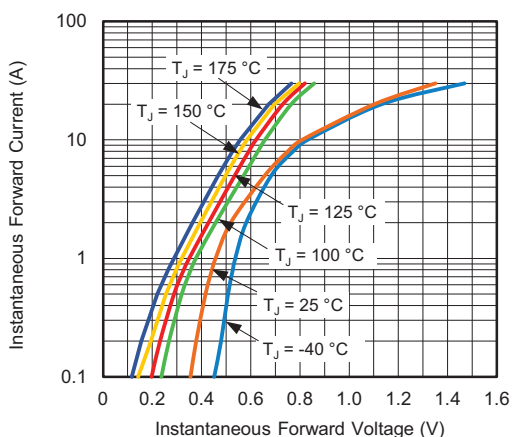


Fig. 3 - Typical Instantaneous Forward Characteristics

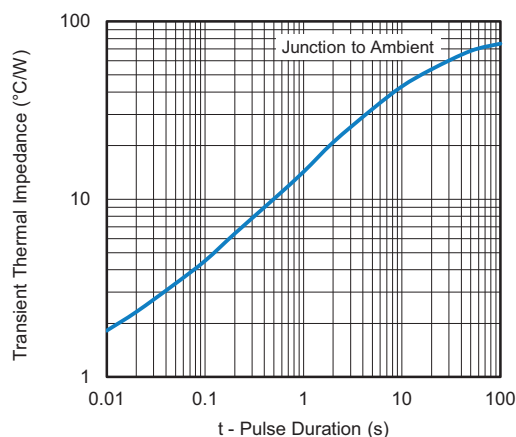
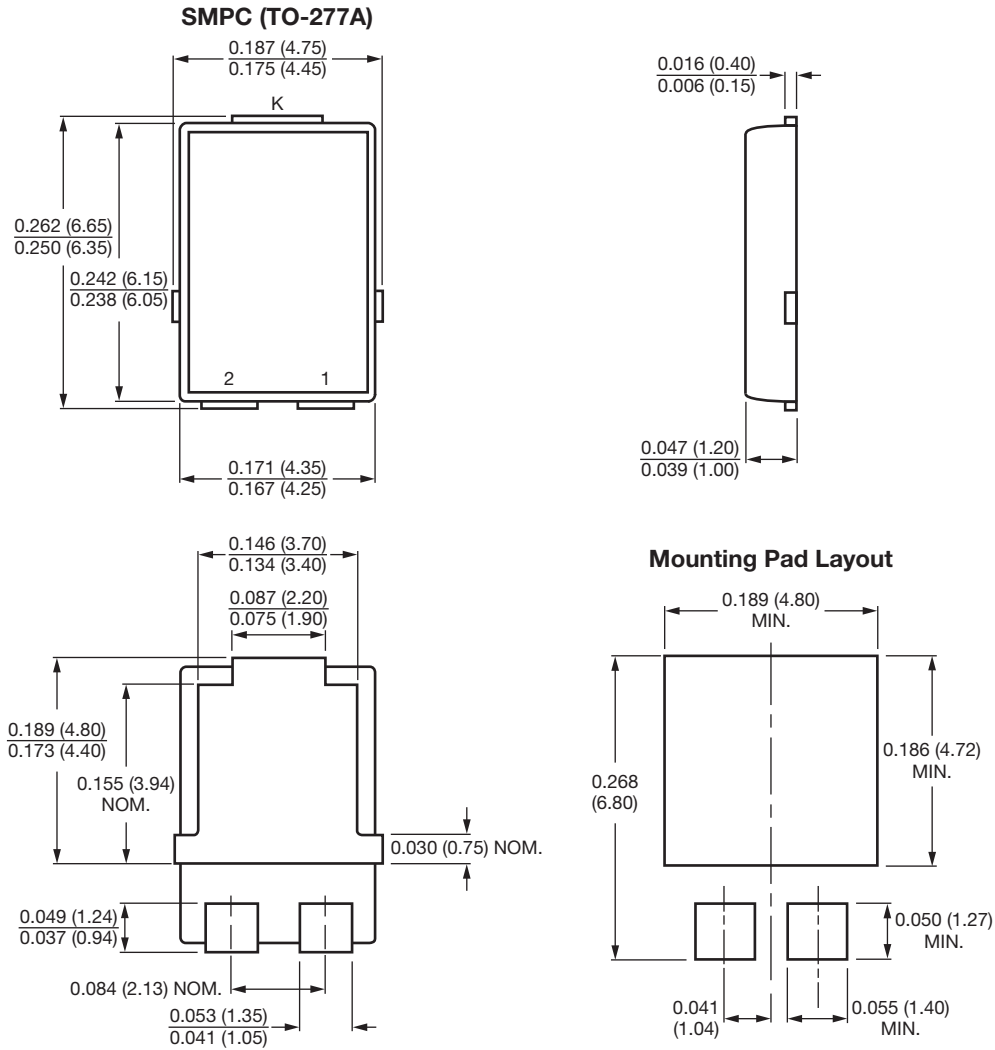


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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