COMPLIANT

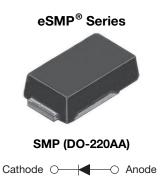
HALOGEN

FRFF



## Vishay General Semiconductor

# Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



#### **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	3.0 A		
$V_{RRM}$	60 V		
I <sub>FSM</sub>	60 A		
V <sub>F</sub> at I <sub>F</sub> = 3.0 A	0.48 V		
T <sub>J</sub> max.	150 °C		
Package	SMP (DO-220AA)		
Circuit configuration	Single		

#### **FEATURES**

- · Low profile package
- Trench MOS Schottky technology
- · Low power losses, high efficiency
- Low forward voltage drop
- 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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

#### **TYPICAL APPLICATIONS**

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

#### **MECHANICAL DATA**

Case: SMP (DO-220AA)

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 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V3PL63	UNIT	
Device marking code		3LF		
Maximum repetitive peak reverse voltage	$V_{RRM}$	60	V	
Maximum DC forward current	I <sub>F(AV)</sub> (1)	3	А	
	I <sub>F(AV)</sub> (2)	2.1	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	60	А	
Operating junction temperature range	T <sub>J</sub> <sup>(3)</sup>	-40 to +150	°C	
Storage temperature range	T <sub>STG</sub>	-55 to +150	°C	

#### Notes

- (1) Mounted on 10 mm x 10 mm PCB pad area
- (2) Free air, mounted on recommended copper pad area
- $^{(3)}$  The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>J</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 1.5 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.46	-	V
	I <sub>F</sub> = 3 A			0.53	0.59	
	I <sub>F</sub> = 1.5 A	T <sub>J</sub> = 125 °C		0.38	-	
	I <sub>F</sub> = 3 A			0.48	0.55	
Reverse current	V <sub>R</sub> = 60 V	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	0.07	- mA
	v <sub>R</sub> = 60 v	T <sub>J</sub> = 125 °C		2.5	5	
Typical junction capacitance	4.0 V, 1 MHz		CJ	460	-	pF

#### Notes

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

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL V3PL63 UNIT			
Typical thermal resistance	R <sub>0JA</sub> (1)(2)	125	°C/W	
	R <sub>0JM</sub> (3)	15		

#### **Notes**

 $^{(1)}$  Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction-to-ambient

 $^{(2)}$  The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ 

(3) Mounted on 10 mm x 10 mm copper pad area PCB; thermal resistance R<sub>0JM</sub> - junction-to-mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V3PL63-M3/H	0.024	Н	3000	7" diameter plastic tape and reel	
V3PL63-M3/I	0.024	I	10 000	13" diameter plastic tape and reel	
V3PL63HM3/H (1)	0.024	Н	3000	7" diameter plastic tape and reel	
V3PL63HM3/I (1)	0.024	I	10 000	13" diameter plastic tape and reel	

#### Note

(1) AEC-Q101 qualified



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### RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

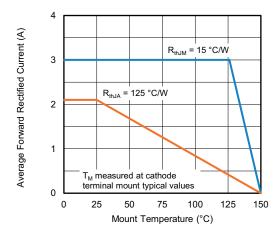


Fig. 1 - Maximum Forward Current Derating Curve

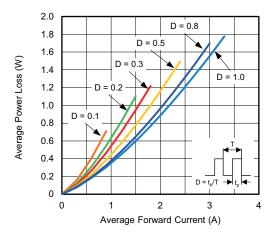


Fig. 2 - Forward Power Loss Characteristics

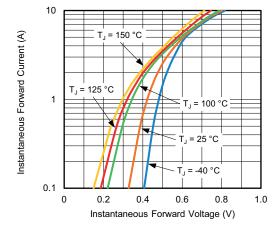


Fig. 3 - Typical Instantaneous Forward Characteristics

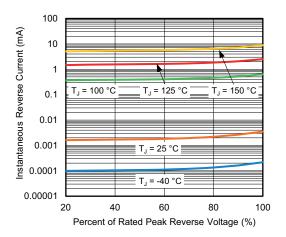


Fig. 4 - Typical Reverse Characteristics

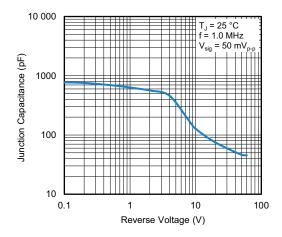


Fig. 5 - Typical Junction Capacitance

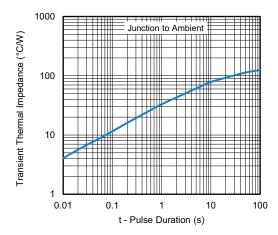


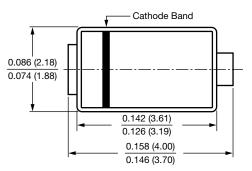
Fig. 6 - Typical Transient Thermal Impedance

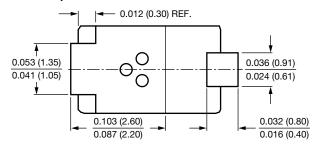


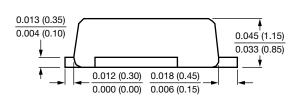
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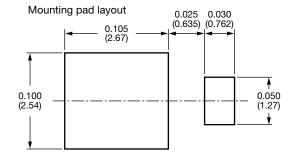
### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

### **SMP (DO-220AA)**











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