AUTOMOTIVE

COMPLIANT

HALOGEN FREE



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## Vishay General Semiconductor

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



**SMA (DO-214AC)** 



### **ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	2.0 A		
V <sub>RRM</sub>	100 V		
I <sub>FSM</sub>	60 A		
V <sub>F</sub> at I <sub>F</sub> = 2.0 A	0.56 V		
T <sub>J</sub> max.	150 °C		
Package	SMA (DO-214AC)		
Circuit configuration	Single		

#### **FEATURES**

- Low profile package
- · Ideal for automated placement
- 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: SMA (DO-214AC)

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 gualified

("\_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

Polarity: color band denotes the cathode end

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VSSA210	UNIT	
Device marking code		V2B		
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V	
Maximum DC farward aurrent	I <sub>F</sub> <sup>(1)</sup>	2.0	- A	
Maximum DC forward current	I <sub>F</sub> <sup>(2)</sup>	1.7		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	60	А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-40 to +150	°C	

### Notes

- (1) Mounted on 8 mm x 8 mm pad areas, 1 oz. FR4 PCB
- (2) Free air, mounted on recommended copper pad area



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST C	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>E</sub> = 2.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.61	0.70	V
	I <sub>F</sub> = 2.0 A	T <sub>A</sub> = 125 °C	VF ('')	0.56	0.65	
Reverse current	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C		1.0	-	μA
	V <sub>R</sub> = 70 V	T <sub>A</sub> = 125 °C	I <sub>R</sub> <sup>(2)</sup>	0.95	-	mA
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C	IR (-)	3.5	150	μA
	v <sub>R</sub> = 100 v	T <sub>A</sub> = 125 °C		2.2	15	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	175	-	pF

#### **Notes**

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER SYMBOL VSSA210				
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	135	°C/W	
Typical trieffial resistance	R <sub>0JM</sub> (2)	25	C/VV	

#### **Notes**

- $^{(1)}$  Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance  $R_{\theta JA}$  junction to ambient
- Units mounted on PCB with 8 mm x 8 mm copper pad areas;  $R_{\theta JM}$  junction to mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
VSSA210-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel	
VSSA210-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel	
VSSA210HM3_A/H (1)	0.064	Н	1800	7" diameter plastic tape and reel	
VSSA210HM3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel	

#### Note

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

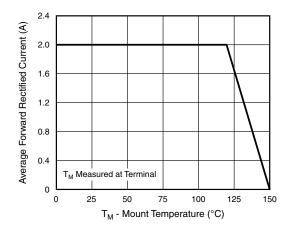


Fig. 1 - Maximum Forward Current Derating Curve

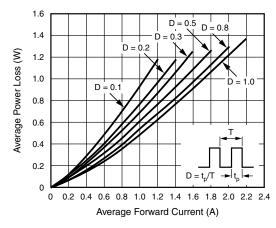


Fig. 2 - Forward Power Loss Characteristics

<sup>(1)</sup> AEC-Q101 qualified



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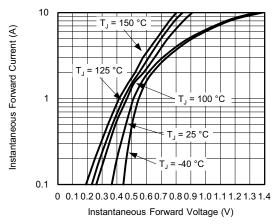


Fig. 3 - Typical Instantaneous Forward Characteristics

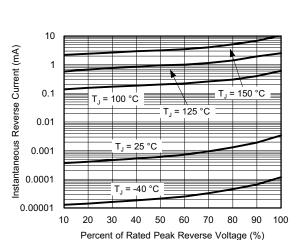


Fig. 4 - Typical Reverse Characteristics

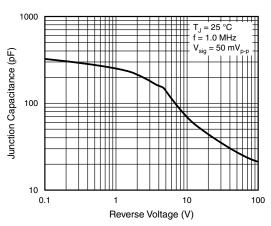


Fig. 5 - Typical Junction Capacitance

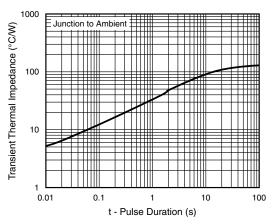


Fig. 6 - Typical Transient Thermal Impedance

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

### SMA (DO-214AC) Cathode Band **Mounting Pad Layout** 0.074 (1.88) 0.066 (1.68) MAX. 0.110 (2.79) 0.065 (1.65) 0.100 (2.54) 0.049 (1.25) 0.177 (4.50) 0.157 (3.99) 0.060 (1.52) 0.012 (0.305) MIN. 0.208 (5.28) REF. 0.090 (2.29) 0.060 (1.52) 0.008 (0.203) 0 (0) 0.208 (5.28) 0.194 (4.93)



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