

# Vishay General Semiconductor

# **Surface Mount Trench MOS Barrier Schottky Rectifier**



**DO-214AC (SMA)** 

PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	2.0 A		
$V_{RRM}$	100 V		
I <sub>FSM</sub>	60 A		
E <sub>AS</sub>	24 mJ		
V <sub>F</sub> at I <sub>F</sub> = 2.0 A	0.56 V		
T <sub>J</sub> max.	150 °C		

### **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
- 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: DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test **Polarity:** Color band denotes the cathode end

MAXIMUM RATINGS (TA = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VSSA210	UNIT	
Device marking code		V2B		
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V	
Maximum DC forward current	I <sub>F</sub> <sup>(1)</sup>	2.0	Α	
	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	
Non-repetitive avalanche energy at $T_J = 25$ °C, $L = 60$ mH	E <sub>AS</sub>	24	mJ	
Peak repetitive reverse current at $t_p$ = 2 $\mu$ s, 1 kHz, $T_J$ = 38 °C $\pm$ 2 °C	I <sub>RRM</sub>	1.0	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 P.C.B.
- (2) Free air, mounted on recommended copper pad area



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<b>ELECTRICAL CHARACTERISTICS</b> (TA = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	$V_{BR}$	100 (minimum)	-	
Instantaneous forward voltage	I <sub>F</sub> = 2.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.61	0.70	V
		T <sub>A</sub> = 125 °C		0.56	0.65	
Reverse current	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	1.0	-	μA
		T <sub>A</sub> = 125 °C		0.95	-	mA
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		3.5	150	μA
		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  $\leq$  40 ms

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

#### Notes

 $^{(1)}$  Free air, mounted on recommended P.C.B. 1 oz. pad area. Thermal resistance  $R_{\theta JA}$  - junction to ambient

Units mounted on P.C.B. 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-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel	
VSSA210-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel	

## **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

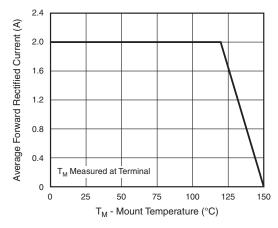


Fig. 1 - Maximum Forward Current Derating Curve

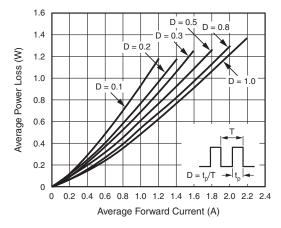


Fig. 2 - Forward Power Loss Characteristics



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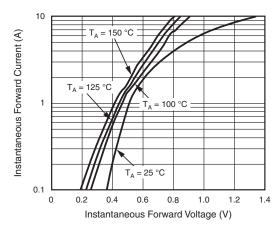


Fig. 3 - Typical Instantaneous Forward Characteristics

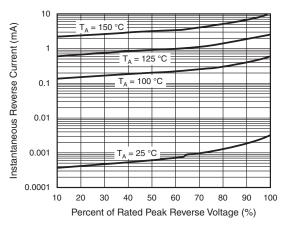


Fig. 4 - Typical Reverse Characteristics

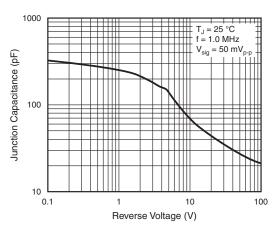


Fig. 5 - Typical Junction Capacitance

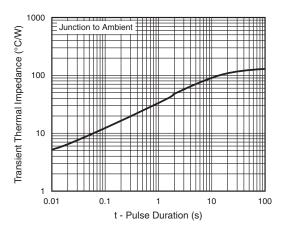
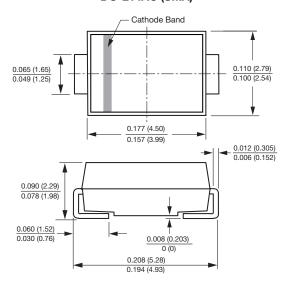
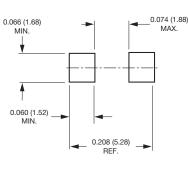


Fig. 6 - Typical Transient Thermal Impedance

# PACKAGE OUTLINE DIMENSIONS in inches (millimeters) DO-214AC (SMA)



## **Mounting Pad Layout**





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