

Vishay General Semiconductor

Surface Mount Trench MOS Barrier Schottky Rectifier



DO-214AA (SMB)

PRIMARY CHARACTERISTICS			
Package	DO-214AA (SMB)		
I _{F(AV)}	4.0 A		
V_{RRM}	100 V		
I _{FSM}	80 A		
E _{AS}	50 mJ		
V_F at $I_F = 4.0 A$	0.61 V		
T _J max.	150 °C		
Diode variations	Single die		

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 www.vishay.com/doc?99912

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AA (SMB)

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 2 whisker test **Polarity:** Color band denotes the cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VSSB410S	UNIT	
Device marking code		V4B		
Maximum repetitive peak reverse voltage	V _{RRM}	100	V	
Maximum DC forward current	I _F ⁽¹⁾	4.0		
	I _F ⁽²⁾	1.9	A	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	80	А	
Non-repetitive avalanche energy at T _J = 25 °C, L = 60 mH	E _{AS}	50	mJ	
Peak repetitive reverse current at t_p = 2 μ s, 1 kHz, T_J = 38 °C \pm 2 °C	I _{RRM}	1.0	А	
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C	

Notes

- (1) Mounted on 14 mm x 14 mm pad areas, 1 oz. FR4 PCB
- (2) Free air, mounted on recommended copper pad area



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I _R = 1.0 mA	T _A = 25 °C	V_{BR}	100 (minimum)	-	V
Instantaneous forward voltage	I _F = 4.0 A	T _A = 25 °C	V _F ⁽¹⁾	0.68	0.77	- V
		T _A = 125 °C		0.61	0.69	
Reverse current	V _R = 70 V	T _A = 25 °C	I _R ⁽²⁾	1.5	-	μA
		T _A = 125 °C		1.2	-	mA
	V _D = 100 V	T _A = 25 °C		7.0	250	μA
		T _A = 125 °C		3.6	20	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	230	-	pF

Notes

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

(2) Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VSSB410S	UNIT	
Typical thermal resistance	R ₀ JA ⁽¹⁾	120	°C/W	
	$R_{\theta JM}$ (2)	15	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 14 mm x 14 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	
VSSB410S-E3/52T	0.096	52T	750	7" diameter plastic tape and reel	
VSSB410S-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel	

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

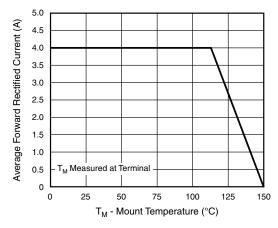


Fig. 1 - Maximum Forward Current Derating Curve

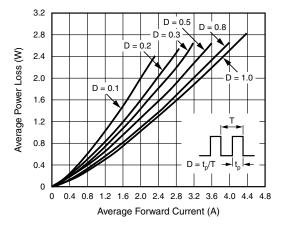


Fig. 2 - Forward Power Loss Characteristics



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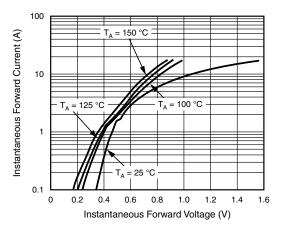


Fig. 3 - Typical Instantaneous Forward Characteristics

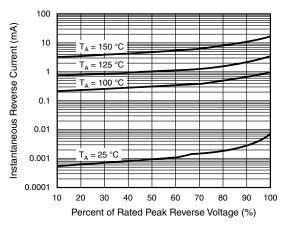


Fig. 4 - Typical Reverse Characteristics

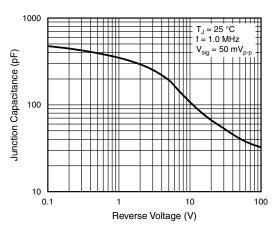


Fig. 5 - Typical Junction Capacitance

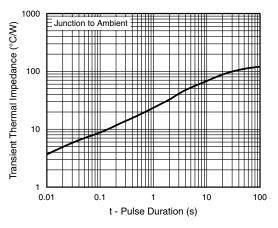
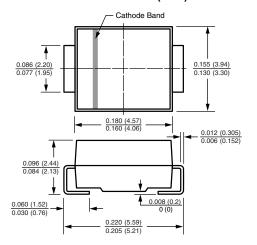


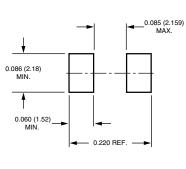
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout





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