HALOGEN FREE



Vishay General Semiconductor

Surface Mount Trench MOS Barrier Schottky Rectifier



DO-214AA (SMB)

PRIMARY CHARACTERISTICS			
I _{F(AV)}	4.0 A		
V _{RRM}	200 V		
I _{FSM}	40 A		
V _F at I _F = 4.0 A	0.71 V		
T _J max.	150 °C		
Package	DO-214AA (SMB)		
Diode variation	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.vishav.com/doc?99912

TYPICAL APPLICATIONS

For use in high frequency converters, freewheeling diodes, 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-M3 - halogen-free and RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

PARAMETER	SYMBOL	VSSB420S	UNIT	
Device marking code		V4D		
Maximum repetitive peak reverse voltage	V _{RRM}	200	V	
Maximum DC forward current	I _F ⁽¹⁾	4.0	Α	
	I _F ⁽²⁾	1.8		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	40	А	
Voltage rate of change (rated V _R)	dV/dt	10 000	V/µs	
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C	

Notes

- (1) Units mounted on PCB with 20 mm x 20 mm pad areas
- (2) Free air, mounted on recommended PCB 1 oz. pad area



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 4.0 A	T _A = 25 °C	V _F ⁽¹⁾	1.44	1.90	- V
		T _A = 125 °C		0.71	0.80	
Reverse current per diode	V _R = 180 V	T _A = 25 °C	I _R (2)	3	-	μA
		T _A = 125 °C		0.7	-	mA
	V _R = 200 V	T _A = 25 °C		4	150	μΑ
		T _A = 125 °C		1.1	10	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	120	-	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	VSSB420S	UNIT	
Typical they make registered	R _{0JA} (1)	120	°C/W	
Typical thermal resistance	R _{0JM} (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 20 mm x 20 mm copper pad areas; thermal resistance $R_{\theta JM}$ junction to mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
VSSB420S-M3/52T	0.096	52T	750	7" diameter plastic tape and reel	
VSSB420S-M3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel	

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

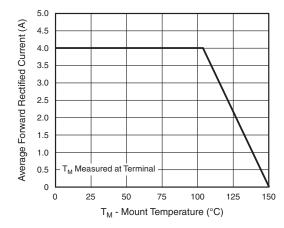


Fig. 1 - Maximum Forward Current Derating Curve

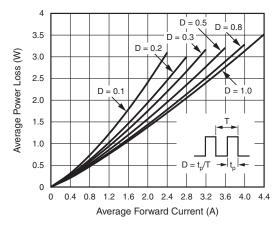


Fig. 2 - Forward Power Loss Characteristics



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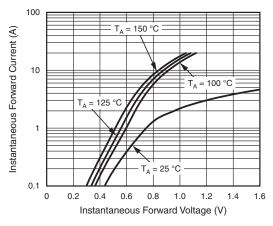


Fig. 3 - Typical Instantaneous Forward Characteristics

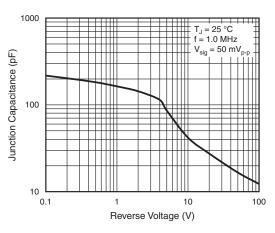


Fig. 5 - Typical Junction Capacitance

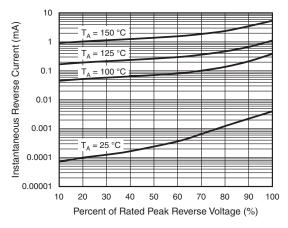


Fig. 4 - Typical Reverse Characteristics

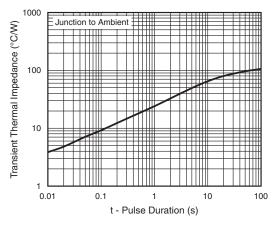
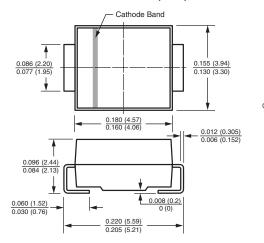


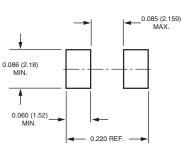
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout





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