AUTOMOTIVE GRADE

RoHS

COMPLIANT

HALOGEN FREE



Vishay General Semiconductor

Surface-Mount Glass Passivated Rectifier



SMC (DO-214AB)



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	8.0 A			
V _{RRM}	1200 V			
I _{FSM}	260 A			
I _R	10 μΑ			
V_F at $I_F = 8$ A ($T_J = 125$ °C)	0.87 V			
T _J max.	150 °C			
Package	SMC (DO-214AB)			
Circuit configuration	Single			

FEATURES

- Low profile package
- Ideal for automated placement
- · Glass passivated pellet chip junction
- Low forward voltage drop
- · Low leakage current
- · High forward surge capability
- 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 <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

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 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	S8CQ	UNIT
Device marking code		8Q	
Maximum repetitive peak reverse voltage	V_{RRM}	1200	V
Maximum RMS voltage	V _{RMS}	840	V
Maximum DC blocking voltage	V_{DC}	1200	V
Maximum average forward rectified current	I _{F(AV)} (1)	8.0	А
	I _{F(AV)} (2)	1.6	Α
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	260	Α
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C

Notes

- (1) Mounted on aluminum PCB 30 mm x 30 mm with aluminum heatsink
- (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
Instantaneous forward voltage	$I_F = 4.0 \text{ A}$	- T _J = 25 °C	- V _F ⁽¹⁾	0.90	ı	V
	$I_F = 8.0 A$			0.96	1.1	
	I _F = 4.0 A	T _J = 125 °C		0.78	-	
	I _F = 8.0 A			0.87	-	
Reverse current	Rated V _R	$T_J = 25 ^{\circ}\text{C}$ $T_J = 125 ^{\circ}\text{C}$ $I_R^{(2)}$	I_ (2)	-	10	μA
	nateu v _R		'R '-'	98	350	μΑ
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t _{rr}	4	ı	μs
Typical junction capacitance	4.0 V, 1 MHz		C_{J}	79	-	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 S8CQ U			
Typical thermal resistance	R ₀ JA (1)(2)	87	°C/W
	R _{eJM} ⁽³⁾	4.5	C/VV

Notes

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

(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz.
(3) Thermal resistance junction-to-mount to follow JEDEC® 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)					
PREFERRED P/N UNIT WEIGHT (g) PREFERRED PACKAGE CODE			BASE QUANTITY	DELIVERY MODE	
S8CQ-M3/I	0.257	I	3500	13" diameter plastic tape and reel	
S8CQHM3/I (1)	0.257	I	3500	13" diameter plastic tape and reel	

(1) AEC-Q101 qualified



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

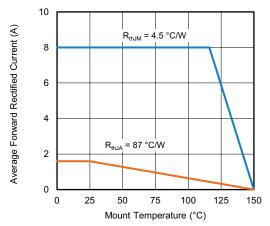


Fig. 1 - Forward Current Derating Curve

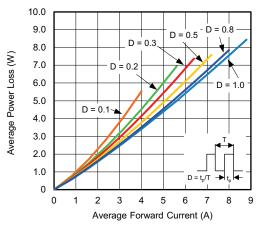


Fig. 2 - Average Power Loss Characteristics

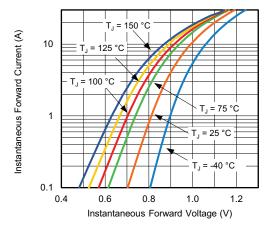


Fig. 3 - Typical Instantaneous Forward Characteristics

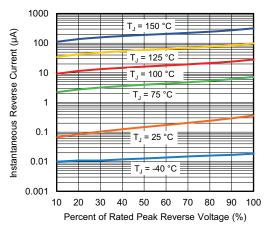


Fig. 4 - Typical Reverse Characteristics

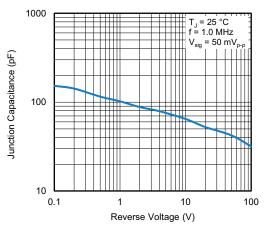


Fig. 5 - Typical Junction Capacitance

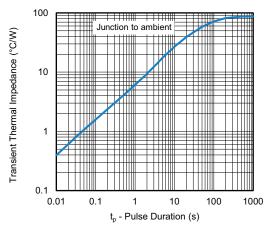


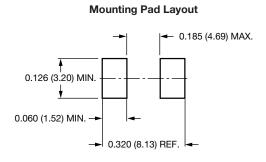
Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB) Cathode Band 0.126 (3.20) 0.245 (6.22) 0.220 (5.59) 0.114 (2.90) 0.280 (7.11) 0.260 (6.60) 0.012 (0.305) 0.006 (0.152) 0.103 (2.62) 0.079 (2.01) 0.060 (1.52) 0.030 (0.76) 0.008 (0.2) 0 (0) 0.320 (8.13) 0.305 (7.75)





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