# S10CG, S10CJ, S10CK, S10CM

Vishay General Semiconductor

AUTOMOTIVE GRADE

COMPLIANT

HALOGEN FREE

## **Surface-Mount Glass Passivated Rectifier**



**SMC (DO-214AB)** 



### **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	10 A				
V <sub>RRM</sub>	400 V, 600 V, 800 V, 1000 V				
I <sub>FSM</sub>	300 A				
I <sub>R</sub>	10 μA				
$V_F$ at $I_F = 10 \text{ A} (T_A = 125 ^{\circ}\text{C})$	0.87 V				
T <sub>J</sub> max.	150 °C				
Package	SMC (DO-214AB)				
Circuit configurations	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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

#### **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 <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	S10CG	S10CJ	S10CK	S10CM	UNIT
Device marking code		10G	10J	10K	10M	
Maximum repetitive peak reverse voltage	$V_{RRM}$	400	600	800	1000	V
Maximum RMS voltage	V <sub>RMS</sub>	280	420	560	700	V
Maximum DC blocking voltage	$V_{DC}$	400	600	800	1000	V
Maximum average forward restified average	I <sub>F(AV)</sub> (1)		Α			
Maximum average forward rectified current	I <sub>F(AV)</sub> (2)		Α			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	300			Α	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-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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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5.0 \text{ A}$	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.9	ı	V	
	I <sub>F</sub> = 10.0 A			0.96	1.0		
	I <sub>F</sub> = 5.0 A	T <sub>A</sub> = 125 °C		0.8	-		
	I <sub>F</sub> = 10.0 A			0.87	0.95		
Reverse current	Rated V <sub>R</sub>	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	10		
	hateu v <sub>R</sub>	T <sub>A</sub> = 125 °C	IR (→	-	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 <sub>rr</sub>	5	- 1	μs	
Typical junction capacitance	4.0 V, 1 MHz		CJ	79	-	pF	

#### **Notes**

 $^{(1)}\,$  Pulse test: 300  $\mu s$  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	S10CG	S10CJ	S10CK	S10CM	UNIT
Typical thermal resistance	RejA (1) 75					°C/W
Typical trieffial resistance	R <sub>0JM</sub> (2)	9.3				C/VV

#### **Notes**

(1) Free air, mounted on recommended PCB, 2 oz.pad area; thermal resistance R<sub>BJA</sub> - junction to ambient

Mounted on 30 mm x 30 mm Aluminum PCB, thermal resistance  $R_{\theta JM}$  - junction to mount

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
S10CJ-M3/I	0.257	I	3500	13" diameter plastic tape and reel		
S10CJHM3/I (1)	0.257	I	3500	13" diameter plastic tape and reel		

#### Note

(1) AEC-Q101 qualified

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

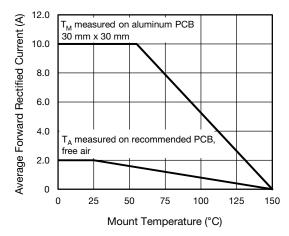


Fig. 1 - Forward Current Derating Curve

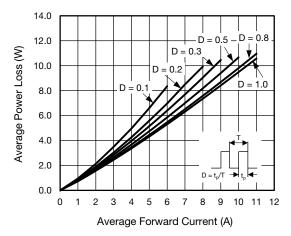


Fig. 2 - Average Power Loss Characteristics



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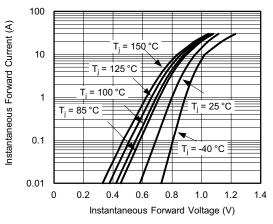


Fig. 3 - Typical Instantaneous Forward Characteristics

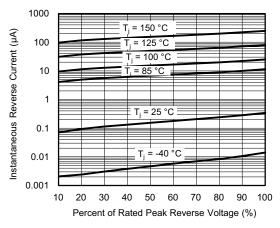


Fig. 4 - Typical Reverse Characteristics

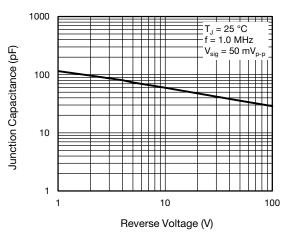


Fig. 5 - Typical Junction Capacitance

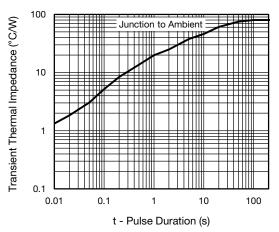
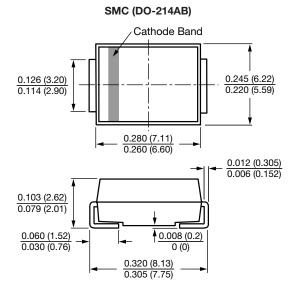
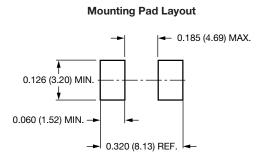


Fig. 6 - Typical Transient Thermal Impedance

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







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