

## 12A, 400V - 1000V Surface Mount Glass Passivated Rectifier

### FEATURES

- Low forward voltage drop
- Ideal for automated placement
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Converter

### MECHANICAL DATA

- Case: DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.27 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	12	A
$V_{RRM}$	400 - 1000	V
$I_{FSM}$	300	A
$T_{J\ MAX}$	150	°C
Package	DO-214AB (SMC)	
Configuration	Single die	



**DO-214AB (SMC)**

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	S12GC	S12JC	S12KC	S12MC	UNIT
Marking code on the device		S12GC	S12JC	S12KC	S12MC	
Repetitive peak reverse voltage	$V_{RRM}$	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	280	420	560	700	V
Maximum DC blocking voltage	$V_{DC}$	400	600	800	1000	V
Forward current	$I_{F(AV)}$	12				A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	300				A
Junction temperature	$T_J$	- 55 to +150				°C
Storage temperature	$T_{STG}$	- 55 to +150				°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance per diode	$R_{\theta JL}$	9	°C/W
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	44	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
<b>PARAMETER</b>	<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP.</b>	<b>MAX.</b>	<b>UNIT</b>
Forward voltage per diode <sup>(1)</sup>	$I_F = 12\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	1.1	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	1	$\mu\text{A}$
	$T_J = 125^\circ\text{C}$		-	250	$\mu\text{A}$
Junction capacitance	1 MHz, $V_R = 4.0\text{V}$	$C_J$	78	-	pF

**Notes:**

1. Pulse test with  $PW = 0.3\text{ ms}$
2. Pulse test with  $PW = 30\text{ ms}$

<b>ORDERING INFORMATION</b>					
<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>PACKAGE</b>	<b>PACKING</b>
S12xC (Note 1,2)	H	R7	G	SMC	850 / 7" Plastic reel
		R6		SMC	3,000 / 13" Paper reel
		M6		SMC	3,000 / 13" Plastic reel
		V7		Matrix SMC	850 / 7" Plastic reel
		V6		Matrix SMC	3,000 / 13" Plastic reel

**Note :**

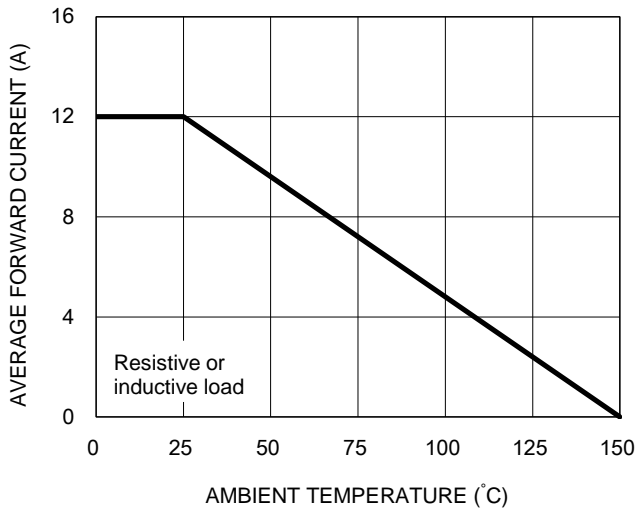
1. "x" defines voltage from 400V (S12GC) to 1000V (S12MC)
2. Only V6 and V7 are all green compound (halogen free)

<b>EXAMPLE</b>					
<b>EXAMPLE P/N</b>	<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>DESCRIPTION</b>
S12GCHR7G	S12GC	H	R7	G	AEC-Q101 qualified Green compound

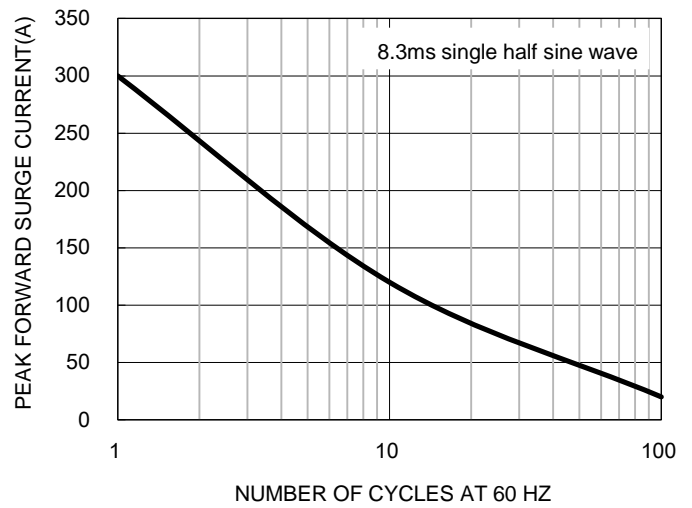
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

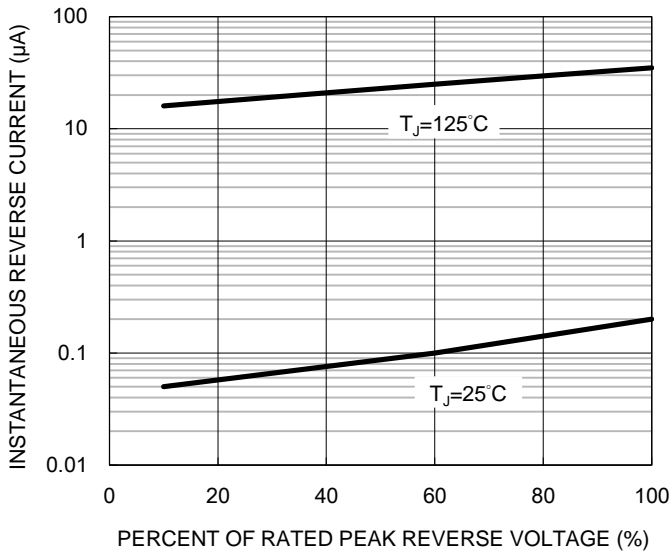
**Fig.1 Forward Current Derating Curve**



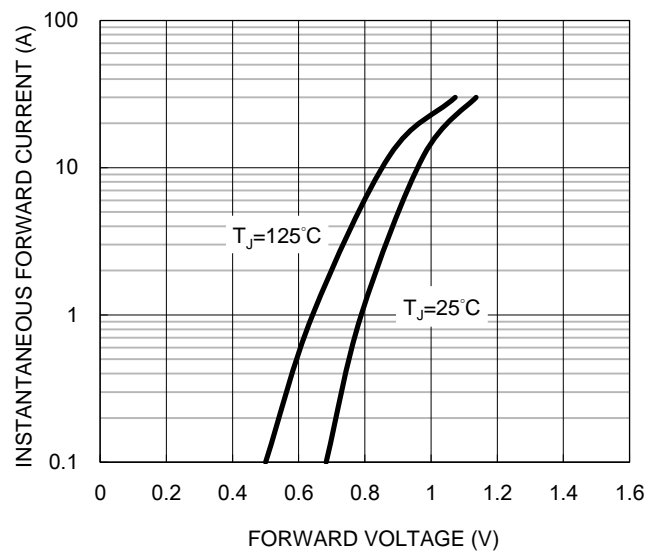
**Fig.2 Maximum Non-repetitive Forward Surge Current**



**Fig.3 Typical Reverse Characteristics**

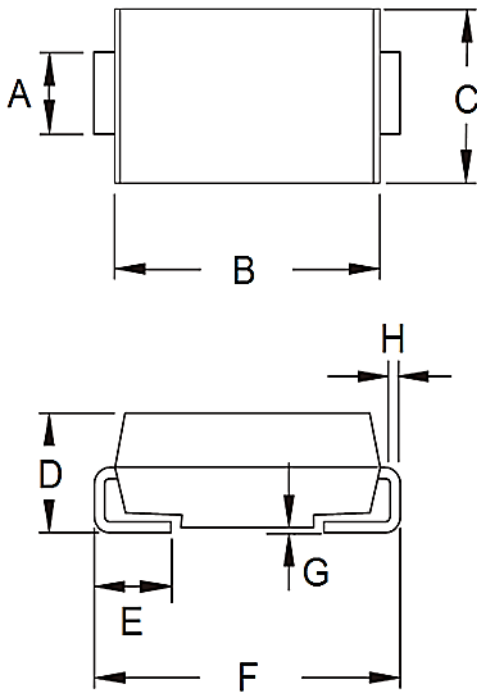


**Fig.4 Typical Forward Characteristics**



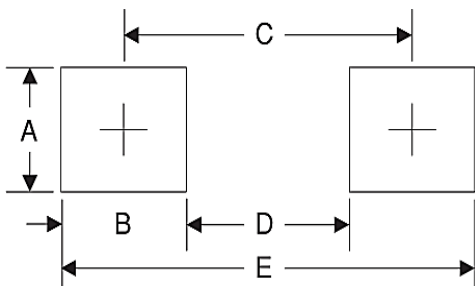
**PACKAGE OUTLINE DIMENSIONS**

DO-214AB (SMC)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	2.90	3.20	0.114	0.126
B	6.60	7.11	0.260	0.280
C	5.59	6.22	0.220	0.245
D	2.00	2.62	0.079	0.103
E	1.00	1.60	0.039	0.063
F	7.75	8.13	0.305	0.320
G	0.10	0.20	0.004	0.008
H	0.15	0.31	0.006	0.012

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	3.30	0.130
B	2.50	0.098
C	6.80	0.268
D	4.40	0.173
E	9.40	0.370

**MARKING DIAGRAM**

Matrix SMC

SMC



- P/N =Marking Code
- G =Green Compound
- YW =Date Code
- F =Factory Code

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