

## 5A, 50V - 1000V High Efficient Surface Mount Rectifier

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low forward voltage drop
- Low profile package
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in computer, automotive and telecommunication.

### 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: 0.21 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	5	A
$V_{RRM}$	50 - 1000	V
$I_{FSM}$	150	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	HS5A	HS5B	HS5D	HS5F	HS5G	HS5J	HS5K	HS5M	UNIT
Marking code on the device		HS5A	HS5B	HS5D	HS5F	HS5G	HS5J	HS5K	HS5M	
Repetitive peak reverse voltage	$V_{RRM}$	50	100	200	300	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	140	210	280	420	560	700	V
Maximum DC blocking voltage	$V_{DC}$	50	100	200	300	400	600	800	1000	
Forward current	$I_{F(AV)}$	5								A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	150								A
Junction temperature	$T_J$	- 55 to +150								°C
Storage temperature	$T_{STG}$	- 55 to +150								°C

**THERMAL PERFORMANCE**

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	60	°C/W

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

PARAMETER		CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Forward voltage per diode <sup>(1)</sup>	HS5A HS5B HS5D HS5F	$I_F = 3\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	-	V
	HS5G			-	-	V
	HS5J HS5K HS5M			-	1.35	V
Forward voltage per diode <sup>(1)</sup>	HS5A HS5B HS5D HS5F	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	1.00	V
	HS5G			-	1.30	V
	HS5J HS5K HS5M			-	1.70	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>		$T_J = 25^\circ\text{C}$	$I_R$	-	10	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$		-	250	$\mu\text{A}$
Junction capacitance	HS5A HS5B HS5D HS5F HS5G	1 MHz, $V_R = 4.0\text{V}$	$C_J$	80	-	pF
	HS5J HS5K HS5M			50	-	pF
Reverse recovery time	HS5A HS5B HS5D HS5F HS5G	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{RR} = 0.25\text{A}$	$t_{rr}$	-	50	ns
	HS5J HS5K HS5M			-	75	ns

**Notes:**

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

**ORDERING INFORMATION**

PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
HS5x (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 :**

- "x" defines voltage from 50V (HS5A) to 1000V (HS5M)
- Only V6 and V7 are all green compound (halogen free)

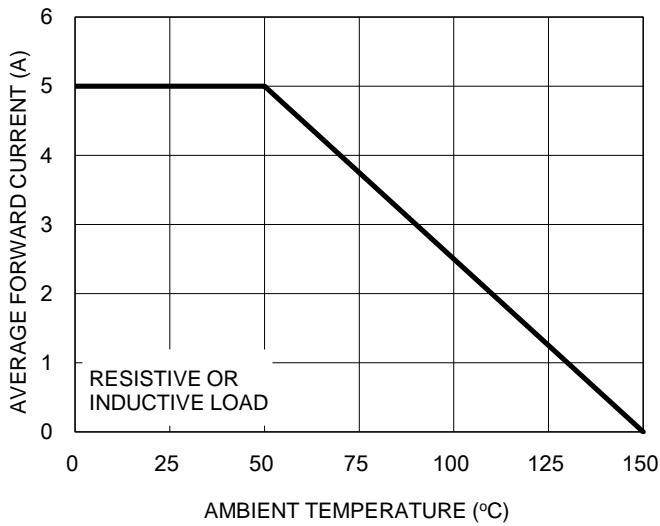
**EXAMPLE**

EXAMPLE P/N	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
HS5AHR7G	HS5A	H	R7	G	AEC-Q101 qualified Green compound

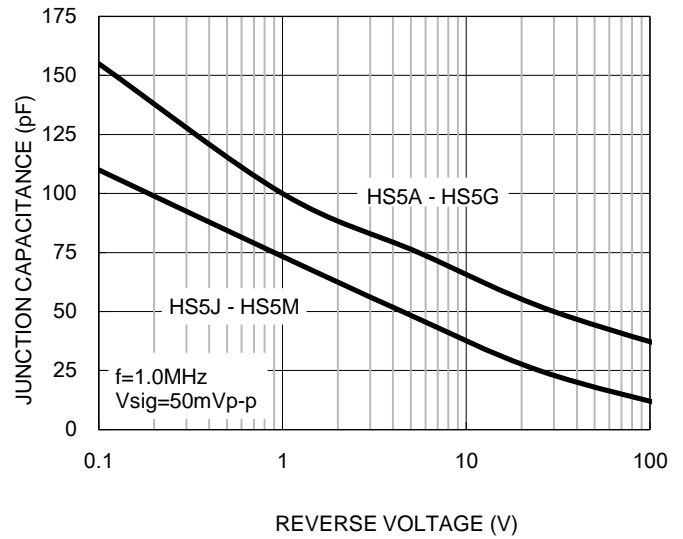
## CHARACTERISTICS CURVES

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

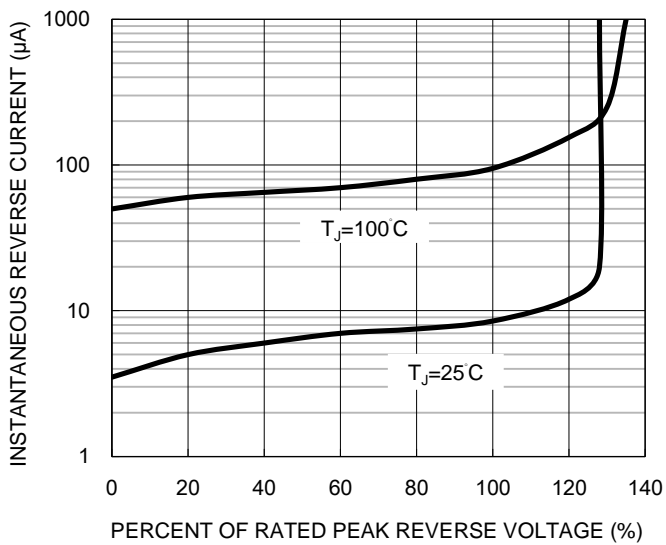
**Fig.1 Forward Current Derating Curve**



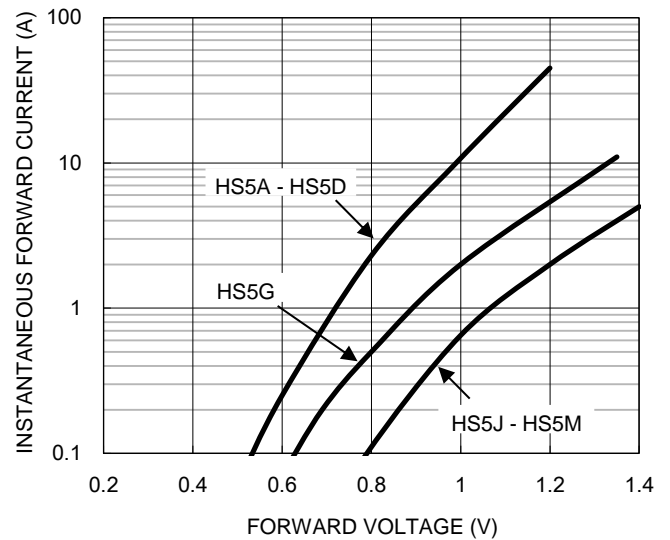
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



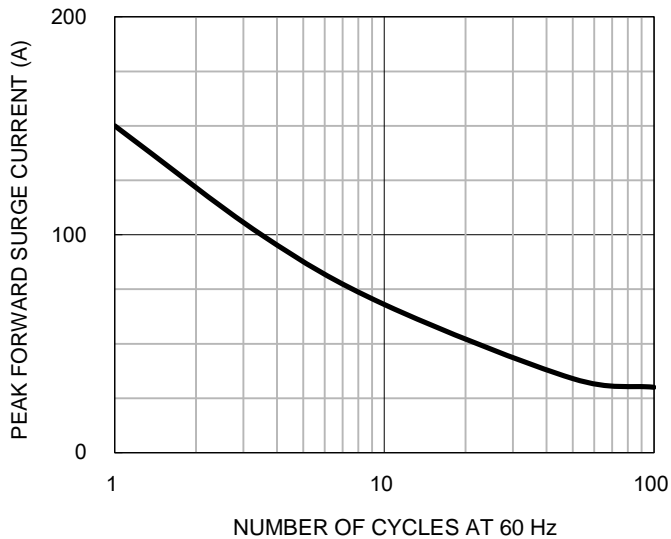
**Fig.4 Typical Forward Characteristics**



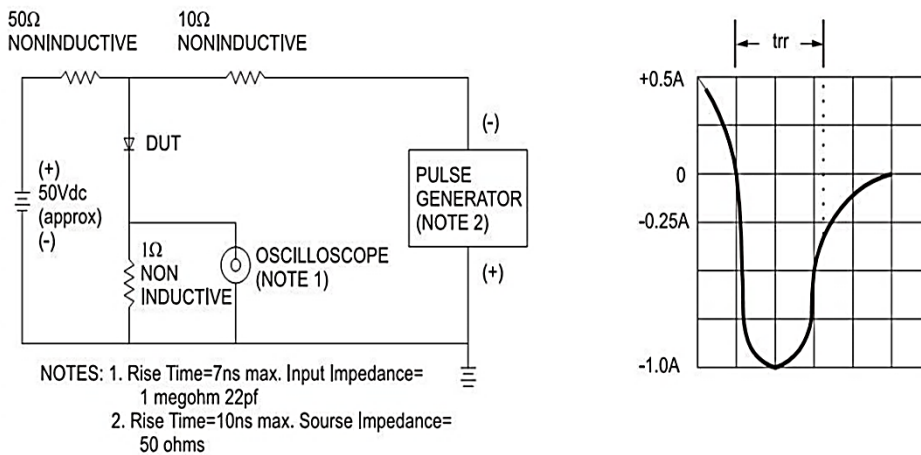
## CHARACTERISTICS CURVES

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

**Fig.5 Maximum Non-repetitive Forward Surge Current**

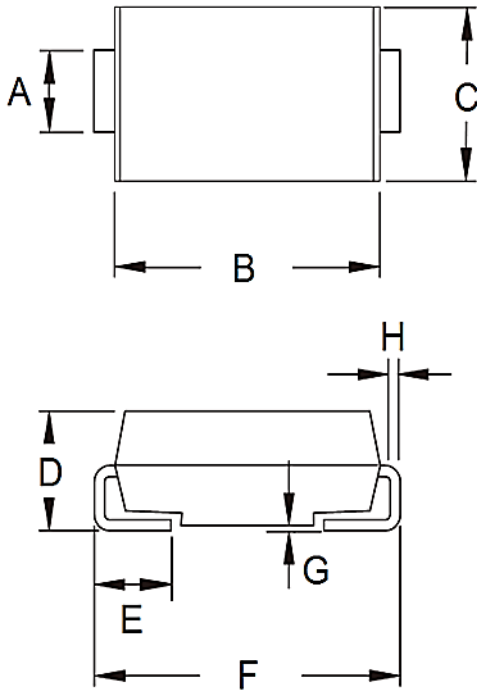


**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



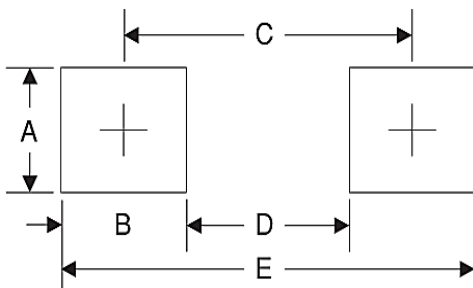
## PACKAGE OUTLINE DIMENSIONS

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

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Taiwan Semiconductor:

[HS5A](#) [HS5B](#) [HS5D](#) [HS5G](#) [HS5K](#) [HS5B R7](#) [HS5J R7](#) [HS5M R7](#) [HS5K R7](#) [HS5A R7](#) [HS5D R7](#) [HS5F R7](#)  
[HS5G R7](#) [HS5K R6](#) [HS5D R6](#) [HS5B R6](#) [HS5G R6](#) [HS5A R6](#) [HS5F R6](#) [HS5J R6](#) [HS5M R6](#) [HS5K V7G](#) [HS5M](#)  
[V6G](#) [HS5K V6G](#) [HS5G V7G](#) [HS5J V6G](#) [HS5J V7G](#) [HS5F V6G](#) [HS5G V6G](#) [HS5B V7G](#) [HS5D V6G](#) [HS5D V7G](#)  
[HS5M V7G](#) [HS5A V6G](#) [HS5A V7G](#) [HS5B V6G](#) [HS5DH](#) [HS5FH](#) [HS5GH](#) [HS5JH](#) [HS5KH](#) [HS5MH](#)