

## 1A, 50V - 1000V High Efficient Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Fast switching for high efficiency
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

### APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Lighting application
- Snubber
- Freewheeling application

### MECHANICAL DATA

- Case: DO-214AC (SMA)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.060g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	1	A
$V_{RRM}$	50 - 1000	V
$I_{FSM}$	30	A
$T_{J\ MAX}$	150	°C
Package	DO-214AC (SMA)	
Configuration	Single die	



DO-214AC (SMA)



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	HS1A	HS1B	HS1D	HS1F	HS1G	HS1J	HS1K	HS1M	UNIT
Marking code on the device		HS1A	HS1B	HS1D	HS1F	HS1G	HS1J	HS1K	HS1M	
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
Forward current	$I_F$	1								A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	30								A
Junction temperature	$T_J$	- 55 to +150								°C
Storage temperature	$T_{STG}$	- 55 to +150								°C

<b>THERMAL PERFORMANCE</b>			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	15	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	70	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	15	°C/W

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm Cu pad test board)

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage <sup>(1)</sup>	HS1A HS1B HS1D HS1F	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	1.0	V
	HS1G			-	1.3	V
	HS1J HS1K HS1M			-	1.7	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^\circ\text{C}$	$I_R$	-	5	μA
		$T_J = 100^\circ\text{C}$		-	50	μA
		$T_J = 125^\circ\text{C}$		-	150	μA
Junction capacitance	HS1A HS1B HS1D HS1F HS1G	1MHz, $V_R = 4.0\text{V}$	$C_J$	20	-	pF
	HS1J HS1K HS1M			15	-	pF
Reverse recovery time	HS1A HS1B HS1D HS1F HS1G	$I_F = 0.5\text{A}, I_R = 1.0\text{A},$ $I_{rr} = 0.25\text{A}$	$t_{rr}$	-	50	ns
	HS1J HS1K HS1M			-	75	ns

**Notes:**

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

<b>ORDERING INFORMATION</b>		
ORDERING CODE <sup>(1)</sup>	PACKAGE	PACKING
HS1x	DO-214AC (SMA)	7,500 / Tape & Reel

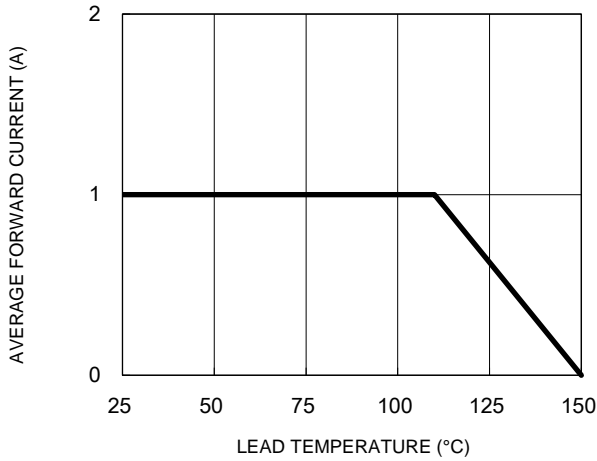
**Notes:**

1. "x" defines voltage from 50V(HS1A) to 1000V(HS1M)

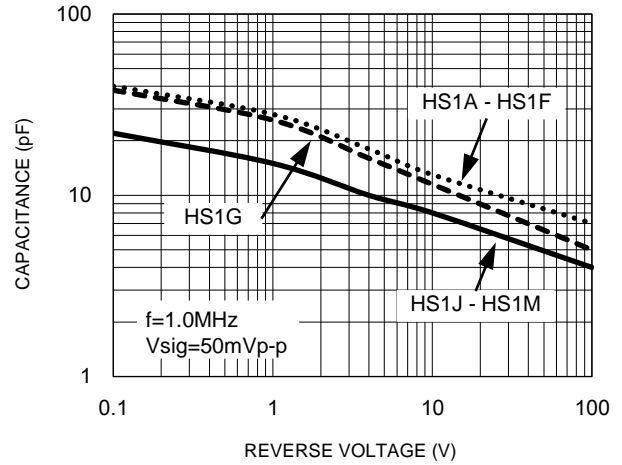
**CHARACTERISTICS CURVES**

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

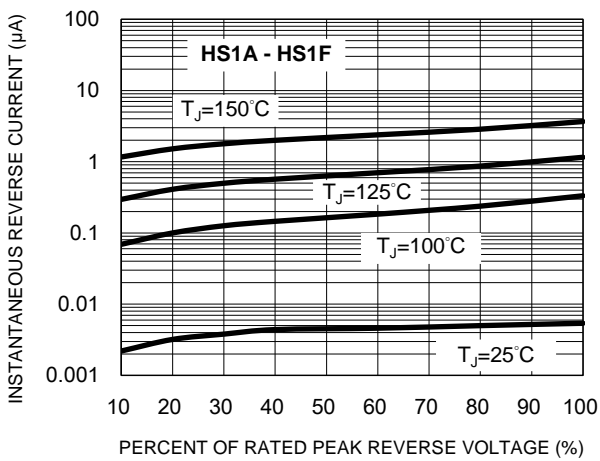
**Fig.1 Forward Current Derating Curve**



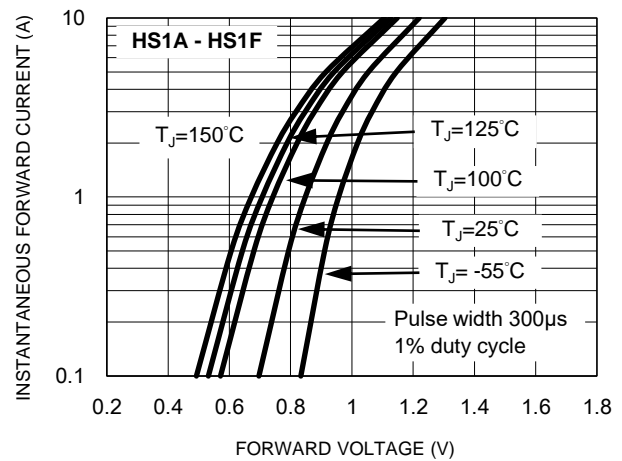
**Fig.2 Typical Junction Capacitance**



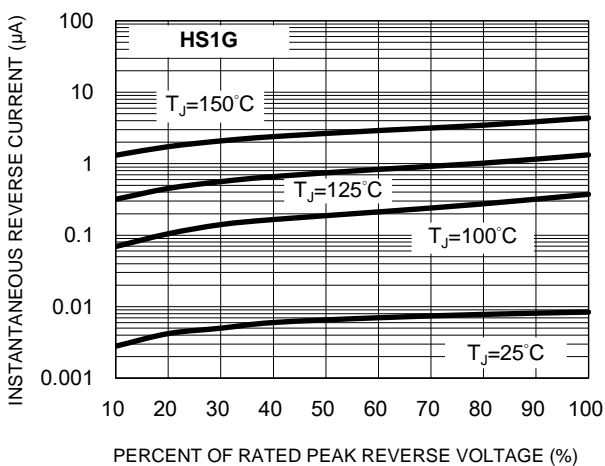
**Fig.3 Typical Reverse Characteristics**



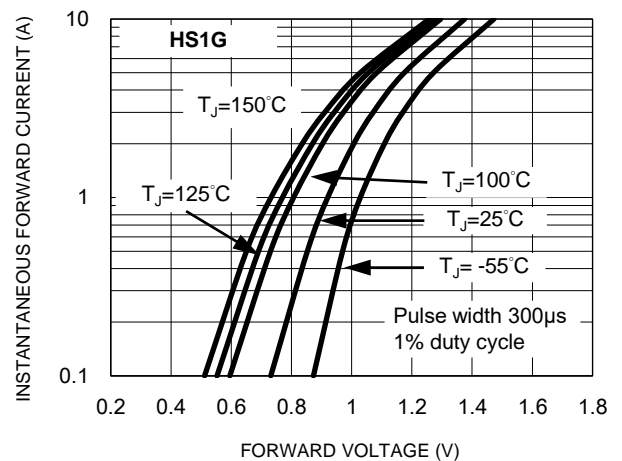
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



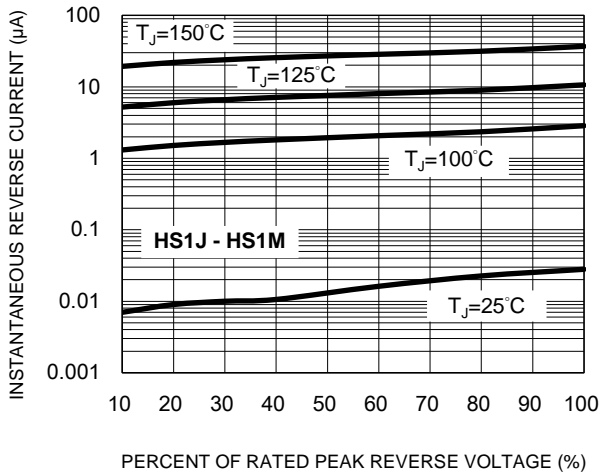
**Fig.6 Typical Forward Characteristics**



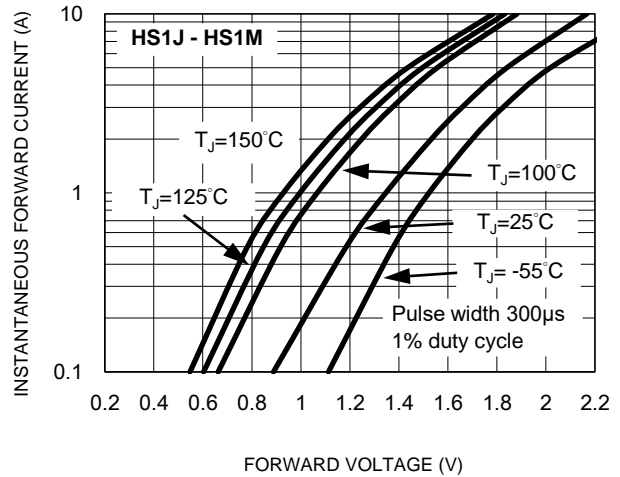
**CHARACTERISTICS CURVES**

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

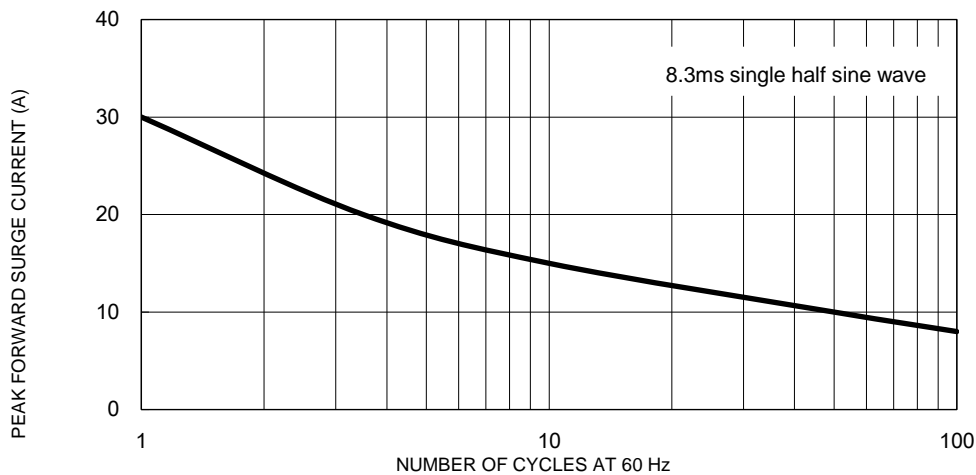
**Fig.7 Typical Reverse Characteristics**



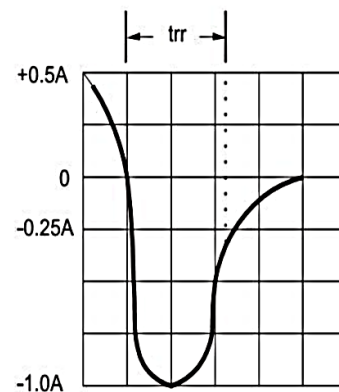
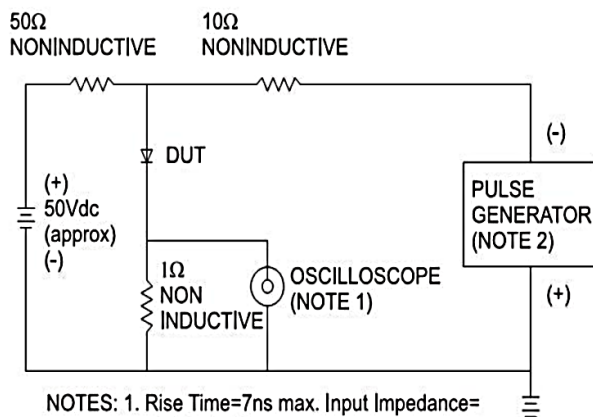
**Fig.8 Typical Forward Characteristics**



**Fig.9 Maximum Non-Repetitive Forward Surge Current**



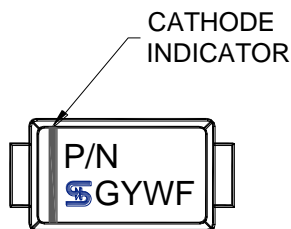
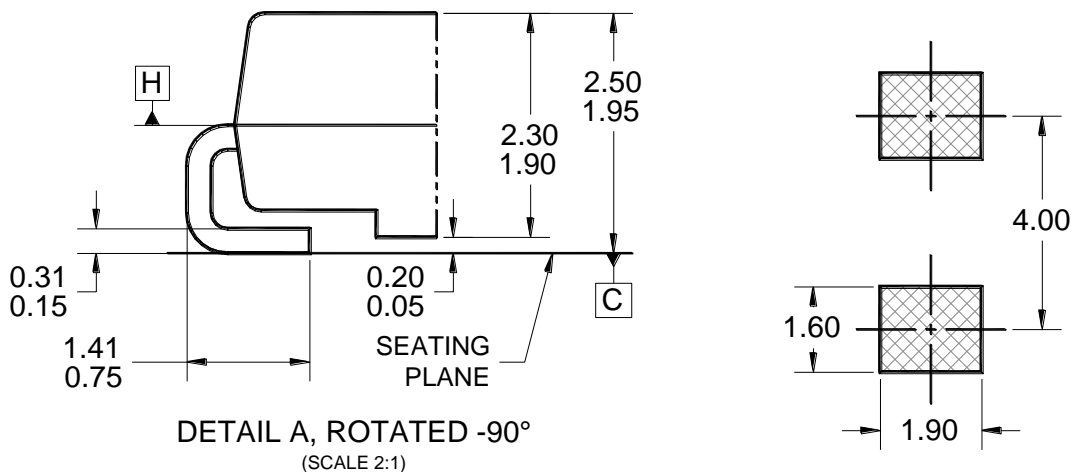
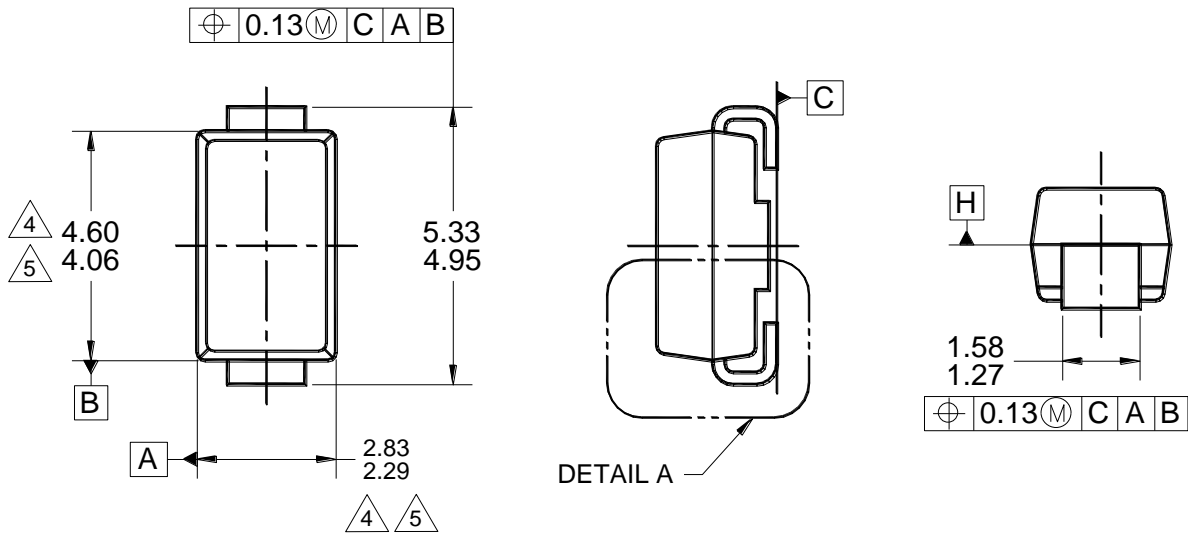
**Fig.10 Reverse Recovery Time Characteristic and Test Circuit Diagram**



NOTES: 1. Rise Time=7ns max. Input Impedance=1 megohm 22pf  
2. Rise Time=10ns max. Source Impedance=50 ohms

**PACKAGE OUTLINE DIMENSIONS**

**DO-214AC (SMA)**



**MARKING DIAGRAM**

P/N = MARKING CODE  
**G** = GREEN COMPOUND  
 YW = DATE CODE  
**F** = FACTORY CODE

**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PACKAGE OUTLINE REFERENCE: JEDEC DO-214, VARIATION AC, ISSUE D.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. MOLDED PLASTIC BODY LATERAL DIMENSIONS TO BE DETERMINED AT DATUM PLANE H.
6. DWG NO. REF: HQ2SD07-DO214SMC-034 REV A.

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