

## 1A, 200V - 1000V High Efficient Surface Mount Rectifier

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low forward voltage drop
- Fast switching for high efficiency
- 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-214AC (SMA)
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 0.06 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	1	A
$V_{RRM}$	200 - 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	HS1D-K	HS1G-K	HS1J-K	HS1K-K	HS1M-K	UNIT	
Marking code on the device		HS1D	HS1G	HS1J	HS1K	HS1M		
Repetitive peak reverse voltage	$V_{RRM}$	200	400	600	800	1000	V	
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	560	700	V	
Maximum DC blocking voltage	$V_{DC}$	200	400	600	800	1000	V	
Forward current	$I_{F(AV)}$	1						A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode)	$I_{FSM}$	30						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	$R_{\theta JA}$	70	°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>	HS1D-K	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	1.0	V
	HS1G-K			-	1.3	V
	HS1J-K			-	1.7	V
	HS1K-K			-	1.7	V
	HS1M-K			-	1.7	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	5	$\mu\text{A}$	
	$T_J = 100^\circ\text{C}$		-	100	$\mu\text{A}$	
	$T_J = 125^\circ\text{C}$		-	150	$\mu\text{A}$	
Junction capacitance	HS1D-K	1 MHz, $V_R = 4.0\text{V}$	$C_J$	20	-	pF
	HS1G-K			20	-	pF
	HS1J-K			15	-	pF
	HS1K-K			15	-	pF
	HS1M-K			15	-	pF
Reverse recovery time	HS1D-K	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{RR} = 0.25\text{A}$	$t_{rr}$	-	50	ns
	HS1G-K			-	50	ns
	HS1J-K			-	75	ns
	HS1K-K			-	75	ns
	HS1M-K			-	75	ns

**Notes:**

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

ORDERING INFORMATION				
PART NO.	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
HS1x-K (Note 1, 2)	R3	G	SMA	1,800 / 7" Plastic reel
	R2		SMA	7,500 / 13" Paper reel
	M2		SMA	7,500 / 13" Plastic reel

**Note:**

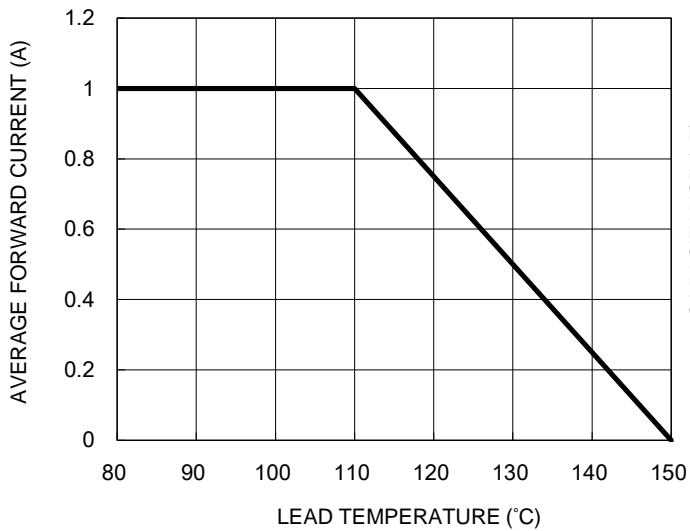
1. "x" defines voltage from 200V (HS1D-K) to 1000V (HS1M-K)
2. Whole series with green compound

EXAMPLE P/N				
EXAMPLE P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
HS1M-K R3G	HS1M-K	R3	G	Green compound

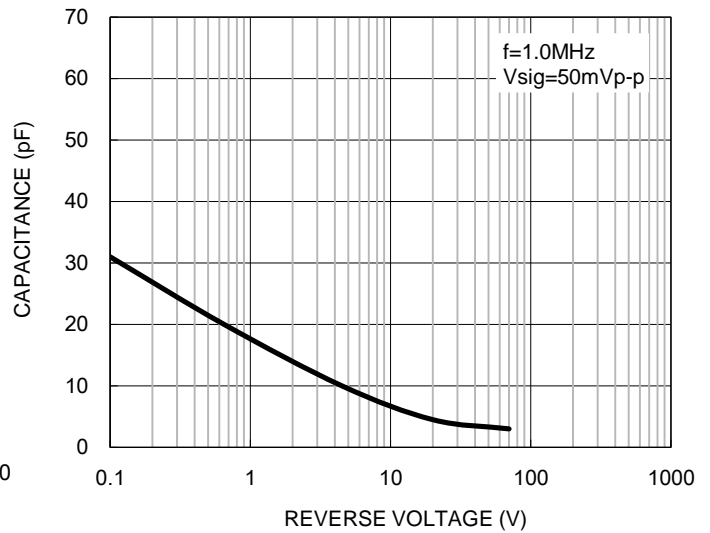
**CHARACTERISTICS CURVES**

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

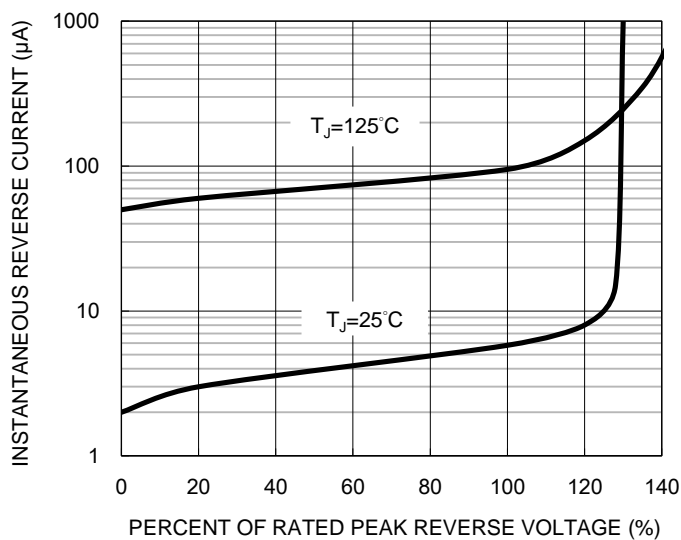
**Fig1. Forward Current Derating Curve**



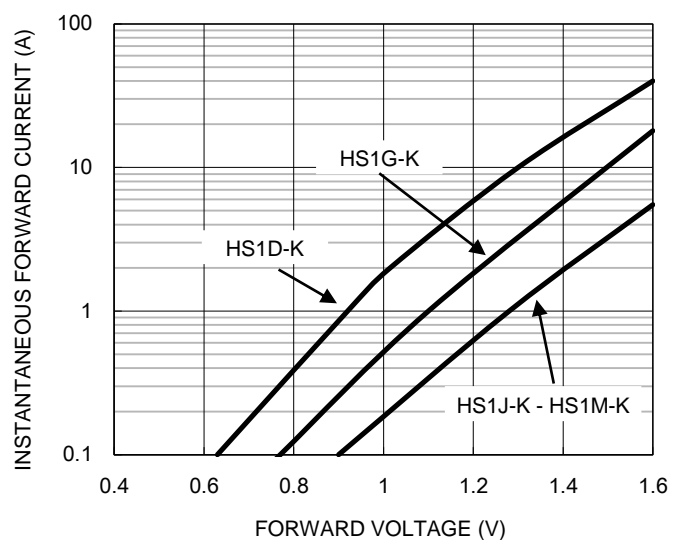
**Fig2. Typical Junction Capacitance**



**Fig3. Typical Reverse Characteristics**



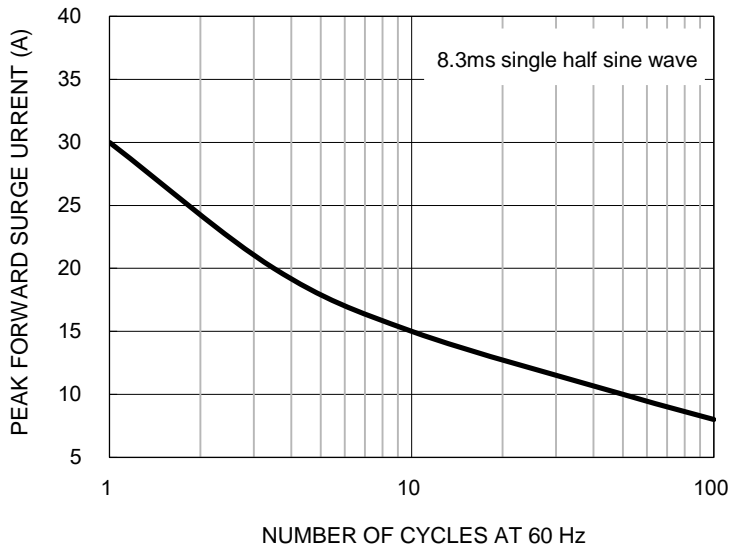
**Fig4. Typical Forward Characteristics**



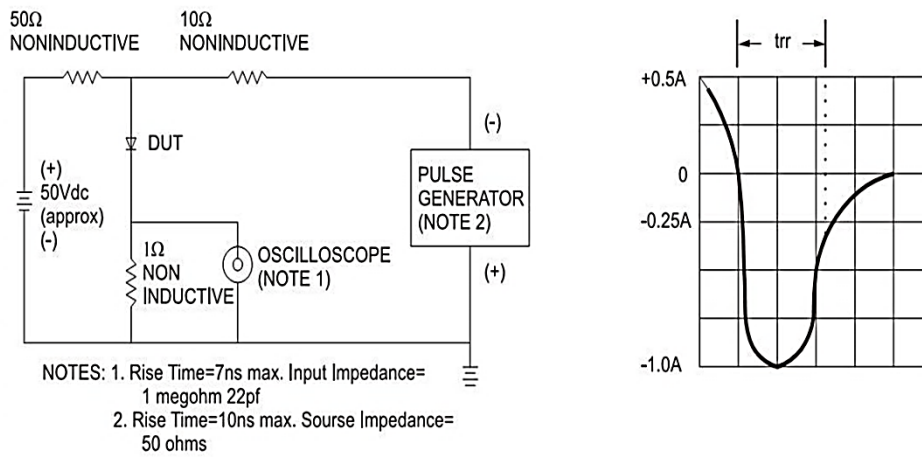
**CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig5. Maximum Non-repetitive Forward Surge Current**

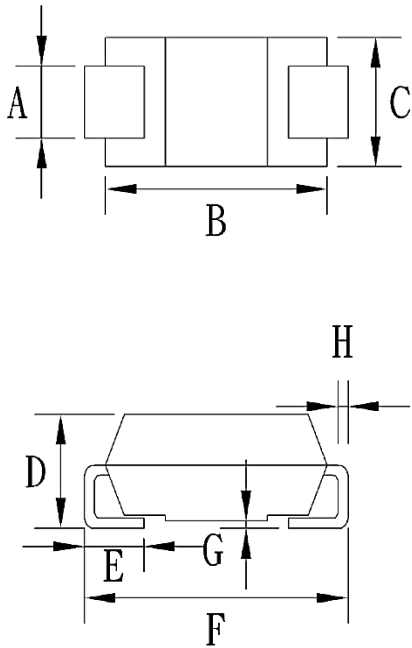


**Fig6. Reverse Recovery Time Characteristic And Test Circuit Diagram**



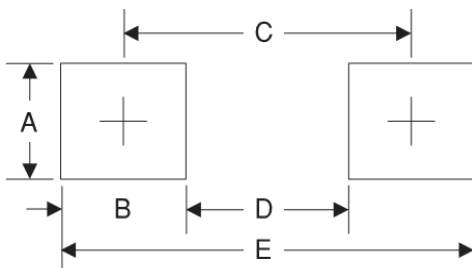
**PACKAGE OUTLINE DIMENSIONS**

DO-214AC (SMA)



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.27	1.58	0.050	0.062
B	4.06	4.60	0.160	0.181
C	2.29	2.83	0.090	0.111
D	1.99	2.50	0.078	0.098
E	0.90	1.41	0.035	0.056
F	4.95	5.33	0.195	0.210
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	1.68	0.066
B	1.52	0.060
C	3.93	0.155
D	2.41	0.095
E	5.45	0.215

**MARKING DIAGRAM**



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

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