

## 1.5A, 200V - 1000V High Efficient Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low profile package
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

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

### MECHANICAL DATA

- Case: SOD-123W
- 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: 0.016g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	1.5	A
$V_{RRM}$	200 - 1000	V
$I_{FSM}$	40	A
$T_{J\ MAX}$	150	°C
Package	SOD-123W	
Configuration	Single die	


**SOD-123W**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	HS15DLW	HS15GLW	HS15JLW	HS15KLW	HS15MLW	UNIT	
Marking code on the device		HS15D	HS15G	HS15J	HS15K	HS15M		
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	
Forward current	$I_F$	1.5						A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	40						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	$R_{\theta JL}$	43	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	84	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	45	°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)							
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>	
Forward voltage <sup>(1)</sup>	HS15DLW	$I_F = 0.75\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.82	0.89	V	
		$I_F = 1.50\text{A}, T_J = 25^\circ\text{C}$		0.88	0.95	V	
		$I_F = 0.75\text{A}, T_J = 125^\circ\text{C}$		0.68	0.75	V	
		$I_F = 1.50\text{A}, T_J = 125^\circ\text{C}$		0.75	0.80	V	
	HS15GLW	$I_F = 0.75\text{A}, T_J = 25^\circ\text{C}$		0.86	1.03	V	
		$I_F = 1.50\text{A}, T_J = 25^\circ\text{C}$		0.93	1.30	V	
		$I_F = 0.75\text{A}, T_J = 125^\circ\text{C}$		0.70	0.85	V	
		$I_F = 1.50\text{A}, T_J = 125^\circ\text{C}$		0.79	1.05	V	
	HS15JLW HS15KLW HS15MLW	$I_F = 0.75\text{A}, T_J = 25^\circ\text{C}$		1.17	1.40	V	
		$I_F = 1.50\text{A}, T_J = 25^\circ\text{C}$		1.31	1.70	V	
		$I_F = 0.75\text{A}, T_J = 125^\circ\text{C}$		0.94	1.12	V	
		$I_F = 1.50\text{A}, T_J = 125^\circ\text{C}$		1.09	1.30	V	
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^\circ\text{C}$	$I_R$	-	1	$\mu\text{A}$	
		$T_J = 125^\circ\text{C}$		-	150	$\mu\text{A}$	
Junction capacitance	HS15DLW	1MHz, $V_R = 4.0\text{V}$	$C_J$	25	-	pF	
	HS15GLW			22	-	pF	
	HS15JLW HS15KLW HS15MLW			9	-	pF	
Reverse recovery time	HS15DLW HS15GLW	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	$t_{rr}$	-	50	ns	
	HS15JLW HS15KLW HS15MLW			-	75	ns	

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
HS15xLW	SOD-123W	10,000 / Tape & Reel

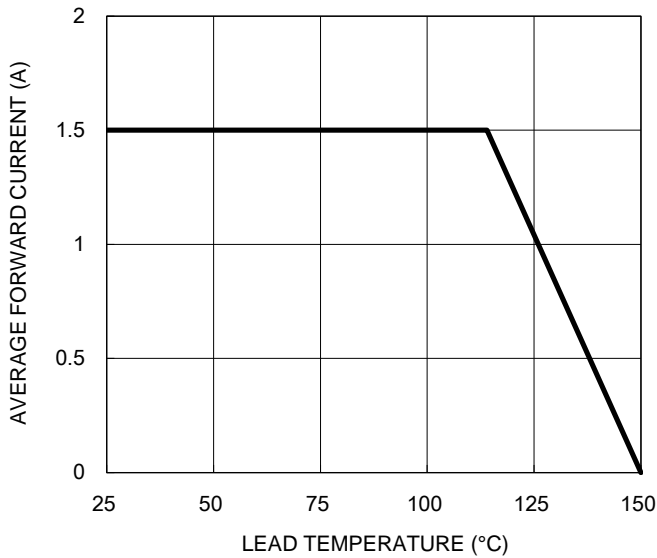
**Notes:**

1. "x" defines voltage from 200V(HS15DLW) to 1000V(HS15MLW)

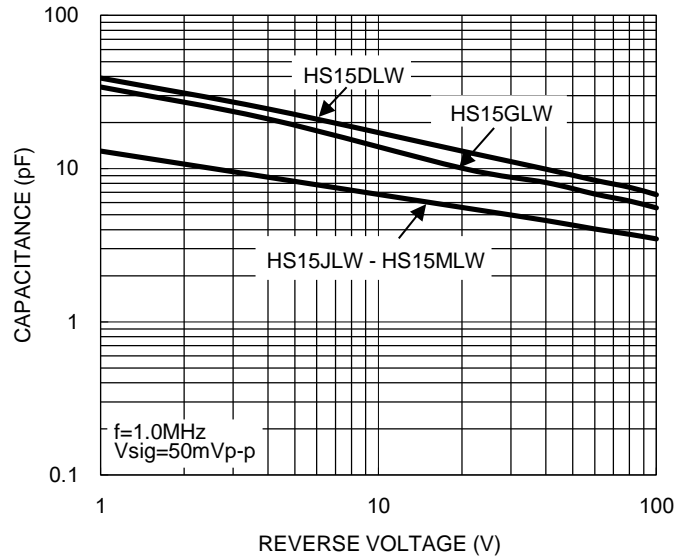
**CHARACTERISTICS CURVES**

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

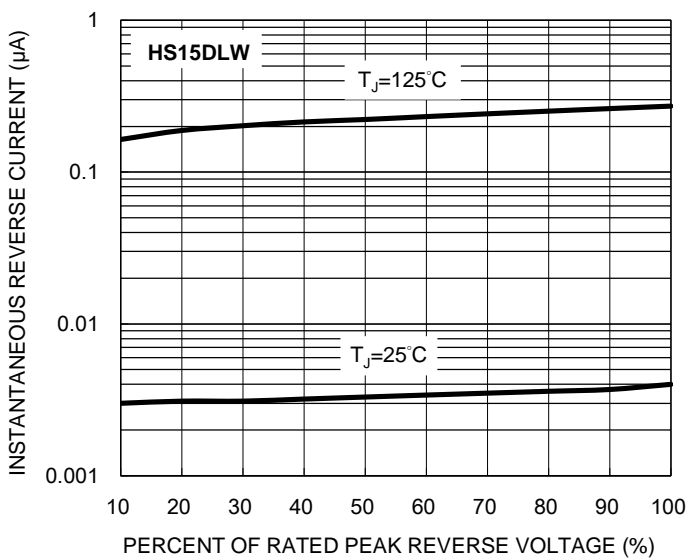
**Fig.1 Forward Current Derating Curve**



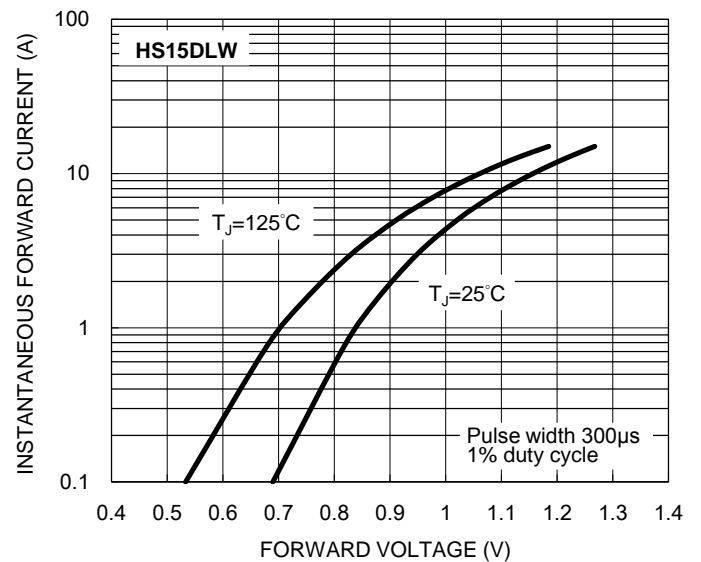
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



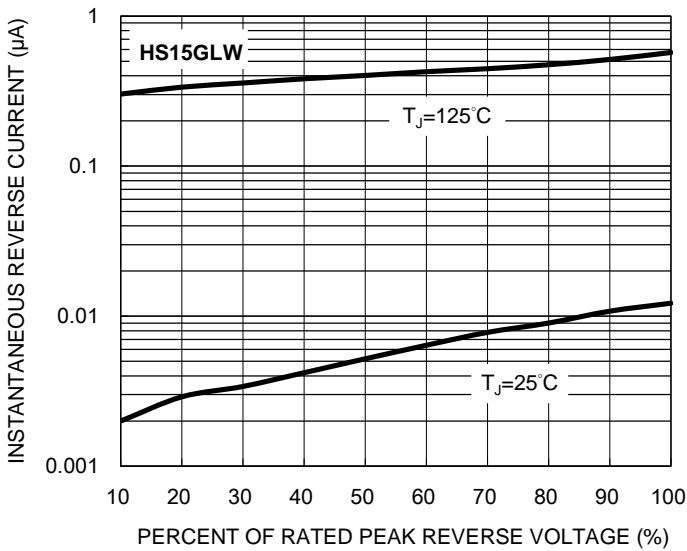
**Fig.4 Typical Forward Characteristics**



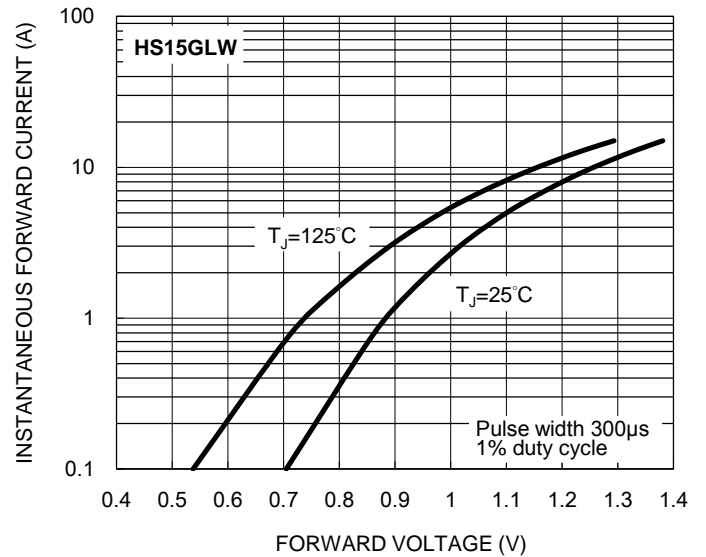
**CHARACTERISTICS CURVES**

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

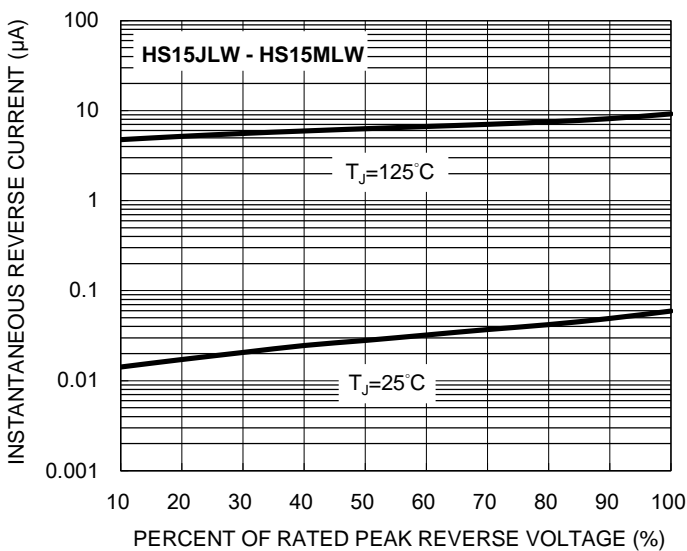
**Fig.5 Typical Reverse Characteristics**



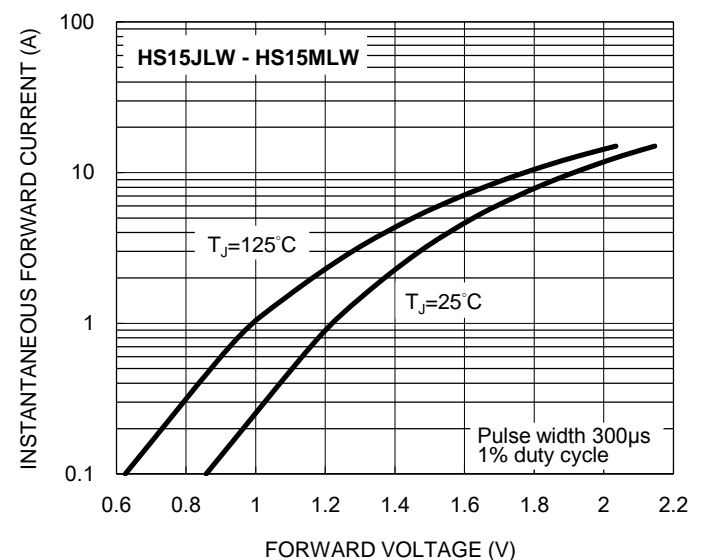
**Fig.6 Typical Forward Characteristics**



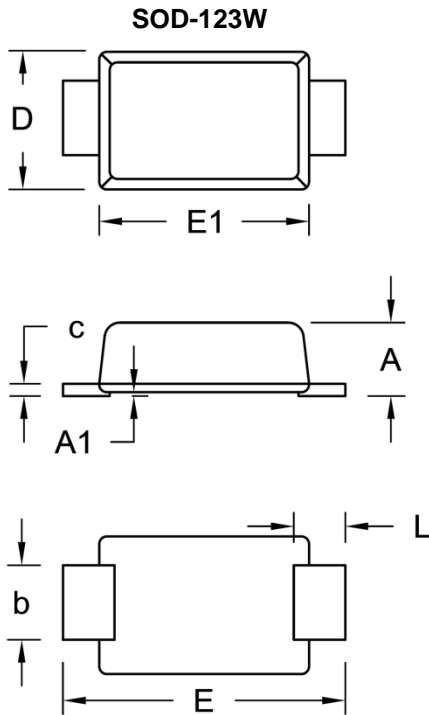
**Fig.7 Typical Reverse Characteristics**



**Fig.8 Typical Forward Characteristics**

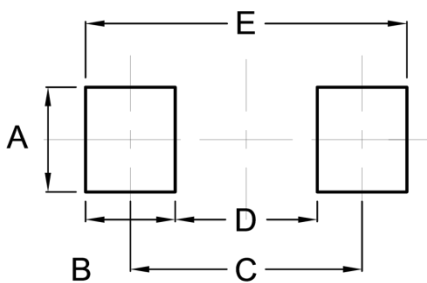


**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.02	0.035	0.040
A1	0.00	0.10	0.000	0.004
b	0.90	1.05	0.035	0.041
c	0.10	0.22	0.004	0.009
D	1.70	1.90	0.067	0.075
E	3.60	3.80	0.142	0.150
E1	2.60	2.90	0.102	0.114
L	0.50	0.85	0.020	0.033

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.40	0.055
B	1.20	0.047
C	3.10	0.122
D	1.90	0.075
E	4.30	0.169

**MARKING DIAGRAM**



P/N = Marking Code  
 YW = Date Code  
 F = Factory Code

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