

## 1A, 400V - 600V ESD Capability Rectifier

### FEATURES

- High ESD capability
- Glass passivated chip junction
- Low forward voltage drop
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

### APPLICATIONS

- General purpose
- Polarity protection

### 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: 0.015g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	1	A
$V_{RRM}$	400 - 600	V
$I_{FSM}$	30	A
$T_{J\ MAX}$	175	°C
Package	SOD-123W	
Configuration	Single die	



SOD-123W



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

PARAMETER	SYMBOL	TSD1GLW	TSD1JLW	UNIT
Marking code on the device		D1GLW	D1JLW	
Repetitive peak reverse voltage	$V_{RRM}$	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	280	420	V
Forward current	$I_F$	1		A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	30		A
	$t = 1.0\text{ms}$	110		
Junction temperature	$T_J$	-40 to +175		°C
Storage temperature	$T_{STG}$	-55 to +175		°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	15	$^{\circ}\text{C}/\text{W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	75	$^{\circ}\text{C}/\text{W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	15	$^{\circ}\text{C}/\text{W}$

**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>	$I_F = 0.5\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	0.86	-	V
	$I_F = 1.0\text{A}, T_J = 25^{\circ}\text{C}$		0.90	1.10	V
	$I_F = 0.5\text{A}, T_J = 125^{\circ}\text{C}$		0.73	-	V
	$I_F = 1.0\text{A}, T_J = 125^{\circ}\text{C}$		0.78	-	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^{\circ}\text{C}$	$I_R$	-	1	$\mu\text{A}$
	$T_J = 125^{\circ}\text{C}$		4	-	$\mu\text{A}$
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	$C_J$	11	-	pF

**Notes:**

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

<b>IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS</b> ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)					
<b>STANDARD</b>	<b>TEST TYPE</b>	<b>TEST CONDITIONS</b>	<b>SYMBOL</b>	<b>CLASS</b>	<b>VALUE</b>
AEC-Q101-001	Human body mode	$C=100\text{pF}, R=1.5\text{k}\Omega$	$V_c$	H3B	$\geq 8\text{kV}$
IEC 61000-4-2	Contact mode	$C=150\text{pF}, R=330\Omega$		x	$\geq 10\text{kV}$
	Air-discharge mode	$C=150\text{pF}, R=330\Omega$		4	$\geq 15\text{kV}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
TSD1xLW	SOD-123W	10,000/ Tape & Reel

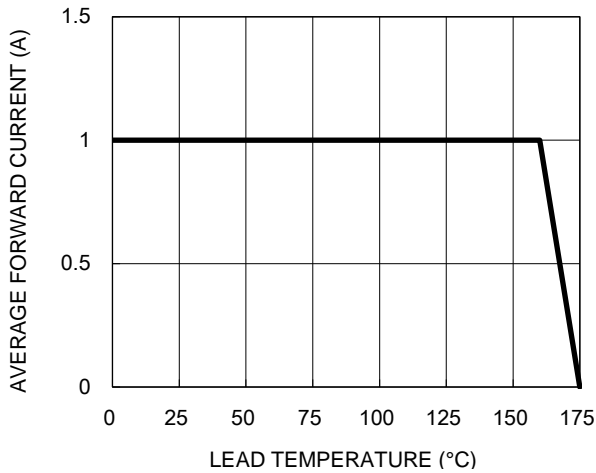
**Notes:**

1. "x" defines voltage from 400V(TSD1GLW) to 600V(TSD1JLW)

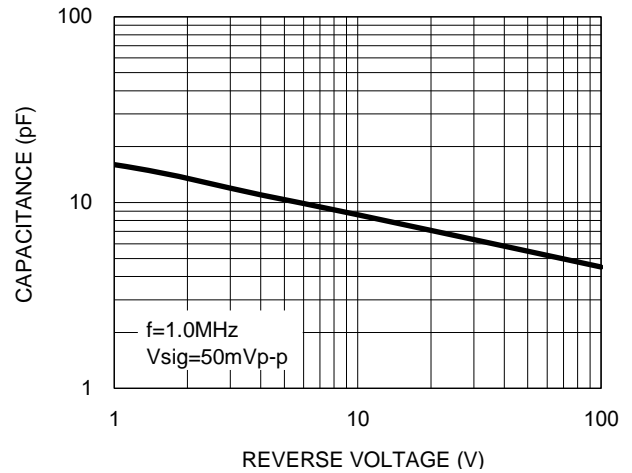
**CHARACTERISTICS CURVES**

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

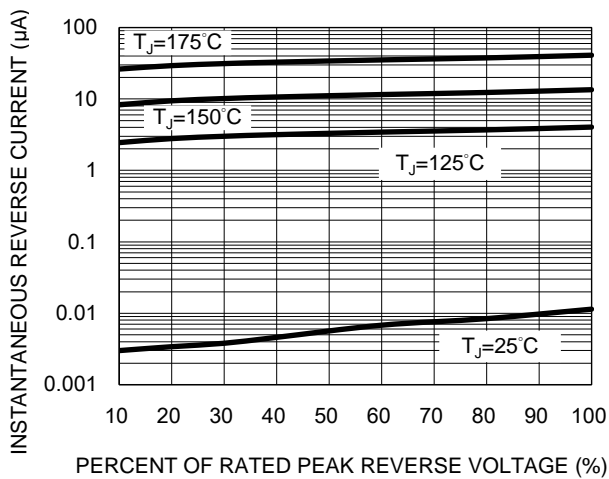
**Fig.1 Forward Current Derating Curve**



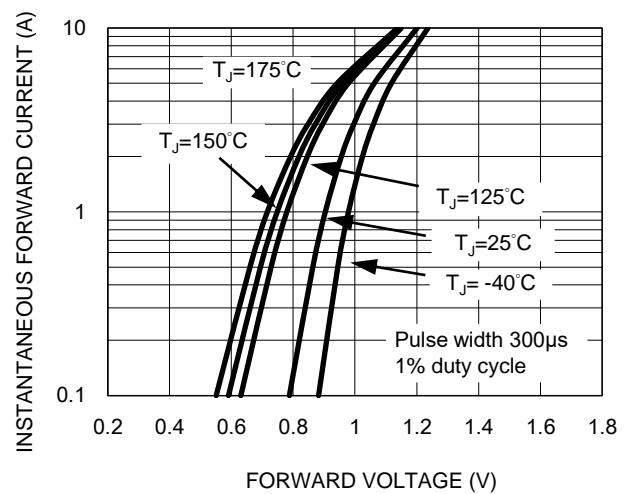
**Fig.2 Typical Junction Capacitance**



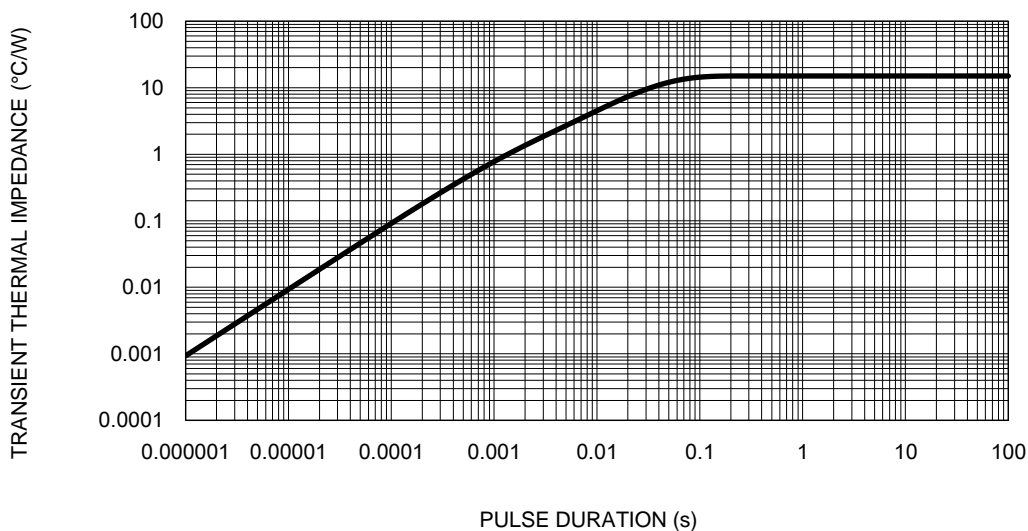
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

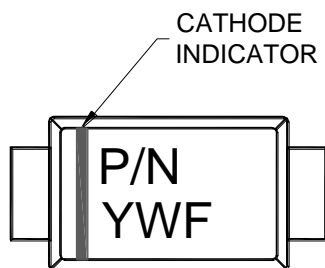
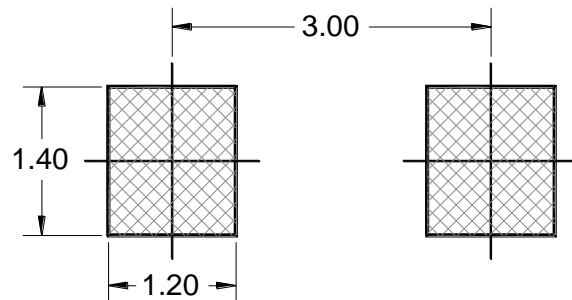
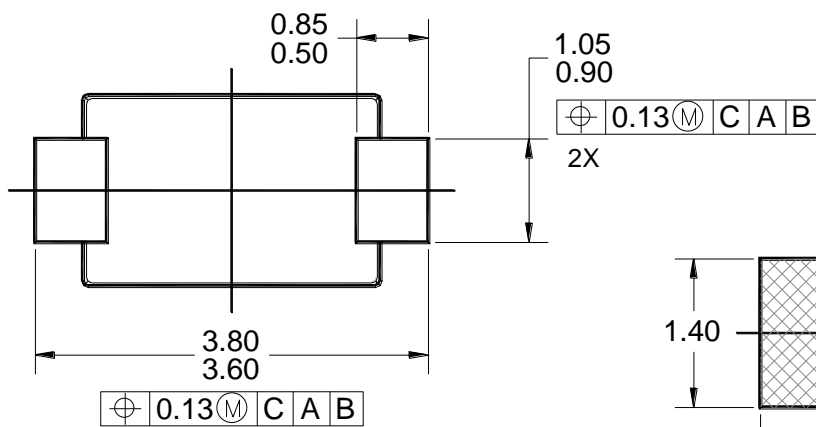
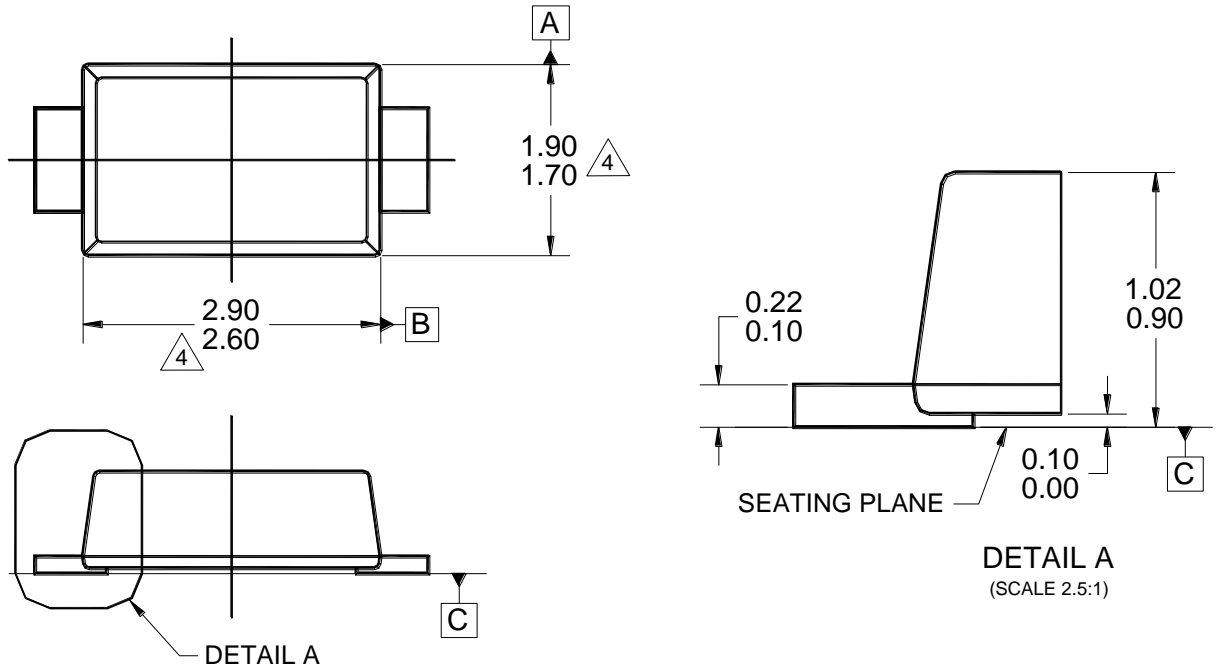


**Fig.5 Typical Transient Thermal Impedance**



**PACKAGE OUTLINE DIMENSIONS**

**SOD-123W**



**MARKING DIAGRAM**

P/N = MARKING CODE  
Y W = DATE CODE  
F = FACTORY CODE

**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
3. PACKAGE OUTLINE REFERENCE: JEDEC DO-219, VARIATION AB, ISSUE C.
4. MODIFIED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. DWG NO. REF: HQ2SD07-SOD123W-037 REV A.

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