

## 2A, 200V - 1000V High Efficient Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low reverse leakage
- 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-123FL
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.016g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	2	A
$V_{RRM}$	200 - 1000	V
$I_{FSM}$	40	A
$T_{JMAX}$	150	°C
Package	SOD-123FL	
Configuration	Single die	



SOD-123FL



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	HS2DFL	HS2GFL	HS2JFL	HS2KFL	HS2MFL	UNIT	
Marking code on the device		H2DF	H2GF	H2JF	H2KF	H2MF		
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	$I_F$	2					A	
Surge peak forward current, single half sine -wave superimposed on rated load	$t = 8.3\text{ms}$	$I_{FSM}$					40	A
	$t = 1.0\text{ms}$						100	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	$R_{\theta JL}$	81	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	116	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	69	$^{\circ}\text{C/W}$

**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>	HS2DFL	$I_F = 1\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	0.84	-	V
		$I_F = 2\text{A}, T_J = 25^{\circ}\text{C}$		0.93	1.00	V
		$I_F = 1\text{A}, T_J = 125^{\circ}\text{C}$		0.73	-	V
		$I_F = 2\text{A}, T_J = 125^{\circ}\text{C}$		0.83	0.95	V
	HS2GFL	$I_F = 1\text{A}, T_J = 25^{\circ}\text{C}$		0.94	-	V
		$I_F = 2\text{A}, T_J = 25^{\circ}\text{C}$		1.06	1.30	V
		$I_F = 1\text{A}, T_J = 125^{\circ}\text{C}$		0.80	-	V
		$I_F = 2\text{A}, T_J = 125^{\circ}\text{C}$		0.93	1.09	V
	HS2JFL HS2KFL HS2MFL	$I_F = 1\text{A}, T_J = 25^{\circ}\text{C}$		1.24	-	V
		$I_F = 2\text{A}, T_J = 25^{\circ}\text{C}$		1.42	1.70	V
		$I_F = 1\text{A}, T_J = 125^{\circ}\text{C}$		1.04	-	V
		$I_F = 2\text{A}, T_J = 125^{\circ}\text{C}$		1.24	1.50	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^{\circ}\text{C}$	$I_R$	-	5	$\mu\text{A}$
		$T_J = 125^{\circ}\text{C}$		-	125	$\mu\text{A}$
Reverse recovery time	HS2DFL HS2GFL	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	$t_{rr}$	-	50	ns
	HS2JFL HS2KFL HS2MFL			-	75	ns
Junction capacitance	HS2DFL	1MHz, $V_R = 4.0\text{V}$	$C_J$	21	-	pF
	HS2GFL			16	-	pF
	HS2JFL			10	-	pF
	HS2KFL HS2MFL					

**Notes:**

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

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
HS2xFL	SOD-123FL	10,000 / Tape & Reel

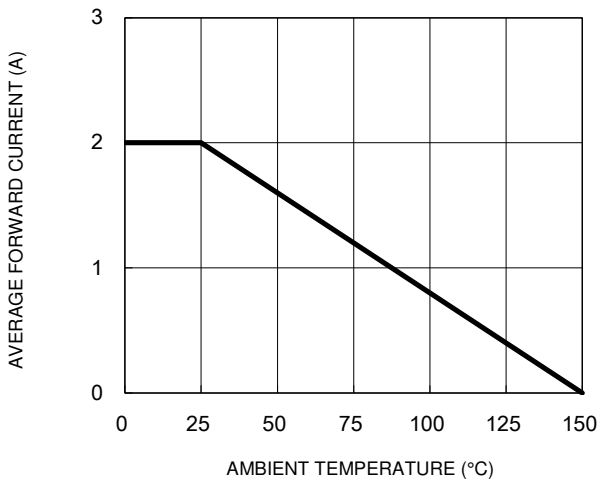
**Notes:**

1. "x" defines voltage from 200V(HS2DFL) to 1000V(HS2MFL)

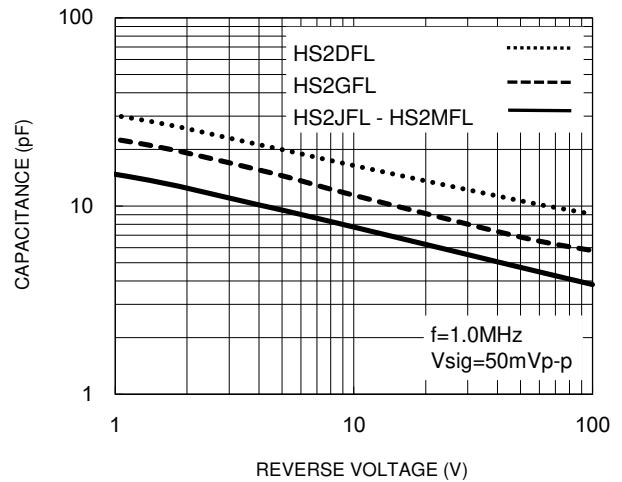
**CHARACTERISTICS CURVES**

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

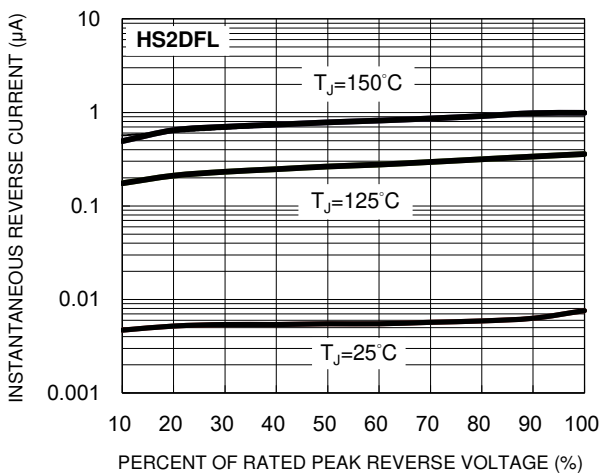
**Fig.1 Forward Current Derating Curve**



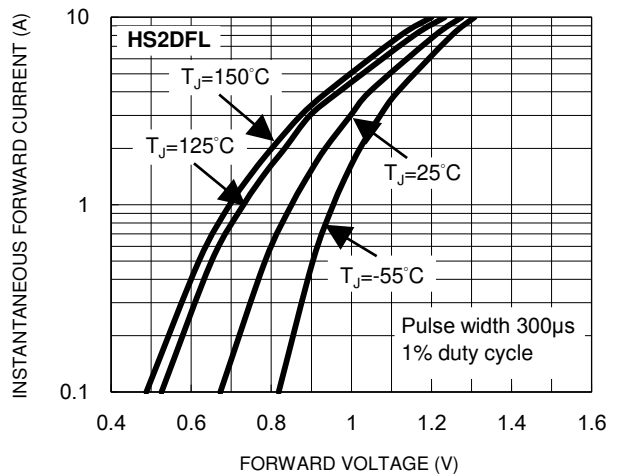
**Fig.2 Typical Junction Capacitance**



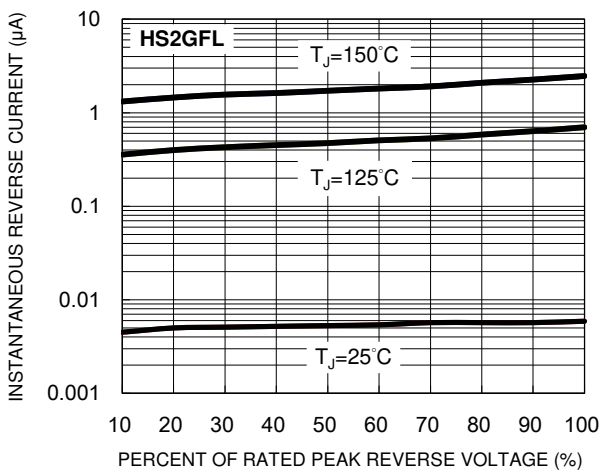
**Fig.3 Typical Reverse Characteristics**



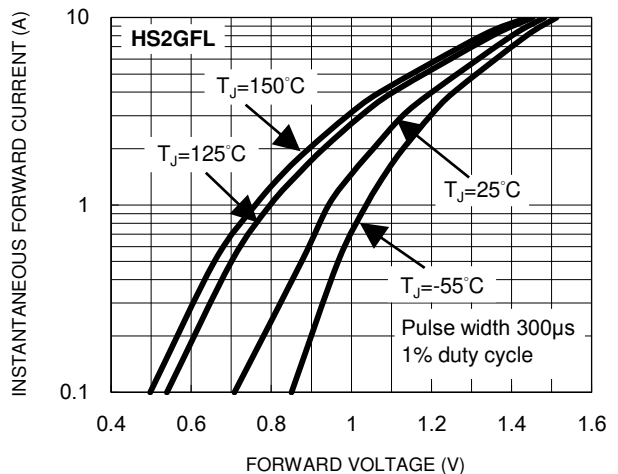
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



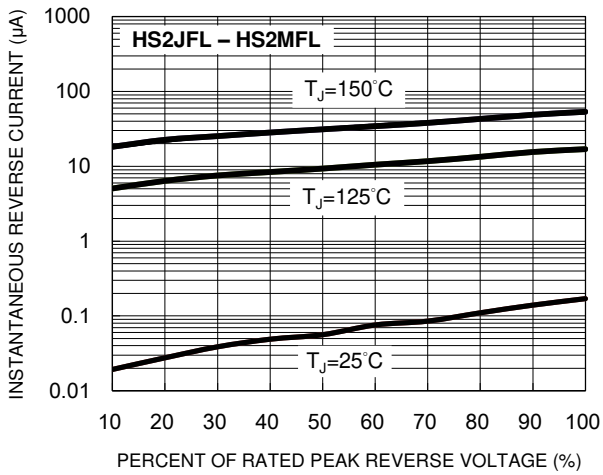
**Fig.6 Typical Forward Characteristics**



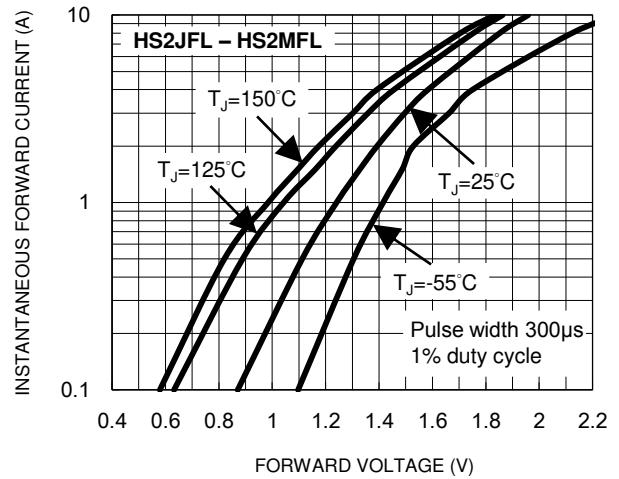
**CHARACTERISTICS CURVES**

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

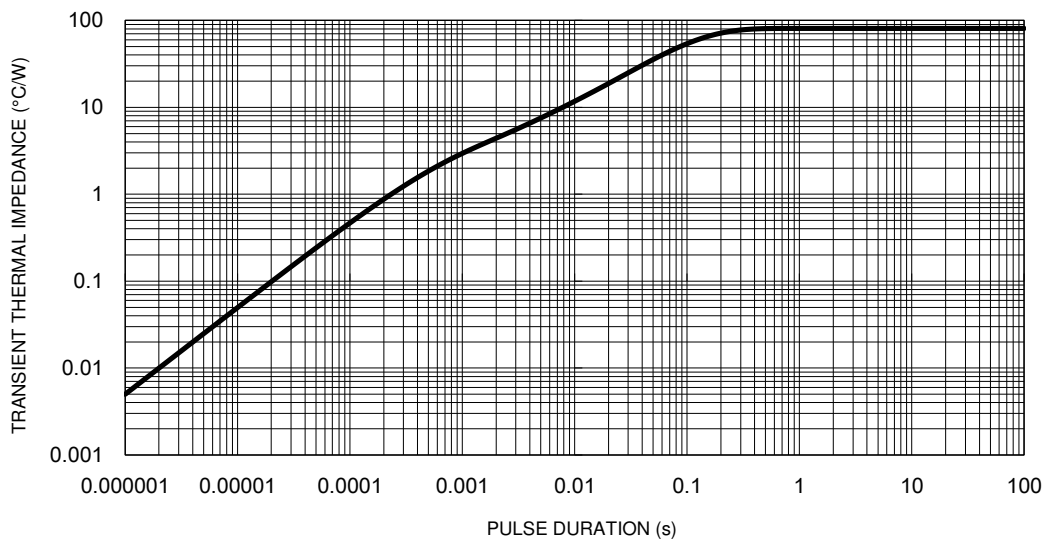
**Fig.7 Typical Reverse Characteristics**



**Fig.8 Typical Forward Characteristics**

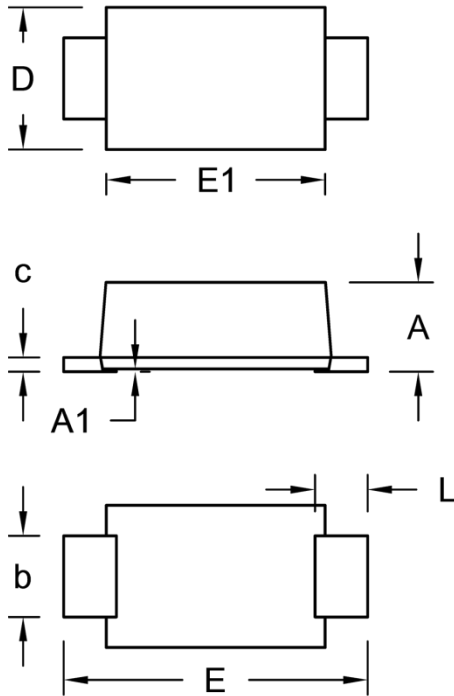


**Fig.9 Typical Transient Thermal Impedance**



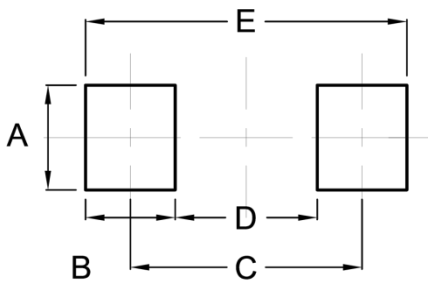
**PACKAGE OUTLINE DIMENSIONS**

SOD-123FL



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.00	1.20	0.039	0.047
A1	0.02	0.05	0.001	0.002
b	0.90	1.10	0.035	0.043
c	0.10	0.25	0.004	0.010
D	1.60	1.90	0.063	0.075
E	3.60	3.90	0.142	0.154
E1	2.55	2.85	0.100	0.112
L	0.40	0.90	0.016	0.035

**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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