



THE DATASHEET OF HS1BFL



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

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Fast switching for high efficiency
- 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 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 0.019g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	1	A
V_{RRM}	50 - 1000	V
I_{FSM}	30	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	HS1A FL	HS1B FL	HS1D FL	HS1F FL	HS1G FL	HS1J FL	HS1K FL	HS1M FL	UNIT
Marking code on the device		HAF	HBF	HDF	HFF	HGF	HJF	HKF	HMF	
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
Surge peak forward 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

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	17	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	85	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	19	$^{\circ}\text{C/W}$

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

ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	HS1AFL HS1BFL HS1DFL HS1FFL	$I_F = 0.5\text{A}, T_J = 25^{\circ}\text{C}$	V_F	0.82	-	V
		$I_F = 1.0\text{A}, T_J = 25^{\circ}\text{C}$		0.89	0.95	V
		$I_F = 0.5\text{A}, T_J = 125^{\circ}\text{C}$		0.67	-	V
		$I_F = 1.0\text{A}, T_J = 125^{\circ}\text{C}$		0.75	0.81	V
	HS1GFL	$I_F = 0.5\text{A}, T_J = 25^{\circ}\text{C}$	V_F	0.93	-	V
		$I_F = 1.0\text{A}, T_J = 25^{\circ}\text{C}$		1.01	1.30	V
		$I_F = 0.5\text{A}, T_J = 125^{\circ}\text{C}$		0.74	-	V
		$I_F = 1.0\text{A}, T_J = 125^{\circ}\text{C}$		0.85	1.10	V
	HS1JFL HS1KFL HS1MFL	$I_F = 0.5\text{A}, T_J = 25^{\circ}\text{C}$	V_F	1.21	-	V
		$I_F = 1.0\text{A}, T_J = 25^{\circ}\text{C}$		1.36	1.70	V
		$I_F = 0.5\text{A}, T_J = 125^{\circ}\text{C}$		0.94	-	V
		$I_F = 1.0\text{A}, T_J = 125^{\circ}\text{C}$		1.10	1.38	V
Reverse current @ rated V_R ⁽²⁾		$T_J = 25^{\circ}\text{C}$	I_R	-	5	μA
		$T_J = 125^{\circ}\text{C}$		-	150	μA
Junction capacitance	HS1AFL HS1BFL HS1DFL HS1FFL HS1GFL	1MHz, $V_R = 4.0\text{V}$	C_J	11	-	pF
	HS1JFL HS1KFL HS1MFL			6	-	pF
Reverse recovery time	HS1AFL HS1BFL HS1DFL HS1FFL HS1GFL	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	t_{rr}	-	50	ns
	HS1JFL HS1KFL HS1MFL			-	75	ns

Notes:

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

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
HS1xFL	SOD-123FL	10,000 / Tape & Reel

Notes:

1. "x" defines voltage from 50V(HS1AFL) to 1000V(HS1MFL)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

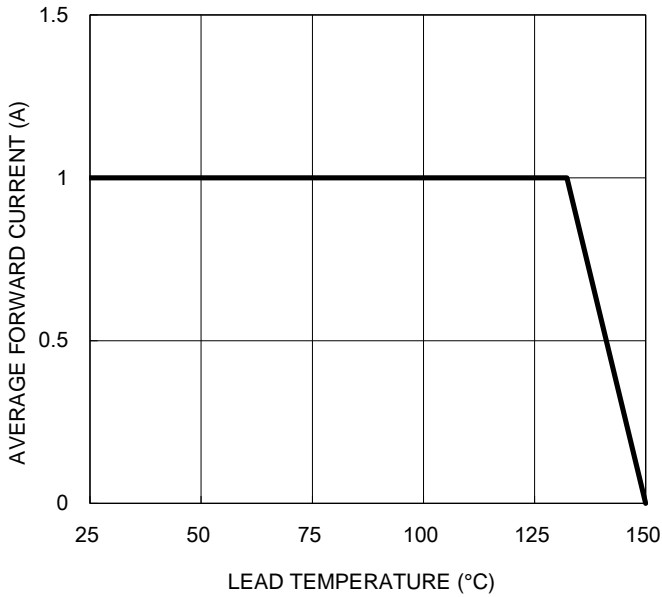


Fig.2 Typical Junction Capacitance

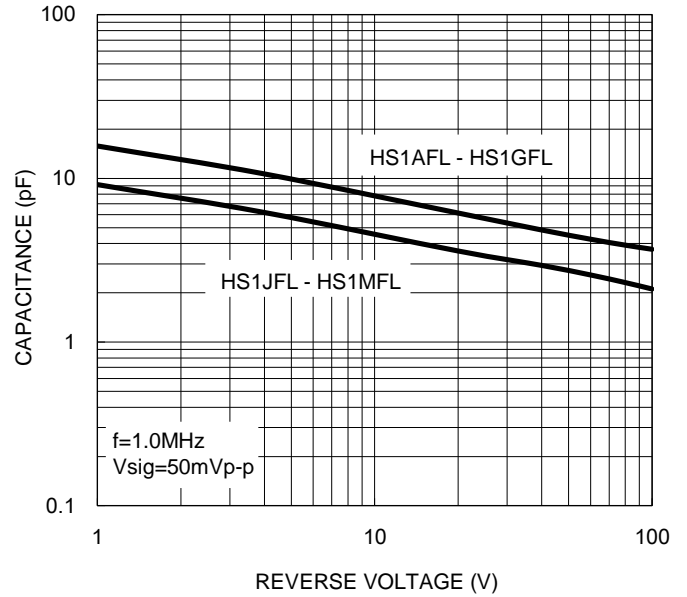


Fig.3 Typical Reverse Characteristics

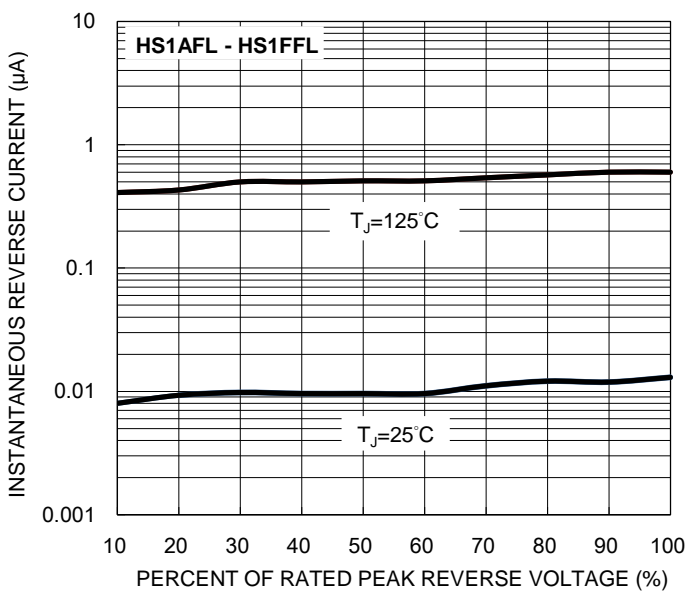
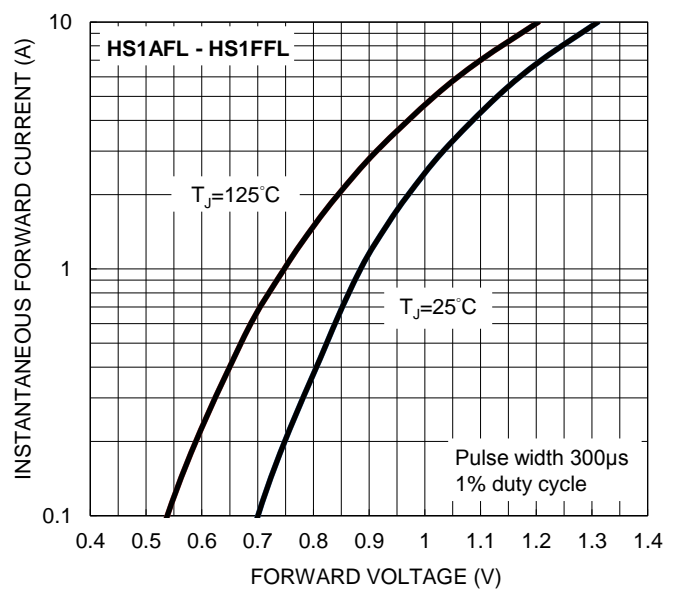


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Typical Reverse Characteristics

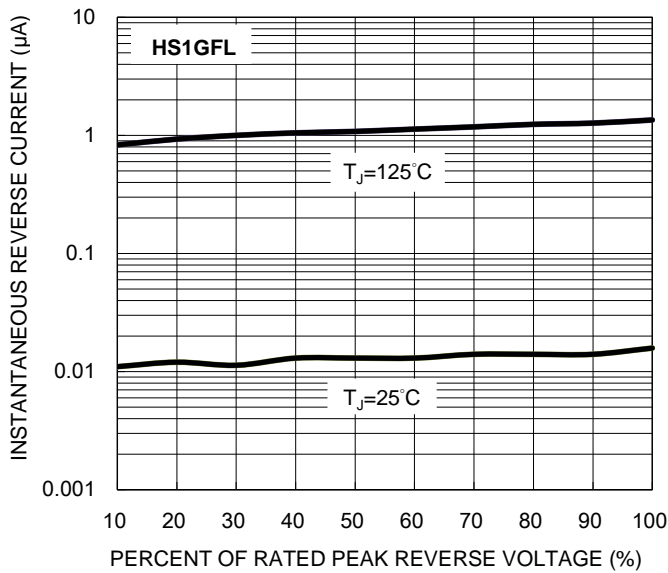


Fig.6 Typical Forward Characteristics

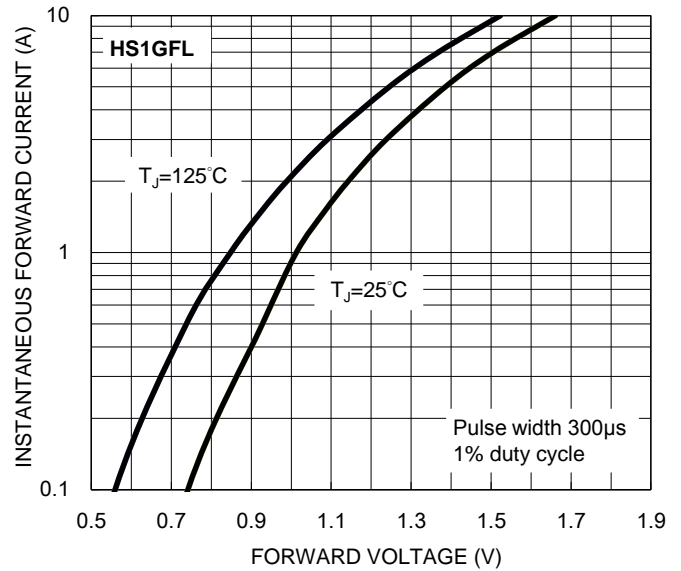


Fig.7 Typical Reverse Characteristics

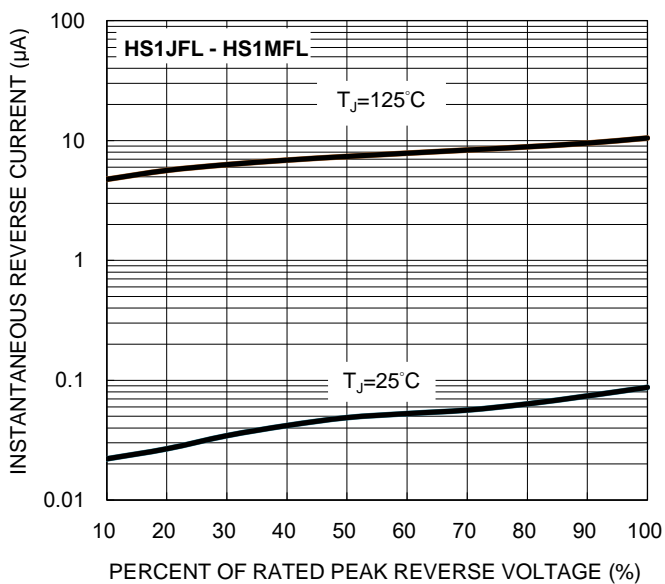
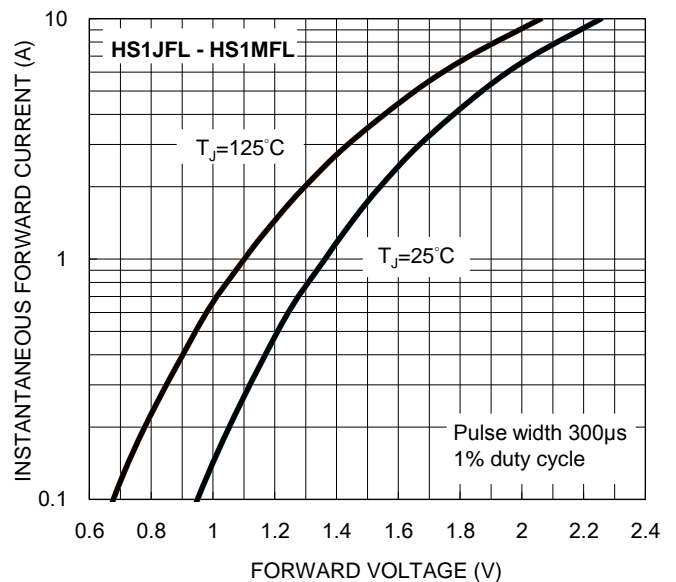
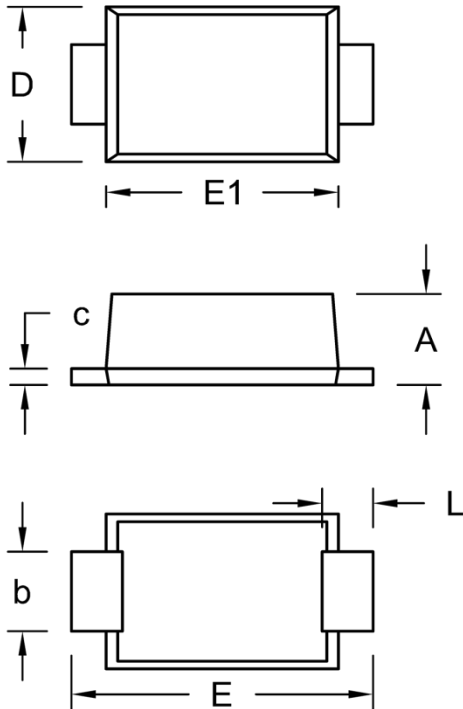


Fig.8 Typical Forward Characteristics



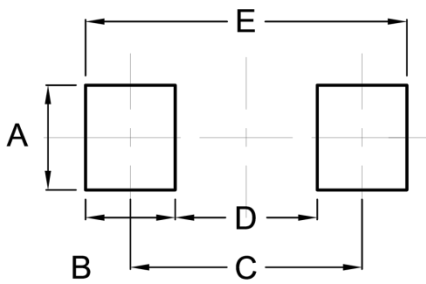
PACKAGE OUTLINE DIMENSIONS

SOD-123FL



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.88	1.35	0.035	0.053
b	0.80	1.15	0.031	0.045
c	0.10	0.30	0.004	0.012
D	1.70	2.10	0.067	0.083
E	3.45	3.95	0.136	0.156
E1	2.60	3.10	0.102	0.122
L	0.30	0.90	0.012	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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