

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

FEATURES

- Glass passivated junction chip
- 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
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in computer and telecommunication.

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: As marked
- Weight: 0.019 g (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	



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, 8.3 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-lead thermal resistance per diode	$R_{\theta JL}$	17	°C/W
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	85	°C/W
Junction-to-case thermal resistance per diode	$R_{\theta JC}$	19	°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 per diode ⁽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
Forward voltage per diode ⁽¹⁾	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
Forward voltage per diode ⁽¹⁾	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 per diode ⁽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	1 MHz, $V_R = 4.0\text{V}$	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		t_{rr}	-	75	ns

Notes:

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
HS1AFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1BFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1DFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1FFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1GFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1JFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1KFL RVG	SOD-123FL	3,000 / 7" Plastic reel
HS1MFL RVG	SOD-123FL	3,000 / 7" Plastic reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

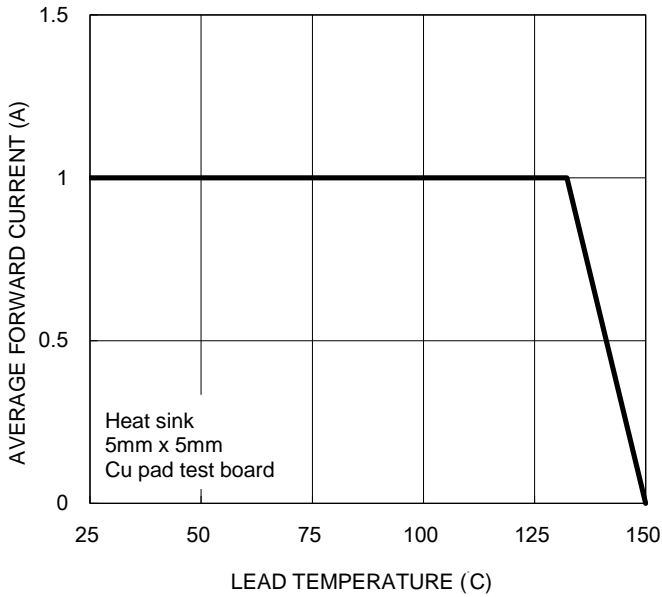


Fig.2 Typical Junction Capacitance

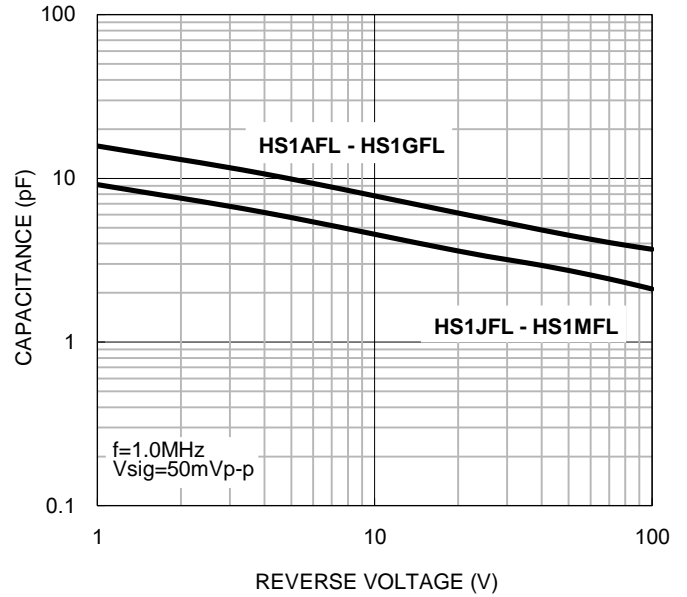


Fig.3 Typical Reverse Characteristics

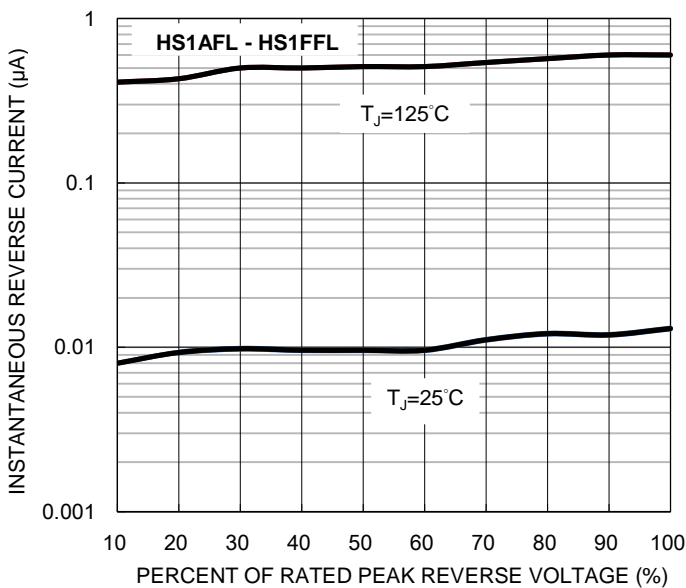
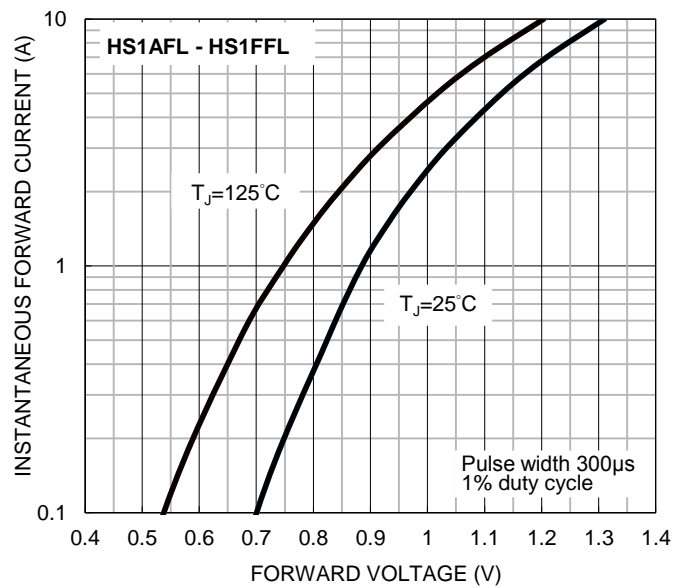


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Typical Reverse Characteristics

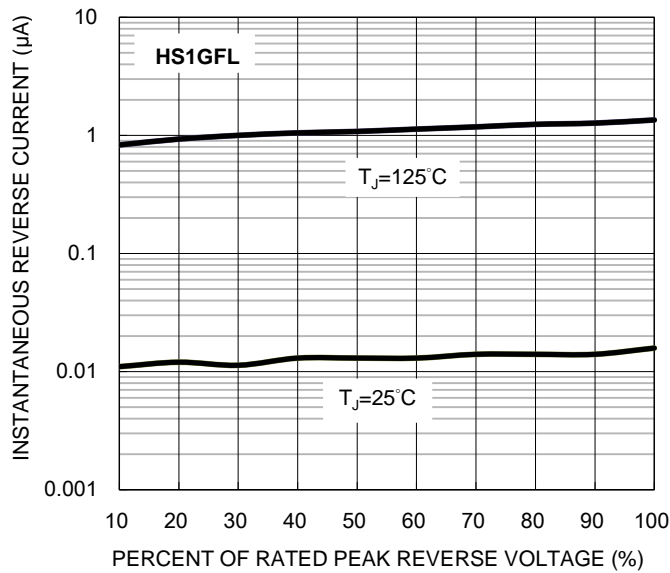


Fig.6 Typical Forward Characteristics

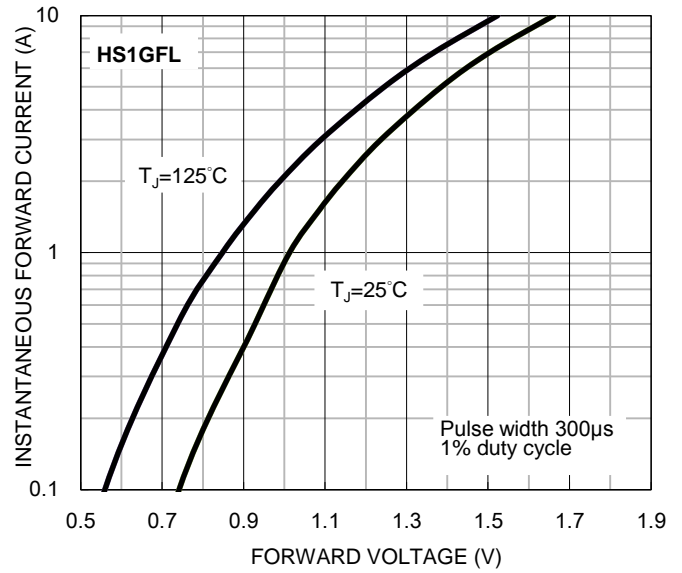


Fig.7 Typical Reverse Characteristics

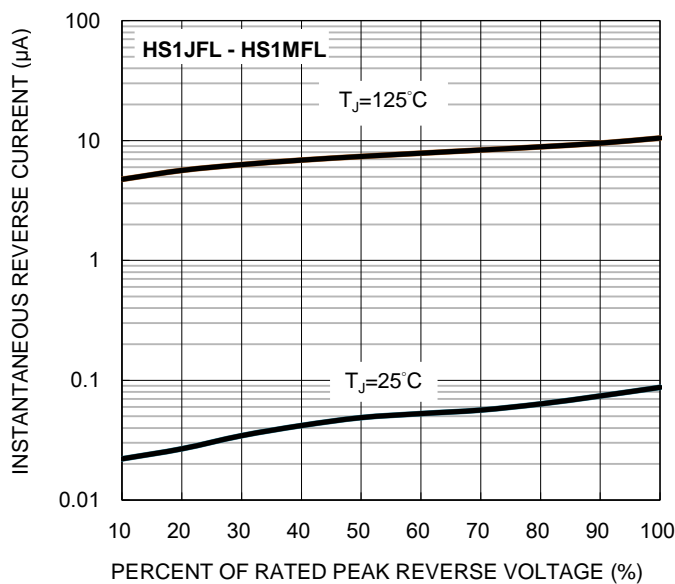
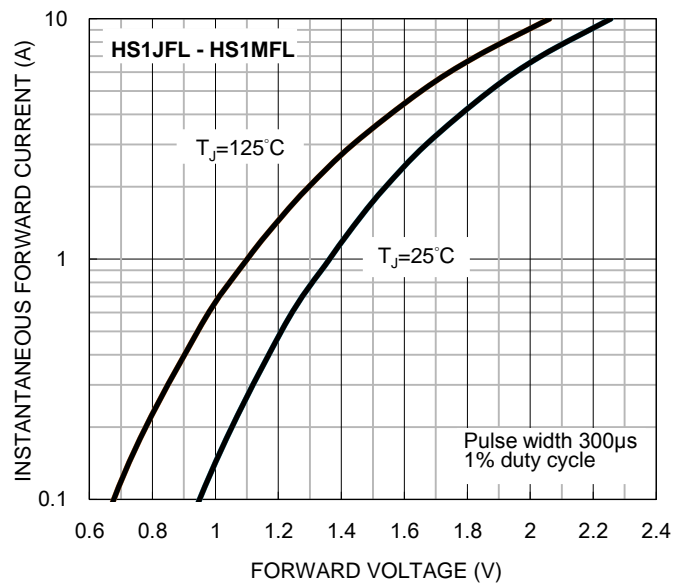
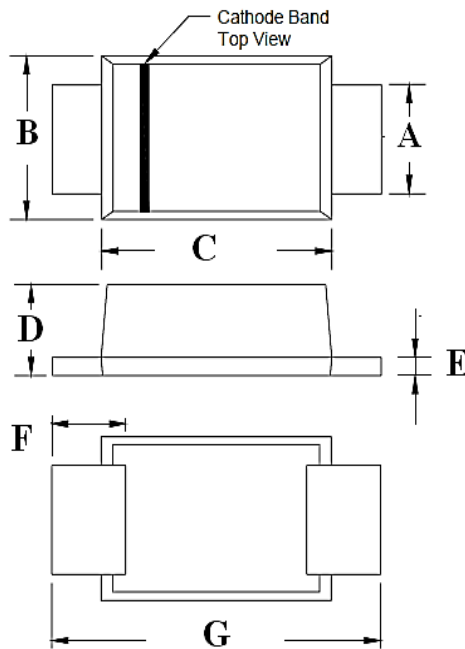


Fig.8 Typical Forward Characteristics



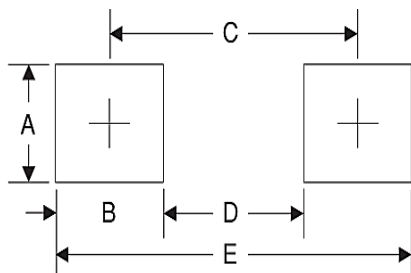
PACKAGE OUTLINE DIMENSIONS

SOD-123FL



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

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.4	0.055
B	1.2	0.047
C	3.1	0.122
D	1.9	0.075
E	4.3	0.169

MARKING DIAGRAM



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

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