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
$T_{J\ MAX}$	150	°C
Package	SOD-123FL	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

SOD-123FL

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)										
PARAMETER	**SYMBOL**	**HS1AFL**	**HS1BFL**	**HS1DFL**	**HS1FFL**	**HS1GFL**	**HS1JFL**	**HS1KFL**	**HS1MFL**	**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	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	85	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	19	°C/W

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

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

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

Notes:

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

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°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

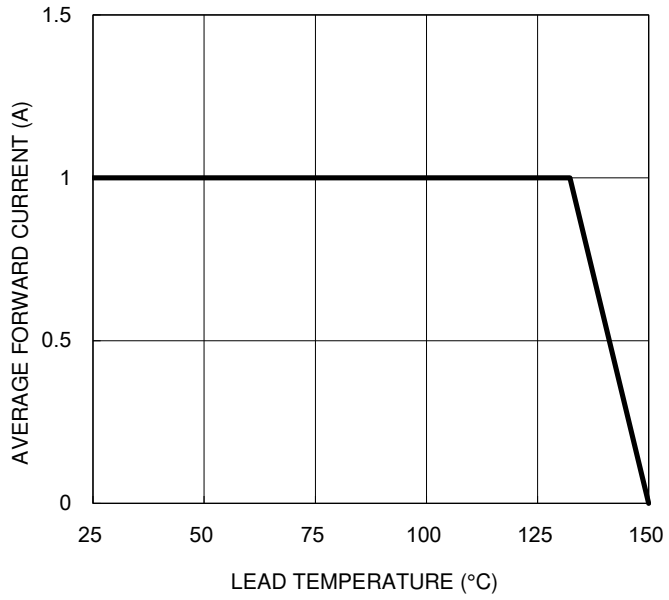


Fig.2 Typical Junction Capacitance

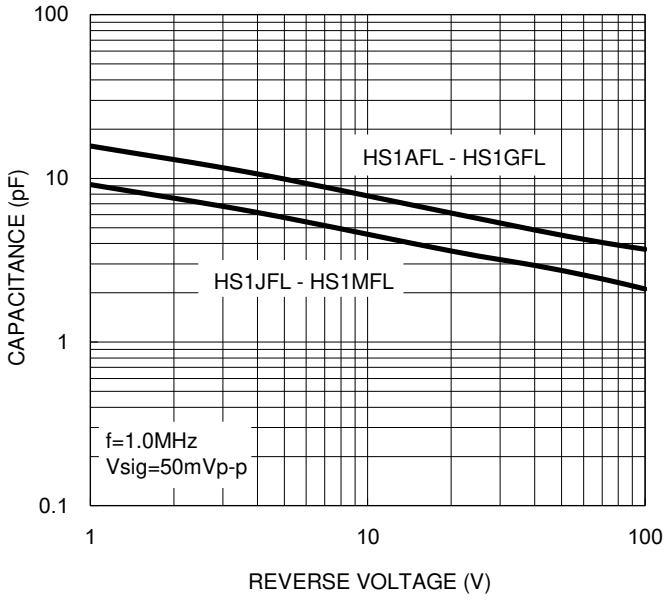


Fig.3 Typical Reverse Characteristics

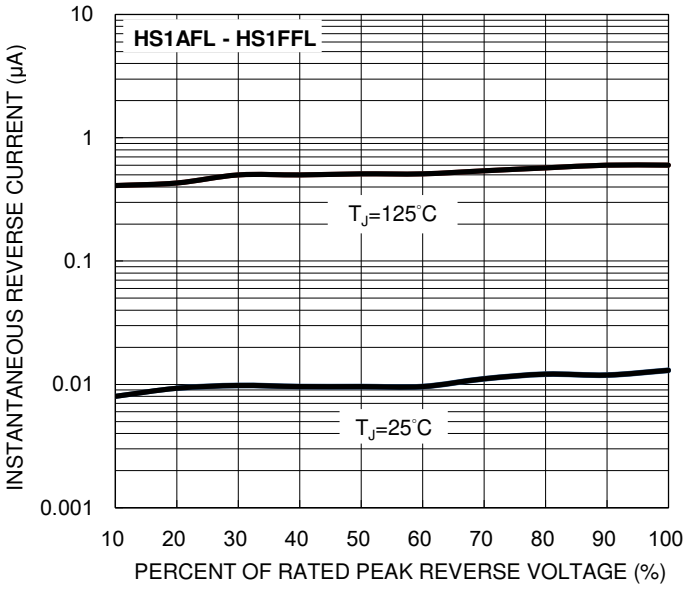
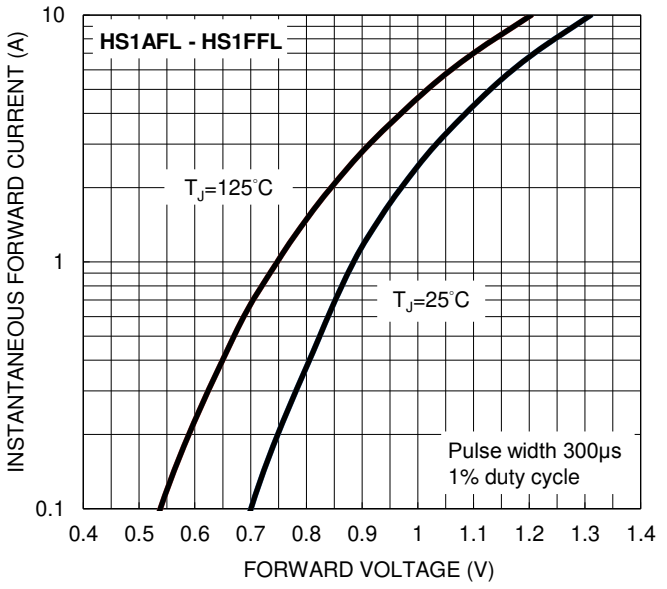


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.5 Typical Reverse Characteristics

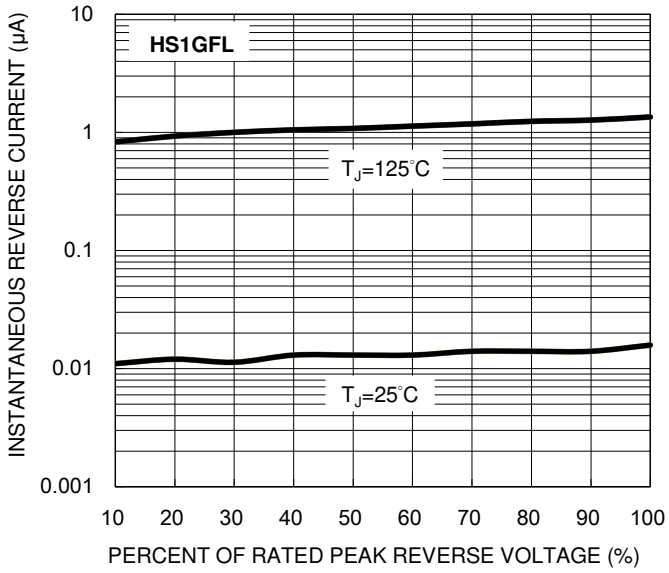


Fig.6 Typical Forward Characteristics

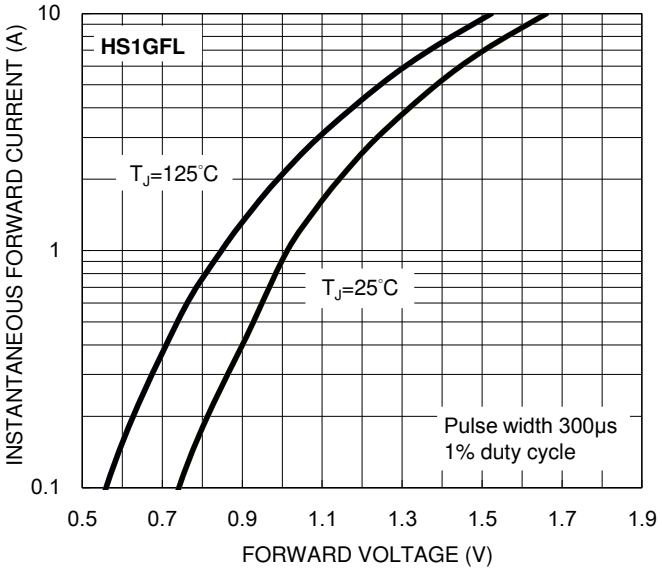


Fig.7 Typical Reverse Characteristics

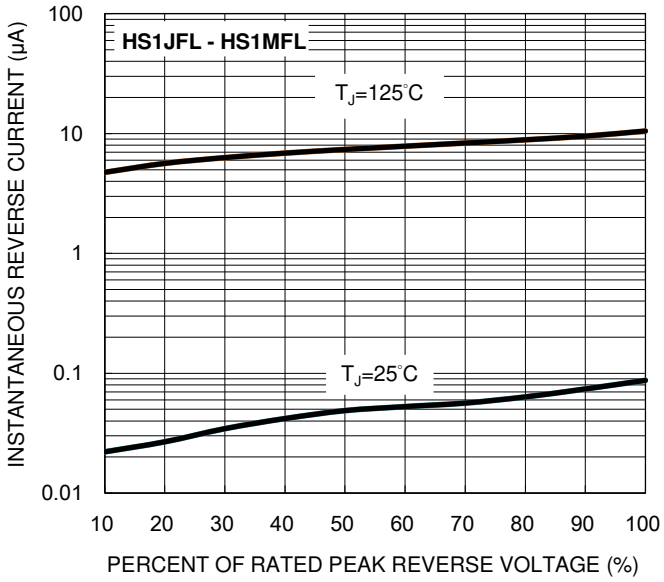
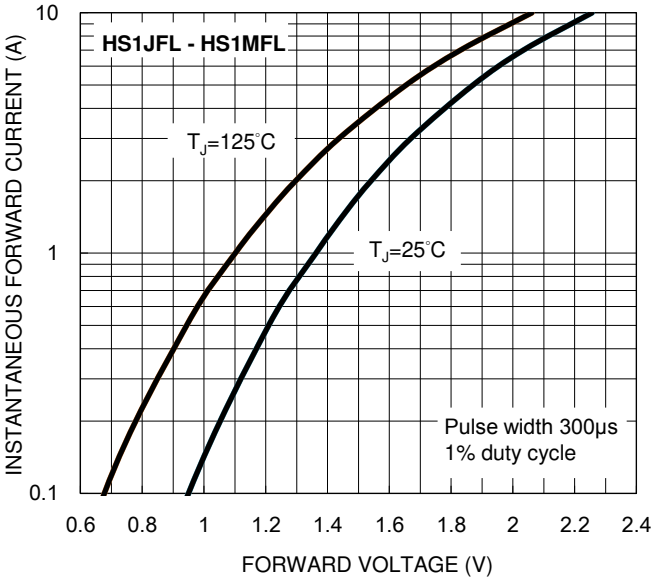
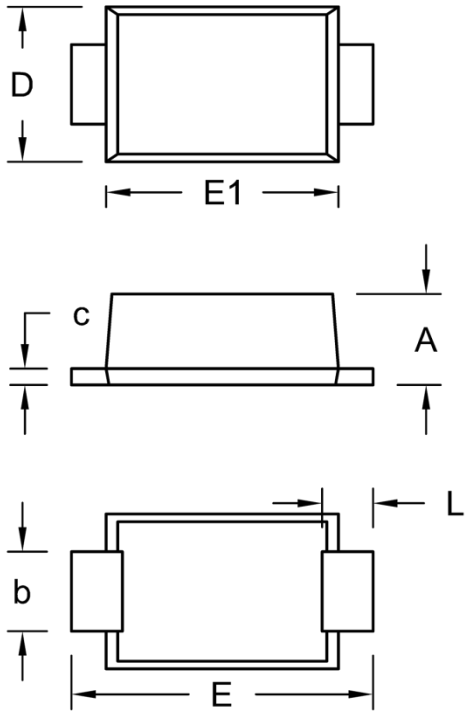


Fig.8 Typical Forward Characteristics



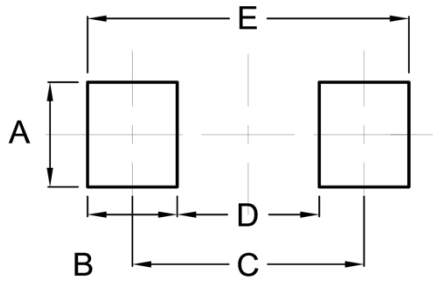
PACKAGE OUTLINE DIMENSIONS

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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