

1A, 200V-1000V High Efficient Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- Low power loss, high efficiency
- Fast switching for high efficiency
- Low profile package
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	1	A
V_{RRM}	200 - 1000	V
I_{FSM}	35	A
$T_{J\ MAX}$	150	°C
Package	SOD-128	
Configuration	Single die	


**HALOGEN
FREE**

SOD-128


MECHANICAL DATA

- Case: SOD-128
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.028g (approximately)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	HS1DFS	HS1GFS	HS1JFS	HS1KFS	HS1MFS	UNIT
Marking code on the device		HS1DFS	HS1GFS	HS1JFS	HS1KFS	HS1MFS	
Repetitive peak reverse voltage	V_{RRM}	200	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(\text{RMS})}$	140	280	420	560	700	V
Forward current	I_F	1					A
Surge peak forward current, single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	I_{FSM}	35				
	$t = 1.0\text{ms}$		90				
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	$R_{\Theta JL}$	29	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	51	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	22	°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⁾	HS1DFS	$I_F = 0.5A, T_J = 25^\circ C$	V _F	0.80	-	V
		$I_F = 1.0A, T_J = 25^\circ C$		0.85	1.00	V
		$I_F = 0.5A, T_J = 125^\circ C$		0.65	-	V
		$I_F = 1.0A, T_J = 125^\circ C$		0.71	0.80	V
	HS1GFS	$I_F = 0.5A, T_J = 25^\circ C$		0.84	-	V
		$I_F = 1.0A, T_J = 25^\circ C$		0.91	1.30	V
		$I_F = 0.5A, T_J = 125^\circ C$		0.68	-	V
		$I_F = 1.0A, T_J = 125^\circ C$		0.76	0.86	V
	HS1JFS	$I_F = 0.5A, T_J = 25^\circ C$		0.92	-	V
		$I_F = 1.0A, T_J = 25^\circ C$		1.02	1.70	V
		$I_F = 0.5A, T_J = 125^\circ C$		0.73	-	V
		$I_F = 1.0A, T_J = 125^\circ C$		0.83	1.02	V
	HS1KFS HS1MFS	$I_F = 0.5A, T_J = 25^\circ C$		1.32	-	V
		$I_F = 1.0A, T_J = 25^\circ C$		1.49	1.70	V
		$I_F = 0.5A, T_J = 125^\circ C$		0.98	-	V
		$I_F = 1.0A, T_J = 125^\circ C$		1.16	1.39	V
Reverse current @ rated V _R ⁽²⁾	T _J = 25°C	I _R	-	1	µA	
	T _J = 125°C		-	35	µA	
Reverse recovery time	HS1DFS HS1GFS	I _R = 0.5A, I _{rr} = 1.0A, I _{rr} = 0.25A	t _{rr}	-	50	ns
	HS1JFS HS1KFS HS1MFS			-	75	ns
Junction capacitance	HS1DFS	1MHz, V _R = 4.0V	C _J	20	-	pF
	HS1GFS			17	-	pF
	HS1JFS			13	-	pF
	HS1KFS HS1MFS			8	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE⁽¹⁾	PACKAGE	PACKING
HS1xFS	SOD-128	14,000 / Tape & Reel

Notes:

1. "x" defines voltage from 200V(HS1DFS) to 1000V(HS1MFS)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

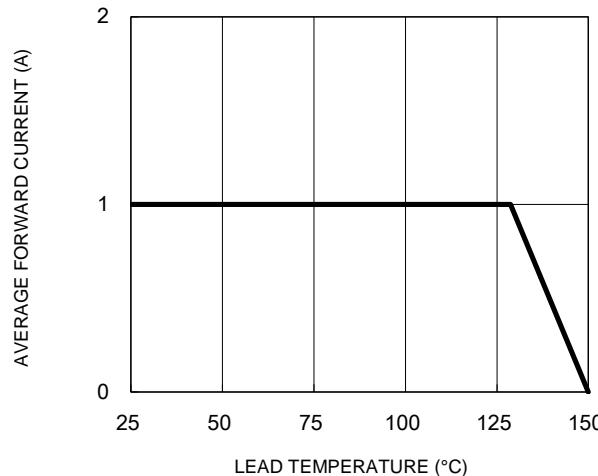


Fig.2 Typical Junction Capacitance

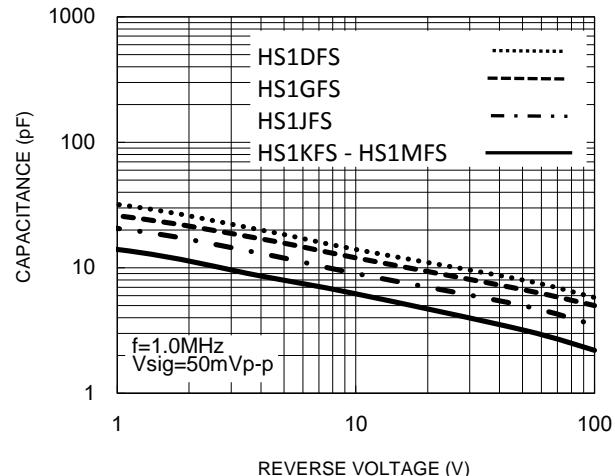


Fig.3 Typical Reverse Characteristics

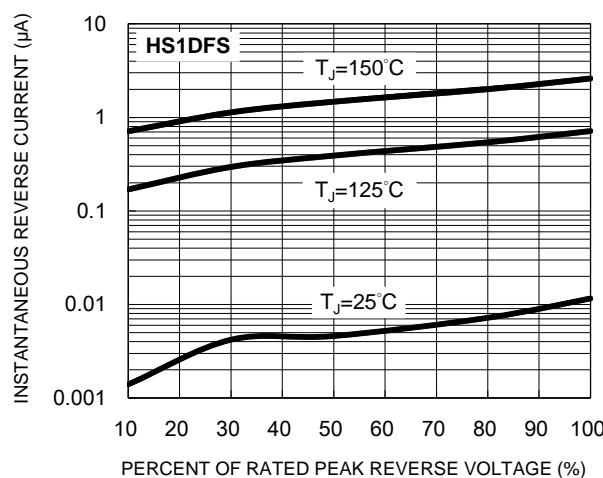


Fig.4 Typical Forward Characteristics

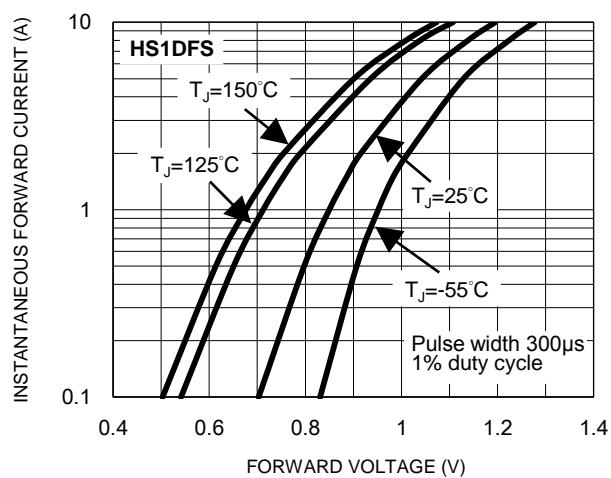


Fig.5 Typical Reverse Characteristics

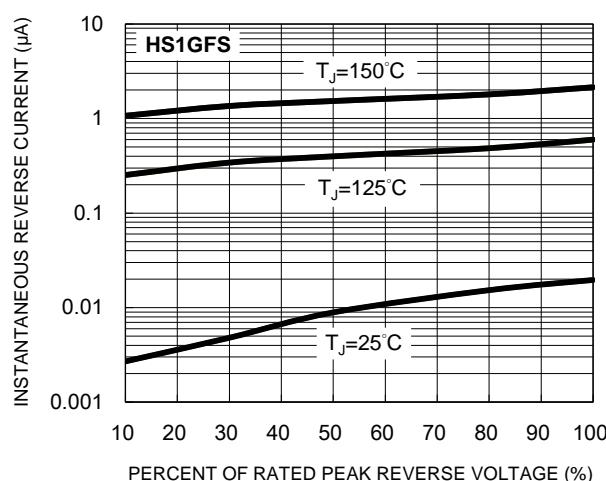
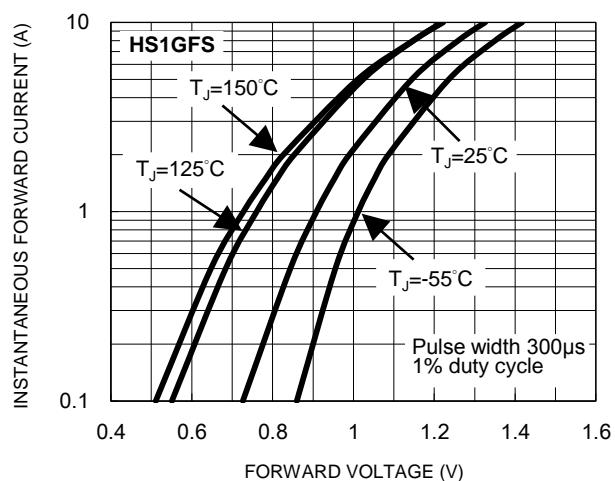


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

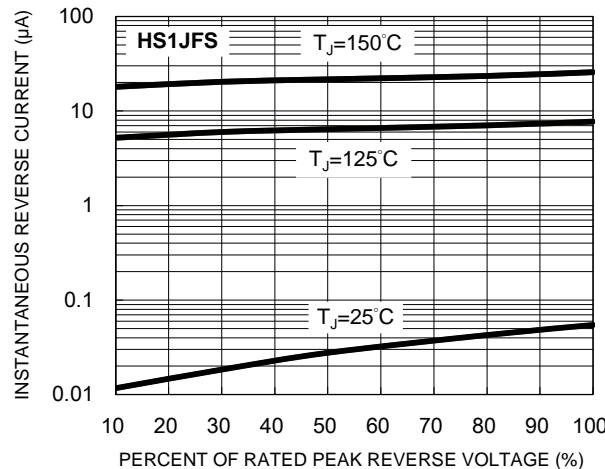


Fig.8 Typical Forward Characteristics

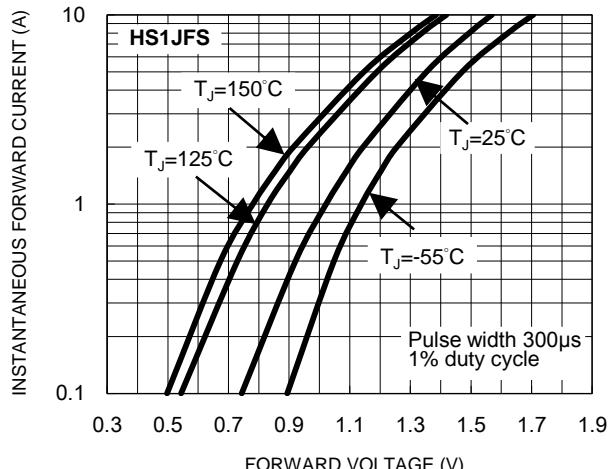


Fig.9 Typical Reverse Characteristics

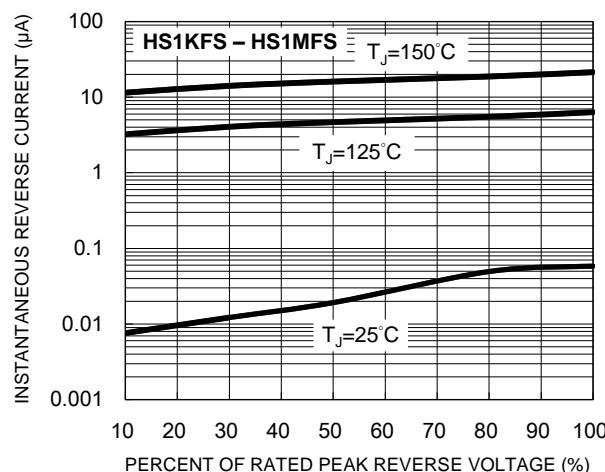


Fig.10 Typical Forward Characteristics

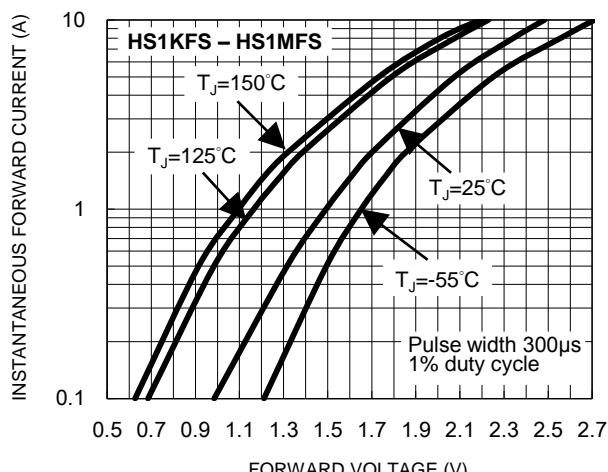
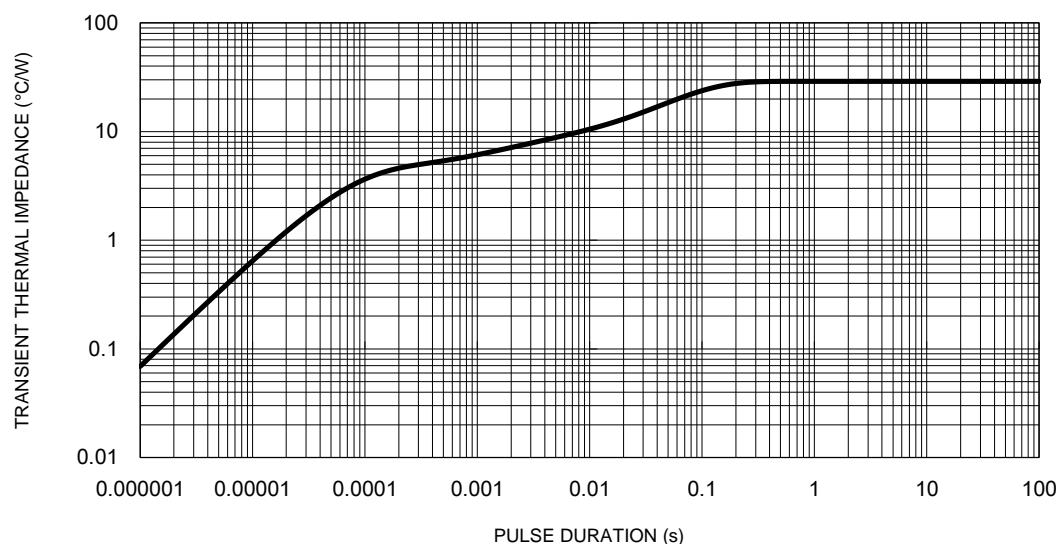
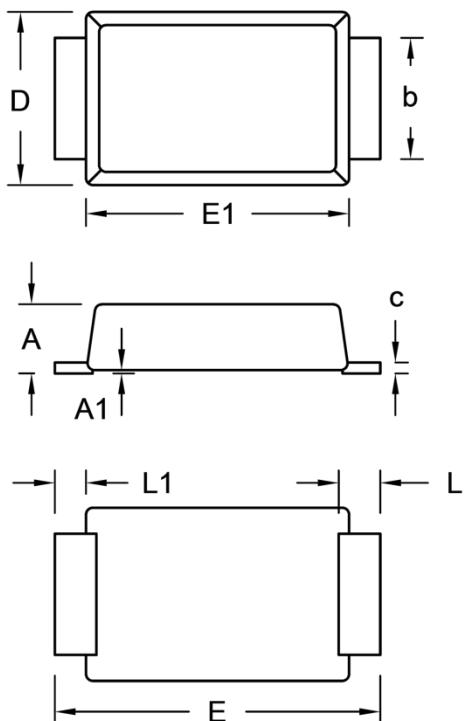
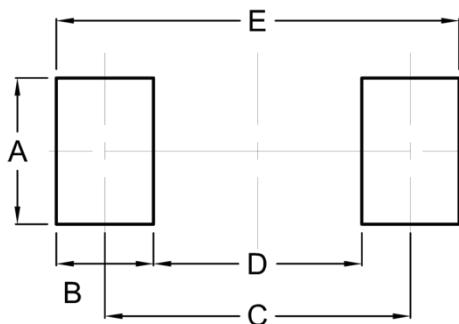


Fig.11 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS
SOD-128


DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
b	1.60	1.90	0.063	0.075
c	0.10	0.22	0.004	0.009
D	2.30	2.70	0.091	0.106
E	4.40	5.00	0.173	0.197
E1	3.60	4.00	0.142	0.157
L	0.40	0.80	0.016	0.031
L1	0.30	0.60	0.012	0.024

SUGGESTED PAD LAYOUT


Symbol	Unit (mm)	Unit (inch)
A	2.10	0.083
B	1.40	0.055
C	4.40	0.173
D	3.00	0.118
E	5.80	0.228

MARKING DIAGRAM


P/N = Marking Code

YW = Date Code

F = Factory Code

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