

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

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)

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	


SOD-128


ABSOLUTE MAXIMUM RATINGS (T _A = 25°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(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 = 8.3ms	I _{FSM}	35					A
	t = 1.0ms		90					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	$R_{\theta JL}$	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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	HS1DFS	I _F = 0.5A, T _J = 25°C	V _F	0.80	-	V
		I _F = 1.0A, T _J = 25°C		0.85	1.00	V
		I _F = 0.5A, T _J = 125°C		0.65	-	V
		I _F = 1.0A, T _J = 125°C		0.71	0.80	V
	HS1GFS	I _F = 0.5A, T _J = 25°C		0.84	-	V
		I _F = 1.0A, T _J = 25°C		0.91	1.30	V
		I _F = 0.5A, T _J = 125°C		0.68	-	V
		I _F = 1.0A, T _J = 125°C		0.76	0.86	V
	HS1JFS	I _F = 0.5A, T _J = 25°C		0.92	-	V
		I _F = 1.0A, T _J = 25°C		1.02	1.70	V
		I _F = 0.5A, T _J = 125°C		0.73	-	V
		I _F = 1.0A, T _J = 125°C		0.83	1.02	V
	HS1KFS HS1MFS	I _F = 0.5A, T _J = 25°C		1.32	-	V
		I _F = 1.0A, T _J = 25°C		1.49	1.70	V
		I _F = 0.5A, T _J = 125°C		0.98	-	V
		I _F = 1.0A, T _J = 125°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 _F = 0.5A, I _R = 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:

- Pulse test with $PW = 0.3\text{ms}$
- Pulse test with $PW = 30\text{ms}$

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

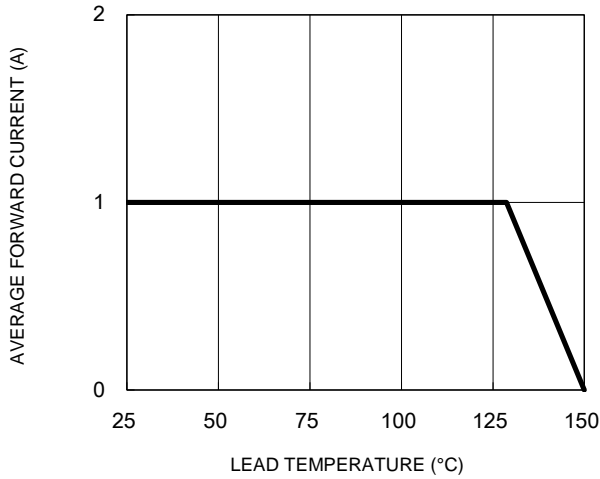


Fig.2 Typical Junction Capacitance

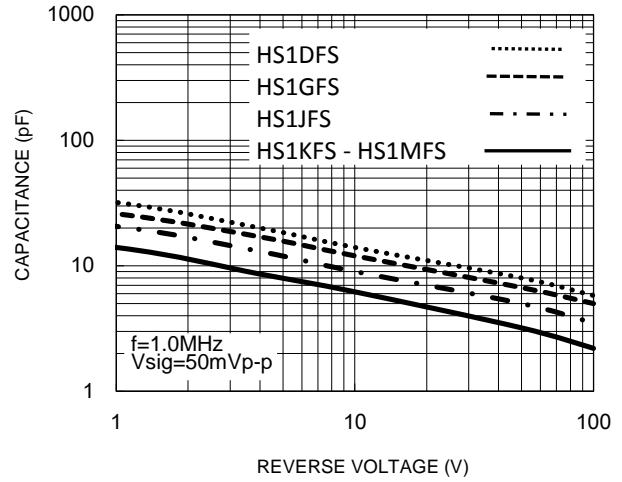


Fig.3 Typical Reverse Characteristics

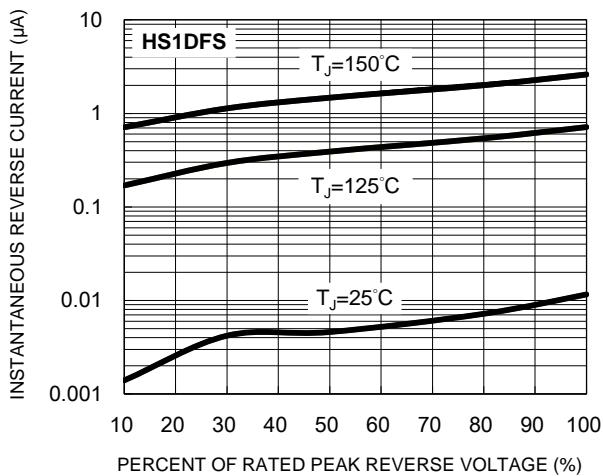


Fig.4 Typical Forward Characteristics

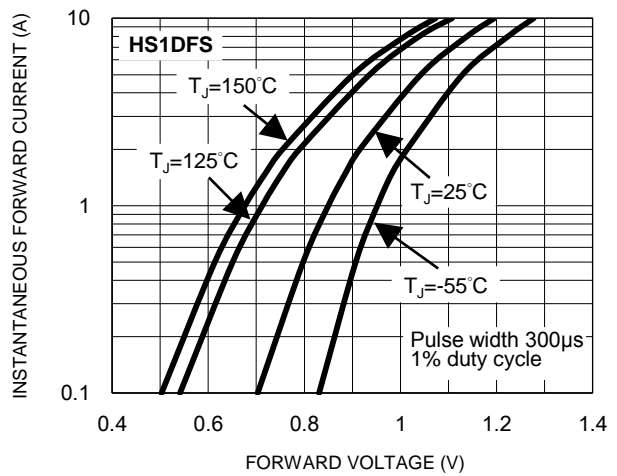


Fig.5 Typical Reverse Characteristics

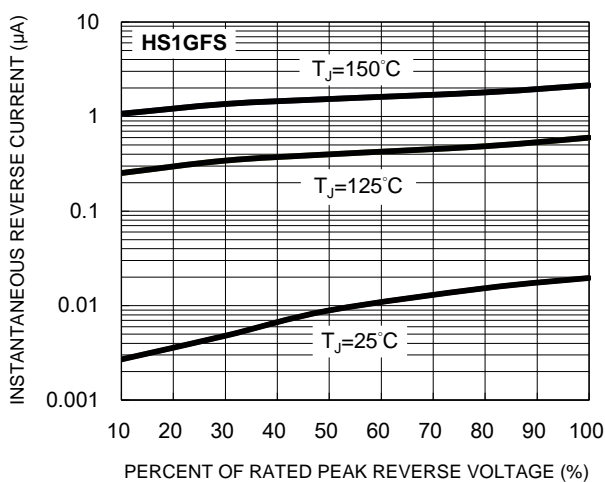
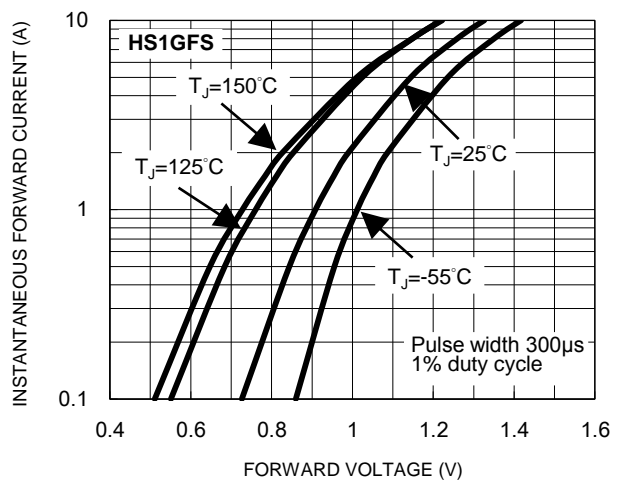


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

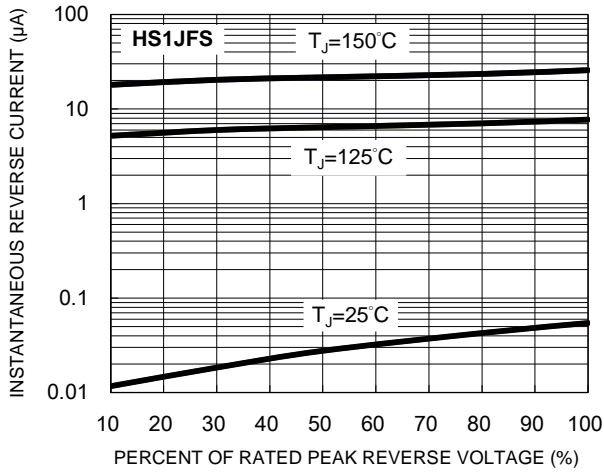


Fig.8 Typical Forward Characteristics

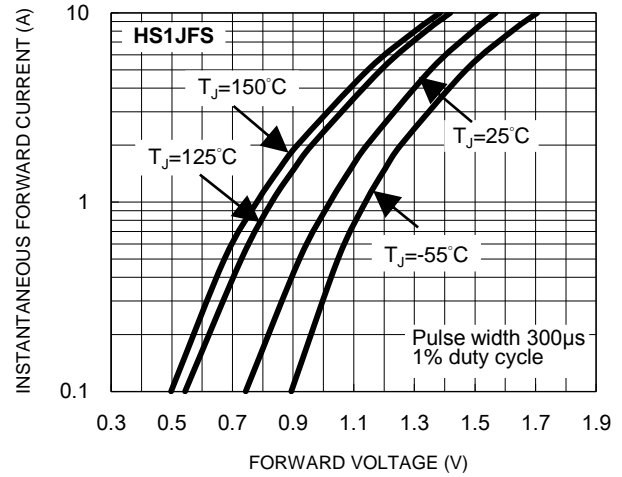


Fig.9 Typical Reverse Characteristics

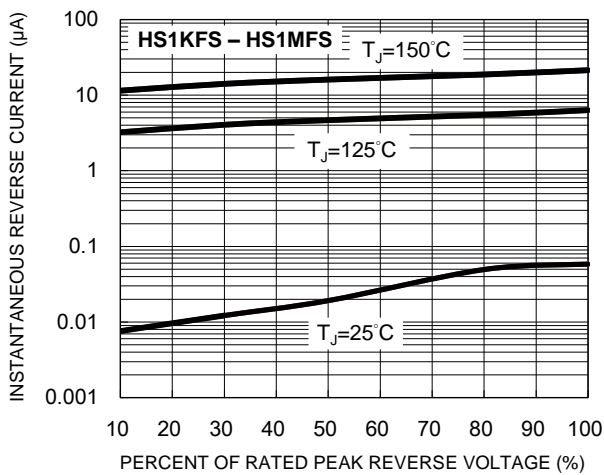


Fig.10 Typical Forward Characteristics

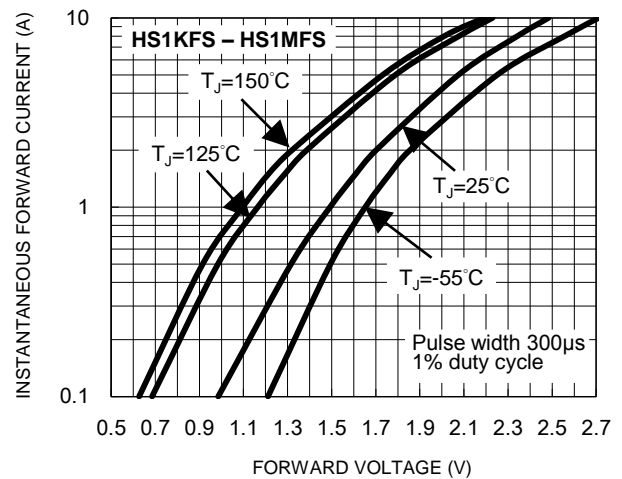
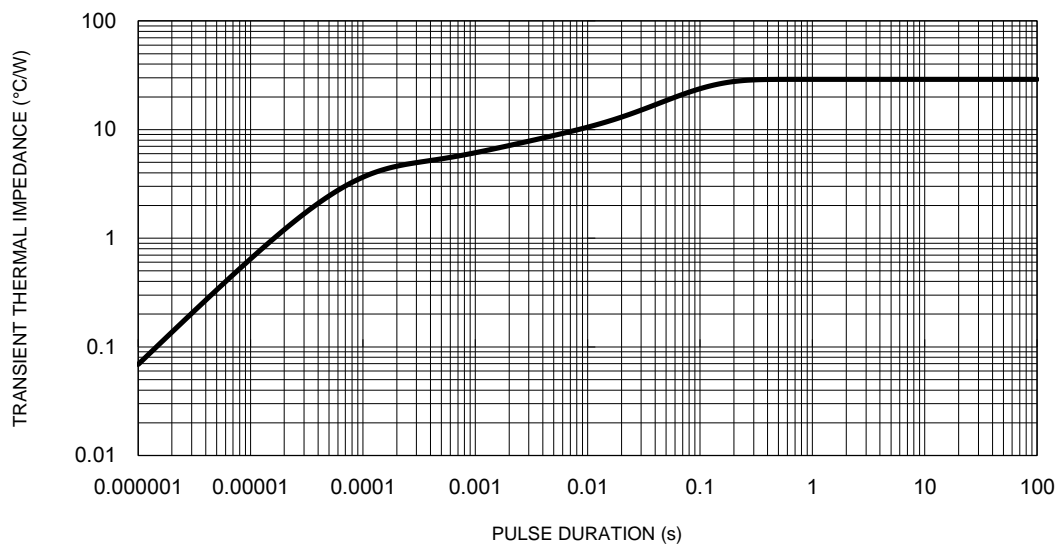
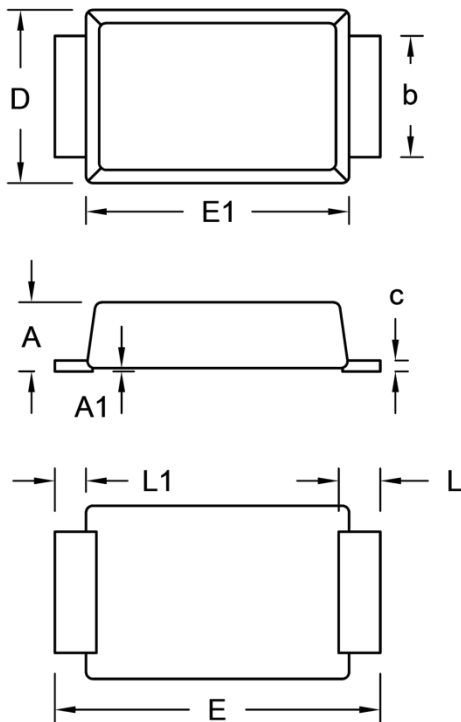


Fig.11 Typical Transient Thermal Impedance



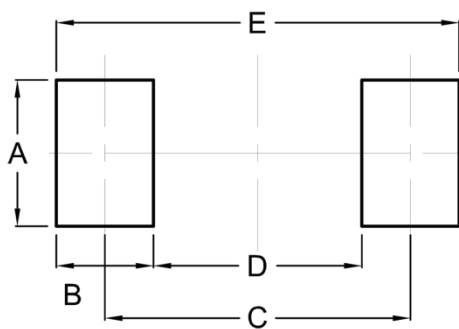
PACKAGE OUTLINE DIMENSIONS

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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