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

FEATURES

- AEC-Q101 qualified
- Glass passivated chip junction
- Ideal for automated placement
- Low power loss, high efficiency
- Fast switching for high efficiency
- Low profile package
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

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	

APPLICATIONS

- Freewheeling
- Snubber
- DC/DC converters
- Automotive application

MECHANICAL DATA

- Case: SOD-128
- Molding compound meets UL 94V-0 flammability rating
- 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)

Pb-Free RoHS COMPLIANT HALOGEN FREE

SOD-128

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETER		SYMBOL	HS1D FSH	HS1G FSH	HS1J FSH	HS1K FSH	HS1M FSH	UNIT
Marking code on the device			HS1DFH	HS1GFH	HS1JFH	HS1KFH	HS1MFH	
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°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage(1)	HS1DFSH	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
	HS1GFSH	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
	HS1JFSH	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
	HS1KFSH HS1MFSH	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	HS1DFSH HS1GFSH	I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A	t_{rr}	-	50	ns
	HS1JFSH HS1KFSH HS1MFSH			-	75	ns
Junction capacitance	HS1DFSH	1MHz, V_R = 4.0V	C_J	20	-	pF
	HS1GFSH			17	-	pF
	HS1JFSH			13	-	pF
	HS1KFSH HS1MFSH			8	-	pF

Notes:

(1) Pulse test with PW = 0.3ms

(2) Pulse test with PW = 30ms

ORDERING INFORMATION		
ORDERING CODE(1)	**PACKAGE**	**PACKING**
HS1xFSH	SOD-128	14,000 / Tape & Reel

Notes:

(1) "x" defines voltage from 200V(HS1DFSH) to 1000V(HS1MFSH)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

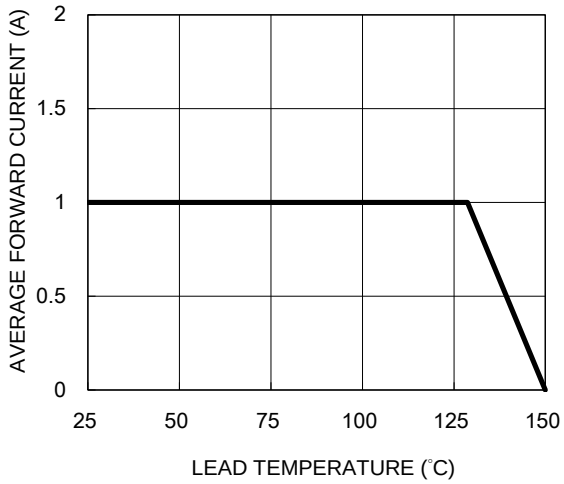


Fig.2 Typical Junction Capacitance

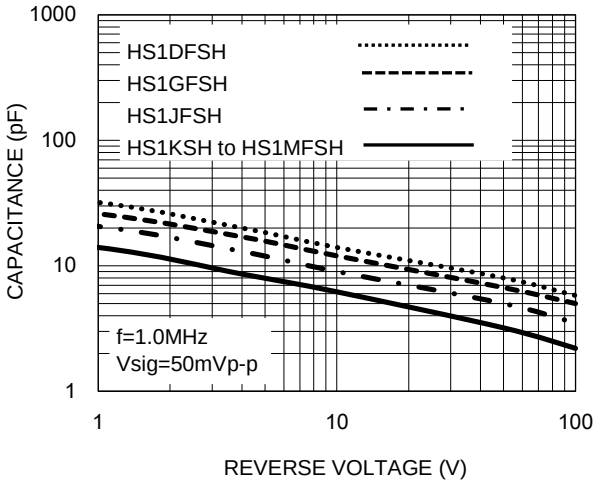


Fig.3 Typical Reverse Characteristics

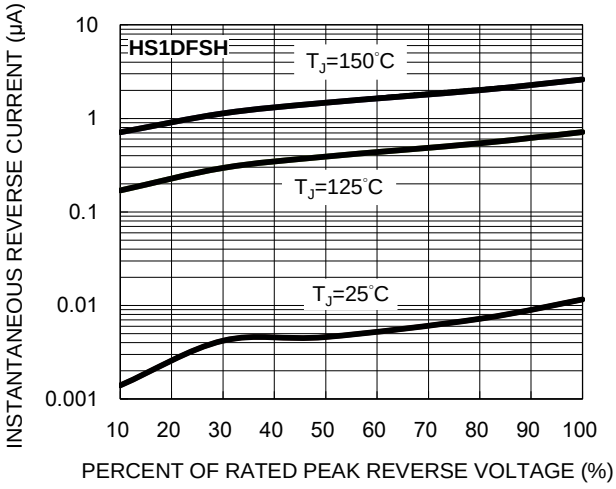


Fig.4 Typical Forward Characteristics

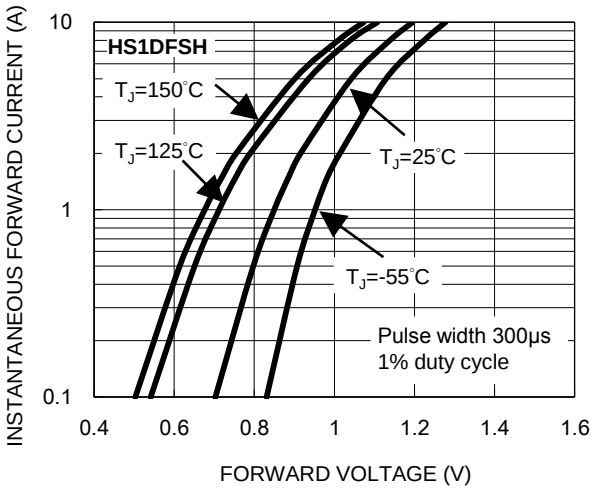


Fig.5 Typical Reverse Characteristics

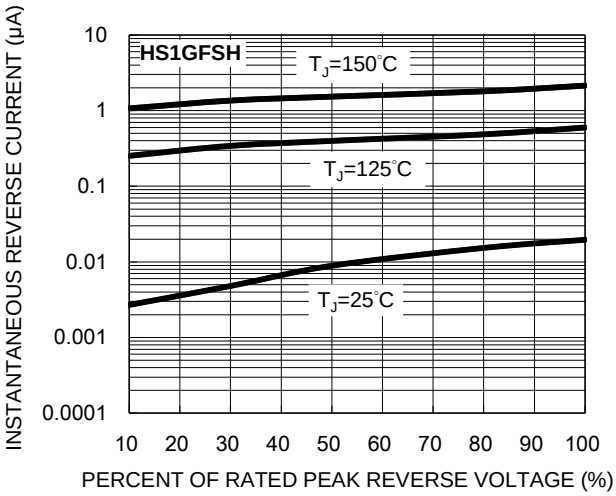
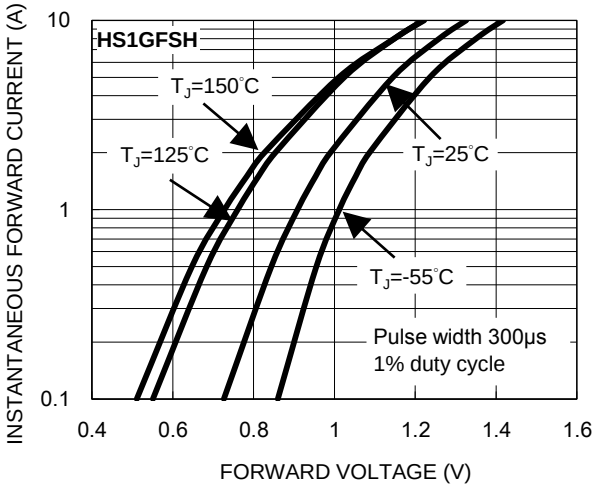


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.7 Typical Reverse Characteristics

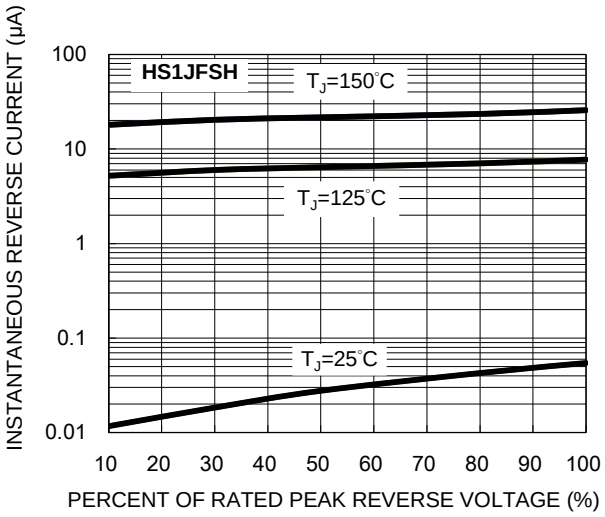


Fig.8 Typical Forward Characteristics

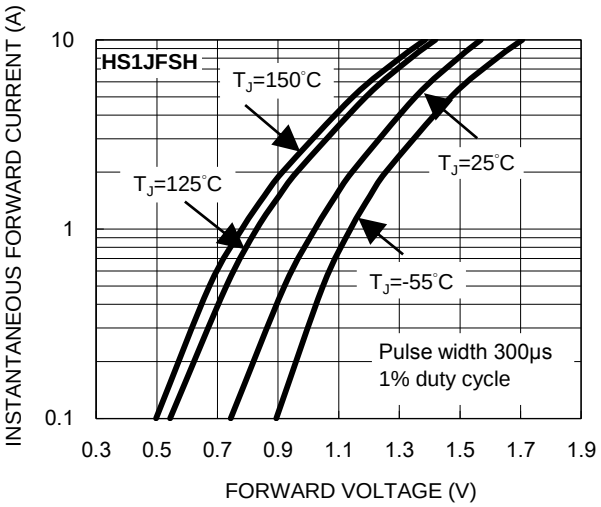


Fig.9 Typical Reverse Characteristics

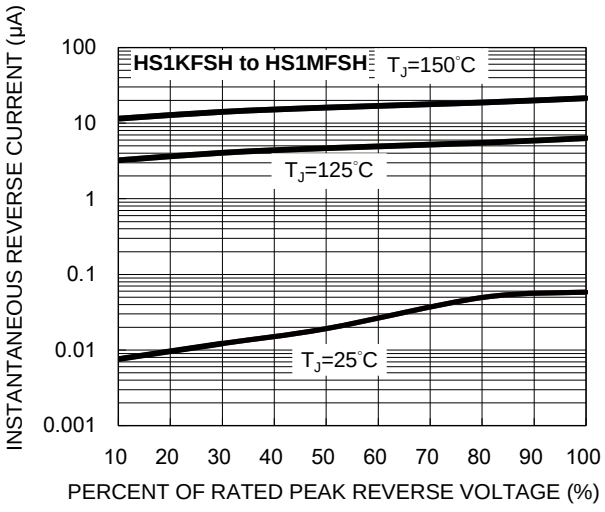


Fig.10 Typical Forward Characteristics

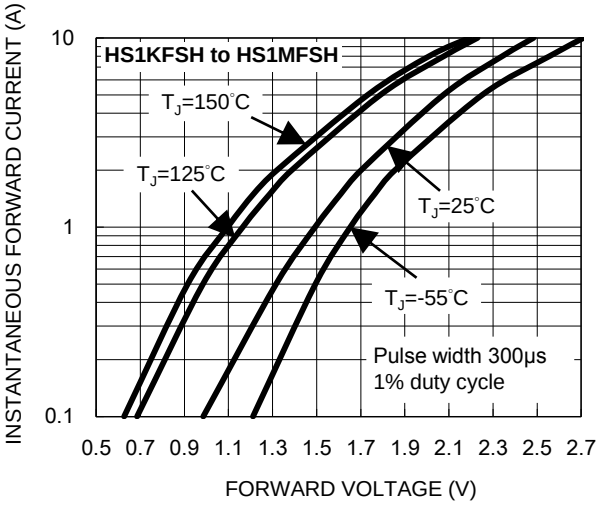
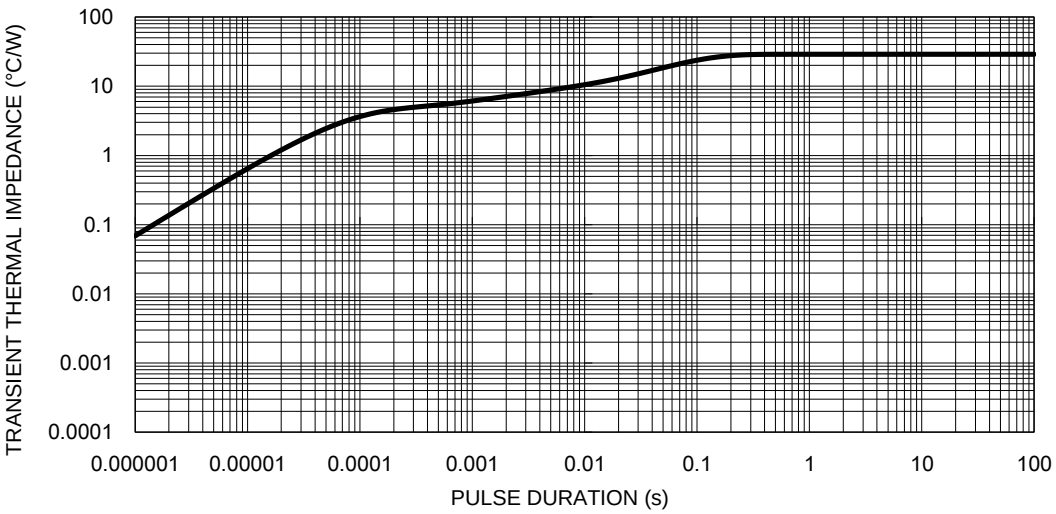
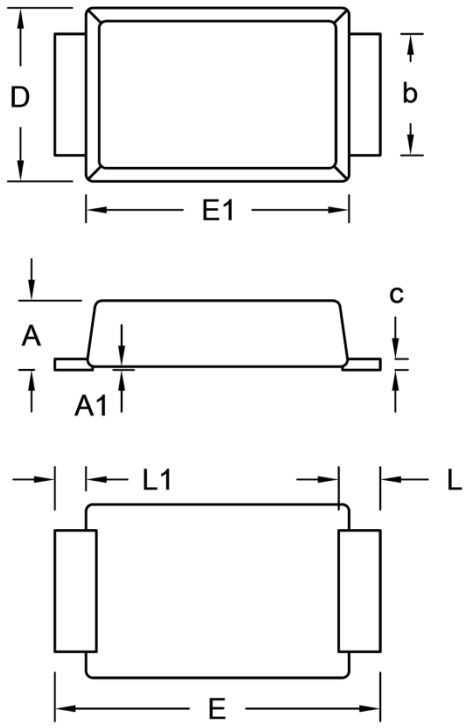


Fig.11 Typical Transient Thermal Impedance



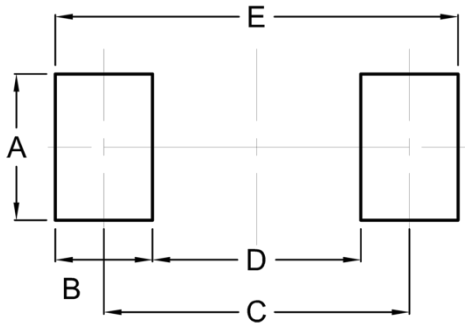
PACKAGE OUTLINE DIMENSIONS

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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