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

FEATURES

- 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

APPLICATIONS

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

MECHANICAL DATA

- Case: Thin SMA
- 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: 0.029g (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	Thin SMA	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

Thin SMA

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)								
PARAMETER		**SYMBOL**	**HS1DAL**	**HS1GAL**	**HS1JAL**	**HS1KAL**	**HS1MAL**	**UNIT**
Marking code on the device			HS1DAL	HS1GAL	HS1JAL	HS1KAL	HS1MAL	
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]	HS1DAL	I_F = 0.5A, T_J = 25°C	V_F	0.80	-	V
		I_F = 1A, T_J = 25°C		0.85	1.00	V
		I_F = 0.5A, T_J = 125°C		0.65	-	V
		I_F = 1A, T_J = 125°C		0.71	0.80	V
	HS1GAL	I_F = 0.5A, T_J = 25°C		0.84	-	V
		I_F = 1A, T_J = 25°C		0.91	1.30	V
		I_F = 0.5A, T_J = 125°C		0.68	-	V
		I_F = 1A, T_J = 125°C		0.76	0.86	V
	HS1JAL	I_F = 0.5A, T_J = 25°C		0.92	-	V
		I_F = 1A, T_J = 25°C		1.02	1.70	V
		I_F = 0.5A, T_J = 125°C		0.73	-	V
		I_F = 1A, T_J = 125°C		0.83	1.02	V
	HS1KAL HS1MAL	I_F = 0.5A, T_J = 25°C		1.32	-	V
		I_F = 1A, T_J = 25°C		1.49	1.70	V
		I_F = 0.5A, T_J = 125°C		0.98	-	V
		I_F = 1A, 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	HS1DAL HS1GAL	I_F = 0.5A, I_R = 1.0A, Irr = 0.25A	t_{rr}	-	50	ns
	HS1JAL HS1KAL HS1MAL			-	75	ns
Junction capacitance	HS1DAL	1MHz, V_R = 4.0V	C_J	20	-	pF
	HS1GAL			17	-	pF
	HS1JAL			13	-	pF
	HS1KAL HS1MAL			8	-	pF

Notes:

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

ORDERING INFORMATION		
ORDERING CODE[1]	**PACKAGE**	**PACKING**
HS1xAL	Thin SMA	14,000 / Tape & Reel

Notes:

1. "x" defines voltage from 200V(HS1DAL) to 1000V(HS1MAL)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

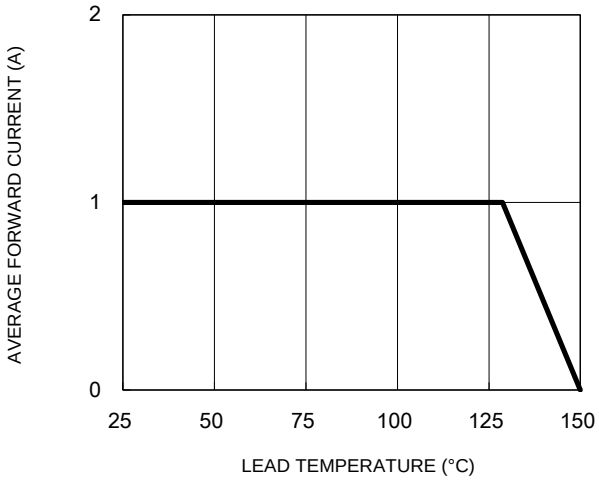


Fig.2 Typical Junction Capacitance

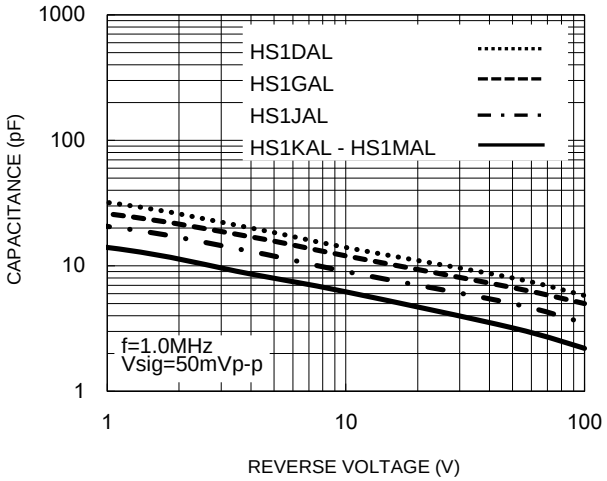


Fig.3 Typical Reverse Characteristics

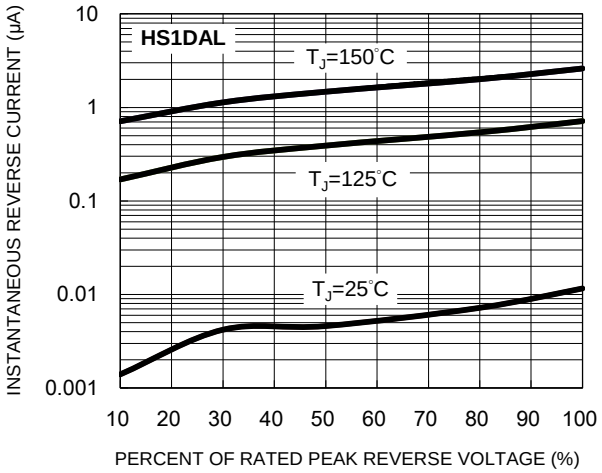


Fig.4 Typical Forward Characteristics

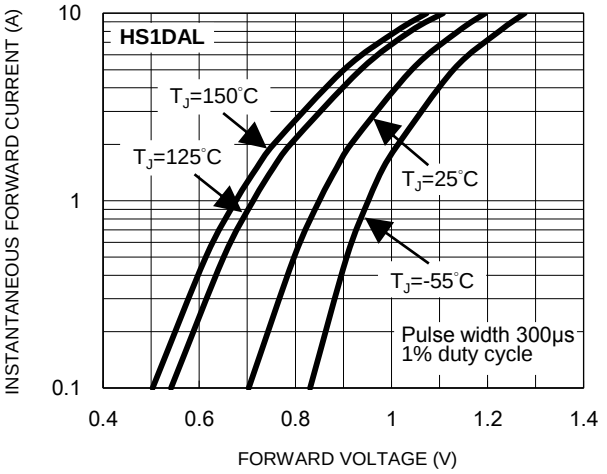


Fig.5 Typical Reverse Characteristics

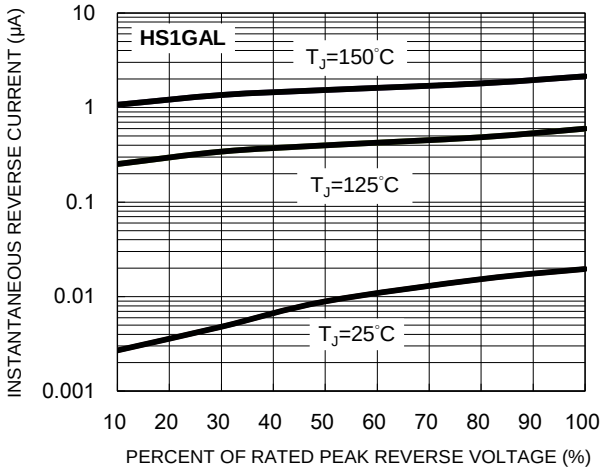
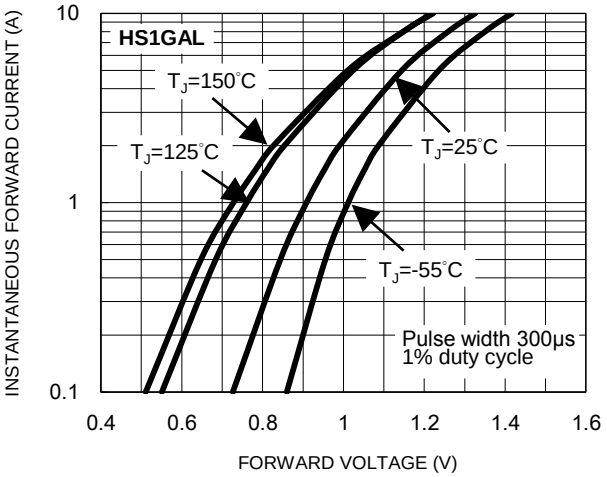


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.7 Typical Reverse Characteristics

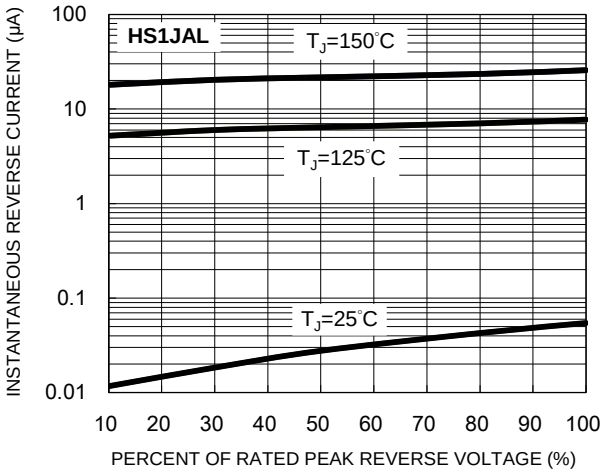


Fig.8 Typical Forward Characteristics

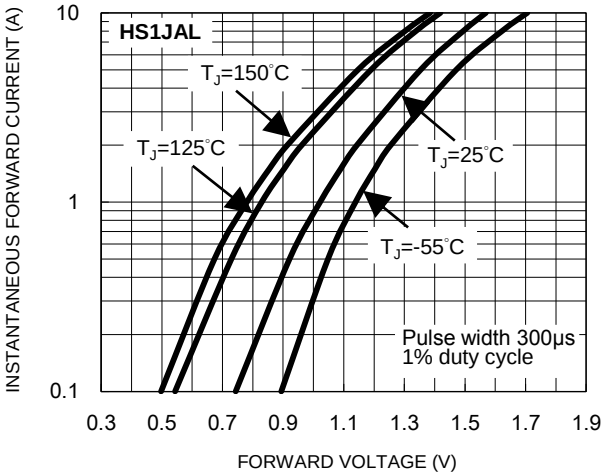


Fig.9 Typical Reverse Characteristics

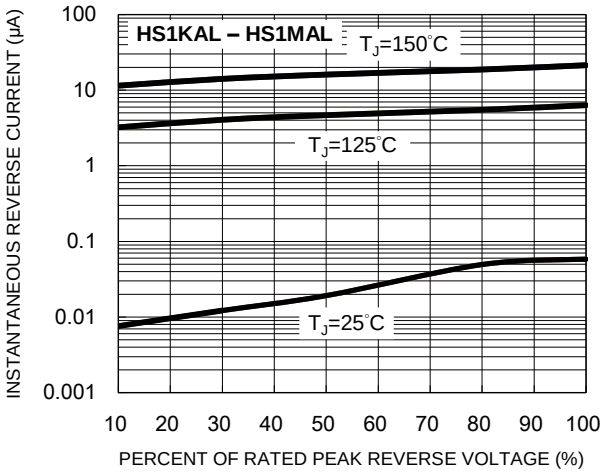


Fig.10 Typical Forward Characteristics

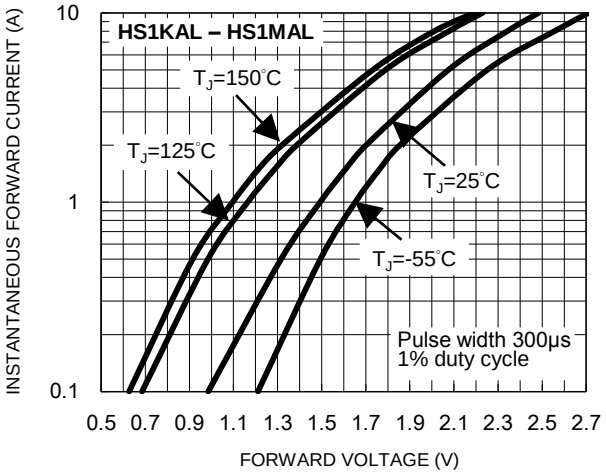
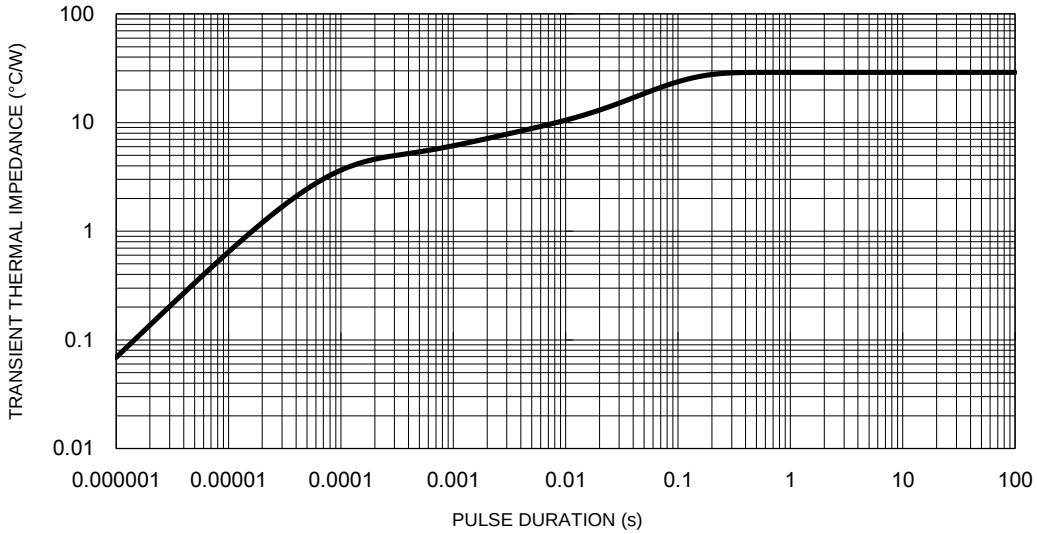
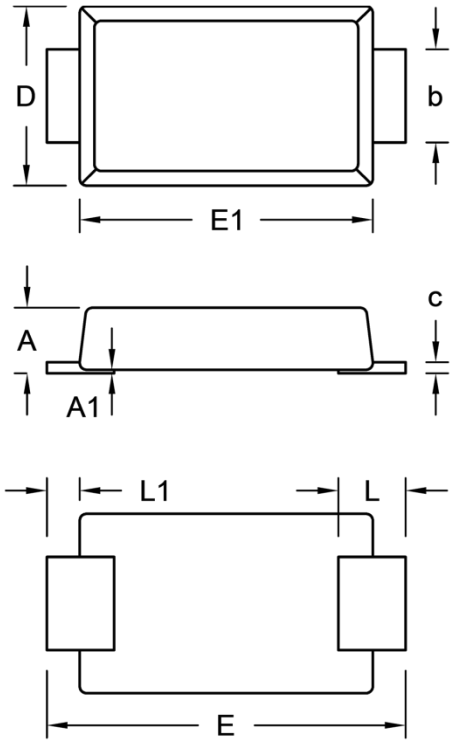


Fig.11 Typical Transient Thermal Impedance



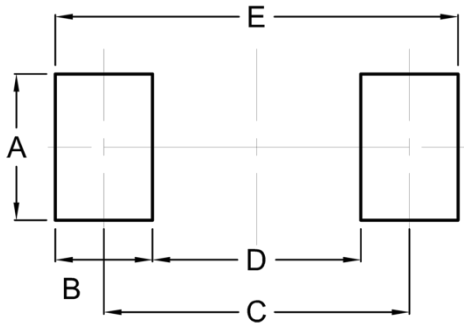
PACKAGE OUTLINE DIMENSIONS

Thin SMA



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.00	0.035	0.039
A1	0.00	0.10	0.000	0.004
b	1.25	1.45	0.049	0.057
c	0.10	0.22	0.004	0.009
D	2.50	2.70	0.098	0.106
E	5.05	5.35	0.199	0.211
E1	4.15	4.35	0.163	0.171
L	0.75	1.20	0.030	0.047
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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