

1A, 200V - 1000V Fast Recovery 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
- General purpose

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}	30	A
$T_{J\ MAX}$	150	°C
Package	Thin SMA	
Configuration	Single die	



Thin SMA



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C unless otherwise noted)								
PARAMETER		SYMBOL	RS1DAL	RS1GAL	RS1JAL	RS1KAL	RS1MAL	UNIT
Marking code on the device			RS1DAL	RS1GAL	RS1JAL	RS1KAL	RS1MAL	
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}	30					A
	t = 1.0ms		100					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	$R_{\theta JL}$	19	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	81	°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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	RS1DAL RS1GAL RS1JAL	I _F = 0.5A, T _J = 25°C	V _F	0.90	-	V
		I _F = 1.0A, T _J = 25°C		0.97	1.30	V
		I _F = 0.5A, T _J = 125°C		0.75	-	V
		I _F = 1.0A, T _J = 125°C		0.83	0.94	V
	RS1KAL RS1MAL	I _F = 0.5A, T _J = 25°C		0.96	-	V
		I _F = 1.0A, T _J = 25°C		1.04	1.30	V
		I _F = 0.5A, T _J = 125°C		0.80	-	V
		I _F = 1.0A, T _J = 125°C		0.90	1.11	V
Reverse current @ rated V _R ⁽²⁾		T _J = 25°C	I _R	-	1	μA
		T _J = 125°C		-	33	μA
Reverse recovery time	RS1DAL RS1GAL	I _F = 0.5A, I _R = 1.0A, I _{rr} = 0.25A	t _{rr}	-	150	ns
	RS1JAL			-	250	ns
	RS1KAL RS1MAL			-	500	ns
Junction capacitance		1MHz, V _R = 4.0V	C _J	7	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE ⁽¹⁾	PACKAGE	PACKING
RS1xAL	Thin SMA	14,000 / Tape & Reel

Notes:

1. "x" defines voltage from 200V(RS1DAL) to 1000V(RS1MAL)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

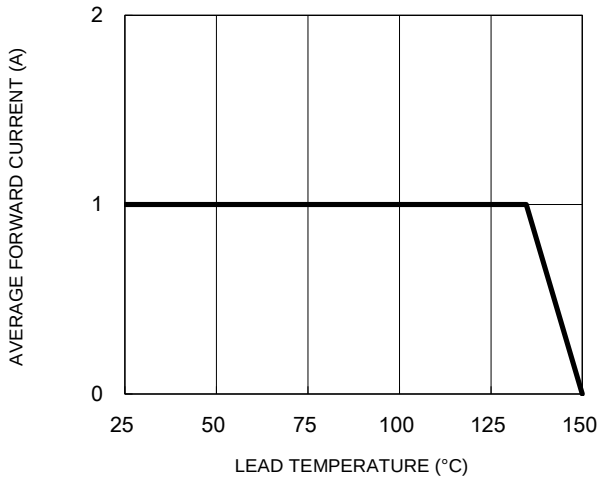


Fig.2 Typical Junction Capacitance

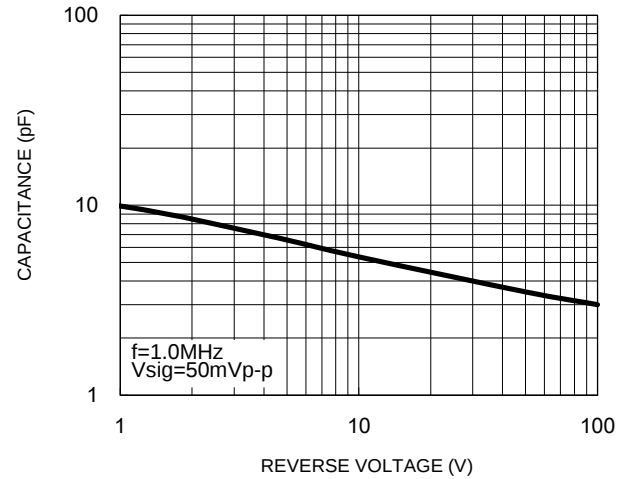


Fig.3 Typical Reverse Characteristics

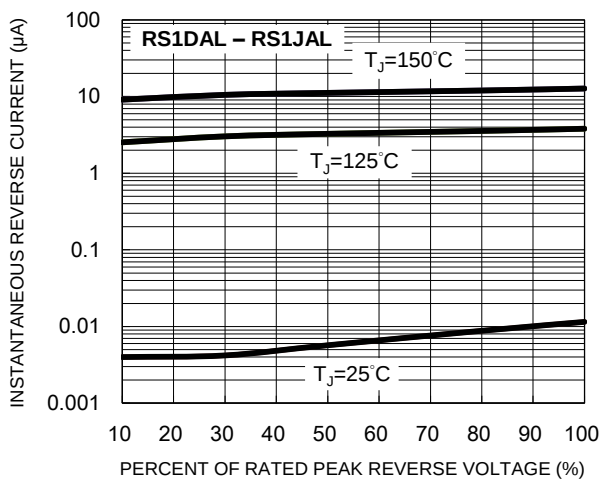


Fig.5 Typical Reverse Characteristics

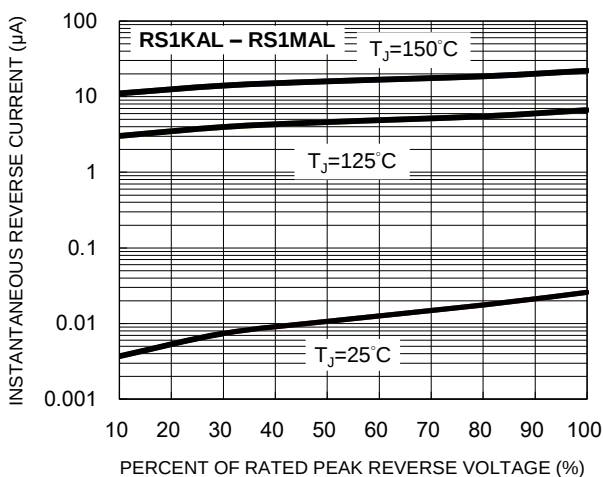


Fig.4 Typical Forward Characteristics

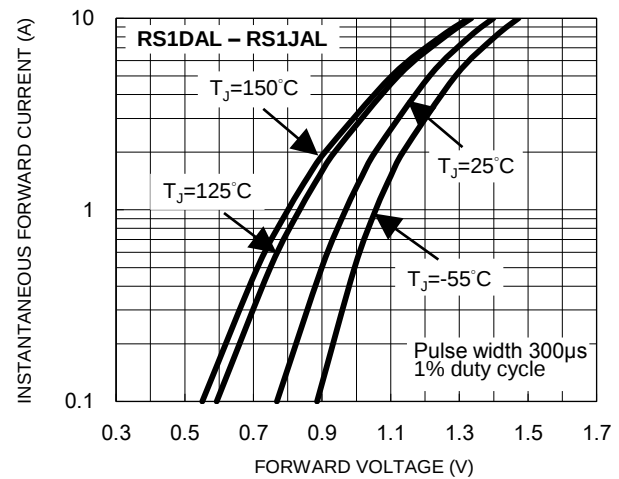
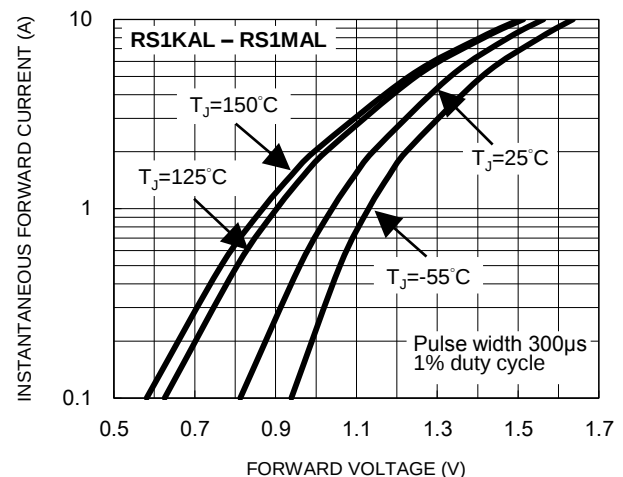


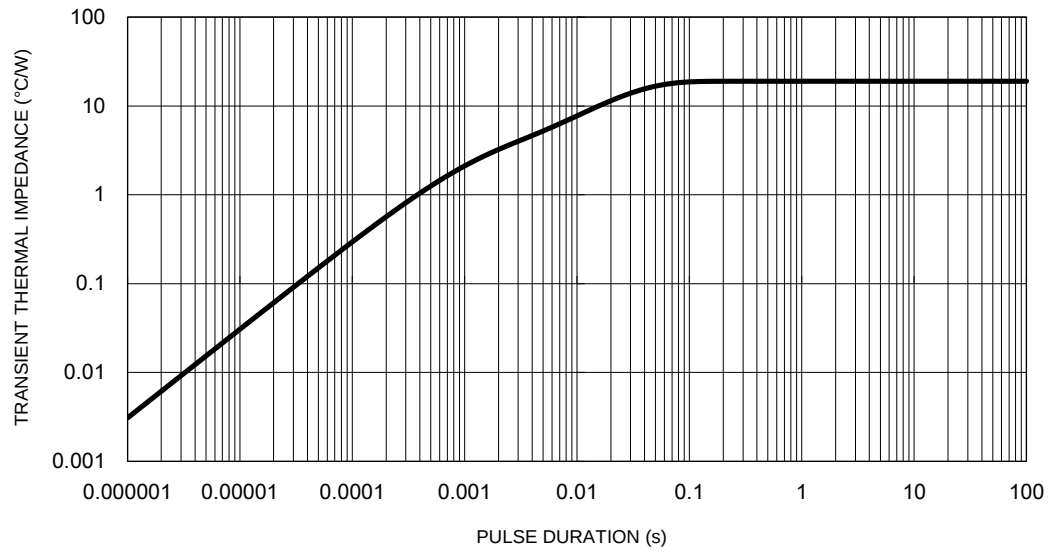
Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

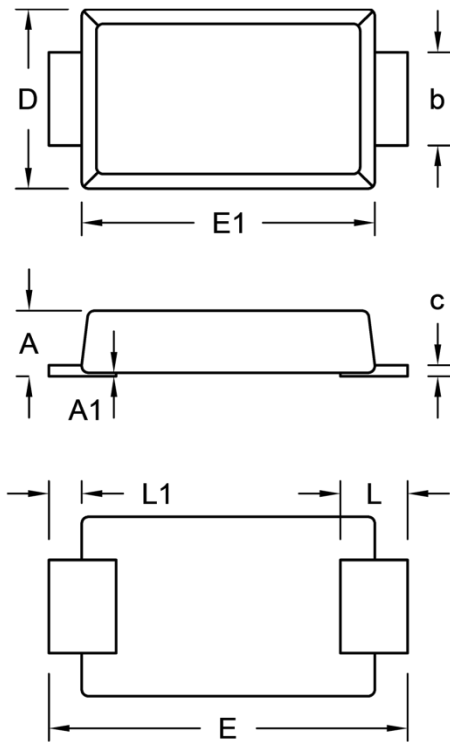
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 Typical Transient Thermal Impedance



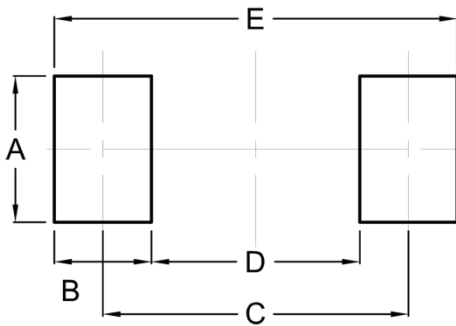
PACKAGE OUTLINE DIMENSIONS

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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