

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

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
$T_{J\ MAX}$	175	°C
Package	Thin SMA	
Configuration	Single die	



Thin SMA



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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	$t = 8.3\text{ms}$	30					A
	$t = 1.0\text{ms}$	100					A
Junction temperature	T_J	-55 to +175					°C
Storage temperature	T_{STG}	-55 to +175					°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	$I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.90	-	V
		$I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$		0.97	1.30	V
		$I_F = 0.5\text{A}, T_J = 125^\circ\text{C}$		0.75	-	V
		$I_F = 1.0\text{A}, T_J = 125^\circ\text{C}$		0.83	0.94	V
	RS1KAL RS1MAL	$I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$		0.96	-	V
		$I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$		1.04	1.30	V
		$I_F = 0.5\text{A}, T_J = 125^\circ\text{C}$		0.80	-	V
		$I_F = 1.0\text{A}, T_J = 125^\circ\text{C}$		0.90	1.11	V
Reverse current @ rated V_R ⁽²⁾		$T_J = 25^\circ\text{C}$	I_R	-	1	μA
		$T_J = 125^\circ\text{C}$		-	33	μA
Reverse recovery time	RS1DAL RS1GAL	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	t_{rr}	-	150	ns
	RS1JAL			-	250	ns
	RS1KAL			-	500	ns
	RS1MAL			-	500	ns
Junction capacitance		1MHz, $V_R = 4.0\text{V}$	C_J	7	-	pF

Notes:

1. Pulse test with $PW = 0.3\text{ms}$
2. Pulse test with $PW = 30\text{ms}$

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

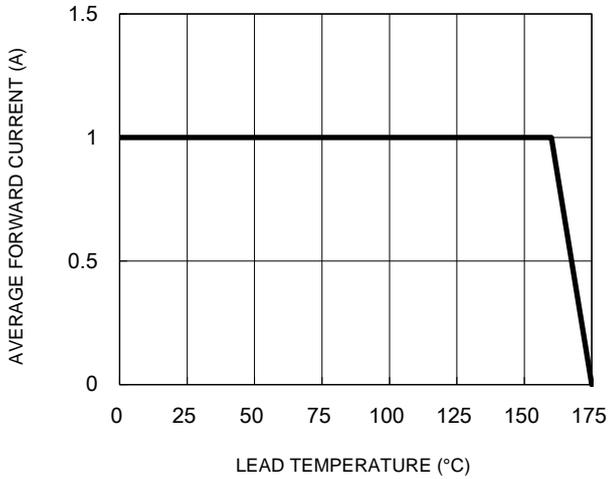


Fig.2 Typical Junction Capacitance

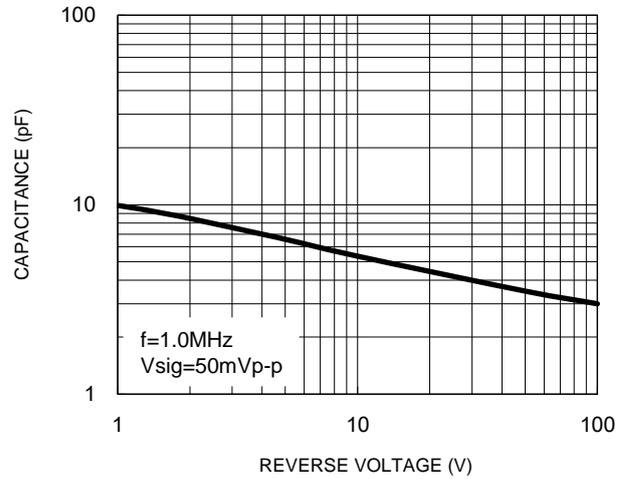


Fig.3 Typical Reverse Characteristics

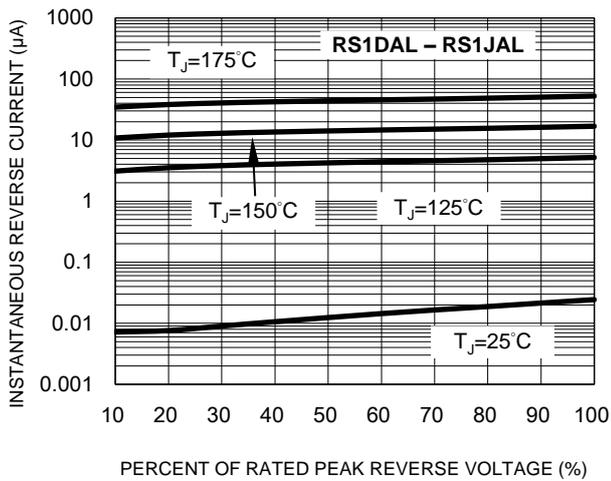


Fig.4 Typical Forward Characteristics

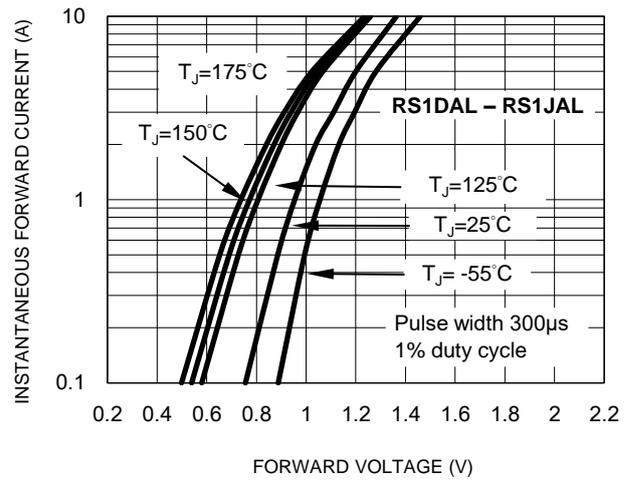


Fig.5 Typical Reverse Characteristics

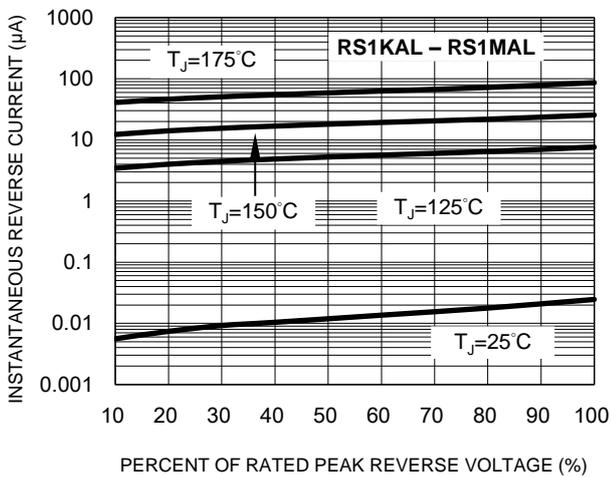
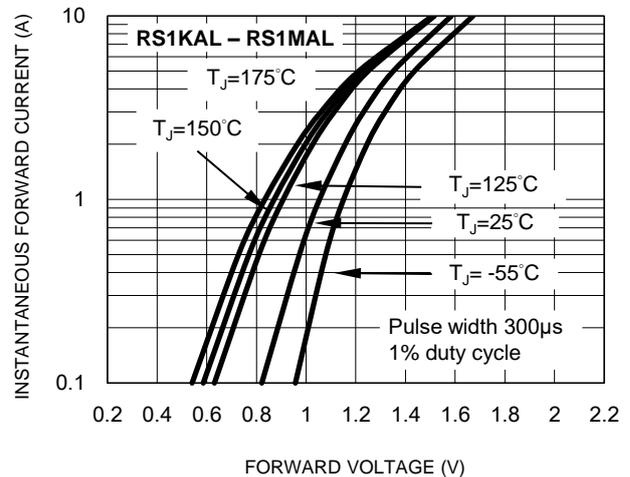


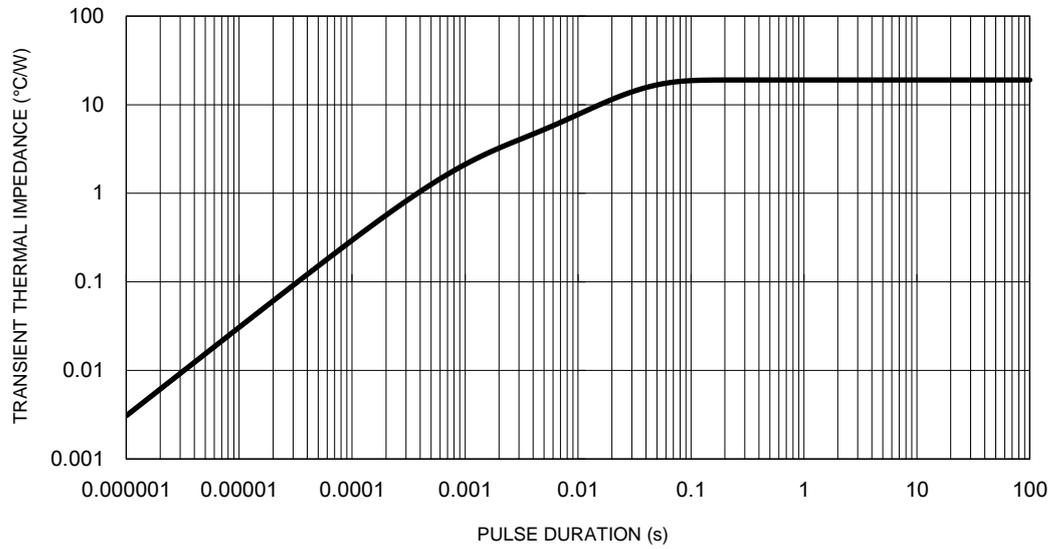
Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

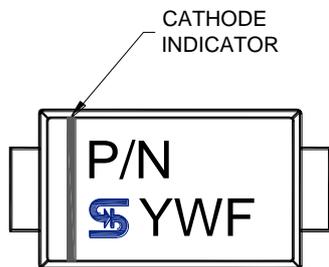
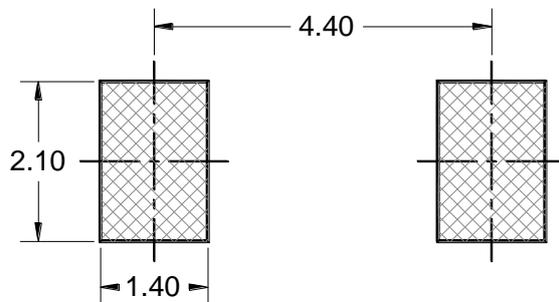
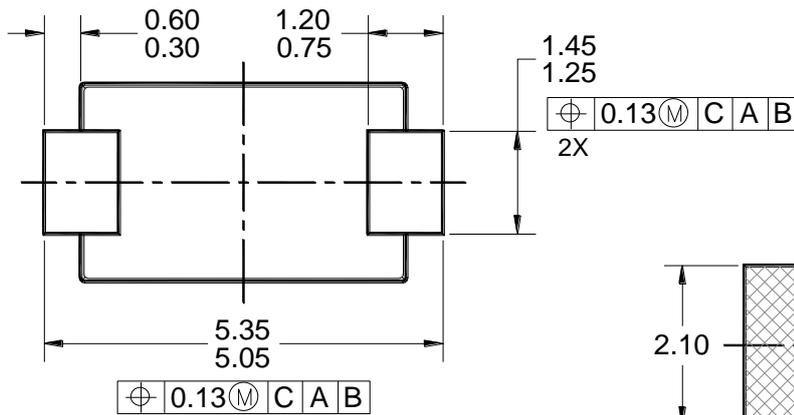
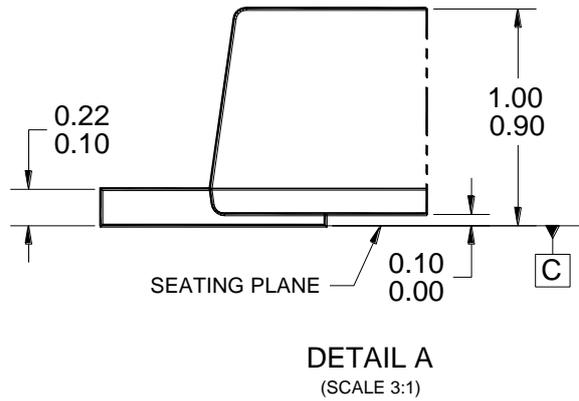
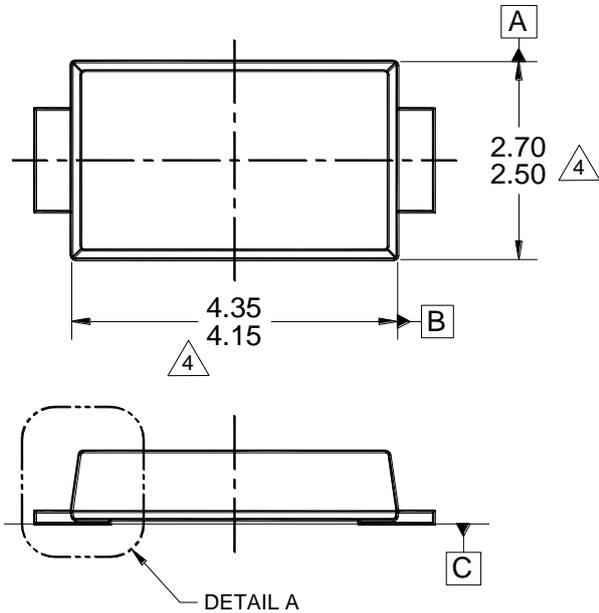
(T_A = 25°C unless otherwise noted)

Fig.7 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

Thin SMA



MARKING DIAGRAM

P/N = MARKING CODE
YW = DATE CODE
F = FACTORY CODE

NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
- PACKAGE OUTLINE REFERENCE: JEDEC DO-221, VARIATION AC, ISSUE B.
- MODED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
- SUGGESTED PAD LAYOUT IS FOR REFERENCE PURPOSE ONLY.
- DWG NO. REF: HQ2SD07-TSMA-074 REV A.

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