

0.1-3.0GHz SPDT Switch

Features

- Broadband frequency range: 0.1 to 3.0GHz
- Power handing capability of up to 32dBm
- Low insertion loss : 0.32dB typical @ 2.7GHz
- High isolation: 23dB typical @ 2.7GHz
- High switching speed: 125ns typical
- Small SOT363-6L Package

Applications

- IEEE 802.11a/b/g/n/ac/ax networks
- Low power T/R systems

General Description

The AW13102PSTR is a single-pole dual-throw switch with power handing capability of up to 32dBm and low insertion loss. It can be used to support WLAN, Low power T/R applications.

The symmetrical design of internal ports makes it convenient for PCB routing and adjustment of receiving and transmitting signals. The band/mode switching is realized by the GPIO pins as referenced in the chip block diagram and the control logic.

Typical Application Circuit

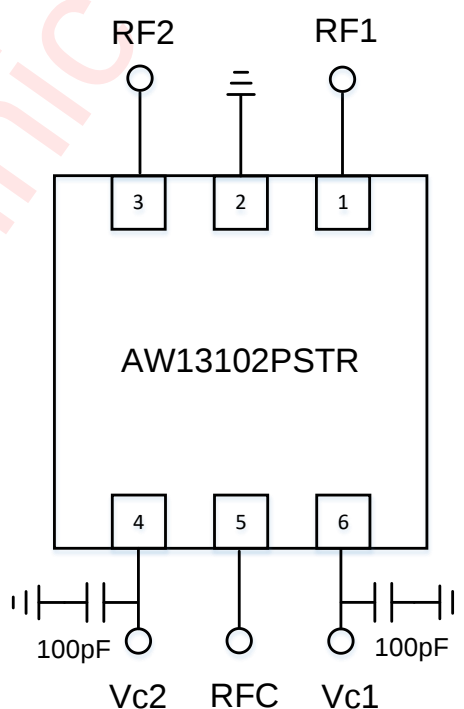


Figure 1 Typical Application Circuit of AW13102PSTR

Pin Configuration And Top Mark

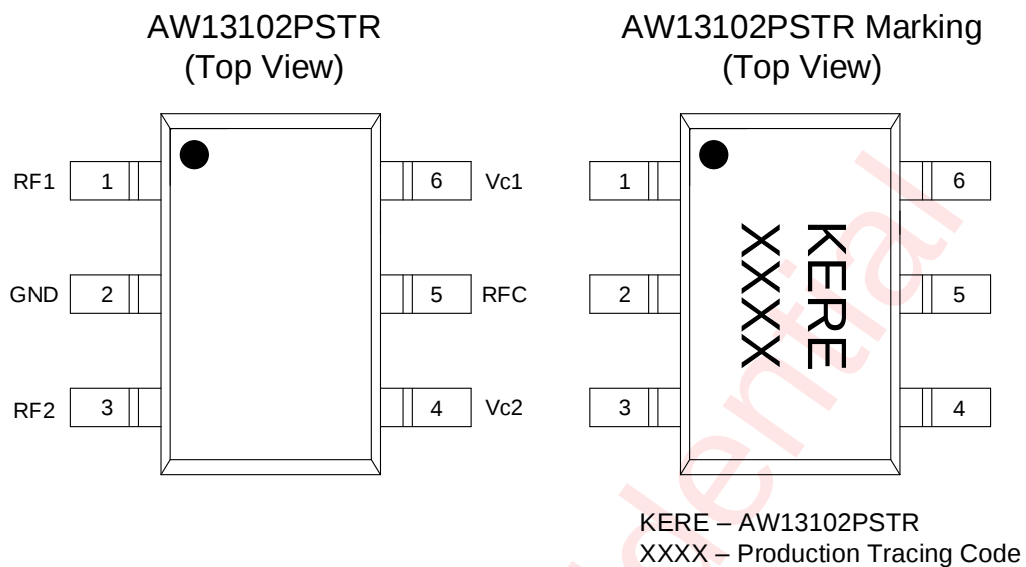


Figure 2 Pin Configuration and Top Mark

Pin Definition

No.	NAME	DESCRIPTION
1	RF1	RF port 1
2	GND	Ground
3	RF1	RF port 2
4	Vc2	Logic control 2
5	RFC	Common Port
6	Vc1	Logic control 1

Functional Block Diagram

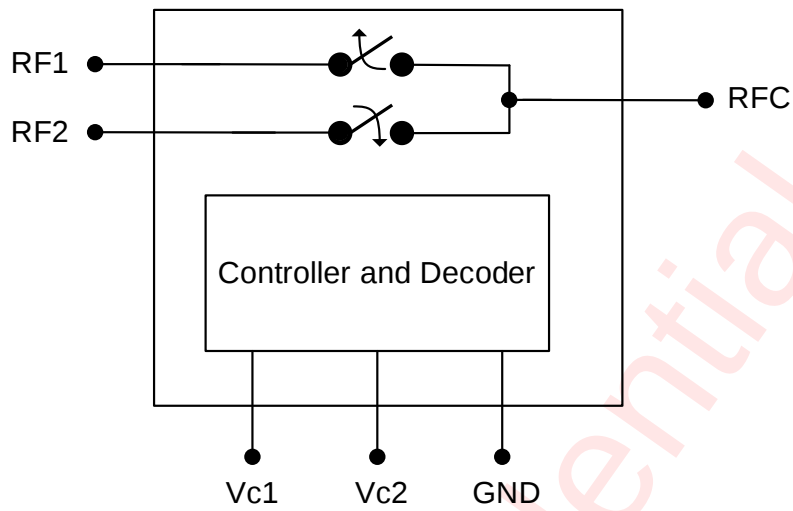


Figure 3 FUNCTIONAL BLOCK DIAGRAM

Ordering Information

Part Number	Temperature	Package	Marking	Moisture Sensitivity Level	Environmental Information	Delivery Form
AW13102PSTR	-40°C~85°C	SOT363-6L	KERE	MSL3	ROHS+HF	3000 units/ Tape and Reel

Absolute Maximum Ratings^(NOTE1)

PARAMETERS		RANGE
Operating Voltage		4.2V
RF input power(RF1/RF2)	900MHz, DC 25%	32dBm
Operating Free-air Temperature Range		-40°C to 85°C
Storage temperature T _{STG}		-65°C to 150°C
Lead temperature (soldering 10 seconds)		260°C

NOTE1: Conditions out of those ranges listed in "absolute maximum ratings" may cause permanent damages to the device. In spite of the limits above, functional operation conditions of the device should within the ranges listed in "recommended operating conditions". Exposure to absolute-maximum-rated conditions for prolonged periods may affect device reliability.

Electrical Characteristics

VDD=3.3V, V1=0/3.3V, PIN=0dBm, T=+25°C, Z₀=50Ω. (unless otherwise noted)

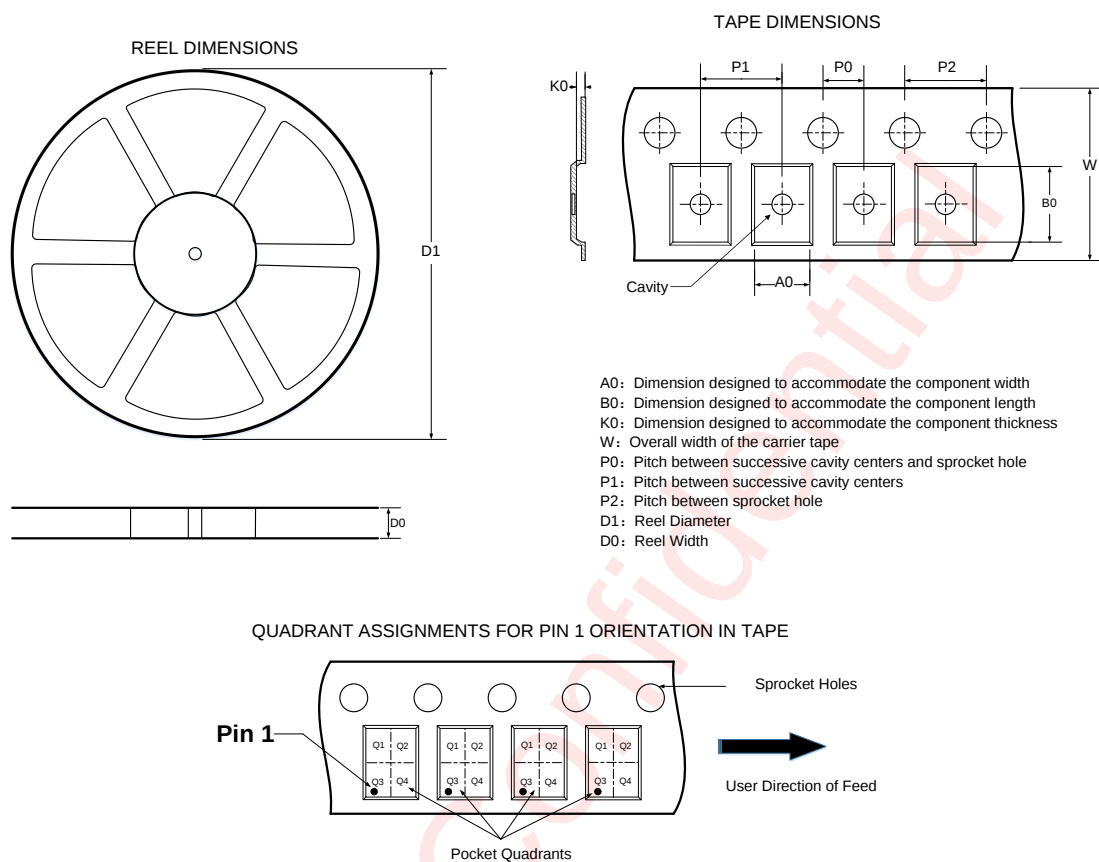
PARAMETER		TEST CONDITION	MIN	TYP	MAX	UNIT
DC Specifications						
VCTL	Supply Voltage		1.65		3.6	V
ICTL	Supply Current			15		μA
VCTL_H VCTL_L	Control Voltage High Low		1.65 0		3.6 0.2	V
Tc	Switching on/off time	50% of final control voltage to 90% of final RF power, switching between RF1/2		125		ns
RF Specifications						
IL	Insertion loss	100-500MHz		0.2		dB
		500-1500MHz		0.25		dB
		1500-2700MHz		0.32		dB
		2700-3000MHz		0.35		dB
ISO	Isolation (RFC to RF1/RF2)	100-500MHz		41		dB
		500-1500MHz		30		dB
		1500-2700MHz		23		dB
		2700-3000MHz		21		dB

PARAMETER		TEST CONDITION	MIN	TYP	MAX	UNIT
ISO	Isolation (RF1 to RF2 or RF2 to RF1)	100-500MHz		48		dB
		500-1500MHz		33		dB
		1500-2700MHz		24		dB
		2700-3000MHz		22		dB
RL	Input return loss	100-500MHz		40		dB
		500-1500MHz		30		dB
		1500-2700MHz		25		dB
		2700-3000MHz		25		dB
2f ₀	Second harmonics	PIN=+20dBm, f ₀ =900MHz VSWR=1:1		-75		dBm
		PIN=+25dBm, f ₀ =900MHz VSWR=1:1		-65		dBm
3f ₀	Third harmonics	PIN=+20dBm, f ₀ =900MHz VSWR=1:1		-85		dBm
		PIN=+25dBm, f ₀ =900MHz VSWR=1:1		-75		dBm
P _{0.1}	0.1dB Compression Point (ANT pin to RF1/RF2)	900MHz, DC 25%, output port VSWR=1:1		32		dBm

AW13102PSTR Control Logic

Vc1	Vc2	RFC-RF1	RFC-RF2
1	0	Isolation	Insertion loss
0	1	Insertion loss	Isolation

Tape And Reel Information



Note: The above picture is for reference only. Please refer to the value in the table below for the actual size

DIMENSIONS AND PIN1 ORIENTATION

D1 (mm)	D0 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
178	8.4	2.4	2.55	1.2	2	4	4	8	Q3

All dimensions are nominal

Figure 5 Tape and Reel

Package Description

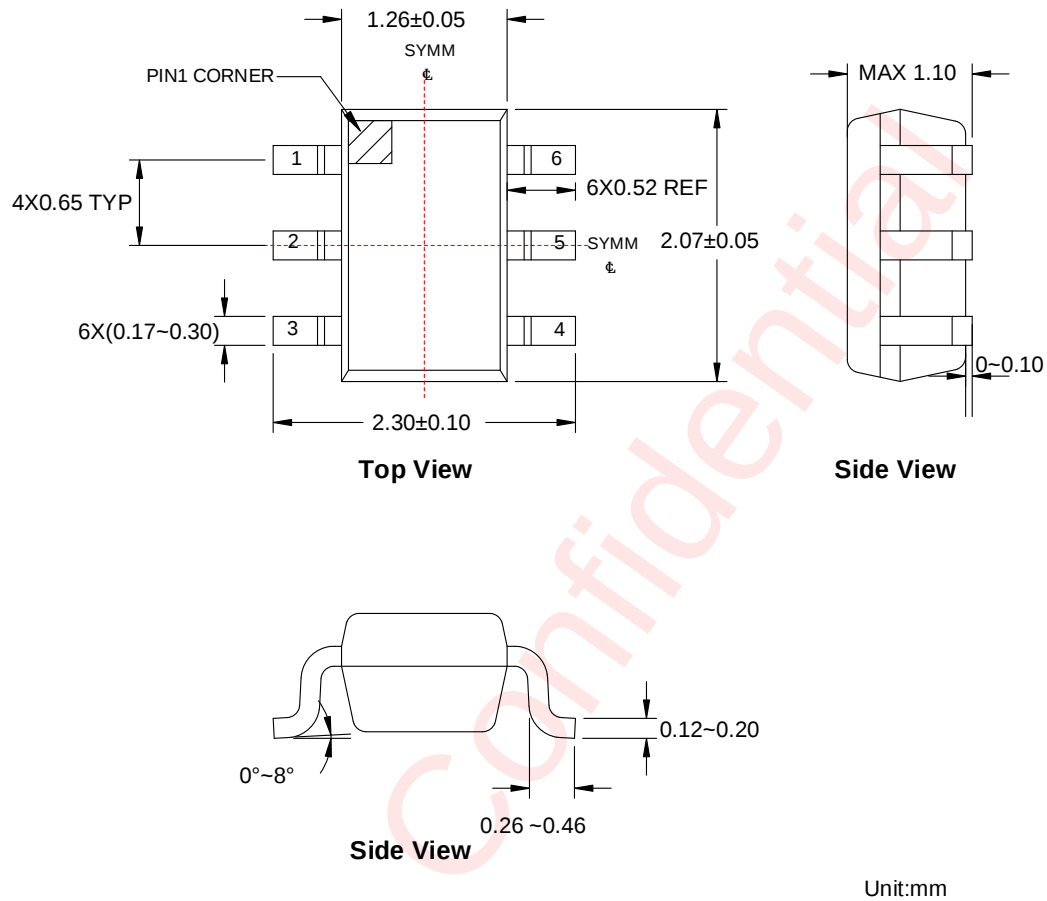


Figure 6 Package Outline

Land Pattern Data

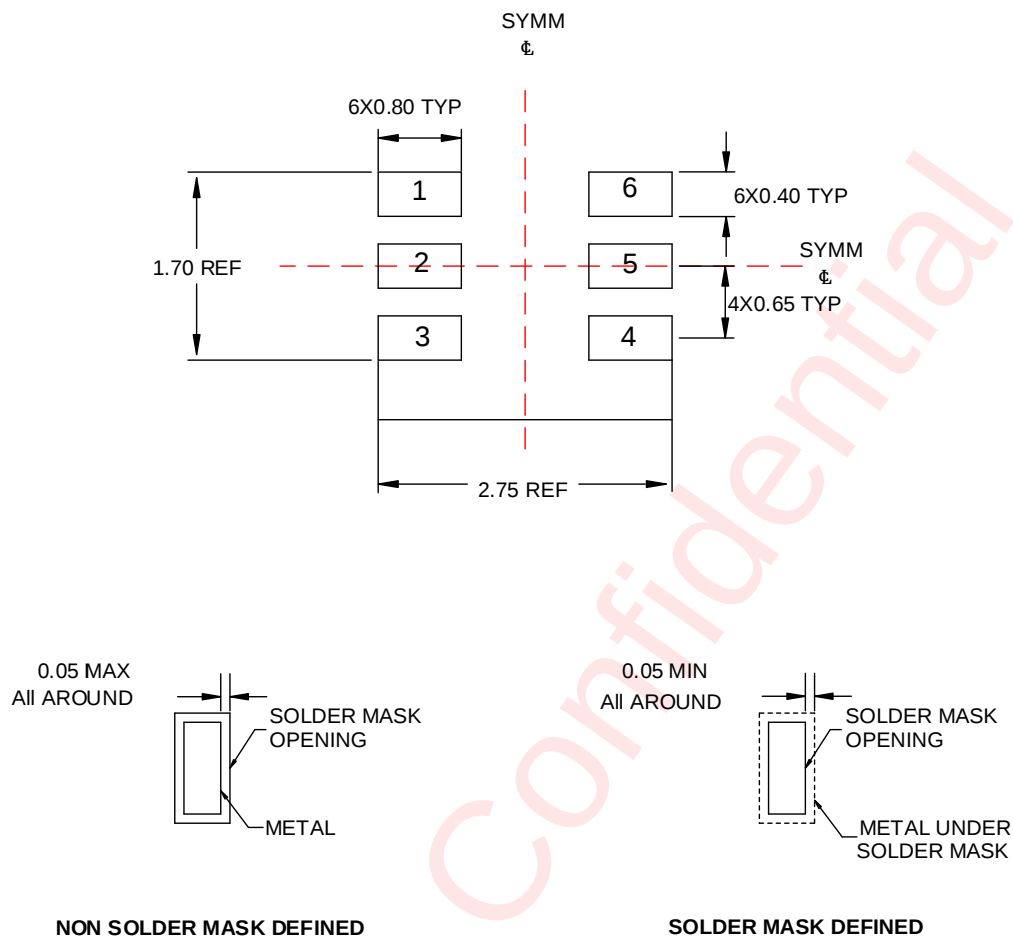


Figure 7 Land Pattern Data

Revision History

Version	Date	Change Record
V1.0	Jul.2024	Preliminary Brief Officially Released
V1.1	Dec.2024	Update MSL level

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