

## 0.02-7.2GHz SP3T Switch

### Features

- Broadband frequency range: 0.02 to 7.2GHz
- Power handling capability of up to 32dBm
- Low insertion loss : 0.38dB typical @ 2.5GHz
- High isolation: 32dB typical @ 2.5GHz
- High switching speed: 125ns typical
- DFN 1.5X1.5-8L Package

### Applications

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

### General Description

The AW13113DNR is a SP3T switch with power handling 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.

The AW13113DNR is provided in a compact DFN 1.5X1.5-8L Package.

## Typical Application Circuit

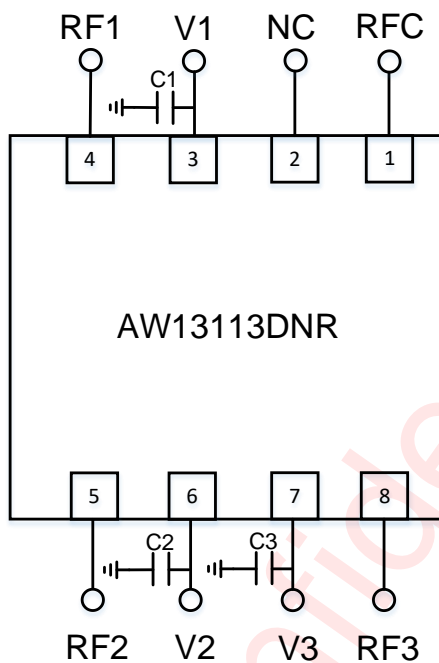


Figure 1 Typical Application Circuit of AW13113DNR

C1, C2 and C3 are optional bypass capacitors (100pF or 200pF). The RF path should use DC block capacitor if it's with any dc voltage.

## Pin Configuration And Top Mark

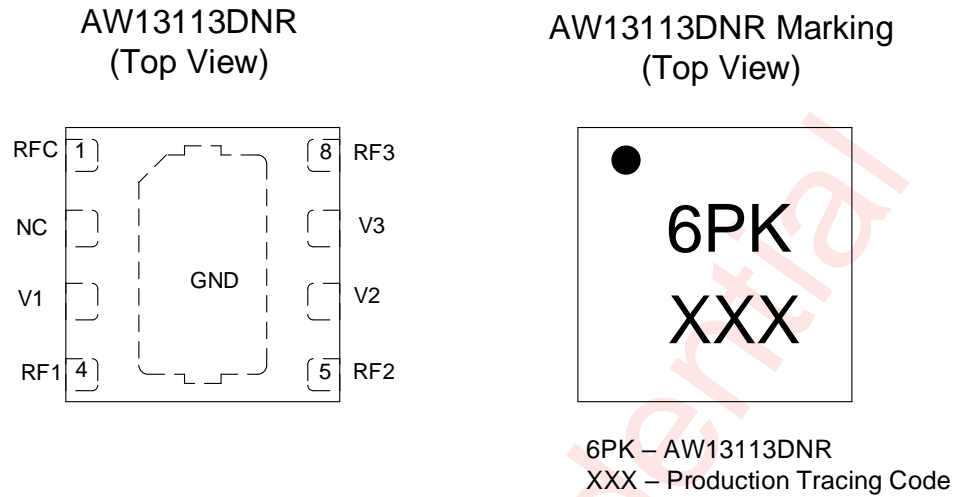


Figure 2 Pin Configuration and Top Mark

## Pin Definition

No.	NAME	DESCRIPTION
1	RFC	Common Port
2	N/C	No connect
3	V1	Logic control 1
4	RF1	RF port 1
5	RF2	RF port 2
6	V2	Logic control 2
7	V3	Logic control 3
8	RF3	RF port 3

## Functional Block Diagram

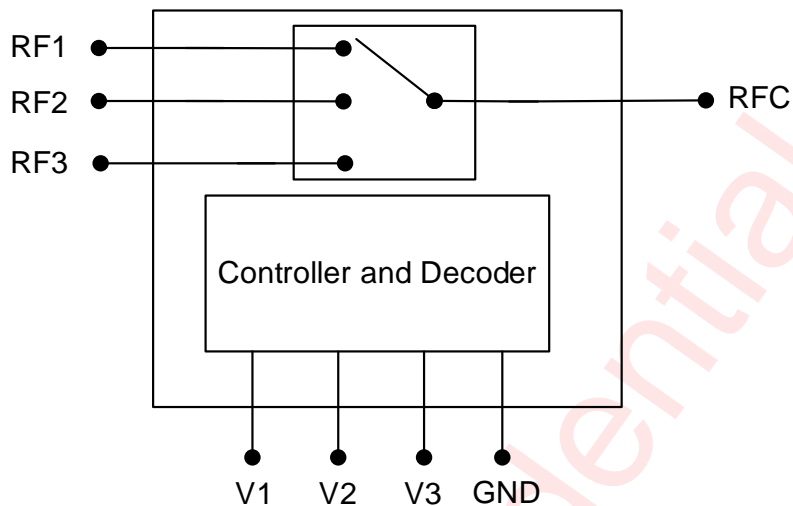


Figure 3 FUNCTIONAL BLOCK DIAGRAM

## Ordering Information

Part Number	Temperature	Package	Marking	Moisture Sensitivity Level	Environmental Information	Delivery Form
AW13113DNR	-40°C~85°C	DFN 1.5X1.5-8L	6PK	MSL3	ROHS+HF	4500 units/ Tape and Reel

**Absolute Maximum Ratings**<sup>(NOTE1)</sup>

PARAMETERS		RANGE
Operating Voltage		1.08V to 4.2V
RF input power(RF1/RF2/RF3)	2.4GHz, DC 25%	33dBm
Operating Free-air Temperature Range		-40°C to 85°C
Storage temperature T <sub>STG</sub>		-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.*

**RECOMMENDED OPERATING RANGES**

PARAMETER		MIN	TYP	MAX	UNIT
Operating frequency	$F_0$	0.02		7.2	GHz
Operating Voltage	Voltage	1.65		3.6	V
VCTL_H	Control Voltage High	1.6	3.3	3.6	V
VCTL_L	Control Voltage Low	0	0	0.2	V

**Electrical Characteristics**

V1/V2/V3=0/3.3V, PIN=0dBm, T=+25°C, Z<sub>0</sub>=50Ω. (unless otherwise noted)

PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
<b>DC Specifications</b>					
I <sub>CTL</sub>	Supply Current	V <sub>low</sub> =0V to 0.2V V <sub>high</sub> =1.8V to 3.3V		15	μA
T <sub>sw</sub>	Switching on/off time	50% of final control voltage to 90% of final RF power, switching between RF1/2/3		125	ns
<b>RF Specifications</b>					
IL	Insertion loss	0.02-3.0GHz		0.38	dB
		3.0-6.0GHz		0.55	dB
		6.0-7.2GHz		0.75	dB
ISO	Isolation	0.02-3.0GHz		32	dB
		3.0-6.0GHz		24	dB
		6.0-7.2GHz		22	dB
RL	Input return loss	0.02-3.0GHz		24	dB
		3.0-6.0GHz		16	dB
		6.0-7.2GHz		16	dB
2f <sub>0</sub>	Second harmonics	PIN=+24dBm, f <sub>0</sub> =2.4GHz VSWR=1:1		-55	dBm
3f <sub>0</sub>	Third harmonics	PIN=+24dBm, f <sub>0</sub> =2.4GHz VSWR=1:1		-53	dBm
P <sub>0.1</sub>	0.1dB Compression Point (ANT pin to RF1/RF2/RF3)	2.4GHz, DC 25%		32	dBm

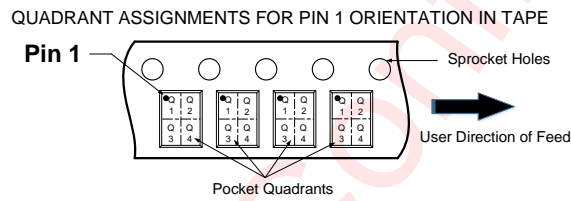
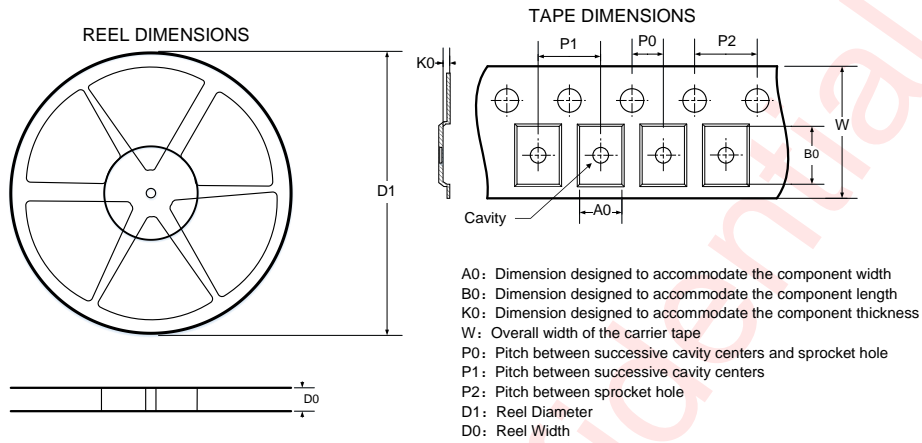
## AW13113DNR Control Logic

Mode	Insertion Loss Path	V1(pin3)	V2(pin6)	V3(pin7)
1	RFC—RF1	1	0	0
2	RFC—RF2	0	1	0
3	RFC—RF3	0	0	1

**Note:** "1" = +1.8V to 3.3V. "0" = 0V to +0.2V.

Awinic Confidential

## 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

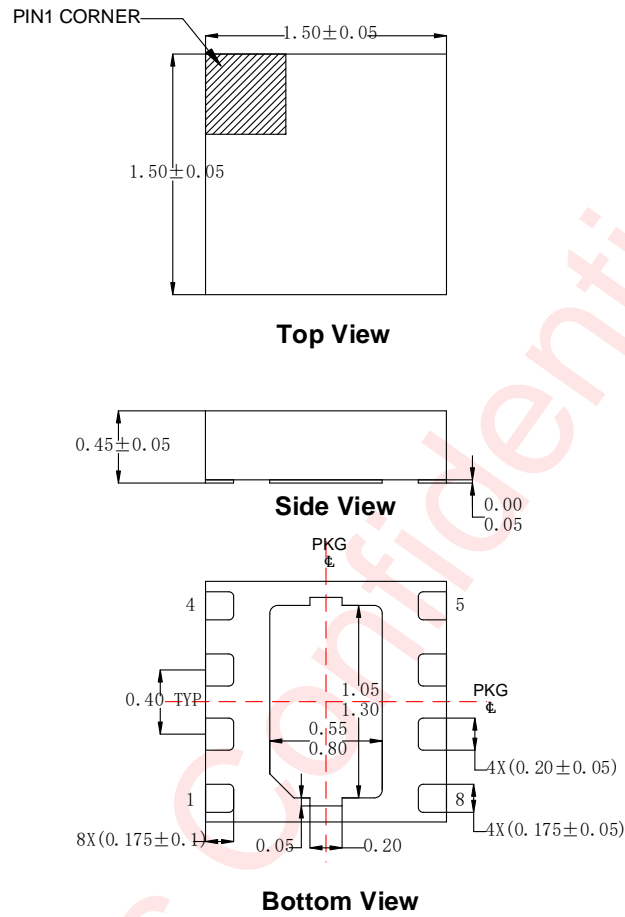
### DIMENSIONS AND PIN1 ORIENTATION

D1 (mm)	D0 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
178	8.2	1.7	1.7	0.6	2	4	4	8	Q1

All dimensions are nominal

Figure 5 Tape and Reel

## Package Description



Unit:mm

Figure 6 Package Outline

Land Pattern Data

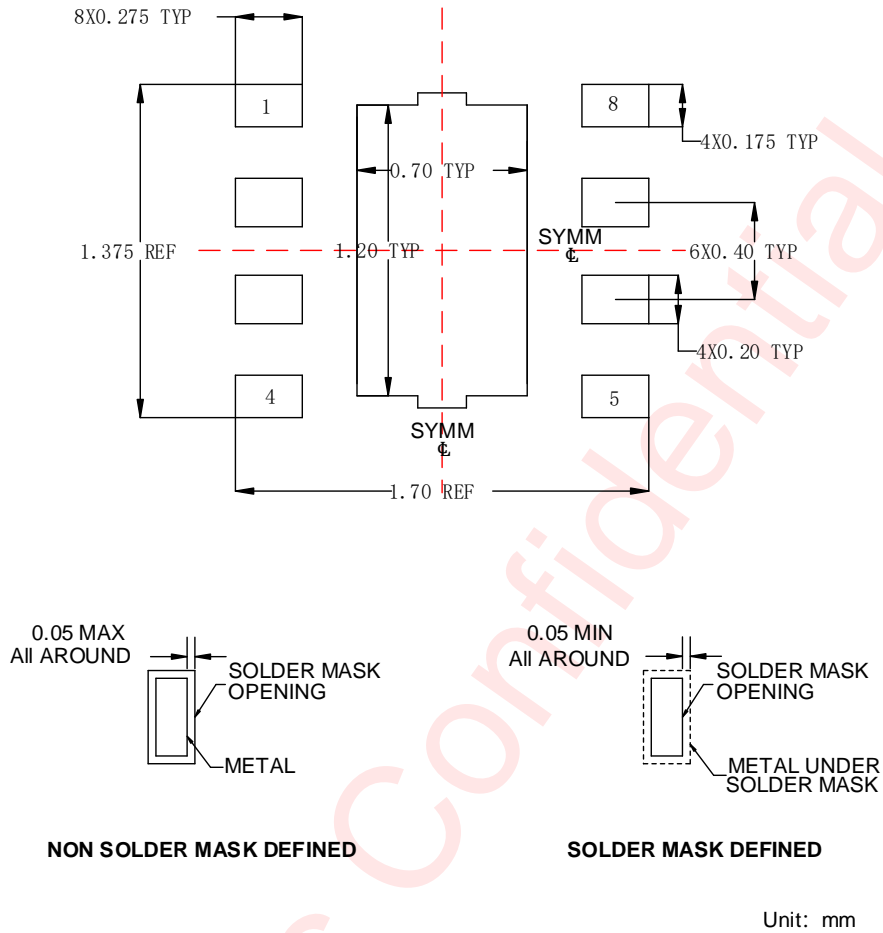


Figure 7 Land Pattern Data