0.1-4.2GHz SPDT Switch for 3G/4G/5G TX

Features

- Broadband frequency range: 0.1 to 4.2 GHz
- Low insertion loss: 0.4dB typical @ 2.7 GHz
- High isolation: >23dB @ 2.7 GHz
- Integrated logic
- DFN 1.1mm X0.7mm X0.55mm-6L package

Applications

Cellular 3G/4G/5G N77/N78 TX

Cellular modems , tablets and USB Devices

Other RF front-end modules

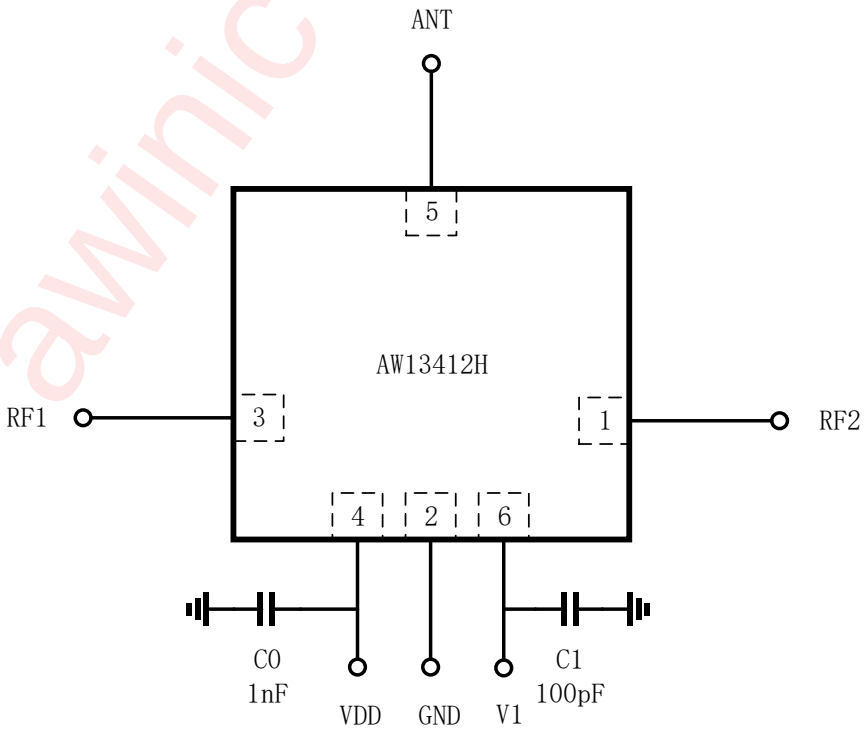
General Description

The AW13412H is a SPDT switch with low insertion loss and high Isolation. It can be used to support band switching and mode switching for cellular 3G/4G/5G, data cards and tablets.

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.

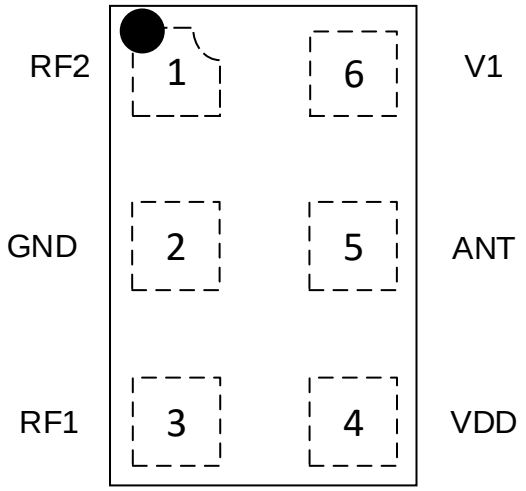
The AW13412H is provided in a compact DFN 1.1mm x 0.7mm x 0.55mm-6L package.

Typical Application Circuit

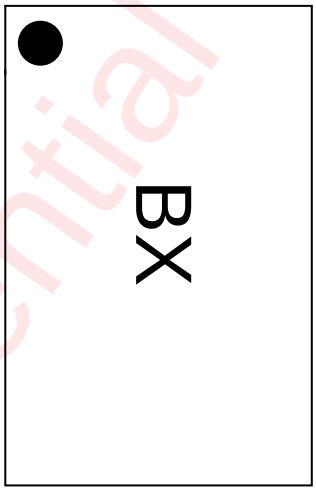


Pin Configuration And Top Mark

AW13412H
(TOP VIEW)



AW13412H Marking
(TOP VIEW)

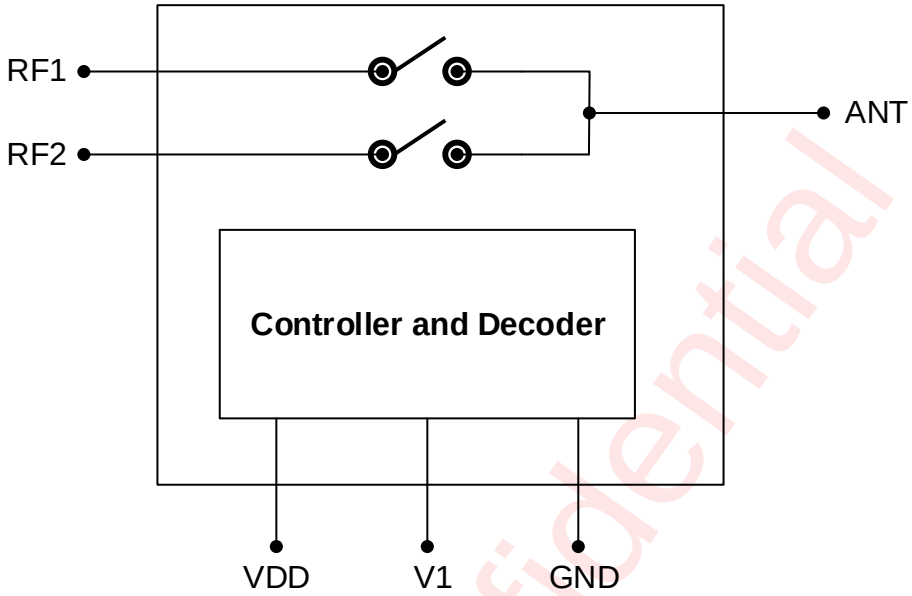


B – AW13412HDNR
X-Production Tracing Code

pin Definition

No.	NAME	DESCRIPTION
1	RF2	RF I/O path 2
2	GND	Ground
3	RF1	RF I/O path 1
4	VDD	DC power supply
5	ANT	Antenna port
6	V1	DC control voltage 1

Functional Block Diagram



Ordering Information

Part Number	Temperature	Package	Marking	Moisture Sensitivity Level	Environmental Information	Delivery Form
AW13412HDNR	-40℃～85℃	DFN 1.1mmX0.7mm X0.55mm-6L	B	MSL1	ROHS+HF	3000 units/ Tape and Reel

Absolute Maximum Ratings(NOTE1)

PARAMETERS		RANGE
Supply Voltage Range VDD		-0.3V to 3.6V
Control Voltage Range	V1	-0.3V to 3.6V
RF input power(RF1/RF2)		35dBm
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
ESD (NOTE 2)		
HBM		±1000V
CDM		±500V

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.

NOTE2: The human body model is a 100pF capacitor discharged through a 1.5kΩ resistor into each pin. Test method: ESDA/JEDEC JS-001-2017. CDM test method ESDA/JEDEC JS -002-2018.

Electrical Characteristics

VDD=2.8V, V1=0/1.8V, PIN=0dBm, Temp=+25℃, Z_0=50Ω. (unless otherwise noted)

PARAMETER		TEST CONDITION	MIN	TYP	MAX	UNIT
DC Specifications						
VDD	Supply Voltage		2.5	2.8	3.3	V
IDD	Supply Current			26	50	μA
VCTL_H VCTL_L	Control Voltage High Low		1 0		VDD 0.3	V
T_{PUP}	Power Up Setting Time	50% of VDD voltage to 90% of final RF power, switching between RF1/2			10	μs
T_{SW}	Switching On/Off Time	50% of final control voltage to 10%/90% of final RF power, switching between RF1/2		0.7	1.2	μs
RF Specifications						
IL	Insertion loss(ANT pin to RF1/RF2)	0.1-1.0G 1.0-2.0G 2.0-2.7G 2.7-4.2G		0.3 0.34 0.36 0.53	0.4 0.45 0.50 0.67	dB dB dB dB
ISO	Isolation (ANT pin to RF1/RF2)	0.1-1.0G 1.0-2.0G 2.0-2.7G 2.7-4.2G	33 26 23 18	37 29 27 23		dB dB dB dB
RL	Input return loss (ANT pin to RF1/RF2)	0.1-1.0G 1.0-2.0G 2.0-2.7G 2.7-4.2G	22 20 18 12	30 28 23 15		dB dB dB dB
2fo	Second harmonics (ANT pin to RF1/RF2)	PIN=+26dBm, 900MHz		88		dBc
3fo	Third harmonics (ANT pin to RF1/RF2)	PIN=+26dBm, 900MHz		83		dBc
$P_{0.1dB}$	0.1dB Compression Point (ANT pin to RF1/RF2)	0.1-4.2GHz		35		dBm

Detailed Functional Description

It is very important that the user adheres to the correct power-on/off sequence in order to avoid damaging the device. The control signal V1 should be set to 0V unless VDD is set in the operating voltage range.

Power ON:

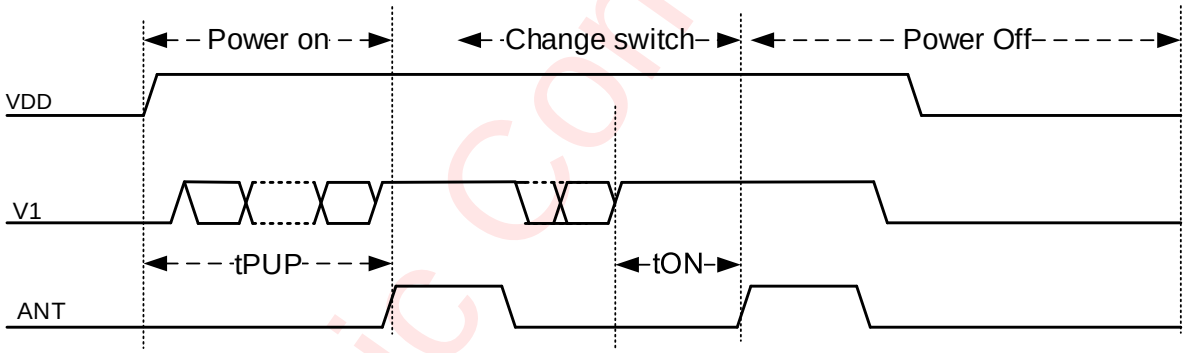
1) Apply voltage supply --- VDD
2) Set Controls---V1
3) Apply RF input

Change switch position from one RF port to another:

1) Remove RF input
2) Change control voltages V1 to set the switch to desired RF port
3) Apply RF input

Power OFF:

1) Remove RF input
2) Remove control voltages-V1
3) Remove VDD input



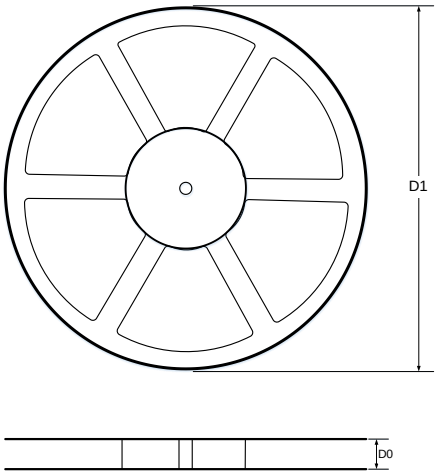
Power on/Change switch/Power off sequence

Control Logic

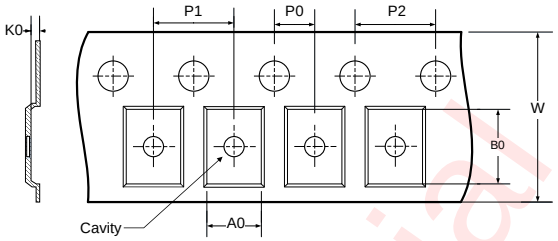
Control Pins	Switch RF I/O	
V1	RF1	RF2
0	ON	Isolation
1	Isolation	ON

Tape And Reel Information

REEL DIMENSIONS

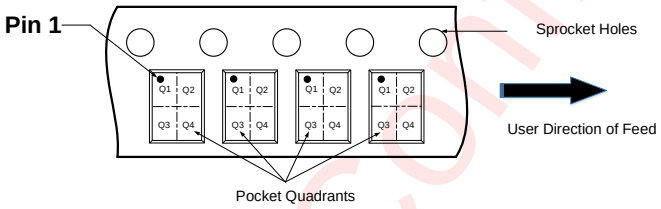


TAPE DIMENSIONS



A0：Dimension designed to accommodate the component width
B0：Dimension designed to accommodate the component length
K0：Dimension designed to accommodate the component thickness
W：Overall width of the carrier tape
P0：Pitch between successive cavity centers and sprocket hole
P1：Pitch between successive cavity centers
P2：Pitch between sprocket hole
D1：Reel Diameter
D0：Reel Width

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



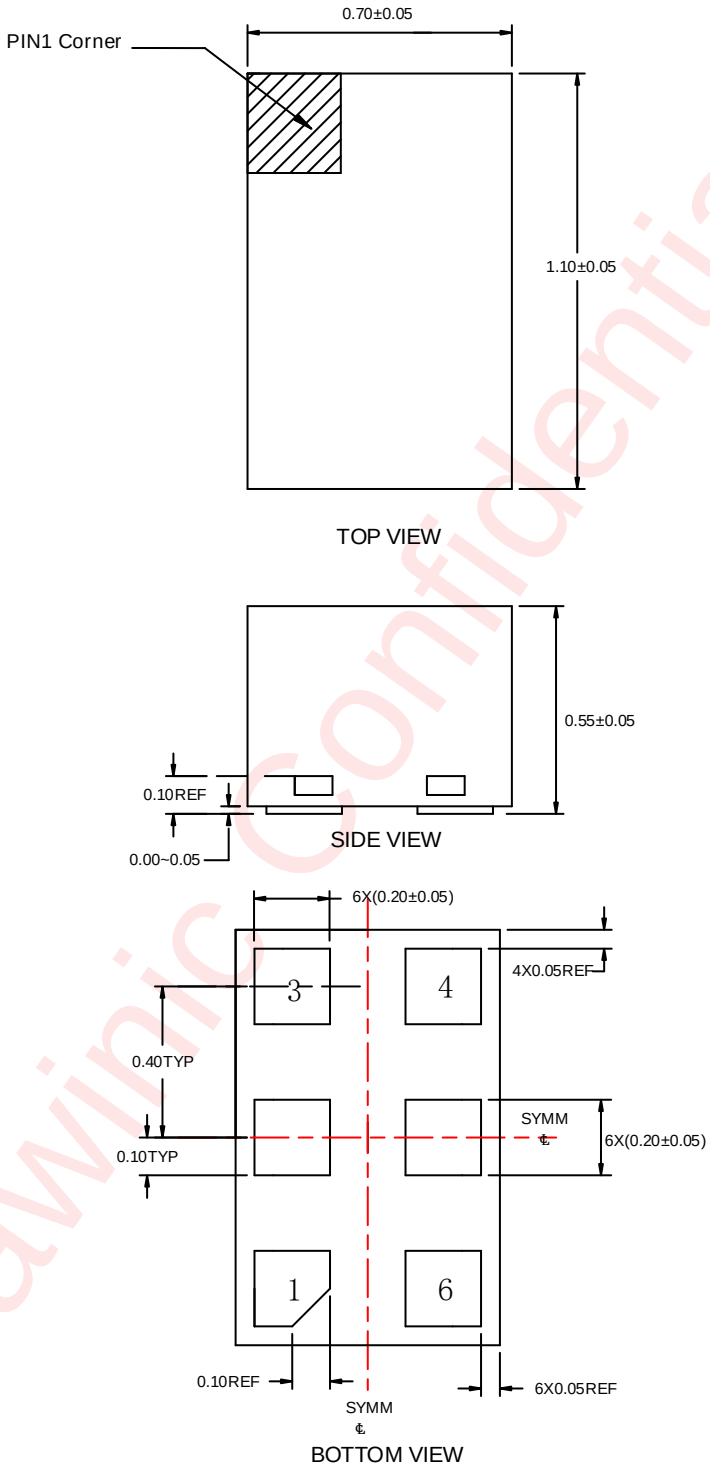
Note：The above picture is for reference only. Please refer to the value in the table below for the actual size

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	0.82	1.22	0.66	2	2	4	8	Q1

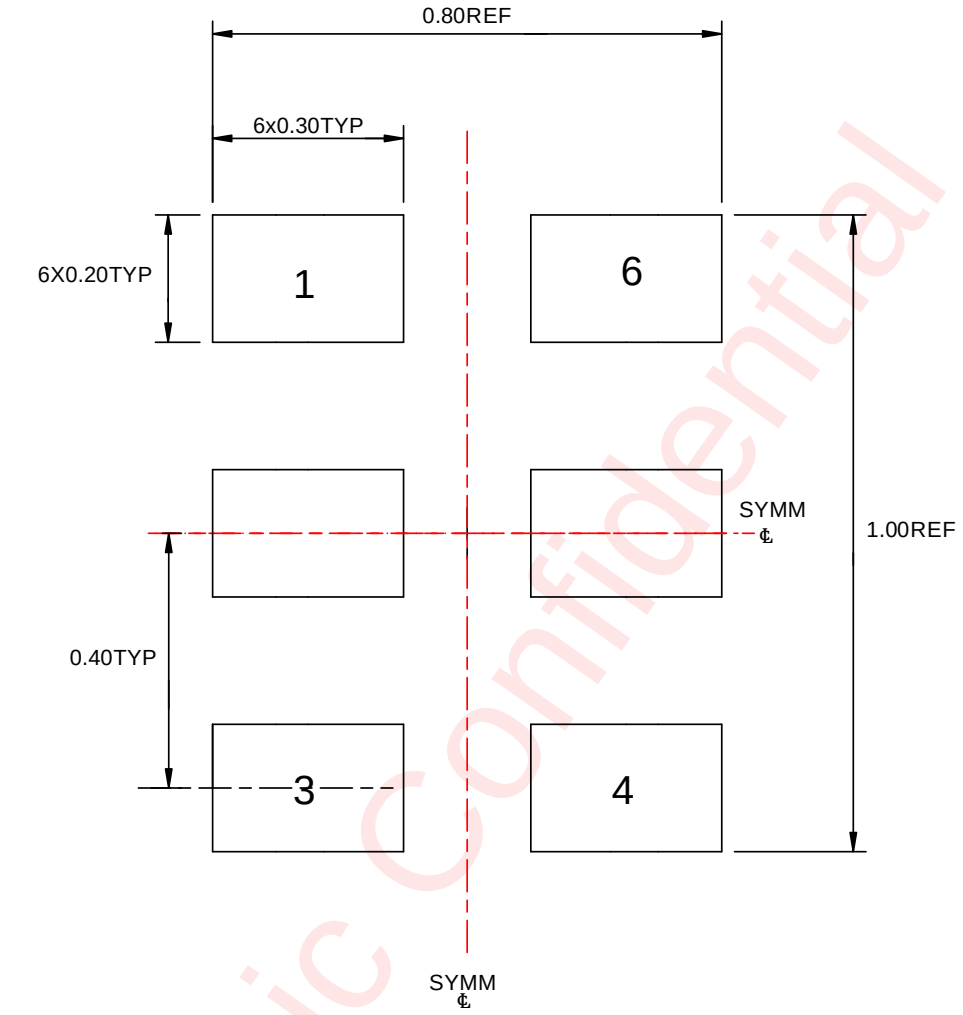
All dimensions are nominal

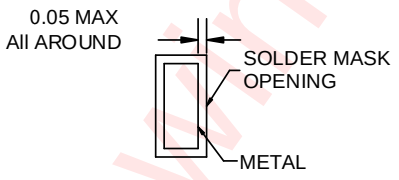
Package Description



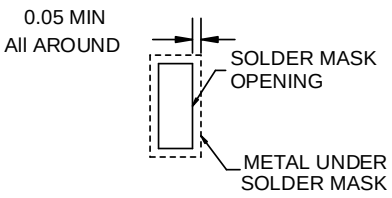
Unit: mm

Land Pattern Data





NON SOLDER MASK DEFINED



SOLDER MASK DEFINED

Unit: mm

Revision History

Version	Date	Change Record
V1.0	Oct. 2021	Officially released
V1.1	Aug. 2022	Update ordering information and AMR

Disclaimer

All trademarks are the property of their respective owners. Information in this document is believed to be accurate and reliable. However, Shanghai AWINIC Technology Co., Ltd (AWINIC Technology) does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

AWINIC Technology reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. Customers shall obtain the latest relevant information before placing orders and shall verify that such information is current and complete. This document supersedes and replaces all information supplied prior to the publication hereof.

AWINIC Technology products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an AWINIC Technology product can reasonably be expected to result in personal injury, death or severe property or environmental damage. AWINIC Technology accepts no liability for inclusion and/or use of AWINIC Technology products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications that are described herein for any of these products are for illustrative purposes only. AWINIC Technology makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

All products are sold subject to the general terms and conditions of commercial sale supplied at the time of order acknowledgement.

Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Reproduction of AWINIC information in AWINIC data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. AWINIC is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of AWINIC components or services with statements different from or beyond the parameters stated by AWINIC for that component or service voids all express and any implied warranties for the associated AWINIC component or service and is an unfair and deceptive business practice. AWINIC is not responsible or liable for any such statements.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for RF Switch ICs ***category:***

Click to view products by Awinic ***manufacturer:***

Other Similar products are found below :

MASW-004100-11930W BGSX210MA18E6327XTSA1 BGSX212MA18E6327XTSA1 CG2185X2 CG2415M6 MA4SW410 MA4SW410B-1 MASW-002102-13580G MASW-005100-11940W BGS 12PL6 E6327 BGS1414MN20E6327XTSA1 BGS1515MN20E6327XTSA1 BGSX28MA18E6327XTSA1 CG2415M6-C2 AS222-92LF UPG2162T5N-E2-A MASWSS0201TR MA4SW310 SW-313-PIN CG2430X1 SKY13405-490LF SKYA21001 SKY13415-485LF MMS008PP3 SKY13319-374LF SKY13404-466LF NJG1809ME7-TE1 SKY13343-92LF MASW-002103-13635P SKY13417-485LF MASW-003100-11920W MASW-004103-13650P NJG1649HB6 FM1694C AW13102DNR FM3418C AW13508QNR AW13418RQNR FM8648M FM8545 FM8648 WS7854QA-9/TR SR1317D4RL BGSA14M2N10E6327XTSA1 BGSX 22G5A10 E6327 BGSA 143GL10 E6327 BGSA 143ML10 E6327 BGSA400ML10E6327XTSA1 CSWA2-63DR+ FM1660