

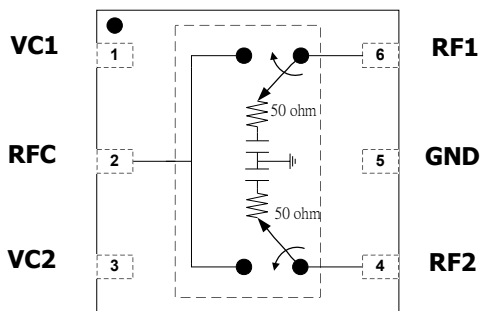
**RFIC 2017.05 Update Rev1.5**

**DESCRIPTION**

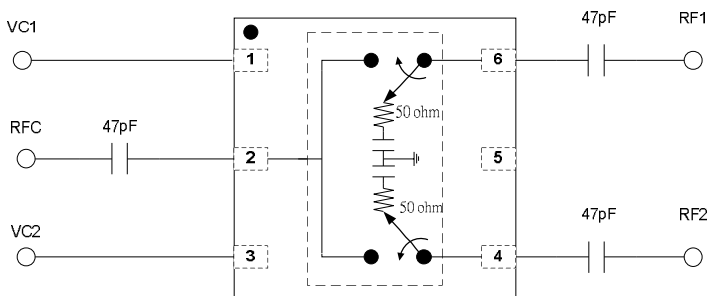
The SW470 is a SPDT GaAs switch, and designed for 0.1 to 6GHz frequency band application. The switch can be used for Tx/Rx selection or antenna diversity function in a variety of wireless communication systems.

The SW470 is housed in a miniature 1.5 x 1.5 (mm), 6-pin, DFN leadless package (Pb free), and features low insertion loss, high isolation and high linearity, particularly suitable for WiMAX, WLAN AP, and S-band wireless applications where high power switching is required.

**Pin & Block Diagram**



**Evaluation Board Schematic**



DC blocking capacitors are necessary for all RF ports (typical is 47 pF for >1GHz application). All unused ports are terminated in 50 Ω.

**KEY FEATURES**

- **Low Insertion:**  
0.6dB (Typ.) @ 2.4GHz  
1.2dB (Typ.) @ 5.8GHz
- **High Linearity**  
P1dB ~ 36dBm
- **Low Control Current ~ 5uA**
- **Lead-Free and RoHS compliant**
- **Non-Reflective switch**

**Pin Details**

Pin No.	Name	Description
1	VC1	RF1 On/Off logic control
2	RFC	RF Common Port
3	VC2	RF2 On/Off logic control
4	RF2	RF Port2
5	GND	GND
6	RF1	RF Port1
Central Paddle	GND	GND

**Logic Control Table**

VC1	VC2	RFC- RF1	RFC- RF2
High	Low	On	Off
Low	High	Off	On

High = +1.8V to +5V

Low = +0V to +0.2V

For more information, please contact us at:

Sales Dept.

Tel: +886-2-2698-1022

e-mail: sales@rfintc.com

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## Electrical Characteristics for 25 °C Ambient Temperature

Logic High = 3V; Logic Low = 0V; T<sub>A</sub> = 25°C; unless otherwise noted.

Parameter	Specification			Units	Notes
	Min	Typ.	Max		
Insertion Loss (IL)		0.5	0.7	dB	DC – 1.0GHz 1.0 – 3.0GHz 3.0 – 5.0GHz 2.4 – 2.5GHz 4.9 – 5.9GHz
		0.6	0.8		
		0.7	1.0		
		0.65	0.8		
		1.2	1.4		
Isolation (ISO)	28	31		dB	DC – 1.0GHz 1.0 – 3.0GHz 3.0 – 5.0GHz 2.4 – 2.5GHz 4.9 – 5.9GHz
	27	31			
	29	32			
	29	31			
	28	30			
VSWR		1.4:1		dB	1.0 – 6.0GHz
IP1dB		36		dBm	1.0 – 6.0GHz, V <sub>High</sub> =3V, V <sub>Low</sub> =0V 1.0 – 6.0GHz, V <sub>High</sub> =1.8V, V <sub>Low</sub> =0V
		26			
IIP3		55		dBm	1.0 – 6.0GHz, V <sub>High</sub> =3V, V <sub>Low</sub> =0V ΔF = 1 MHz, Pin=+15dBm/tone
Second Harmonic		75		dBc	DC – 1.0GHz 2fo @ Pout = 15dBm 1.0 – 3.0GHz 2fo @ Pout = 15dBm 2.4 – 2.5GHz 2fo @ Pout = 15dBm
		75			
		74			
Third Harmonic		85		dBc	DC – 1.0GHz 3fo @ Pout = 15dBm 1.0 – 3.0GHz 3fo @ Pout = 15dBm 2.4 – 2.5GHz 3fo @ Pout = 15dBm
		85			
		80			
Switching Speed T <sub>ON</sub> /T <sub>OFF</sub>		300		ns	50% control to 90% RF and 50% control to 10% RF
Control Current		5	10	uA	

Note: All measurements made in a 50 ohm system.

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## Absolute Maximum Ratings

Parameter	Rating	Unit
Gate-Source Voltage ( $V_{GS}$ )	+6	V
RF Input Power (under acceptable bias state, > 500MHz)	+38	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-65 to +150	°C
Moisture Level	MSL1	
ESD Level	Class 1A HBM	

## Important Note:

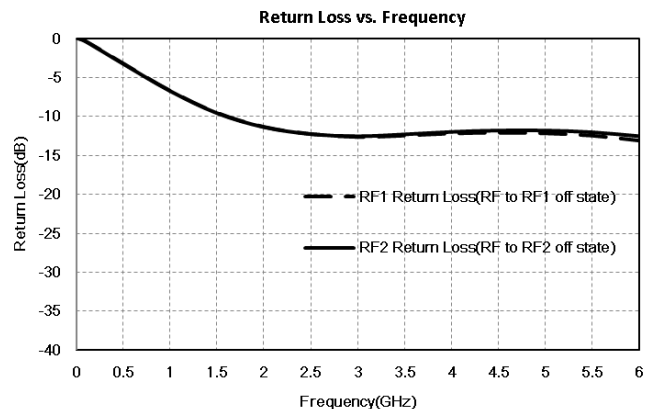
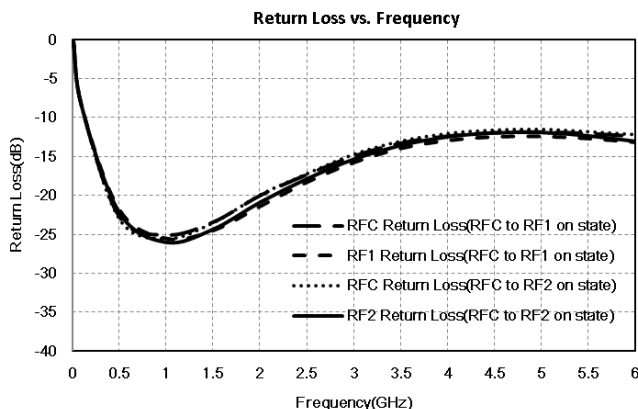
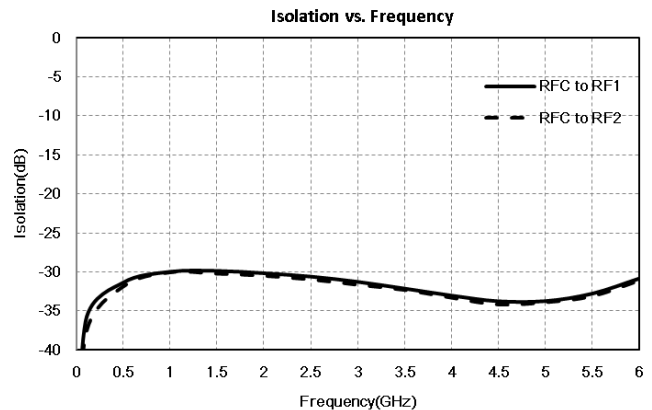
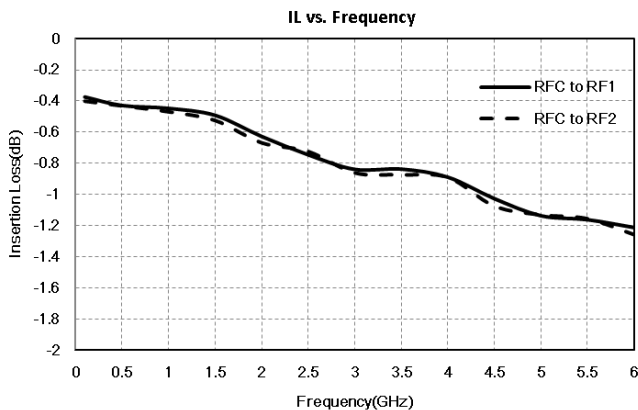
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**Caution: ESD Sensitive**  
Appropriate precaution in handling, packaging And testing devices must be observed.

## Typical Characteristic Chart

(RFC to RF1, RF2 (0, 2.7 V), TOP = +25°C)



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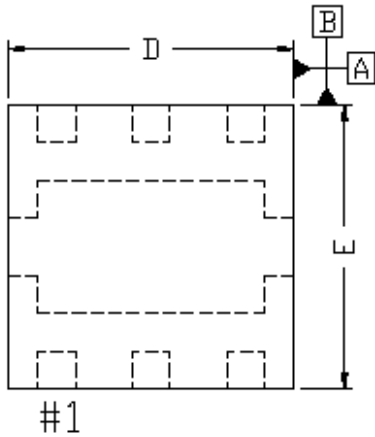
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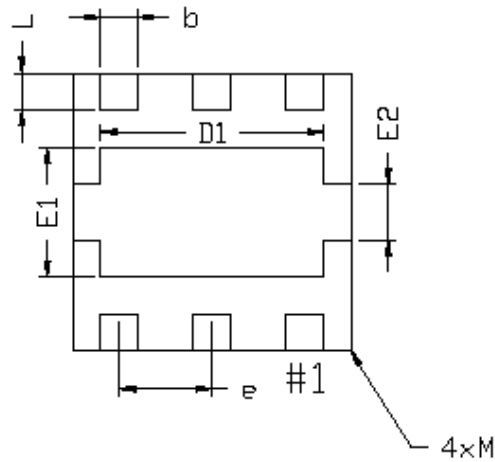
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## Package Outline

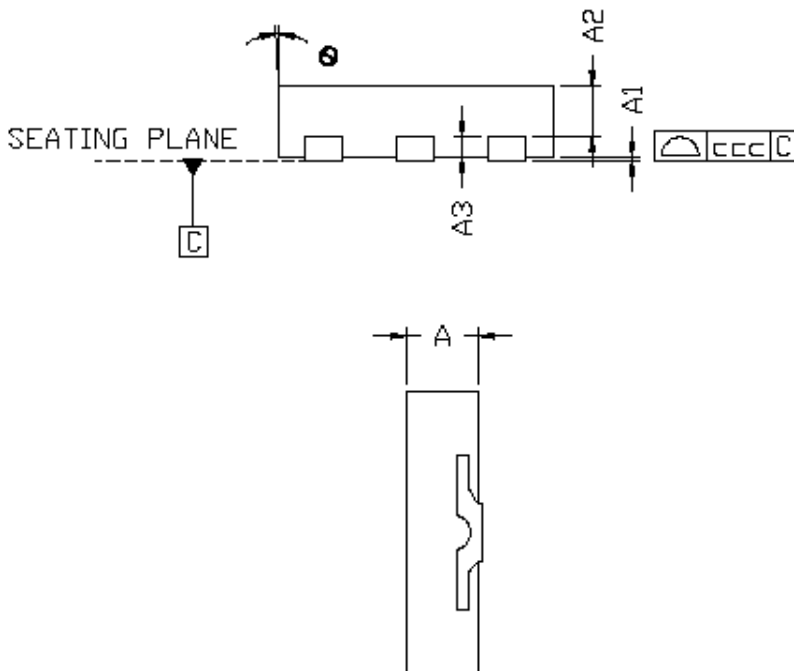
**Top View**



**Bottom View**



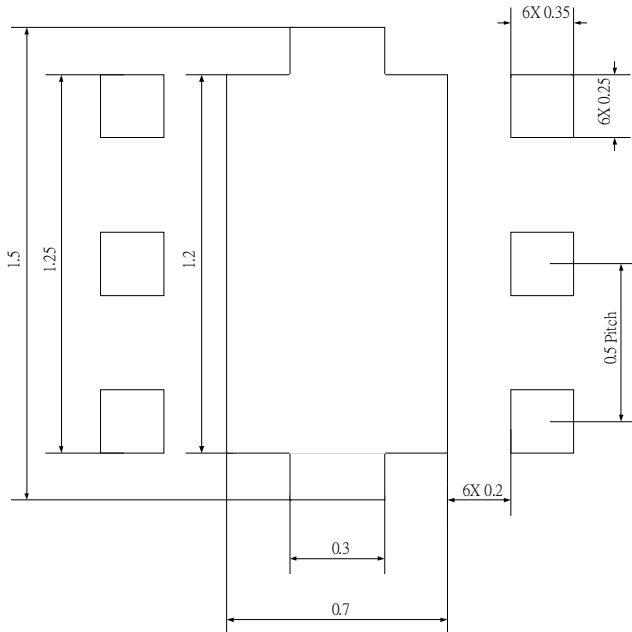
**Side View**



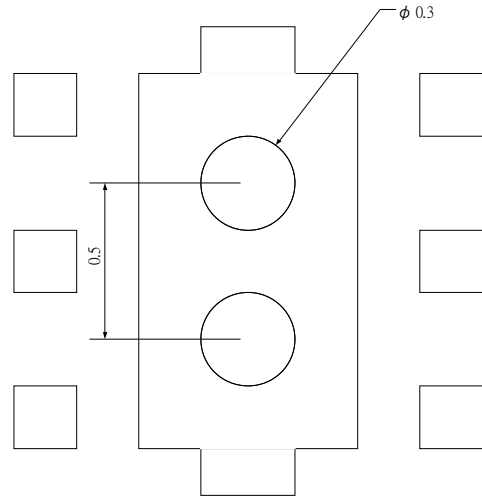
Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	0.35	---	0.40
A1	0.00	---	0.05
A2	0.223	---	0.273
A3	---	0.127REF	---
b	0.15	0.20	0.25
D	1.45	1.50	1.55
D1	---	1.2BSC	---
E	1.45	1.50	1.55
E1	---	0.70BSC	---
E2	---	0.30BSC	---
e	---	0.50BSC	---
L	0.15	0.20	0.25
⌀	-12	---	0
ccc	---	0.08	---
M	---	---	0.05
Burr	0.00	0.03	0.06

## Suggested PCB Layout

### I/O Pin, Central PAD Layout



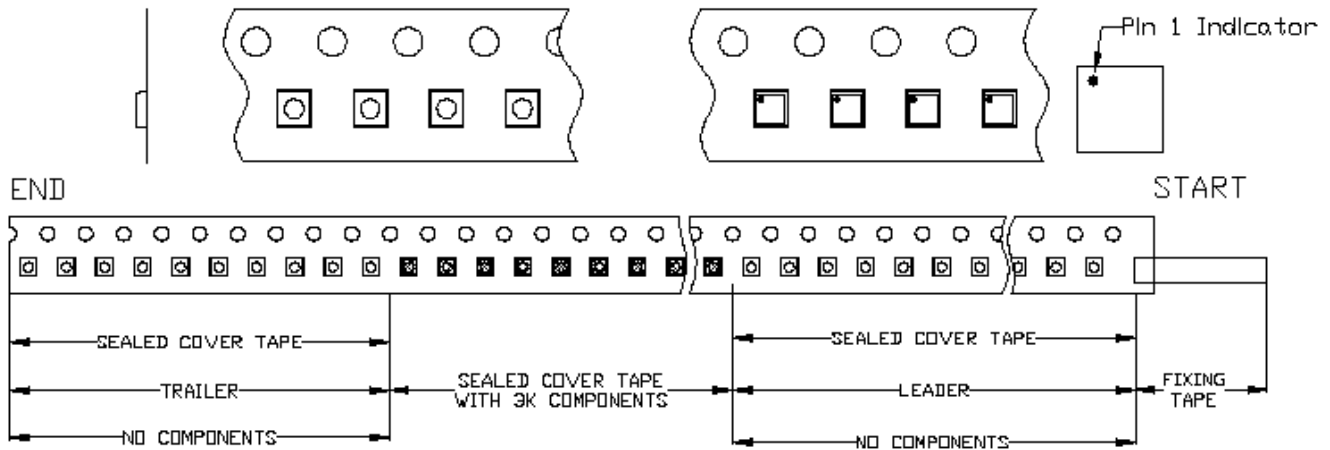
### GND Via Layout



Unit : mm

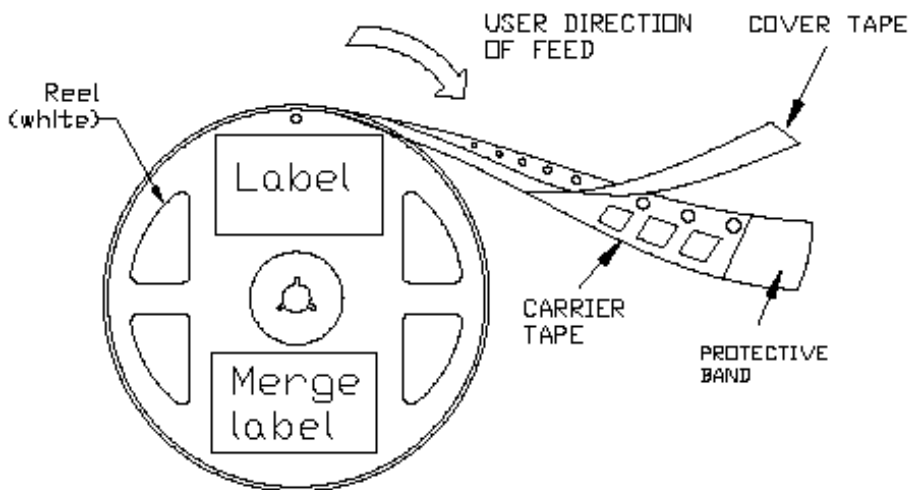
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## Packing



ITEM		SPECIFICATION (mm)(minimum)
LEADER	COVER TAPE WITH EMPTY CAVITIES	840(210格)
TRAILER	COVER TAPE WITH EMPTY CAVITIES	400(100格)
FIXING TAPE		100
PROTECTIVE BAND (t=1.0mm)		1200

PKG TYPE	Tape Width (mm)	Reel Size	Devices Per Reel
5X1X350N 1.5x1.5x(0.55-0.1)	8	7"	3000



Part Number	Reel Size	Tape/Reel
SW470	7 inch	3000 PCS

SW470



## RFIC 2017.05 Update Rev1.5

The product is designed and manufactured for consumer application only and is not intended for any application listed below which requires especially high reliability for the prevention of such defect which could lead to personal injury, death, physical or environmental damage.

- Aircraft equipment.
- Aerospace equipment.
- Undersea equipment.
- Medical equipment.
- Life-saving or life-sustaining applications
- Transportation equipment (vehicles, trains, ships, etc.).
- Traffic signal equipment.
- Disaster prevention / crime prevention equipment.
- Application of similar complexity and/ or reliability requirements to the applications listed in the above.