

**RFIC Preliminary 2015.06**

**DESCRIPTION**

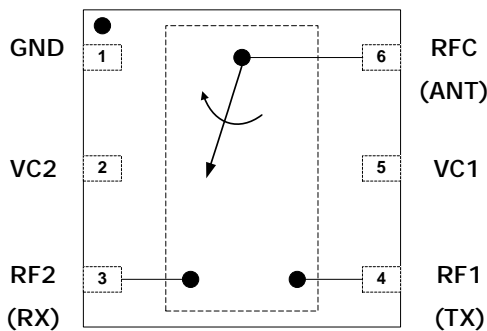
The SW414 is a SPDT GaAs pHEMT switch, and designed for DC to 6GHz frequency band application. The switch can be used for Tx/Rx selection or antenna diversity function in a variety of wireless communication systems.

The SW414 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 GSM, 3G, LTE, WiMAX, WLAN AP, and S band wireless applications where high power switching is required.

**KEY FEATURES**

- **Low Insertion loss:**  
0.5dB (Typ.) @ 2.4GHz  
1.2dB (Typ.) @ 5.8GHz
- **High P1dB:**  
32dBm@3.3V
- **High Isolation:**  
25dB(Typ.)@2.4GHz  
25dB(Typ.)@5.8GHz
- **Lead-Free and RoHS compliant**

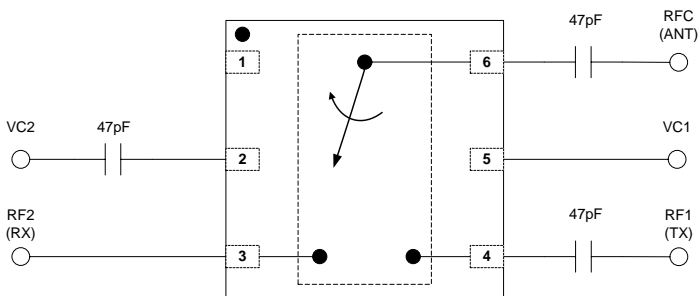
**Pin & Block Diagram**



**Pin Details**

Pin No.	Name	Description
1	GND	GND
2	VC2	DC control voltage 2
3	RF2(RX)	RF Port1
4	RF1(TX)	RF Port2
5	VC1	DC control voltage 1
6	RFC(ANT)	RF Common Port
Central Paddle	GND	GND

**Evaluation Board Schematic**



**Logic Control Table**

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

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

High = +1.8V to +5V  
Low = +0V to +0.2V

For more information, please contact us at:

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### Absolute Maximum Ratings

Parameter	Rating	Unit
Gate-Source Voltage ( $V_{GS}$ )	+5.5	V
RF Input Power (under acceptable bias state, > 500MHz)	+32	dBm
Operating Ambient Temperature	-40 to +125	°C
Storage Temperature	-65 to +150	°C
Moisture Level	MSL1	
ESD Level	Class 1A HBM	

### Important Note:

The information provided in this datasheet is deemed to be accurate and reliable only at present time. RFIC Technology Corp. reserves the right to make any changes to the specifications in this datasheet without prior notice.



#### Caution: ESD Sensitive

Appropriate precaution in handling, packaging  
And testing devices must be observed.

### Electrical Characteristics for 25 °C Ambient Temperature

Logic High = 3V; Logic Low = 0V;  $T_A = 25^\circ\text{C}$ ; unless otherwise noted.

Parameter	Specification			Units	Notes
	Min	Typ.	Max		
Insertion Loss (IL)		0.4		dB	DC – 1.0GHz 1.0 – 3.0GHz 3.0 – 5.0GHz 2.4 – 2.5GHz 5.0 – 6.0GHz
		0.5	0.8		
		0.8	1.1		
		0.5	0.7		
		1.2	1.5		
Isolation (ISO)		30		dB	DC – 1.0GHz 1.0 – 3.0GHz 3.0 – 5.0GHz 2.4 – 2.5GHz 5.0 – 6.0GHz
	23	25			
	23	26			
	24	26			
	23	25			
VSWR		1.3:1	1.5:1	dB	DC – 6.0GHz
IP1dB		35		dBm	0.5 – 6.0GHz, $V_{High}=5V$ , $V_{Low}=0V$ 0.5 – 6.0GHz, $V_{High}=3.3V$ , $V_{Low}=0V$ 0.5 – 6.0GHz, $V_{High}=1.8V$ , $V_{Low}=0V$
		32			
		24			
IIP3		48		dBm	0.5 – 6.0GHz, $V_{High}=3V$ , $V_{Low}=0V$ $\Delta F = 5 \text{ MHz}$ , $P_{in}=+20\text{dBm/tone}$
Switching Speed $T_{ON}$ $T_{OFF}$		200		ns	50% control to 90% RF 50% control to 10% RF
		100			
Control Current		5	10	uA	

Note: All measurements made in a 50 ohm system.

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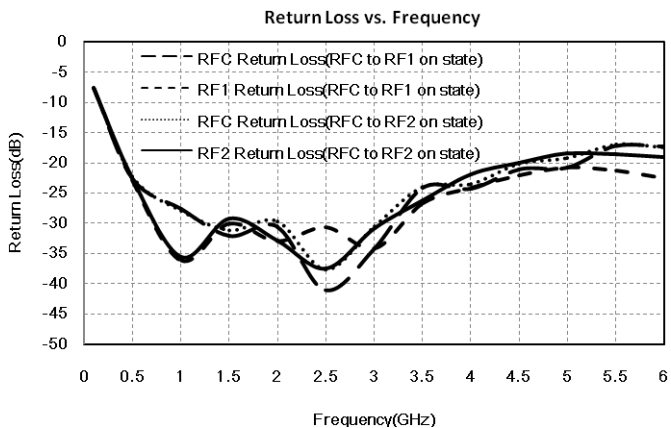
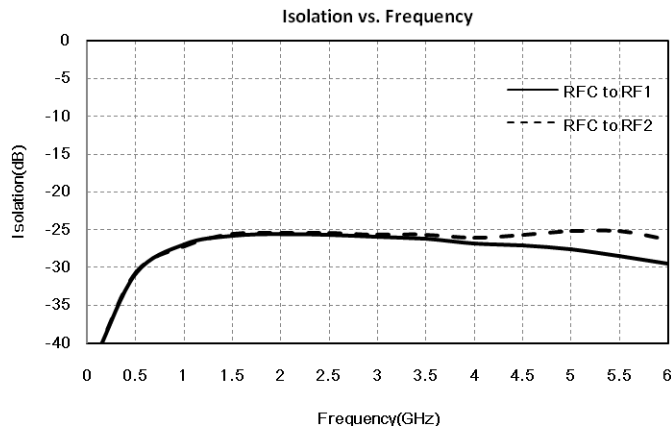
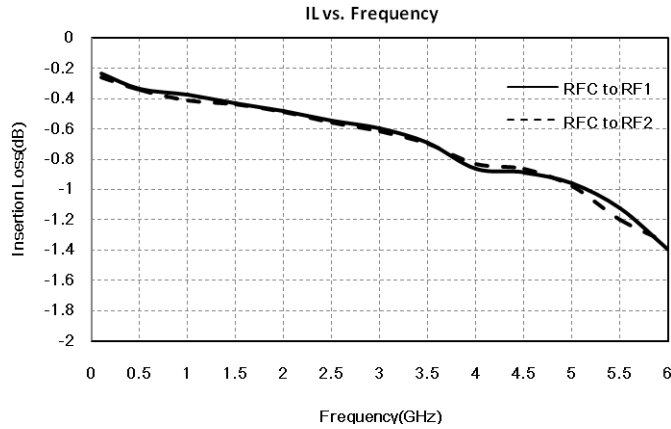
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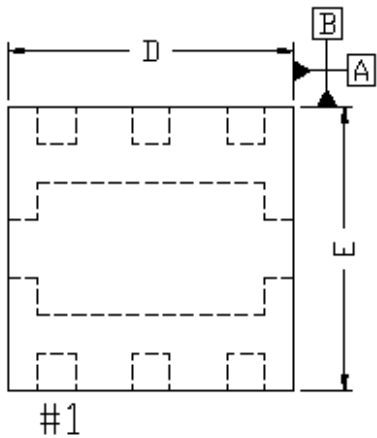
## Typical Characteristic Chart

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

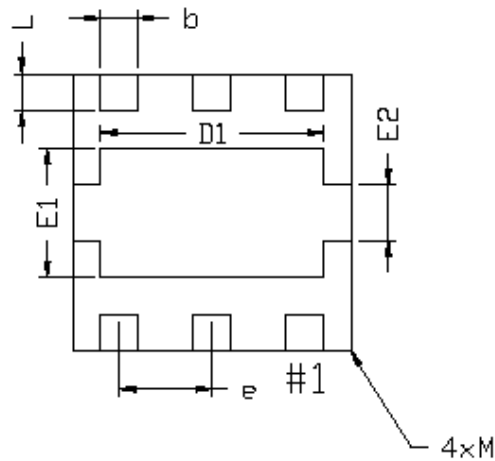


## Package Outline

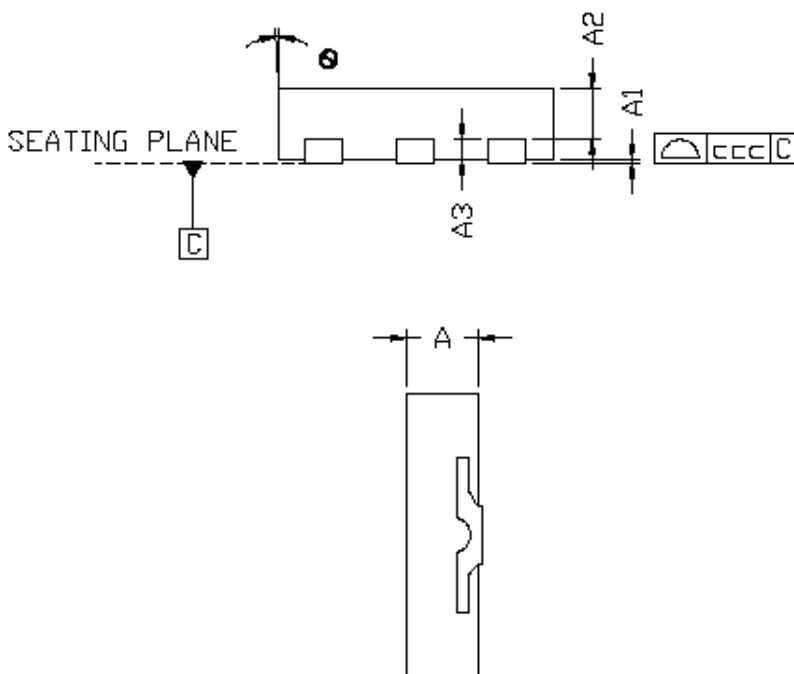
Top View



Bottom View

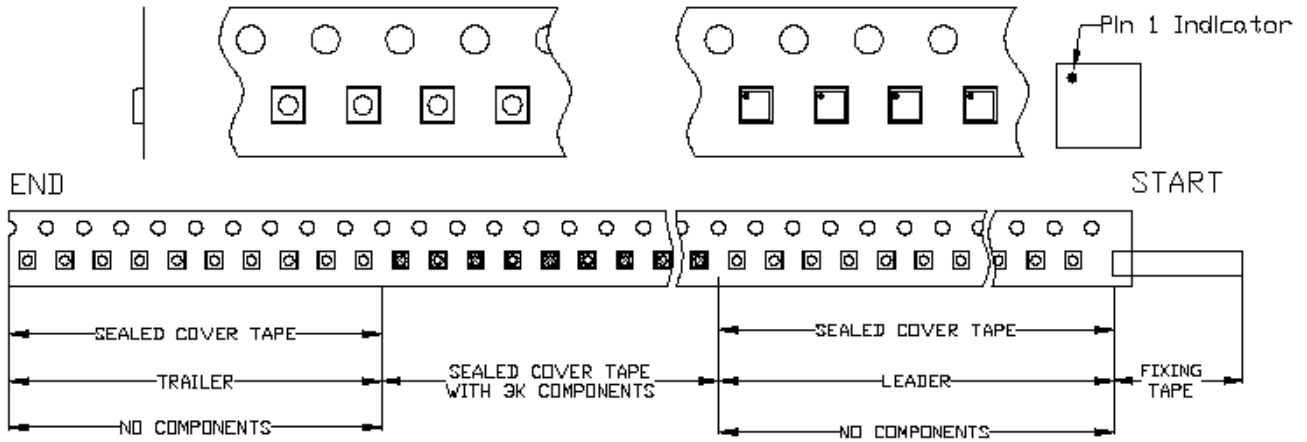


Side View



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

### 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
SW414SON 15x15x0.55-0L	8	7"	3000

