

Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 0.1 to 3.8 GHz
- Small package: QFN-14 2.0mm x 2.0mm x 0.5mm
- No DC blocking capacitors required
- 1kV HBM ESD Protection on all pins

Product Applications

- 4G multimode cellular tablets and Multi-Mode GSM, EDGE, WCDMA, LTE
- Diversity antenna switching

Product Description

The LX3416 is a Silicon On Insulator (SOI) Single Pole, Six Throw (SP6T) antenna switch which require very low insertion loss, high isolation and high linearity performance.

The high linearity performance and low insertion loss for UMTS, CDMA2000, and LTE applications. The LX3416 is manufactured in a compact 2.0mm x 2.0mm x 0.5mm, 14-pin surface mount Quad Flat No-Lead (QFN) package.

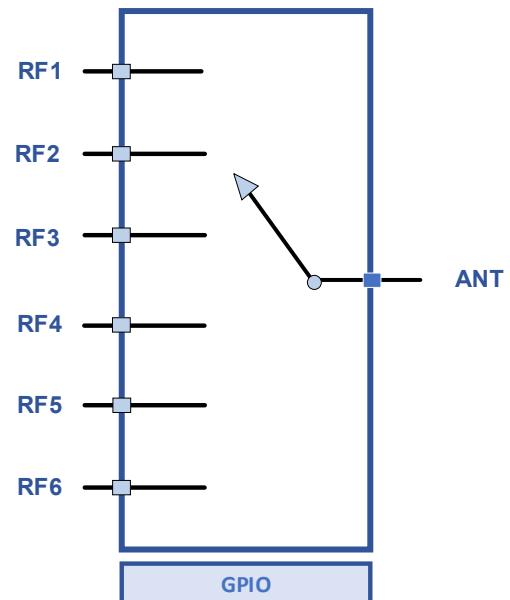


Figure 1 Functional Block Diagram

Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V_{DD}	2.5	4.8	V
Control voltage	V_{CC}		3.1	V
RF input power	P_{in}		+33	dBm
Storage temperature	T_{STG}	-55	+150	°C
Operating temperature	T_{OP}	-40	+90	°C
Human Body Model, Class 1C	ESD	1000		V

1: Test condition 50% duty cycle, VSWR=1:1, +25 °C

Note: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

General Electrical Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply voltage	V_{DD}		2.5	2.8	4.8	V
Supply current, active mode	I_{DD}		30		50	μA
Control signal: High Low	V_{CT}		1.35	1.8	2.70 0.3	V
Control current: High Low	I_{CTL}		0.5		1.0	μA
Turn-on time ($P_{IN} = +27$ dBm)	T_{ON}	Measured from 50% of final VDD supply voltage to 90% of RF power		1.5	2.2	μs
Switching time ($P_{IN} = +27$ dBm)	T_{SW}	Measured from 50% of final VDD supply voltage to 90% of RF power		1	1.5	μs

(VDD = 2.85 V, VCT = 1.8 V, TOP = +25 °C, Characteristic Impedance [ZO] = 50 Ω, Unless Otherwise Noted)

RF Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		0.1		3.8	GHz
Insertion loss	IL	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz Up to 3.8 GHz		0.46 0.50 0.50 0.8	0.50 0.55 0.60 0.95	dB
Isolation (ANT port to any receive port)	Iso	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz Up to 3.8 GHz	35 25 20 17	40 30 25 20		dB
Isolation (Active RF Ports to other inactive RF Ports)	Iso	All ports, up to 1.0 GHz All ports, up to 2.0 GHz All ports, up to 2.7 GHz All ports, up to 3.8 GHz	24 23 15 8.5	27 25 18 10		dB
2nd Order harmonics	2fo	Pin = +26 dBm, 900MHz	-60	-59		dBm
3rd Order harmonics	3fo	Pin = +26 dBm, 900MHz	-58	-54		dBm
0.1 dB Compression Point 50% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		+33		dBm

Truth Table

V1	V2	V3	ANT-RFX
0	0	0	ANT-RF1 on
0	0	1	ANT-RF2 on
0	1	0	ANT-RF3 on
0	1	1	ANT-RF4 on
1	0	0	ANT-RF5 on
1	0	1	ANT-RF6 on

Pin-out Information

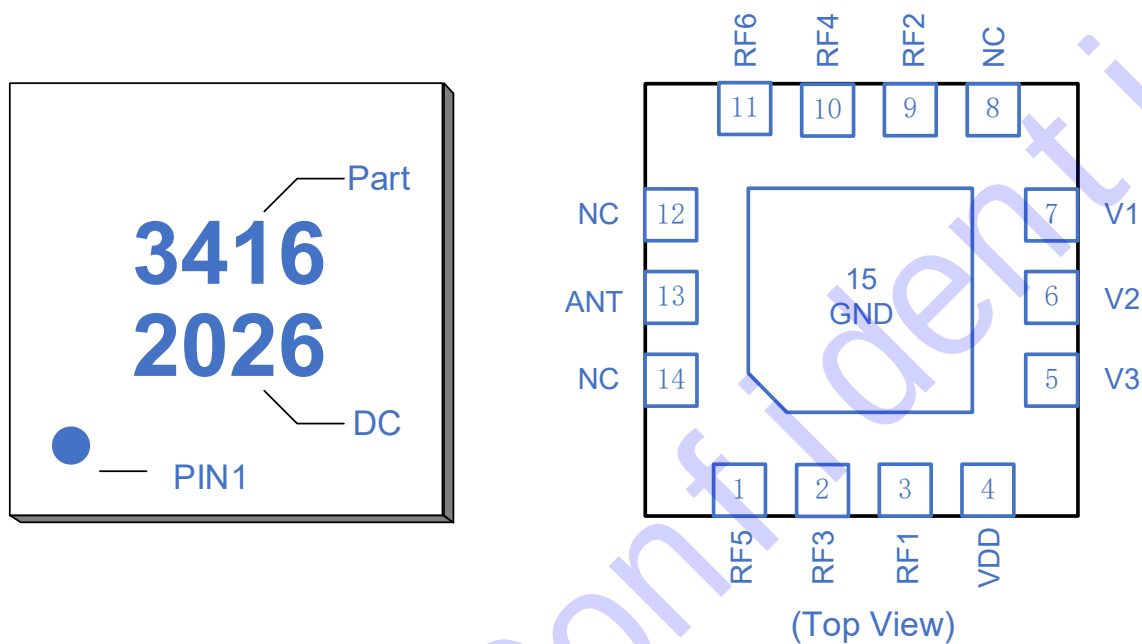


Figure 2 Pin-out Information

Table 1. Pin Description

Pin #	Name	Description	Pin #	Name	Description
1	RF5	RF Port 5	9	RF2	RF Port 2
2	RF3	RF Port 3	10	RF4	RF Port 4
3	RF1	RF Port 1	11	RF6	RF Port 6
4	VDD	Supply voltage	12	NC	Not Connect
5	V3	Control voltage	13	ANT	Antenna in
6	V2	Control voltage	14	NC	Not Connect
7	V1	Control voltage	15	GND	Ground
8	NC	Not Connect			

Application circuit

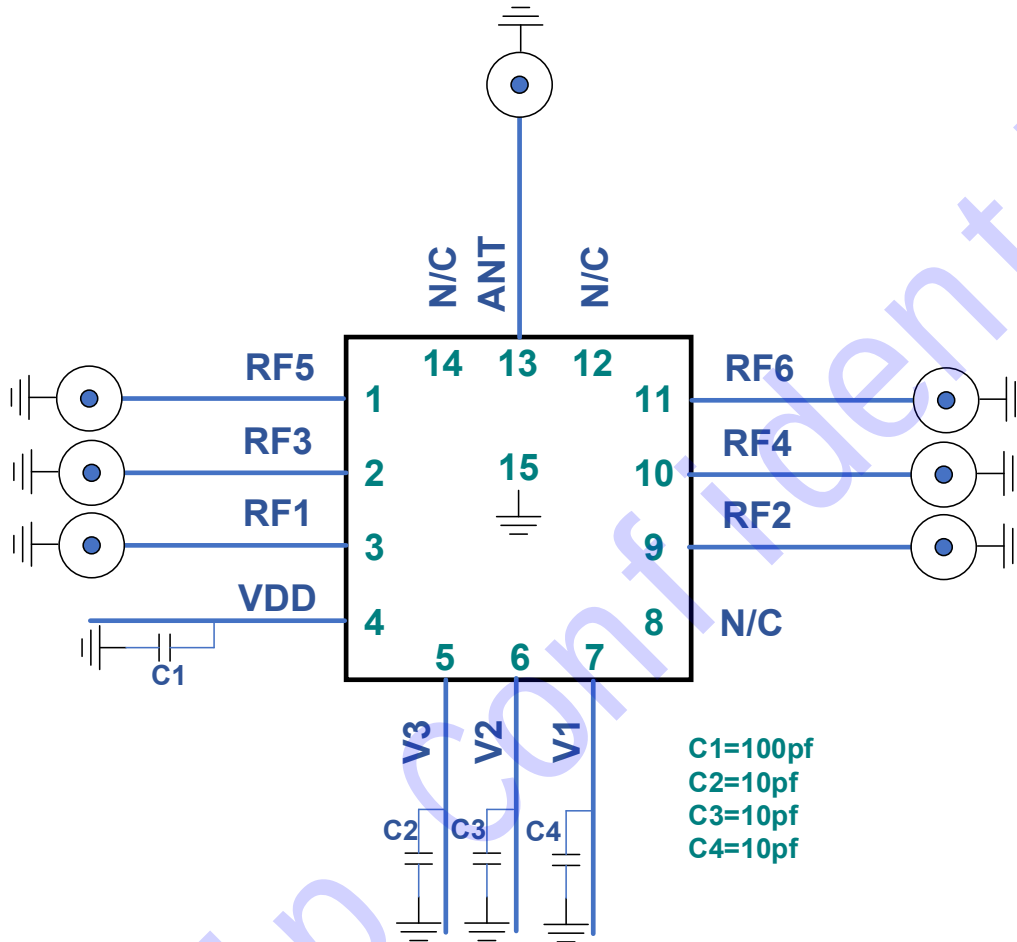


Figure 3 Application circuit

Evaluation Board

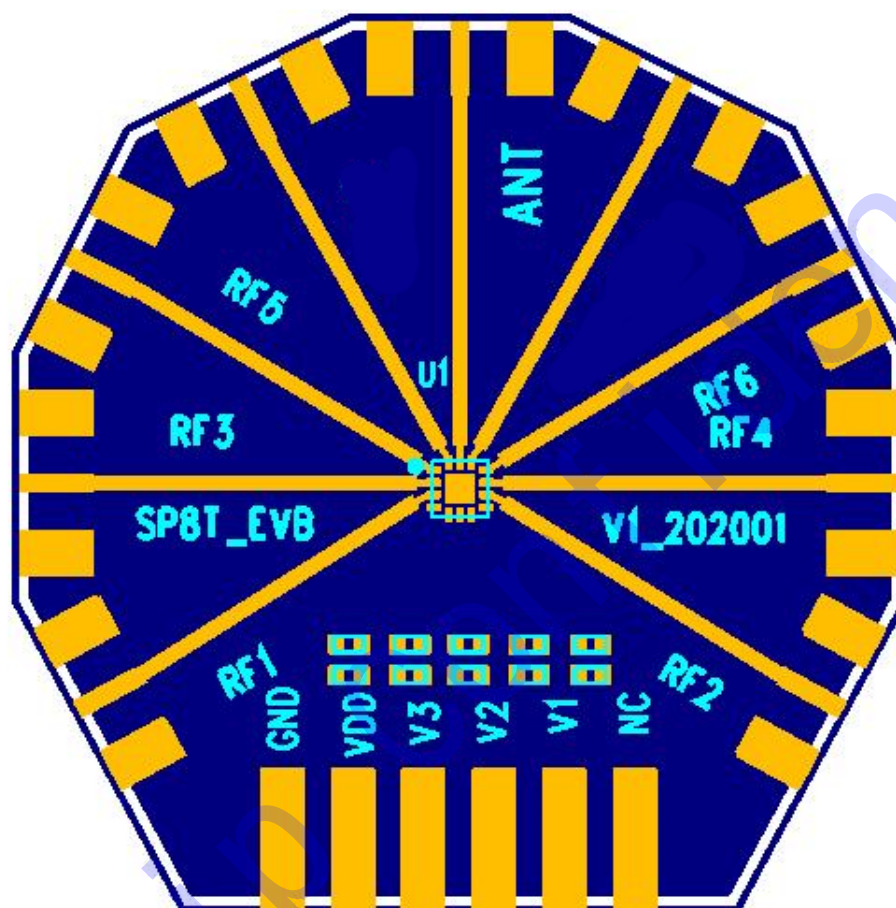
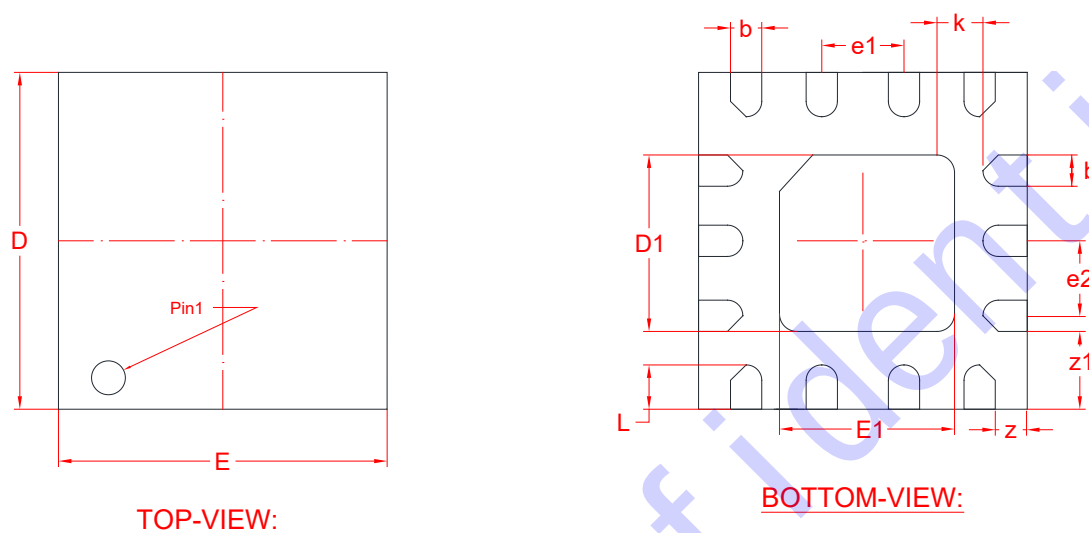


Figure 4 Evaluation Board Assembly Diagram

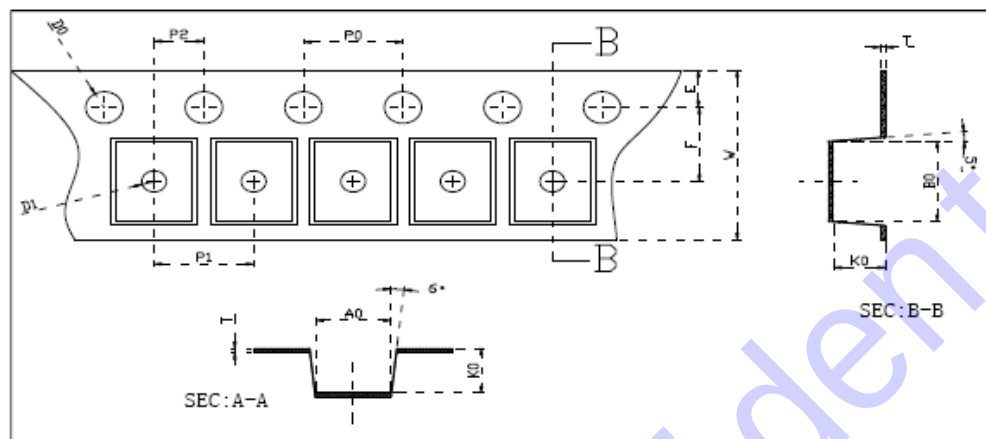
Package Outline Dimension



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
A2	0.127REF		
b	0.15	0.20	0.25
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	0.95	1.00	1.05
E1	0.95	1.00	1.05
e1	0.40	0.45	0.50
e2	0.35	0.40	0.45
L	0.19	0.24	0.29
z	0.225REF		
z1	0.50REF		
K	0.26REF.		

Figure 5 Package Outline Dimension

Package Dimensions (3000pcs)



W	8.00±0.10	T	0.20±0.05	D1	1.00±0.10	单位	MM
E	1.75±0.10	F	3.50±0.10	D0	1.50±0.10	材质	PC+PS
P0	4.00±0.10	P1	4.00±0.10	P2	2.00±0.10		
A0	2.18±0.10	B0	2.20±0.10	K0	0.75±0.10		

Figure 6 Tape and Reel Dimensions

Declaration of No Harmful Substances

This part is compliant with 2005/20/EC packaging directive, 1907/2006/EC REACH directive and the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

This product also has the following attributes:

- Lead free
- Halogen Free (Chlorine, Bromine)
- SVHC Free

Reflow Chart

