

Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 619MHz to 5925MHz
- Small package: QFN 10-1.1mm x 1.5mm x 0.5mm
- No DC blocking capacitors required
- 1kV HBM ESD Protection on all pins

Product Applications

- 3G/4G/5G multimode cellular tablets and Multi-Mode GSM, EDGE, WCDMA, LTE
- Diversity antenna switching

Product Description

The LX1022 is a Silicon On Insulator (SOI) Single Pole, double Throw (DPDT) antenna switch which require very low insertion loss, high isolation and high linearity performance.

The high linearity performance and low insertion loss for 5G, UMTS, CDMA2000, and LTE applications.

The LX1022 is manufactured in a compact 1.1mm x 1.5mm x 0.5mm, 10-pin surface mount Quad Flat No-Lead (QFN) package.

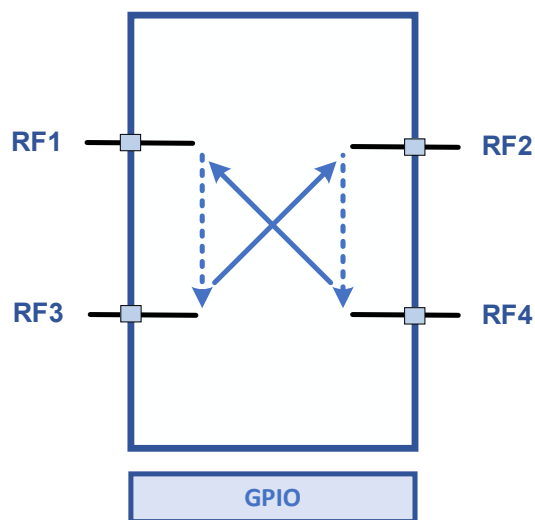


Figure 1 Functional Block Diagram

Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V _{DD}	1.6	4.8	V
Control voltage	V _{CC}	1.6	3.0	V
RF input power	P _{in}		+38	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			1.35	1.8	2.70	V
Low					0.3	
Control current:						
High	I _{CTL}			5	8	μA
Low						
Turn-on time (PIN = +27 dBm)	T _{ON}	Measured from 50% of final VDD supply voltage to 90% of RF power		5	10	μs
Switching time (PIN = +27 dBm)	T _{SW}	Measured from 50% of final VDD supply voltage to 90% of RF power		2.0	3.0	μs

(V_{DD} = 2.85 V, V_{IO} = 1.8 V, T_{OP} = +25 °C, Characteristic Impedance [Z_O] = 50 Ω, Unless Otherwise Noted)

RF Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		617		5925	MHz
Insertion loss	IL	Up to 0.9 GHz		0.42	0.45	dB
		Up to 2.1 GHz		0.55	0.60	
		Up to 2.7 GHz		0.62	0.67	
		Up to 3.8 GHz		0.70	0.75	
		Up to 4.2 GHz		0.75	0.90	
		Up to 5.0 GHz		0.85	0.95	
		Up to 5.9 GHz		1.20	1.30	
Isolation (ANT port to any receive port)	Iso	Up to 0.9 GHz	38	44	dB	
		Up to 2.1 GHz	32	40		
		Up to 2.7 GHz	30	35		
		Up to 3.8 GHz	29	32		
		Up to 4.2 GHz	28	30		
		Up to 5.0 GHz	27	30		
		Up to 5.9 GHz	25	28		
Return loss	RL	All ports, up to 9.6 GHz All ports, up to 2.1 GHz				dB
2nd Order harmonics	2fo	Pin = +26 dBm, 900MHz	-71	-70		dBm
		Pin = +35 dBm, 900MHz	-53	-52		
3rd Order harmonics	3fo	Pin = +26 dBm, 900MHz	-78	-77		dBm
		Pin = +35 dBm, 900MHz	-52	-50		
0.1 dB Compression Point 50% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		38		dBm

Truth Table

VCTL	ANT-RFX
Low	RF1-RF3 on, RF2-RF4 on
High	RF1-RF4 on, RF2-RF3 on

LingChip Confidential

Pin-out Information

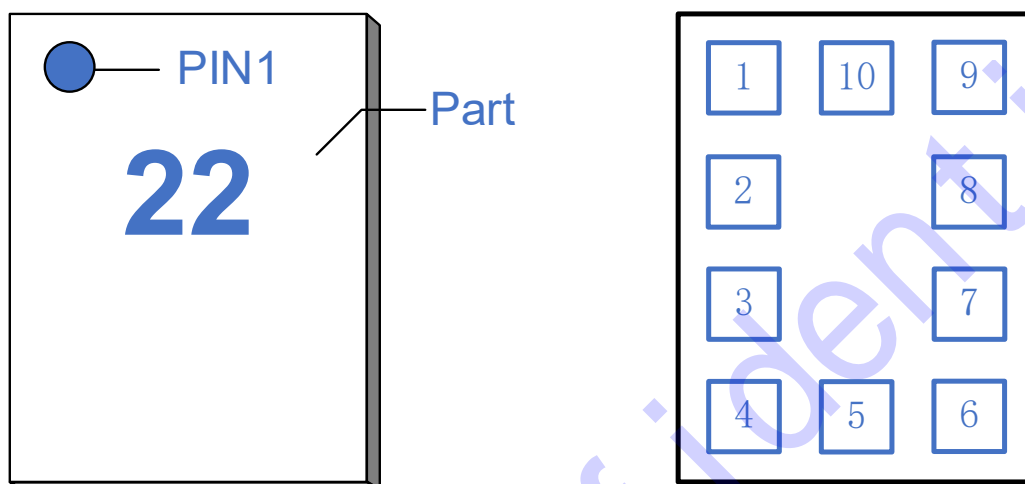


Figure 2 Pin-out Information

Table 1. Pin Description

Pin #	Name	Description	Pin #	Name	Description
1	GND	Ground	6	RF2	RF Port2
2	RF3	RF Port3	7	GND	Ground
3	GND	Ground	8	RF4	RF Ports
4	RF1	RF Port1	9	VCTL	Control Voltage Pin
5	GND	Ground	10	VDD	DC Power Supply

Application circuit

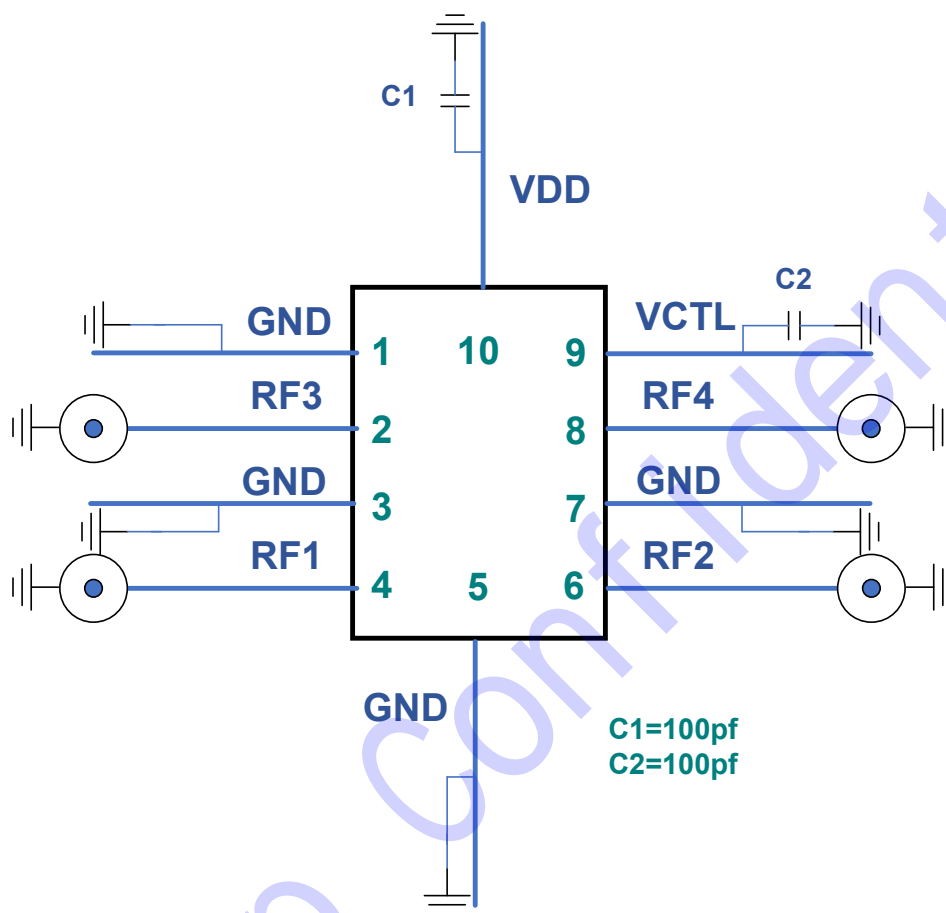


Figure 3 Application circuit

Evaluation Board

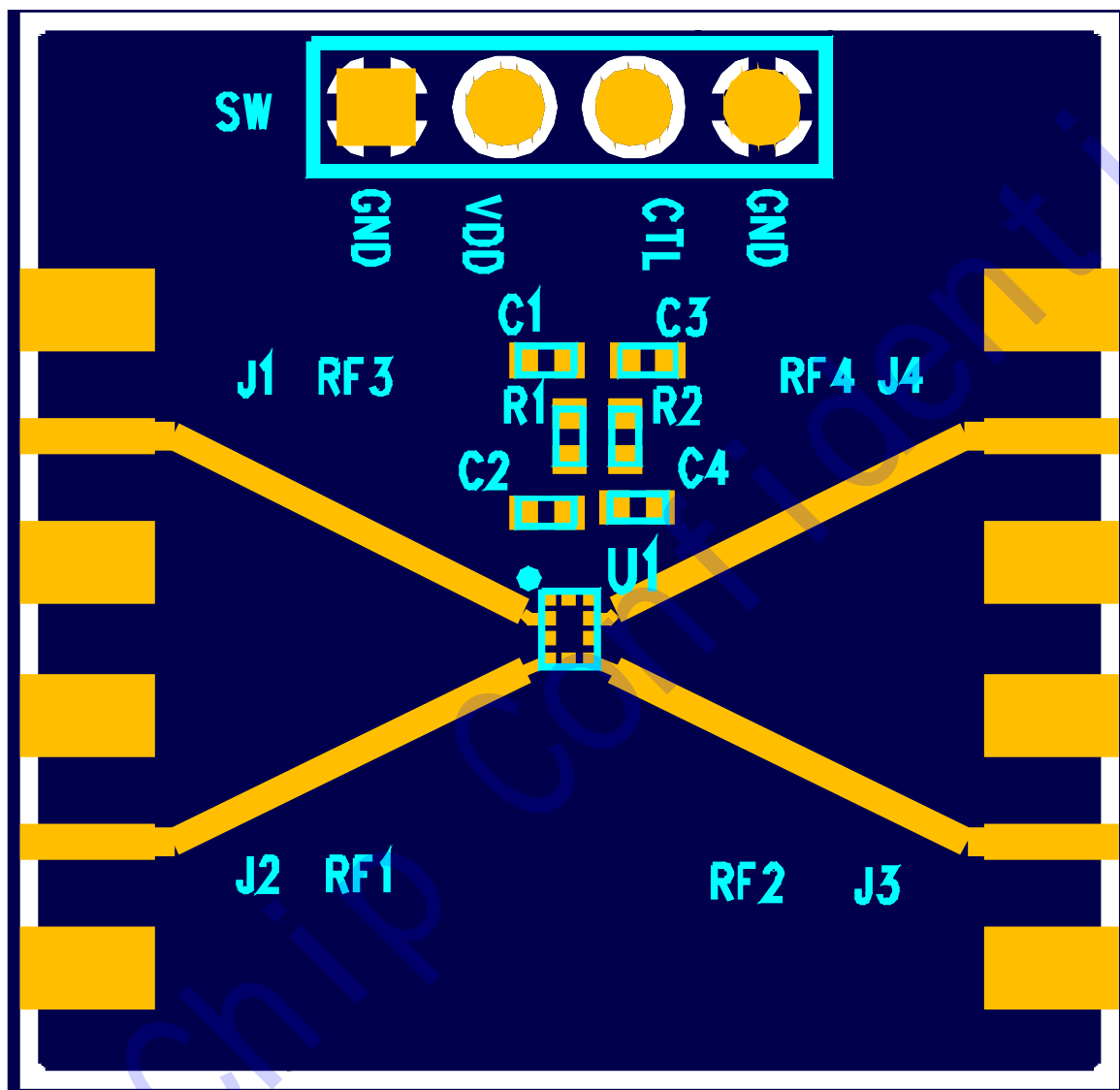
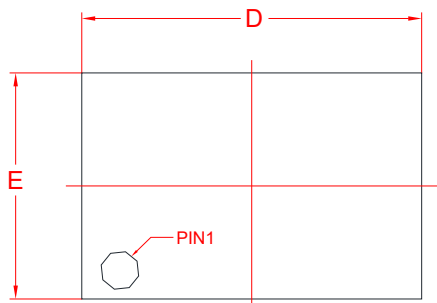
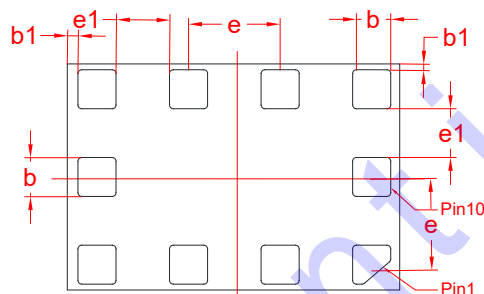


Figure 4 Evaluation Board Assembly Diagram

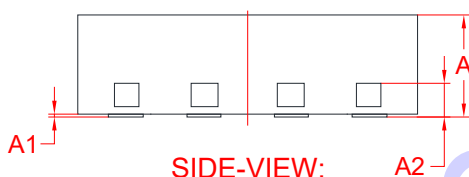
Package Outline Dimension



TOP-VIEW:



BOTTOM-VIEW:

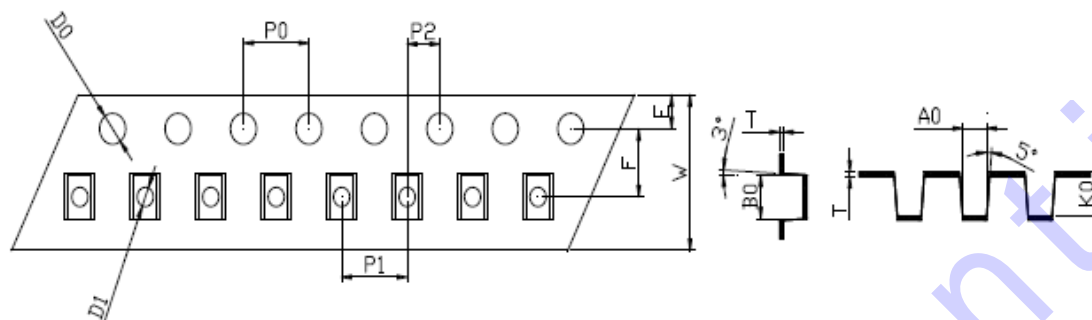


SIDE-VIEW:

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
A2	0.127REF		
b	0.17	0.20	0.23
D	1.45	1.50	1.55
E	1.05	1.10	1.15
e	0.375	0.40	0.425
e1	0.17	0.20	0.230
b1	0.05REF		

Figure 5 Package Outline Dimension

Package Dimensions (5000pcs)



W	8.00±0.05	T	0.20±0.02	D1	0.80±0.10	单位	MM
E	1.75±0.10	F	3.50±0.10	D0	1.60±0.10	材质	ABS
P0	4.00±0.10	P1	4.00±0.10	P2	2.00±0.10		
A0	1.25±0.05	B0	1.88±0.05	K0	0.75±0.05		

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

Version Information

Version	Description	Data	Reviser
V1.6	2022-1-5		