Product Features

- Excellent Insertion Loss and Isolation performance
- GPIO Control Interface
- VDD supports both 1.8V and 2.8V Supplies
- GPIO Interface for 1.6V to 2.7V Control Logic
- Broadband frequency range: 617MHz to 5925MHz
- Small package: QFN 10-1.1mm x 1.5mm x 0.45mm
- No DC blocking capacitors required
- 2kV HBM ESD Protection on all pins

Product Applications

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

Product Description

The LX1122 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 LX1122 is manufactured in a compact 1.1mm x 1.5mm x 0.45mm, 10-pin surface mount Quad Flat No-Lead (QFN) package.

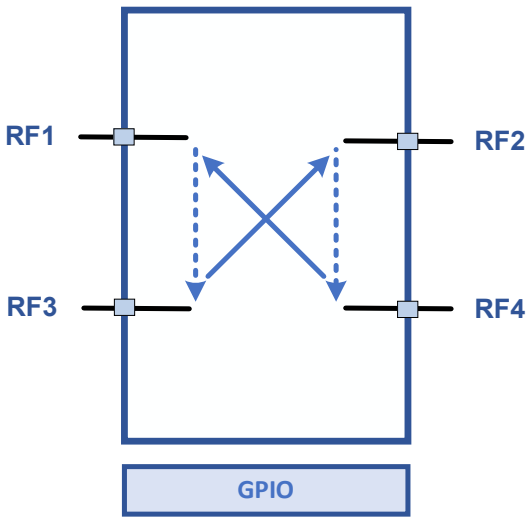


Figure 1 Functional Block Diagram

Absolute Maximum Conditions

Parameters	Symbol	Minimum	Typ.	Maximum	Units
Supply voltage	V_{DD}	1.6	2.85/1.80	4.0	V
Control voltage	V_{CTL}	1.3	1.8	2.7	V
RF input power	Pin			+38	dBm
Storage temperature	T_{STG}	-55		+150	℃
Operating temperature	T_{OP}	-40		+90	℃
Human Body Model, Class 1C	ESD		2000		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}		1.8	2.8	3.5	V
Supply current, active mode	I_{DD}		27	85	110	μA
Control signal: High Low	V_{CTL}		1.65	1.8	2.70 0.3	V
Control current: High Low	I_{CTL}			5	8	μA
Turn-on time (PIN = +27 dBm)	TON	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		1.8	2.3	μs

(VDD = 2.8 V, VCT = 1.8 V, TOP = +25 ℃, Characteristic Impedance [ZO] = 50 Ω, Unless Otherwise Noted)

RF Specifications

VDD=2.8V, VCTLH=1.8V, VCTLL=0V, PIN=0dBm, ZO=50Ω, TA=25℃, Unless Otherwise Stated

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		617		5925	MHz
Insertion loss	IL	Up to 0.9 GHz		0.35	0.45	dB
		Up to 2.1 GHz		0.45	0.60	
		Up to 2.7 GHz		0.60	0.65	
		Up to 3.8 GHz		0.63	0.68	
		Up to 4.2 GHz		0.69	0.73	
		Up to 5.0 GHz		0.73	0.88	
		Up to 5.9 GHz		0.90	1.30	
Isolation (port to any receive port)	Iso	Up to 0.9 GHz	39	47		dB
		Up to 2.1 GHz	32	42		
		Up to 2.7 GHz	31	35		
		Up to 3.8 GHz	30	32		
		Up to 4.2 GHz	28	30		
		Up to 5.0 GHz	27	33		
		Up to 5.9 GHz	26	28		
Return Loss	RL	Up to 0.9 GHz	20	27		dB
		Up to 2.1 GHz	17	22		
		Up to 2.7 GHz	17	21		
		Up to 3.8 GHz	22	28		
		Up to 4.2 GHz	23	30		
		Up to 5.0 GHz	16	23		
		Up to 5.9 GHz	12	17		
2nd Order harmonics	2fo	Pin = +26 dBm,900MHz	-73	-74		dBm
		Pin = +35 dBm,900MHz	-51	-54		
3rd Order harmonics	3fo	Pin = +26 dBm,900MHz	-70	-72		dBm
		Pin = +35 dBm,900MHz	-43	-52		
0.1 dB Compression Point 25% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		38.5		dBm

RF Specifications

VDD=1.8V, VCTLH=1.8V, VCTLL=0V, PIN=0dBm, ZO=50Ω, TA=25℃, Unless Otherwise Stated

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		617		5925	MHz
Insertion loss	IL	Up to 0.9 GHz		0.45	0.55	dB
		Up to 2.1 GHz		0.56	0.70	
		Up to 2.7 GHz		0.70	0.75	
		Up to 3.8 GHz		0.72	0.80	
		Up to 4.2 GHz		0.80	0.87	
		Up to 5.0 GHz		0.85	1.00	
		Up to 5.9 GHz		1.05	1.35	
Isolation (port to any receive port)	I_{SO}	Up to 0.9 GHz	40	46		dB
		Up to 2.1 GHz	31	36		
		Up to 2.7 GHz	31	34		
		Up to 3.8 GHz	30	32		
		Up to 4.2 GHz	30	31		
		Up to 5.0 GHz	26	28		
		Up to 5.9 GHz	23	27		
Return Loss	RL	Up to 0.9 GHz	20	29		dB
		Up to 2.1 GHz	18	20		
		Up to 2.7 GHz	18	21		
		Up to 3.8 GHz	21	22		
		Up to 4.2 GHz	22	23		
		Up to 5.0 GHz	19	23		
		Up to 5.9 GHz	14	20		
2nd Order harmonics	2fo	Pin = +26 dBm,900MHz	-56	-57		dBm
		Pin = +35 dBm,900MHz	-37	-38		
3rd Order harmonics	3fo	Pin = +26 dBm,900MHz	-60	-61		dBm
		Pin = +35 dBm,900MHz	-30	-33		
0.1 dB Compression Point 25% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		37		dBm

Truth Table

VCTL	RF Channel Operating Mode
Low	RF1-RF3 on, RF2-RF4 on
High	RF1-RF4 on, RF2-RF3 on

Pin-out Information

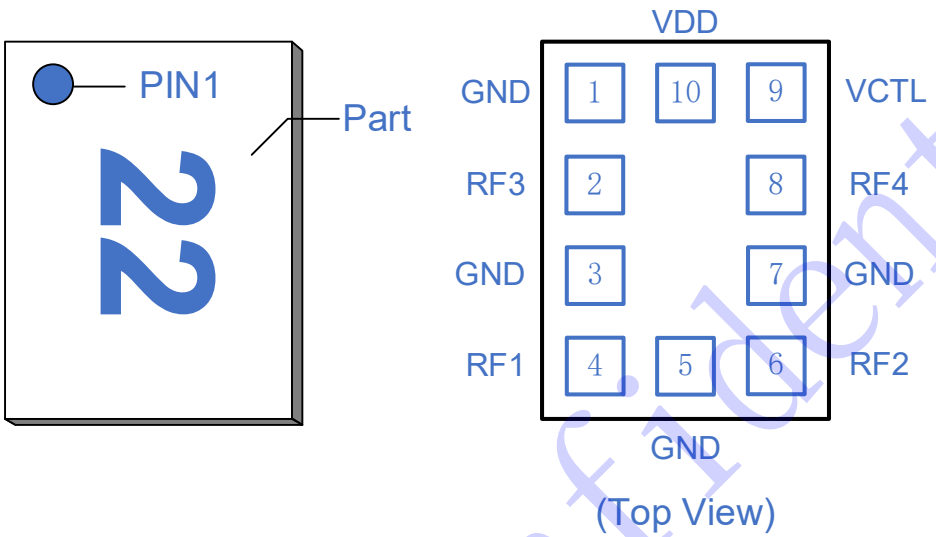


Figure 2 Pin-out Information

Table 1. Pin Description

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

Application circuit

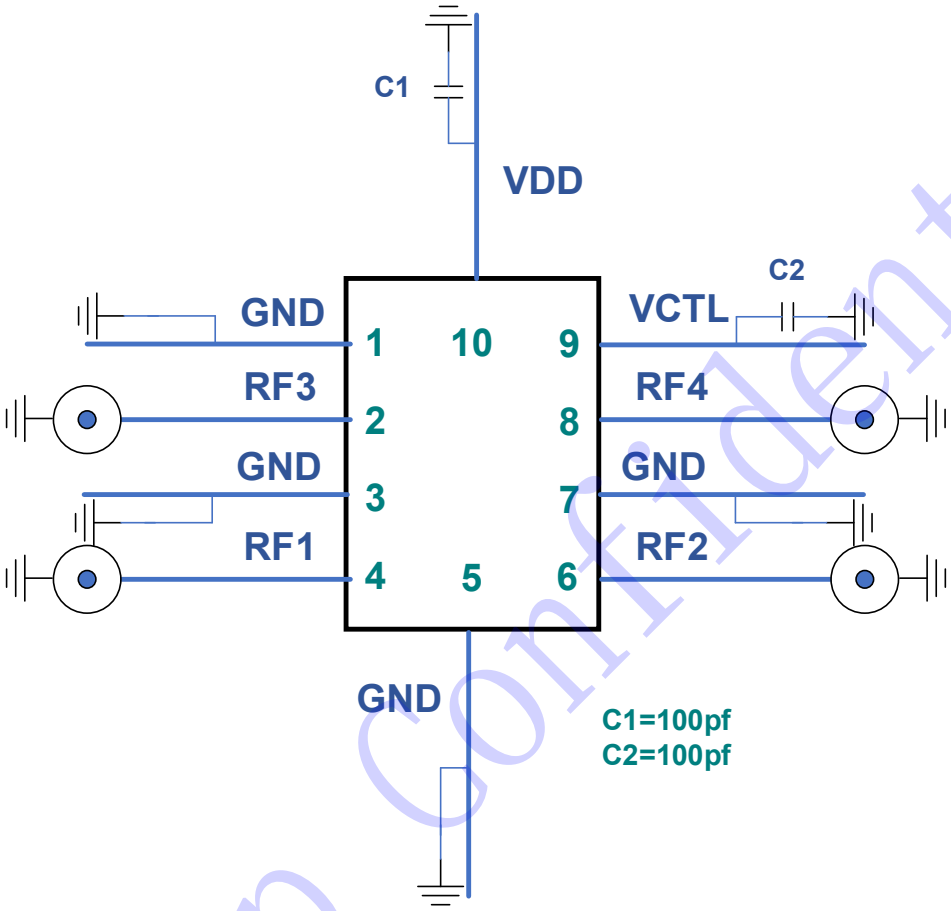


Figure 3 Application circuit

Evaluation Board

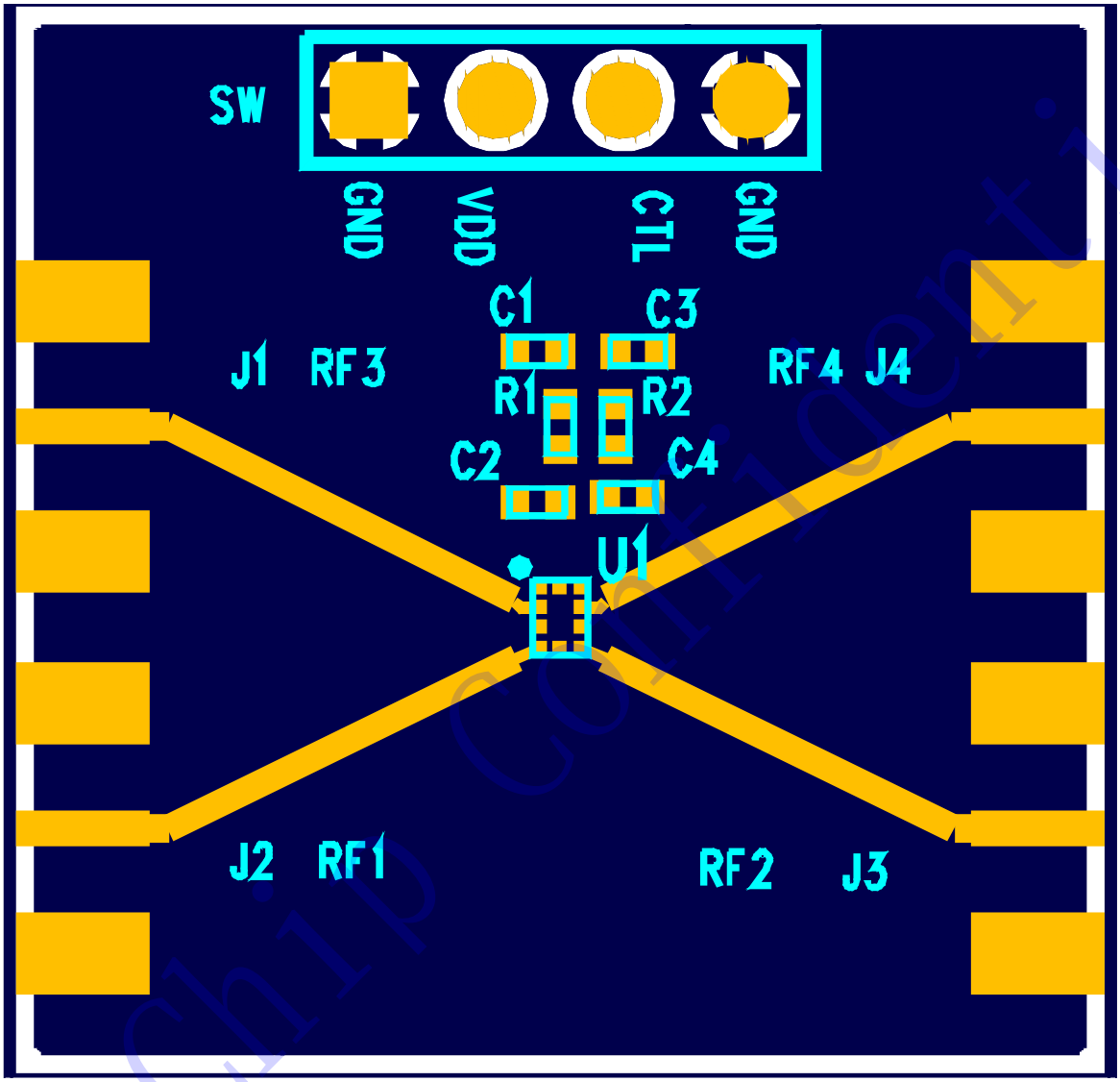
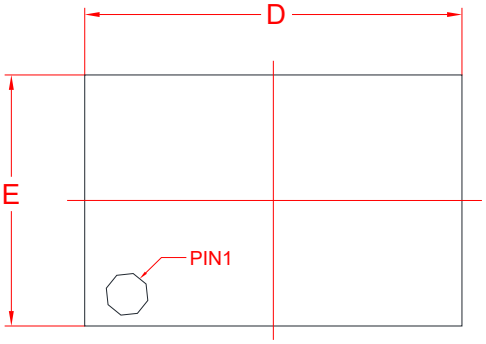
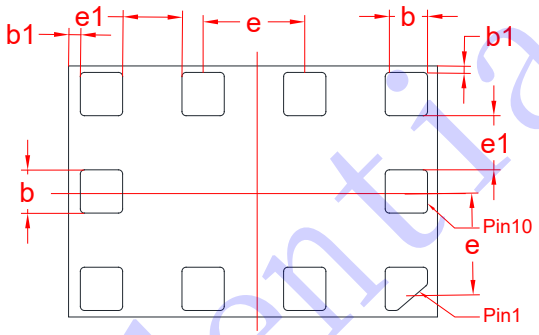


Figure 4 Evaluation Board Assembly Diagram

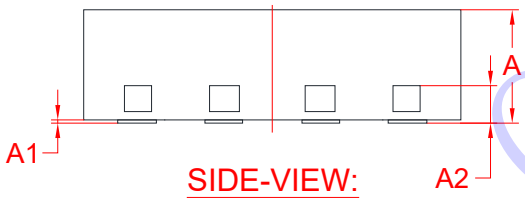
Package Outline Dimension



TOP-VIEW:



BOTTOM-VIEW:

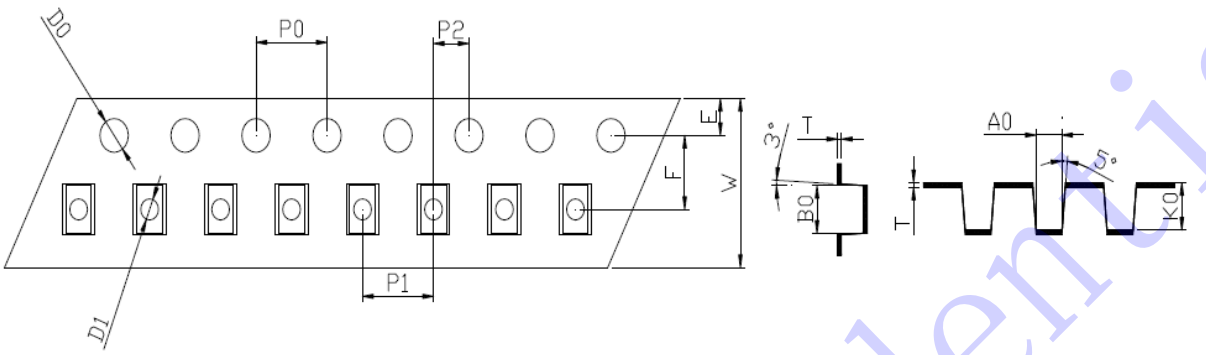


SIDE-VIEW:

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.40	0.45	0.50
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
E	1.75±0.10	F	3.50±0.10	D0	1.60±0.10
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.

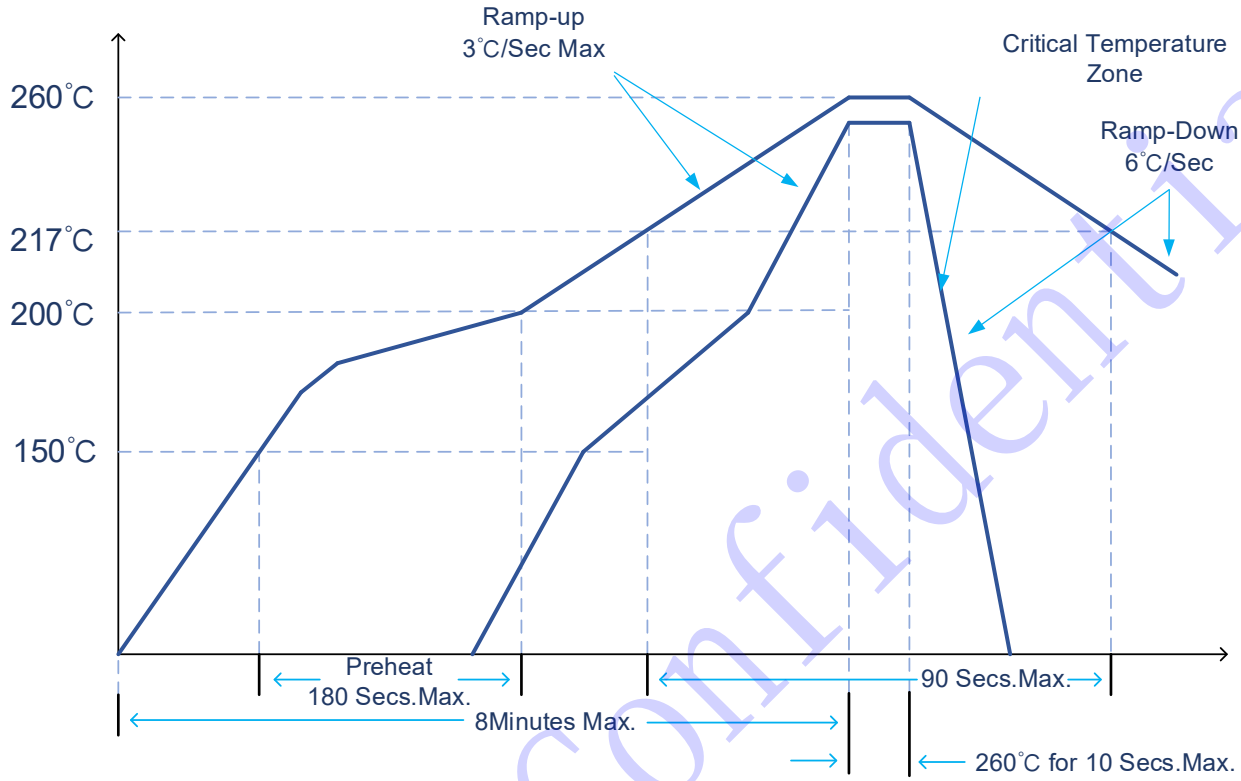
This product also has the following attributes:

• Lead free

• Halogen Free (Chlorine, Bromine)

• SVHC Free

Reflow Chart



NOTE: Reflow Profile with 240°C peak also acceptable.

