Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 0.1 to 2.7 GHz
- Small package: DFN-6 1.1 x 0.7 x 0.5 mm
- No DC blocking capacitors required
- 1kV HBM ESD Protection on all pins

Product Applications

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

Product Description

The LX1630 is a Silicon On Insulator (SOI) Single Pole, Double Throw (SP2T) 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 LX1630 is manufactured in a compact 1.1 x 0.7 x 0.5 mm, 6-pin surface mount Duad Flat No-Lead (DFN) package.

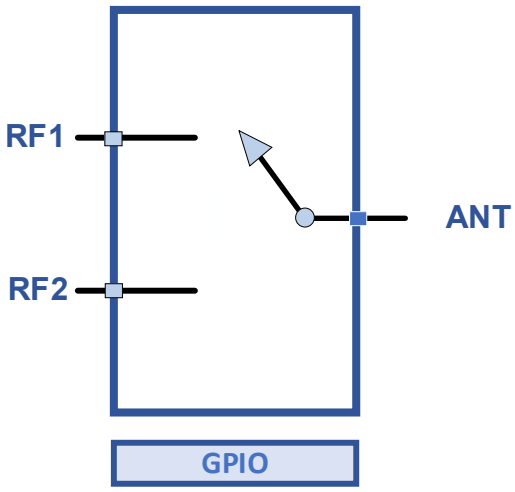


Figure 1 Functional Block Diagram

Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V_{DD}	1.6	4.8	V
Control voltage	VCTL		3.3	V
RF input power	Pin		+34	dBm
Storage temperature	T_{STG}	-55	+150	℃
Operating temperature	T_{OP}	-40	+90	℃
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}		1.6	2.85/1.8	4.8	V
Supply current, active mode	I_{DD}		80		130	μA
Control signal: High Low	V_{CTL}		1.20	1.8	3.30 0.4	V
Control current: High Low	I_{CTL}				5	μA
Turn-on time (PIN = +27 dBm)	T_{ON}	Measured from 50% of final VDD supply voltage to 90% of RF power		20	25	μs
Switching time (PIN = +27 dBm)	T_{SW}	Measured from 50% of final VDD supply voltage to 90% of RF power		2	3	μs

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

RF Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		0.1		3	GHz
Insertion loss	IL	Up to 0.7 GHz Up to 1.0 GHz Up to 2.2 GHz Up to 2.7 GHz		0.28 0.30 0.35 0.35	0.35 0.40 0.45 0.5	dB
Isolation (ANT port to any receive port)	I_{SO}	Up to 0.7 GHz Up to 1.0 GHz Up to 2.2 GHz Up to 2.7 GHz	32 27 22 17	37 33 25 23		dB
2nd Order harmonics	2fo	Pin = +26 dBm,900MHz	-67	-66		dBm
3rd Order harmonics	3fo	Pin = +26 dBm,900MHz	-67	-66		dBm
0.1 dB Compression Point 50% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		34		dBm

Truth Table

Active Path	VCTL(Pin 6)
ANT to RF1	0
ANT to RF2	1

Pin-out Information

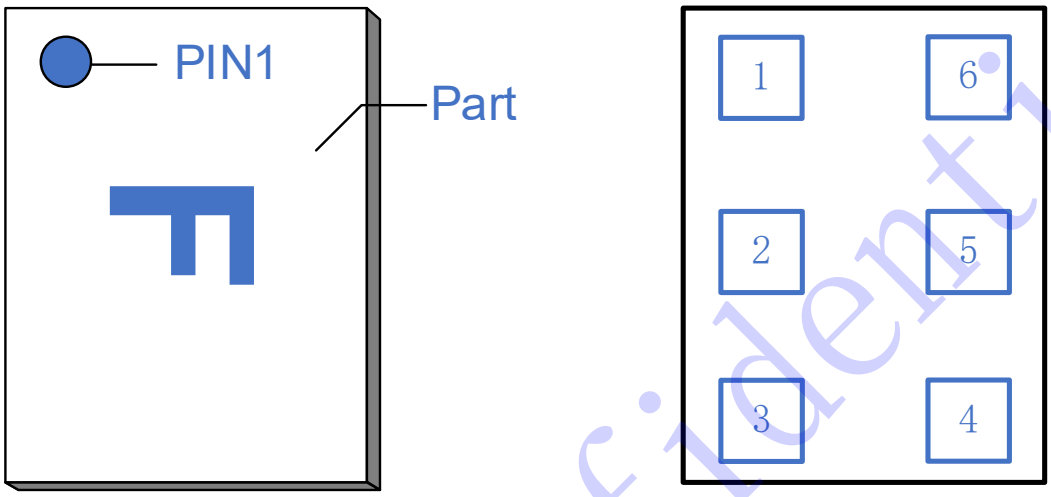


Figure 2 Pin-out Information

Table 1. Pin Description

Pin #	Name	Description	Pin #	Name	Description
1	RF2	RF I/O, Port2	4	VDD	Voltage supply
2	GND	Ground	5	ANT	RF I/O, Antenna Port
3	RF1	RF I/O, Port1	6	VCTL	Switch control line

Application circuit

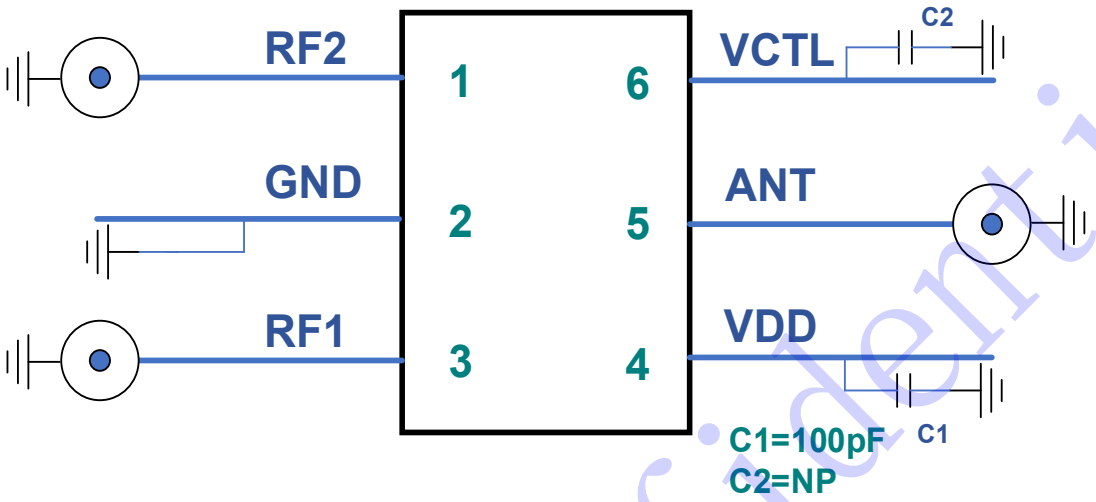


Figure 3 Application circuit

Evaluation Board

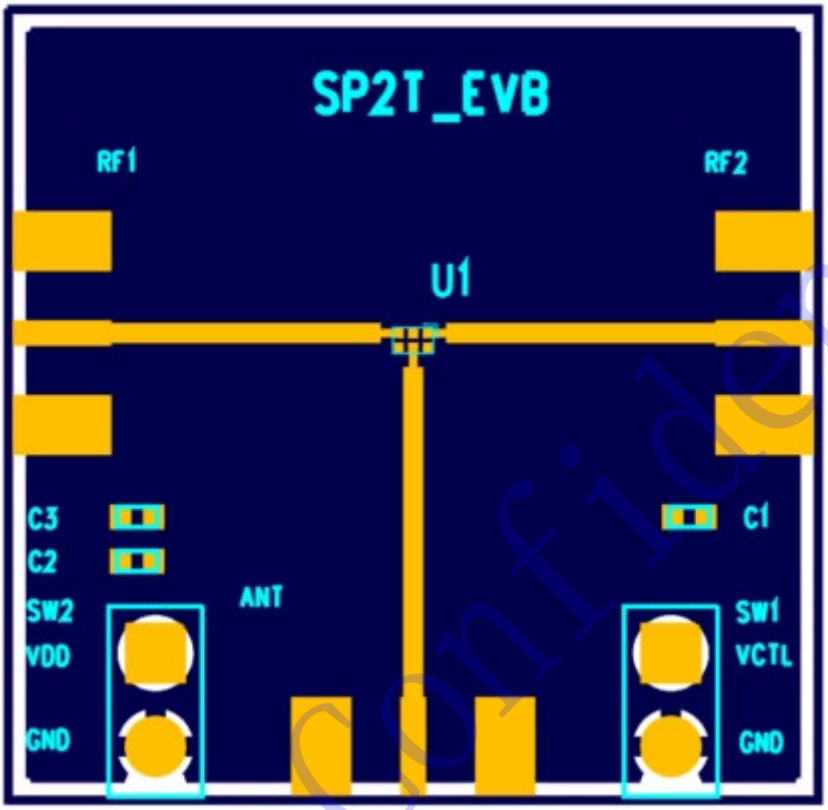
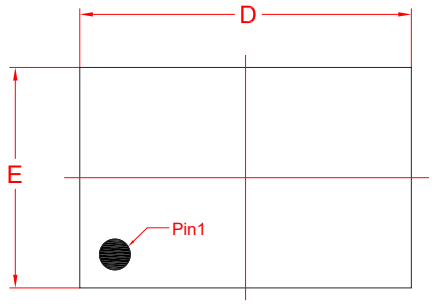
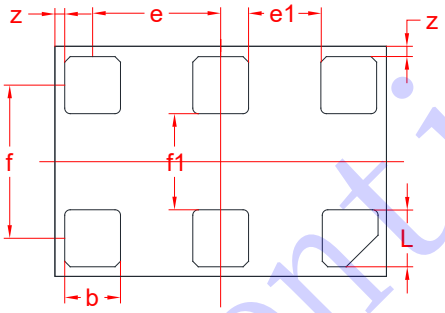


Figure 4 Evaluation Board Assembly Diagram

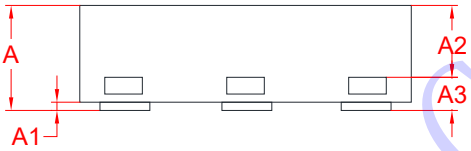
Package Outline Dimension



TOP-VIEW:



BOTTOM-VIEW:

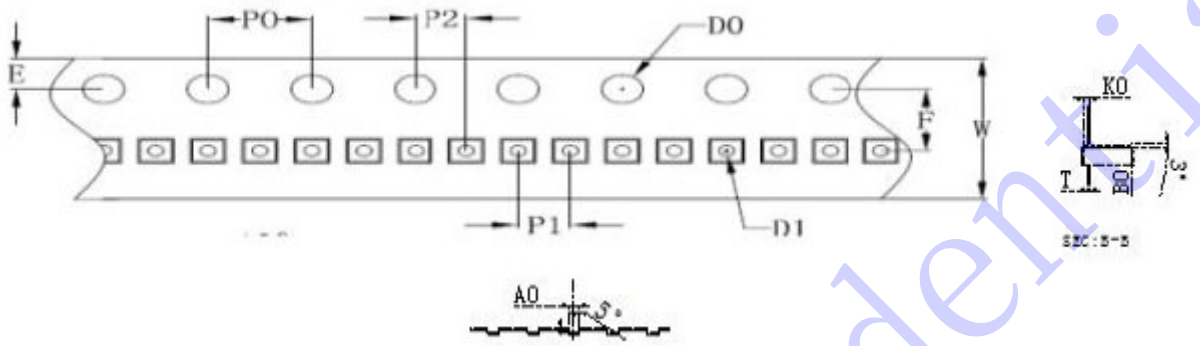


SIDE-VIEW:

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
A2	0.33	0.38	0.43
A3	0.127REF		
b	0.15	0.20	0.25
D	1.05	1.10	1.15
E	0.65	0.70	0.75
z	0.05REF		
e	0.35	0.40	0.45
e1	0.15	0.20	0.25
f	0.35	0.40	0.45
f1	0.15	0.20	0.25
L	0.15	0.20	0.25

Figure 5 LX1630 Package Outline Dimension

Package Dimensions (6000pcs)



W	8.00±0.05	T	0.20±0.03	D1	0.40+0.05
E	1.75±0.05	F	3.50±0.05	D0	1.50+0.05
P0	4.00±0.05	P1	2.00±0.05	P2	2.00±0.05
A0	0.84±0.05	B0	1.25±0.05	K0	0.55±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

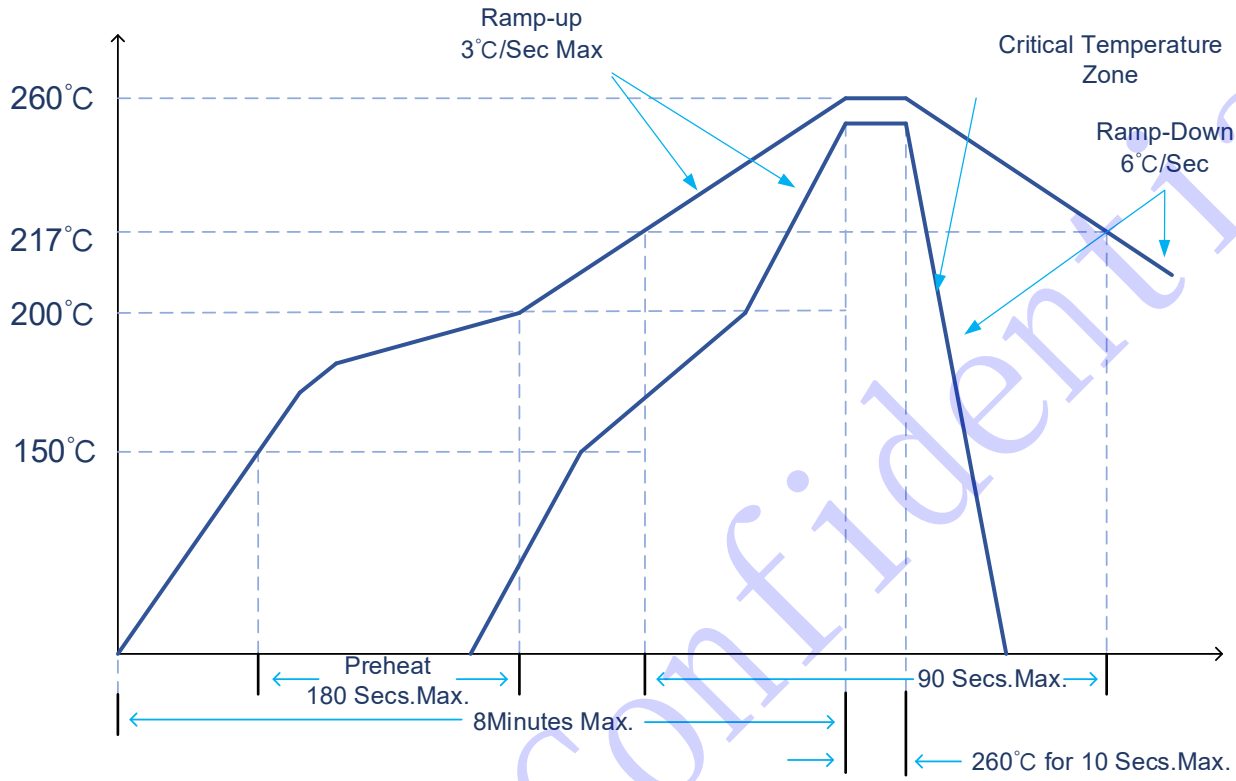
Storage

Storage temperature	T_{STG}	-55	+150	℃

The LX1630 is strictly follow MSL1, 260℃ per JEDEC J-STD-020, and pass HTSL 1000H.

Under recommended storage temperature, the device will not fail for at least 3 years.

Reflow Chart



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

