



● Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 0.1 to 4.2 GHz
- Small package: QFN-10-pin, 1.1mm x 1.5mm x 0.45mm
- No DC blocking capacitors required
- 1kV HBM ESD Protection on all pins

Product Applications

- Band Selecting
- Antenna Tuning

Product Description

The LX8544AC is a Silicon On Insulator (SOI) Single Pole, Four-Throw (SP4T) antenna tuner which require very low insertion loss, high isolation and high linearity performance.

The high linearity performance and low insertion loss for 5G and 4G LTE applications.

The LX8544AC SP4T tuner is manufactured in a compact 1.1mm x 1.5mm x 0.45mm, 10-pin surface mount Quad Flat No-Lead (QFN) package.

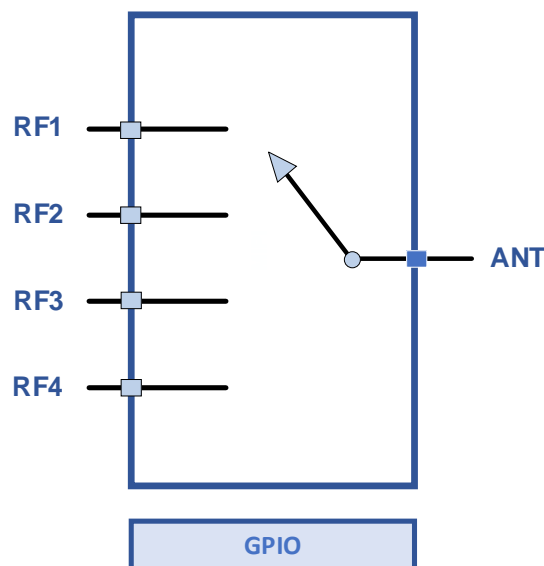


Figure 1 Functional Block Diagram

Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V _{DD}	-0.3	+4.8	V
Control voltage	V _{CT}	-0.3	+3.3	V
RF input power	P _{in}		+43	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	4.2	V
Supply current, active mode	I _{DD}			60	100	μA
Control signal: High Low	V _{CT}		1.35	1.8	3.00 0.3	V
Control current: High Low	I _{CTL}			1	3	μA
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		3	5	μs

(VDD = 2.85 V, VCT = 1.8 V, TOP = +25 °C, Characteristic Impedance [Z0] = 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	0.1 to 1.0 GHz		0.25	0.3	dB
		1.0 to 2.2 GHz		0.35	0.4	
		2.2 to 3.0 GHz		0.40	0.5	
		3.0 to 3.4 GHz		0.50	0.60	
		3.4 to 3.8 GHz		0.60	0.70	
		3.8 to 4.2 GHz		0.70	0.80	
Isolation (ANT port to any receive port)	Iso	0.1 to 1.0 GHz	28	35	dB	
		1.0 to 2.2 GHz	23	25		
		2.2 to 3.0 GHz	19	22		
		3.0 to 3.4 GHz	18	20		
		3.4 to 3.8 GHz	15	18		
		3.8 to 4.2 GHz	14	16		
2nd Order harmonics	2fo	Pin = +26 dBm,900MHz	-79	-74	dBm	
		Pin = +35 dBm,900MHz	-64	-62		
3rd Order harmonics	3fo	Pin = +26 dBm,900MHz	-75	-68	dBm	
		Pin = +35 dBm,900MHz	-68	-57		
0.1 dB Compression Point 50% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		+43		dBm
On Resistance	Ron	Switch on		1.1	1.4	Ohm
Off Capacitance	Coff	Switch off @500MHz		140	160	fF

Truth Table

V1	V2	V3	ANT-RFX
0	0	1	All Ron
0	1	1	ANT to RF1 and RF2
1	0	1	ANT to RF3 and RF4
0	0	0	ANT to RF1
0	1	0	ANT to RF2
1	0	0	ANT to RF3
1	1	0	ANT to RF4
1	1	1	All Isolation

Pin-out Information

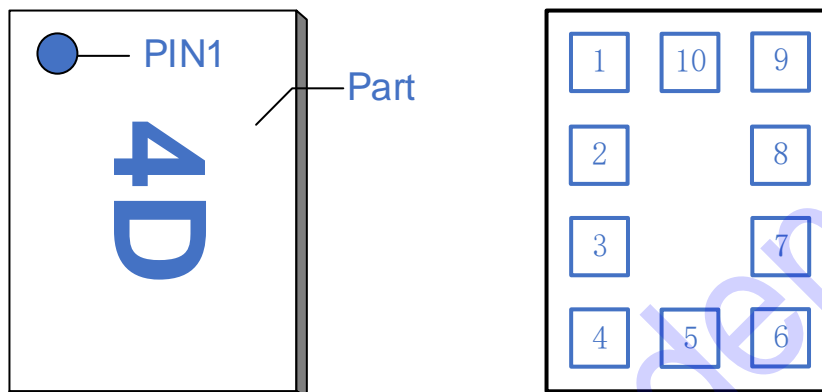


Figure 2 Pin-out Information

Table 1. Pin Description

Pin #	Name	Description	Pin #	Name	Description
1	RF1	RF Port 1	6	V2	Logic Control Voltage 2
2	RF2	RF Port 2	7	GND	Ground
3	V3	Logic Control Voltage 3	8	RF4	RF Port 4
4	VDD	DC Power Supply	9	RF3	RF Port 3
5	V1	Logic Control Voltage 1	10	ANT	Antenna in

Application circuit

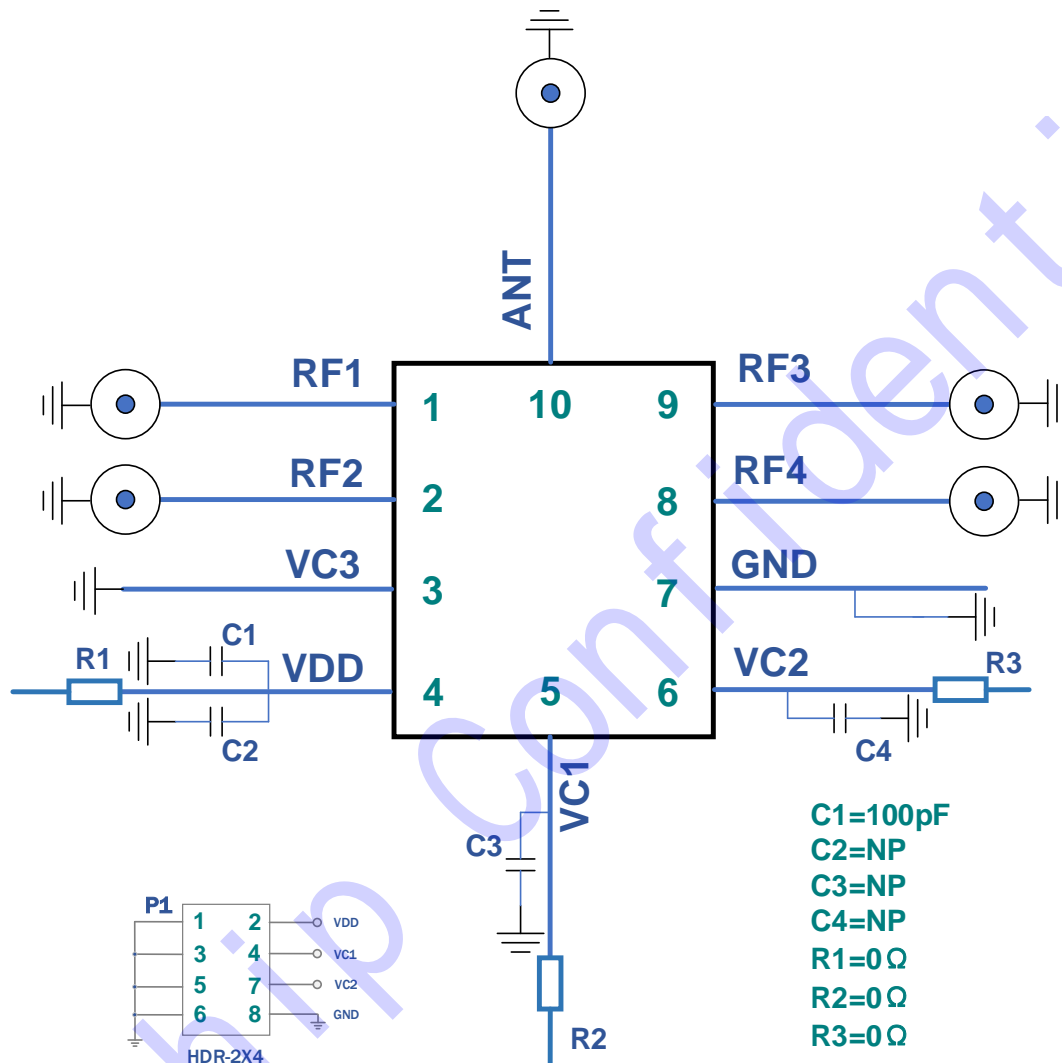


Figure 3 Application circuit

Evaluation Board

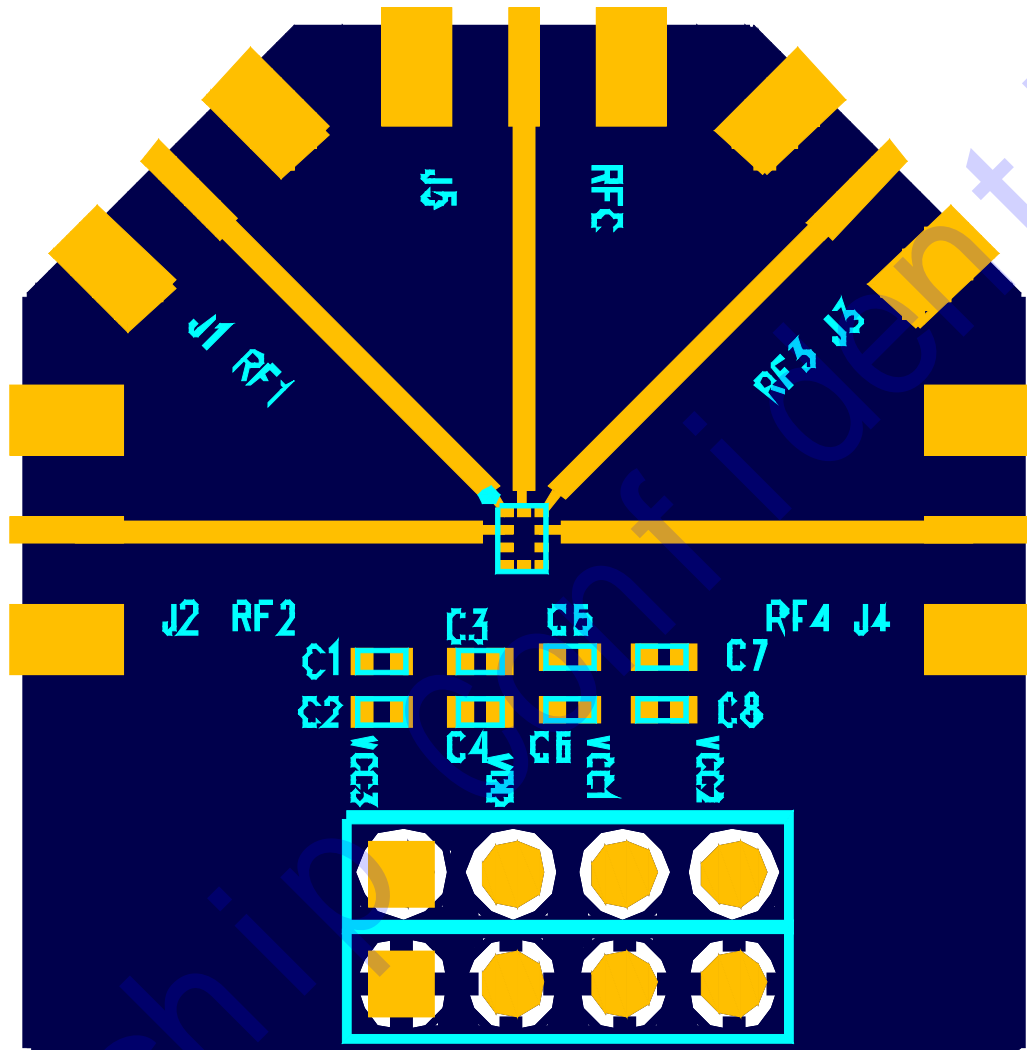
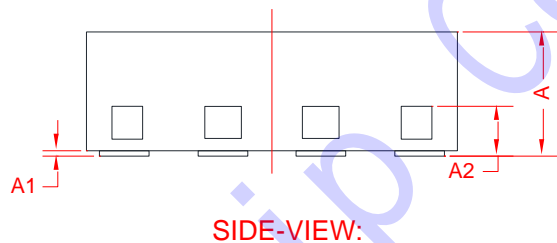
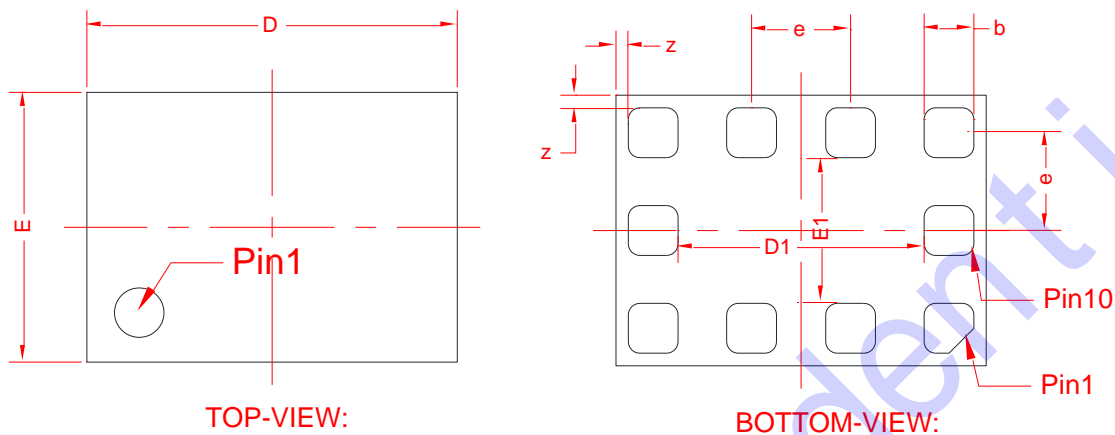


Figure 4 Evaluation Board Assembly Diagram

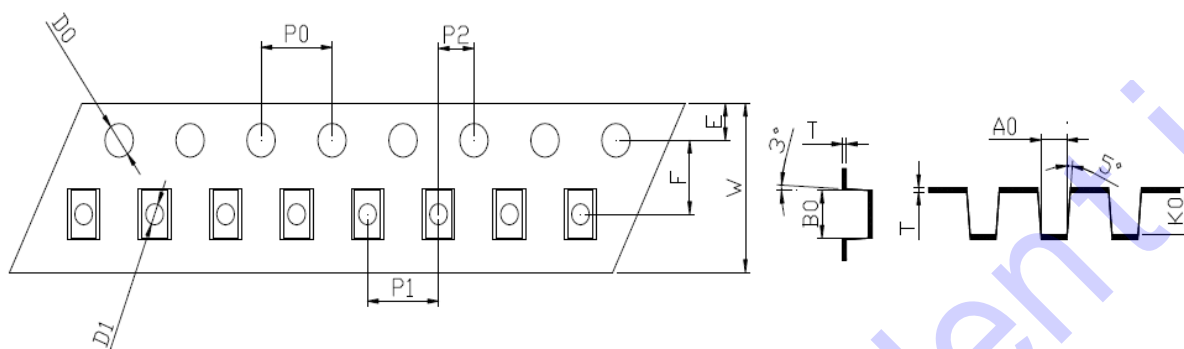
Package Outline Dimension



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
D1	0.950	1.00	1.050
E1	0.550	0.60	0.650
e	0.375	0.40	0.425
z	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

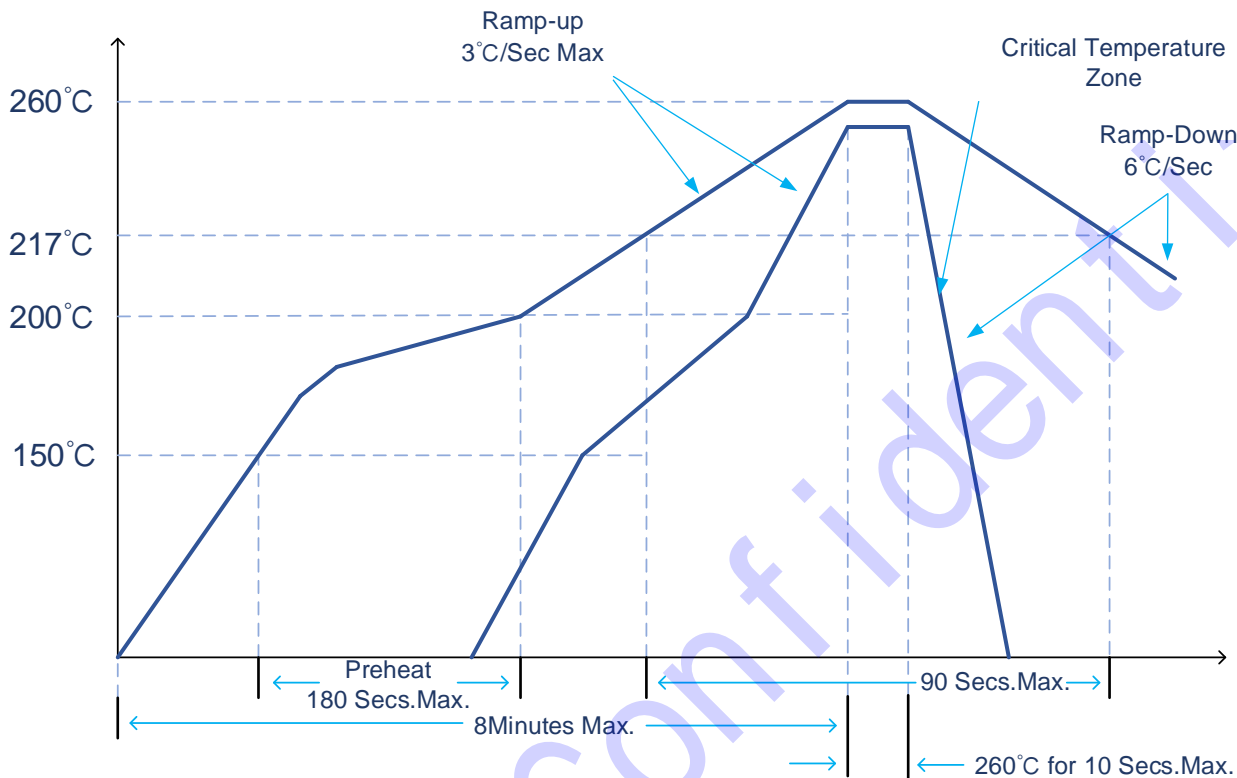
Declaration of No Harmful Substances

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.