

## Features

- Broadband frequency range: 0.1 to 3GHz
- Excellent insertion loss: 0.6dB @2.7GHz
- High isolation: 20dB @2.7 GHz
- Wide VDD range: 2.5 to 3.0V
- Small, QFN(9-pin, 1.15mmx1.15mm)x 0.55mm) package, MSL1
- RoHS compliant package

## Applications

- GSM/WCDMA/LTE receiving
- 802.11a/b/g/n WLANs

## Description

The LX8631 is a low loss, high isolation, single-pole, triple-throw (SP3T) receive switch. The high linearity performance and low insertion loss makes the device an ideal choice for GSM/WCDMA/LTE handset and data card applications.

The LX8631 SP3T switch is provided in a compact Quad Flat No-Lead (QFN) 1.15mm x 1.15mm x 0.55mm package which allows for a small solution size with no need for external DC blocking capacitors (when no external DC is applied to the device ports). A functional block diagram is shown in Figure 1 and the pin configuration are also shown in Figure 1. Signal pin assignments and functional pin

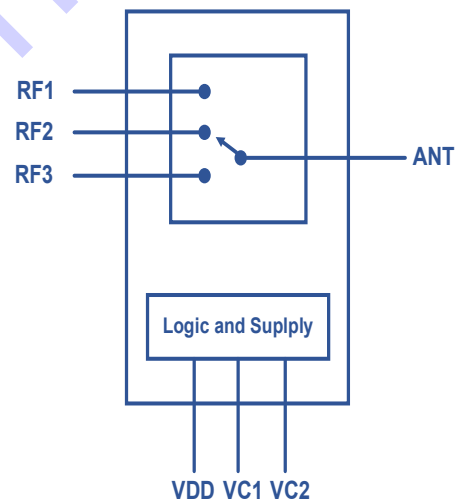


Figure 1 Functional Block

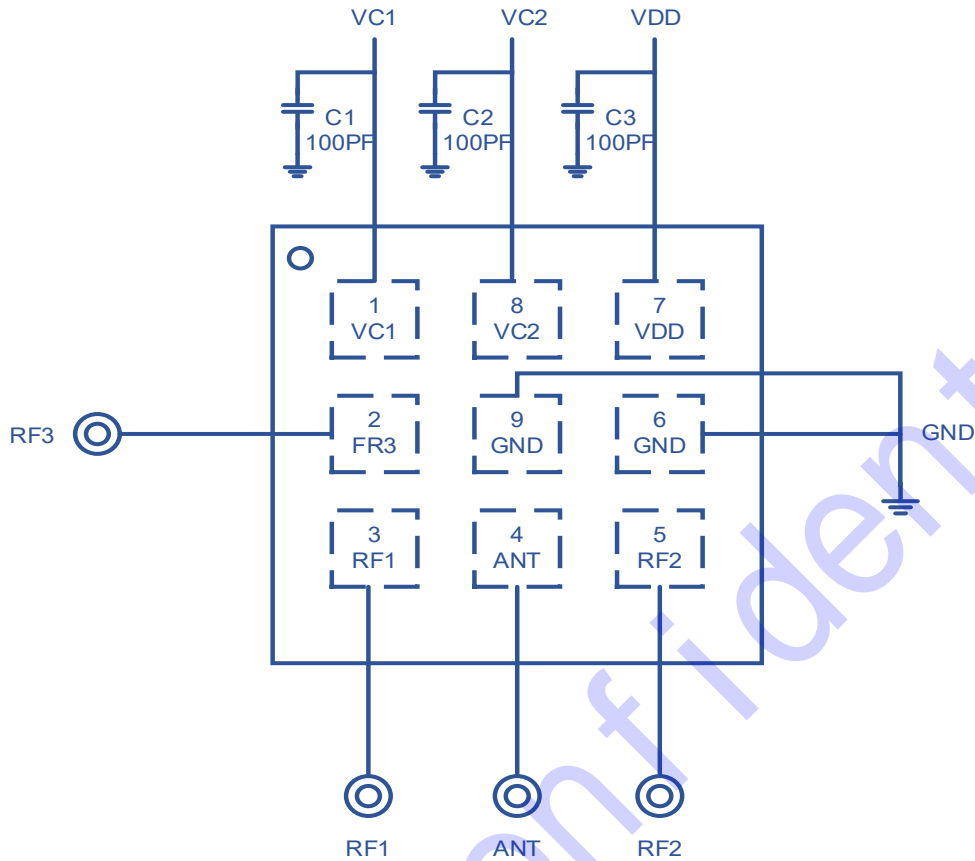


Figure 2. Application Circuit

### Signal Descriptions

NO.	Name	Description	NO.	Name	Description
1	VC1	Logic Control Voltage 1	6	GND	Ground
2	RF3	RF Port 3	7	VDD	DC Power Supply Voltage
3	RF1	RF Port 1	8	VC2	Logic Control Voltage 2
4	ANT	Antenna Port	9	GND	Ground
5	RF2	RF Port 2			

### VC Truth Table for RF Channel Operating Mod

VC1	VC2	RF Channel Operating Mode
Low	Low	All RF Paths Isolated
High	Low	ANT to RF1 On
Low	High	ANT to RF2 On
High	High	ANT to RF3 On

## Electrical Characteristics

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Condition
DC Supply Voltage	V <sub>DD</sub>	2.5	4.8	V	T <sub>A</sub> =25°C
Control Pin Voltage (VC1, VC2)	V <sub>C</sub>	-0.5	3		T <sub>A</sub> =25°C
Peak RF Input Power	P <sub>IN</sub>		33	dBm	F0=950MHz, CW, V <sub>DD</sub> =2.8V, V <sub>CH</sub> =1.8V, V <sub>CL</sub> =0V, Z <sub>O</sub> =50Ω, T <sub>A</sub> =25°C
Device Operating Temperature	T <sub>OP</sub>	-40	90	°C	
Device Storage Temperature	T <sub>STG</sub>	-55	150		
Electrostatic Discharge	V <sub>ESD(HBM)</sub>	1000		V	Human Body Model
	V <sub>ESD(CDM)</sub>	500			Charged Device Model

**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.

### Recommended Operating Conditions

Parameter	Symbol	MIN	TYP	MAX	Unit
Operating Frequency	F <sub>O</sub>	0.1		3	GHz
DC Supply Voltage	V <sub>DD</sub>	2.5	2.8	3.0	V
Control Voltage High	V <sub>CH</sub>	1.5	1.8	3.0	V
Control Voltage Low	V <sub>CL</sub>	0	0	0.3	V

## Nominal Operating Parameters

Parameter	Symbol	Specification			Unit	Condition
		MIN	TYP	MAX		
Normal Condition	V <sub>DD</sub> =2.8V, V <sub>CH</sub> =1.8V, V <sub>CL</sub> =0V, PIN=0dBm, Z <sub>O</sub> =50Ω, T <sub>A</sub> =25°C, Unless Otherwise Stated					
DC Performances						
Current on VDD	I <sub>DD</sub>		30	50	μA	
Current on VCTL	I <sub>CTL</sub>			2	μA	
Timing Performances						
Turn On Time	T <sub>ON</sub>		1.5	2.2	μs	50% of VDD to 90% of final RF power
Insertion Loss (ANT to RF1/2/3)	IL		0.04 0.5 0.55	0.45 0.50 0.60	dB	F <sub>0</sub> =0.1 to 1.0GHz F <sub>0</sub> =1.0 to 2.0GHz F <sub>0</sub> =2.0 to 2.7GHz
Isolation (ANT to RF1/2/3)	ISO	30 22 18	35 25 20		dB	F <sub>0</sub> =0.1 to 1.0GHz F <sub>0</sub> =1.0 to 2.0GHz F <sub>0</sub> =2.0 to 2.7GHz
Input 0.1dB Compression Point (ANT to RF1/2/3)	P <sub>0.1dB</sub>	33			dBm	F <sub>0</sub> =950MHz, 20% DC
2nd Order Harmonic (ANT to RF1/2/3)	2F <sub>0</sub>			-75	dBc	F <sub>0</sub> =950MHz @+26dBm
3rd Order Harmonic (ANT to RF1/2/3)	3F <sub>0</sub>			-70	dBc	

Package Outline Dimensions

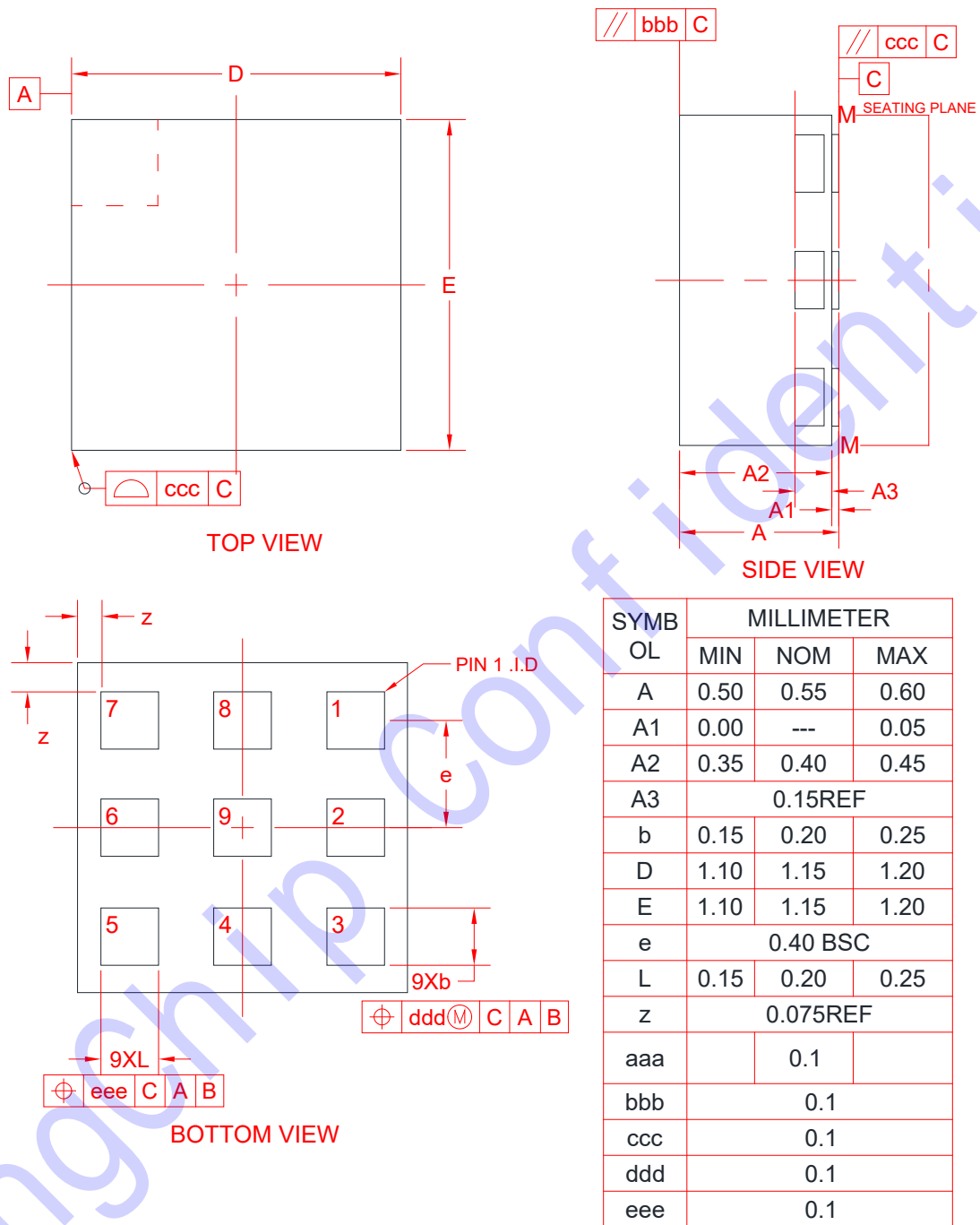


Figure 3. Package Outline Dimensions