



Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 0.4 to 2.7 GHz
- Small package: LGA-9 1.1mm x 1.1mm x 0.45mm
- 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 FM8648 is a Silicon On Insulator (SOI) Single Pole Four Throw(SP4T) Antenna switch which require very low insertion loss, high isolation and high linearity performance.

The FM8648 is manufactured in a compact 1.1 x 1.1 x 0.45mm, 9-pin surface mount LGA package.

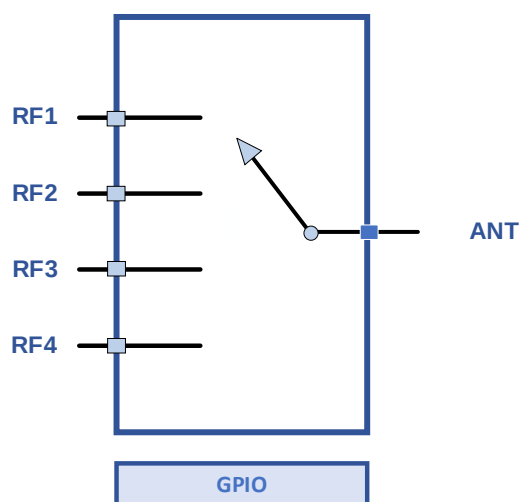


Figure 1 Functional Block Diagram



Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V _{DD}	2.5	3.6	V
Control voltage	V _{CC}	1.5	2.7	V
RF input power	P _{in}		+33.5	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	3.6	V
Supply current, active mode	I _{DD}			90	120	μA
Control signal: High Low			1.5	1.8	2.7 0.3	V
Control current: High Low	I _{CTL}		0.5		5.0	μA
Turn-on time (PIN = +27 dBm)	T _{ON}	Measured from 50% of final VDD supply voltage to 90% of RF power		2	3	μs
Switching time (PIN = +27 dBm)	T _{SW}	Measured from 50% of final VDD supply voltage to 90% of RF power		1	1.5	μs

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



RF Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		0.4		2.7	GHz
Insertion loss	IL	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz		0.45 0.50 0.55	0.48 0.55 0.60	dB
Isolation (ANT port to any receive port)	I _{so}	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz	39 32 28	45 40 35		dB
Isolation (Active RF Ports to other inactive RF Ports)	I _{so}	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz	27 21 18	33 25 21		dB
2nd Order harmonics	2fo	P _{in} = +26 dBm, 900MHz		-59		dBm
3rd Order harmonics	3fo	P _{in} = +26 dBm, 900MHz		-56		dBm
0.1 dB Compression Point 50% duty cycle, VSWR=1:1	P _{0.1dB}	900M, 50Ω		+33.5		dBm



Truth Table

V1	V2	ANT-RFX
0	1	ANT-RF1 on
1	0	ANT-RF2 on
1	1	ANT-RF3 on
0	0	ANT-RF4 on



Pin-out Information

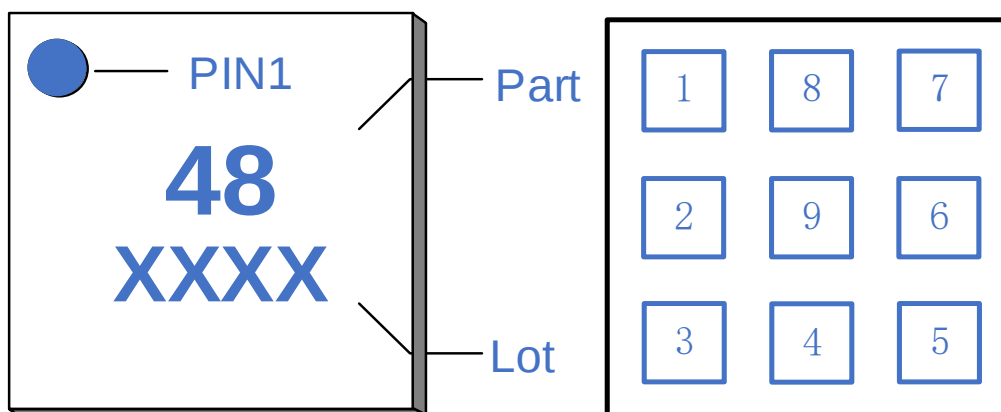


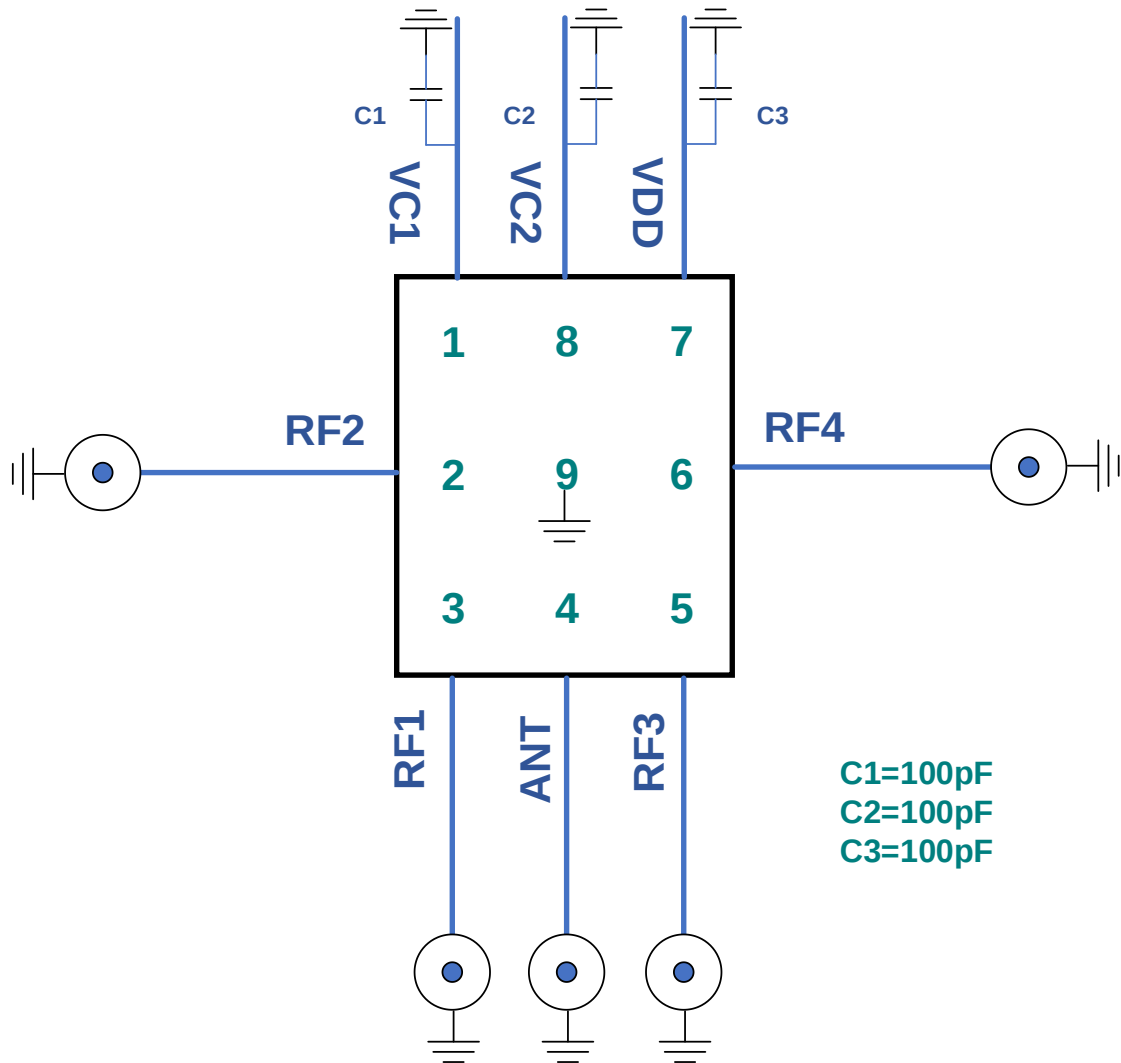
Figure 2 Pin-out Information

Table 1. Pin Description

Pin #	Name	Description	Pin #	Name	Description
1	VC1	Control Voltage	6	RF4	RF Port 4
2	RF2	RF Port 2	7	VDD	Supply Voltage
3	RF1	RF Port 1	8	VC2	Control Voltage
4	ANT	Antenna IN	9	GND	Ground
5	RF3	RF Port 3			



Application circuit





Evaluation Board

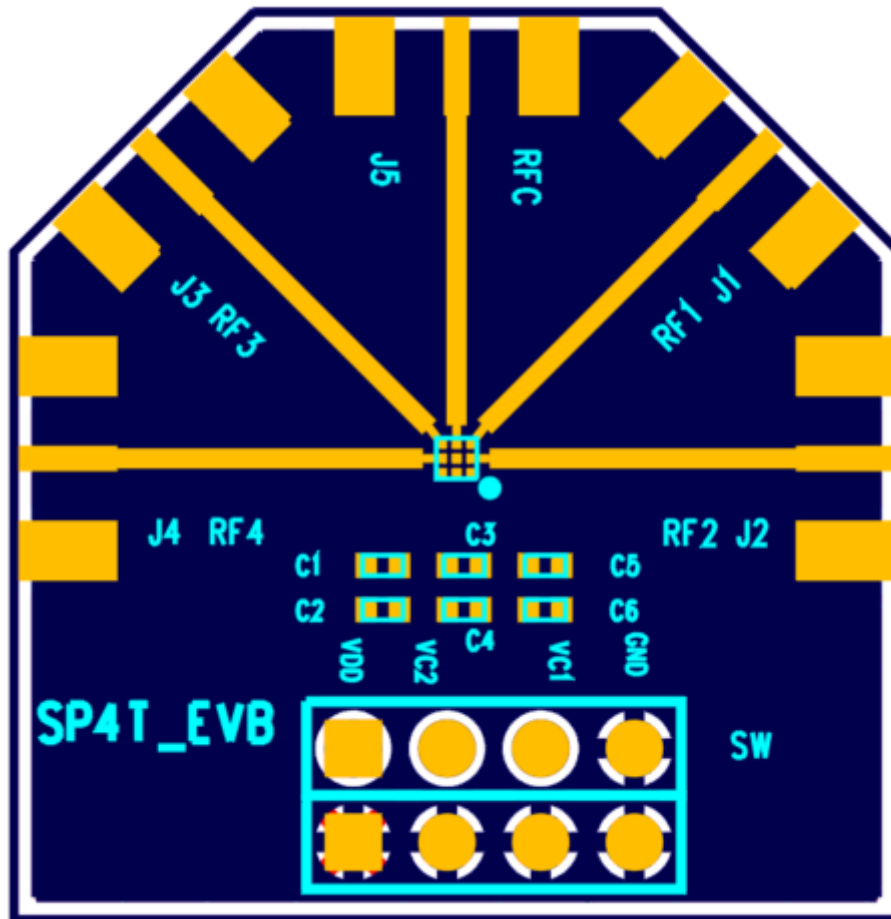


Figure 4 Evaluation Board Assembly Diagram



Package Outline Dimension

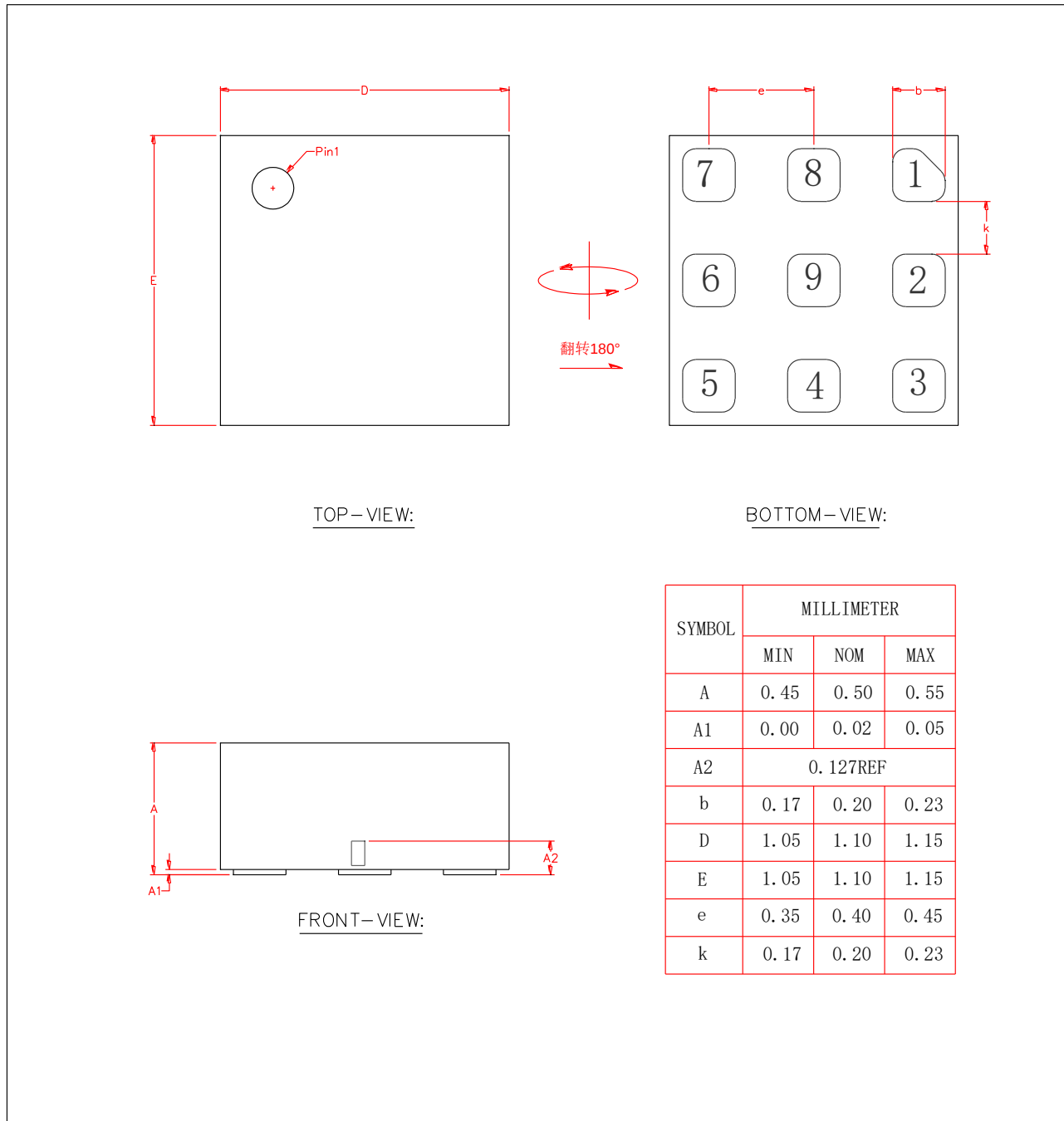
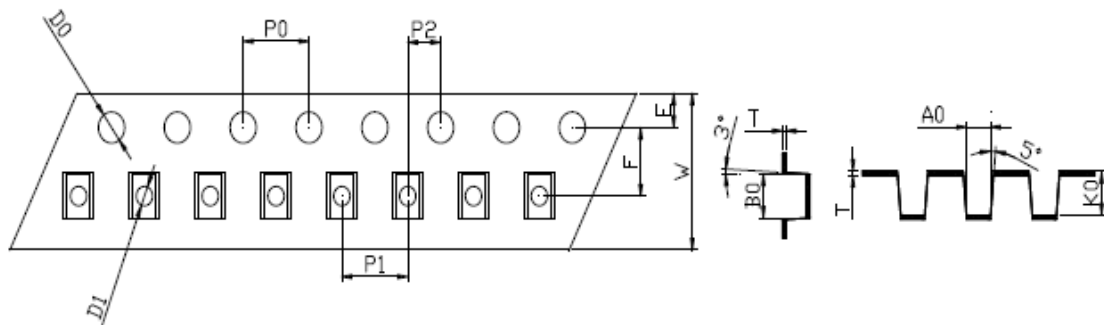


Figure 5 Package Outline Dimension



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:

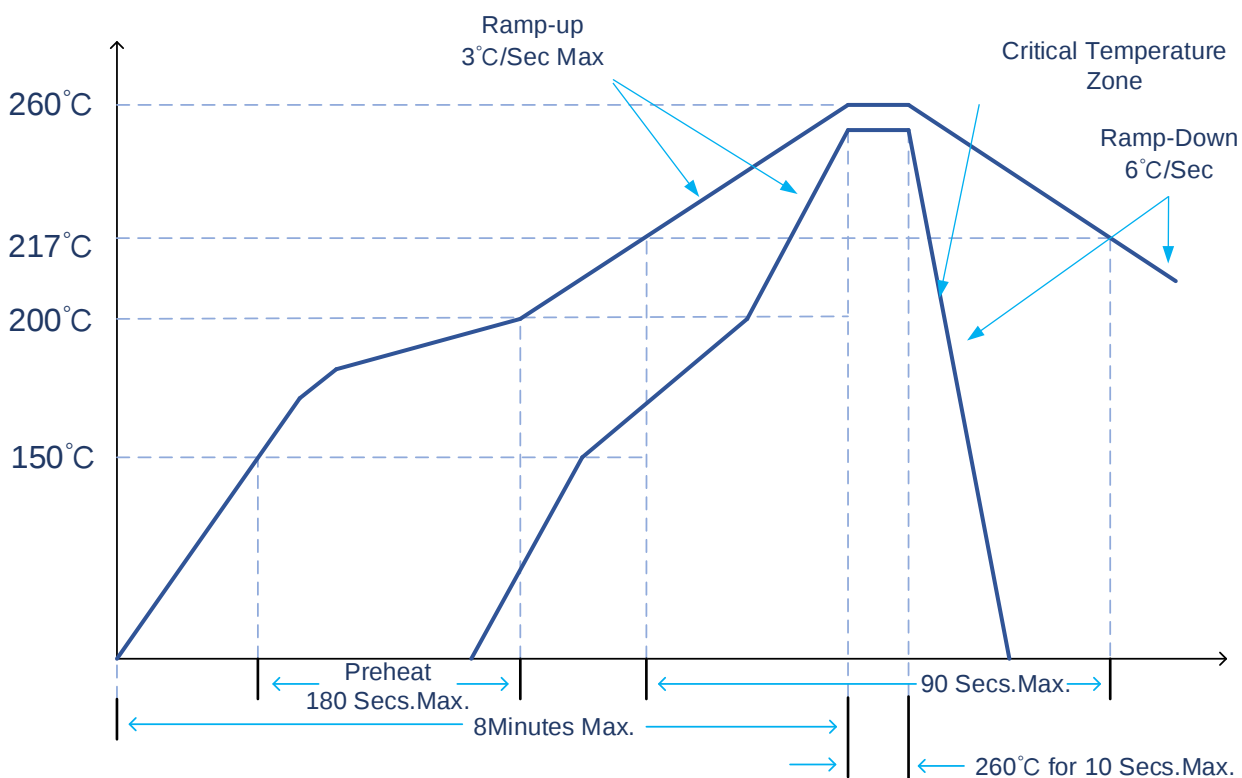
- Lead free
- Halogen Free (Chlorine, Bromine)
- SVHC Free

Version Information

Version	Description	Data	Reviser
V1.2			



Reflow Chart



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