



Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 0.1 to 3 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

- 4G/5G multimode cellular tablets and Multi-Mode GSM, EDGE, WCDMA, LTE
- Diversity antenna switching

Product Description

The FM8544A 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 FM8544A SP4T tuner is manufactured in a compact QFN 1.1mm x 1.5mm x 0.45mm, 10-pin surface mount Quad Flat No-Lead (QFN) package.

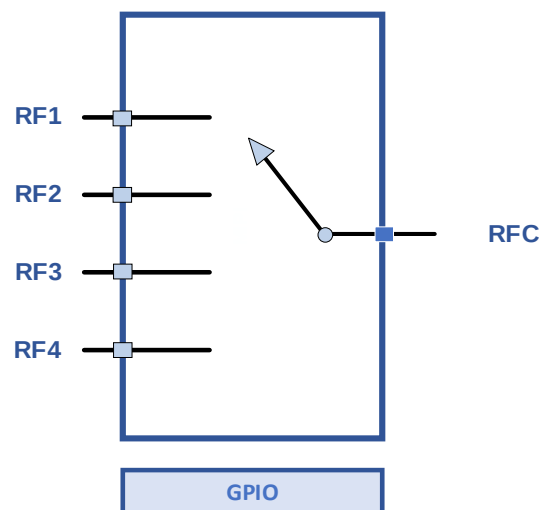


Figure 1 Functional Block Diagram



Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V _{DD}	2.5	3.6	V
Control voltage	VC	-0.3	+3.3	V
RFx Port Off V _{peak}	V _{RF}		60	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	3.6	V
Supply current, active mode	I _{DD}			85	130	μA
Control signal: High Low			1.35	1.8	2.70 0.3	V
Control current: High Low	I _{CTL}			1	5	μA
Turn-on time (PIN = +27 dBm)	T _{ON}	Measured from 50% of final VDD supply voltage to 90% of RF power		10	20	μs
Switching time (PIN = +27 dBm)	T _{SW}	Measured from 50% of final VDD supply voltage to 90% of RF power		/		μs

(VDD = 2.85 V, VIO = 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		0.1		3.0	GHz
Ron(RFC to RF1/2/3/4)	Ron	Switch on path		1.0	1.5	Ω
Coff(RFC to RF1/2/3/4)	Coff	Switch Off path		150	170	fF
Insertion loss	IL	Up to 1.0 GHz		0.25	0.35	dB
		Up to 2.2 GHz		0.40	0.60	
		Up to 3.0 GHz		0.60	0.85	
Isolation (ANT port to any receive port)	Iso	Up to 1.0 GHz	20	25		dB
		Up to 2.2 GHz	15	20		
		Up to 3.0 GHz	12	15		
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	-85	-85		dBm
		Pin = +35 dBm,900MHz	-57	-57		
0.1 dB Compression Point 50% duty cycle, VSWR=1:1	P0.1dB	900M, 50 Ω		+32.5		dBm



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

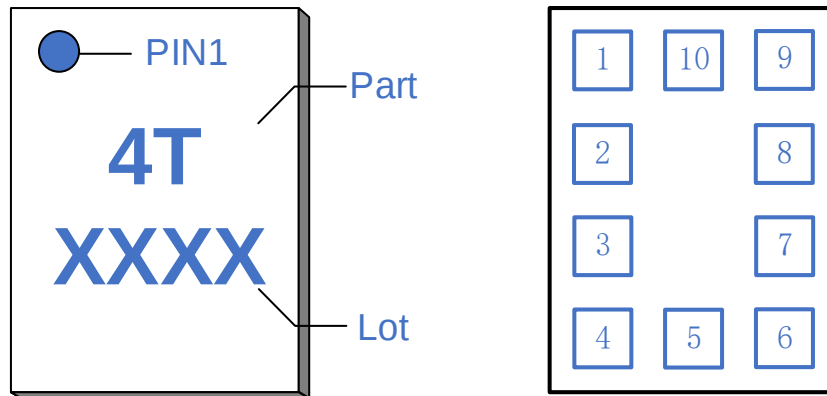


Figure 2 Pin-out Information

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 Port



Application circuit

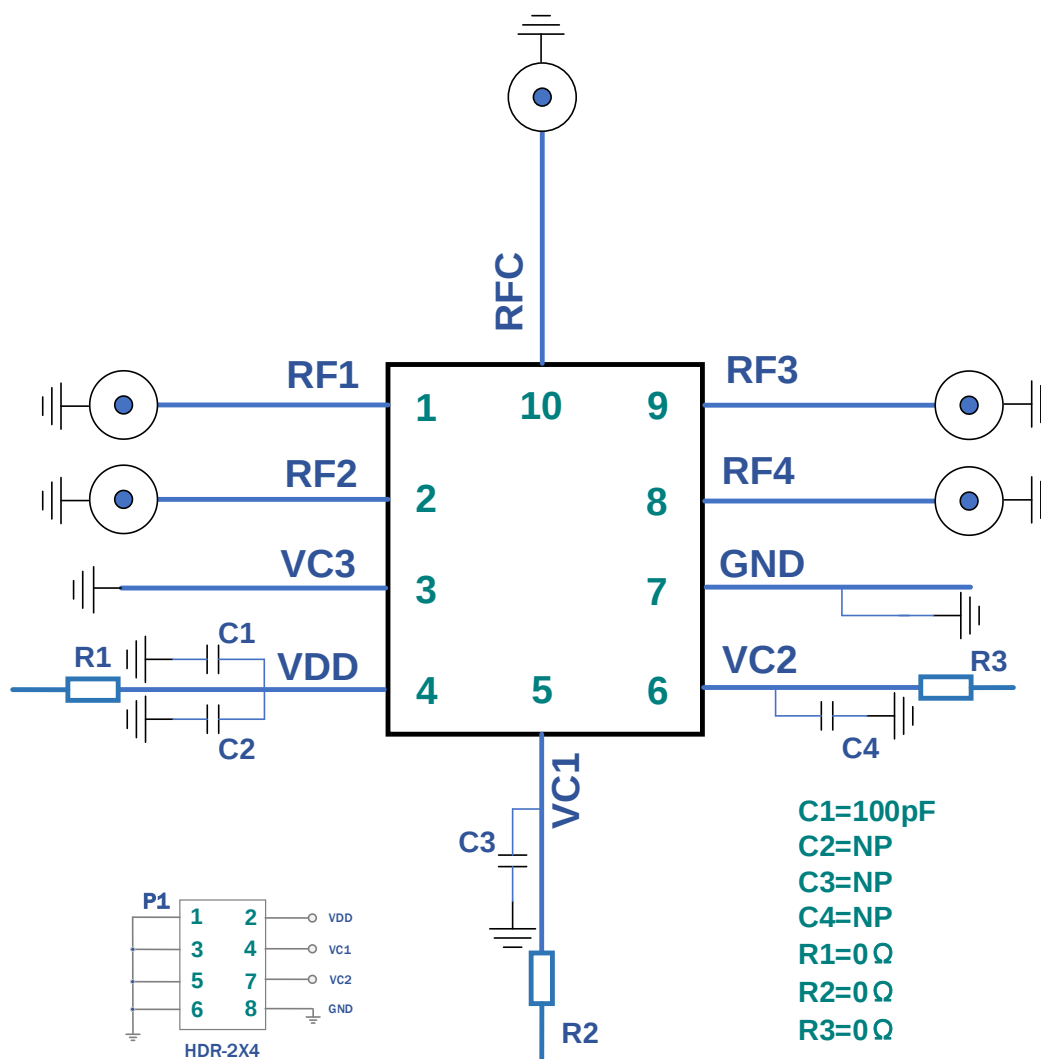


Figure 3 Application circuit



Evaluation Board

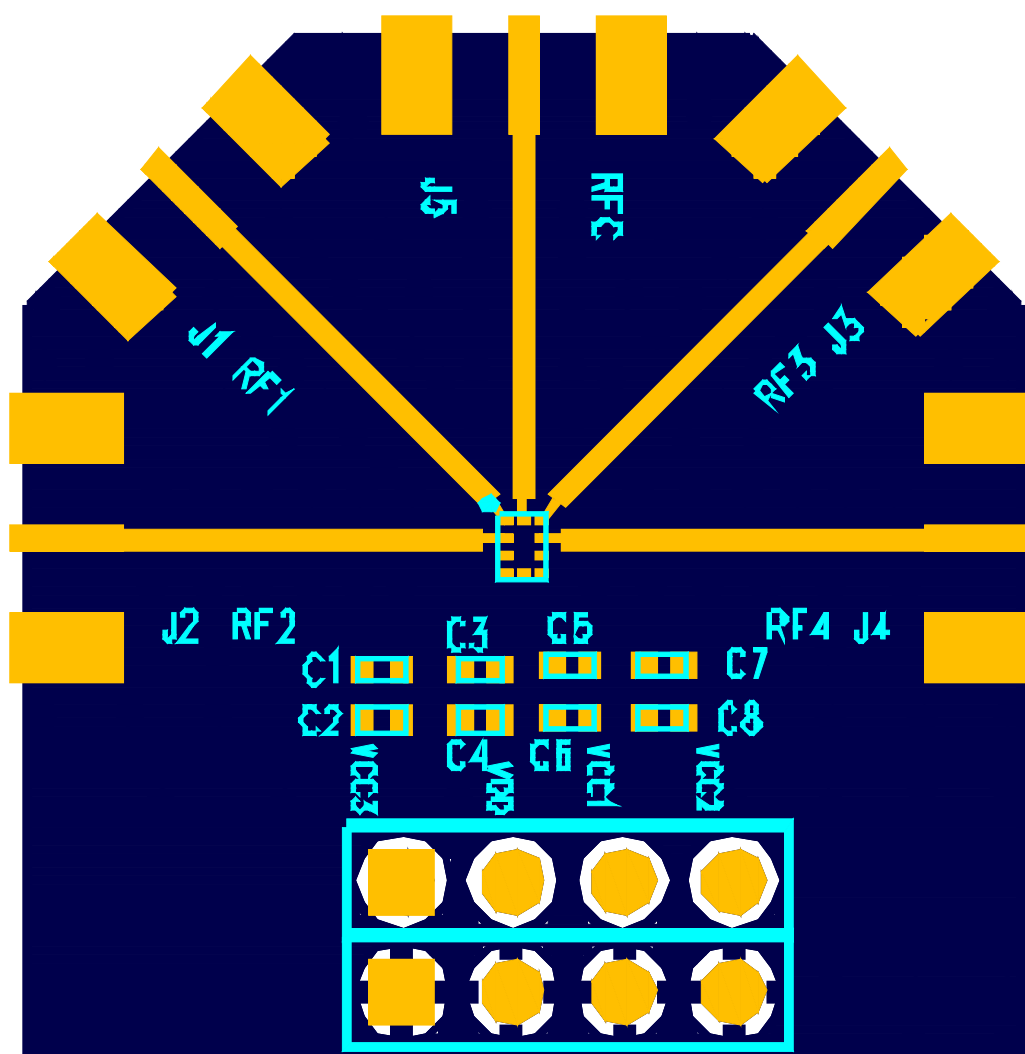


Figure 4 Evaluation Board Assembly Diagram



Package Outline Dimension

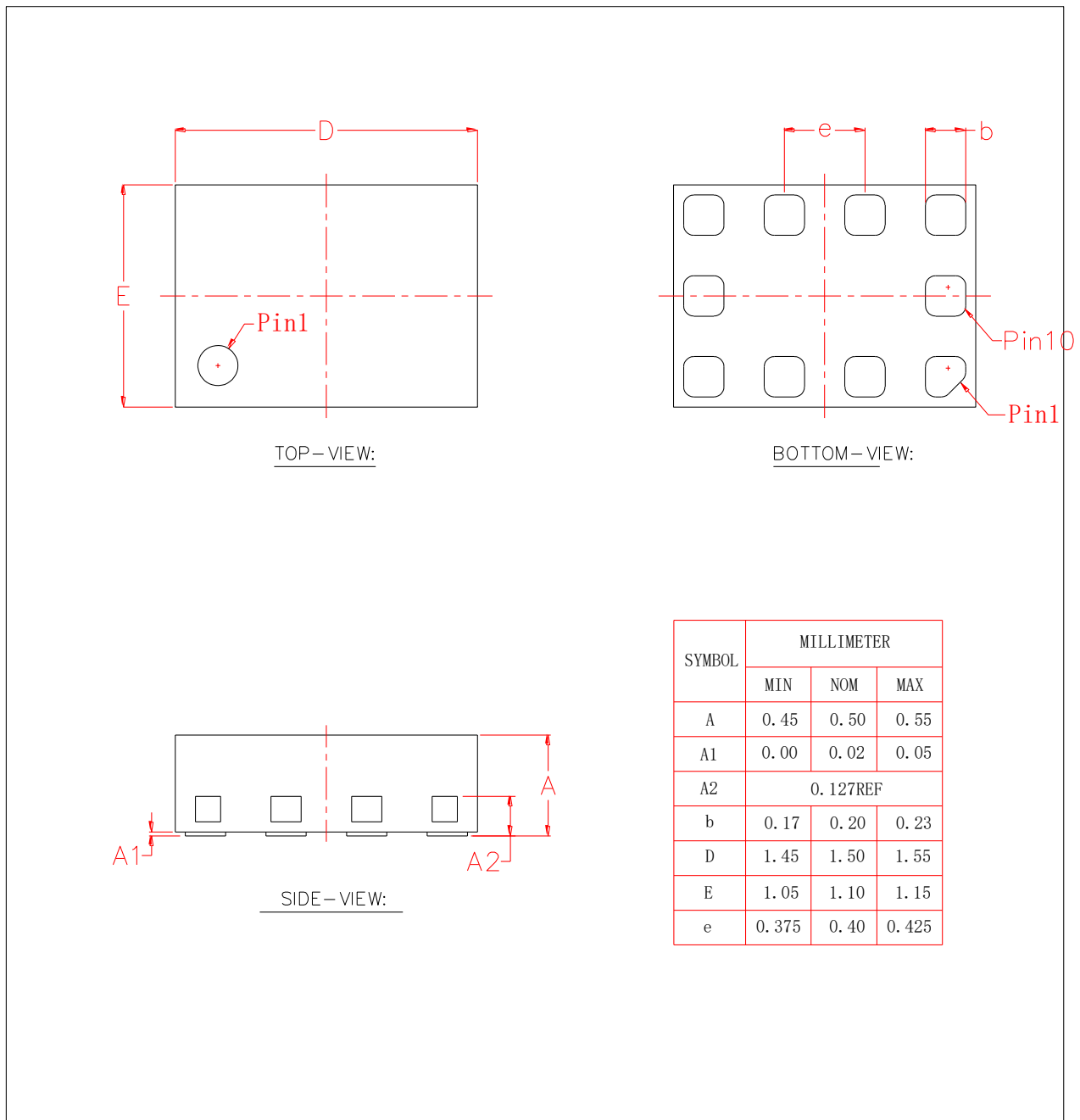
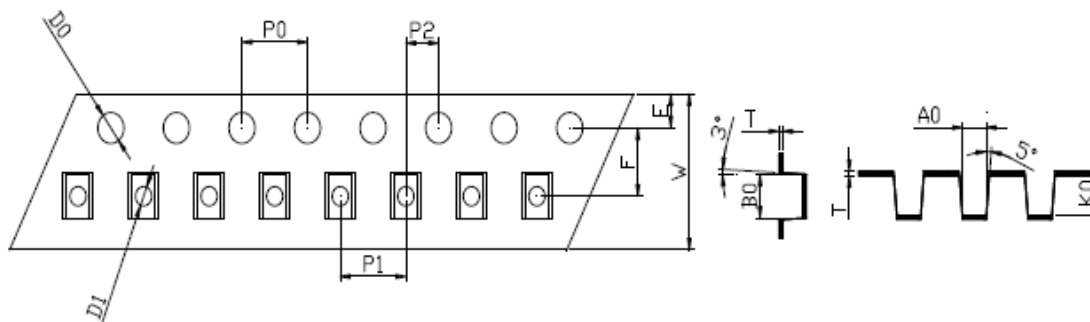


Figure 5 Package Outline Dimension



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

