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RF1200
SPDT SWITCH

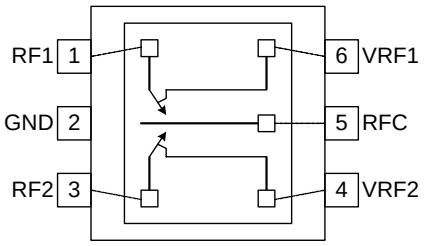
RoHS Compliant & Pb-Free Product
Package Style: QFN, 6-pin, 2x2

Features

- Low Insertion Loss 0.3dB at 1GHz
- High Isolation 26dB at 1GHz
- Low Control Voltage 2.6V to 5.0V
- Harmonics H2: -80dBc@1GHz
- GaAs pHEMT Process

Applications

- Cellular Handset Applications
- Antenna Tuning Applications
- Multi-Mode GSM, W-CDMA Applications
- IEEE802.11b/g WLAN Applications
- GSM/GPRS/EDGE Switch Applications
- Cellular Infrastructure Applications



Functional Block Diagram

Product Description

The RF1200 is a single-pole double-throw (SPDT) high power switch specially designed to handle GSM power applications. The RF1200 features low insertion loss, low control voltage, high linearity, and very good harmonic characteristics. It is fabricated with 0.5µm GaAs pHEMT process, and is packaged in a very compact 2mmx2mm, 6-pin, leadless QFN package.

Ordering Information

RF1200	SPDT Switch
RF1200PCBA-410	Fully Assembled Evaluation Board

Optimum Technology Matching® Applied

☐ GaAs HBT	☐ SiGe BiCMOS	☑ GaAs pHEMT	☐ GaN HEMT
☐ GaAs MESFET	☐ Si BiCMOS	☐ Si CMOS	
☐ InGaP HBT	☐ SiGe HBT	☐ Si BJT	

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Absolute Maximum Ratings

Parameter	Rating	Unit
Voltage	7.0	V
Maximum Input Power (0GHz to 2.5GHz)	+36	dBm
Operating Temperature	-30 to +85	°C
Storage Temperature	-35 to +100	°C

Caution! ESD sensitive device.

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
					Temp=25°C, $V_{CONTROL}$=2.65V
Insertion Loss					
RF>ANT		0.3	0.4	dB	RF ON, 0.88GHz
RF>ANT		0.4	0.5	dB	RF ON, 1.88GHz
RF>ANT		0.5	0.6	dB	RF ON, 2.10GHz
RF>ANT		0.55	0.65	dB	RF ON, 2.45GHz
RF>ANT Isolation					
RF>ANT	25	26		dB	RF ON, 0.88GHz
RF>ANT	21	22		dB	RF ON, 1.88GHz
RF>ANT	19	20		dB	RF ON, 2.10GHz
RF>ANT	17	18		dB	RF ON, 2.45GHz
0.8GHz to 1GHz Harmonics					
Second Harmonic		-80		dBc	P_{IN}=34.5dBm, 0.88GHz, $2f_0$
Third Harmonic		-75		dBc	P_{IN}=34.5dBm, 0.88GHz, $3f_0$
1.7GHz to 2.0GHz Harmonics					
Second Harmonic		-80		dBc	P_{IN}=31.5dBm, 1.9GHz, $2f_0$
Third Harmonic		-80		dBc	P_{IN}=31.5dBm, 1.9GHz, $3f_0$
2.45GHz Harmonics					
Second Harmonic		-90		dBc	P_{IN}=31.5dBm, 1.9GHz, $2f_0$
Third Harmonic		-90		dBc	P_{IN}=31.5dBm, 1.9GHz, $3f_0$
IMD Due to Out-of-Band Blocker					
RF>ANT		-105		dBm	P_{IN}=20dBm @ 1950MHz, P_{BLOCK}=-15dBm @ 4090MHz
RF Port Return Loss					
RF>ANT		15		dB	0.5GHz to 2.5GHz
Input Power at 0.1dB Compression Point					
	37			dBm	0.88GHz
	34			dBm	1.88GHz
Switching Speed					
			5	us	

Note: Parameters hold at 25°C and $V_{CONTROL}$=2.65V.

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Switch Control Settings

	Control Signals		Signal Paths	
	VRF1	VRF2	RF1-RFC	RF2-RFC
Valid States	1	0	Closed	Open
	0	1	Open	Closed
Invalid States	0	0	Indeterminate State*	
	1	1	Indeterminate State*	

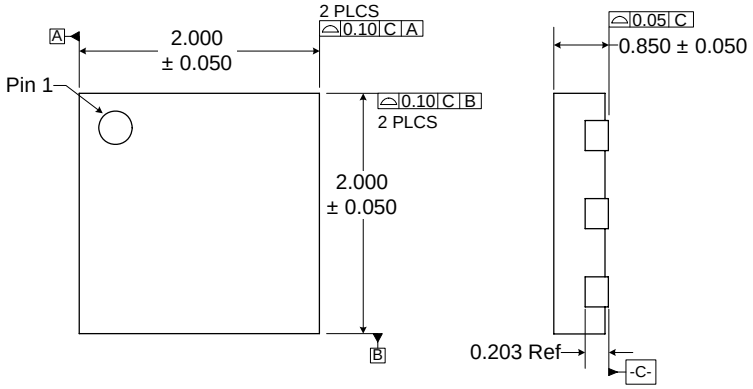
0: Logic level low, 0V~0.2V

1: Logic level high, 2.6V~5.0V

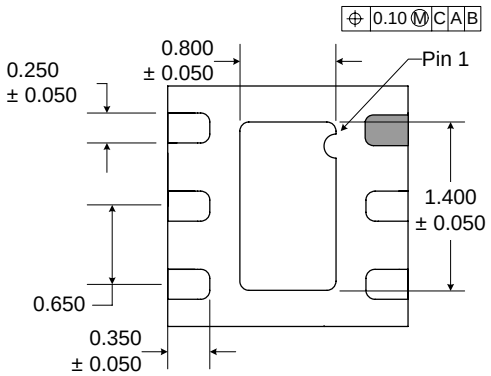
Note: In indeterminate states, both sigal paths are closed with degraded performance.

Pin	Function	Description	Interface Schematic
1	RF1	First RF connection.	
2	GND	Ground.	
3	RF2	Second RF connection.	
4	VRF2	Second RF control.	
5	RFC	Common RF connection.	
6	VRF1	First RF control.	
Pkg Base	GND		

Package Drawing



Dimensions in mm.
Shaded lead is pin 1.



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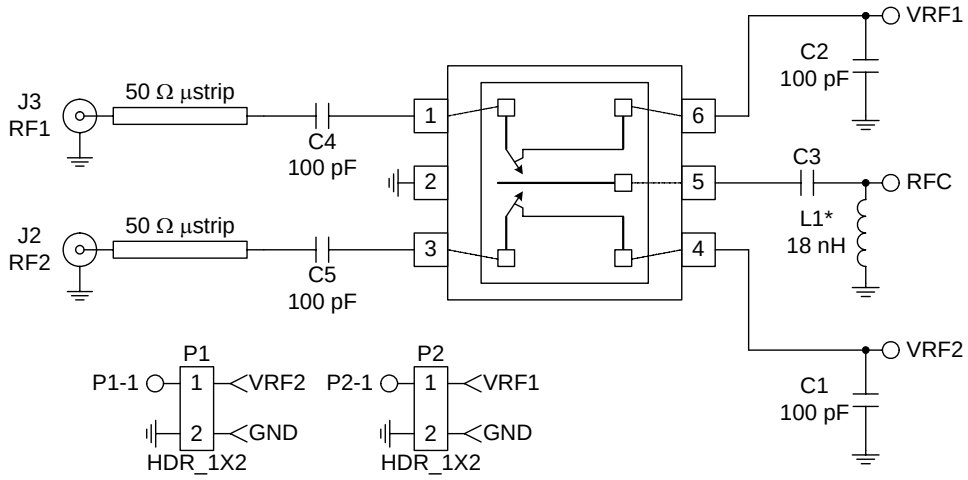
Evaluation Board Schematic



*L1 is optional for
IEC61000-4-2 ESD protection.

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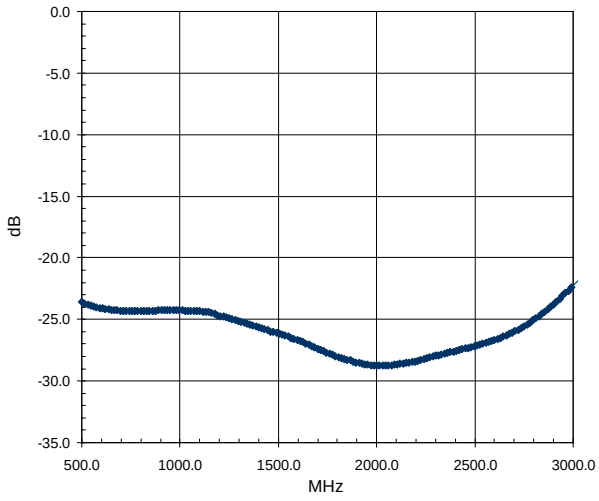
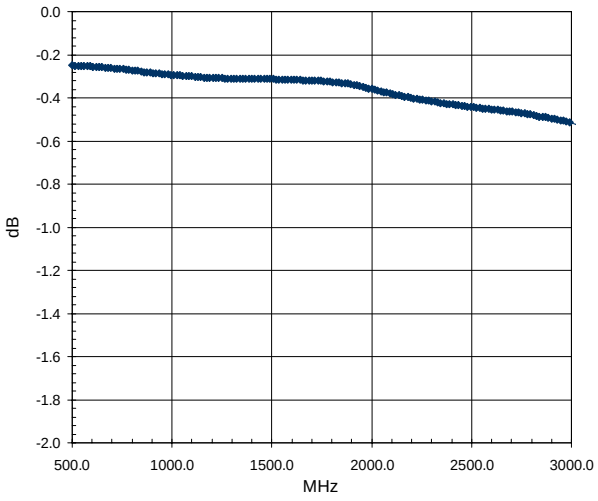
Typical Performance

Temp = 25°C, $V_{CONTROL}$ = 2.65V

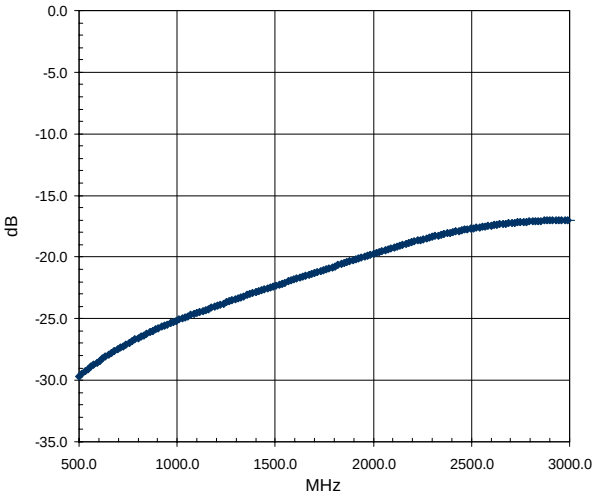
Return Loss



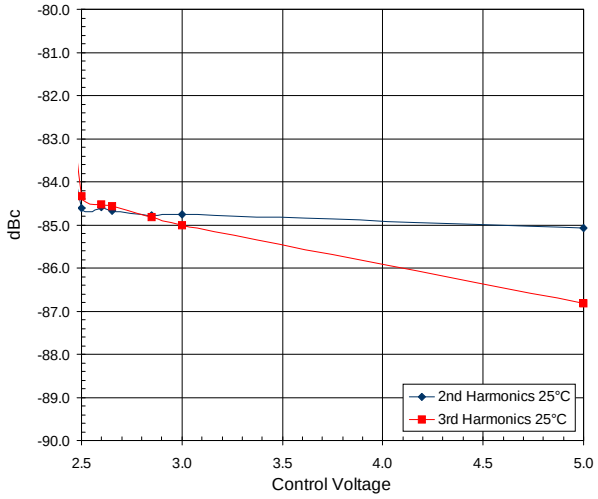
Insertion Loss



Isolation



900MHz Harmonics versus Control Voltage



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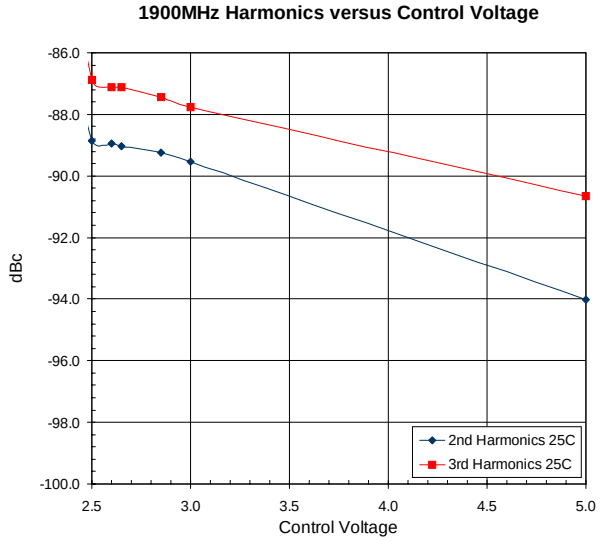
1900MHz Harmonics versus Control Voltage
-86.0
-88.0
-90.0
-92.0
-94.0
-96.0
-98.0
-100.0
dBc
2.5
3.0
3.5
4.0
4.5
5.0
Control Voltage
2nd Harmonics 25C
3rd Harmonics 25C

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