

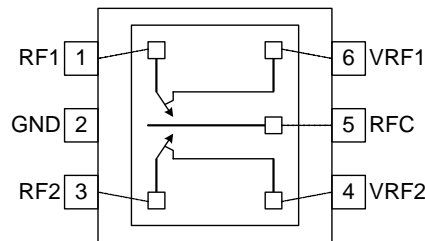
RoHS Compliant & Pb-Free Product  
Package Style: QFN, 6-pin, 2x2

**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**

- |                                      |                                      |  |                                   |
|--------------------------------------|--------------------------------------|--|-----------------------------------|
| <input type="checkbox"/> GaAs HBT    | <input type="checkbox"/> SiGe BiCMOS | <input checked="" type="checkbox"/> GaAs pHEMT | <input type="checkbox"/> GaN HEMT |
| <input type="checkbox"/> GaAs MESFET | <input type="checkbox"/> Si BiCMOS   | <input type="checkbox"/> Si CMOS               |                                   |
| <input type="checkbox"/> InGaP HBT   | <input type="checkbox"/> SiGe HBT    | <input type="checkbox"/> 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.

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RoHS status based on EUDirective2002/95/EC (at time of this document revision).

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
					Temp=25 °C, V <sub>CONTROL</sub> =2.65V
<b>Insertion Loss</b>					
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
<b>RF&gt;ANT Isolation</b>					
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
<b>0.8GHz to 1GHz Harmonics</b>					
Second Harmonic		-80		dBc	P <sub>IN</sub> =34.5dBm, 0.88GHz, 2f <sub>0</sub>
Third Harmonic		-75		dBc	P <sub>IN</sub> =34.5dBm, 0.88GHz, 3f <sub>0</sub>
<b>1.7GHz to 2.0GHz Harmonics</b>					
Second Harmonic		-80		dBc	P <sub>IN</sub> =31.5dBm, 1.9GHz, 2f <sub>0</sub>
Third Harmonic		-80		dBc	P <sub>IN</sub> =31.5dBm, 1.9GHz, 3f <sub>0</sub>
<b>2.45GHz Harmonics</b>					
Second Harmonic		-90		dBc	P <sub>IN</sub> =31.5dBm, 1.9GHz, 2f <sub>0</sub>
Third Harmonic		-90		dBc	P <sub>IN</sub> =31.5dBm, 1.9GHz, 3f <sub>0</sub>
<b>IMD Due to Out-of-Band Blocker</b>					
RF>ANT		-105		dBm	P <sub>IN</sub> =20dBm @ 1950MHz, P <sub>BLOCK</sub> =-15dBm @ 4090MHz
<b>RF Port Return Loss</b>					
RF>ANT		15		dB	0.5GHz to 2.5GHz
<b>Input Power at 0.1dB Compression Point</b>					
	37			dBm	0.88GHz
	34			dBm	1.88GHz
<b>Switching Speed</b>					
			5	us	

Note: Parameters hold at 25 °C and V<sub>CONTROL</sub>=2.65V.

**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*	

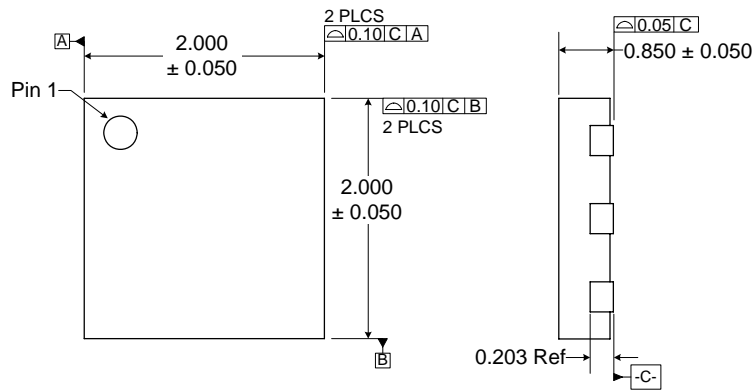
0: Logic level low, 0V~0.2V

1: Logic level high, 2.6V~5.0V

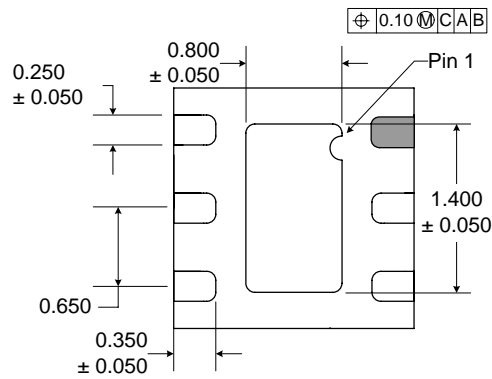
Note: In indeterminate states, both sigal paths are closed with degraded performance.

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		

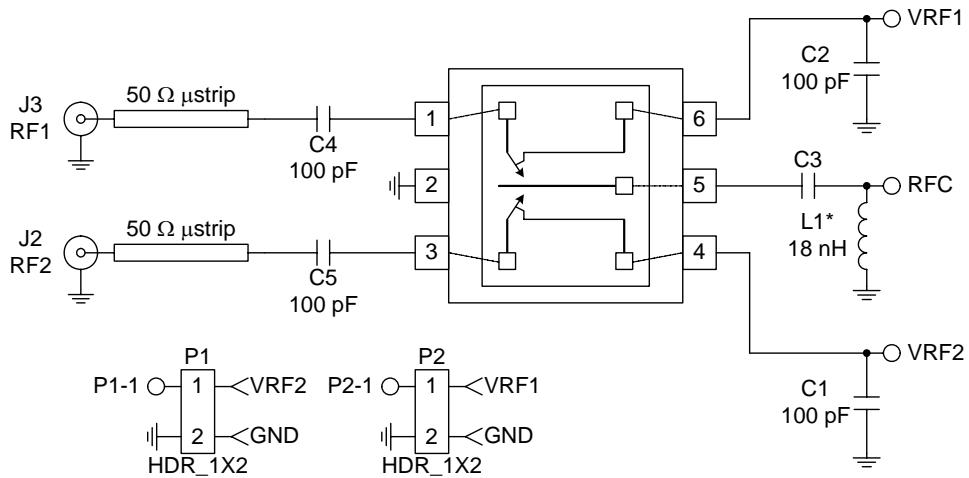
## Package Drawing



Dimensions in mm.  
Shaded lead is pin 1.



**Evaluation Board Schematic**

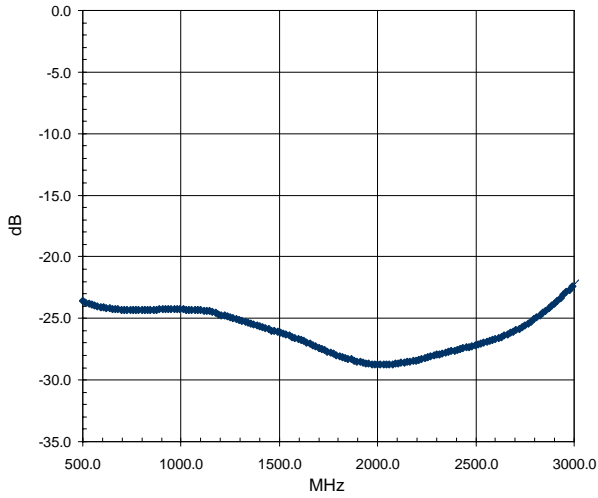


\*L1 is optional for IEC61000-4-2 ESD protection.

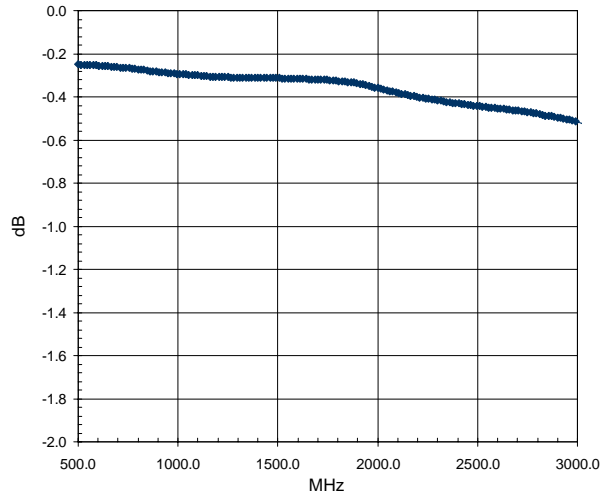
## Typical Performance

Temp=25 °C,  $V_{CONTROL} = 2.65V$

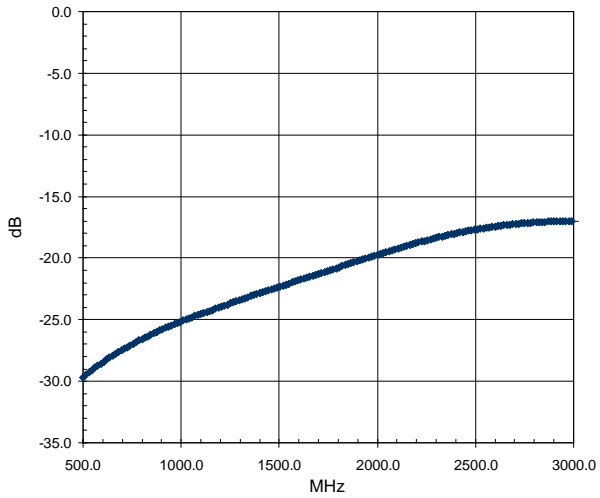
Return Loss



Insertion Loss



Isolation



900MHz Harmonics versus Control Voltage

