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RF1128

BROADBAND MEDIUM POWER (HIGH ISOLATION) SPDT SWITCH

Package Style: QFN, 6-pin, 2mmx1.3mm



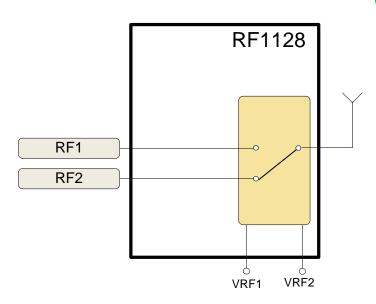


Features

- Broadband Performance: Low Frequency to 3.5 GHz
- Very Low Insertion Loss:
 - 0.35dB at 1GHz
 - 0.40 dB at 2GHz
- Excellent Linearity:
 - IIP2 > 108dBm (Typ.)
 - IIP3 > 67 dBm (Typ.)
- P0.1dB:32dBm (Typ.)
- Compact Footprint (2.0 mmx1.3 mmx0.35 mm, 6-pin QFN)

Applications

- Cellular Handset Applications
- Antenna Tuning Applications
- Multi-mode GSM, W-CDMA Applications
- WLAN Applications



Functional Block Diagram

Product Description

The RF1128 is a single-pole double-throw (SPDT) switch designed for general purpose switching applications which require very low insertion loss and high power handling capability. The RF1128 is ideally suited for battery operated applications requiring high performance switching with very low DC power consumption. The RF1128 features very low insertion loss, broadband isolation and excellent linearity performance, and is operable from 1.8V to 3.3V control voltage. It is fabricated with 0.5 μ m GaAs pHEMT process, and is packaged in a very compact 2 mmx1.3 mm, 6-pin, leadless QFN package.

Ordering Information

RF1128 Broadband Medium Power (High Isolation) SPDT Switch RF1128PCBA-410 Fully Assembled Evaluation Board

Optimum Technology Matching® Applied

☐ GaAs HBT	☐ SiGe BiCMOS	✓ GaAs pHEMT	☐ GaN HEMT
☐ GaAs MESFET	☐ Si BiCMOS	☐ Si CMOS	☐ RF MEMS
☐ InGaP HBT	☐ SiGe HBT	☐ Si BJT	☐ LDMOS

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RF1128



Absolute Maximum Ratings

Parameter	Rating	Unit
Voltage	6.0	V
Maximum Input Power (0.6GHz to 3.5GHz), RF1, RF2, 50Ω	+34	dBm
Operating Temperature	-30 to +85	°C
Storage Temperature	-65 to +100	°C



Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

RoHS status based on EUDirective 2002/95/EC (at time of this document revision).

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Parameter		Specification		11:4	O andition
	Min.	Тур.	Max.	Unit	Condition
					VRF1, VRF2=High=3V, VRF1=VRF2=Low=0V, Temp=25°C
Operating Frequency	600		3500	MHz	
Insertion Loss					
RFC - RF1, RFC - RF2		0.25	0.35	dB	RF ON, 50MHz to 600MHz
		0.35	0.50	dB	RF ON, 824 MHz to 960 MHz
		0.40	0.55	dB	RF ON, 1850MHz to 1990MHz
		0.45	0.60	dB	RF ON, 2170MHz to 2500MHz
		0.55	0.70	dB	RF ON, 3500 MHz
RF Isolation					
RF1 - RF2 and RF2 - RF1	27	29		dB	RF ON, 600 MHz
	25	27		dB	RF ON, 824MHz to 960MHz
	29	31		dB	RF ON, 1850MHz to 1990MHz
	32	34		dB	RF ON, 2170MHz to 2500MHz
RFC - RF1, RFC - RF2	27	29		dB	RF ON, 600MHz
	25	27		dB	RF ON, 824MHz to 960MHz
	28	30		dB	RF ON, 1850 MHz to 1990 MHz
	31	33		dB	RF ON, 2170 MHz to 2500 MHz
RF Port Return Loss					
VSWR			1.5:1		
880 MHz Harmonics					
Second Harmonic	70	91		dBc	P _{IN} =26dBm; F _O =880MHz
Third Harmonic	70	91		dBc	P _{IN} =26dBm; F _O =880MHz
1880 MHz Harmonics					
Second Harmonic	70	85		dBc	P _{IN} =26dBm; F _O =1880MHz
Third Harmonic	70	88		dBc	P _{IN} =26dBm; F ₀ =1880MHz
2500 MHz Harmonics					
Second Harmonic	70	82		dBc	P _{IN} =26dBm; F ₀ =2500MHz
Third Harmonic	70	86		dBc	P _{IN} =26dBm; F _O =2500MHz



Parameter	Specification		Hoit	Condition	
Parameter	Min.	Тур.	Max.	Unit	Condition
IIP2					
RF1, RF2 - ANT Cell	104	111		dBm	Tone 1: 836.5MHz @ 16dBm, Tone 2: 1718MHz @ -20dBm, Receive Freq: 881.5MHz
RF1, RF2 - ANT AWS	105	111		dBm	Tone 1: 1732.5MHz @ 16dBm, Tone 2: 3865MHz @ -20dBm, Receive Freq: 2132.5MHz
RF1, RF2 - ANT PCS	104	108		dBm	Tone 1: 1880 MHz @ 16dBm, Tone 2: 3840 MHz @ -20dBm, Receive Freq: 1960 MHz
IIP3					
RF1, RF2 - ANT Cell	65	68		dBm	Tone 1: 836.5MHz @ 16dBm, Tone 2: 791.5MHz @ -20dBm, Receive Freq: 881.5MHz
RF1, RF2 - ANT IMT	65	67		dBm	Tone 1: 1950 MHz @ 16 dBm, Tone 2: 1760 MHz @ -20 dBm, Receive Freq: 2140 MHz
Input Power at 0.1dB					
Compression Point					
		32		dBm	
Switching Speed					
			600	ns	50% to 90% RF ON, 50% to 10% RF OFF
DC Supply					
VRF1 and VRF2 (H)	2.85	3.0	3.30	V	
VRF1 and VRF2 (L)	0.00		0.40	V	
Control Current			6.00	uA	

Control Logic

	Control	Signals	Signal Paths		
,	VRF1	VRF2	RF1-RFC	RF2-RFC	
Valid States	1	0	ON	OFF	
	0	1	OFF	ON	
Invalid States	0	0	Indeterminate State*		
	1	1	Indeterminate State*		

0: Logic level low, 0V~0.4V

1: Logic level high, 2.85V~3.3V

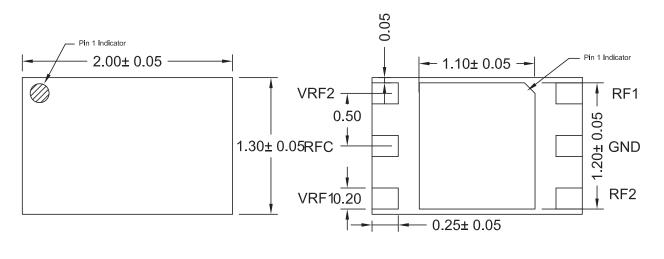
Note: In indeterminate states, both signal paths are ON with degraded performance.

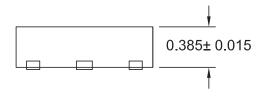
For low power applications, RF1128 is operable at 1.8V control voltage with no significant change to the Insertion Loss, Return Loss, and Isolation performance.



Pin	Function	Description
1	RF1	RF Port 1.
2	GND	Ground.
3	RF2	RF Port 2.
4	VRF1	Control 1.
5	RFC	Antenna.
6	VRF2	Control 2.
Pkg	GND	Ground.
Base		

Package Drawing

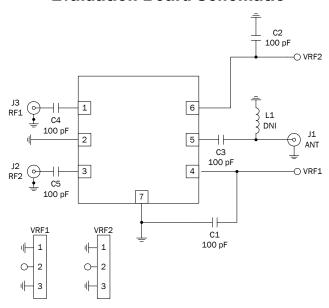




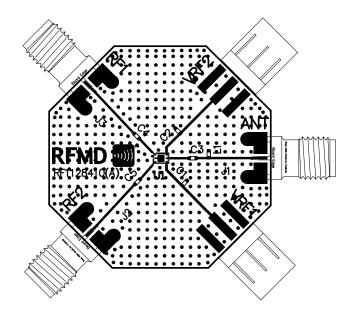
1) PIN 1 INDICATOR SHADED AREA Notes:



Evaluation Board Schematic



Evaluation Board Layout



RF1128



Typical Performance Data on Evaluation Board

Note: Fixture losses have been de-embedded (Temp=25°C, VRF1=VRF2=High=3V, VRF1=VRF2=Low=0V)

