Preliminary

RF3024

BROADBAND MEDIUM POWER SPDT SWITCH

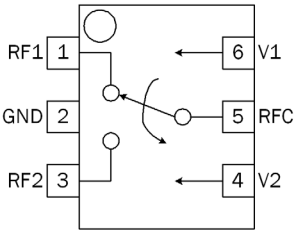
Package Style: SC70, 6-pin

Features

- 10MHz to 3GHz Operation
- 0.25dB Insertion Loss at 1GHz
- 27dB Isolation at 2GHz
- 2.5V Minimum Control Voltage
- 30dBm P0.1dB at 3V
- 50dBm IP3 at 3V

Applications

- Cellular Handset Applications
- Antenna Tuning Applications
- IEEE802.11b/g WLAN Applications
- Cellular Infrastructure Applications



Functional Block Diagram

Product Description

The RF3024 is a single-pole double-throw (SPDT) switch designed for general purpose switching applications which require very low insertion loss, moderate isolation, and medium power handling capability. It is also well suited for battery powered applications with low control voltages. The RF3024 is fabricated with 0.5μm GaAs pHEMT process, and is packaged in a very compact SC70, 6-pin package.

Ordering Information

RF3024	Broadband Medium Power SPDT Switch
RF3024PCBA-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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Absolute Maximum Ratings

Parameter	Rating	Unit
Control Voltage	7.0	V
Maximum Input Power	+36	dBm
Operating Temperature	-40 to +85	°C
Storage Temperature	-55 to +150	°C
MSL Rating	TBD	
HBM ESD	Class 1A	

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 EUDirective2002/95/EC (at time of this document revision).

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Insertion Loss		0.25		dB	1GHz
		0.33		dB	2GHz
		0.45		dB	3GHz
VSWR		1.15		dB	1GHz
		1.2		dB	2GHz
		1.33		dB	3GHz
Isolation		26		dB	1GHz
		27		dB	2GHz
		27		dB	3GHz
P1dB		32		dBm	1GHz
P0.1dB		30		dBm	1GHz
IP3		55		dBm	1GHz, 1MHz Spacing, 10dBm per tone

Test Conditions: V_{CC}=3.0V, 50Ω, 25°C, with Application Circuit shown.

Switch Control Settings

	Control Signals		Signal Paths	
	V1	V2	RFC-RF1	RFC-RF2
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~0.2V

1: Logic level high, 2.5V~5.0V

*In indeterminate states, both signal paths are in high insertion loss states, ~10dB.

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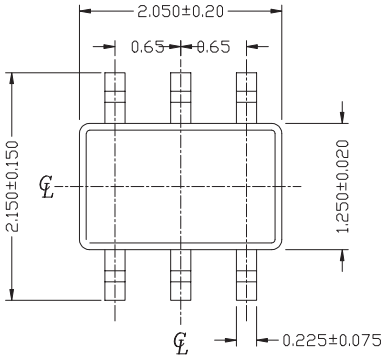
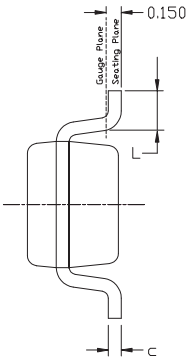
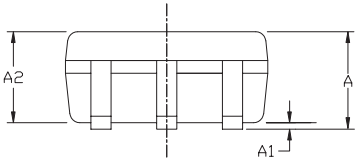
Pin	Function	Description
1	RF1	RF Port 1.
2	GND	Ground.
3	RF2	RF Port 2.
4	V2	RF2 Control Voltage.
5	RFC	Common RF Port.
6	V1	RF1 Control Voltage.

Package Drawing





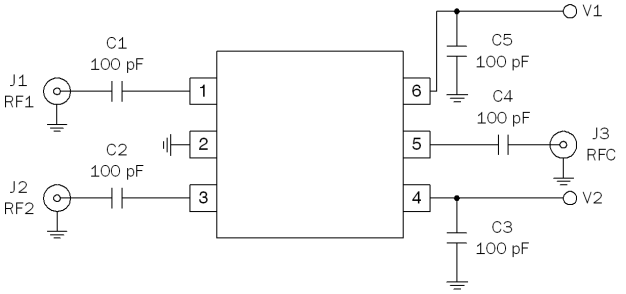
SYMBOL	MIN	MAX
E	1.15	1.35
D	1.85	2.25
HE	2.00	2.30
A	0.80	1.00
A2	0.80	0.91
A1	0.00	0.09
e	0.65 BSC	
b	0.15	0.30
c	0.08	0.25
L	0.21	0.41



NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS ARE EXCLUSIVE OF MOLD FLASH & GATE BURR.
3. ALL SPECIFICATIONS COMPLY TO JEDEC SPEC MO-203 ISSUE A.
4. DIE IS FACING UP FOR MOLD AND FACING DOWN FOR TRIM/FORM. ie :REVERSE TRIM/FORM.
5. PACKAGE SURFACE MATTE FINISH VDI 11~13.
6. THE FOOT LENGTH MEASURING BASED ON GAUGE PLANE METHOD.

Evaluation Board Schematic



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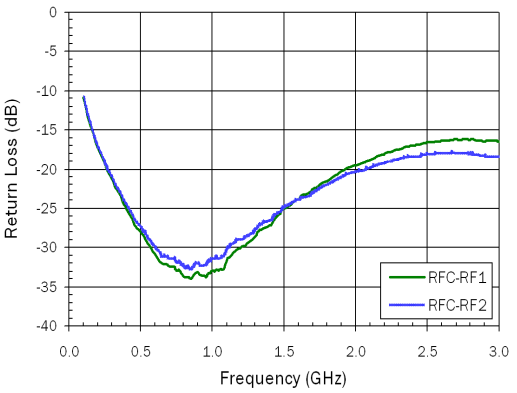
Typical Performance

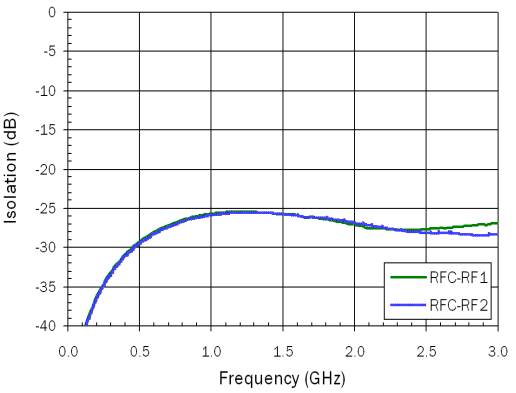
Temp=25°C, $V_{CONTROL}$=3.0V

Note: Low Frequency RL performance can be improved using larger DC blocking capacitors.

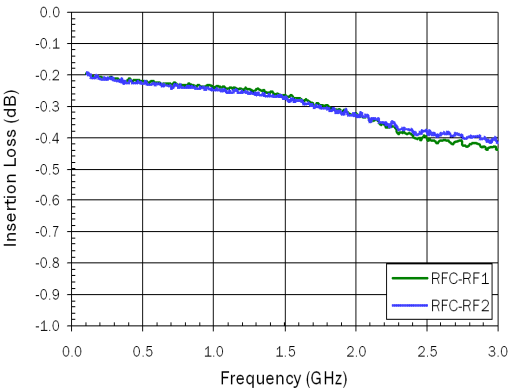
Return Loss versus Frequency



Isolation versus Frequency



Insertion Loss versus Frequency



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