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RF1132

BROADBAND HIGH POWER SP3T SWITCH

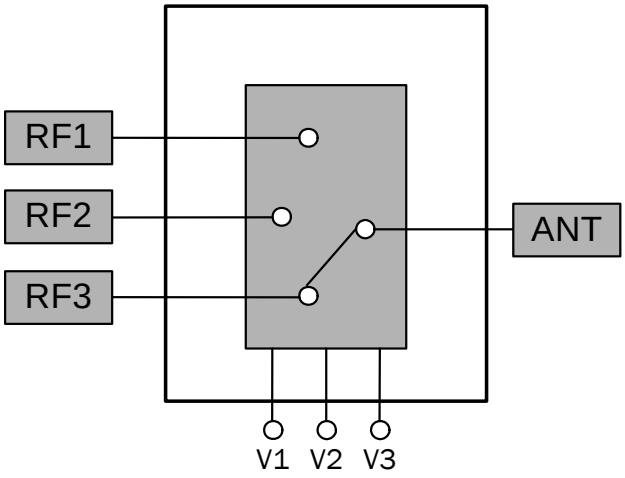
Package Style: QFN, 12-pin, 2mmx2mm

Features

- Broadband Performance
  Low Frequency - 2.5GHz
- Low Insertion Loss
  0.48dB Typ at 0.90GHz
  0.68dB Typ at 1.90GHz
- Good Isolation:
  23dB Typ at 1.90GHz
- Excellent Cross-Modulation Performance:
  -102dBm Typ @ 0.90GHz
  -100dBm Typ @ 1.90GHz
- P0.1dB>34dBm
- Compact Footprint
  (2.0mmx2.0mmx0.55mm, 12-pin QFN)

Applications

- CDMA Handset Applications
- Antenna Tuning Applications
- IEEE802.11b/g WLAN Applications
- Multi-mode GSM/W-CDMA Applications
- GSM/GPRS/EDGE Switch Applications



Functional Block Diagram

Product Description

The RF1132 is a single-pole triple-throw (SP3T) switch designed for CDMA Handset Applications and general purpose switching applications which require very low insertion loss and high power handling capability. The RF1132 is ideally suited for battery operated applications requiring high performance switching with very low DC power consumption. The RF1132 features low insertion loss, excellent cross-modulation performance, and good isolation. It is fabricated with 0.5µm GaAs pHEMT process, and is packaged in a very compact 2mmx2mm, 12-pin, leadless QFN package.

Ordering Information

RF1132	Broadband High Power SP3T Switch
RF1132PCBA-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	6.0	V
Maximum Input Power (0.6GHz to 2.5GHz), RF1, RF2, RF3	+36	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 EUDirective2002/95/EC (at time of this document revision).

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
					$V_{CONTROL}$=0/2.6V, Nominal Test Conditions Unless Otherwise Specified: ZO=50Ω. Temp=25°C. Need external DC blocking capacitors on all RF ports.
Operating Frequency	0.6		2.5	GHz	
Insertion Loss					
Cellular		0.48	0.58	dB	ANT to RFx ON, 824MHz to 894MHz
GPS		0.60	0.70	dB	ANT to RFx ON, 1574MHz to 1577MHz
PCS		0.68	0.78	dB	ANT to RFx ON, 1850MHz to 1990MHz
RF>ANT Isolation					
Cellular	28	30		dB	RFxOFF to RFx ON, 824MHz to 894MHz
GPS	23	25		dB	RFxOFF to RFx ON, 1574MHz to 1577MHz
PCS	21	23		dB	RFxOFF to RFx ON, 1850MHz to 1990MHz
Second Harmonics					
Cellular		-82	-78	dBc	+26dBm input
PCS		-84	-80	dBc	+26dBm input
Third Harmonics					
Cellular		-91	-80	dBc	+26dBm input
PCS		-95	-82.5	dBc	+26dBm input
IIP3					
IIP3 - Cellular (IMT, PCS, AWS)	64	65		dBm	Two tones: +23dBm, 837MHz and 838MHz
		67		dBm	Two tones: +23dBm, 837MHz and 838MHz, $V_{CONTROL}$=3V
IIP3 - PCS	61	63		dBm	Two tones: +23dBm, 1880MHz and 1881MHz
		65		dBm	Two tones: +23dBm, 1880MHz and 1881MHz, $V_{CONTROL}$=3V
Cross-Modulation					
Cellular		-102	-101	dBm	PTx1=23dBm @ 836MHz, PTx2=23dBm @ 837MHz; P_{INT}=-23dBm @ 881.5MHz
		-105		dBm	PTx1=23dBm @ 836MHz, PTx2=23dBm @ 837MHz; P_{INT}=-23dBm @ 881.5MHz, $V_{CONTROL}$=3V
PCS		-100	-96	dBm	PTx1=23dBm @ 1879.5MHz, PTx2=23dBm @ 1880.5MHz; P_{INT}=-23dBm @ 1960MHz
		-102		dBm	PTx1=23dBm @ 1879.5MHz, PTx2=23dBm @ 1880.5MHz; P_{INT}=-23dBm @ 1960MHz, $V_{CONTROL}$=3V

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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
RF Port Return Loss					
RF>ANT		-24	-15	dB	0.5GHz to 2.0GHz
Input Power at 0.1dB Compression Point					
Cellular		>+35		dBm	
PCS		>+35		dBm	
Switching Speed					
T_{RISE}, T_{FALL}		0.80	1	us	10% to 90% RF, 90% to 10% RF
T_{ON}, T_{OFF}		0.80	1	µs	50% control to 90% RF, 50% control to 90% RF
DC Controls					
V_{High} (V1, V2, V3)		2.6	3.6	V	
V_{LOW} (V1, V2, V3)	0		0.4	V	
Control Current		10		µA	
Leakage Current		10		µA	

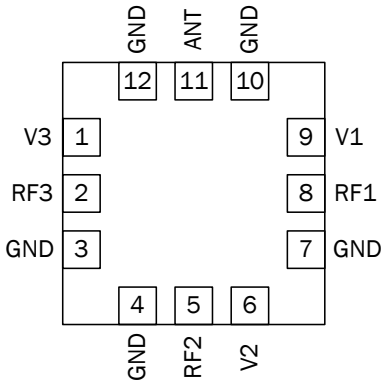
Switch Control Settings

V1	V2	V3	ANT-RF1	ANT-RF2	ANT-RF3
1	0	0	ON	OFF	OFF
0	1	0	OFF	ON	OFF
0	0	1	OFF	OFF	ON

0: Logic level low, 0V to 0.4V
1: Logic level high, 2.6V to 3.6V
Note: Indeterminate states would lead to degraded performance.

Pin	Function	Description
1	V3	Control Signal 3
2	RF3	RF Port 3
3	GND	Ground
4	GND	Ground
5	RF2	RF Port 2
6	V2	Control Signal 2
7	GND	Ground
8	RF1	RF Port 1
9	V1	Control Signal 1.
10	GND	Ground
11	ANT	Antenna Connection
12	GND	Ground
Pkg Base	N/C	Should be left floating for best performance. RF performance specifications in this DS are quoted with package base left floating.

Pin Out



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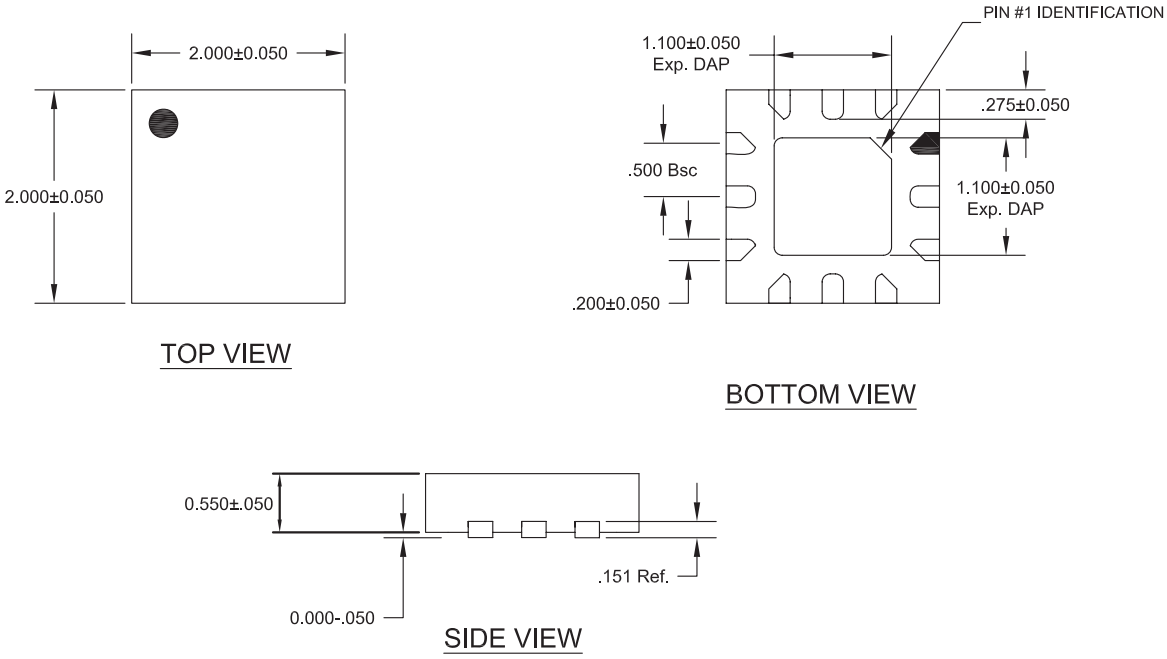
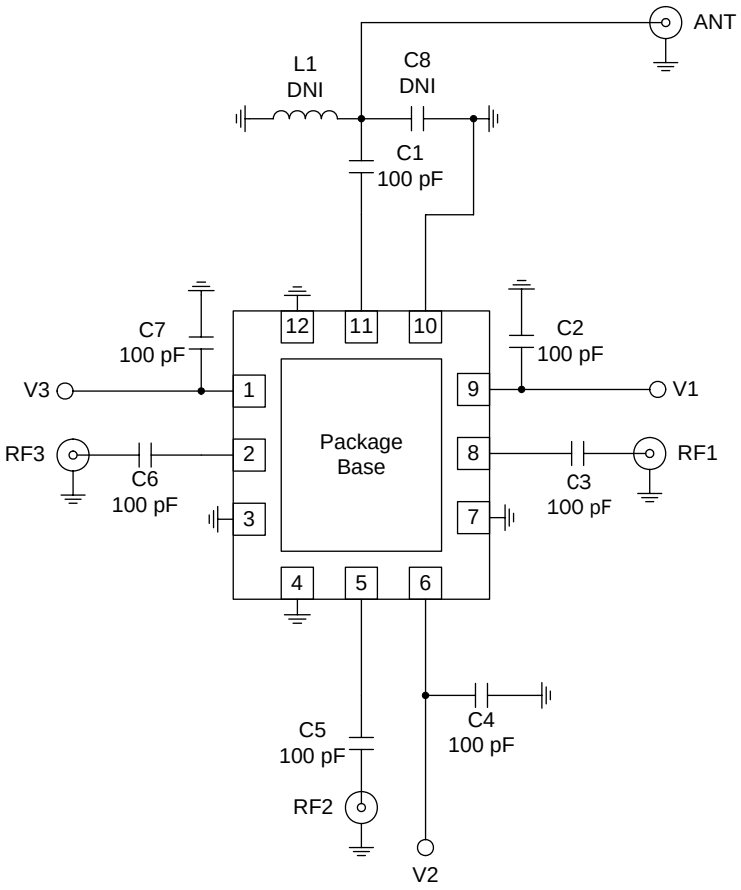
Package Drawing



Notes:
1) Pin 1 Shaded Area

Evaluation Board Schematic



Note: Package Base needs to be left floating for best Isolation performance.

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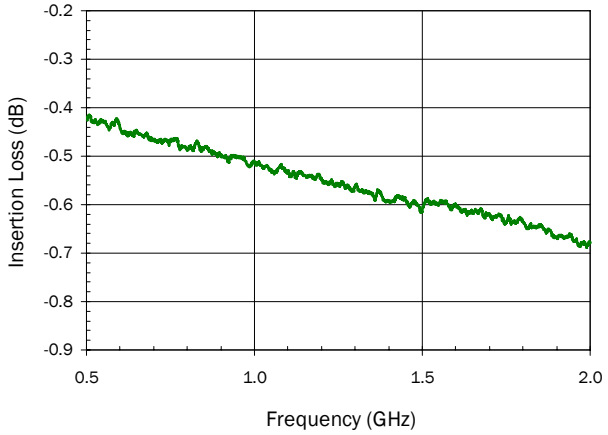
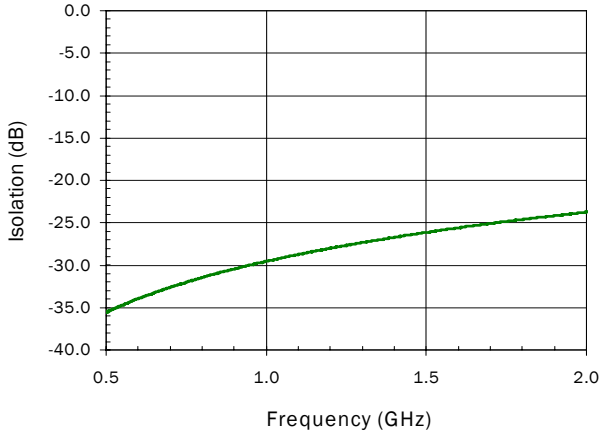
Typical Performance

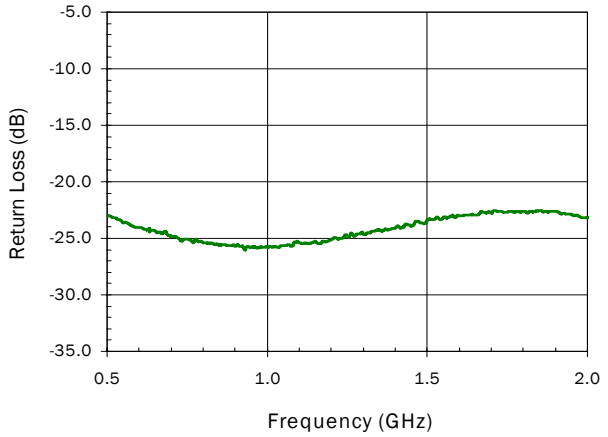
Insertion Loss
($V_{CONTROL}$=2.6V; T=25°C)



Isolation
($V_{CONTROL}$=2.6V; T=25°C)



Match
($V_{CONTROL}$=2.6V; T=25°C)



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