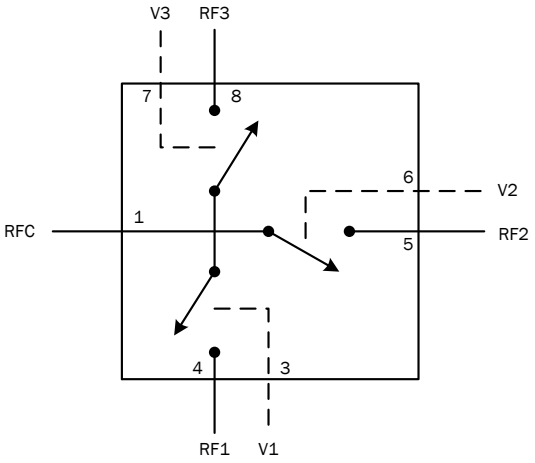
RFSW6132

SP3T Symmetric Switch, 10MHz to 6000MHz

The RFSW6132 is a GaAs pHEMT single-pole three-throw (SP3T) switch designed for use in cellular, 3G, LTE, and other high performance communications systems. It offers a symmetric topology with excellent linearity and power handling capability. The RFSW6132 is 3V and 5V positive logic compatible.



Functional Block Diagram

Package: DFN, 8-pin, 2.0mm x 2.0mm

Features

- 10MHz to 6000MHz Operation
- Symmetric SP3T
- Low Loss: 0.5dB at 2GHz Typical
- Isolation: 27dB at 2GHz Typical
- High IP3: 56dBm
- P0.1dB: 31dBm (5V, 2.2GHz)
- Positive Logic Control
- 3V and 5V Logic Compatible

Applications

- Cellular, 3G, LTE Infrastructure
- Automotive
- Wireless Backhaul
- High Performance Communication Systems
- GMSK, QPSK, DQPSK, QAM Modulation

Ordering Information

RFSW6132SQ	Sample bag with 25 pieces
RFSW6132SR	7" Reel with 100 pieces
RFSW6132TR7	7" Reel with 2500 pieces
RFSW6132PCK-410	10MHz to 6000MHz PCBA with 5-piece sample bag

RF Micro Devices Inc. 7628 Thorndike Road, Greensboro, NC 27409-9421
For sales or technical support, contact RFMD at +1.336.678.5570 or customerservice@rfmd.com.

DS131125

Absolute Maximum Ratings

Parameter	Rating	Unit
Control Voltage (V1, V2, V3)	6	V
Maximum CW Input Power for 3V Control	31	dBm
Maximum CW Input Power for 5V Control	32	dBm
Operating Temperature Range	-40 to +85	°C
Storage Temperature Range	-40 to +150	°C
Maximum Junction Temperature	+150	°C
ESD Rating - Human Body Model (HBM)	Class 1A (250)	V
Moisture Sensitivity Level	MSL3	

Caution! ESD sensitive device.

RFMD Green: RoHS status based on EU Directive 2011/65/EU (at time of this document revision), halogen free per IEC 61249-2-21, < 1000ppm each of antimony trioxide in polymeric materials and red phosphorus as a flame retardant, and <2% antimony in solder.

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.

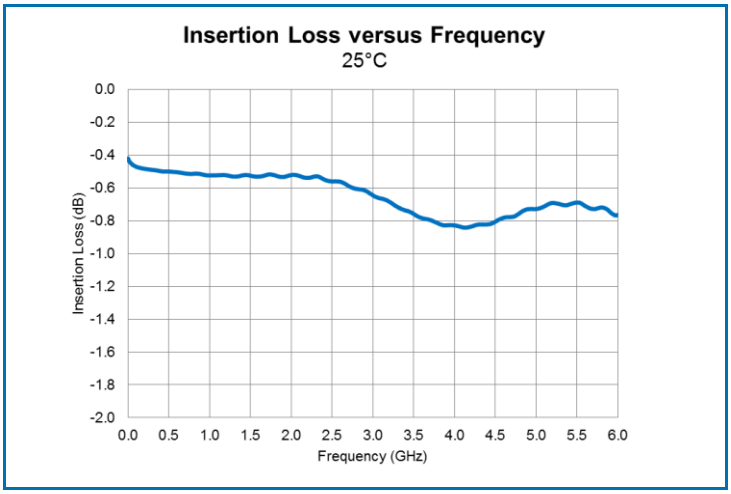
Nominal Operating Parameters

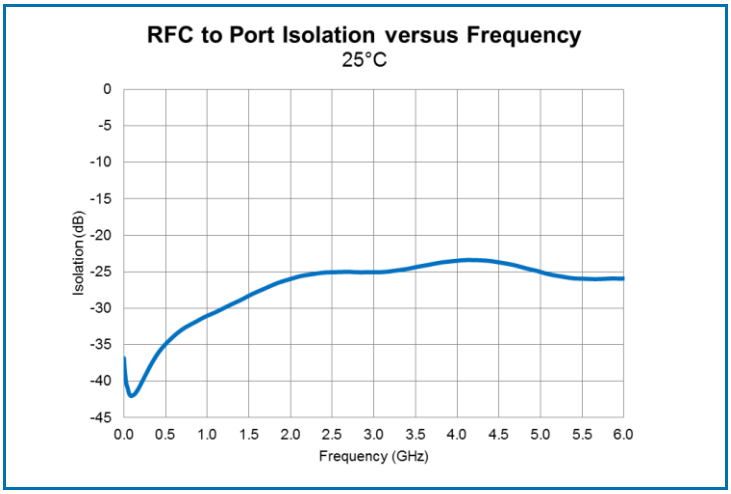
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Performance					**TA=25°C, 100pF EVB DC blocks, 3V unless otherwise noted.**
Insertion Loss (RFC to RF1/RF2/RF3)		0.5		dB	1GHz
		0.5	0.7	dB	2GHz
		0.7		dB	4GHz
		0.8		dB	5.85GHz
Isolation (RFC to RF1/RF2/RF3)		31		dB	1GHz
	25	27		dB	2GHz
		22		dB	4GHz
		22		dB	5.85GHz
Isolation (RF1-RF2, RF1-RF3, RF2-RF3)		32		dB	1GHz
		27		dB	2GHz
		25		dB	4GHz
		25		dB	5.85GHz
Return Loss (On-state)		>20		dB	1GHz
		>20		dB	2GHz
		>18		dB	4GHz
		>15		dB	5.85GHz
IP0.1dB		27		dBm	3.0V, 2.2GHz
		31		dBm	5.0V, 2.2GHz
Input IP3 (900MHz)		53		dBm	17dBm input power/tone, 1MHz spacing, 3.3V
T_{ON}, T_{OFF}		25		ns	50% V_{CC} to 10/90% RF, +10dBm input power
T_{RISE}, T_{FALL}		20		Ns	10/90% RF, 10dBm input power

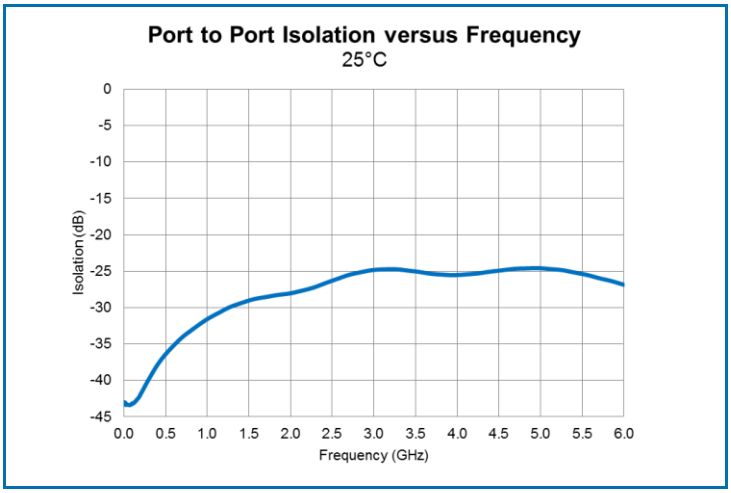
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
Power Supply					
“High” Control Voltage	1.8		5	V	Logic “high”
“Low” Control Voltage	0		0.2	V	Logic “low”
Control Current		0.7	2.5	µA	5V

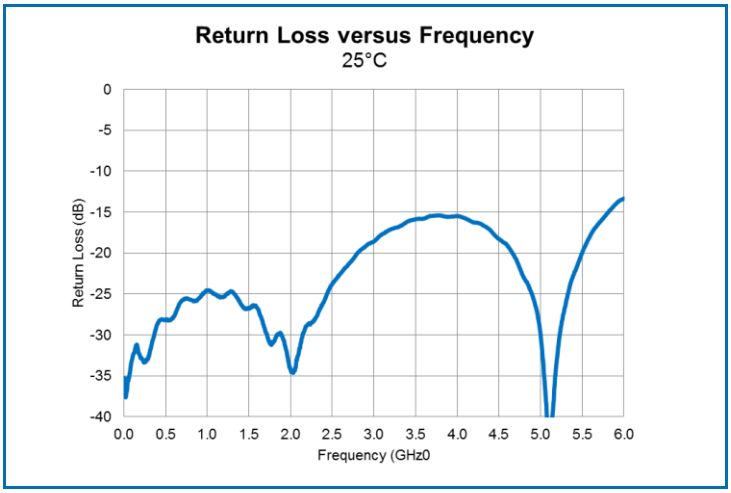
Note: User should optimize DC blocking capacitors for the desired frequency of operation. For positive logic control, DC blocking capacitors are required on all RF ports.

Typical Performance:

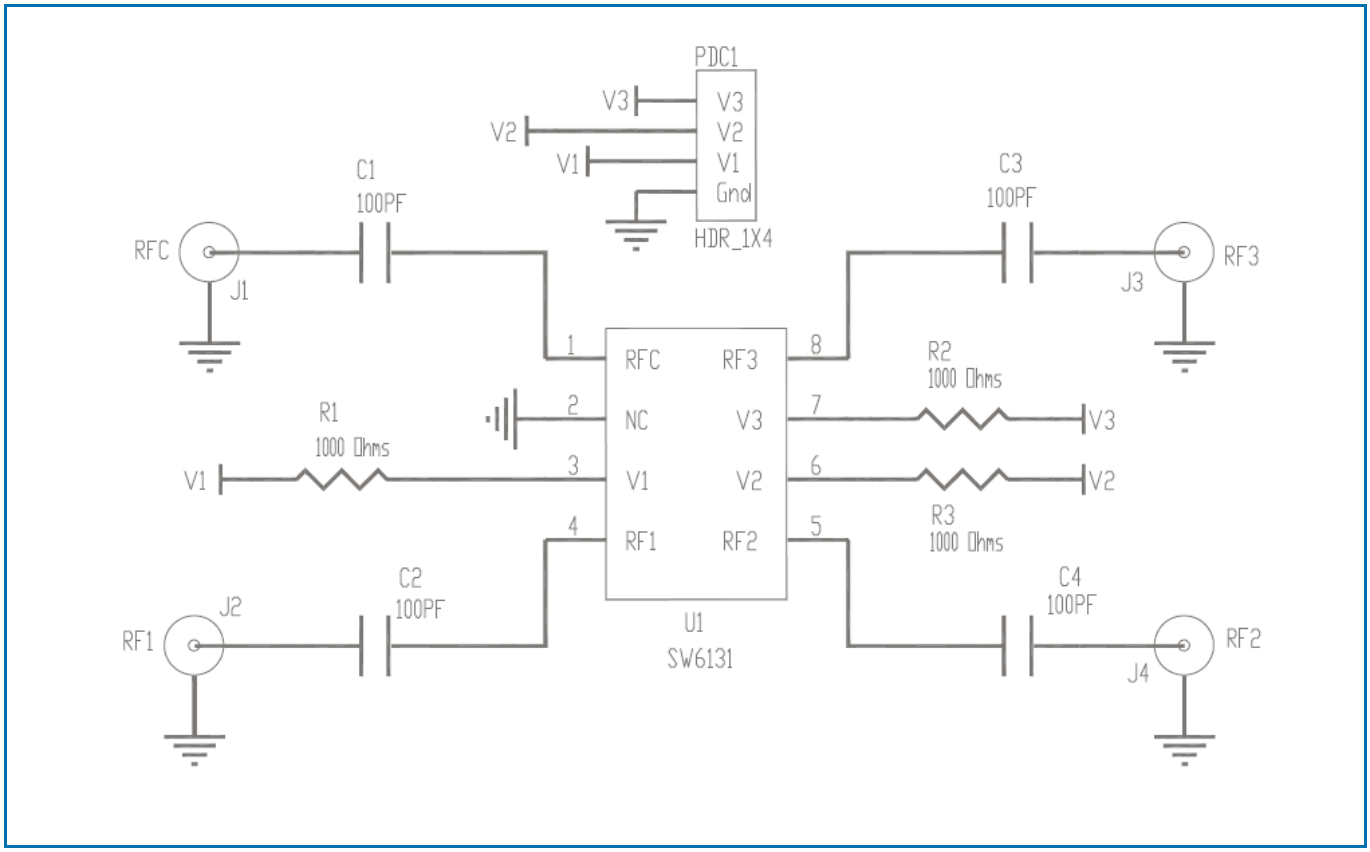








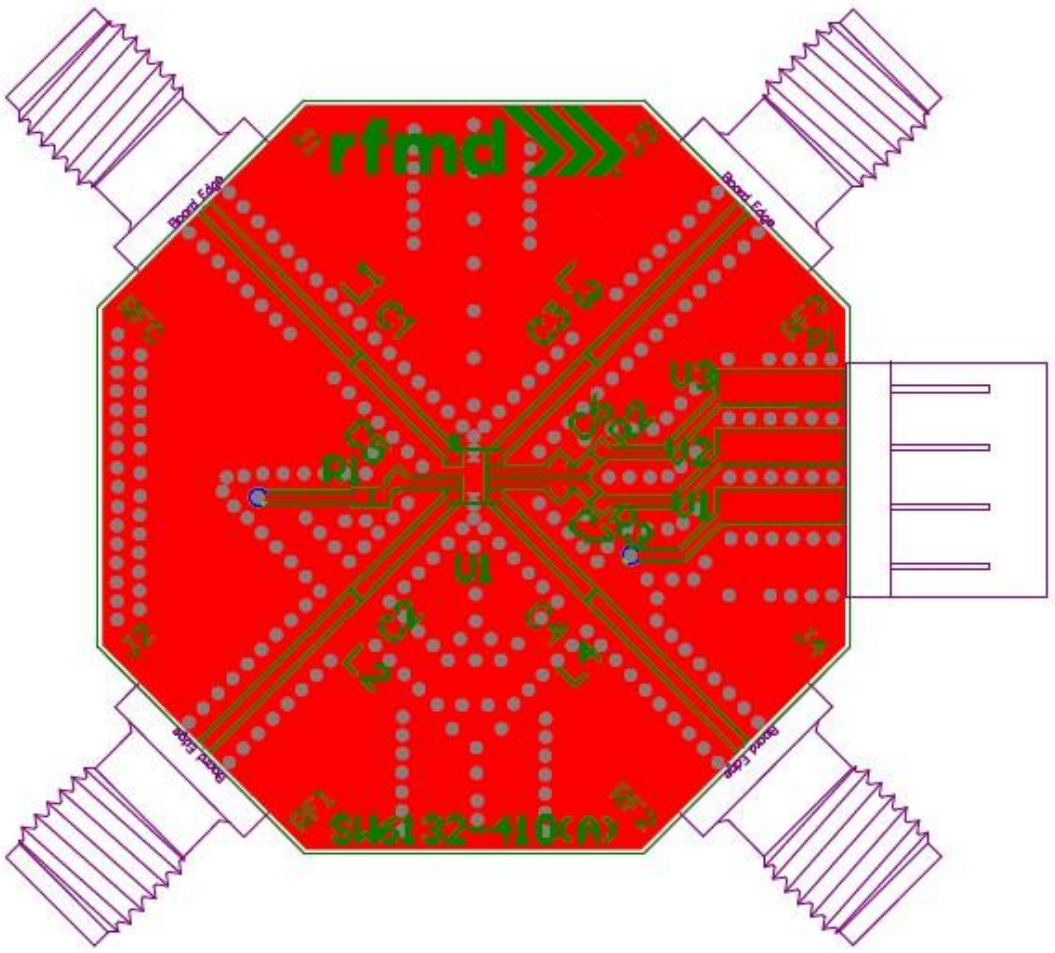
Evaluation Board Schematic



Evaluation Board Bill of Materials (BOM)

Description	Reference Designator	Manufacturer	Manufacturer's P/N
RFSW6132 Evaluation Board			RFSW6132-410(A)
RFSW6132, SP3T Switch	U1	RFMD	RFSW6132
CAP, 100pF, 5%, 50V, C0G, 0402	C1-C4	Murata Electronics	GRM1555C1H101JD01E
RES, 1K, 5%, 1/6W, 0402	R1-R3	Kamaya, Inc.	RMC1/16S-102JTH
CONN, SMA, END, LAUNCH, 26.5GHz, 0.068	J1-J4	Gigalane	PSF-S01-008
CONN, HDR, ST, PLRZD, 4-PIN, 0.100”	PDC1	ITW Pancon	MPSS100-4-C
Do Not Place	C5-C7, L1-L4		

Evaluation Board Assembly Drawing



Pin Names and Descriptions

Pin	Name	Description
1	RFC	RF Common Port; external DC block required
2	NC	No internal connection
3	V1	Control 1
4	RF1	RF Port 1; external DC block required
5	RF2	RF Port 2; external DC block required
6	V2	Control 2
7	V3	Control 3
8	RF3	RF Port 3; external DC block required
EPAD	GND	RF and DC Ground; must be soldered to EVB ground plane over a bed of vias

Note: RFMD recommends that the NC pins be grounded on the EVB to maximize isolation.

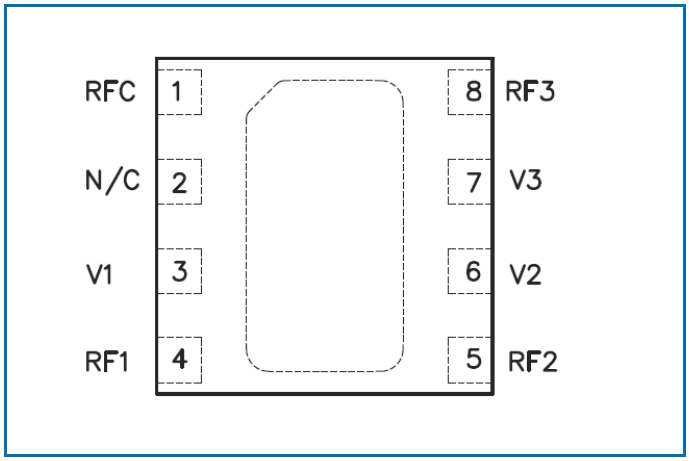
Truth Table

Control Logic			RF Path Configuration		
V1	V2	V3	RFC-RF1	RFC-RF2	RFC-RF3
1	0	0	On	Off	Off
0	1	0	Off	On	Off
0	0	1	Off	Off	On

1 = 1.8V to 5.0V

0 = 0V to 0.2V

Package Pin Out



Package Outline Drawing (Dimensions in millimeters)