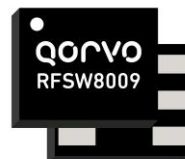


### Product Overview

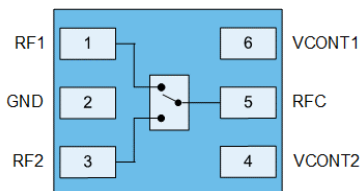
The Qorvo® RFSW8009 is a high power single-pole double-throw (SPDT) switch designed for high performance wireless applications.

This wideband switch has been designed for use from 0.5 to 8GHz, where high linearity, high isolation, low insertion loss, and small package size are required. Switching for the RFSW8009 is controlled via two control voltage inputs.



6 Pad 1.86 x 1.5 mm Laminate Package

### Functional Block Diagram



Top View

### Key Features

- 500 – 8000 MHz
- Low Insertion Loss
- High Isolation
- Input  $P_{0.1dB} = 32$  dBm
- Fast Switching Speed <250 nS

### Applications

- Access Points
- Wireless Routers
- Residential Gateways
- Customer Premise Equipment
- Internet of Things

### Ordering Information

Part Number	Description
RFSW8009SB	Sample bag with 5 pieces
RFSW8009SR	7" reel with 100 pieces
RFSW8009TR7	7" reel with 2,500 pieces
RFSW8009PCK-410	0.5-2.5 GHz Evaluation Board
RFSW8009PCK-411	2.5-8 GHz Evaluation Board

## Absolute Maximum Ratings

Parameter	Conditions	Rating
Control Voltage	VCONT1, VCONT2	Up to +6 V
Storage Temperature		-40 to 150 °C
RF Input Power	Control Voltage = 3 V	+34 dBm
	Control Voltage = 5 V	+35 dBm

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.

## Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Units
Operating Frequency	500		8000	MHz
Control Voltage – High	+2.7	+3	5.3	V
Control Voltage - Low	-0.2	0	+0.2	V
T <sub>OPERATING</sub> *	-40		+85	°C

Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions. . \* T<sub>OPERATING</sub> is temperature at package ground.

## Electrical Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
Insertion Loss	$f = 500$ to 2000 MHz <sup>(1)</sup>		0.40	0.65	dB
	$f = 2000$ to 2500 MHz <sup>(1)</sup>		0.45	0.70	dB
	$f = 2500$ to 3800 MHz <sup>(2)</sup>		0.55	0.80	dB
	$f = 3800$ to 6000 MHz <sup>(2)</sup>		0.65	0.90	dB
	$f = 6000$ to 7200 MHz <sup>(2)</sup>		0.70		dB
Isolation	$f = 500$ to 2000 MHz <sup>(1)</sup>	25	28		dB
	$f = 2000$ to 2500 MHz <sup>(1)</sup>	25	28		dB
	$f = 2500$ to 3800 MHz <sup>(2)</sup>	25	28		dB
	$f = 3800$ to 6000 MHz <sup>(2)</sup>	22	26		dB
	$f = 6000$ to 7200 MHz <sup>(2)</sup>		25		dB
Return Loss	$f = 500$ to 2000 MHz <sup>(1)</sup>	15	20		dB
	$f = 2000$ to 2500 MHz <sup>(1)</sup>	15	20		dB
	$f = 2500$ to 6000 MHz <sup>(2)</sup>	10	15		dB
	$f = 6000$ to 7200 MHz <sup>(2)</sup>		15		dB
Input P <sub>0.1dB</sub>	$f = 500$ to 2500 MHz <sup>(1)</sup>		+32		dBm
	$f = 2500$ to 6000 MHz <sup>(2)</sup>		+32		dBm
	$f = 6000$ to 7200 MHz <sup>(2)</sup>		+32		dBm
Input P <sub>1dB</sub>	$f = 500$ to 2500 MHz <sup>(1)</sup>		+34		dBm
	$f = 2500$ to 7200 MHz <sup>(2)</sup>		+34		dBm
	$f = 6000$ to 7200 MHz <sup>(2)</sup>		+34		dBm



# RFSW8009

## 0.5-8GHz Wi-Fi/IoT SP2T Switch

Parameter	Conditions	Min.	Typ.	Max.	Units
Input IP3	$f = 500$ to $2500$ MHz		+60		dBm
2 <sup>nd</sup> Harmonics	$f = 2500$ MHz $P_{IN} = +20$ dBm		-80	-30	dBm/MHz
3 <sup>rd</sup> Harmonics	$f = 2500$ MHz $P_{IN} = +20$ dBm		-80	-42	dBm/MHz
Control Current - High	No RF input; All modes		0.1	10	$\mu$ A
Switching Time	50% of control to 90/10% of RF; All modes		50	250	nS

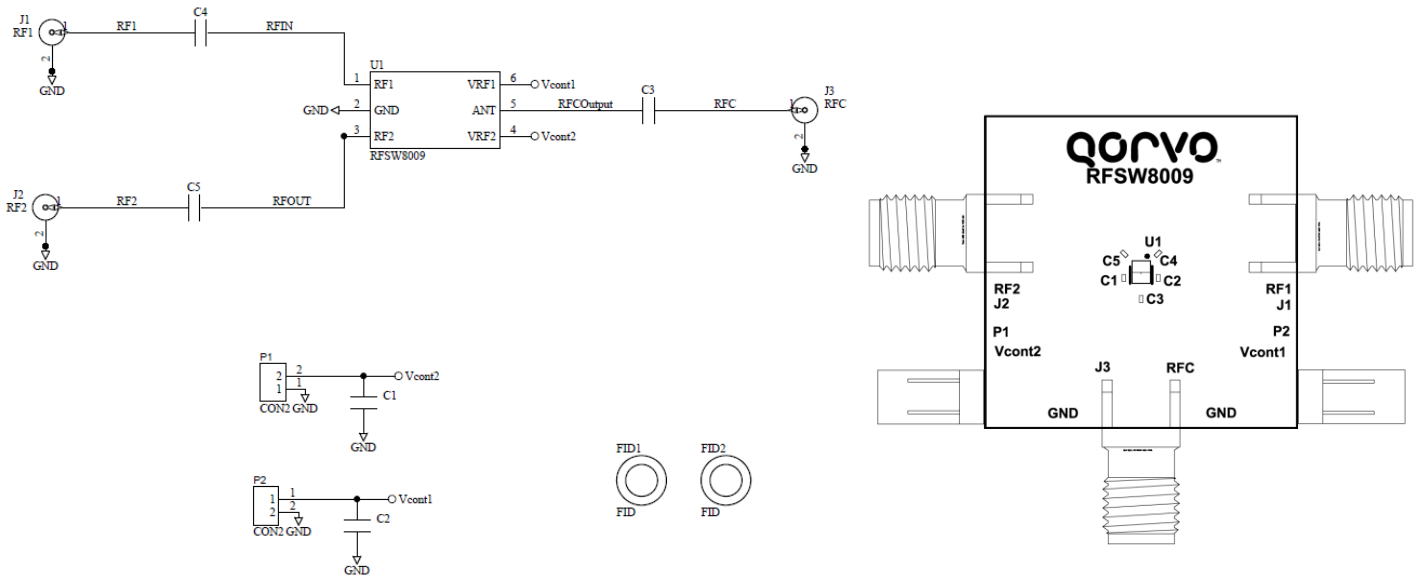
Notes:

1. External DC blocking capacitor value for C3, C4 & C5 per EVB Schematic = 56 pF
2. External DC blocking capacitor value for C3, C4 & C5 per EVB Schematic = 8 pF

### Logic Truth Table

Mode	VCONT1	VCONT2
RF1-RFC	High	Low
RF2-RFC	Low	High
Not Supported	All Other States	

**Evaluation Board Schematic and Layout – RFSW8009PCK-410**

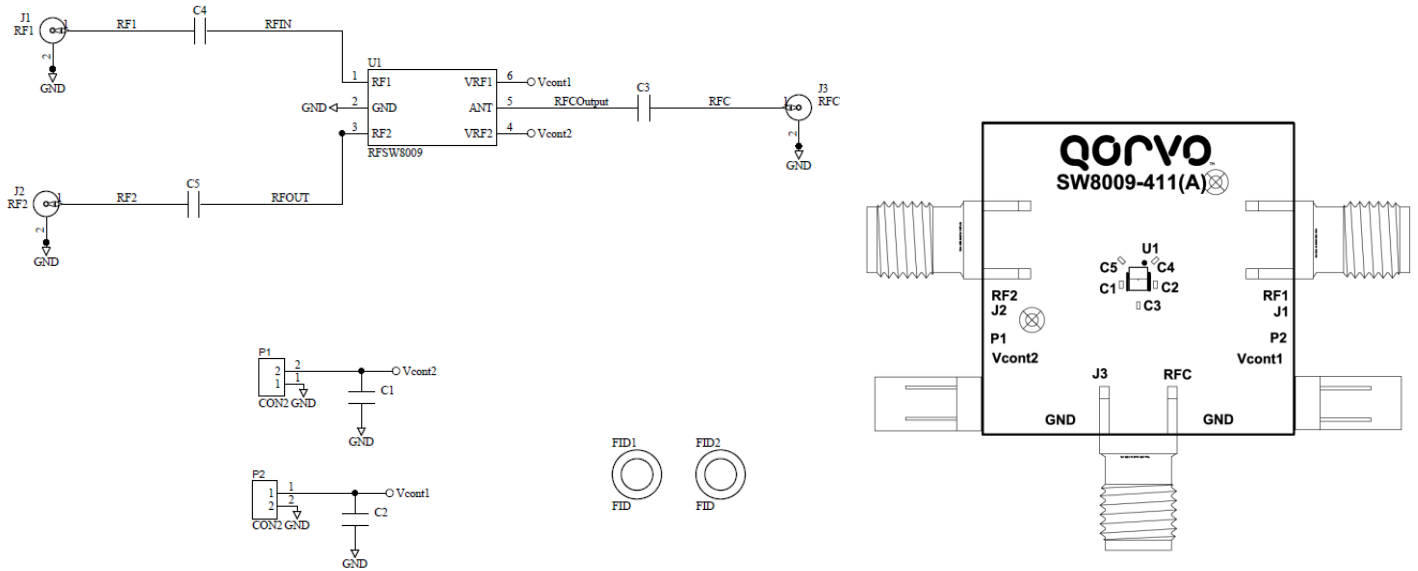


Notes:

**Bill of Material**

Ref. Des.	Value	Description	Manuf.	Part number
-	-	Printed Circuit Board		
U1	-	0.5-8GHz Wi-Fi/IoT SP2T Switch	Qorvo	RFSW8009
C3, C4, C5	56 pF	Capacitor, Chip, 5%, 25V, C0G, 0201	Kyocera	CM03CG560J25AH
C1, C2	1 nF	Capacitor, Chip, 10%, 25V, X7R, 0201		

**Evaluation Board Schematic and Layout – RFSW8009PCK-411**

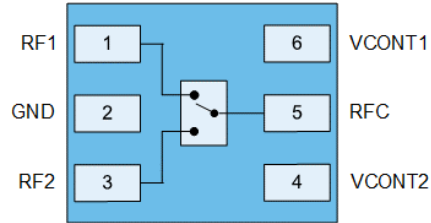


Notes:

**Bill of Material**

Ref. Des.	Value	Description	Manuf.	Part number
-	-	Printed Circuit Board		
U1	-	0.5-8GHz Wi-Fi/IoT SP2T Switch	Qorvo	RFSW8009
C3, C4, C5	8 pF	Capacitor, Chip, +/-0.5pF, 25V, C0G, 0201	Murata	GRM0335C1E8R0DA01D
C1, C2	1 nF	Capacitor, Chip, 10%, 25V, X7R, 0201		

## Pin Configuration and Description



Top View

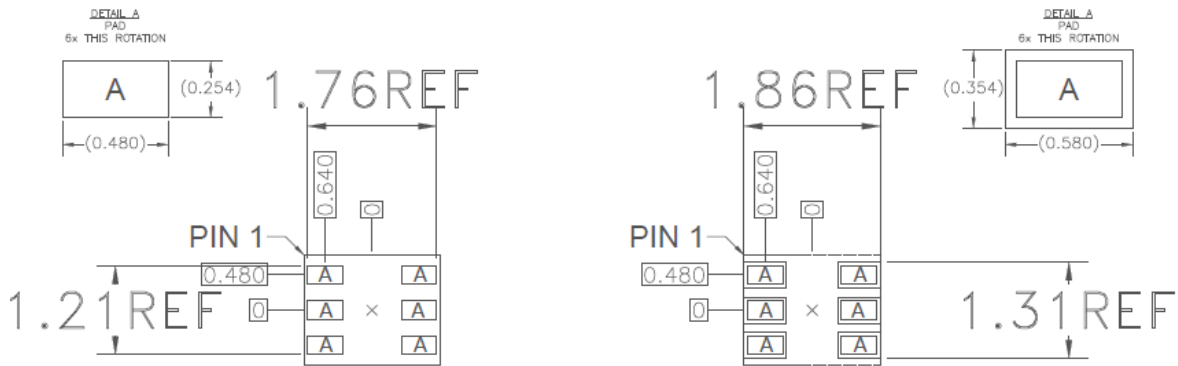
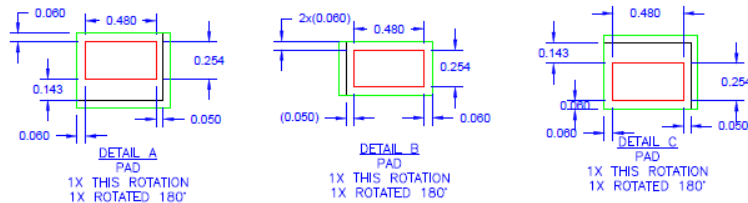
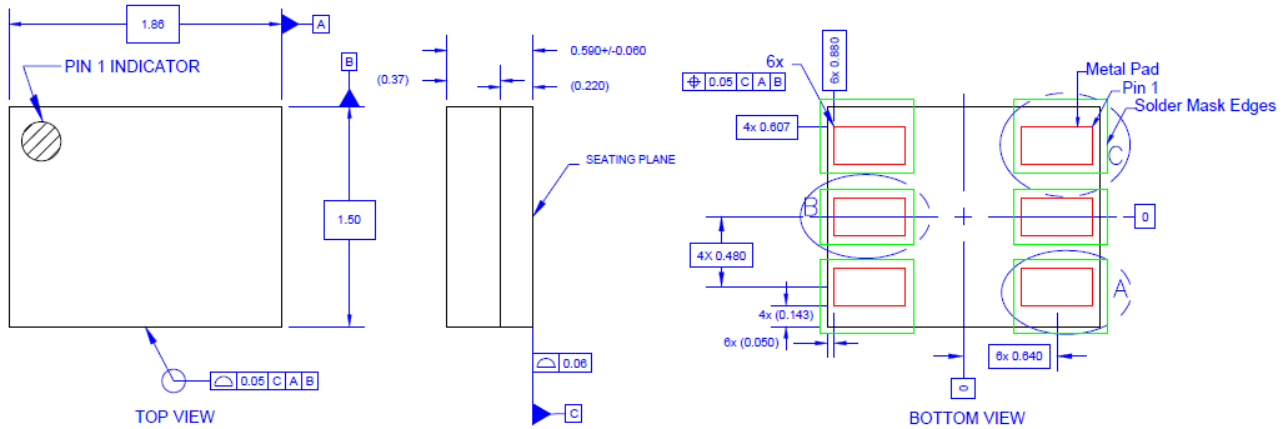
Pin Number	Label	Description
1	RF1	RF port. Internally matched to 50 Ω <sup>(1)</sup>
2	GND	Ground connection.
3	RF2	RF port. Internally matched to 50 Ω <sup>(1)</sup>
4	VCONT2	Control pin.
5	RFC	RF port. Internally matched to 50 Ω <sup>(1)</sup>
6	VCONT1	Control pin.

Notes:

1. External DC block required.

Mechanical Information

Dimensions and PCB Mounting Pattern



- Notes:
3. All dimensions are in millimeters. Angles are in degrees.
  4. Dimension and tolerance formats conform to ASME Y14.4M-1994.
  5. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.