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RFSW8005

11b/g/n WiFi SP3T SWITCH

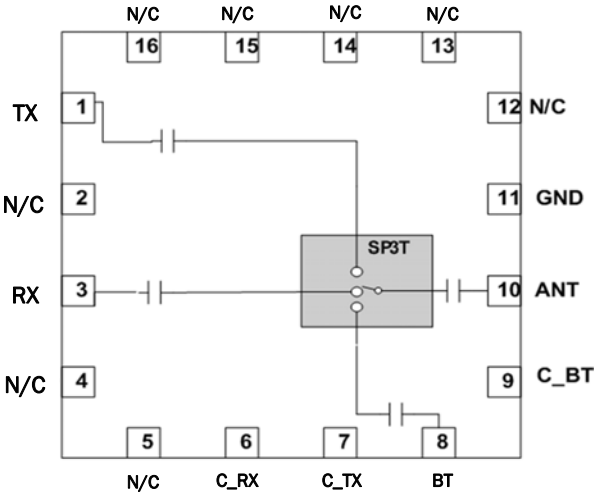
Package: QFN 16 pin, 3mm x 3mm x 0.5mm

Features

- SP3T Switch
- Switch Control Voltage 2.5Vto 5V
- Low Insertion Loss 0.8dB

Applications

- IEEE802.11b/g/n WiFi Applications
- WiFi/Bluetooth® Combination Devices



Functional Block Diagram

Product Description

The RFSW8005 is a single-pole triple-throw (SP3T) pHEMT switch in a 3mm x 3mm x 0.5mm Pb-free, 16-pin package. This switch is capable of switching between WiFi Rx, WiFi Tx, and Bluetooth Rx/Tx operations. The RFSW8005 can also be placed in WiFi and Bluetooth modes simultaneously with a slight increase in insertion loss. This device meets or exceeds the RF switch needs of IEEE802.11b/g WiFi RF systems.

Ordering Information

RFSW8005SQ	25-Piece bag
RFSW8005SR	100-Piece reel
RFSW8005TR7	2500-Piece reel
RFSW8005PCBK-410	RFSW8000 eval board (100MHz to 2000MHz) and 5-piece bag

Optimum Technology Matching® Applied

☐ GaAs HBT	☐ SiGe BiCMOS	☑ GaAs pHEMT	☐ GaN HEMT
☐ GaAs MESFET	☐ Si BiCMOS	☐ Si CMOS	☐ BiFET HBT
☐ InGaP HBT	☐ SiGe HBT	☐ Si BJT	☐ SOI

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Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	6	V
Ruggedness Output VSWR	10:1	
Stability Output VSWR	5:1	
ESD Human Body Model	250	V
ESD Device Model	1000	V
Operating Case Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C
Moisture Sensitivity Level	MSL2	

*Note: Maximum input power with a 50Ω load.

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.

RFMD Green: RoHS compliant per EU Directive 2011/65/EU, 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.

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Operating Parameters					
Frequency	2.4		2.5	GHz	
Switch Control Voltage: Low	0		0.20	V	
Switch Control Voltage: High	2.5		5.0	V	
Operating Temperature	-40		85	°C	
TX - ANT					CW Signal, C_TX = 2.5V to 5.0V; T = -40 °C to 85 °C; Unless otherwise noted.
Insertion Loss		0.8	1.2	dB	
		0.8		dB	C_TX = 2.8V; T = 25 °C
Input Return Loss		15	10	dB	
Output Return Loss		15	8	dB	
Isolation					
TX - RX	20			dB	Measured from ANT - RX in TX mode
TX - BT	23			dB	Measured from ANT - BT in TX mode
RX - ANT					CW Signal, C_RX = 2.5V to 5.0V; T = -40 °C to 85 °C; Unless otherwise noted.
Insertion Loss		0.9	1.5	dB	
		0.9		dB	C_RX = 2.5V to 5.0V; T = 25 °C
Input Return Loss		14	11	dB	
Output Return Loss		14	11	dB	
Isolation					
RX - TX	17			dB	Measured from ANT - TX in RX mode
RX - ANT	22			dB	Measured from ANT - BT in RX mode

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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Operating Parameters (continued)					
BT - ANT					CW Signal, C_BT = 2.5V to 5.0V; T = -40 °C to 85 °C; Unless otherwise noted.
BT Insertion Loss		0.8	1.3	dB	
		0.8		dB	C_BT = 2.5V to 5.0V; T = 25 °C
Input Return Loss		12	8	dB	
Isolation					
BT - TX	18			dB	Measured from ANT - TX in BT mode
BT - RX	19			dB	Measured from ANT - RX in BT mode
General Parameters					All Modes = C_TX or C_RX or C_BT; T=-40 °C to 85 °C; Unless otherwise noted.
Passband Ripple	-0.3		+0.3	dB	All Modes
IP0.1dB; CW	20			dBm	All Modes; Switch Control = 2.5V; CW
	20			dBm	All Modes; Switch Control = 2.8V; CW
	24			dBm	All Modes; Switch Control = 3.1V; CW
	30			dBm	All Modes; Switch Control = 5.0V; CW
Switch Control Current; High			3	µA	All Modes; Switch Control = 2.5V; T = 25 °C
			5	µA	All Modes; Switch Control ≤ 3.1V
			10	µA	All Modes; Switch Control = 5.0V
Switch Time, 10% CTL to 90% RF		200	800	ns	All Modes; Switch Control = 2.5V to 5.0V
Switch Time, 90% CTL to 10% RF		200	800	ns	

Switch Control Logic

Mode	C_TX	C_BT	C_RX	Condition
TX	1	0	0	TX to ANT
BT	0	1	0	BT to ANT
RX	0	0	1	RX to ANT
BT/RX	0	1	1	BT TX/RX Coexistence

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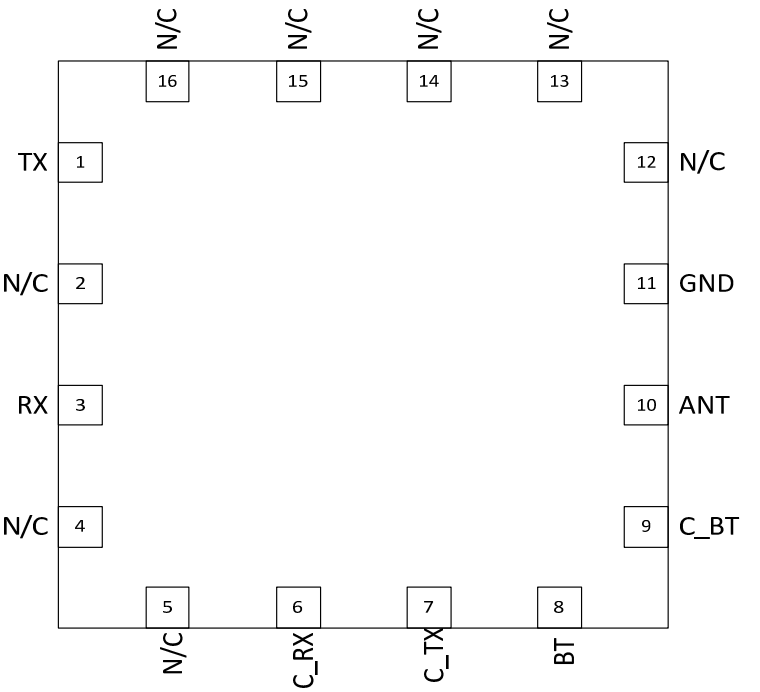
Pin Names and Description

Pin	Name	Description
1	TX	TX RF port.
2	N/C	Not connected.
3	GND	Ground.
4	N/C	Not connected.
5	N/C	Not connected.
6	C_RX	Switch control to enable RX to ANT.
7	C_TX	Switch control to enable TX to ANT.
8	BT	BT RF port.
9	C_BT	Switch control to enable BT to ANT.
10	ANT	ANT RF port.
11	GND	Ground.
12	N/C	Not connected.
13	N/C	Not connected.
14	N/C	Not connected.
15	N/C	Not connected.
16	N/C	Not connected.

Pin Out



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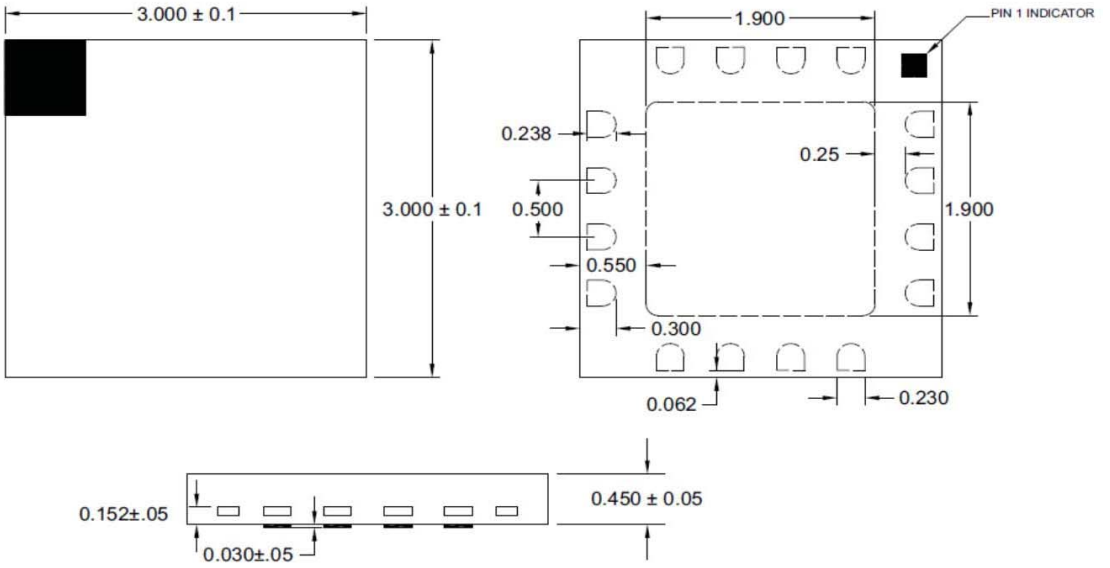
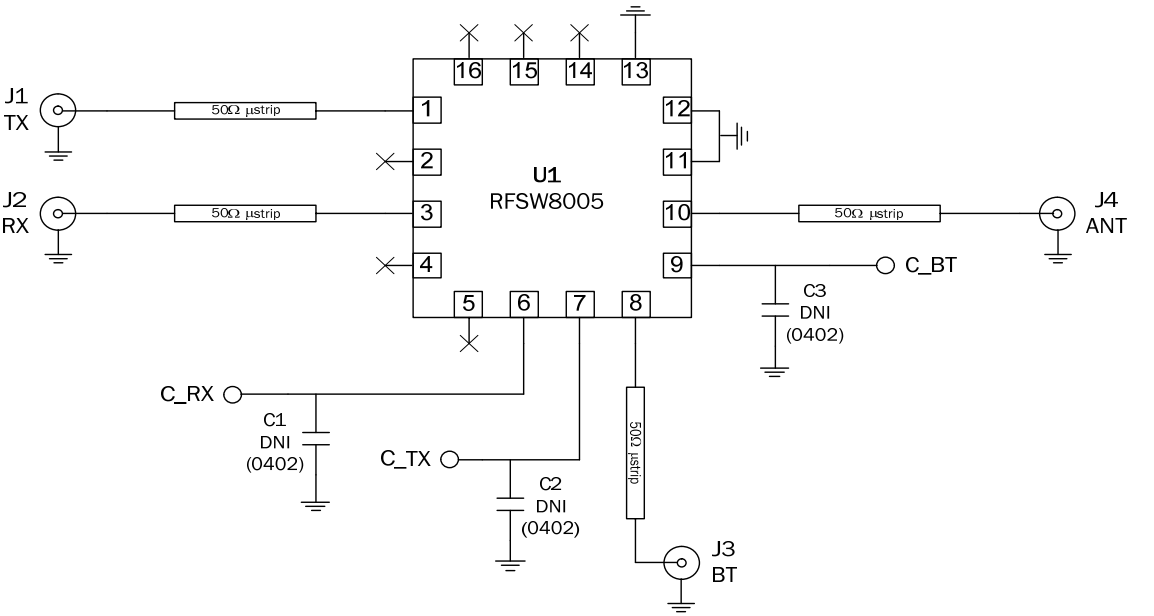
Package Drawing



NOTES:
1 Shaded Area is Pin 1 Indicator

Application Schematic



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