

RFSW8006Q

11b/g/n/ac WiFi SP3T Switch
In process of AEC-Q100 Qualification

The RFSW8006Q is a single pole triple throw (SP3T) SOI switch in a 2x2mm, Pb-Free, 8-pin package. This switch is capable of switching between WiFi Rx, WiFi Tx, and Bluetooth Rx/Tx operations. The RFSW8006Q 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/n/ac WiFi RF systems.



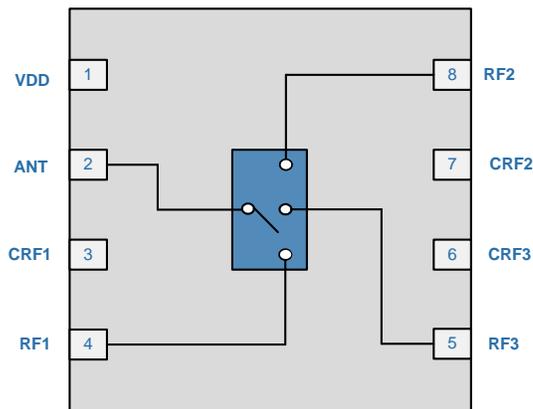
Package: DFN, 8-pin,
2.0mm x 2.0mm x 0.85mm

Features

- Symmetric SP3T Switch
- Switch Control Voltage 1.2V to 4.8V
- Low Insertion Loss 0.6dB (2.4GHz)
- Isolation: 27dB (2.4GHz)
- P0.1dB: 27dBm (3.6V)

Applications

- Automotive WiFi
- Automotive Data and Diagnostics
- Infotainment
- Key Fob
- IEEE802.11b/g/n/ac WiFi Applications



Functional Block Diagram

Ordering Information

RFSW8006QSQ	Standard 25 piece bag
RFSW8006QSR	Standard 100 piece bag
RFSW8006QTR7	Standard 2500 piece reel
RFSW8006QPCK-410	Fully assembled evaluation board w/5 piece bag

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	5	V
ESD Human Body Model (HBM)	2000	V
ESD Charged Device Model (CDM)	1000	V
Operating Case Temperature	-40 to +105	°C
Storage Temperature	-40 to +150	°C
Moisture Sensitivity Level	MSL2	



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

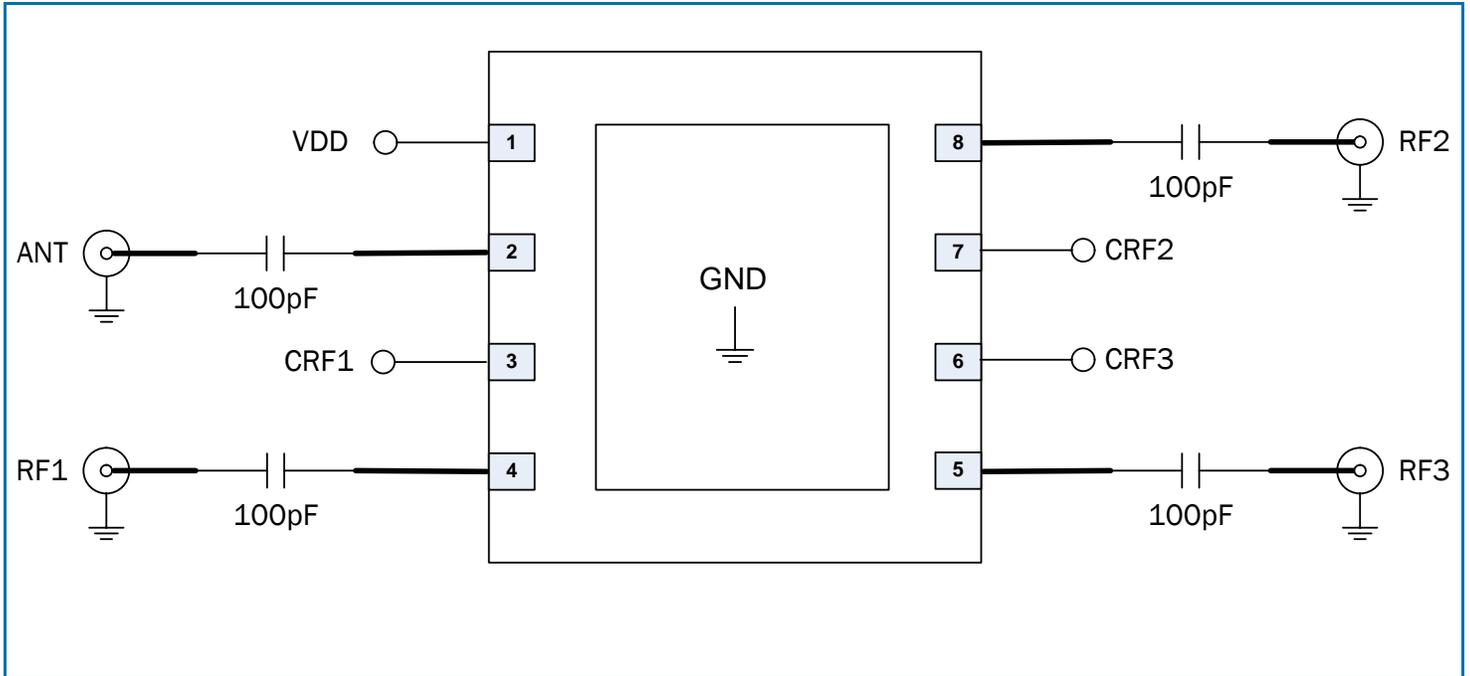
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
Operating Parameters					
Operating Frequency Range	100		4000	MHz	
VDD	2.7	3.6	4.8	V	
Switch Control Voltage: Low	0		0.20	V	
Switch Control Voltage: High	1.2		4.8	V	
RF1 – ANT					V_{DD} = 3.6V; CRF1 = 1.2V to 4.8V; T = -40°C to 105°C; 2412MHz to 2484MHz; Unless otherwise noted
Insertion Loss		0.5		dB	T = 25°C
		0.6	1.2	dB	All conditions
Input Return Loss		20	15	dB	
Output Return Loss		20	15	dB	
RF1 to RF2 Isolation	25	30		dB	Measured ANT - RF2
RF1 to RF3 Isolation	25	30		dB	Measured ANT – RF3
RF2 – ANT					V_{DD} = 3.6V; CRF2 = 1.2V to 4.8V; T = -40°C to 85°C; 2412MHz to 2484MHz; Unless otherwise noted
Insertion Loss		0.6		dB	T = 25°C
		0.6	1.2	dB	T = 105°C
Input Return Loss		20	15	dB	
Output Return Loss		20	15	dB	
RF2 to RF1 Isolation	23	25		dB	Measured ANT - RF1
RF2 to RF3 Isolation	28	31		dB	Measured ANT - RF3
RF3 – ANT					V_{DD} = 3.6V; CRF3 = 1.2V to 4.8V; T = -40°C to 85°C; 2412MHz to 2484MHz; Unless otherwise noted
Insertion Loss		0.6		dB	T = 25°C
		0.6	1.2	dB	T = 105°C
Input Return Loss		20	15	dB	
Output Return Loss		20	15	dB	
RF3 to RF1 Isolation	23	26		dB	Measured ANT – RF1
RF3 to RF2 Isolation	27	31		dB	Measured ANT – RF2

Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Parameters					All Modes = CRF1 or CRF2 or CRF3; T = -40°C to 105°C; Unless otherwise noted
Passband Ripple	-0.2		0.2	dB	
IP0.1dB; CW	25	27		dBm	All Modes; VDD = 2.7V; CW
	26	28		dBm	All Modes; VDD ≥ 3.6V; CW
Switch Total Current (IDD)		50	100	uA	All Modes; VDD 2.7-4.8V; Control voltage 1.2 to 4.8V; T = 25°C
Switch Control Current; High State		0.5	1.5	uA	All Modes; Control voltage 1.2 to 4.8V; T = 25°C
Switch Control Current; Low State		0.05	0.1	uA	All Modes; Control voltage ≤ 0.2V; T = 25°C
Switch Time, 50% CTL to 90% RF		150	500	ns	All Modes; Switch Control = 1.2V to 4.8V
Switch Time, 50% CTL to 10% RF		150	500	ns	
300MHz to 450MHz Operation					V_{DD} = 3.6V; CRF1 = 1.2V to 4.8V; T = -40°C to 105°C; Unless otherwise noted
Insertion Loss		0.4		dB	T = 25°C
		0.4	0.5	dB	
Input Return Loss		20	15	dB	
Output Return Loss		20	15	dB	

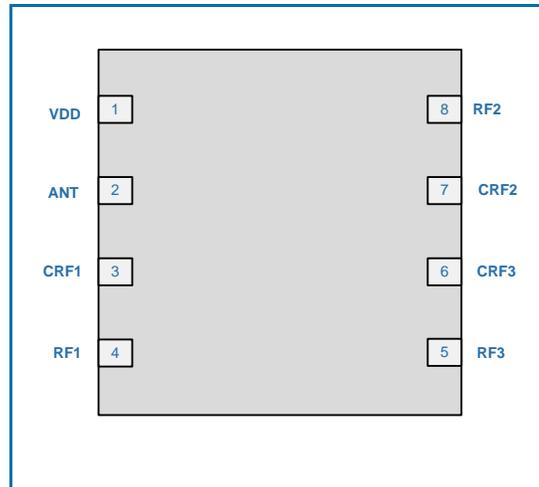
Switch Control Logic Table

Mode	CRF1	CRF2	CRF3	Condition
RF1	1	0	0	RF1 to ANT
RF2	0	1	0	RF2 to ANT
RF3	0	0	1	RF3 to ANT

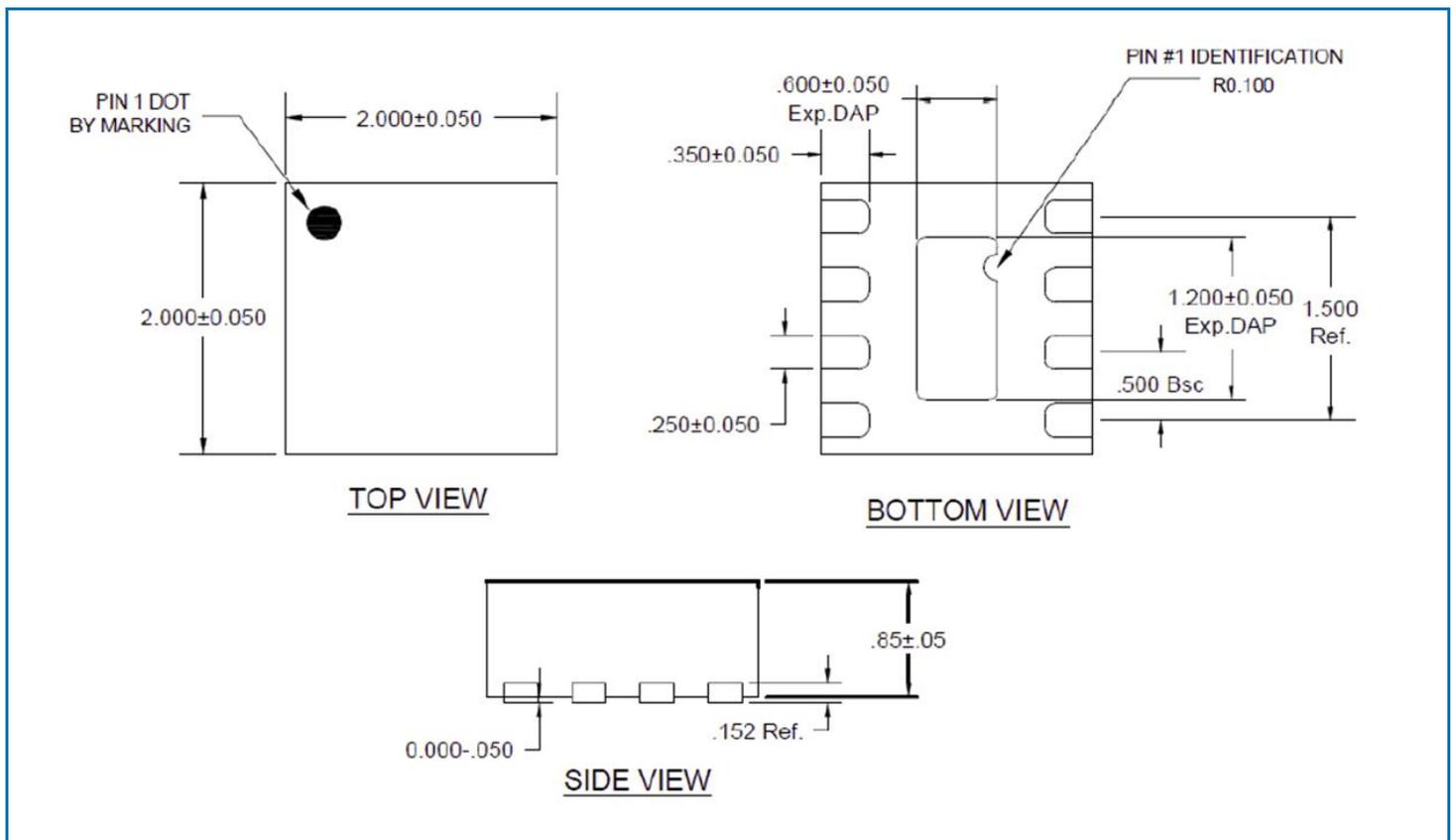
Application Schematic



Pin Out



Package Drawing



Pin Names and Descriptions

Pin	Name	Description
1	VDD	Drain Voltage Supply
2	ANT	Antenna RF Port. External DC block required.
3	CRF1	Switch control to enable RF1 to ANT
4	RF1	RF port1. External DC block required.
5	RF3	RF port3. External DC block required.
6	CRF3	Switch control to enable RF3 to ANT
7	CRF2	Switch control to enable RF2 to ANT
8	RF2	RF port2. External DC block required.

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