

RFSW8007Q

11a/b/g/n/ac Wi-Fi SPDT SWITCH
AEC-Q100 Qualified

The RFSW8007Q is a single pole double throw (SPDT) SOI switch in a 2mm x 2mm x 0.85mm Pb-Free, 8-pin DFN package. This switch is capable of switching between Wi-Fi Rx and Wi-Fi Tx. This device meets or exceeds the RF switch needs of IEEE802.11a/b/g/n/ac Wi-Fi RF systems. The RFSW8007Q is AEC-Q100 Qualified.



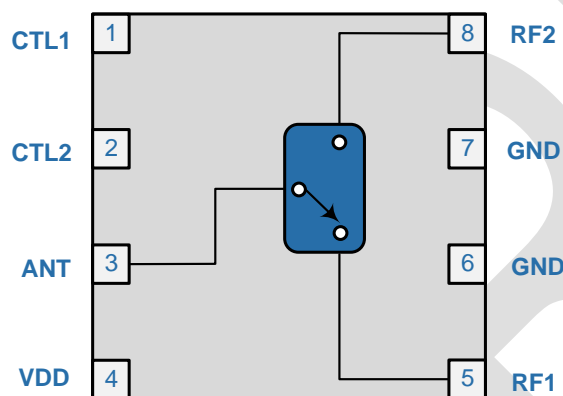
Package: DFN, 8-pin,
2.0mm x 2.0mm x 0.85mm

Features

- Symmetric SPDT Switch
- Switch Control Voltage 1.2V to 4.8V
- Isolation 27dB
- P0.1dB: 29dBm
- High ESD 2kV HBM

Applications

- Automotive Wi-Fi
- Automotive Data and Diagnostics
- Infotainment
- Key Fob



Functional Block Diagram

Ordering Information

RFSW8007QSQ	Standard 25-piece bag
RFSW8007QSR	Standard 100-piece reel
RFSW8007TR7	Standard 2500-piece reel
RFSW8007QPCK-410	Fully assembled evaluations board w/ 5-piece bag

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	5.0	V
ESD Human Body Model (HBM)	2000	V
ESD Charge 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

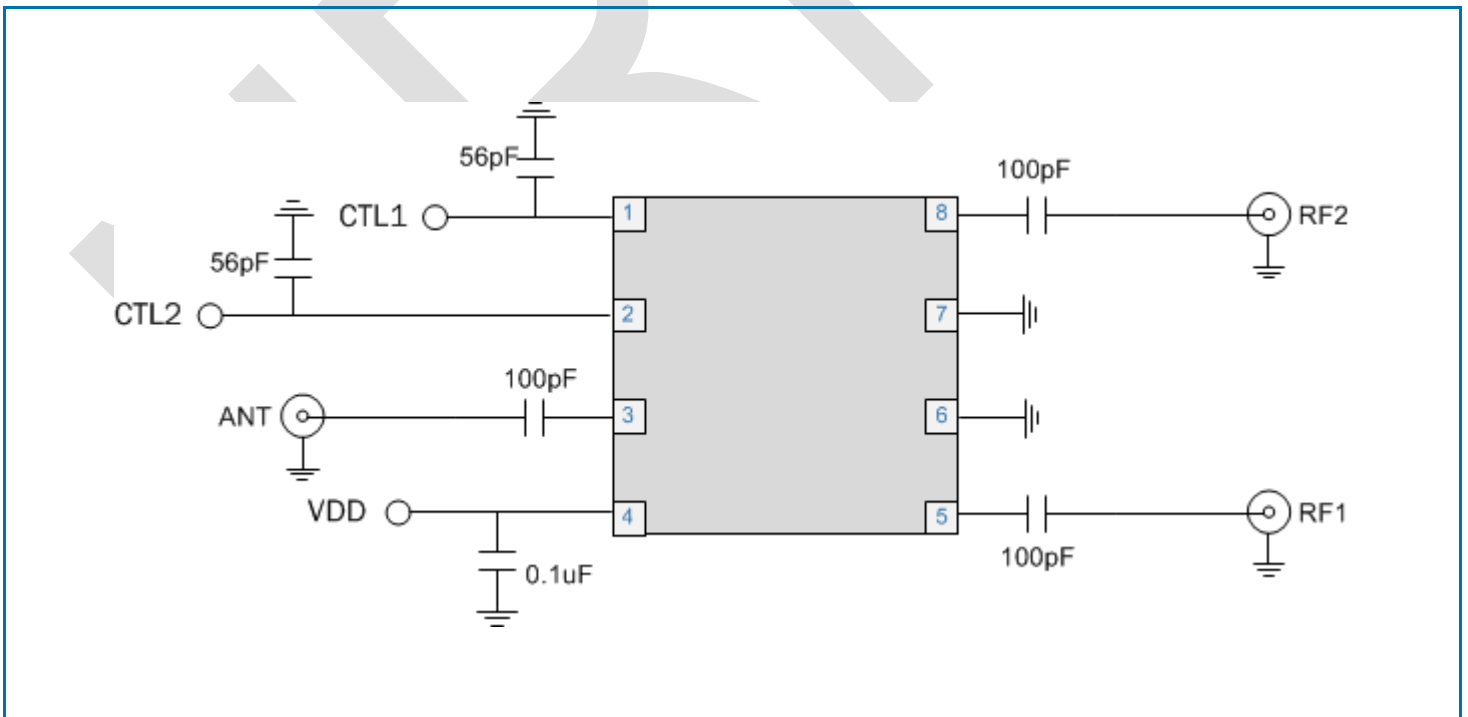
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
Operating Parameters					
Frequency	100		6000	MHz	
Vdd	2.7	3.6	4.8	V	
Switch Control Voltage: Low	0		0.20	V	
Switch Control Voltage: High	1.2	1.8	Vdd	V	
Nominal Operating Case Temperature	-40		105	°C	
Max Junction Temperature		125		°C	
RF1-ANT					V _{DD} =3.6V; CTL1=CTL2=1.8V to Vdd; T=-40°C to 105°C; Unless otherwise noted.
Insertion Loss		0.3	0.8	dB	0.1 to 2.5GHz
		0.5	1.8		5.1 to 5.95GHz
Input Return Loss		20	15	dB	0.1 to 6GHz
Output Return Loss		20	15	dB	0.1 to 6GHz
RF1 - RF2 Isolation (Measured from ANT-RF2)	28	32		dB	0.1 to 2.5GHz
	19	24		dB	5.1 to 5.95GHz
RF2-ANT					V _{DD} =3.6V; CTL1=0V; CTL2=1.8V to Vdd; T=-40°C to 105°C; Unless otherwise noted.
Insertion Loss		0.3	0.8	dB	0.1 to 2.5GHz
		0.5	1.7		5.1 to 5.95GHz
Input Return Loss		20	15	dB	0.1 to 6GHz
Output Return Loss		20	15	dB	0.1 to 6GHz
RF2 - RF1 Isolation (Measured from ANT-RF1)	30	32		dB	0.1 to 2.5GHz
	21	24		dB	5.1 to 5.95GHz
General Parameters					
Passband Ripple	-0.2		0.2	dB	Over 200MHz BW
IP0.1db; CW	29			dBm	RF1; 0.1 to 6GHz; T=25°C

Parameter	Specification			Unit	Condition
	Min	Typ	Max		
	29			dBm	RF2; 0.1 to 6GHz; T=25°C
Linear Power (RF1 and RF2)		24		dBm	Meeting EVM = -37dB with MCS9 VHT80. Source EVM floor < -40dB; Temp=25°C
Switch Control Current; High		0.1	5	μA	RF1/RF2 Mode
Operating Supply Current (Vdd)		55	65	μA	RF1/RF2 Mode
Switch Leakage Current		0.5	10	μA	OFF Mode
Switching Time		180	500	Ns	50% CTL to 90% RF

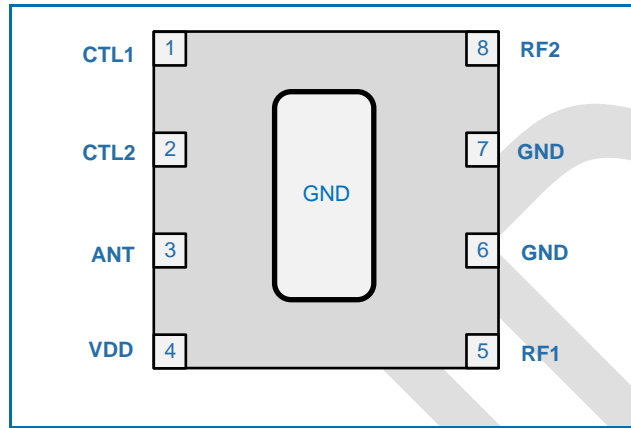
Control Logic Table

Mode	CTL1	CTL2	Condition
RF1	1	1	RF1 to ANT
RF2	1	0	RF2 to ANT
OFF Mode	0	0	RF Ports OFF

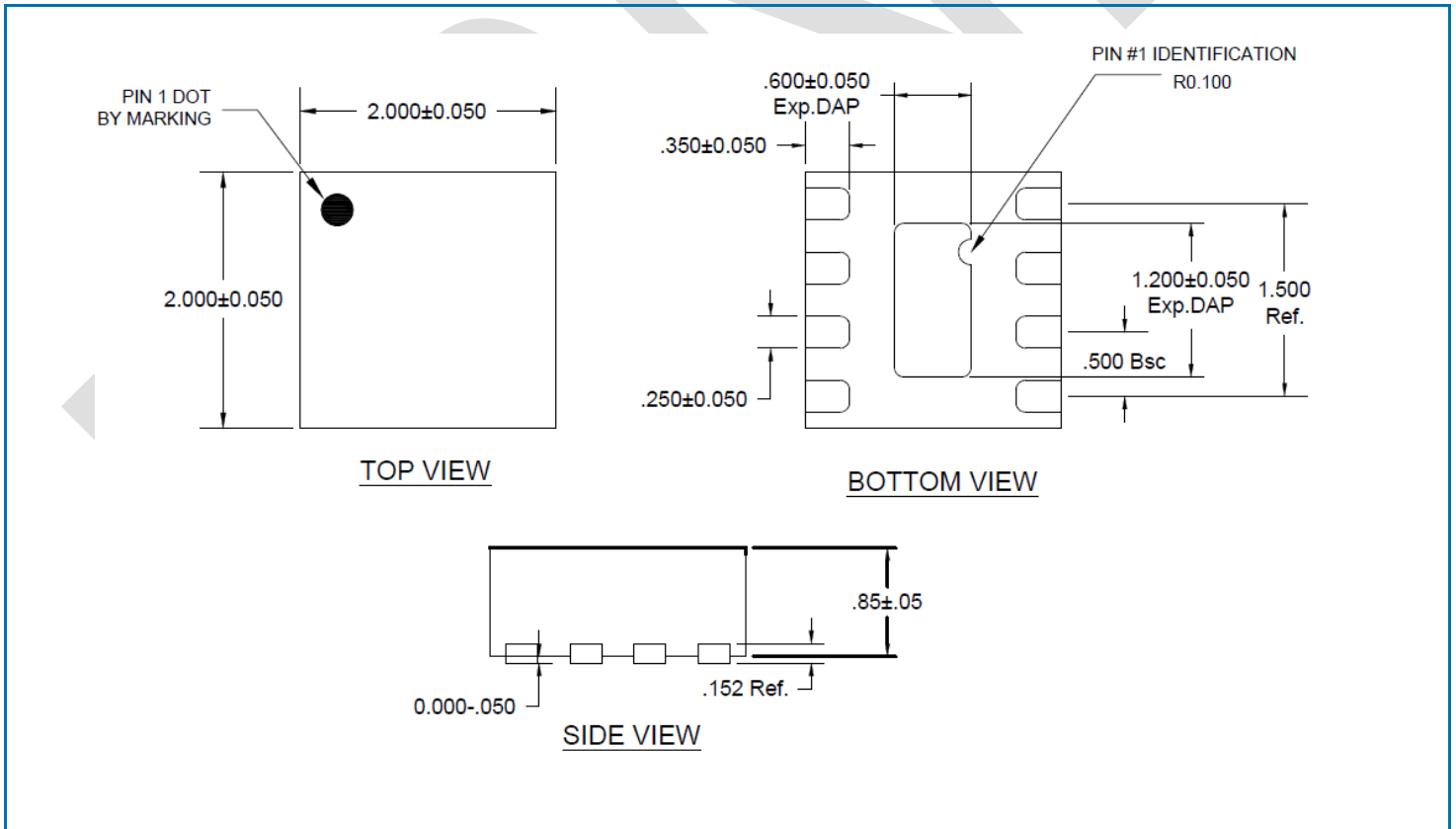
Application Schematic



Pin Out – Top View

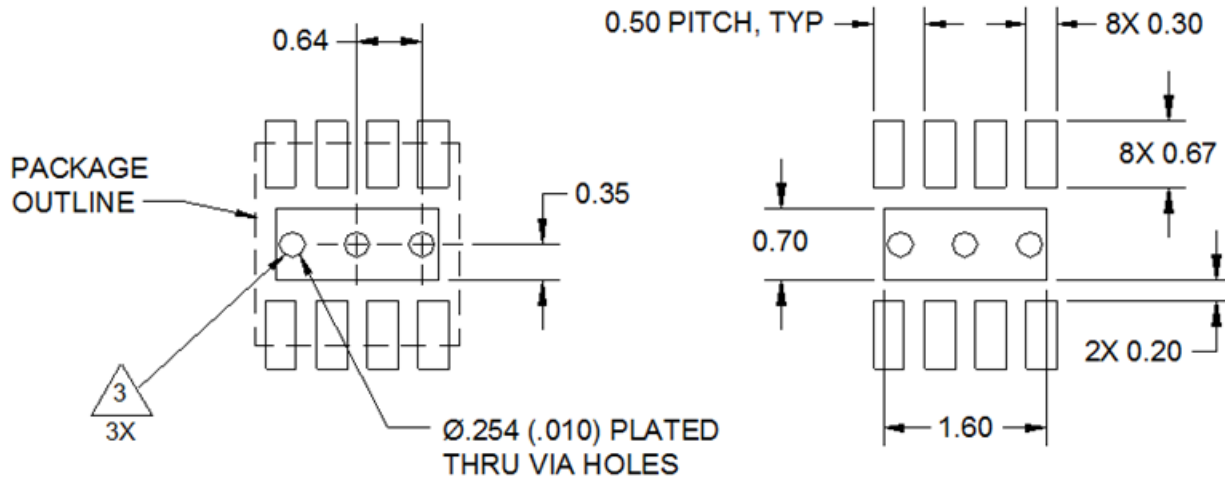


Package Drawing



Dimensions in mm

PCB Mounting Pattern



NOTES:

1. All dimensions are in millimeters. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.
3. Vias are required under the backside paddle of this device for proper RF/DC grounding and thermal dissipation. We recommend a 0.35mm (#80/.0135") diameter bit for drilling via holes and a final plated thru diameter of 0.25 mm (0.10").
4. Ensure good package backside paddle solder attach for reliable operation and best electrical performance.

Pin Names and Descriptions

Pin	Name	Description
1	CLT1	Enable Voltage for the Switch
2	CLT2	Switch Control to enable RF1 or RF2 Port
3	ANT	Common RF Port. External DC blocking required.
4	VDD	Battery Voltage Supply
5	RF1	RF Port-1. External DC blocking required.
6	GND	Ground
7	GND	Ground
8	RF2	RF Port-2. External DC blocking required.
PADDLE	GND	GND Paddle on backside for thermal relief

Revision History

Revision	DATE	DESCRIPTION
Rev I	2/15/22	Added Watermark NRND; added History and Contact Information and Notice; Added GND paddle to pin description; Added Max operating Tj; Added PCB Mounting Pattern

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

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