

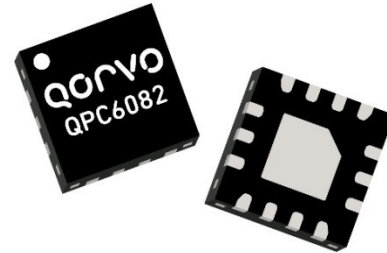
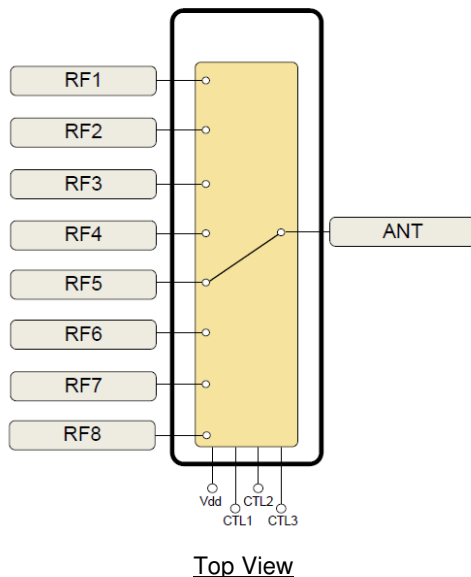
Product Overview

The QPC6082 is a low loss, high isolation SP8T switch with performance optimized for CDMA, WCDMA & LTE applications requiring high linearity

The RF and antenna ports can be directly connected in 50 Ω systems and control logic is compatible with +1.3 V to +1.8V systems. DC blocking caps are not required if there is no external DC voltage present at the RF or antenna ports. The supply voltage is intended for connection to +2.85 V systems but the device is operable from +2.4 V to +4.5 V.

The standard 14 pad QFN package and compact 2.0 mm x 2.0 mm size offers designers a compact, easy-to-use, switch component for quick integration into multimode, multi-band systems.

Functional Block Diagram



14 Pad 2.0 mm x 2.0 mm x 0.55 mm QFN Package

Key Features

- Very Low Insertion Loss: 0.4 dB typ. In Band 5
- High Port-to-Port Isolation: 31 dB typ. In Band 5
- Power Handling up to +32 dBm into 50 Ω
- GPIO Interface for +1.3 V to +1.8 V Control Logic
- Multi-Band Operation 700 MHz to 2700 MHz
- Compact 2.0 mm x 2.0 mm QFN Package
- No DC Blocking Capacitors Required (unless external DC is applied to the RF ports)

Applications

- Data Cards
- IoT
- Telemetry
- Automotive
- Cellular Modems and USB Devices
- Multi-Mode WCDMA, LTE Applications

Ordering Information

| Part No. | Description |
|---------------|------------------------------------|
| QPC6082 | SP8T Switch for 3G/4G |
| QPC6082SB | Sample Bag with 5 pieces |
| QPC6082SQ | Sample Bag with 25 pieces |
| QPC6082SR | Sample Reel with 100 pieces |
| QPC6082TR7 | 2500-PC Taped on 13" Reel Fully |
| QPC6082PCK401 | Assembled EVB + 5 Piece Sample Bag |

Absolute Maximum Ratings

| Parameter | | Rating |
|--|-----------------|----------------|
| Storage Temperature | | -40 to +125 °C |
| Operating Temperature | | -30 to +90 °C |
| Maximum V _{DD} | | +6.0 V |
| Maximum V _{CTRL} | | +3.0 V |
| Max Input Power (Momentary Infrequent Occurrence) | 1:1 VSWR, +25°C | +38.5 dBm |
| | 6:1 VSWR, +25°C | +35.0 dBm |
| Max Input Power (Continuous Operation) | 1:1 VSWR, +25°C | +36.5 dBm |
| | 6:1 VSWR, +25°C | +35.5 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 |
|--|------|-------|-------|-------|
| Device Voltage (V _{DD}) | +2.4 | +2.85 | +4.5 | V |
| V _{DD} Supply Current | - | 80 | 120 | µA |
| C _{TL1,2,3} Logic Low Voltage | 0.00 | - | +0.45 | V |
| C _{TL1,2,3} Logic High Voltage ⁽¹⁾ | +1.3 | - | +2.7 | V |
| C _{TL1,2,3} Logic High Current | - | | 5 | µA |
| Switching Time ⁽²⁾ | | | 2 | µs |
| Turn-On Time ⁽³⁾ | | 4 | | µs |

Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

Notes:

- V_{DD} must be > V_{CTRL} at all times.
- 10% to 90% RF.
3. Time from VDD=0V to part ON and RF at 90%.

Electrical Specifications

| Parameter | | Conditions ⁽¹⁾ | Min | Typ | Max | Units | |
|---------------------------|----------------|--|-------------|-------|-------|-------|-----|
| Insertion Loss RFX to ANT | | 704 – 787 MHz | - | 0.40 | 0.55 | dB | |
| | | 815 – 960 MHz | - | 0.40 | 0.55 | | |
| | | 1710 – 1980 MHz | - | 0.50 | 0.70 | | |
| | | 2110 – 2170 MHz | - | 0.66 | 0.79 | | |
| | | 2300 – 2690 MHz | - | 0.76 | 0.90 | | |
| Harmonics | Low Band, 2fo | Pin = +28 dBm, 50 Ω | fo=824 MHz | - | -115 | -96 | dBc |
| | Low Band, 3fo | | fo=824 MHz | - | -84 | -81 | |
| | High Band, 2fo | | fo=1980 MHz | - | -99 | -86 | |
| | High Band, 3fo | | fo=1980 MHz | - | -82 | -76 | |
| | High Band, 2fo | | fo=2570 MHz | - | -92 | -88 | |
| | High Band, 3fo | | fo=2570 MHz | - | -79 | -75 | |
| Input IP2 | Low Band | TX Carrier at 897.5 MHz at +21 dBm CW Blocker at 1840 MHz at -15 dBm Measured RX frequency = 942.5 MHz | 113 | 117 | - | dB | |
| | High Band | TX Carrier at 1880 MHz at +21 dBm CW Blocker at 3840 MHz at -15 dBm Measured RX frequency = -1960 MHz | 115 | 118 | - | dB | |
| Input IP3 | Low Band | TX Carrier at 897.5 MHz at +21 dBm CW Blocker at 1840 MHz at -15 dBm Measured RX frequency = 942.5 MHz | 66 | 68 | - | dB | |
| | High Band | TX Carrier at 1880 MHz at +21 dBm CW Blocker at 3840 MHz at -15 dBm Measured RX frequency = 1960 MHz | 67 | 69 | - | dB | |
| Triple Beat Ratio | | VSWR=2:1, BC0/BC1/BC4/BC5/BC14/BC15 | 81 | - | - | dBc | |
| VSWR | | 704 – 2690 MHz | - | 1.1:1 | 1.5:1 | - | |

Notes:

- Test conditions unless otherwise stated: all unused RF ports terminated in 50 Ω, Input and Output = 50 Ω, Temp. = +25 °C, V_{DD} = +2.85V, V_{CTRL} High = +1.8V, V_{CTRL} Low = 0 V

Electrical Specifications ⁽¹⁾ – Isolation Matrix – 704 MHz to 960 MHz

| Values Min/Typ (dB) | RF1 | RF2 | RF3 | RF4 | RF5 | RF6 | RF7 | RF8 | ANT ⁽²⁾ |
|---------------------|-----|---------|---------|---------|---------|---------|---------|---------|--------------------|
| RF1 | - | 35 / 43 | 36 / 44 | 36 / 48 | 39 / 42 | 38 / 46 | 37 / 44 | 37 / 43 | 31 / 34 |
| RF2 | - | - | 30 / 33 | 38 / 43 | 37 / 46 | 43 / 46 | 41 / 46 | 40 / 46 | 31 / 44 |
| RF3 | - | - | - | 30 / 32 | 36 / 40 | 41 / 47 | 41 / 43 | 40 / 43 | 31 / 43 |
| RF4 | - | - | - | - | 36 / 43 | 40 / 47 | 39 / 43 | 39 / 41 | 30 / 42 |
| RF5 | - | - | - | - | - | 34 / 43 | 36 / 48 | 36 / 45 | 30 / 33 |
| RF6 | - | - | - | - | - | - | 31 / 33 | 38 / 40 | 35 / 44 |
| RF7 | - | - | - | - | - | - | - | 29 / 31 | 33 / 41 |
| RF8 | - | - | - | - | - | - | - | - | 33 / 42 |

- Notes:
1. Test conditions unless otherwise stated: all unused RF ports terminated in 50 Ω, Input and Output = 50 Ω, Temp. = +25 °C, V_{DD} = +2.85V, V_{CTRL} High = +1.8V, V_{CTRL} Low = 0V.
 2. RFx path not selected.

Electrical Specifications ⁽¹⁾ – Isolation Matrix – 1710 MHz to 2170 MHz

| Values Min/Typ (dB) | RF1 | RF2 | RF3 | RF4 | RF5 | RF6 | RF7 | RF8 | ANT ⁽²⁾ |
|---------------------|-----|---------|---------|---------|---------|---------|---------|---------|--------------------|
| RF1 | - | 27 / 31 | 29 / 31 | 29 / 35 | 28 / 30 | 29 / 32 | 29 / 31 | 29 / 31 | 21 / 25 |
| RF2 | - | - | 21 / 23 | 27 / 30 | 29 / 30 | 30 / 33 | 29 / 33 | 28 / 31 | 26 / 32 |
| RF3 | - | - | - | 21 / 23 | 29 / 31 | 29 / 33 | 29 / 31 | 28 / 31 | 26 / 32 |
| RF4 | - | - | - | - | 29 / 31 | 28 / 33 | 26 / 31 | 27 / 29 | 26 / 31 |
| RF5 | - | - | - | - | - | 27 / 31 | 29 / 34 | 29 / 35 | 21 / 25 |
| RF6 | - | - | - | - | - | - | 22 / 24 | 27 / 31 | 27 / 31 |
| RF7 | - | - | - | - | - | - | - | 20 / 22 | 26 / 32 |
| RF8 | - | - | - | - | - | - | - | - | 25 / 31 |

- Notes:
1. Test conditions unless otherwise stated: all unused RF ports terminated in 50 Ω, Input and Output = 50 Ω, Temp. = +25 °C, V_{DD} = +2.85V, V_{CTRL} High = +1.8V, V_{CTRL} Low = 0V.
 2. RFx path not selected.

Electrical Specifications ⁽¹⁾ – Isolation Matrix – 2300 MHz to 2690 MHz

| Values Min/Typ (dB) | RF1 | RF2 | RF3 | RF4 | RF5 | RF6 | RF7 | RF8 | ANT ⁽²⁾ |
|---------------------|-----|---------|---------|---------|---------|---------|---------|---------|--------------------|
| RF1 | - | 25 / 27 | 27 / 30 | 27 / 31 | 25 / 27 | 27 / 29 | 26 / 28 | 26 / 28 | 18 / 20 |
| RF2 | - | - | 18 / 20 | 24 / 27 | 26 / 29 | 28 / 29 | 26 / 29 | 25 / 28 | 24 / 29 |
| RF3 | - | - | - | 18 / 20 | 26 / 28 | 29 / 29 | 26 / 25 | 25 / 27 | 24 / 28 |
| RF4 | - | - | - | - | 26 / 28 | 25 / 29 | 25 / 27 | 25 / 27 | 24 / 28 |
| RF5 | - | - | - | - | - | 25 / 27 | 27 / 30 | 27 / 30 | 19 / 21 |
| RF6 | - | - | - | - | - | - | 20 / 21 | 24 / 27 | 24 / 29 |
| RF7 | - | - | - | - | - | - | - | 18 / 19 | 24 / 28 |
| RF8 | - | - | - | - | - | - | - | - | 23 / 28 |

- Notes:
1. Test conditions unless otherwise stated: all unused RF ports terminated in 50 Ω, Input and Output = 50 Ω, Temp. = +25 °C, V_{DD} = +2.85V, V_{CTRL} High = +1.8V, V_{CTRL} Low = 0V.
 2. RFx path not selected.

Control Logic

| Mode (Signal Path) | CTL1 | CTL2 | CTL3 |
|--------------------|------|------|------|
| RF1 – ANT | High | Low | Low |
| RF2 – ANT | Low | High | Low |
| RF3 – ANT | High | High | Low |
| RF4 – ANT | Low | Low | High |
| RF5 – ANT | High | Low | High |
| RF6 – ANT | Low | High | High |
| RF7 – ANT | High | High | High |
| RF8 – ANT | Low | Low | Low |

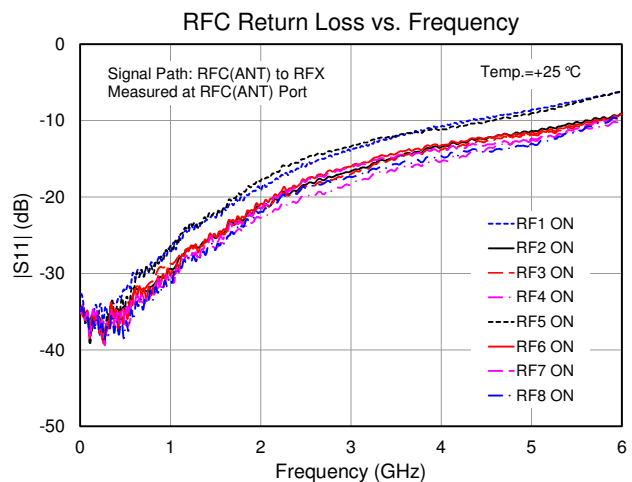
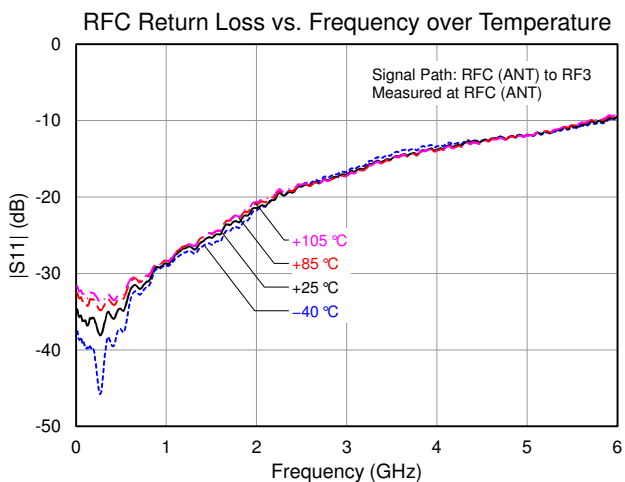
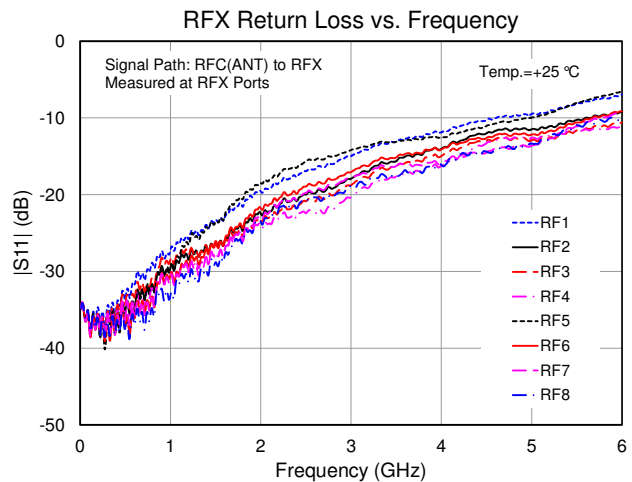
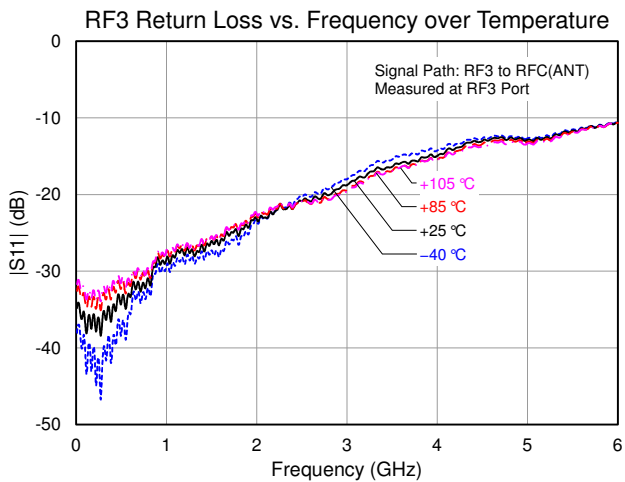
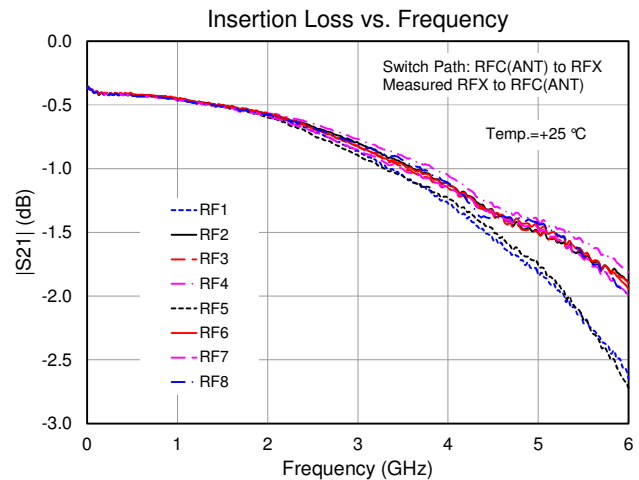
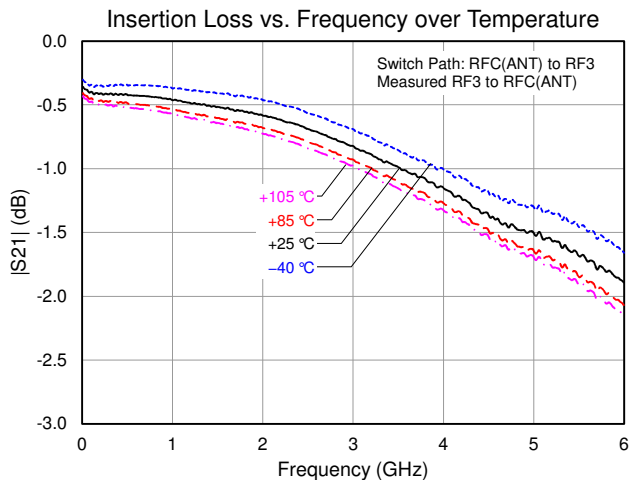
NOTE: The SP8T switch is controlled by CTL1, CTL2, and CTL3.

Recommended Operating Power, 50 Ω System

| Frequency | Power at T=+85 °C | Power at T=+105 °C | Theta-J(°C/W) |
|------------------|-------------------|--------------------|---------------|
| 8 MHz | +30 dBm | +30 dBm | 236 |
| 20 MHz to 100MHz | +34.5dBm | +31.5 dBm | 110 |
| 500MHz – 3GHz | +36dBm | +32dBm | 55 |
| 4GHz | +35dBm | +31dBm | 57 |

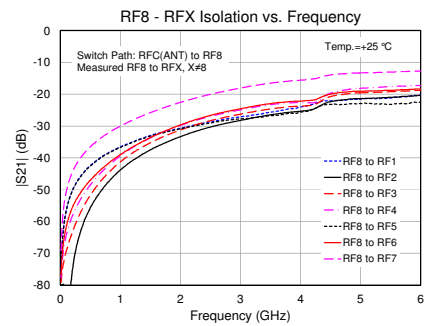
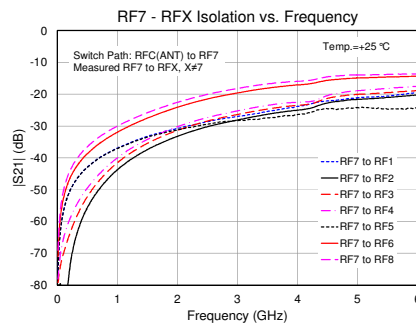
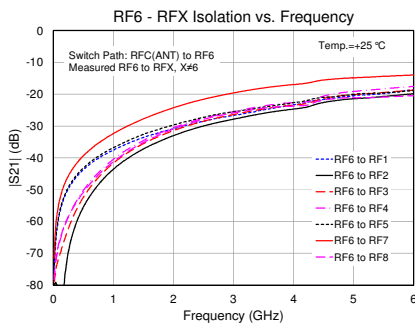
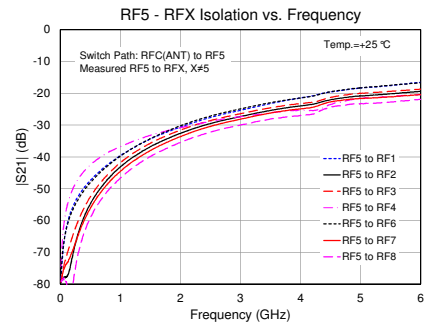
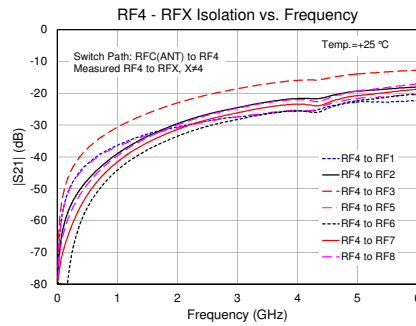
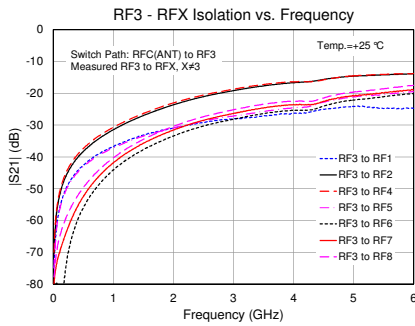
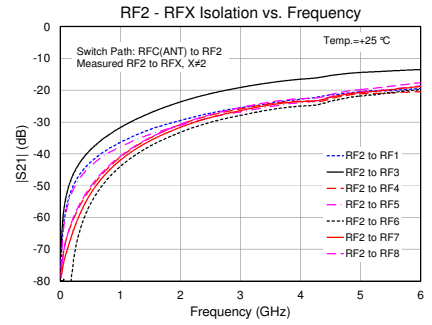
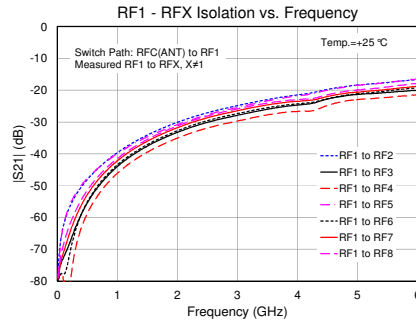
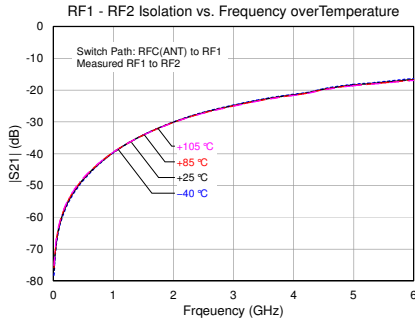
Performance Plots

Test conditions unless otherwise noted: $V_{DD} = +2.85\text{ V}$



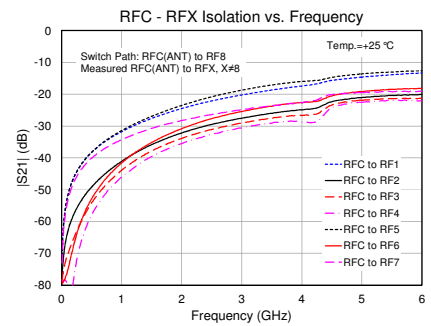
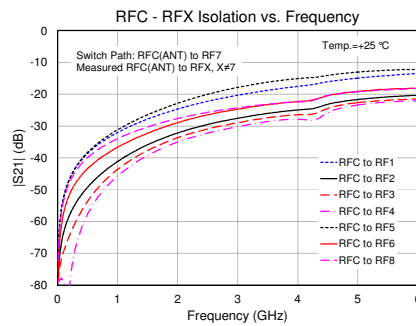
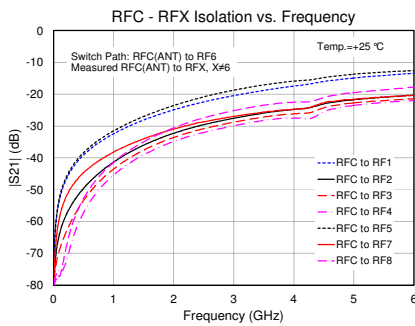
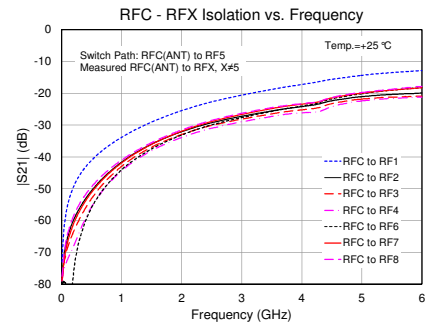
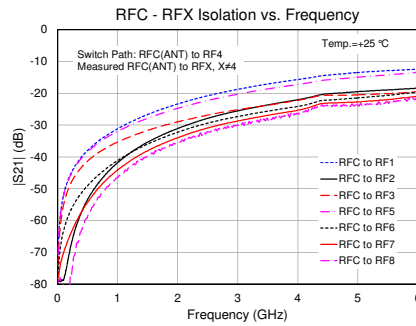
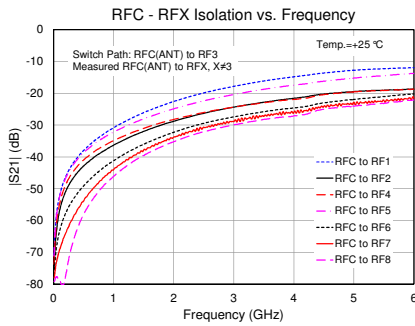
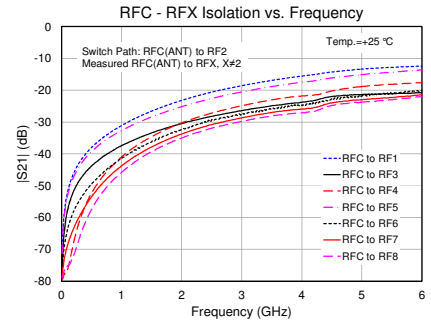
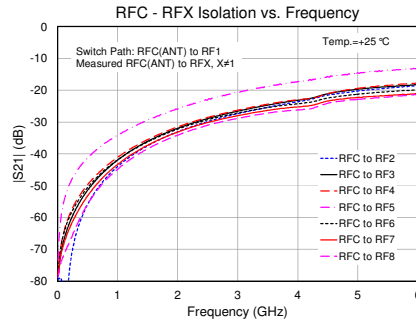
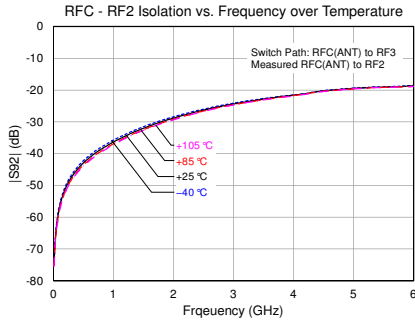
Performance Plots

Test conditions unless otherwise noted: $V_{DD} = +2.85\text{ V}$

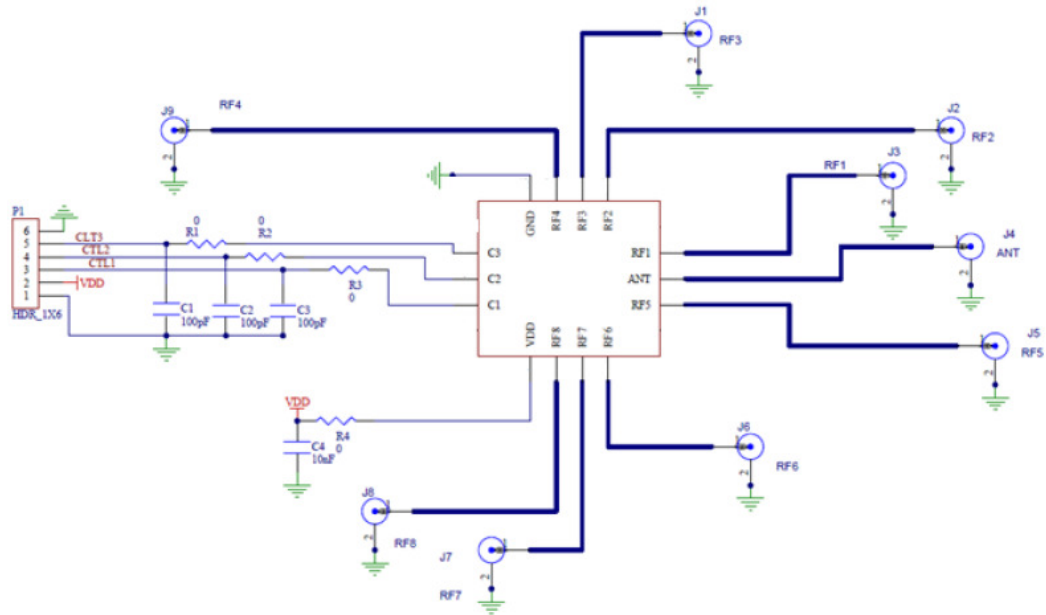


Performance Plots

Test conditions unless otherwise noted: $V_{DD} = +2.85\text{ V}$



Evaluation Board Schematic



Applications Notes

Unused RF ports of the QPC6082 should be grounded

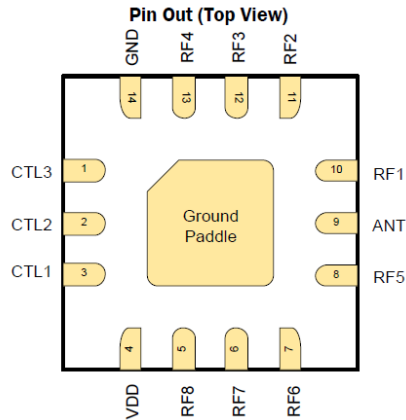
Power-Up/Down Sequence

It is very important that the user adhere to the correct power-up/down sequence in order to avoid damaging the device. If VDD is not supplied at any time the control lines must all be set to 0V (or ground).

ON Sequence: First turn ON VDD, then to apply control signals.

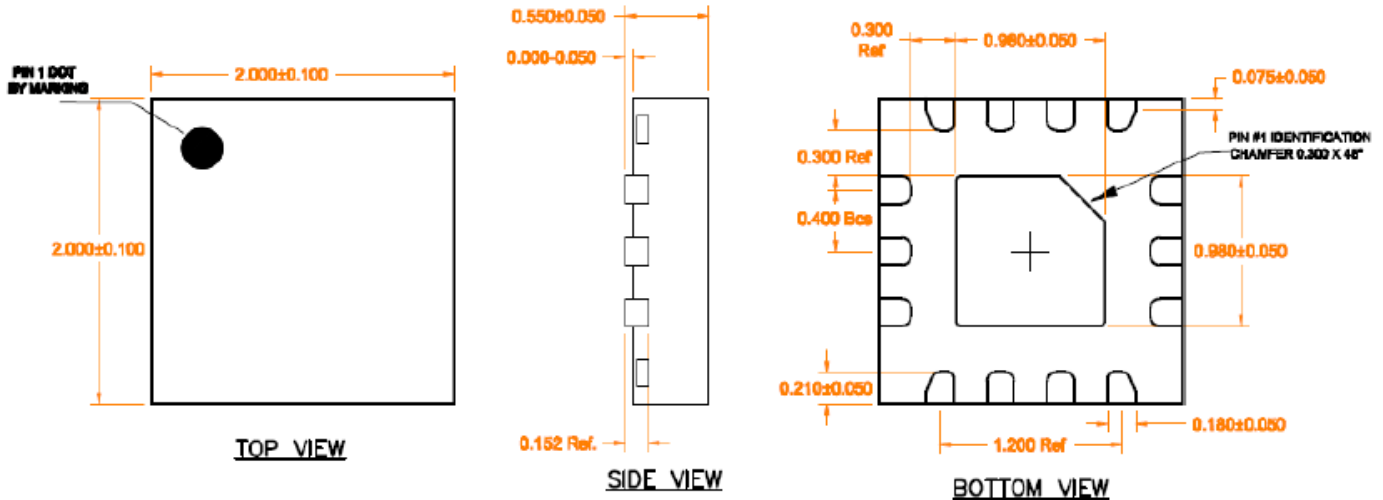
OFF Sequence: First turn OFF the control signals, then to turn OFF VDD.

Pin Configuration and Description

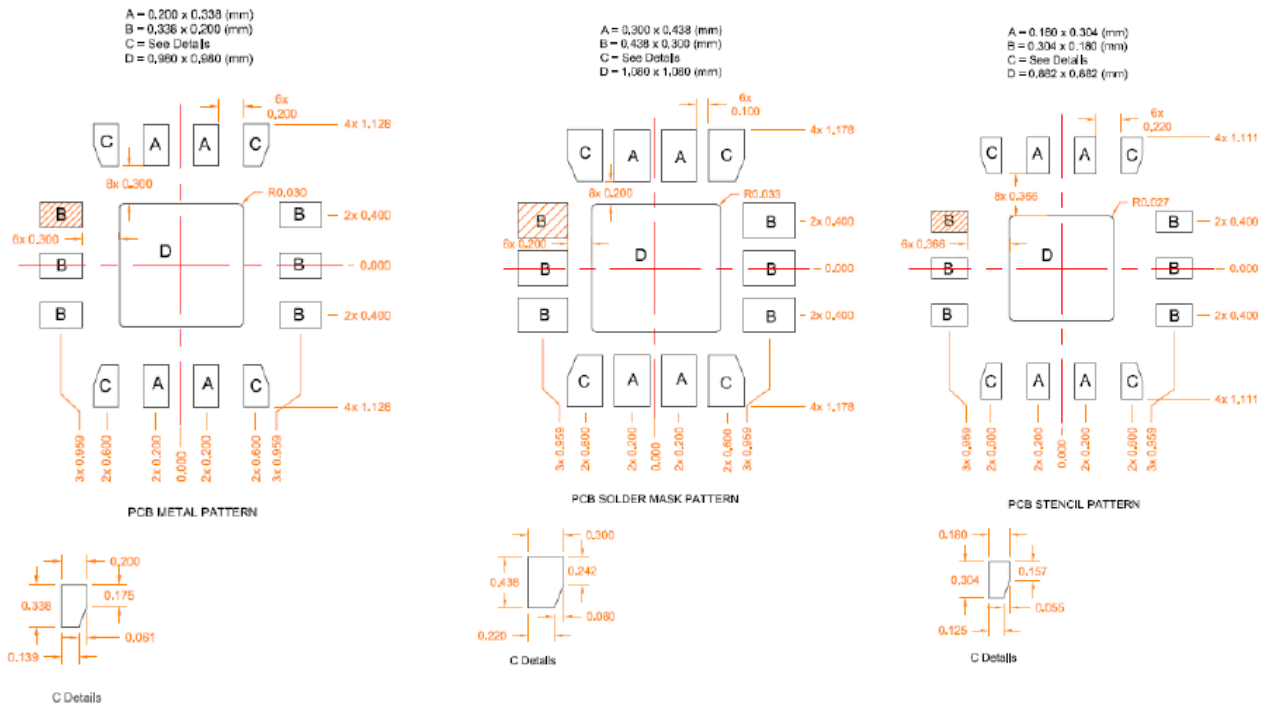


| Pad No. | Label | Description |
|------------------|-----------------|-----------------------|
| 1 | CTL3 | Control Logic #3. |
| 2 | CTL2 | Control Logic #2. |
| 3 | CTL1 | Control Logic #1. |
| 4 | V _{DD} | Power Supply. |
| 5 | RF8 | RF output. |
| 6 | RF7 | RF output. |
| 7 | RF6 | RF output. |
| 8 | RF5 | RF output. |
| 9 | ANT | RF signal in Antenna. |
| 10 | RF1 | RF output. |
| 11 | RF2 | RF output. |
| 12 | RF3 | RF output. |
| 13 | RF4 | RF output. |
| 14, Backside Pad | GND | RF and DC Ground. |

Package Marking and Dimensions



PCB Mounting Patterns



- Notes:
- Thermal vias for center slug "E" should be incorporated into the PCB design. The number and size of thermal vias will depend on the application, the power dissipation and the electrical requirements. An example of the number and size of the vias can be found on the Qorvo evaluation board layout.
 - Shaded pad in drawing above indicates pin 1 location.

Handling Precautions

| Parameter | Rating | Standard |
|----------------------------------|-----------|--------------------------|
| ESD – Human Body Model (HBM) | Class 1C | ESDA / JEDEC JS-001-2012 |
| ESD – Charged Device Model (CDM) | Class C2b | JEDEC JESD22-C101F |
| MSL – Moisture Sensitivity Level | MSL 2 | IPC/JEDEC J-STD-020 |



Caution!
ESD-Sensitive Device

Solderability

Compatible with both lead-free (260°C max. reflow temp.) and tin/lead (245°C max. reflow temp.) soldering processes. Solder profiles available upon request.

Contact plating: NiPdAu

RoHS Compliance

This part is compliant with 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) as amended by Directive 2015/863/EU.

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A (C₁₅H₁₂Br₄O₂) Free
- PFOS Free
- SVHC Free



Contact Information

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

Web: www.qorvo.com

Tel: 1-844-890-8163

Email: customer.support@qorvo.com

Important Notice

The information contained herein is believed to be reliable; however, Qorvo makes no warranties regarding the information contained herein and assumes no responsibility or liability whatsoever for the use of the information contained herein. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for Qorvo products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information. **THIS INFORMATION DOES NOT CONSTITUTE A WARRANTY WITH RESPECT TO THE PRODUCTS DESCRIBED HEREIN, AND QORVO HEREBY DISCLAIMS ANY AND ALL WARRANTIES WITH RESPECT TO SUCH PRODUCTS WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

Without limiting the generality of the foregoing, Qorvo products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.

Copyright 2016 © Qorvo, Inc. | Qorvo is a registered trademark of Qorvo, Inc.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru