

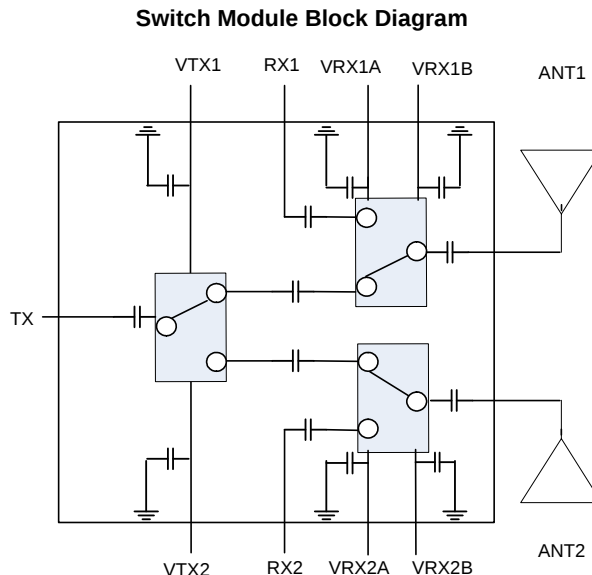


## Features

- Single Voltage: 2.5 to 5.0V
- 40dBm P1dB at 3.0V
- Low Insertion Loss and High Isolation
- Antenna Diversity

## Applications

- WiMAX, WiFi, and Cellular
- Commercial and Consumer Systems



Functional Block Diagram

## Product Description

This module is a 1x2 switch module intended to address WiMAX, WiFi, and Cellular 700MHz to 2.7GHz, 3.3GHz to 3.8GHz applications. This switch is specified to be capable of supporting linear power levels over 1 watt. The small form factor and integrated DC blocking minimizes the layout size and reduces the number of external components. The device is provided in a 4mm x 4mm x 0.9mm LGA package. This module meets or exceeds the RF Front End needs of IEEE802.11b/g/n and IEEE802.16 systems.

## Ordering Information

|                |                                                         |
|----------------|---------------------------------------------------------|
| RF5620         | 2.5V to 5.0V, 700MHz to 3.8GHz Integrated Switch Module |
| RF5620PCBA-410 | Fully Assembled Evaluation Board                        |

## Optimum Technology Matching® Applied

- |                                      |                                      |                                                |                                    |
|--------------------------------------|--------------------------------------|------------------------------------------------|------------------------------------|
| <input type="checkbox"/> GaAs HBT    | <input type="checkbox"/> SiGe BiCMOS | <input checked="" type="checkbox"/> GaAs pHEMT | <input type="checkbox"/> GaN HEMT  |
| <input type="checkbox"/> GaAs MESFET | <input type="checkbox"/> Si BiCMOS   | <input type="checkbox"/> Si CMOS               | <input type="checkbox"/> BiFET HBT |
| <input type="checkbox"/> InGaP HBT   | <input type="checkbox"/> SiGe HBT    | <input type="checkbox"/> Si BJT                | <input type="checkbox"/> LDMOS     |

## Absolute Maximum Ratings

| Parameter                                       | Rating        | Unit |
|-------------------------------------------------|---------------|------|
| Supply Voltage                                  | -0.5 to +5.25 | V    |
| Power Control Voltage ( $V_{REG}$ )             | -0.5 to +6.0  | V    |
| DC Supply Current                               | TBD           | mA   |
| Input RF Power with 50 $\Omega$ Output Load     | TBD           | dBm  |
| Input RF Power with Non-50 $\Omega$ Output Load | TBD           | dBm  |
| Operating Ambient Temperature                   | -30 to +85    | °C   |
| Storage Temperature                             | -40 to +150   | °C   |

**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.

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RFMD Green: RoHS compliant per EU Directive 2002/95/EC, 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.

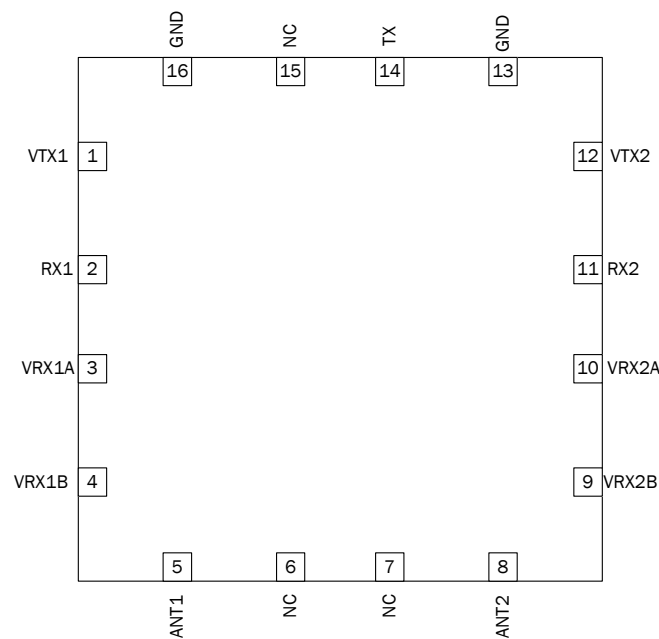
| Parameter                        | Specification |      |      | Unit    | Condition                        |
|----------------------------------|---------------|------|------|---------|----------------------------------|
|                                  | Min.          | Typ. | Max. |         |                                  |
| Frequency                        | 700           |      | 2700 | MHz     | Compliance with 802.16e standard |
| Tx Insertion Loss - Tx to ANT1,2 |               | 1.2  | 1.5  | dB      |                                  |
| Rx Insertion Loss - Rx to ANT1,2 |               | 0.7  | 1    | dB      |                                  |
| Frequency                        | 3300          |      | 3800 | MHz     |                                  |
| Tx Insertion Loss - Tx to ANT1,2 |               | 1.5  | 1.8  | dB      |                                  |
| Rx Insertion Loss - Rx to ANT1,2 |               | 0.9  | 1.2  | dB      |                                  |
| Tx - ANT Isolation               | 25            | 28   |      | dB      | Tx - ANT 1 & 2                   |
| Rx - ANT Isolation               | 25            | 28   |      | dB      | Rx1,2 to ANT 1,2                 |
| Return Loss (ON State)           | 15            | 20   |      | dB      | Tx - ANT 1, 2                    |
| Return Loss (OFF State)          | 15            | 20   |      | dB      | Rx1,2 to ANT 1, 2                |
| Input P1dB                       | 38            | 40   | 28.5 | dBm     | AT Vcontrol=3.0V                 |
| IIP3                             |               | TBD  |      | dBm     |                                  |
| Switching Speed                  |               | 300  | 500  | nsec    | 50% CTL to 90%/10% RF            |
| Switching Speed                  |               | 150  | 300  | nsec    | 90%/10% RF to 10%/90% RF         |
| Control Voltage High             | 2.5           | 3    | 5    | V       |                                  |
| Control Voltage Low              | 0             |      | 0.2  | V       |                                  |
| Control Current                  |               | 5    |      | $\mu$ A |                                  |

**Truth Table**

| Mode              | VTX1 | VTX2 | VRX1A | VRX1B | VRX2A | VRX2B |
|-------------------|------|------|-------|-------|-------|-------|
| RX Diversity      | 0    | 0    | 0     | 1     | 0     | 1     |
| TX-ANT1           | 1    | 0    | 1     | 0     | 1     | 0     |
| TX-ANT2           | 0    | 1    | 1     | 0     | 1     | 0     |
| TX-ANT1, RX2-ANT2 | 1    | 0    | 1     | 0     | 0     | 1     |
| TX-ANT2, RX1-ANT2 | 0    | 1    | 0     | 1     | 1     | 0     |

**Note:** Any other control voltage combination will place into an undefined state, but will not damage the device

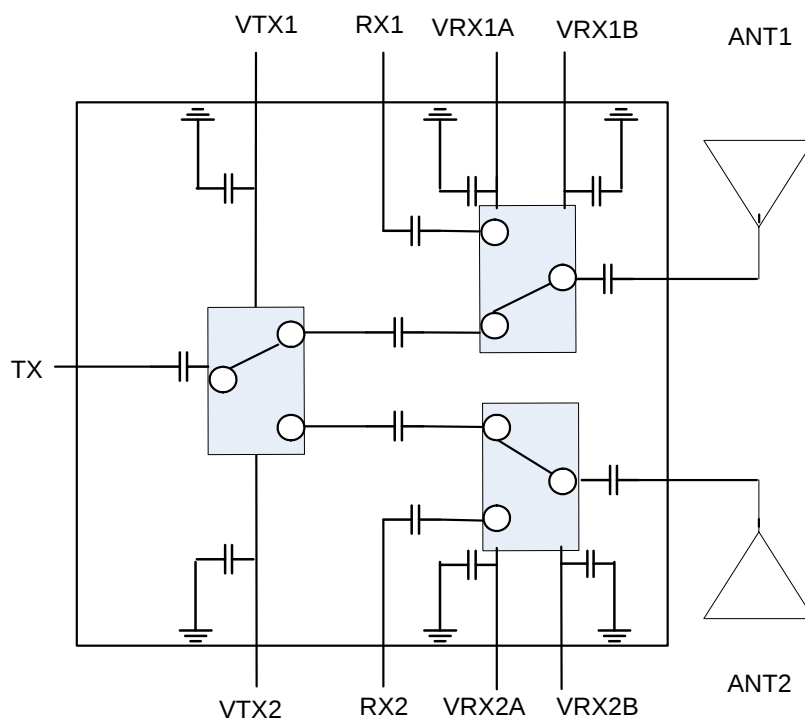
Pin Out



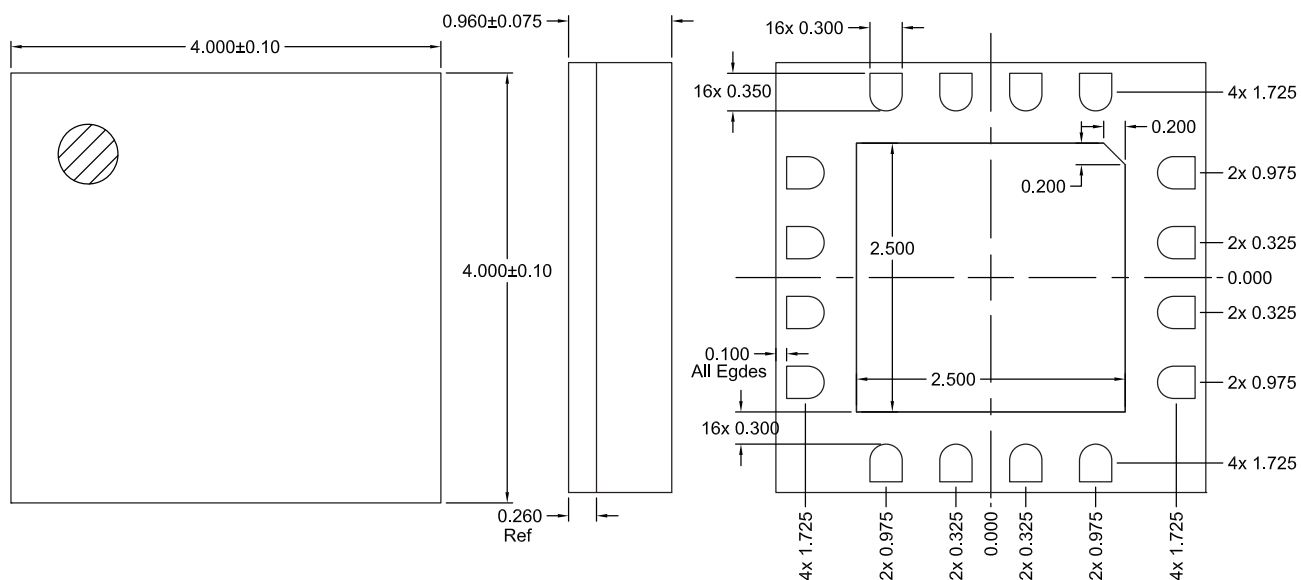
| Pin      | Function | Description                                                                                                                                                                   |
|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | VTX1     | Logic controller for TX                                                                                                                                                       |
| 2        | RX1      | RF RX port 1 - internally matched to 50Ω and DC blocked                                                                                                                       |
| 3        | VRX1A    | Logic control for RX                                                                                                                                                          |
| 4        | VRX1B    | Logic control for RX                                                                                                                                                          |
| 5        | ANT1     | RF output port 1 - internally matched to 50Ω and DC blocked                                                                                                                   |
| 6        | NC       | No internal connection (connect to GND recommended)                                                                                                                           |
| 7        | NC       | No internal connection (connect to GND recommended)                                                                                                                           |
| 8        | ANT2     | RF output port 2 - internally matched to 50Ω and DC blocked                                                                                                                   |
| 9        | VRX2B    | Logic control for RX                                                                                                                                                          |
| 10       | VRX2A    | Logic control for RX                                                                                                                                                          |
| 11       | RX2      | RF RX port 2 - internally matched to 50Ω and DC blocked                                                                                                                       |
| 12       | VTX2     | Logic control for TX                                                                                                                                                          |
| 13       | GND      | Ground connection                                                                                                                                                             |
| 14       | TX       | RF TX port - internally matched to 50Ω and DC blocked                                                                                                                         |
| 15       | NC       | No internal connection (connect to GND recommended)                                                                                                                           |
| 16       | GND      | Ground connection                                                                                                                                                             |
| Pkg Base | GND      | Ground connection - the backside of the package should be connected to the ground plane through as short a connection as possible (PCB vias under the device are recommended) |

## Detailed Functional Block Diagram

### Switch Module Block Diagram



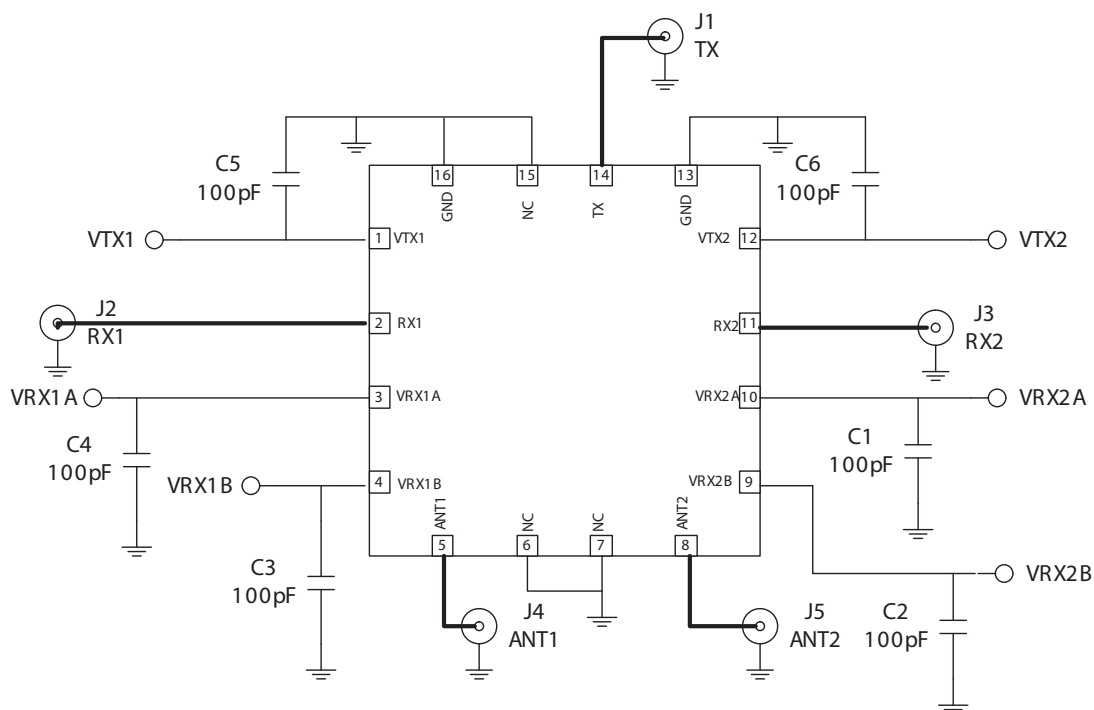
## Package Drawing



Notes:

1. Shaded area represents Pin 1 location

## Application Schematic



Evaluation Board Layout

