

### Product Description:

The TQS5200 is a high power, single-pole double-throw switch configured for TX-RX or Antenna Diversity switching applications for the WLAN market. The device exhibits industry-leading insertion loss, isolation and power handling. It requires no fixed supply voltage and operates with a positive control voltage. The switch is manufactured using TriQuint's GaAs pHEMT process and is packaged in an ultra-small, low-profile 1.3mm x 2mm x 0.4mm SLIM-7 package.

### Selected Electrical Specifications:

Parameter	min	typ	max	units
Frequency Range	2400	-	2500	MHz
Insertion Loss		0.6	0.8	dB
Isolation	23	28		dB
Return Loss	12.5	15		dB
Input P-1dB		31.5		dBm

Parameter	min	typ	max	units
Frequency Range	4900	-	6000	MHz
Insertion Loss		0.8	1.0	dB
Isolation	23	28		dB
Return Loss	12.5	15		dB
Input P-1dB		29		dBm

Test Conditions:  $T_a=25^{\circ}\text{C}$ ;  $P_{in}=0\text{dBm}$ ;  $V_{ctrl}=3.0\text{V}/0.0\text{V}$  as required

## SPDT Switch for Single-band and Dual-band, 802.11a/b/g Systems

### Features

- Integrated SPDT Switch for Single-band and Dual-band 802.11a/b/g WLAN Systems
- 1.0 to 6.0 GHz Frequency Coverage
- Low Insertion Loss
- High Isolation
- Positive Control Voltage
- GaAs pHEMT Technology
- Leadless 1.3 x 2.0 x 0.4 mm SMT Package

### Applications

- 802.11b WLAN
- 802.11g WLAN
- 802.11a WLAN
- TX-RX Switching
- Antenna Diversity Switching

# TQS5200

## Preliminary Datasheet

### Absolute Maximum Ratings

Parameter	Symbol	Value		Unit
		min	max	
Control Voltage Range	Vcntrl	-5	5	V
RF Input Power	Pin		3	W
Junction Temperature @ 30 dBm input, 25° C	Tj		50	°C
Storage Temperature	T <sub>a</sub>	-40	150	°C
Operating Temperature Range	Tope	-40	85	°C

### DC Electrical Performance

Parameter,	min	typ	max	Unit
Logic Level Low - State 0	0	-	0.2	V
Logic Level High - State 1	2.5	-	5.0	V
Gate Leakage		1	50	uA

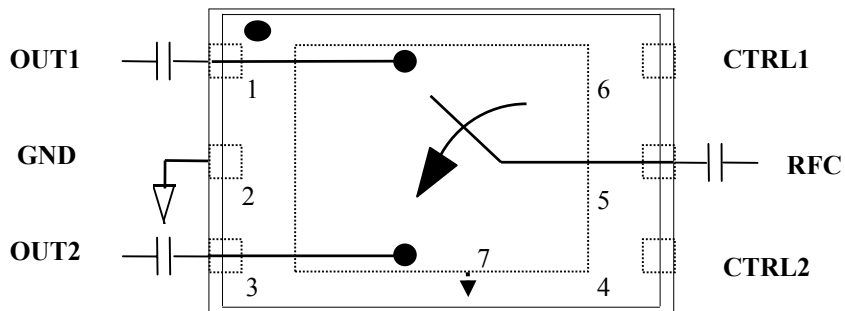
### General Electrical Characteristics<sup>1,2</sup>

Parameter	min	typ	max	min	typ	max	units
Frequency Range	2400	-	2500	4900	-	6000	MHz
Insertion Loss		0.6	0.8		0.8	1.0	dB
Isolation	23	28		23	28		dB
Return Loss	12.5	15		12.5	15		dB
Input P-1dB (with Vcntrl=3V/0.0V)		31.5			29		dBm
Harmonics, 2fo, Pin=+20dBm (with Vcntrl=3V/0.0V)		85			80		dBc
Harmonics, 3fo, Pin=+20dBm (with Vcntrl=3V/0.0V)		70			70		dBc

<sup>1</sup>Test Conditions: T<sub>a</sub>=25°C, Vcntrl=3V/0V unless otherwise noted,

<sup>2</sup>AC performance is guaranteed at 25 Deg-C,

### Applications Information



### Pin Assignments

PIN	Symbol	Description
1	OUT1	RF Output 1
2	GND	Ground
3	OUT2	RF Output 2
4	CTRL2	RF Output 2 Control
5	RFC	Common RF Port
6	CTRL1	RF Output 1 Control
7	GND	Ground

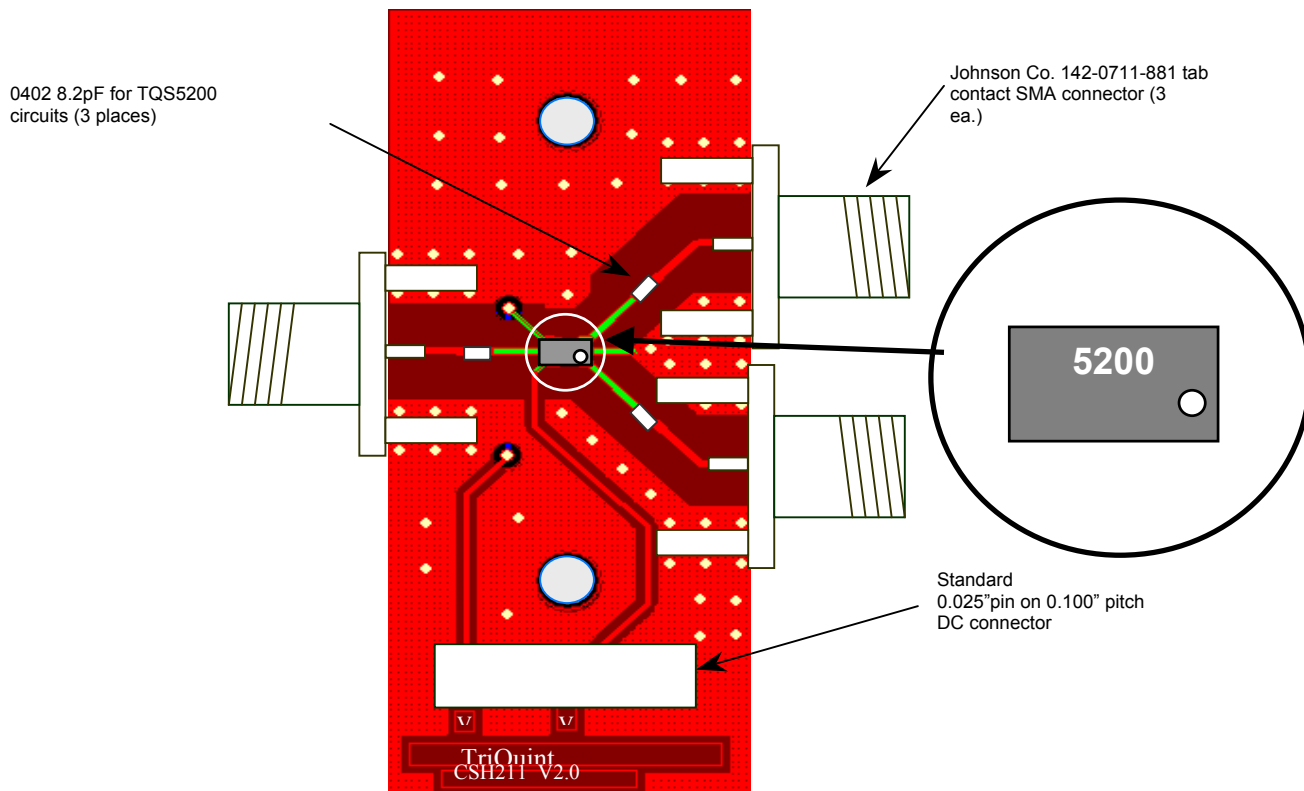
### Truth Table

CTRL1	CTRL2	RFC - OUT1	RFC - OUT2
+2.5V to 5.0V	0.0V +/- 0.2V	ON	OFF
0.0V +/- 0.2V	+2.5V to 5.0V	OFF	ON

# TQS5200

## Preliminary Datasheet

Evaluation Board – TQS5200 SPDT SW; CSH211 V2.0 Evaluation board



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### Bill of Materials

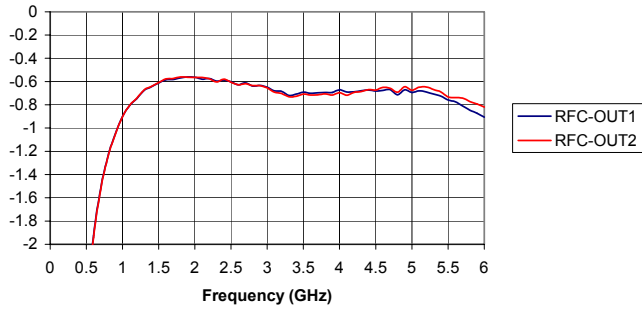
Layer/Descriptions
Dielectric: FR4: Er=4.6
Top: 1 oz. Plated Copper
Dielectric 1 : 6 mils
Mid 1: 1 oz. Copper
Dielectric 2: 28 mils
Mid 2: 1 oz. Copper
Dielectric 3: 6 mils
Bottom: 1 oz. Plated Copper

# Preliminary Datasheet

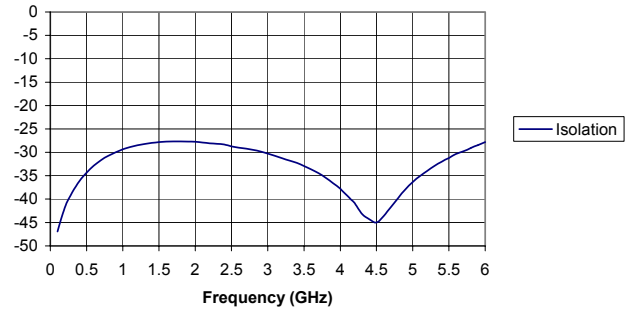
## TQS5200 measured performance; in TriQuint CSH211 V2.0 Evaluation Board

Measurement conditions:  $T_a = 25^\circ\text{C}$ ;  $V_{ctrl} = 3.0\text{V}/0.0\text{V}$ ; unless otherwise noted.

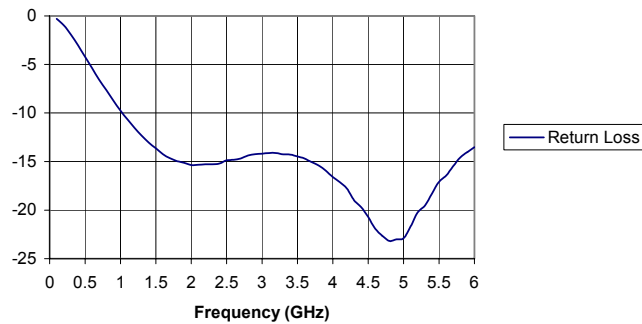
### Insertion Loss



### Isolation



### Return Loss

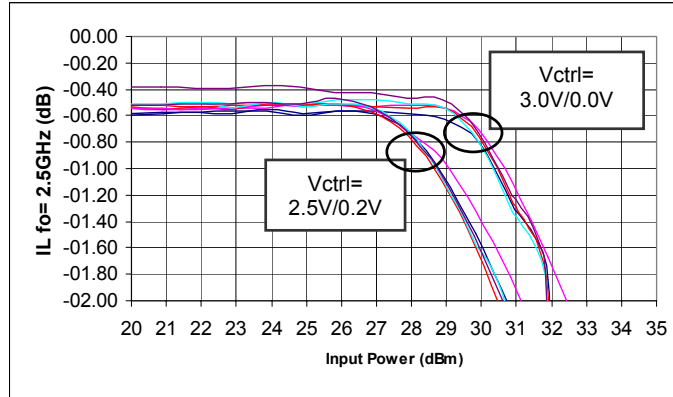


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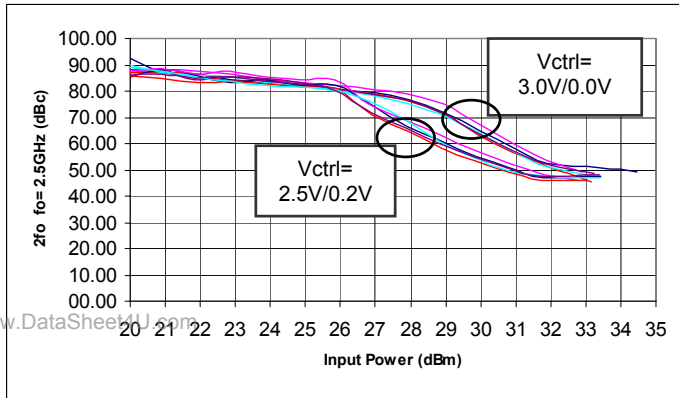
**TQS5200 Measured Performance; in TriQuint CSH211 V2.0 Evaluation Board- Continued**

Measurement conditions:  $T_a = 25^\circ\text{C}$ ;  $V_{ctrl}=3.0\text{V}/0.0\text{V}$ , Frequency=2.5GHz; unless otherwise noted.

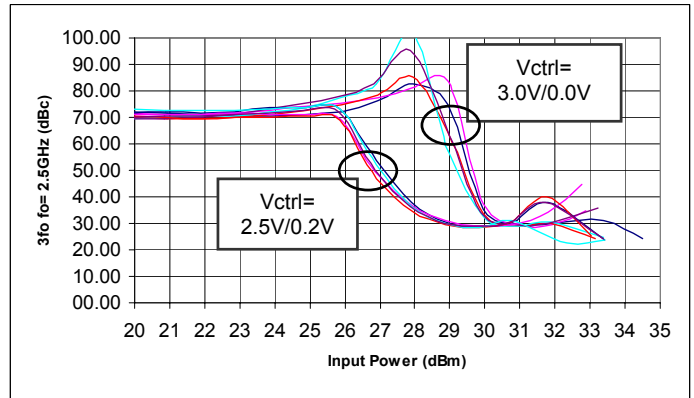
**Insertion Loss versus Input Power**



**2<sup>nd</sup> Harmonic versus Input Power**

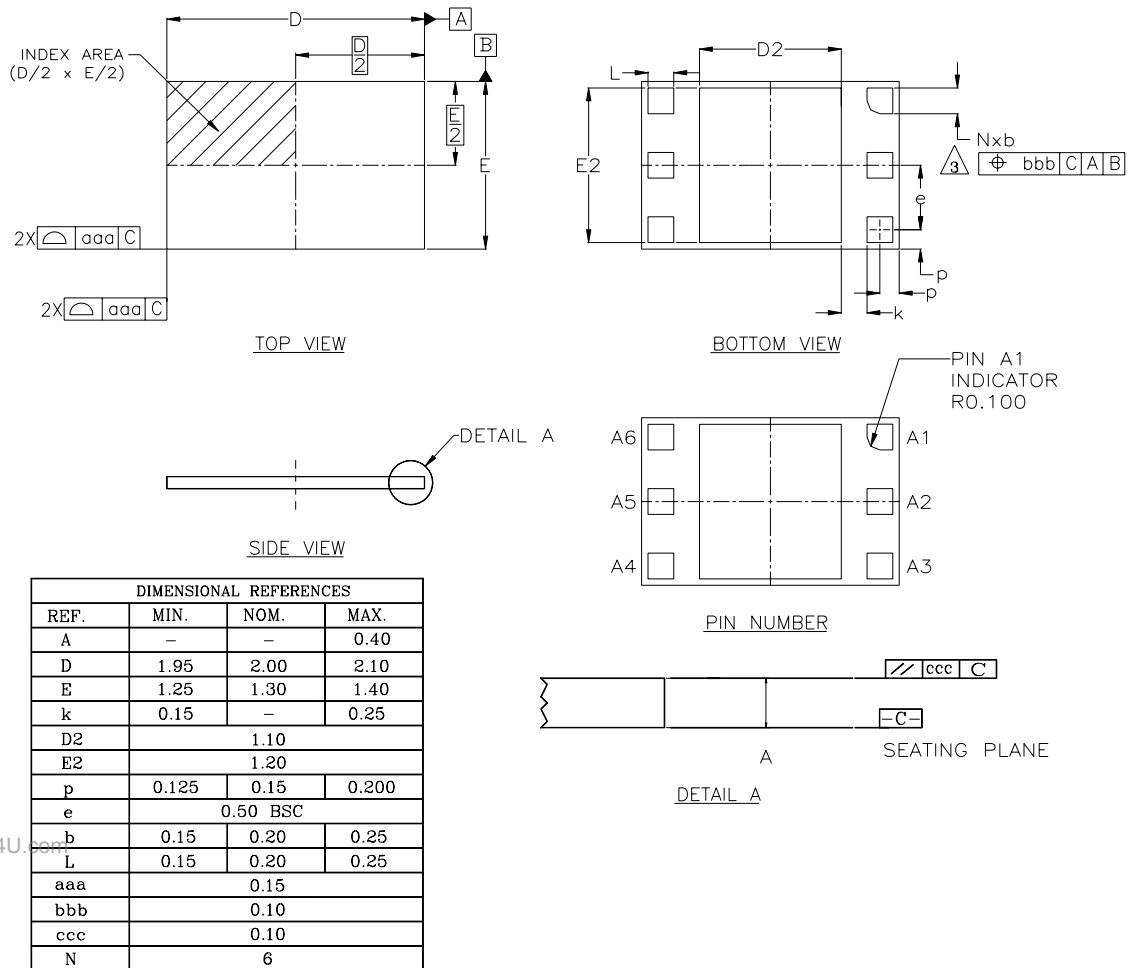


**3<sup>rd</sup> Harmonic versus Input Power**



## Application Data

## Package Outline – SLIM7



## NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. 'e' REPRESENTS THE BASIC LAND GRID PITCH.
3. "N" IS THE TOTAL NUMBER OF I/O
4. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
5. b IS MEASURED AT THE MAXIMUM I/O SIDE LENGTH.
6. LAND DESIGNATION PER JESD 95-1, SPP-002.
7. PACKAGE WARP SHALL BE 0.050MM MAXIMUM.
8. NO METAL CUT ON PAD IS ALLOWED

# TQS5200

## Preliminary Datasheet

### Package Marking



Pin 1

Line 1: 5200  
 Line 2: XXXX TriQuint Assembly Lot Number  
 Line 3: Manufacturing year and work-week

### Ordering Information:

Type	Marking	Package <sup>1)</sup>
<b>TQS5200</b>	<b>5200</b>	<b>SLIM-7</b>

ESD: **Electrostatic discharge sensitive device**  
 Observe handling Precautions!

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### Additional Information

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

**Web:** [www.triquint.com](http://www.triquint.com)      **Tel:** (503) 615-9000  
**Email:** [info\\_wireless@tqs.com](mailto:info_wireless@tqs.com)      **Fax:** (503) 615-8902

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**Email:** [info\\_wireless@tqs.com](mailto:info_wireless@tqs.com)

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