

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: Ta=25°C; Pin=0dBm; Vcntrl=3.0V/0.0V 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

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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 _a	-40	150	°C
Operating Temperature Range	To _{per}	-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

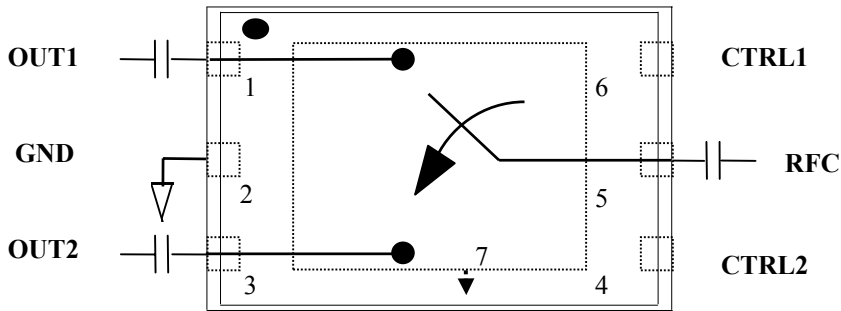
General Electrical Characteristics^{1,2}

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

¹Test Conditions: T_a=25°C, Vcntrl=3V/0V unless otherwise noted,

²AC 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

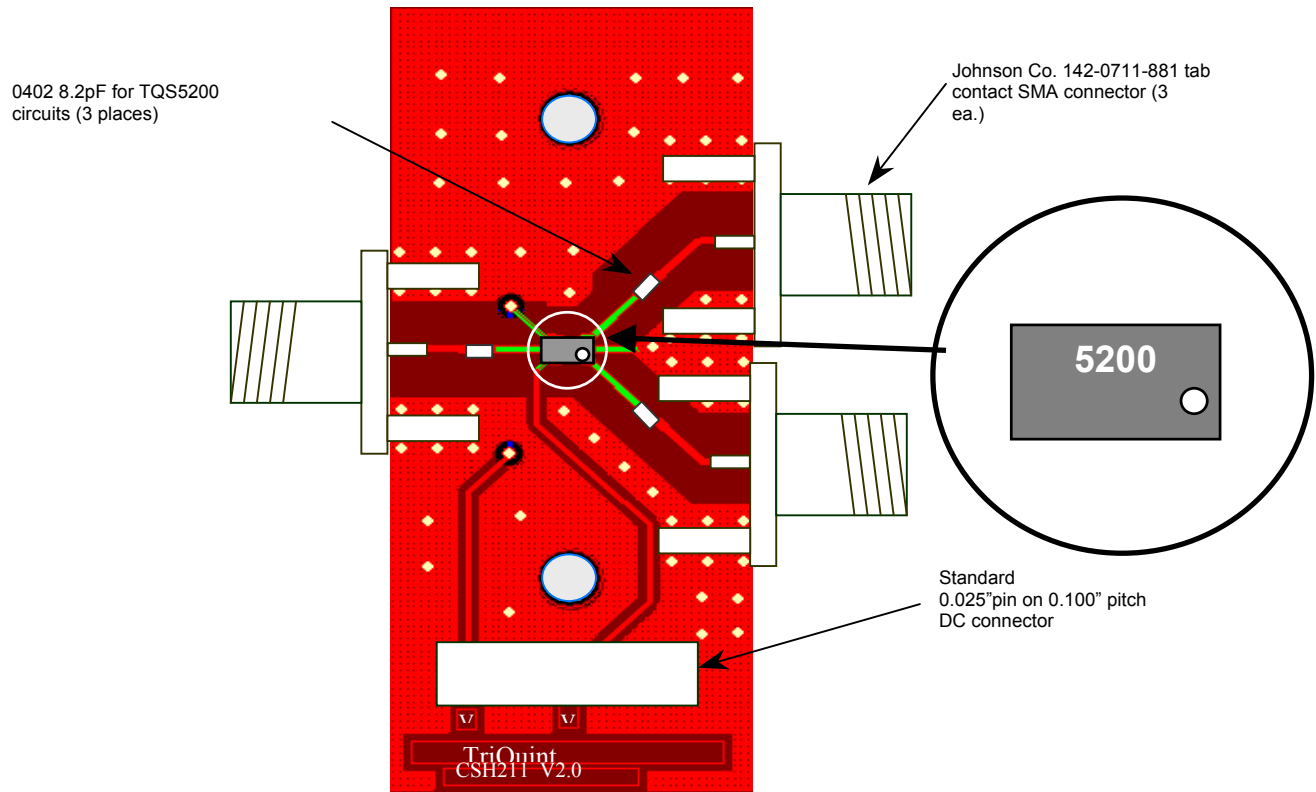
Truth Table

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

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



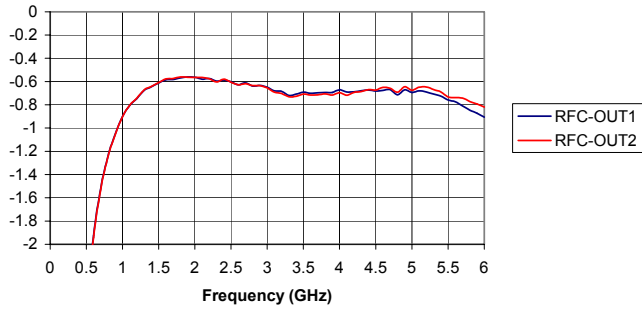
Bill of Materials

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

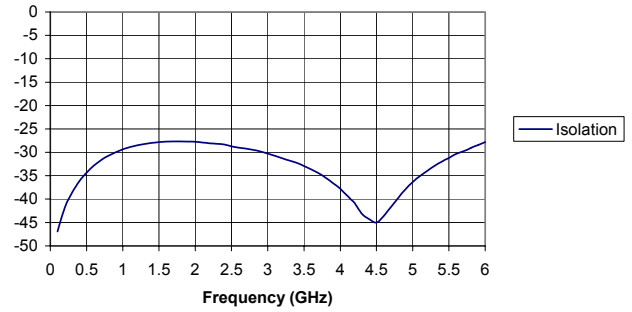
TQS5200 measured performance; in TriQuint CSH211 V2.0 Evaluation Board

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

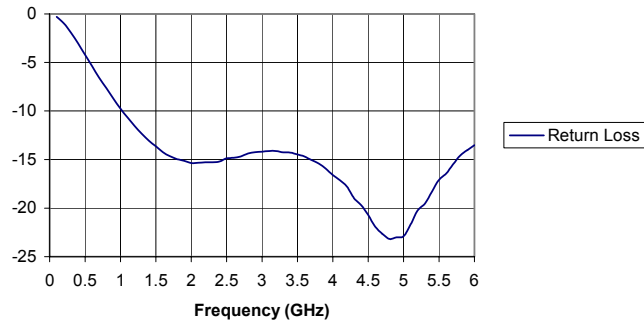
Insertion Loss



Isolation



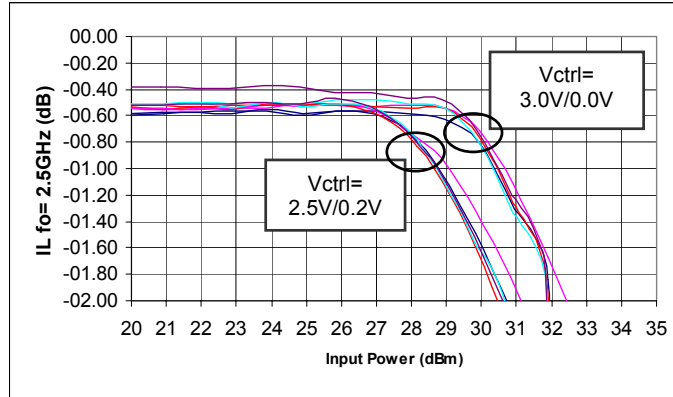
Return Loss



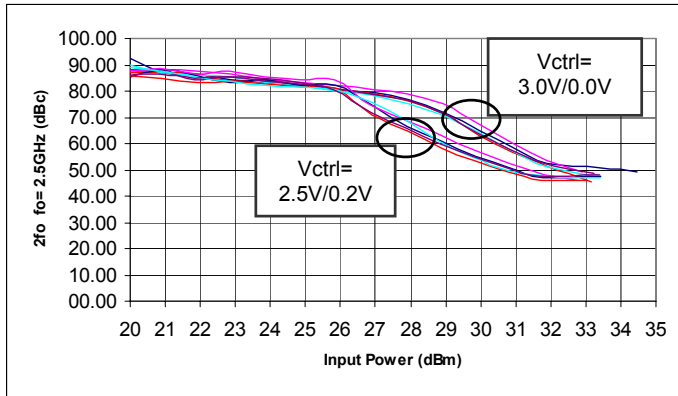
TQS5200 Measured Performance; in TriQuint CSH211 V2.0 Evaluation Board- Continued

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

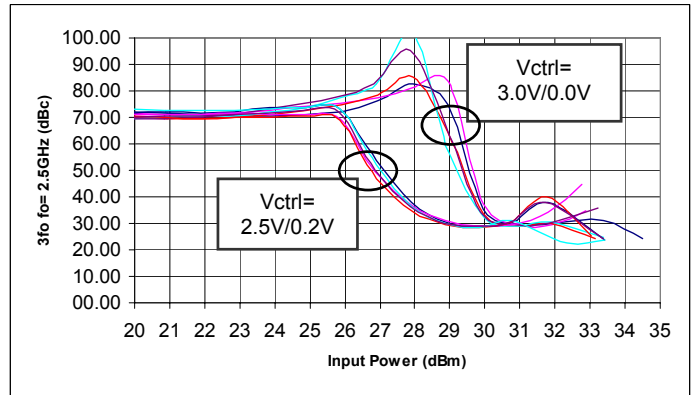
Insertion Loss versus Input Power



2nd Harmonic versus Input Power

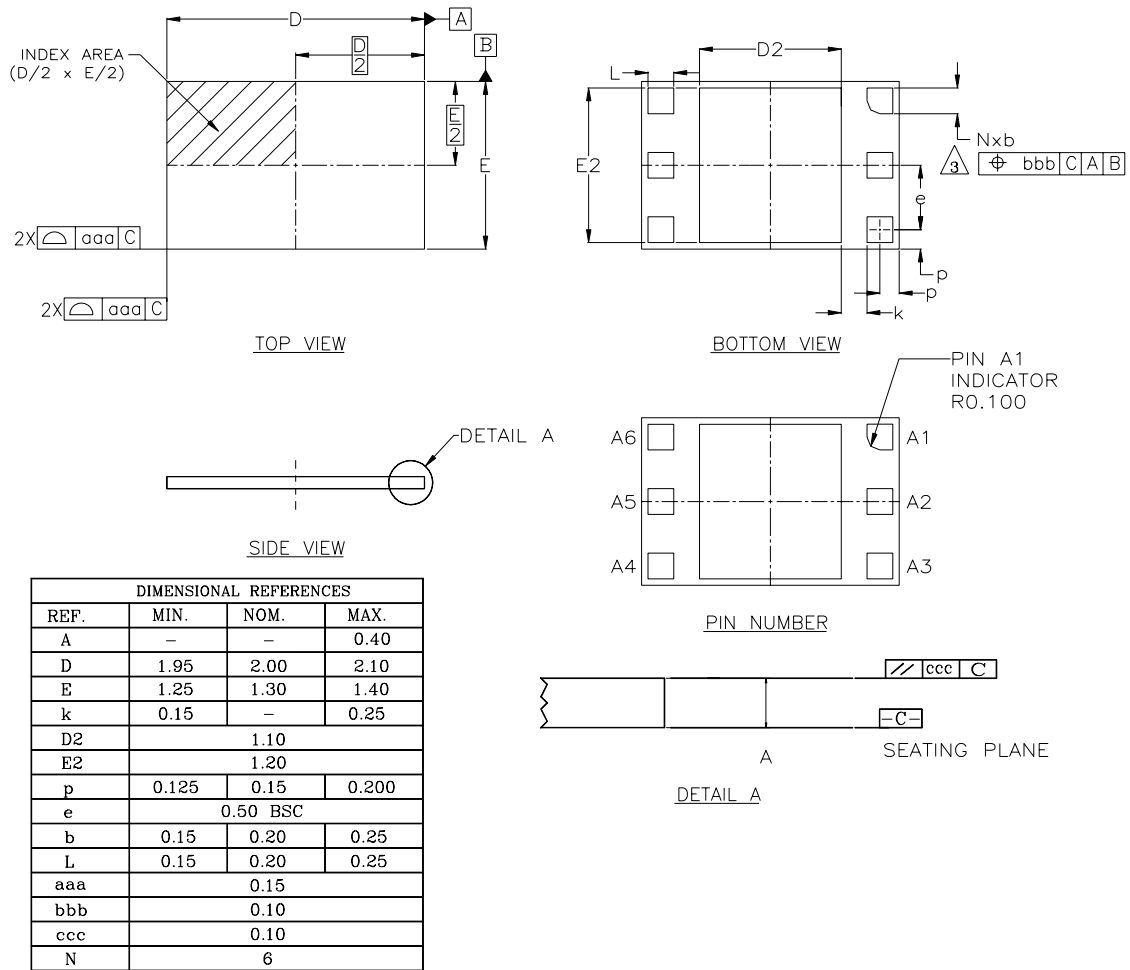


3rd Harmonic versus Input Power



Application Data

Package Outline – SLIM7



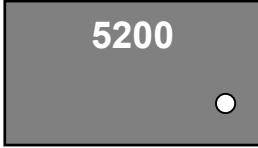
NOTES:

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

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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 ¹⁾
TQS5200	5200	SLIM-7

ESD: **E**lectrostatic **d**ischarge sensitive device
Observe handling Precautions!

Additional Information

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

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