

Product Description:

The TQS5201 is a high power, double-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 industry standard 3mm x 3mm VQFN-12 package.

Selected Electrical Specifications:

Parameter	min	typ	max	units
Frequency Range	2400	-	2500	MHz
Insertion Loss	2450 MHz	0.8	1.2	dB
Return Loss	2400 MHz	15		dB
Isolation	2400 MHz	20	28	dB
Input P-1dB (Vcntrl=3V)	2400 MHz	35		dBm
Harmonics, 2fo	2400 MHz	90		dBc
Harmonics, 3fo	2400 MHz	80		dBc

Test Conditions: Ta=25°C; Pin=20dBm; Vcntrl=3.0V or 0V as required

TX-RX and Diversity Switch for Dualmode, 802.11b & g Systems

Features

- Integrated TX-RX and Diversity Switch for Dualmode 802.11b and 802.11g WLAN Systems
- 1.0 to 3.0 GHz Frequency Coverage
- Low Insertion Loss
- High Isolation
- Positive Control Voltage
- 4 Independent Controls
- GaAs pHEMT Technology
- Leadless 3.0 x 3.0 mm SMT Package

Applications

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

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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	Toper	-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

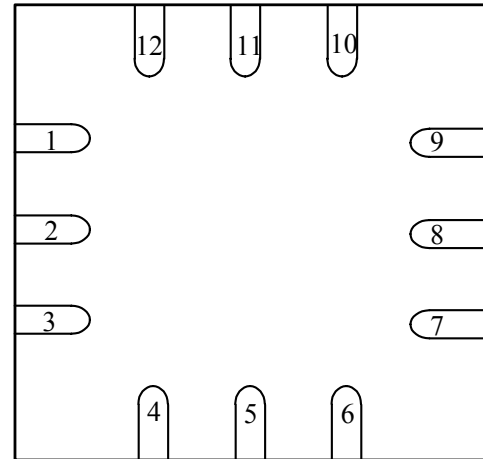
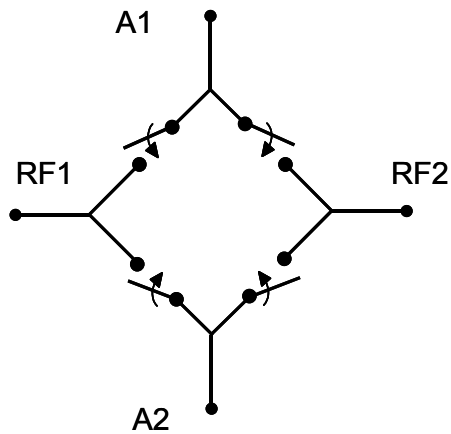
General Electrical Characteristics^{1,2}

Parameter	min	typ	max	Unit
Insertion Loss-		0.8	1.2	dB
Return Loss- All Ports		15		dB
Isolation- Defined as isolation of either path adjacent to on path	20	28		dB
Input P-1dB- with 3V/0.2V Vctrl		35		dBm
Input P-1dB- with 2.5V/0.2V Vctrl		33		dBm
Input IP3- @ +5 dBm Input level; 5 MHz spacing; with 3V/0.2V Vctrl		55		dBm
Input IP3- @ +5 dBm Input level; 5 MHz spacing; with 2.5V/0.2V Vctrl		50		dBm
2 nd Harmonic- @ 2.4 GHz; Pin=+20 dBm; with 2.5V/0.2V Vctrl		90		dBc
3 rd Harmonic- @ 2.4 GHz; Pin=+20 dBm; with 2.5V/0.2V Vctrl		80		DBc
Trise/Tfall- 10% RF to 90% RF		110		nS
Ton/Toff- 50% Cntrl to 90%/10% Cntrl		150		nS

¹Test Conditions: T_a=250C, Freq=2.45GHz,

²AC performance is guaranteed at 25 Deg-C,

Applications Information



Pin Assignments

Pin	Symbol	Description
1	Ctrl1	Control 1
2	RF1	RF Port 1
3	Ctrl4	Control 4
4	GND	Ground
5	A2	Antenna Port 2
6	GND	Ground
7	Ctrl3	Control 3
8	RF2	RF Port 2
9	Ctrl2	Control 2
10	GND	Ground
11	A1	Antenna Port 1
12	GND	Ground
	GND	Backside Paddle

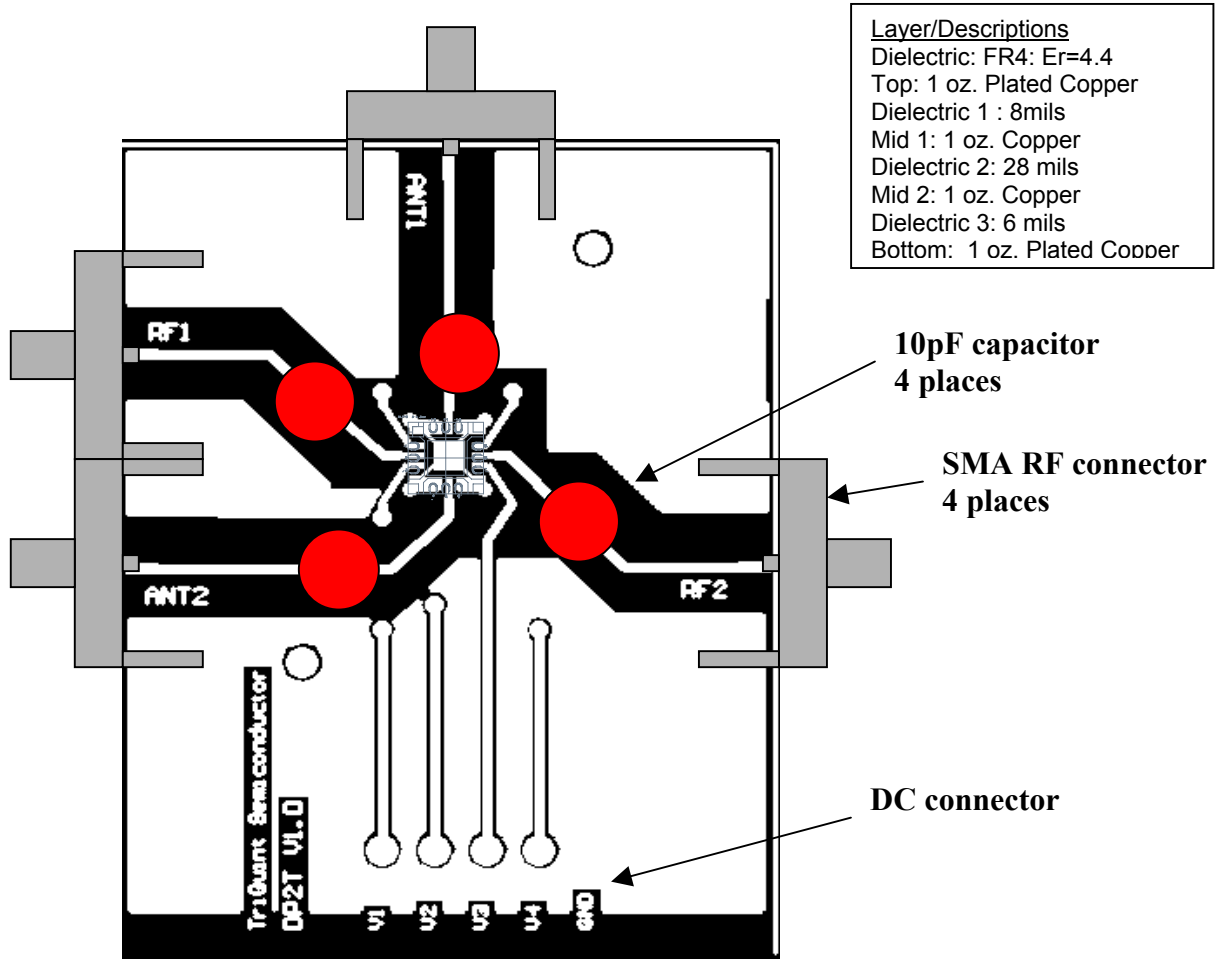
Truth Table

Ctrl1	Ctrl2	Ctrl3	Ctrl4	A1 – RF1	A1 – RF2	A2 – RF2	A2 – RF1
High	Low	Low	Low	On	Off	Off	Off
Low	High	Low	Low	Off	On	Off	Off
Low	Low	High	Low	Off	Off	On	Off
Low	Low	Low	High	Off	Off	Off	On
High	Low	High	Low	On	Off	On	Off
Low	High	Low	High	Off	On	Off	On

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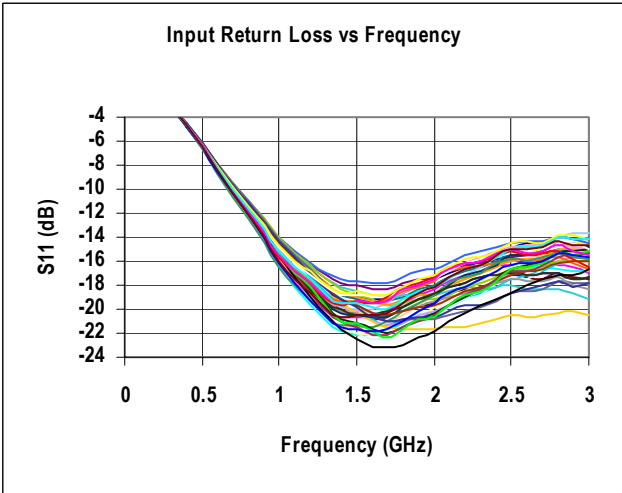
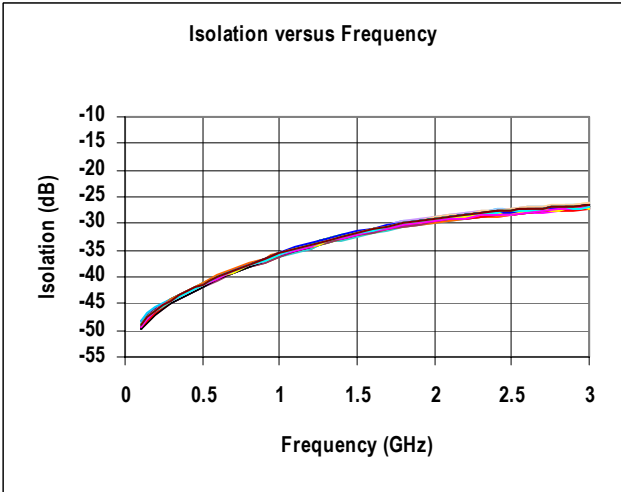
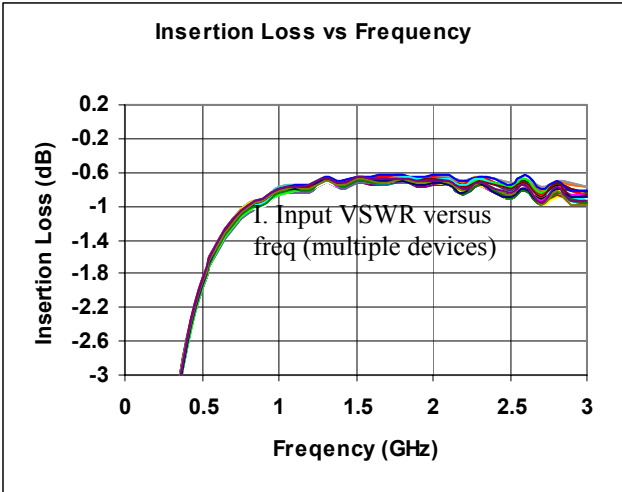
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Evaluation Board-TX-RX Diversity SW; DP2T V1.0 Evaluation board



TQS5201 measured performance; in TriQuint DP2T V1.0 Evaluation Board

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

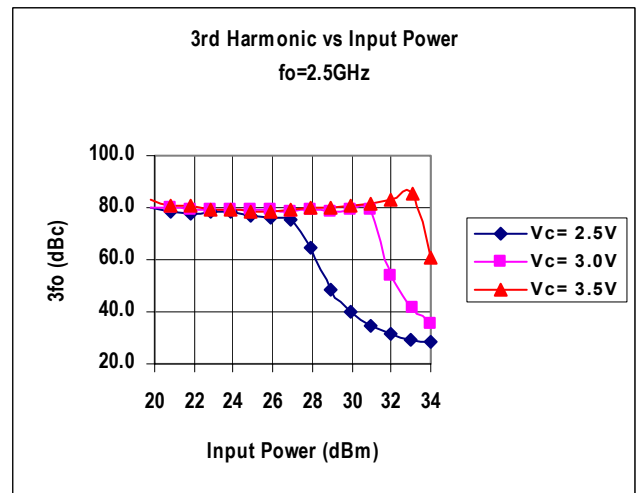
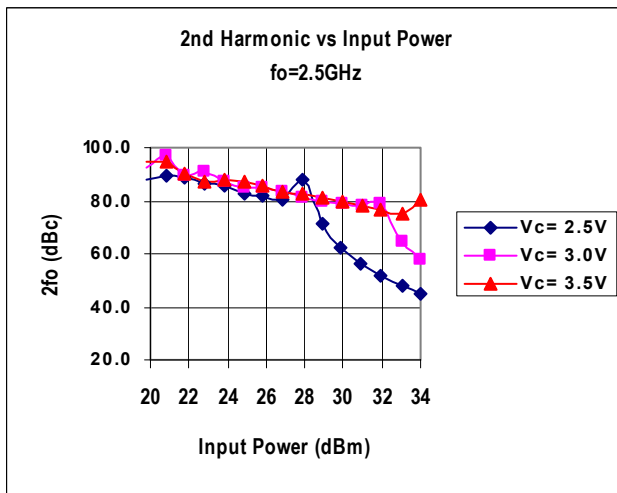
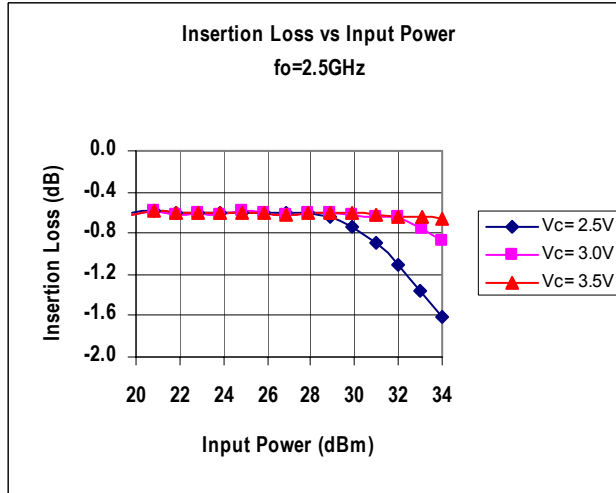


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TQS5201 Measured Performance; in TriQuint DP2T V1.0 Evaluation Board- Continued

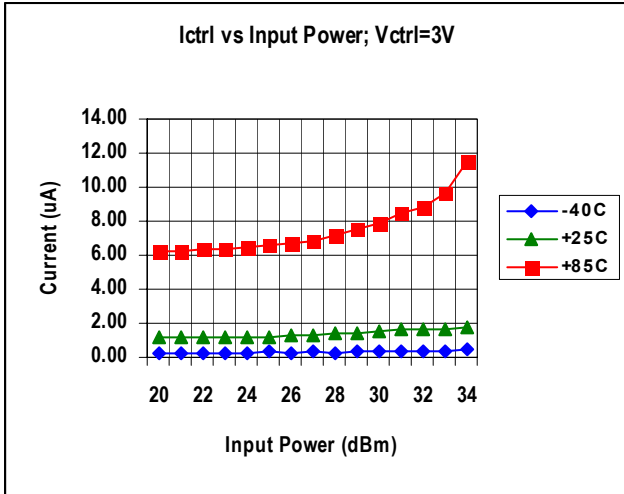
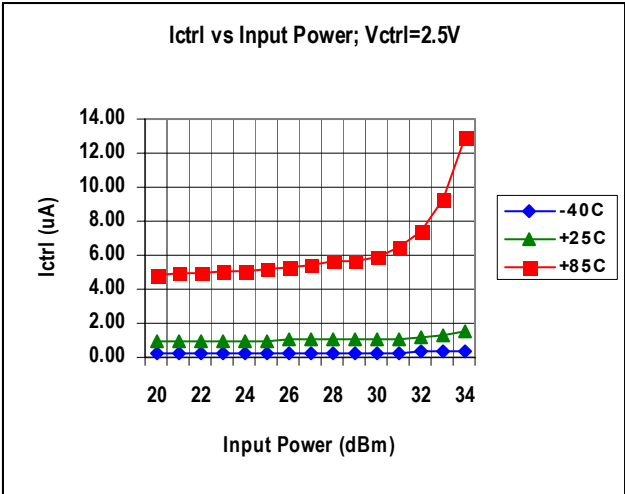
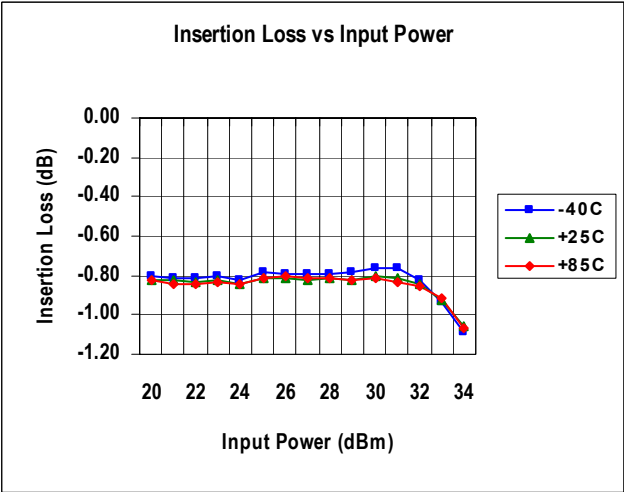
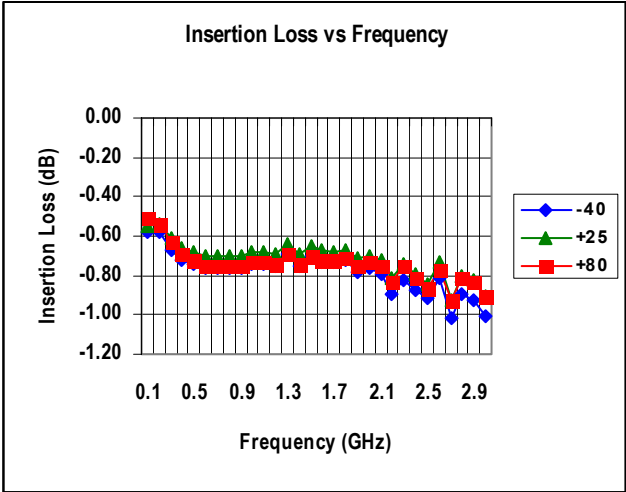
Measurement conditions: $T_a = 25^\circ\text{C}$; $V_{ctrl}=3.0\text{V}$; unless otherwise noted.



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TQS5201 Over Temperature Performance; in TriQuint DP2T V1.0 Evaluation Board

Measurement conditions: $V_{ctrl}=3.0V$; unless otherwise noted.

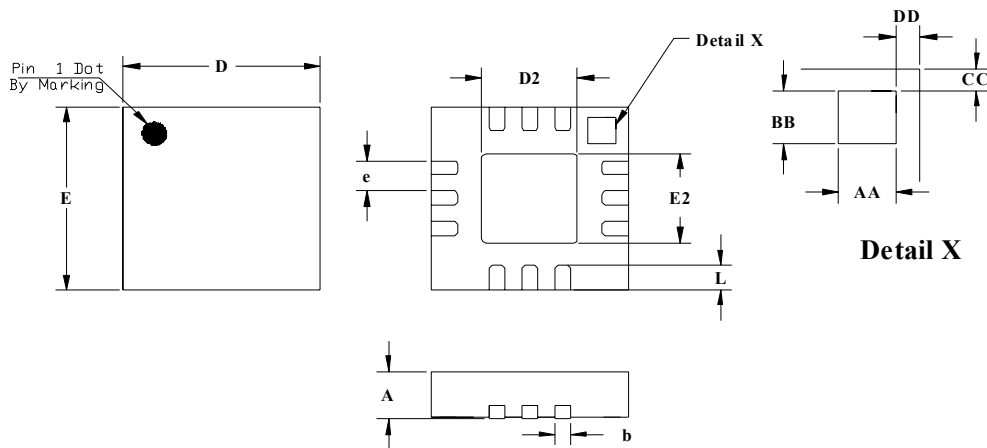


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Application Data

Package Outline



JEDEC DESIGNATION	DESCRIPTION	METRIC	ENGLISH	NOTE
A	OVERALL HEIGHT	0.90 +/- .10 mm	.035 +/- .004 in	1
b	TERMINAL WIDTH	0.23 +/- .07 mm	.009 +/- .003 in	1
D	PACKAGE LENGTH	3.00 mm BSC	.118 in	1
D2	EXPOSED PAD LENGTH	1.45 +/- .10 mm	.057 +/- .004 in	1
e	TERMINAL PITCH	0.50 mm BSC	.020 in	1
E	PACKAGE WIDTH	3.00 mm BSC	.118 in	1
E2	EXPOSED PAD WIDTH	1.45 +/- .10 mm	.057 +/- .004 in	1
L	TERMINAL LENGTH	0.40 +/- .10 mm	.016 +/- .004 in	1
AA	PIN 1 ID LENGTH	0.43 mm BSC	.017 in	1
BB	PIN 1 ID WIDTH	0.43 mm BSC	.017 in	1
CC	PIN 1 ID TO EDGE	0.18 mm BSC	.007 in	1
DD	PIN 1 ID TO EDGE	0.18 mm BSC	.007 in	1

Notes:

1. PRIMARY DIMENSIONS ARE IN METRIC MILLIMETERS. THE ENGLISH EQUIVALENTS ARE CALCULATED AND SUBJECT TO ROUNDING ERROR.

Part Ordering and Marking Information

Type	Marking	Ordering code (tape and reel)	Package
TQS5201	5201	TBD	VQFN-12 3x3mm 12 Lead

Package Marking

Pin 1



Line 1: 5201
Line 2: XXXX TriQuint Assembly Lot Number
Line 3: YYWW Manufacturing year and work week

Caution: Electrostatic discharge sensitive. Observe handling Precautions!

Additional Information

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

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