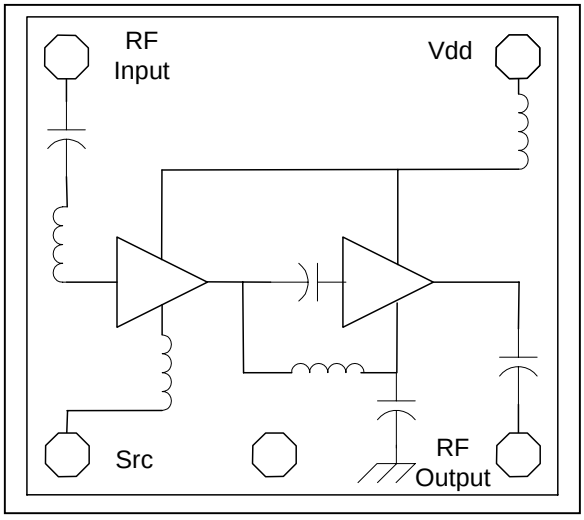
TriQuint SEMICONDUCTOR

WLAN PRODUCTS

TQL5000
DATASHEET



LNA for 5GHz UNII Band 802.11a Systems

Product Description:

The TQL5000 is a low noise amplifier designed for 802.11a receive applications for the WLAN market. The device exhibits industry-leading noise figure and power consumption while maintaining high intercept performance. It requires a single 3 V supply voltage and draws 8 mA. The LNA is manufactured using TriQuint's GaAs pHEMT process and is packaged in an ultra-small, low-profile 1.3mm x 2mm x 0.4mm Lead Free SLIM-7 package.

Selected Electrical Specifications:

Parameter	min	typ	Max	units
Frequency Range	4900	-	5900	MHz
Noise Figure (with onchip match)		1.3		dB
Small Signal Gain	16.5	18		dB
Input Power (IP1dB)		-13		dBm
Input IP3		-3		dBm

Test Conditions: Ta=25°C; Vdd=3.0V

Features

- *4.9 to 5.9 GHz Frequency Coverage*
- *Low Noise Figure*
- *High Gain*
- *Low Current: 8mA Typical @ 3V*
- *50-ohm Input and Output Match*
- *GaAs pHEMT Technology*
- *Leadless 1.3 x 2.0 x 0.4 mm Lead Free SMT Package*

Applications

- *802.11a WLAN*
- *PCs and Mobile Devices*
- *WLAN Access Points*
- *WLAN Repeaters*

Absolute Maximum Ratings

Parameter	Symbol	Value		Unit
		min	max	
Supply Voltage Range	Vddl	0	6	V
DC Voltage, @ RF Ports	Vrf	-0.3	0.3	V
DC Volgate, @ GND ports	Vgnd	-0.3	0.3	V
Operating Temperature Range	Ta	-40	85	°C
Channel Temperature	Tch		150	°C
Storage Temperature Range	Tstg	-55	150	°C
Power Dissipation	Pdiss		0.2	W
Maximum Input Power	P_I		0	dBm

General Electrical Characteristics[1,2]

Electrical Characteristics

Parameter	min	typ	max	Unit
Vdd Supply Voltage	2.7	3.0	3.6	V
Supply Current: Vdd = 3.0V		8		mA

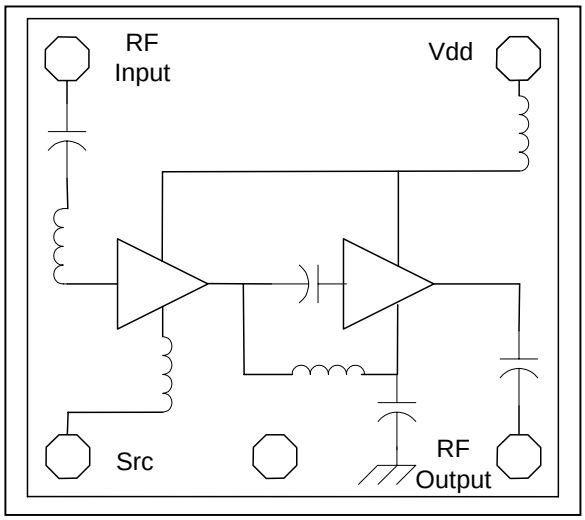
LNA Performance:

Parameter	min	typ	max	units
Frequency Range	4900	-	5900	MHz
Small Signal Gain	16.5	18		dB
Gain Variation vs Vdd		0.5		dB
Gain Variation vs Frequency		1.5		dB
Noise Figure (with on-chip matching)		1.3		dB
Input Power (IP1dB)		-13		dBm
Input IP3		-3		dBm
Isolation		30		dB
Stability		10:1		
Harmonics (2^{nd}, 3^{rd}, 4^{th})		-30		dBc
Input VSWR (with on-chip matching)		1.7		
Output VSWR (with on-chip matching)		2		

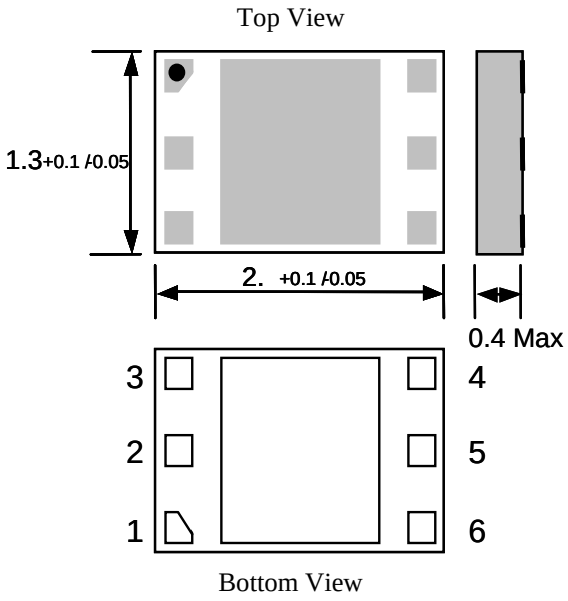
[1]Test Conditions: T_a=25ºC, unless otherwise noted,
[2]AC performance is guaranteed at 25 Deg-C,

Applications Information

Functional Block Diagram:



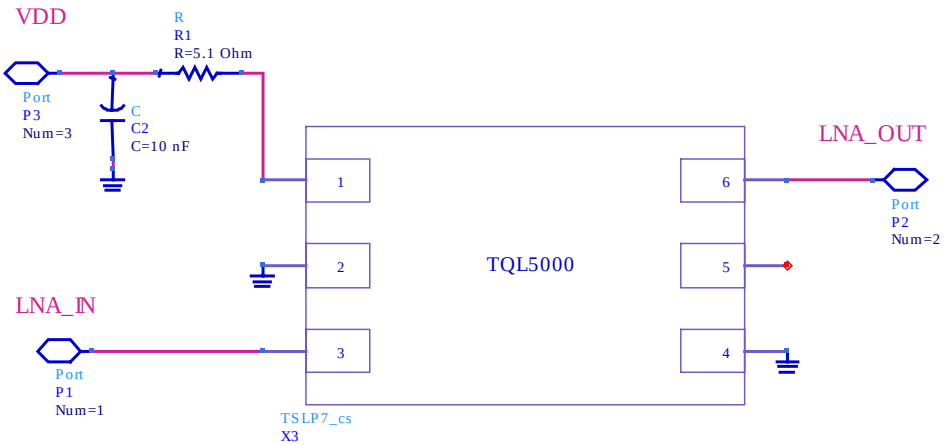
1.3mm x 2mm SLIM-7 Package



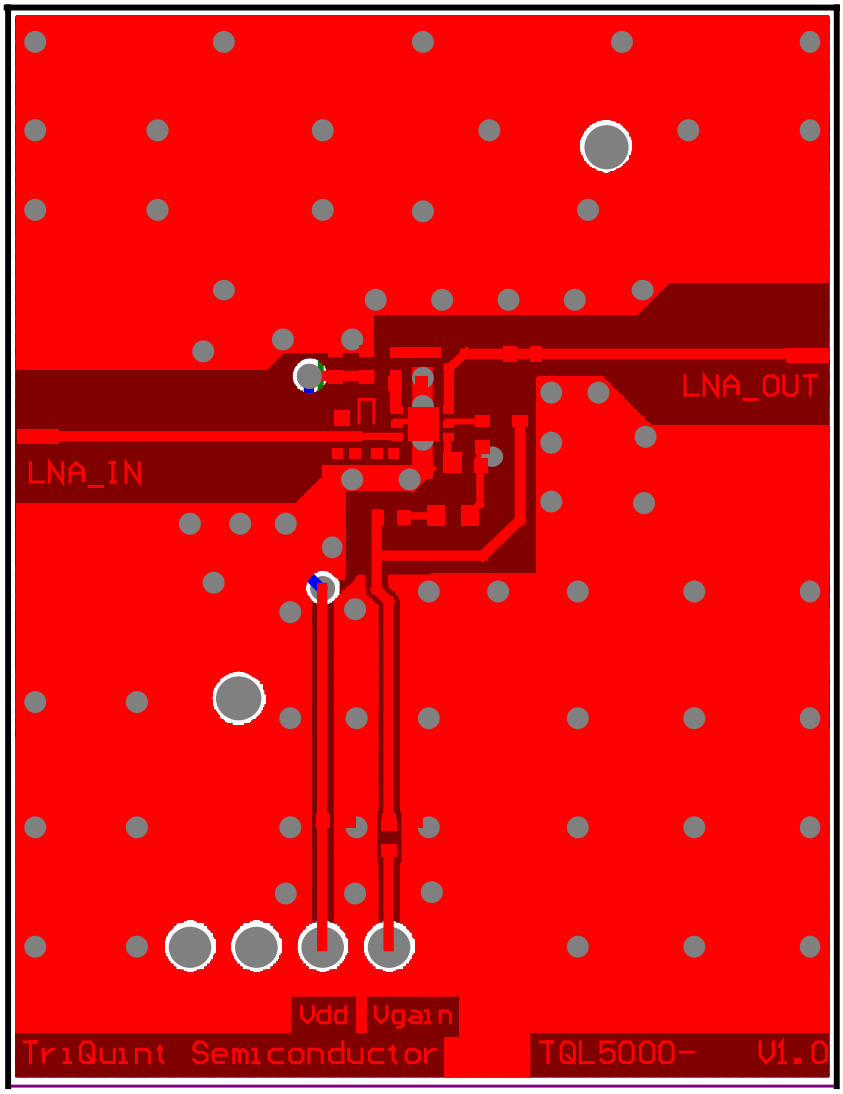
Pin Assignments:

PIN	Symbol	Abbreviation	Description
1	Vdd	Vdd	Drain Supply Voltage
2	Ground	GND	RF and DC Ground
3	RF IN	RF IN	RF Input
4	SRC	SRC	Source Grounding
5	N/C	N/C	No Connection
6	RF OUT	RF OUT	RF Output

Application Circuit:



TQL5000 5GHz LNA; TQL5000- V1.0 Evaluation board



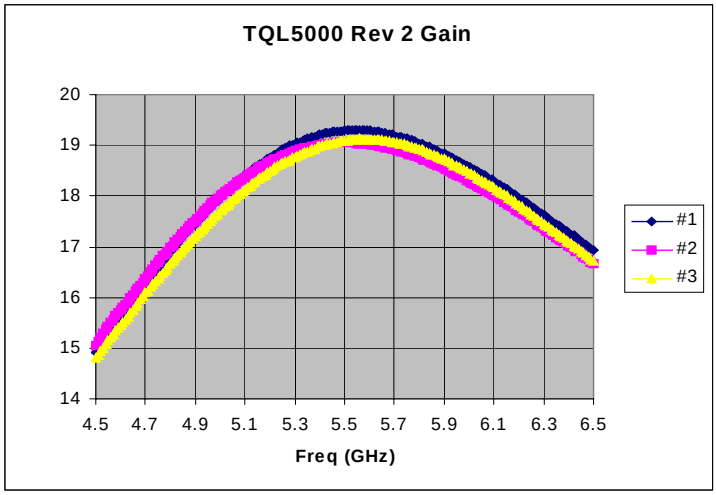
Bill of Materials

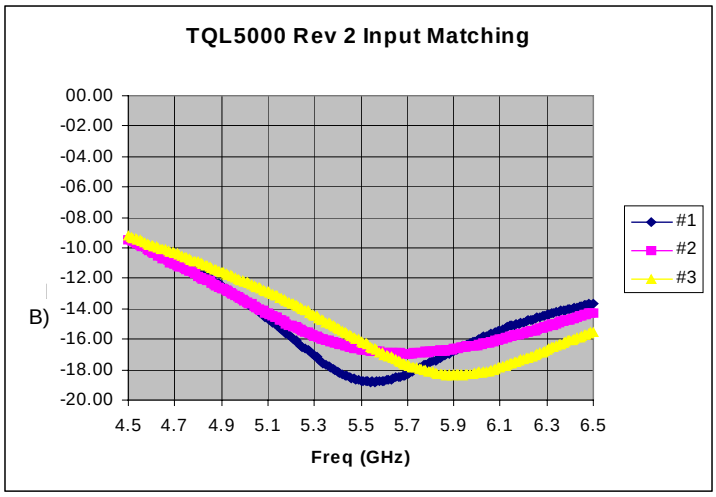
Layer/Descriptions
Dielectric: FR4: Er=4.6
Top: 1 oz. Plated Copper
Dielectric 1 : 8 mils
Mid 1: 1 oz. Copper
Dielectric 2: 28 mils
Mid 2: 1 oz. Copper
Dielectric 3: 6 mils
Bottom: 1 oz. Plated Copper

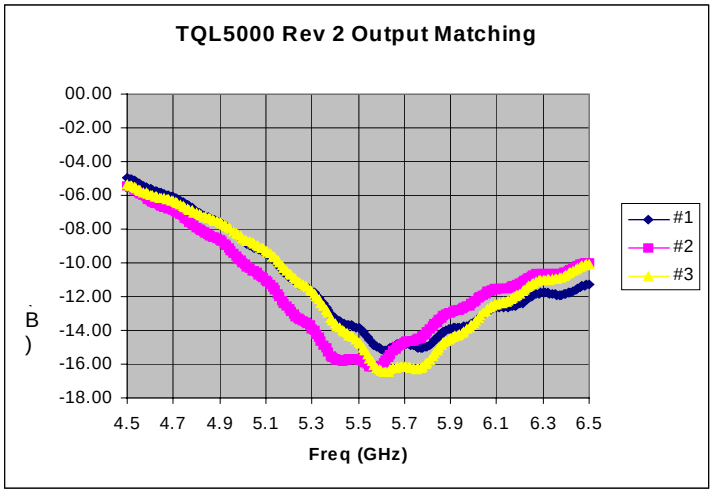
TQL5000 Measured Performance:

TriQuint TQL5000- V1.0 Evaluation Board

Measurement Conditions Ta = 25°C, Vdd=3.0, Idd=8.2mA



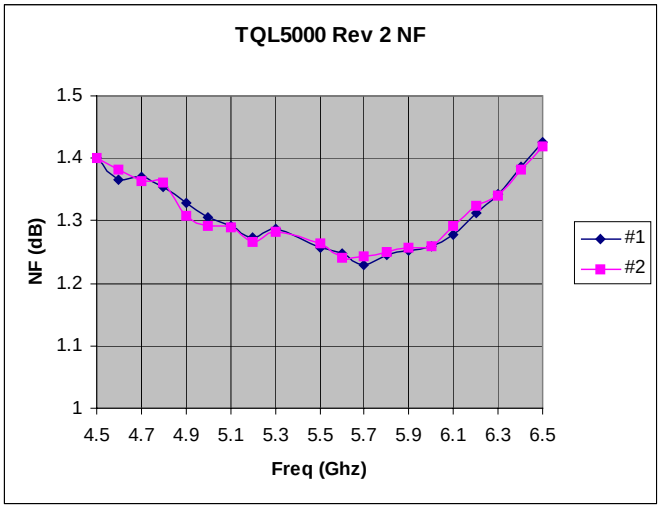


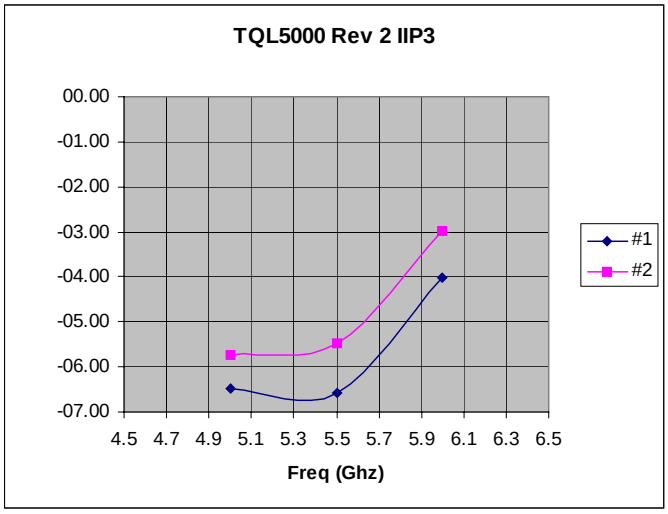


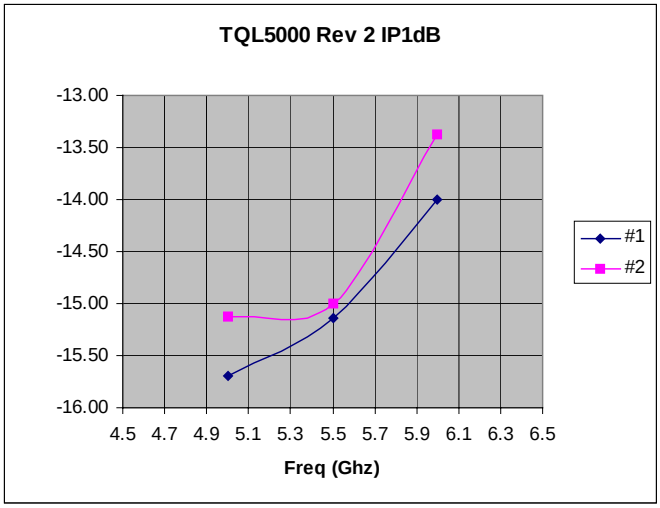
TQL5000 Measured Performance:

TriQuint TQL5000- V1.0 Evaluation Board

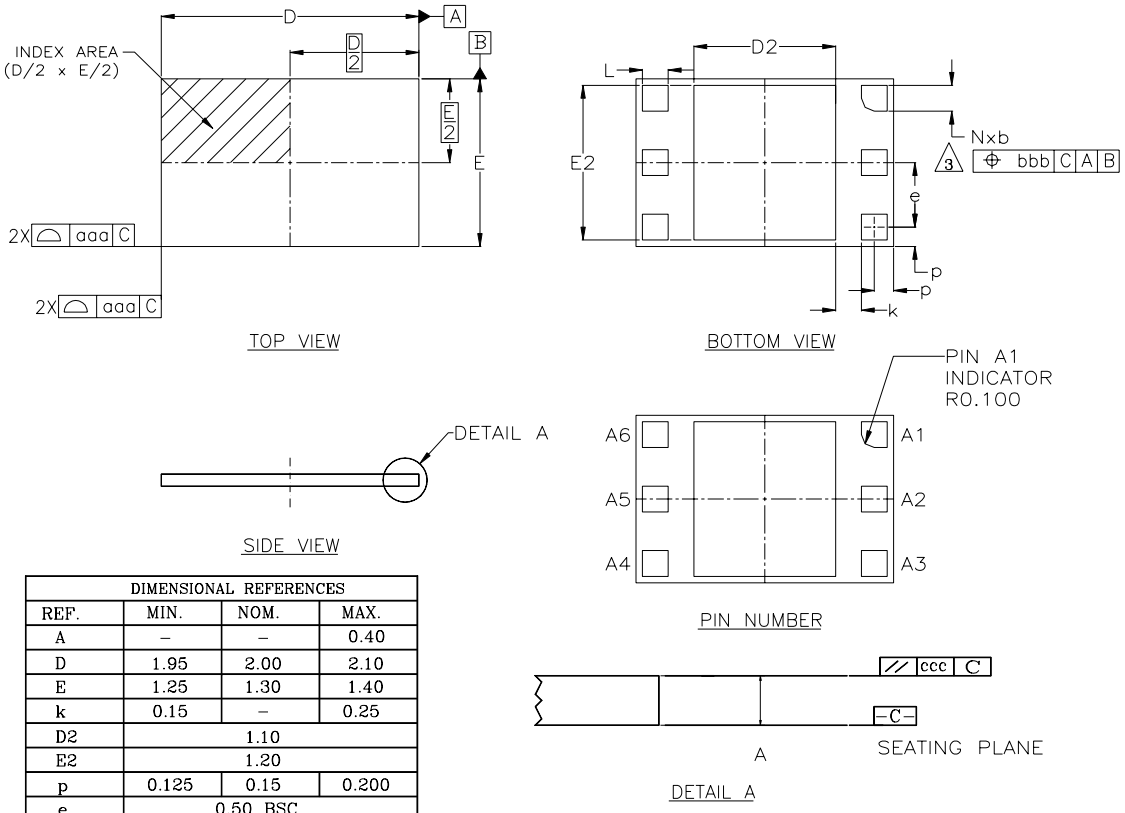
Measurement Conditions Ta = 25°C, Vdd=3.0, Idd=8.2mA







Package Outline – SLIM7



DIMENSIONAL REFERENCES			
REF.	MIN.	NOM.	MAX.
A	–	–	0.40
D	1.95	2.00	2.10
E	1.25	1.30	1.40
k	0.15	–	0.25
D2		1.10	
E2		1.20	
p	0.125	0.15	0.200
e		0.50 BSC	
b	0.15	0.20	0.25
L	0.15	0.20	0.25
aaa		0.15	
bbb		0.10	
ccc		0.10	
N		6	

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

Package Marking

Line 1: XXXX last 4 digits of TQS lot number

Pin 1

Caution: Electro**s**tatic **d**ischarge sensitive. Observe handling Precautions!

Ordering Information

Type	Marking	Ordering code (tape and reel)	Package
TQL5000	**XXXX**	**TBD**	**SLIM-7**

Additional Information

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

Web: www.triquint.com Tel: (503) 615-9000
Email: info_wireless@tqs.com Fax: (503) 615-8902

For technical questions and additional information on specific applications:

Email: info_wireless@tqs.com

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