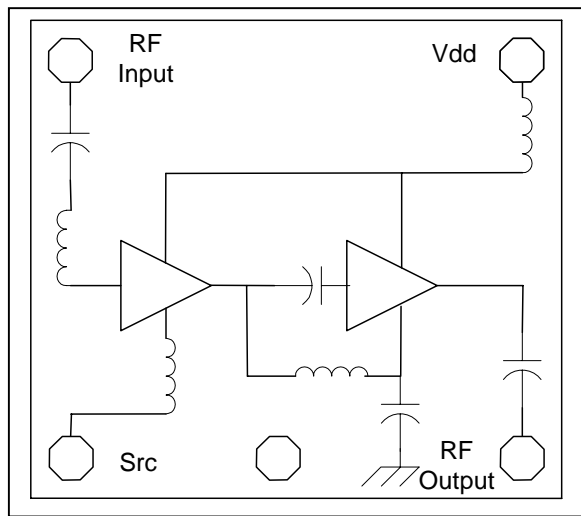


LNA for 5 GHz UNII Band 802.11a Systems

Functional Block Diagram



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 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

Data Sheet:

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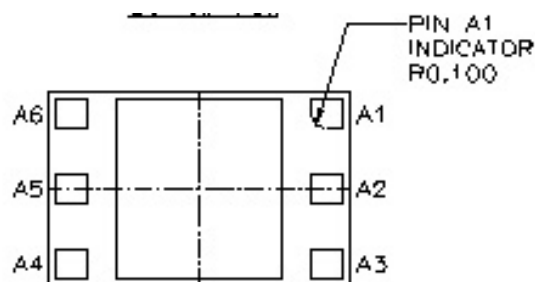
Features

- 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

Outline Drawing



LNA for 5 GHz UNII Band 802.11a Systems

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 (LNA ON)	P _{LON}		5	dBm
Maximum Input Power (LNA OFF)	P _{LOFF}		10	dBm

General Electrical Characteristics; Test Conditions: $T_a=25C$, unless otherwise noted,
AC performance is guaranteed at 25C,

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		

Applications Information

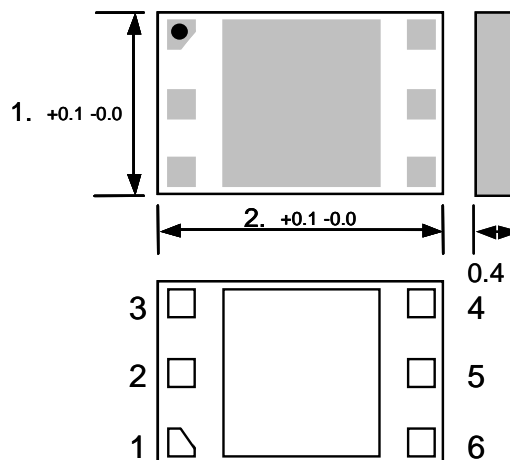
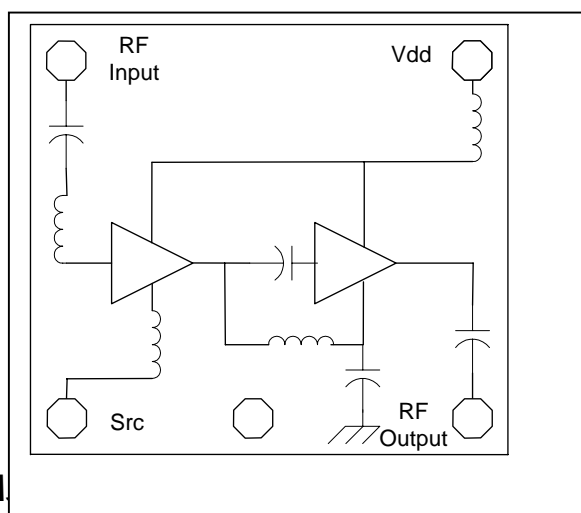
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Functional Block Diagram:

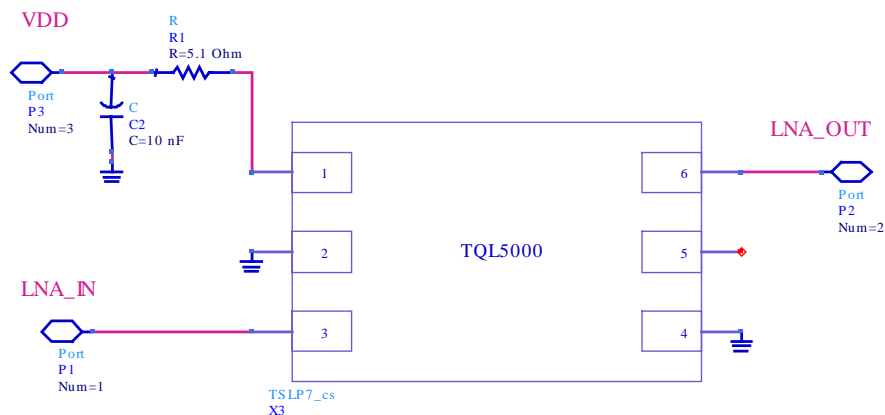
1.3mm x 2mm SLIM-7 Package



Pin A

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:

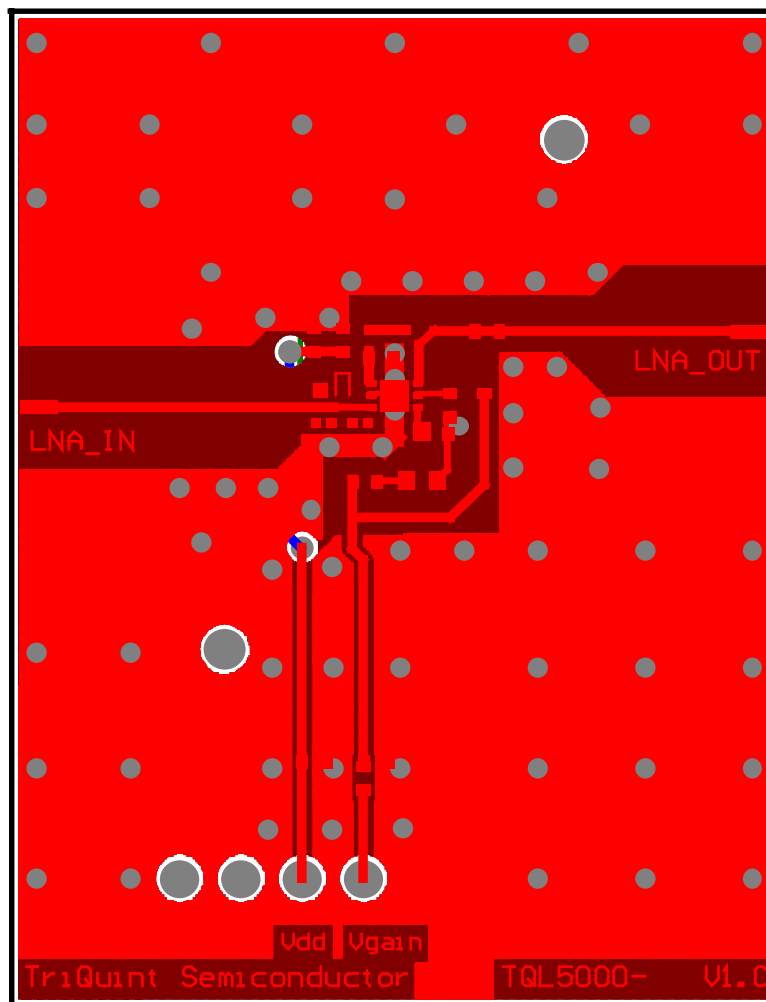


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LNA for 5 GHz UNII Band 802.11a Systems

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



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

Data Sheet:

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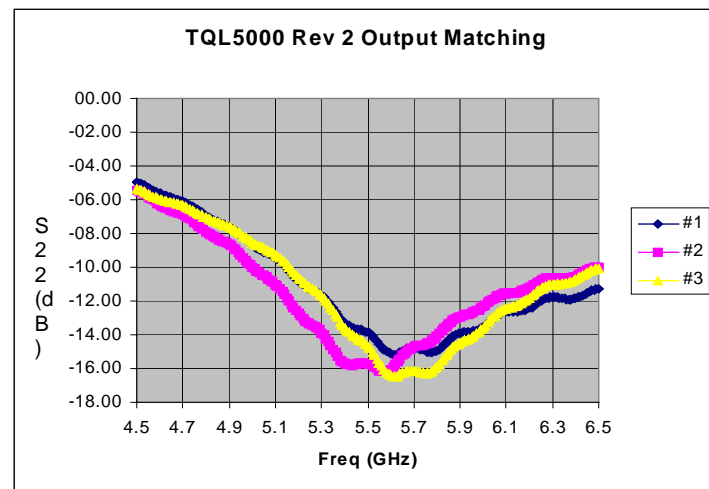
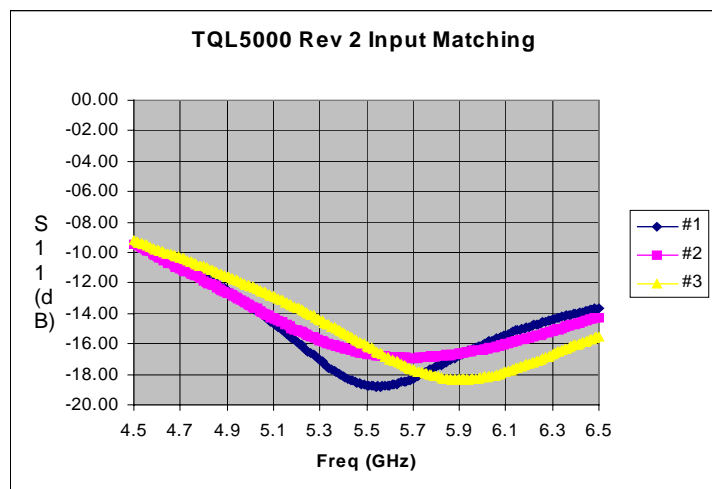
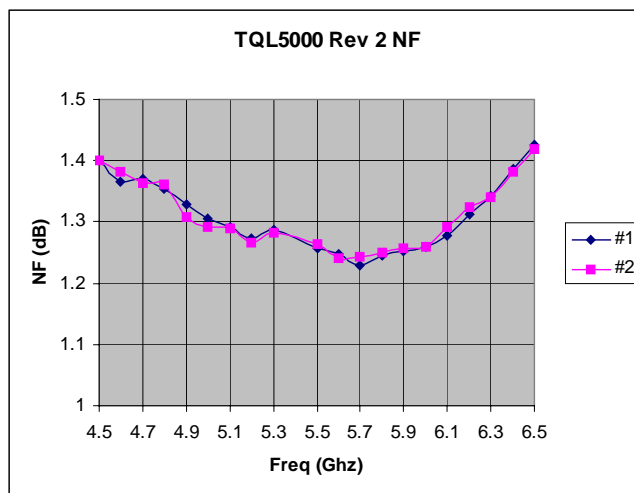
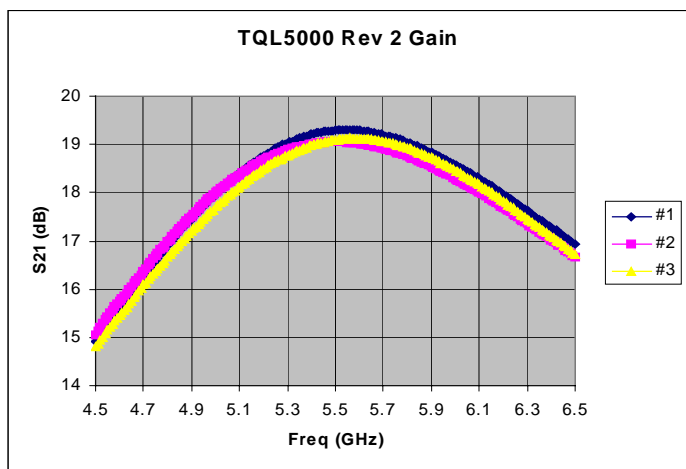
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LNA for 5 GHz UNII Band 802.11a Systems

TQL5000 Measured Performance:

TriQuint TQL5000- V1.0 Evaluation Board

Measurement Conditions $T_a = 25^\circ\text{C}$, $V_{dd}=3.0$, $I_{dd}=8.2\text{mA}$



Data Sheet:

For additional information and latest specifications, see our website: www.triquint.com

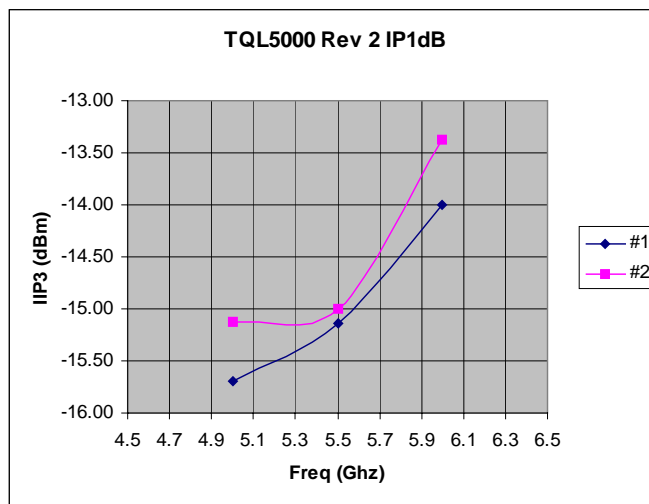
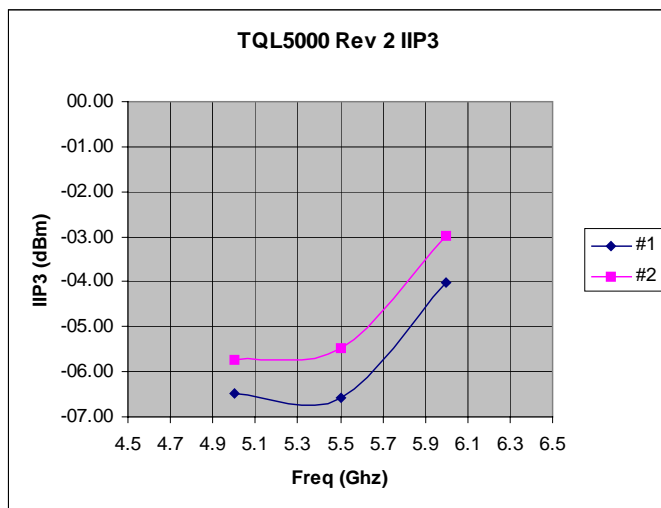
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LNA for 5 GHz UNII Band 802.11a Systems

TQL5000 Measured Performance (Continued):

TriQuint TQL5000- V1.0 Evaluation Board

Measurement Conditions $T_a = 25^\circ\text{C}$, $V_{dd} = 3.0$, $I_{dd} = 8.2\text{mA}$



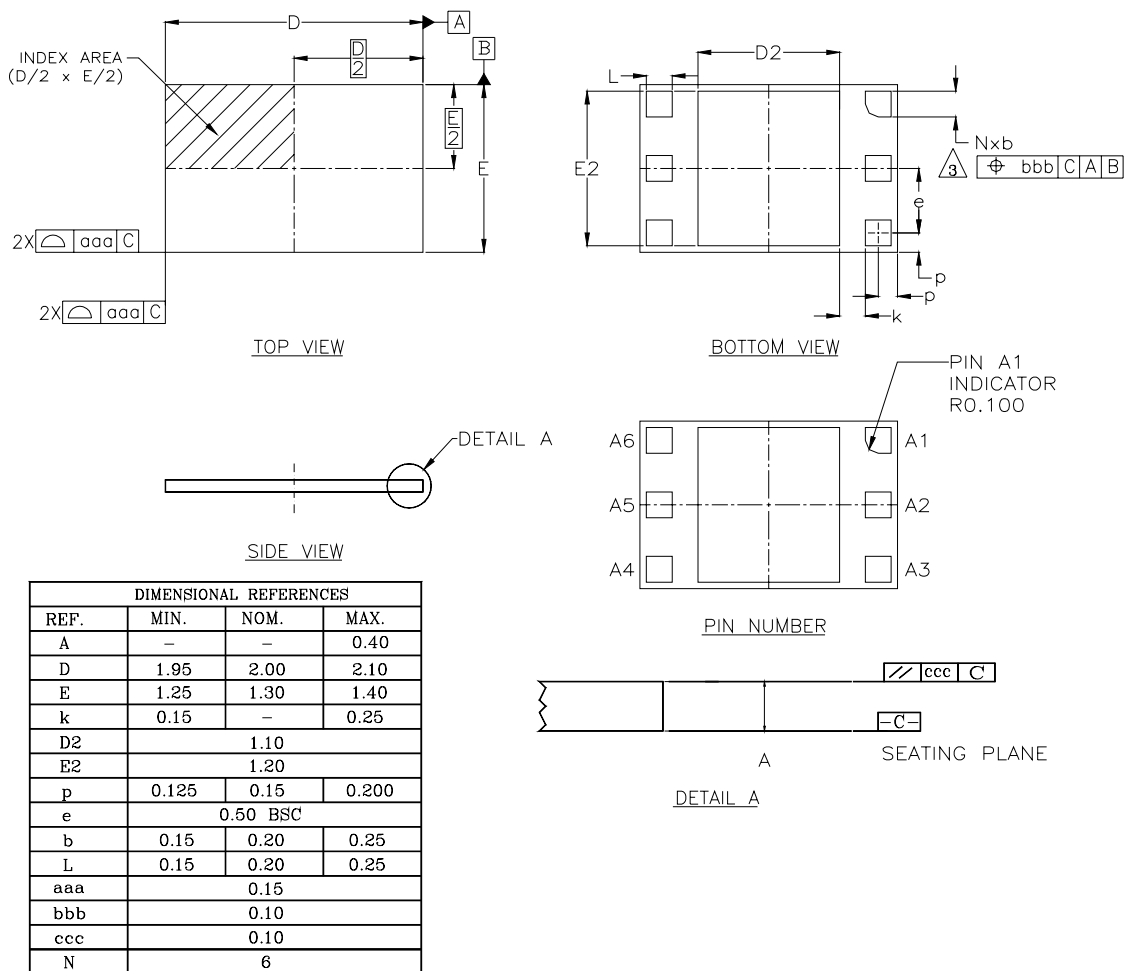
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LNA for 5 GHz UNII Band 802.11a Systems

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

Data Sheet:

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LNA for 5 GHz UNII Band 802.11a Systems

Package Marking

Pin 1



Line 1: XXXX last 4 digits of TQS lot number

Caution: Electrostatic discharge sensitive. Observe handling Precautions!

Ordering Information

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

Additional Information ¹T

¹ For latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

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Email: info_wireless@tqs.com

Fax: (503) 615-8902

For technical questions and additional information on specific applications:

Email: Hinfo_wireless@tqs.com

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