Wideband LNA

WL1008-L / WL2208-L
WL1015-L / WL2215-L

RFHIC

Product Features

- GaAs p-HEMT chip on board
- No matching circuit needed
- High Maximum input power(+25dBm)
- High IP3 & Low Noise
- Single Supply Voltage (+5V)
- Surface Mount Hybrid Type
- Tape & Reel Packaging
- Small Size, High Heatsink
- Alumina Substrate
- Pb Free / RoHS Standard

Applications

- 2G & 3G Repeater
- Base Station
- PCS, CDMA, W-CDMA
- GSM, DCS, UMTS
- RF Sub-Systems



Package Type : CP-16A

Description

RFHIC's LOW Noise Amplifier series are all hybrid LNA type products which includes all matching for the convenience of customers. WL series are a wideband LNA used for up to 50 ~ 2200MHz. The structure of the device is built with GaAs p-HEMT die attached on a ceramic thick film substrate. The device is still smaller than the area one would use for the application notes all together. Depending on the part number, one can use this in different frequency applications. All LNA hybrids are possible to have custom frequency & spec without any additional NRE cost involved. All RFHIC products are RoHS compliant.

Electrical Specifications

PARAMETER	UNIT	WL1008-L	WL2208-L	WL1015-L	WL2215-L
Frequency Range	MHz	50 ~ 1000	50 ~ 2200	50 ~ 1000	50 ~ 2200
Small Signal Gain (S_{21})	dB	16	15	16	15
Gain Flatness	dB	±1.0	±2.0	±1.0	±2.0
Input Return Loss (S_{11})	dB	-15	-10	-15	-10
Output Return Loss (S_{22})	dB	-5	-5	-5	-5
1dB Compression Point (P_1dB)	dBm	19	20	21	21
Output 3rd Order Intercept Point (OIP3) (TYP.)	dBm	31	31	35	35
Noise Figure (TYP.)	dB	1.5	1.5	1.7	1.7
DC Supply Current (Vdc=+5V)	mA	100	100	160	160

Test Condition

1.Supply voltage = +5V, 50ohm System, Ta = 25℃

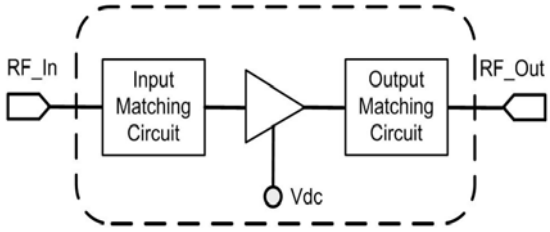
2.OIP3 is measured with two tones, at an output power of +0dBm/tone separated by 1MHz.

Absolute Maximum Ratings

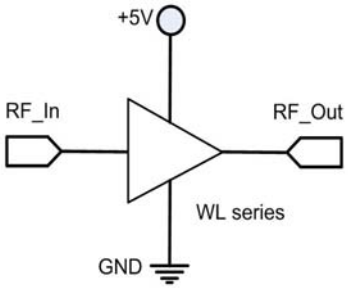
PARAMETER	UNIT	RATING	REMARK
Device Voltage	V	8	-
RF Input Power	dBm	25	-
Operating Temperature	℃	-40 ~ 85	-
Storage Temperature	℃	-50 ~ 125	-

* Operation of this device in excess of any one of these parameters may cause permanent damage.

Functional Diagram



Application Circuit



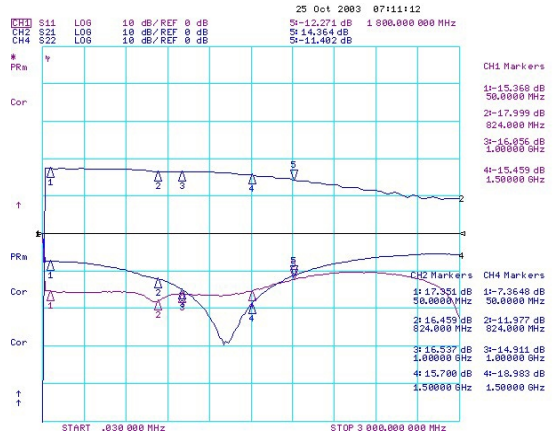
ESD Protection

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices. Some of the precautions recommended are;

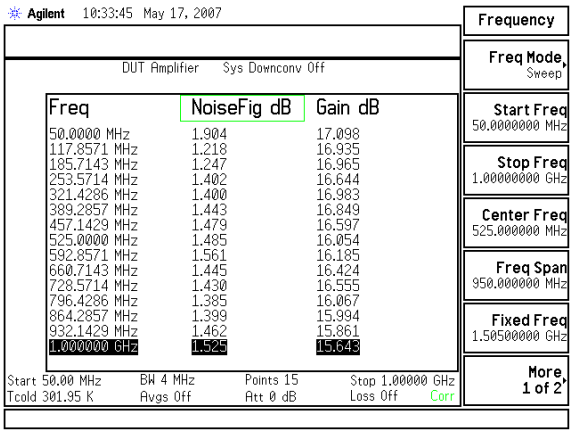
- Person at a workbench should be earthed via a wrist strap and a resistor.
- All mains-powered equipment should be connected to the mains via an earth-leakage switch.
- Equipment cases should be grounded.
- Relative humidity should be maintained between 40% and 50%.
- An ionizer is recommended.
- Keep static materials, such as plastic envelopes and plastic trays etc. away from the workbench.

WL1008-L

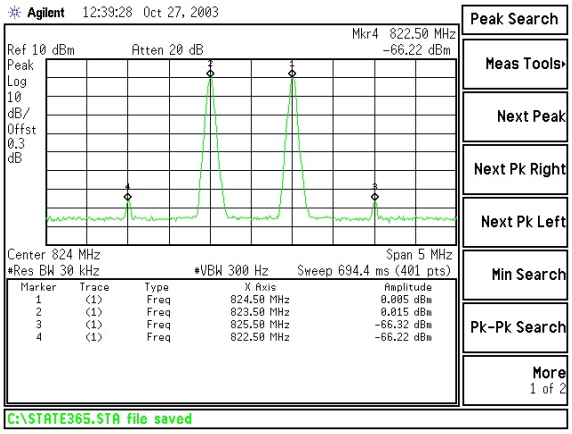
S-Parameter



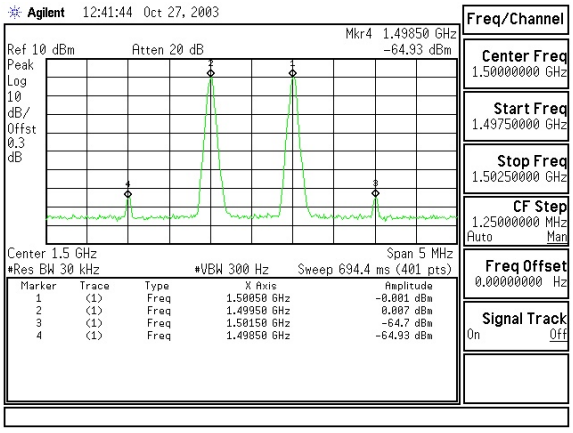
Noise Figure



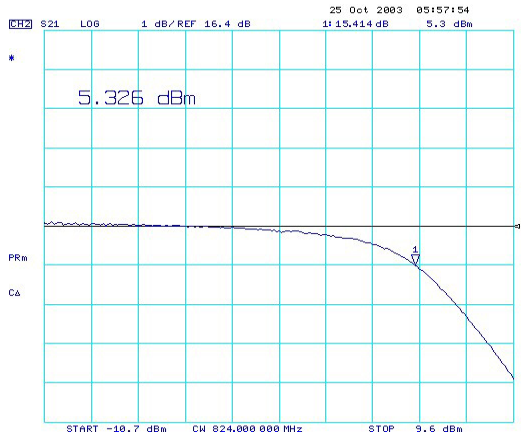
OIP3 (824MHz)



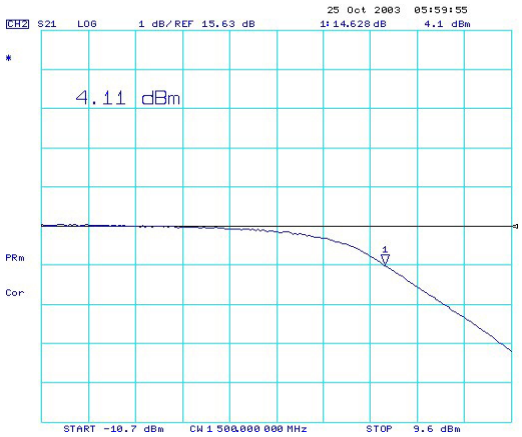
OIP3 (1500MHz)



P1dB (824MHz)

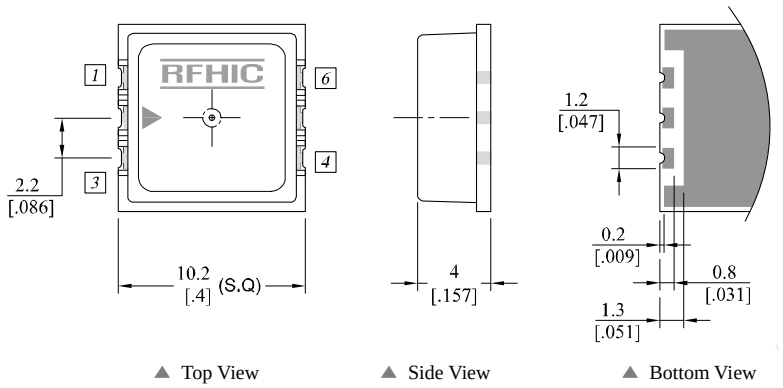


P1dB (1500MHz)



Package Dimensions (Type: CP-16A)

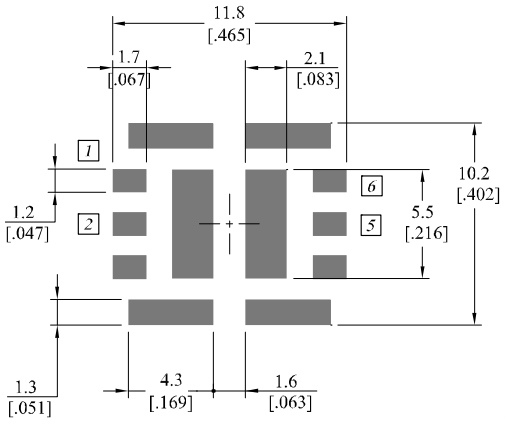
* Unit: mm[inch] | Tolerance ±0.15[.006]



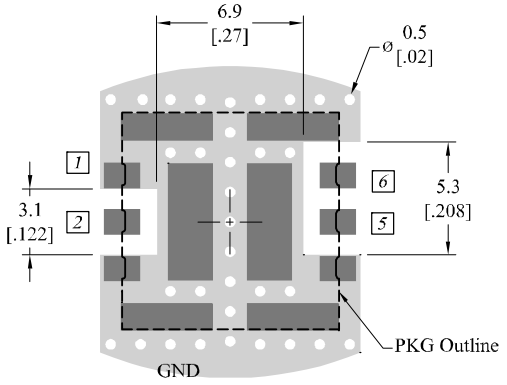
▲ Top View ▲ Side View ▲ Bottom View

Pin Description			
Pin No	**Function**	**Pin No**	**Function**
1	GND	4	GND
2	Input	5	Output
3	GND	6	Vcc

Recommended Pattern



Evaluation Board Layout



*** Mounting Configuration Notes**

1. Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
WL1008-L WL2208-L WL1015-L WL2215-L	-	6.1	New datasheet format	-

RFHIC Corporation reserves the right to make changes to any products herein or to discontinue any product at any time without notice. While product specifications have been thoroughly examined for reliability, RFHIC Corporation strongly recommends buyers to verify that the information they are using is accurate before ordering. RFHIC Corporation does not assume any liability for the suitability of its products for any particular purpose, and disclaims any and all liability, including without limitation consequential or incidental damages.
RFHIC products are not intended for use in life support equipment or application where malfunction of the product can be expected to result in personal injury or death. Buyer uses or sells such products for any such unintended or unauthorized application, buyer shall indemnify, protect and hold RFHIC Corporation and its directors, officers, stockholders, employees, representatives and distributors harmless against any and all claims arising out of such unauthorized use.

Sales, inquiries and support should be directed to the local authorized geographic distributor for RFHIC Corporation. For customers in the US, please contact the US Sales Team at 919-677-8780. For all other inquiries, please contact the International Sales Team at 82-31-250-5078