WLA14-2030AC

1.2 – 1.6 GHz LOW NOISE AMPLIFIER[1]

REV B
January 2012

Key Features

- 50 Ohm Impedance
- 1.2 ~ 1.6 GHz
- 0.90 dB Noise Figure
- 18.5 dB Gain
- +/-0.2 dB Gain Flatness
- 14.0 dBm P_{1dB}
- 1.25:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS compliant

Product Description

WLA14-2030AC integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, high linearity, and unconditional stable performances together. With single +5.0V DC operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA connectorized WP-5 gold plated housing.

The amplifier is designed to meet the rugged standard of MIL-STD-202.

Applications

- Mobile Infrastructures
- GPS
- CATV/DBS
- Defense
- Security System
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications WLA14-2030AC at room temperature

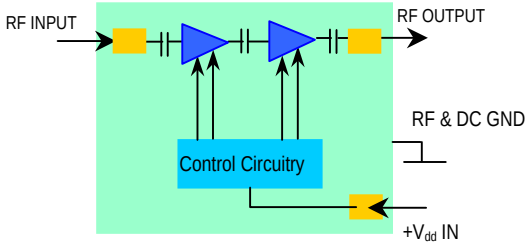
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	1.2 – 1.6 GHz	18	18.5	19	dB
2	Gain Variation	ΔG	1.2 – 1.6 GHz		+/- 0.2	+/-0.3	dB
3	Input VSWR	SWR_1	1.2 – 1.6 GHz		1.25:1	1.4:1	Ratio
4	Output VSWR	SWR_2	1.2 – 1.6 GHz		1.25:1	1.3:1	Ratio
5	Reverse Isolation	S_{12}	1.2 – 1.6 GHz	20	22		dB
6	Noise figure	NF	1.2 – 1.6 GHz		0.90	1.0	dB
7	Output Power 1dB compression Point	P_{1dB}	1.2 – 1.6 GHz	12	14		dBm
8	Output-Third-Order Interception point	IP_3	Two-Tone, P_{out} +0 dBm each, 1 MHz separation	22	26		dBm
9	Current Consumption	I_{dd}	V_{dd}= +5 V		30		mA
10	Power Supply Voltage	V_{dd}	WBA0242A	+4.7	+5	+5.3	V
11	Thermal Resistance	$R_{th,c}$	Junction to case			220	°C/W
12	Operating Temperature	T_o		-40		+85	°C
13	Maximum Average RF Input Power	$P_{IN, MAX}$	DC – 6 GHz			5	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	7.0
Drain Current	mA	45
Total Power Dissipation	mW	300
RF Input Power	dBm	5
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	220

Operation of this device above any one of these parameters may cause permanent damage.

Functional Block Diagram



Ordering Information

Model Number	Feature
WLA14-2030AC	**Without Output Bias-T**
WLA14-2030ACBT	**With Output Bias-T**

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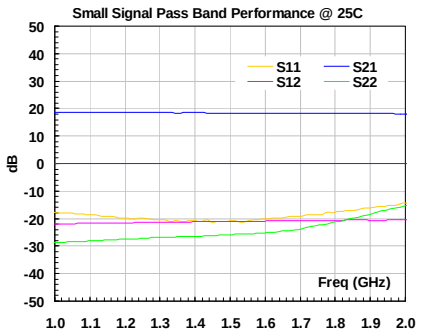
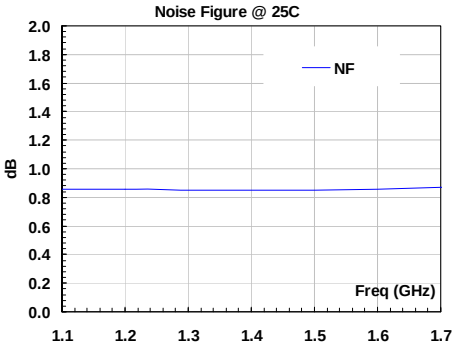
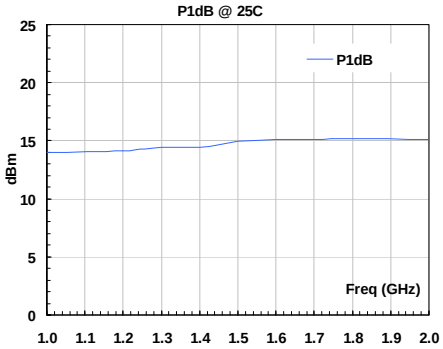
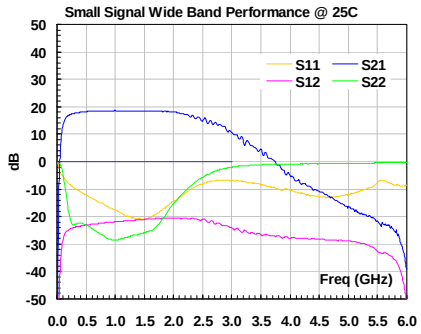
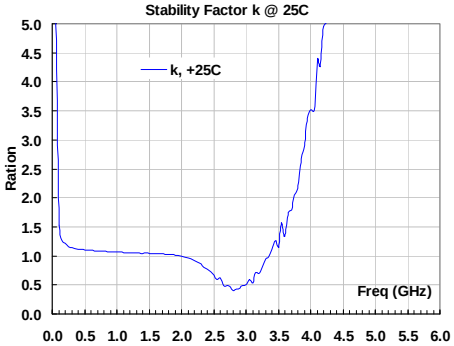
Typical Data





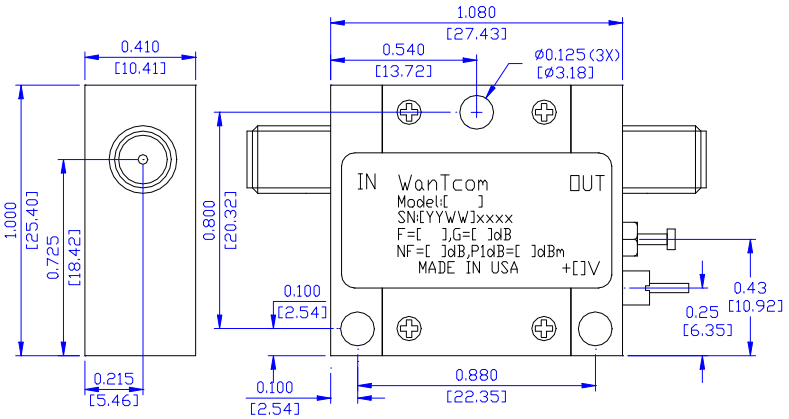






Outline, WP-5 Housing

UNITS:	INCH [mm]
BODY:	Brass
Finish:	Gold Plating
RF Connector:	SMA F Gold
V_{dd} PWR:	Feed through



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Application Notes:

A. SMA Torque Wrench Selection

Always use a torque wrench with 5 ~ 6 inch-lb coupling torque setting for mating the SMA cables to the amplifier. Never use torque more than 8 inch-lb wrench for tightening the mating cable to the connector. Otherwise, the permanent damage will occur to the SMA connectors of the amplifier. 8710-1582 (5 inch-lb) is one of the ideal torque wrench choice from Agilent Technology.

B. DC Power Line Connection

Strip the insulation layer at the end of DC power supply wire. The stripped distance should be in the range of 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped terminal wire about 1 to 2 turns on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering area by Q-tip with alcohol to remove the flux and residue.

Repeat the process to solder the DC return wire on the ground turret.

For WLA14-2030ACBT version, leave the DC feed thru open since the +5V is fed through the RF output port.

C. Mounting the Amplifier

Use three pieces of #4-40 with longer than 9/16" screws for mounting the amplifier on a metal-based chase. Flat and spring washers are needed to prevent the screw loosening during the shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount them.

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