# WLA14-3030A

## 1.2- 1.6 GHz LOW NOISE WIDE BAND AMPLIFIER

**REV C**
**July 2016**

## Key Features

- 50 Ohm Impedance
- 1.2 ~ 1.6 GHz
- 0.60 dB Noise Figure
- 22.0 dBm Output $IP_3$
- 31.0 dB Gain
- +/-0.25 dB Gain Flatness
- 9.0 dBm $P_{1dB}$
- 1.25:1 VSWR
- Single DC Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

## Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WLA14-3030A is integrated with WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wide bandwidth, high linearity, and unconditional stable performances together. With single DC voltage 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-202g.

## Applications

- Mobile Infrastructures
- GPS
- Astronomy
- Defense
- Security System
- Measurement
- Fixed Wireless


## Specifications

Summary of the electrical specifications WLA14-3030A at room temperature

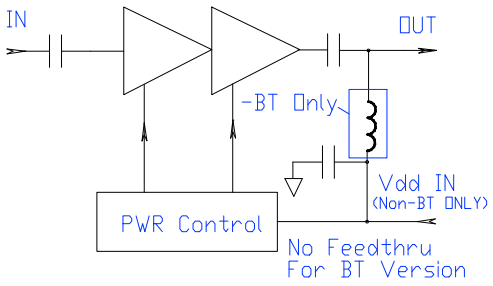
| Index | Testing Item | Symbol | Test Constraints | Min | Nom | Max | Unit |
|---|---|---|---|---|---|---|---|
| 1 | Gain | $S_{21}$ | 1.2 – 1.6 GHz | 29 | 31 | 33 | dB |
| 2 | Gain Variation | $\Delta G$ | 1.2 – 1.6 GHz | | +/- 0.25 | +/-0.5 | dB |
| 3 | Input Return Loss | $S_{11}$ | 1.2 – 1.6 GHz | 16 | 20 | | dB |
| 4 | Output Return Loss | $S_{22}$ | 1.2 – 1.6 GHz | 16 | 20 | | dB |
| 5 | Reverse Isolation | $S_{12}$ | 1.2 – 1.6 GHz | | 45 | | dB |
| 6 | Noise Figure | NF | 1.2 – 1.6 GHz | | 0.60 | 0.70 | dB |
| 7 | Output 1dB Gain Compression Point | $P_{1dB}$ | 1.2 – 1.6 GHz | 7 | 9 | | dBm |
| 8 | Output Third Order Interception Point | $IP_3$ | Two-tone, $P_{out}$=+0 dBm each, 1 MHz sep. | 20 | 22 | | dBm |
| 9 | Current Consumption | $I_{dd}$ | $V_{dd}$ | | 35 | | mA |
| 10 | DC Power Supply Voltage | $V_{dd}$ | WLA14-3030A | +2.7 | +3 | +3.3 | V |
| | | | WLA14-3030B | +5 | | +16 | |
| 11 | Thermal Resistance, Junction to Case | $R_{th,c}$ | Last stage transistor $V_{ds}$ = 2.7V, $I_{ds}$ = 20 mA, | | | 220 | °C/W |
| 12 | Operating Temperature | $T_o$ | -- | -40 | | +85 | °C |
| 13 | Maximum Input CW RF Power | $P_{IN, MAX}$ | DC – 6 GHz | | | 10 | dBm |

## Absolute Maximum Ratings

| Parameters | Units | Ratings |
|---|---|---|
| DC Power Supply Voltage | V | -0.5, +5V /+16V |
| Drain Current | mA | 50 |
| Total Power Dissipation | mW | 150 |
| Input CW RF Power | dBm | 10 |
| 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

| DC Voltage | Without Output Bias-T | With Output Bias-T |
|---|---|---|
| $V_{dd}$ = +3.0 V | **WLA14-3030A** | **WLA14-3030ABT** |
| $V_{dd}$ = +5.0 ~ +16.0V | **WLA14-3030B** | **WLA14-3030BBT** |

Specifications and information are subject to change without notice.



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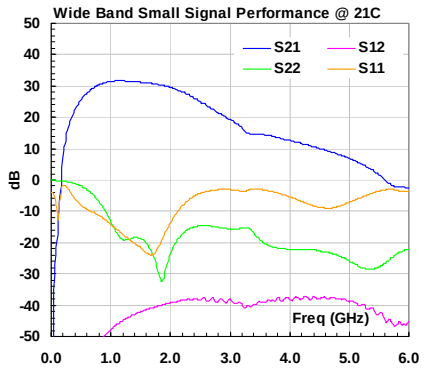
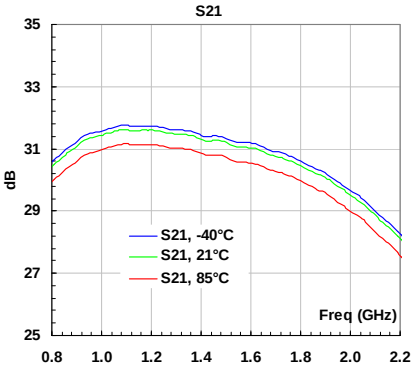
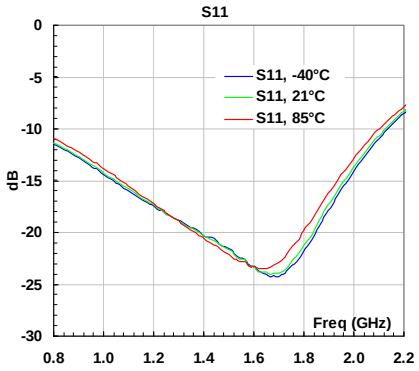
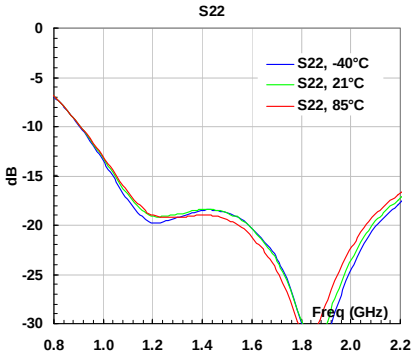
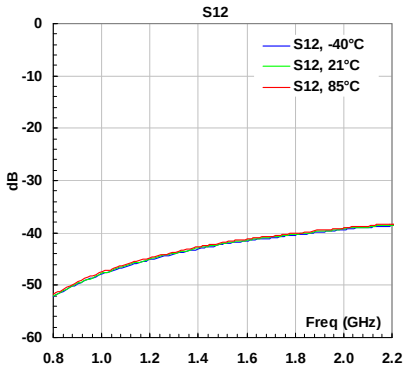
## Typical Data

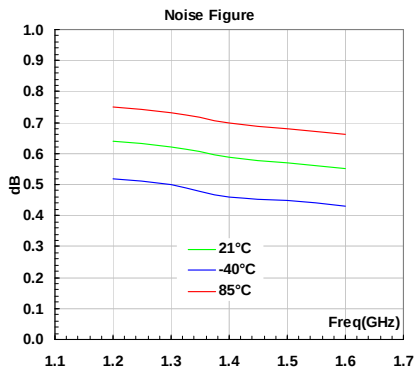


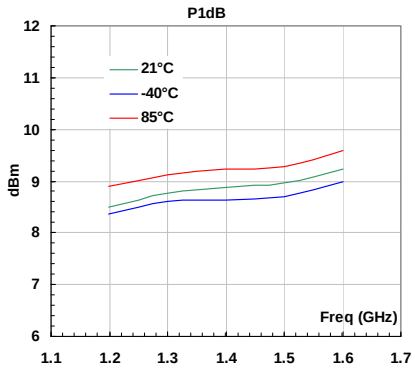



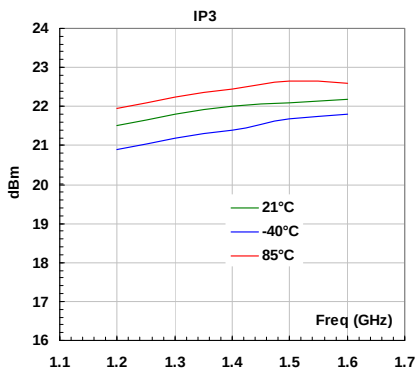



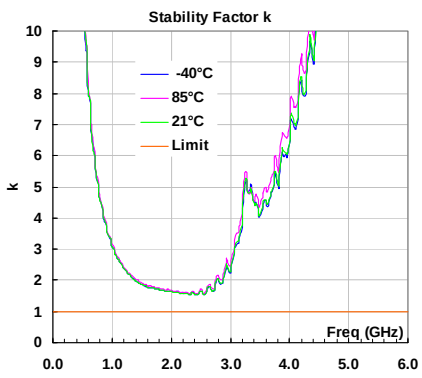



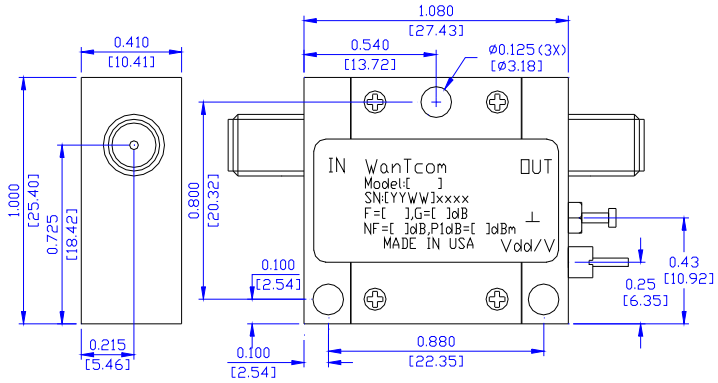



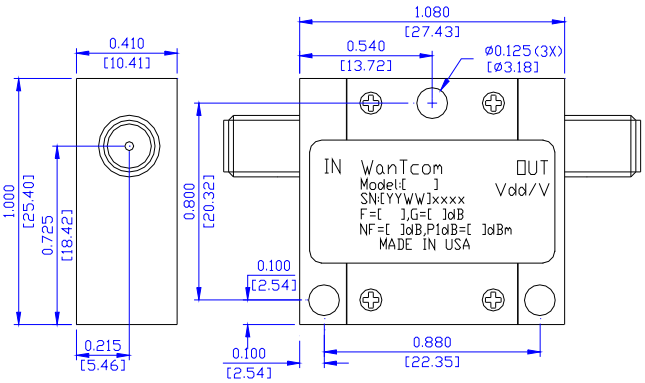
## Outline, WP-5 Housing

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

**WLA14-3030A/B**




**WLA14-3030A/B-BT**




## 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 connectors. 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 length should be around 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped wire about 3/4 to 1 turn on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering joint by a Q-tip with alcohol to remove the flux and residue.

Do not use large soldering iron tip with more than 750 degree Fahrenheit to solder the wire and feed thru pin. Damage may occur to the feed thru. 0.010" size tip with 750 degree Fahrenheit temperature setting is suitable for the soldering works.

Repeat the process to solder the DC return wire on the ground turret. Higher temperature and larger tip can be used for this ground soldering.

### 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. Always use the appropriate torque setting of the power screwdriver to mount screws.

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