



# WBA0130A

## 0.10 – 3.0 GHz EXCEPTIONAL GAIN FLATNESS AMPLIFIER

REV A  
July 2012

### Key Features



- 0.10 ~ 3.0 GHz
- 4.5 dB Noise Figure
- 22.0 dBm Output  $P_{1dB}$
- 8.0 dB Gain
- **+/-0.25 dB Gain Flatness**
- 1.5:1 VSWR
- Single power supply
- >34 years MTBF
- Unconditional stable
- RoHS compliant
- Meet MIL-STD-202

### Product Description

WBA0130A integrates WanTcom proprietary power 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 +9.0V 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-11 gold plated housing.

### Applications

- Mobile Infrastructures
- Defense
- Radar
- Measurement
- Fixed Wireless

### Specifications

Summary of the electrical specifications WBA0130A at room temperature

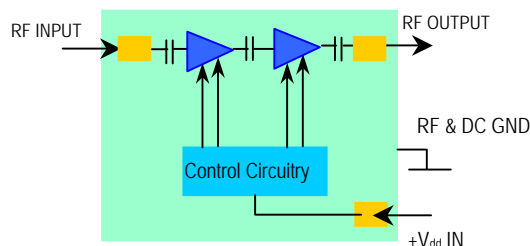
| Index | Testing Item                       | Symbol        | Test Constraints         | Min | Nom      | Max    | Unit  |
|-------|------------------------------------|---------------|--------------------------|-----|----------|--------|-------|
| 1     | Gain                               | $S_{21}$      | 0.10 – 3.0 GHz, WBA0130A | 7.0 | 8.0      | 9.0    | dB    |
|       |                                    |               | 0.10 – 3.0 GHz, WBA0130B | 8.0 | 9.0      | 10.0   |       |
| 2     | Gain Variation                     | $\Delta G$    | 0.10 – 3.0 GHz           |     | +/- 0.25 | +/-0.5 | dB    |
| 3     | Input & Output VSWR                | $SWR_{1,2}$   | 0.10 – 3.0 GHz           |     | 1.5:1    | 1.8:1  | Ratio |
| 4     | Noise Figure                       | NF            | 0.10 – 3.0 GHz, WBA0130A |     | 4.5      | 5.5    | dB    |
|       |                                    |               | 0.10 – 3.0 GHz, WBA0130B |     | 4.0      | 5.0    |       |
| 5     | Reverse Isolation                  | $S_{12}$      | 0.10 – 3.0 GHz           |     | 20       |        | dB    |
| 7     | Output Power 1dB compression Point | $P_{1dB}$     | 0.10 – 3.0 GHz, WBA0130A | 20  | 22       |        | dBm   |
|       |                                    |               | 0.10 – 3.0 GHz, WBA0130B | 21  | 23       |        |       |
| 8     | Output $IP_3$                      | $IP_3$        | 0.10 – 3.0 GHz           | 34  | 36       | 40     | dBm   |
| 9     | Current Consumption                | $I_{dd}$      | $V_{dd} = +9V$           |     | 100      |        | mA    |
| 10    | Power Supply Voltage               | $V_{dd}$      |                          | 8.5 | +9       | +9.5   | V     |
| 11    | Thermal Resistance                 | $R_{th,c}$    | Junction to case         |     |          | 130    | °C/W  |
| 12    | Operating Temperature              | $T_o$         |                          | -40 |          | +85    | °C    |
| 13    | Maximum Average RF Input Power     | $P_{IN, MAX}$ | DC – 6 GHz               |     |          | 20     | dBm   |

### Absolute Maximum Ratings

| Parameters              | Units | Ratings   |
|-------------------------|-------|-----------|
| DC Power Supply Voltage | V     | 11        |
| Drain Current           | mA    | 150       |
| Total Power Dissipation | W     | 1         |
| RF Input Power          | dBm   | 20        |
| Channel Temperature     | °C    | 150       |
| Storage Temperature     | °C    | -55 ~ 125 |
| Operating Temperature   | °C    | -40 ~ 85  |
| Thermal Resistance      | °C/W  | 130       |

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

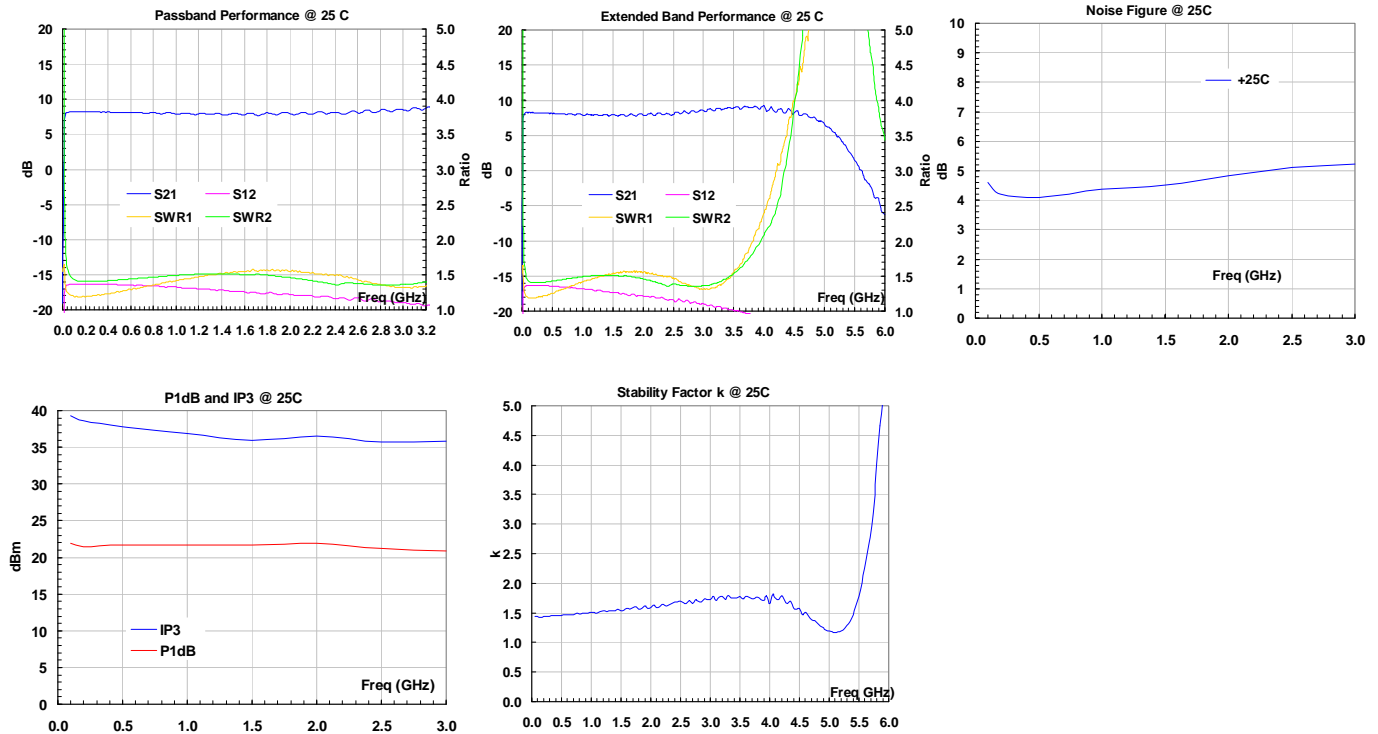
### Functional Block Diagram



### Ordering Information

| Model Number | Gain   |
|--------------|--------|
| WBA0130A     | 8.0 dB |
| WBA0130B     | 9.0 dB |

Specifications and information are subject to change without notice.

**WBA0130A****0.10 – 3.0 GHz EXCEPTIONAL GAIN FLATNESS AMPLIFIER****REV A**  
**July 2012****Typical Data:****Outline, WP-11 Housing**

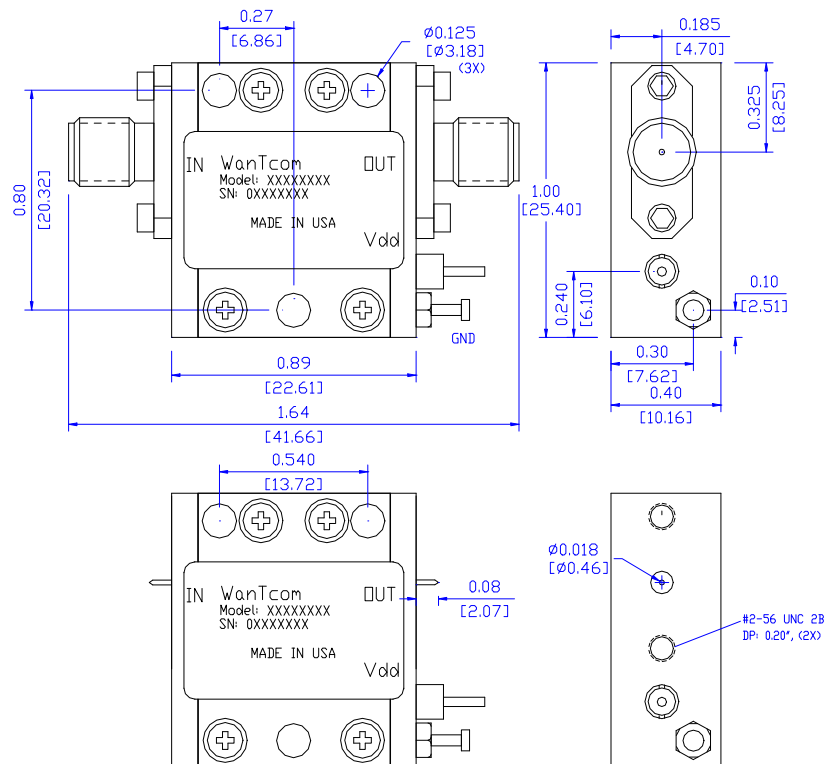
UNITS: INCH  
[mm]

BODY: Brass

Finish: Gold Plating

RF Connector: SMA F Gold Field Replaceable

V<sub>dd</sub> 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.

### **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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