



# WBA5060A

## 4.5 – 6.0 GHz LOW NOISE WIDE BAND AMPLIFIER

REV B  
March 2016

### Key Features



- 50 Ohm Impedance
- 4.5 to 6.0 GHz
- 0.80 dB Noise Figure
- 27.0 dB Gain
- +/-0.50 dB Gain Flatness
- 10.0 dBm P<sub>1dB</sub>
- 1.35:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

### Product Description



WBA5060A 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, wideband, high linearity, and unconditional stable performances together. With single DC power 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
- C-Band
- WiMax
- Defense
- Security System
- Measurement
- Fixed Wireless



### Specifications

Summary of the electrical specifications at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S <sub>21</sub>	4.5 – 6.0 GHz	25	27	29	dB
2	Gain Variation	ΔG	4.5 – 6.0 GHz		+/- 0.5	+/-1.0	dB
3	Input VSWR	SWR <sub>1</sub>	4.5 – 6.0 GHz		1.35:1	1.5:1	Ratio
4	Output VSWR	SWR <sub>2</sub>	4.5 – 6.0 GHz		1.35:1	1.5:1	Ratio
5	Reverse Isolation	S <sub>12</sub>	4.5 – 6.0 GHz		40		dB
6	Noise figure	NF	4.5 – 6.0 GHz		0.8	1.0	dB
7	Output Power 1dB compression Point	P <sub>1dB</sub>	4.5 – 6.0 GHz	8	10		dBm
8	Output-Third-Order Interception point	IP <sub>3</sub>	Two-Tone, P <sub>out</sub> +0 dBm each, 1 MHz separation	18	22		dBm
9	Current Consumption	I <sub>dd</sub>			45		mA
10	Power Supply Voltage	V <sub>dd</sub>	WBA5060A	+4.7	+5	+5.3	V
			WBA5060B	+8.0		+16	
11	Thermal Resistance	R <sub>th,c</sub>	Junction to case			220	°C/W
12	Operating Temperature	T <sub>o</sub>		-40		+85	°C
13	Maximum RF CW Input Power	P <sub>IN, MAX</sub>	DC – 6 GHz			10	dBm

### Absolute Maximum Ratings

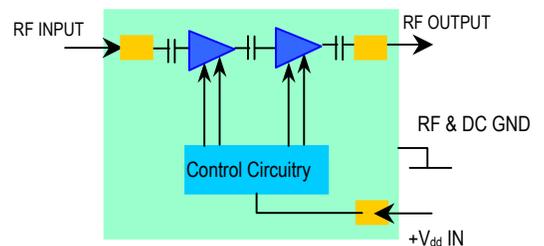
Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 6.0 (+16V for WBA5060B)
Drain Current	mA	60
Total Power Dissipation	mW	300
RF CW Input Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	220

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

### Ordering Information

Model Number	Feature
WBA5060A	V <sub>dd</sub> = +5.0V
WBA5060B	V <sub>dd</sub> = +8.0 ~ +16.0V

### Functional Block Diagram



Specifications and information are subject to change without notice.

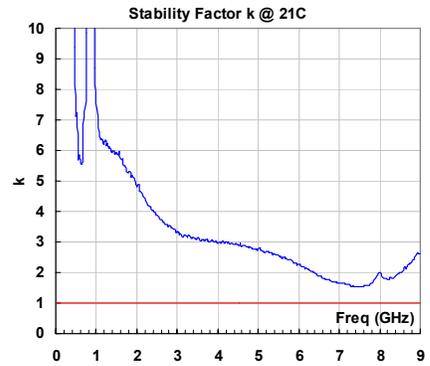
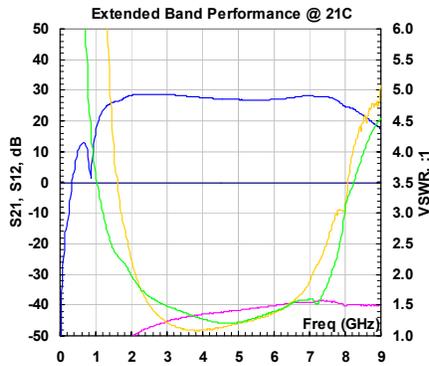
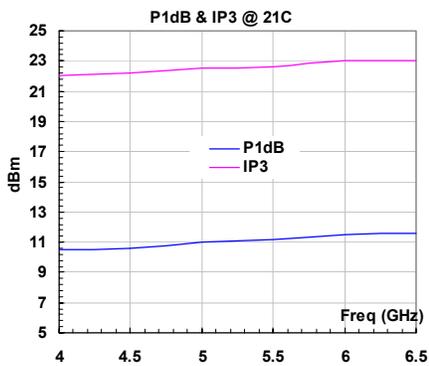
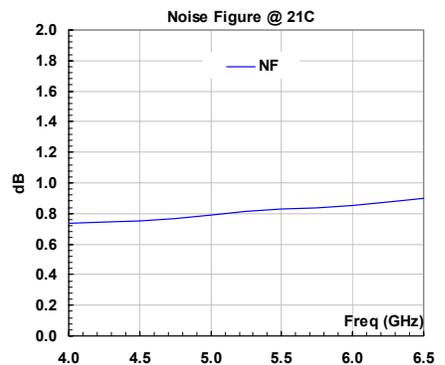
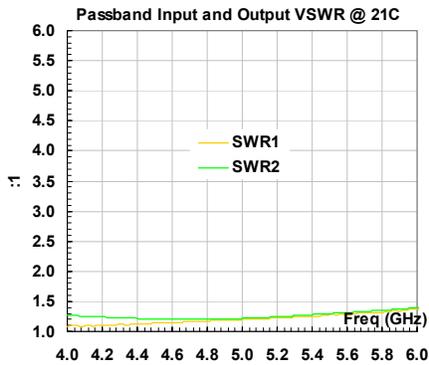
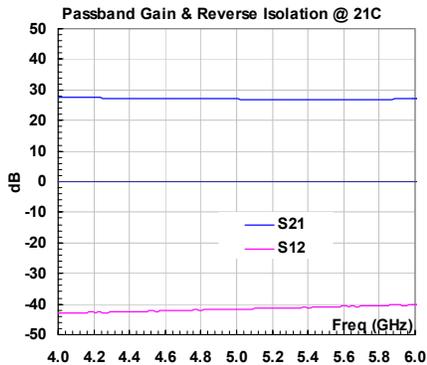


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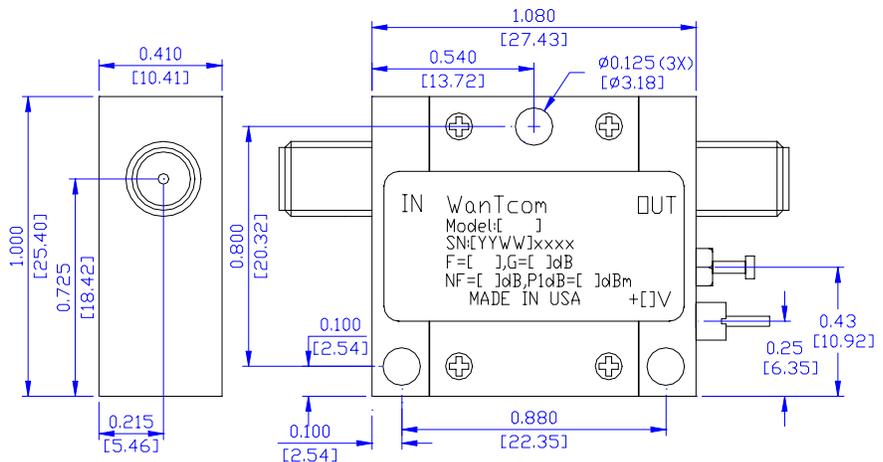
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### Typical Data



### Outline, WP-5 Housing

UNITS: INCH [mm]  
 BODY: Brass  
 Finish: Gold Plating  
 RF Connector: SMA F Gold  
 V<sub>dd</sub> PWR: Feed through



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## Application Notes:

### A. Testing The Amplifier

Due to high gain, the input power level to the amplifier must be set at – 30 dBm or lower! Too high input power will saturate the amplifier and causes inaccurate measured performance.

### B. 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.

### C. 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.

### D. 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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