



# WBA0204A/B

## 225 - 400 MHz LOW NOISE WIDE BAND 1 Watt AMPLIFIER

REV B  
March 2017

### Key Features



- 50 Ohm Impedance
- 225 ~ 400 MHz
- 1.40 dB Noise Figure
- 45.0 dBm Output IP<sub>3</sub>
- 18.5 dB Gain
- +/-0.3 dB Gain Flatness
- 30.0 dBm P<sub>1dB</sub>
- 1.5:1 VSWR
- Single DC Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

### Product Description

WBA0204A/B 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.

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

### Applications

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



### Specifications

Summary of the electrical specifications WBA0204A/B at room temperature

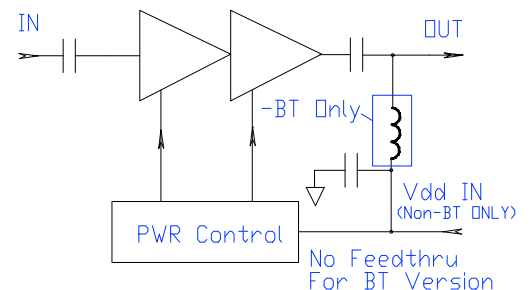
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S <sub>21</sub>	0.225 – 0.40 GHz	17.5	18.5	19.5	dB
2	Gain Variation	ΔG	0.225 – 0.40 GHz		+/- 0.3	+/-0.5	dB
3	Input VSWR	SWR <sub>1</sub>	0.225 – 0.40 GHz		1.5:1	1.8:1	Ratio
4	Output VSWR	SWR <sub>2</sub>	0.225 – 0.40 GHz		1.25:1	1.35:1	Ratio
5	Reverse Isolation	S <sub>12</sub>	0.225 – 0.40 GHz		25		dB
6	Noise Figure	NF	0.225 – 0.40 GHz		1.40	1.60	dB
7	Output 1dB Gain Compression Point	P <sub>1dB</sub>	0.225 – 0.40 GHz	28	30		dBm
8	Output Third Order Interception Point	IP <sub>3</sub>	Two-tone, P <sub>out</sub> =+10 dBm each, 1 MHz sep.	42	45		dBm
9	Current Consumption	I <sub>dd</sub>	V <sub>dd</sub>		220		mA
10	Power Supply Voltage	V <sub>dd</sub>	WBA0204A	+9.5	+10	+10.5	V
			WBA0204B	+12		+18	
11	Thermal Resistance, Junction to Case	R <sub>th,c</sub>	Last stage transistor V <sub>ds</sub> = 10.0V, I <sub>ds</sub> = 200 mA,			30	°C/W
12	Operating Temperature	T <sub>o</sub>	--	-40		+85	°C
13	Maximum Input CW RF Power	P <sub>IN,MAX</sub>	DC – 6 GHz			27	dBm

### Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, +12/+18, WBA0204A/WBA0204B
Drain Current	mA	250
Total Power Dissipation	W	2.5/4, WBA0204A/WBA0204B
Input CW RF Power	dBm	27
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



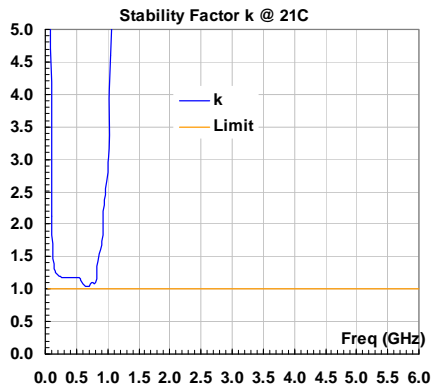
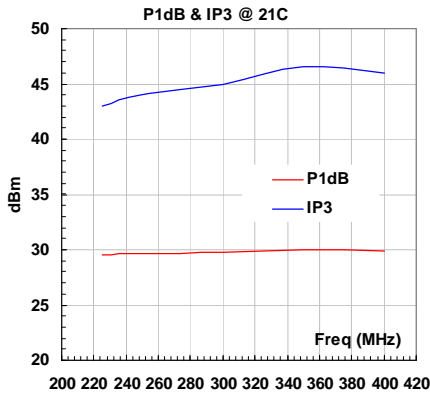
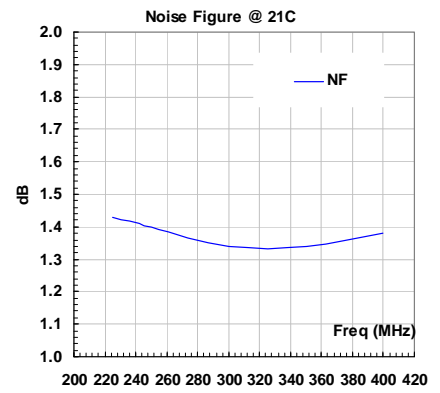
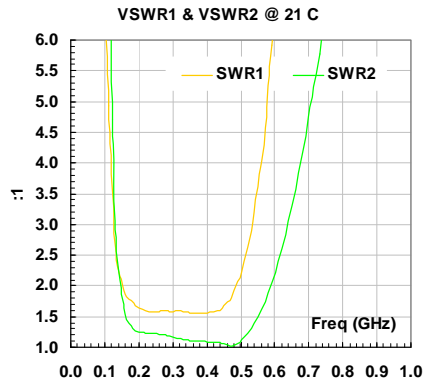
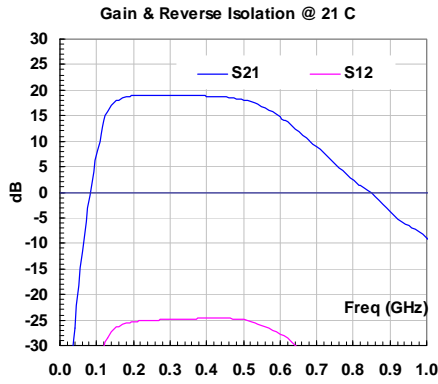
### Ordering Information

DC Voltage	Without Output Bias-T	With Output Bias-T
V <sub>dd</sub> = +10 V	WBA0204A	WBA0204ABT
V <sub>dd</sub> = +12.0 ~ +18.0V	WBA0204B	WBA0204BBT

Specifications and information are subject to change without notice.



### Typical Data



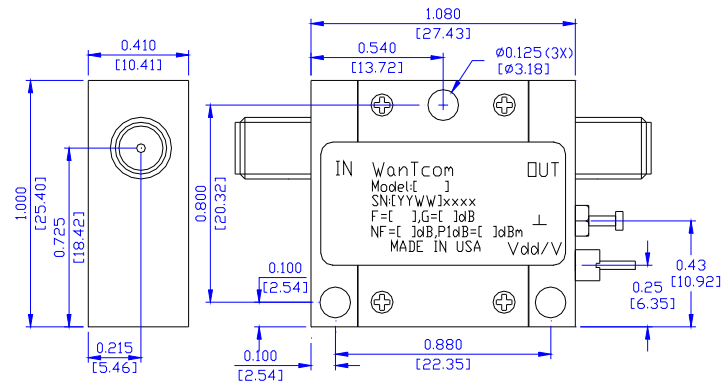
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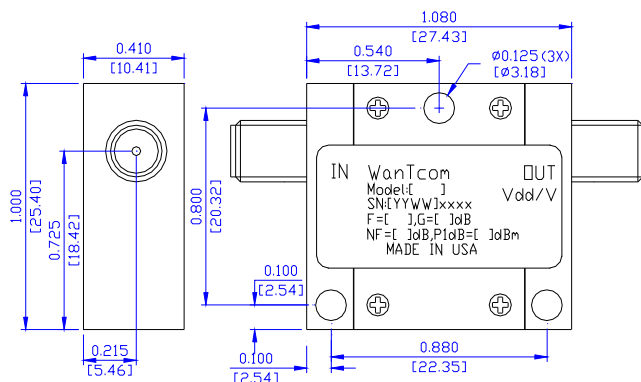
### Outline, WP-5 Housing

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

WBA0204A/B



WBA0204ABT/BBT



### 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. Proper heat sink is required.

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