



# WBA0145A

## 0.2- 4.2 GHz LOW NOISE WIDE BAND AMPLIFIER

REV C  
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### Key Features



- 50 Ohm Impedance
- 0.2 ~ 4.2 GHz
- 1.30 dB noise figure
- 27.0 dBm output IP<sub>3</sub>
- 16.0 dB Gain
- +/-0.50 dB Gain Flatness
- 14.0 dBm P<sub>1dB</sub>
- 1.5:1 VSWR
- Single Power Supply
- >34 years MTBF
- RoHS Compliant

### Product Description

WBA0145A integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, and high linearity 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-202G.

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

### Applications

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



### Specifications

Summary of the electrical specifications at room temperature, 21 °C

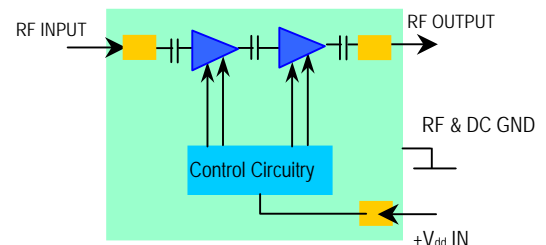
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S <sub>21</sub>	0.2 – 4.2 GHz	15	16	17	dB
2	Gain Variation	ΔG	0.2 – 4.2 GHz		+/- 0.3	+/-0.50	dB
3	Input VSWR	SWR <sub>1</sub>	0.2 – 4.2 GHz		1.5:1	1.8:1	Ratio
4	Output VSWR	SWR <sub>2</sub>	0.2 – 4.2 GHz		1.5:1	1.8:1	Ratio
5	Reverse Isolation	S <sub>12</sub>	0.2 – 4.2 GHz		20		dB
6	Noise Figure	NF	0.2 – 4.2 GHz		1.30	1.50	dB
7	Output Power 1dB Compression Point	P <sub>1dB</sub>	0.2 – 4.2 GHz	12	14		dBm
8	Output-Third-Order Interception Point	IP <sub>3</sub>	Two-Tone, P <sub>out</sub> +0 dBm each, 1 MHz separation	25	27		dBm
9	DC Current Consumption	I <sub>dd</sub>	V <sub>dd</sub> = +5 V		30		mA
10	Power Supply Voltage	V <sub>dd</sub>	WBA0145A	+4.7	+5	+5.3	V
			WBA0145B	+7.0		+25	
11	Thermal Resistance	R <sub>th,c</sub>	Junction to case, transistor, 30 mA at 3.5V			220	°C/W
12	Operating Temperature	T <sub>o</sub>		-40		+85	°C
13	Maximum CW RF 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 (+25V for WBA0145B)
Drain Current	mA	45
Total Power Dissipation	mW	250
RF 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.

### Functional Block Diagram



### Ordering Information

Model Number	WBA0145A	WBA0145B
V <sub>dd</sub>	+5.0V	+7.0 ~ +35.0V
RoHS	WBA0145AG	WBA0145BG

Specifications and information are subject to change without notice.





### 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 turn 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. Never use too large soldering iron tip and too high temperature soldering this DC power line. Too hot tip will damage the feed thru and causes permanent damage to the amplifier.

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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