



# WBA60180B

## 6 - 18 GHz LOW NOISE WIDE BAND AMPLIFIER

REV A  
December 2018

### Key Features



- 50 Ohm Impedance
- 6.0 ~ 18.0 GHz
- 2.0 dB Noise Figure
- 19.0 dBm Output P<sub>sat</sub>
- 35.0 dB Gain
- +/-1.0 dB Gain Flatness
- 1.8:1 VSWR
- Single Power Supply
- >34 years MTBF
- RoHS Compliant

### Product Description

WBA60180B integrates 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 excellent gain flatness 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 field replaceable SMA connectorized WP-10D Gold plated housing.



### Applications

- Microwave Radio
- Satellite VSAT & DBS
- 802.16 & 802.20 WiMAX
- WLL & MMDS
- Test Instrument



The amplifier is designed to meet the rugged standard of MIL-STD-202g.

**Additional heat sink is required for continuous operation!**

### Specifications

Summary of the electrical specifications WBA60180B at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S <sub>21</sub>	6.0 – 18.0 GHz		35		dB
2	Gain Variation	ΔG	6.0 – 18.0 GHz		+/- 1.0		dB
3	Input VSWR	SWR <sub>1</sub>	6.0 – 8.0 GHz		2:1	2.8:1	Ratio
			8.0 – 18.0 GHz		1.8:1	2.4:1	
4	Output VSWR	SWR <sub>2</sub>	6.0 – 18.0 GHz		1.4:1	2.0:1	Ratio
5	Reverse Isolation	S <sub>12</sub>	6.0 – 18.0 GHz	45			dB
6	Noise Figure	NF	6.0 – 8.0 GHz		2.5	3.5	dB
			8.0 – 18.0 GHz		2.0	2.5	
7	Output Power Saturation	P <sub>sat</sub>	6.0 – 18.0 GHz		19		dBm
8	Current Consumption	I <sub>dd</sub>	V <sub>dd</sub> = +5 V or +9V ~ +16V		170		mA
9	Power Supply Voltage	V <sub>dd</sub>	WBA60180B	+4.7	+5	+5.3	V
			WBA60180B-12	+9.0		+16.0	V
10	Operating Temperature	T <sub>o</sub>		-40		+85	°C
11	Maximum CW RF Input Power	P <sub>IN, MAX</sub>	6.0 – 18.0 GHz			15	dBm

### Absolute Maximum Ratings

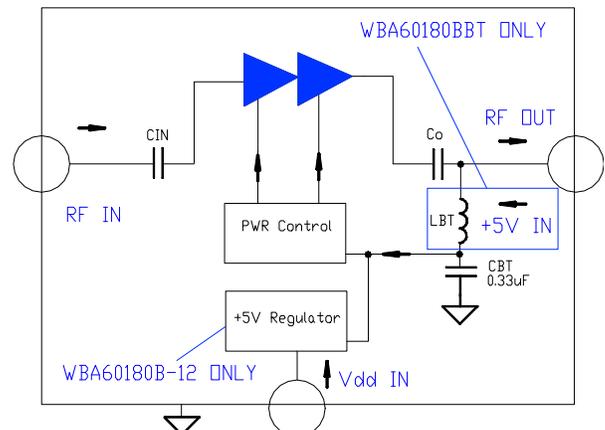
Parameters	Unit	Ratings
DC Power Supply Voltage	V	-0.5 ~ +6.0 (+16V for WBA60180B-12)
Drain Current	mA	200
Total Power Dissipation	W	1
CW RF Input Power	dBm	15
Junction Temperature	°C	170
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85

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

### Ordering Information

Model Number	DC Voltage	Output Bias-T
WBA60180B	+5 V	WBA60180BBT
WBA60180B-12	+9 V ~ +16V	Not Available

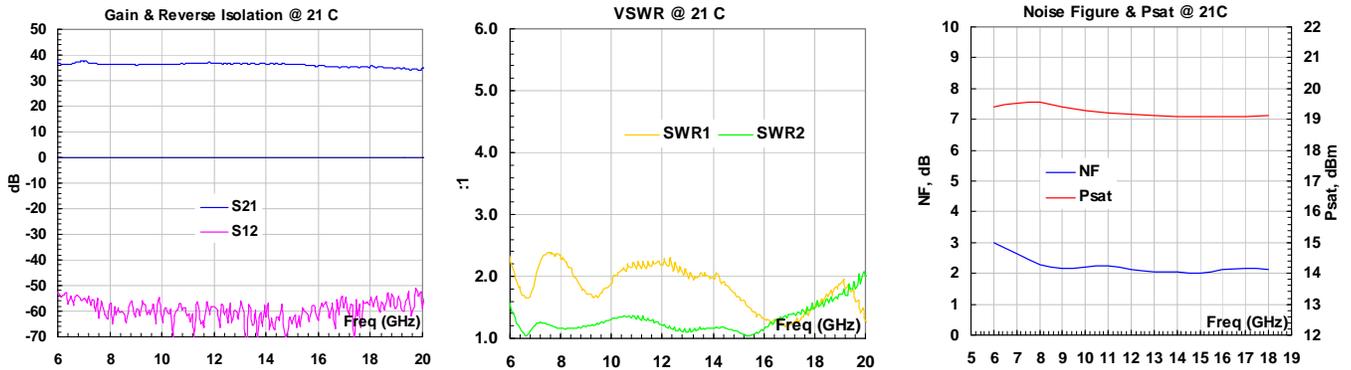
### Functional Block Diagram



Specifications and information are subject to change without notice.



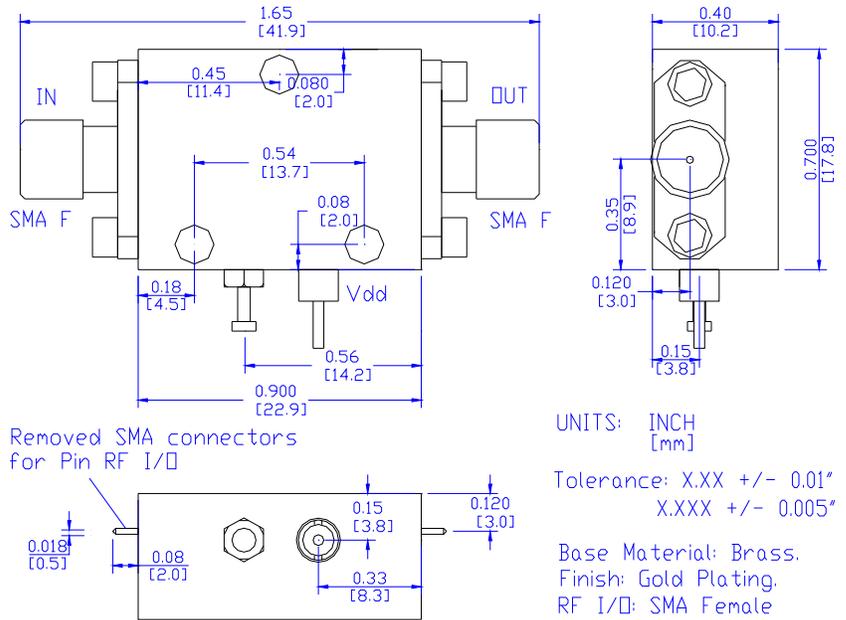
**Typical Data**



\*The measured noise figure includes the input SMA connector loss. The noise figure shall be around 0.1 dB lower without Input SMA connector.

**Outline, WP-10D Housing**

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



For the pin type input and output application, remove the input and output SMA connectors.



### 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 during the shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount them.

High thermal conductivity thermal film such as T-gon is needed between the bottom of the PA and the heat sink surface. Refer to AN-155 for heat sink design, [http://wantcominc.com/engineering\\_tools.htm](http://wantcominc.com/engineering_tools.htm).

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