WBA3090A

3.0 – 9.0 GHz LOW NOISE WIDE BAND AMPLIFIER

REV C
December 2018

Key Features

- 3.0 ~ 9.0 GHz
- 1.0 dB Noise Figure
- 22.0 dB Gain
- +/- 1.0 dB Gain Flatness
- 10.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single Power Supply
- Unconditional Stable, *k* >1
- **MADE IN USA**

Applications

- 50 Ohm Impedance
- WiMAX
- Defense
- Measurement
- Fixed Wireless

CAUTION:
ELECTROSTATIC DISCHARGE SENSITIVE

Absolute Maximum Ratings

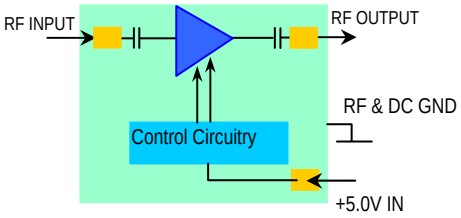
Parameters	Units	Rating
DC Power Supply Voltage	V	6.0
Drain Current	mA	50
Total Power Dissipation	mW	300
CW RF Input Power	dBm	10
Junction Temperature	°C	150
Storage Temperature	°C	-55~125
Operating Temperature	°C	-54~100
Thermal Resistance	°C/W	220

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

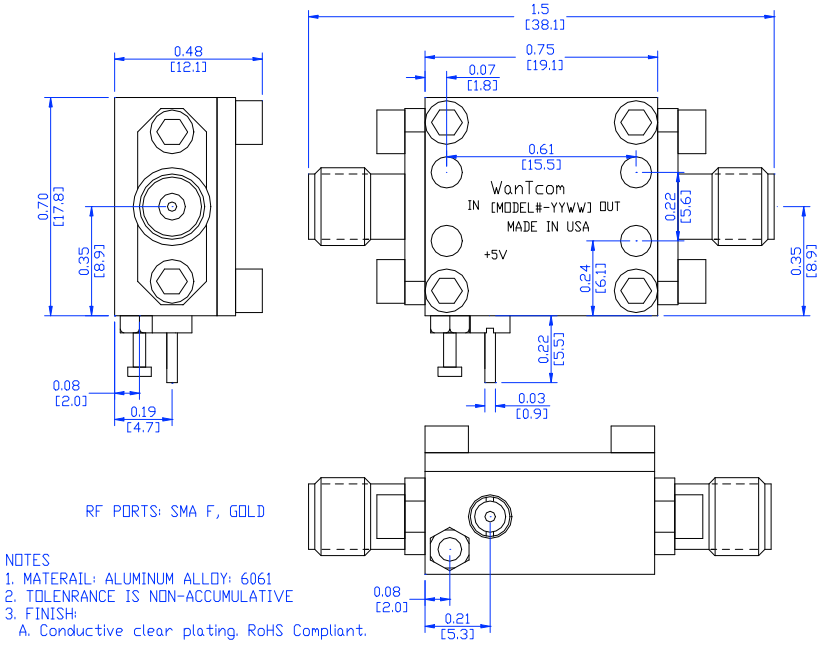
Specifications

Summary of the electrical specifications WBA3090A at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	3.0 – 9.0 GHz	20	22		dB
2	Gain Variation	ΔG	3.0 – 9.0 GHz		+/- 1.0	+/- 1.5	dB
3	Input VSWR	SWR_1	3.0 – 9.0 GHz		1.5:1	1.8:1	Ratio
4	Output VSWR	SWR_2	3.0 – 9.0 GHz		1.5:1	1.8:1	Ratio
5	Reverse Isolation	S_{12}	3.0 – 9.0 GHz		35		dB
6	Noise figure	NF	3.0 – 9.0 GHz		1.0	1.3	dB
7	Output Power 1dB Compression Point	P_{1dB}	3.0 – 9.0 GHz	7	10		dBm
8	Current Consumption	I_{dd}	@ 21 °C		38		mA
9	Power Supply Voltage	V_{dd}	WBA3090A	+4.7	+5.0	+5.3	V
10	Thermal Resistance	$R_{th,c}$	Junction to case			220	°C/W
11	Operating Temperature	T_o	Case temperature, bottom of housing	-40		+85	°C
12	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 13 GHz			10	dBm
13	Spurious	P_{spur}	DC – 13 GHz	-70			dBc
14	Weight				13		Grams



Outline, WP-30 Housing



Ordering Information

Model Number	WBA3090A

Specifications and information are subject to change without notice.

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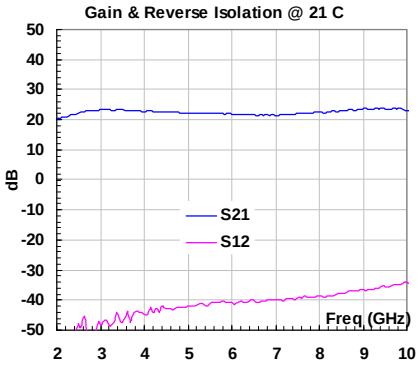
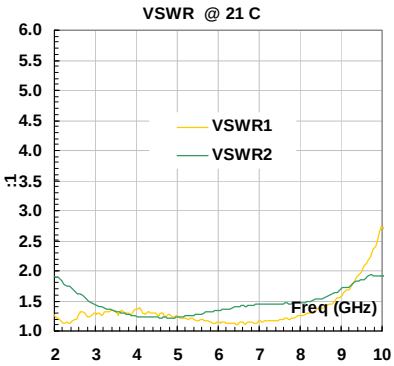
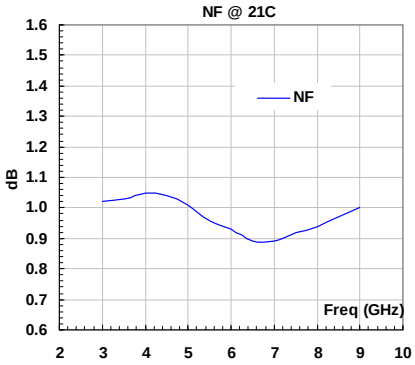
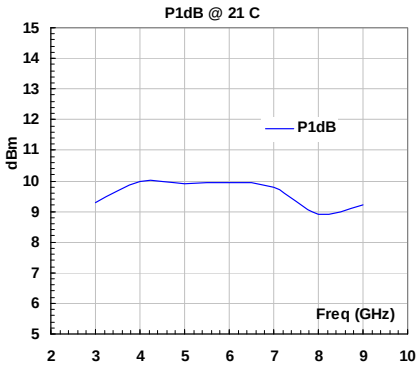
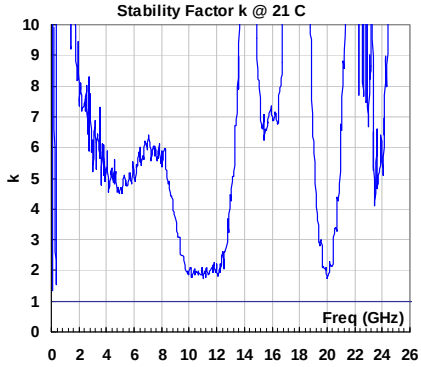
Typical Performance











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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 connector to the amplifier 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 Keysight Technology.

B. Mounting the Amplifier

Use three pieces of #2-56 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 for shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount the screws.

C. Soldering DC Power Supply Wires

Always turn off the DC power supply of +5.0V when connect the DC cables to the amplifier. Only turn on the power supply after the correct connections and +5.0V DC voltage are confirmed. Any accidentally short the live +5.0V to the ground while applying DC cable to the DC feed thru pin may damage the amplifier.

The AWG of 18 ~ 24 insulated wires are recommended for the DC cables. Red and Black color wires are recommended for +5.0V and its return for easier identification of the polarity to avoid the wrong DC bias. Only ¾ to 1 turn wrap around the feed thru pin and ground turret per the IPC standard.

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.

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