WBA0030-30A/B

1 – 3000 MHz LOW NOISE WIDE BAND AMPLIFIER

REV B
September 2013

Key Features

- 50 Ohm Impedance
- 1 ~ 3000 MHz Pass Band
- **+/- 0.25 dB Gain Flatness**
- 1.2 dB Noise Figure
- 26.0 dBm Output IP_3
- 29.0 dB Gain
- 14.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WBA0030-30A/B integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, exceptional gain flatness, 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-202.

Applications

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

Specifications

Summary of the electrical specifications WBA0030-30A/B at room temperature

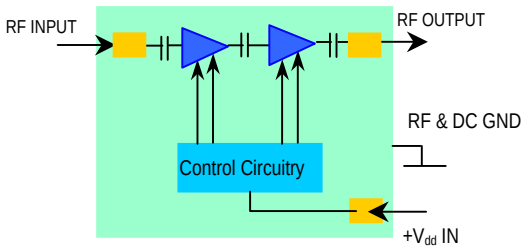
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	1 – 3000 MHz	28.3	29	30.3	dB
2	Gain Variation	ΔG	1 – 3000 MHz		+/- 0.25	+/-0.5	dB
3	Input VSWR	SWR_1	1 – 3000 MHz		1.35:1	1.5:1	Ratio
4	Output VSWR	SWR_2	1 – 3000 MHz		1.45:1	1.6:1	Ratio
5	Reverse Isolation	S_{12}	1 – 3000 MHz		40		dB
6	Noise Figure	NF	10 – 100 MHz		1.5	2.5	dB
			100 – 3000 MHz		1.2	1.6	
7	Output Power 1dB Compression Point	P_{1dB}	1 – 3000 MHz	12	14		dBm
8	Output-Third-Order Interception Point	IP_3	Two-Tone, P_{out} +0 dBm each, 1 MHz separation	24	26		dBm
9	Current Consumption	I_{dd}			50	65	mA
10	DC Power Supply Voltage	V_{dd}	WBA0030-30A	+4.7	+5	+5.3	V
			WBA0030-30B	+7.0		+25	
11	Thermal Resistance	$R_{th,c}$	Junction to case, last stage transistor			220	°C/W
12	Operating Temperature	T_o		-40		+85	°C
13	Maximum CW RF Input Power	$P_{IN, MAX}$	DC – 6.0 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 6.0 (+25V for WBA0030-30B)
DC Current	mA	70
Total Power Dissipation	mW	400
CW RF Input Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ +125
Operating Temperature	°C	-40 ~ +85

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

Functional Block Diagram



Ordering Information

Model Number	Feature
WBA0030-30A	V_{dd} =+5.0V
WBA0030-30B	V_{dd} = +7.0 ~ +25.0V

Specifications and information are subject to change without notice.

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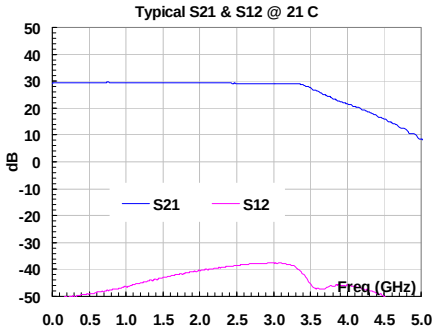
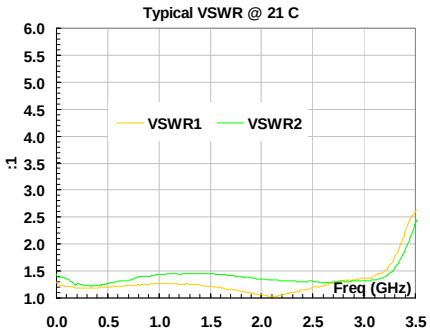
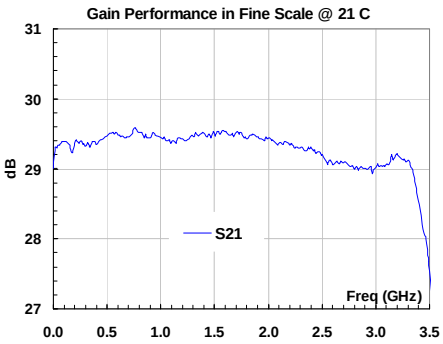
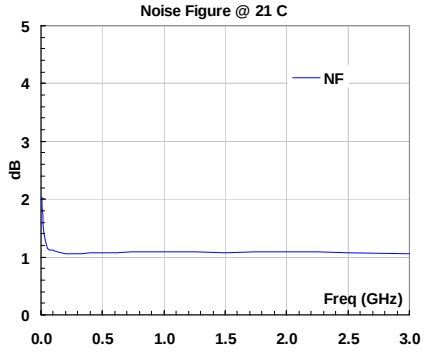
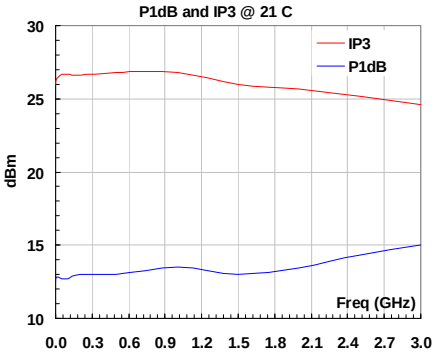
Typical Performance

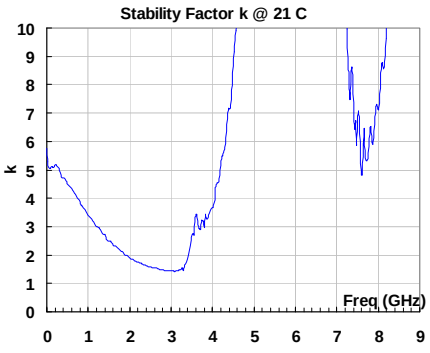






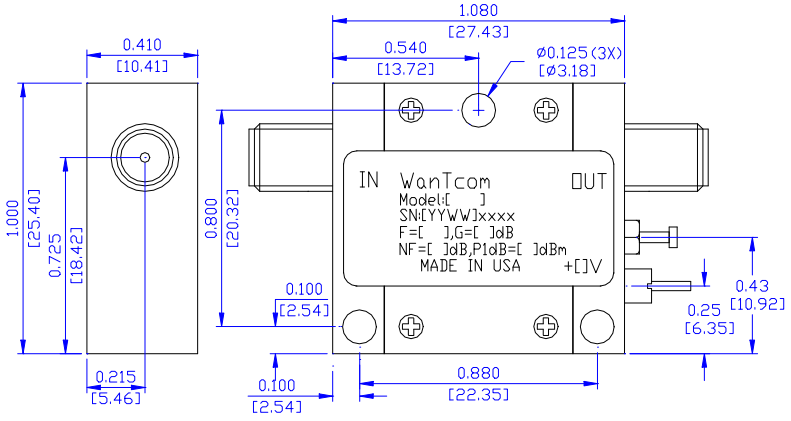






Outline, WP-5 Housing

UNITS:	INCH [mm]
BODY:	Brass
Finish:	Gold Plating
RF Connector:	SMA F Gold
V_{dd} PWR:	Feed through



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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 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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