



WBA0030A

20 – 3000 MHz LOW NOISE WIDE BAND AMPLIFIER

REV B
September 2013

Key Features



- 50 Ohm Impedance
- 20 ~ 3000 MHz Pass Band
- +/- 0.3 dB Gain Flatness
- 3.0 dB Noise Figure
- 40.0 dBm Output IP₃
- 23.0 dB Gain
- 24.0 dBm P_{1dB}
- 14 dB Return Losses
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

WBA0030A 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.

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

Applications

- Mobile Infrastructures
- VHF & UHF
- CATV/DBS
- Defense
- PCS & 3G
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WBA0030A at room temperature, V_{dd} = +10V

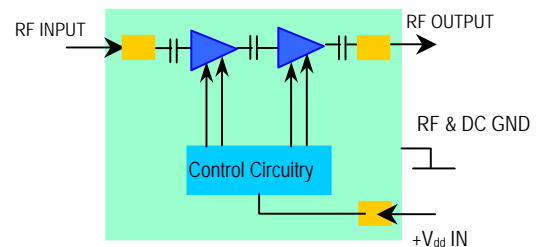
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	20 – 3000 MHz	22	23	25	dB
2	Gain Variation	ΔG	20 – 3000 MHz		+/- 0.5	+/-1.0	dB
3	Input Return Loss	S ₁₁	20 – 3000 MHz	10	14		dB
4	Output Return Loss	S ₂₂	20 – 3000 MHz	10	14		dB
5	Reverse Isolation	S ₁₂	20 – 3000 MHz		40		dB
6	Noise Figure	NF	20 – 100 MHz			4.5	dB
			100 – 3000 MHz		3.0	3.5	
7	Output Power 1dB Compression Point	P _{1dB}	20 – 3000 MHz	22	24		dBm
8	Output-Third-Order Interception Point	IP ₃	Two-Tone, P _{out} +10 dBm each, 1 MHz separation	38	40		dBm
9	Current Consumption	I _{dd}			225		mA
10	DC Power Supply Voltage	V _{dd}		+9.5	+10	+10.5	V
11	Thermal Resistance	R _{th,c}	Junction to case, last stage transistor			30	°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, +12
DC Current	mA	300
Total Power Dissipation	W	3.0
CW RF Input Power	dBm	10
Channel Temperature	°C	160
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



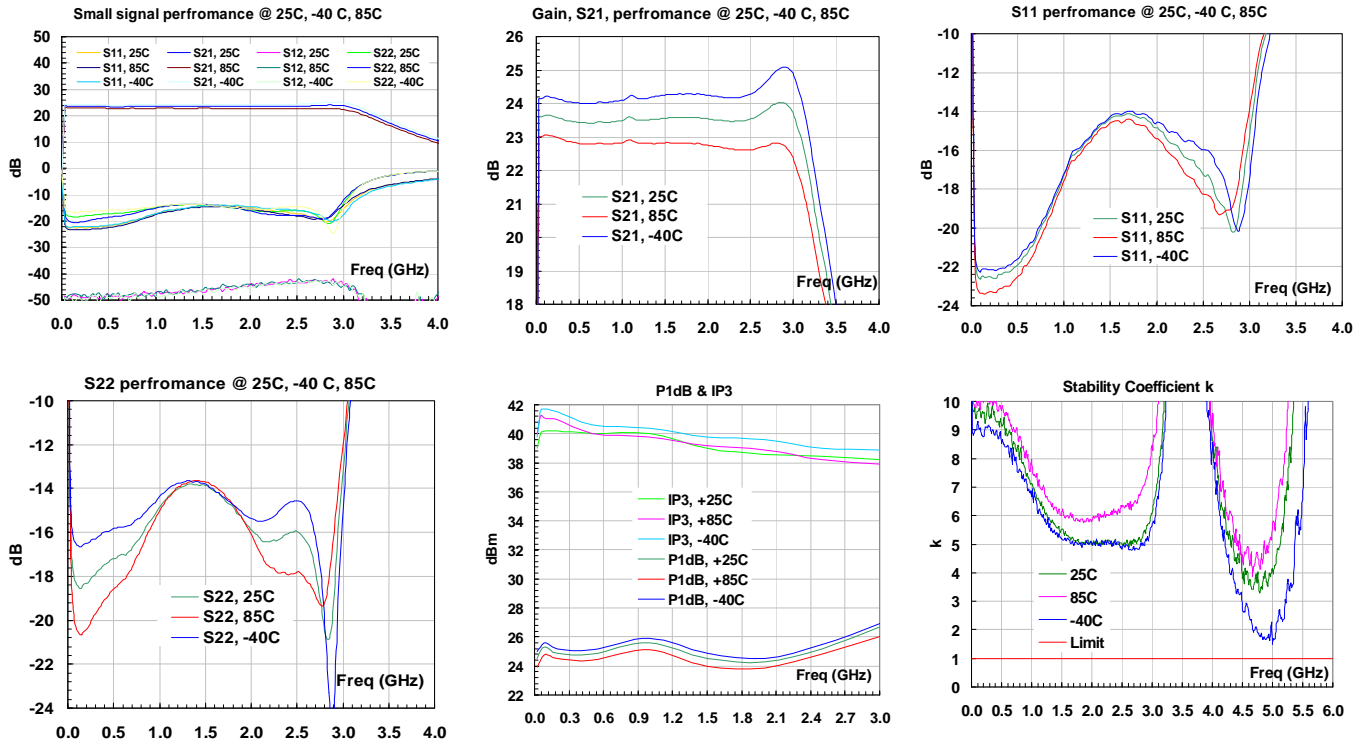
Ordering Information

Model Number	WBA0030A
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Specifications and information are subject to change without notice.

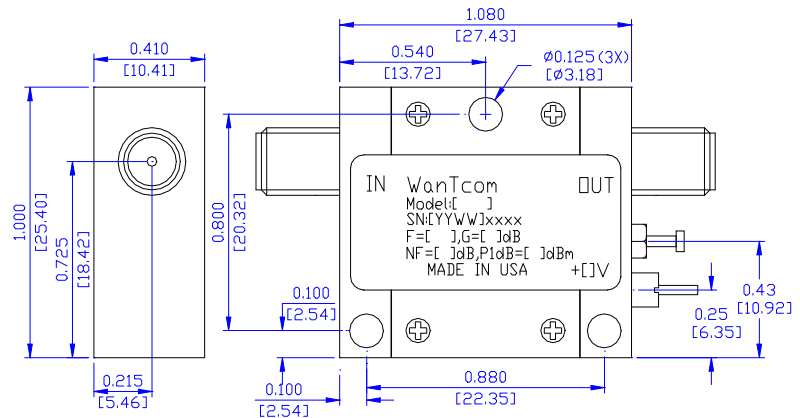


Typical Performance



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.
