



Key Features



- 30 MHz ~ 2000 MHz
- 1.0 dB noise figure
- 30.0 dBm output IP₃
- 30.0 dB Gain
- +/-0.50 dB Gain Flatness
- 20.0 dBm P_{1dB}
- 1.35:1 VSWR
- Single power supply
- >34 years MTBF
- Unconditional stable
- RoHS compliant

Product Description

WBA0022A 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 unconditional stable 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-202.

Applications

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



Specifications

Summary of the electrical specifications WBA0022A at room temperature

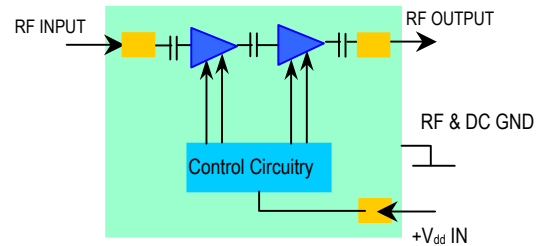
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	30 MHz – 2000 MHz		30		dB
2	Gain Variation	ΔG	30 MHz – 2000 MHz		+/- 0.5	+/-0.75	dB
3	Input VSWR	SWR ₁	30 MHz – 2000 MHz		1.4:1	1.5:1	Ratio
4	Output VSWR	SWR ₂	30 MHz – 2000 MHz		1.22:1	1.35:1	Ratio
5	Reverse Isolation	S ₁₂	30 MHz – 2000 MHz		42		dB
6	Noise figure	NF	30 MHz – 200 MHz		1.2	1.70	dB
			200 MHz – 2000 MHz		1.0	1.15	dB
7	Output Power 1dB compression Point	P _{1dB}	30 MHz – 2000 MHz	18	20		dBm
8	Output-Third-Order Interception point	IP ₃	Two-Tone, P _{out} +0 dBm each, 1 MHz separation		30		dBm
9	Current Consumption	I _{dd}	V _{dd} = +5 V		140		mA
10	Power Supply Voltage	V _{dd}		+4.8	+5	+5.2	V
11	Thermal Resistance	R _{th,c}	Junction to case, worst case at 1 st stage transistor			220	°C/W
12	Operating Temperature	T _o		-40		+85	°C
13	Maximum Average RF Input Power	P _{IN,MAX}	30 MHz – 2000 MHz			5	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	5.5
Drain Current	mA	150
Total Power Dissipation	mW	750
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



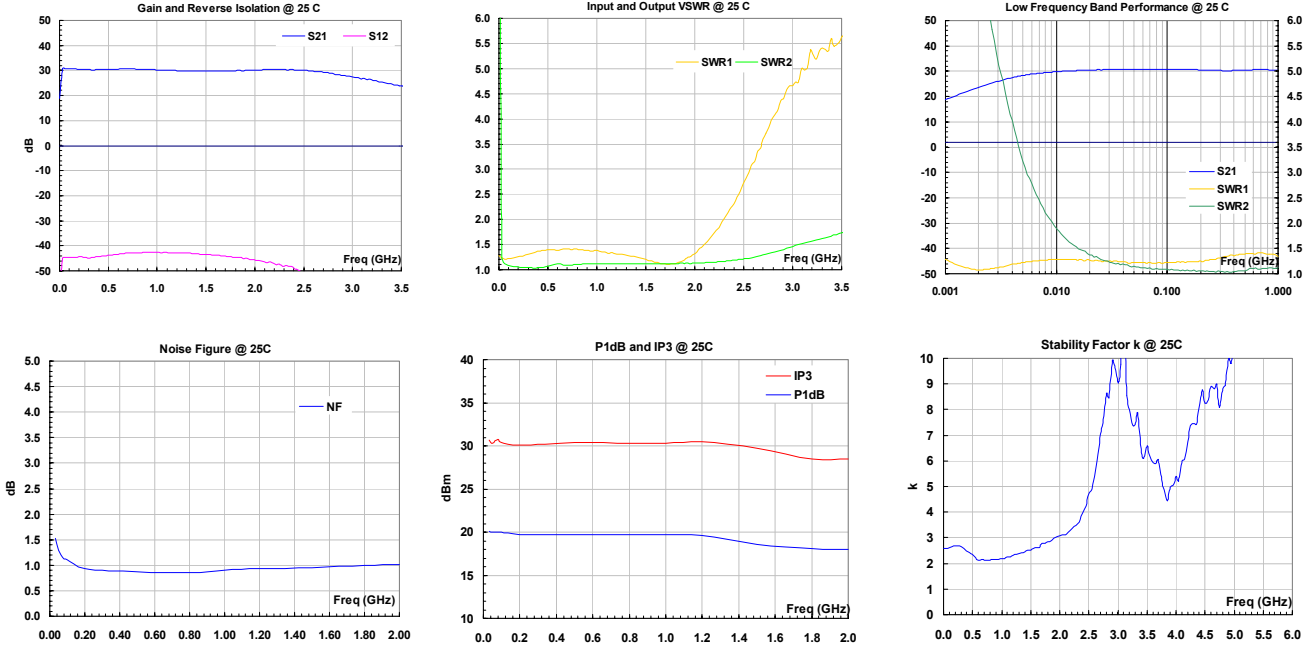
Ordering Information

Model Number	WBA0022A
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Specifications and information are subject to change without notice.

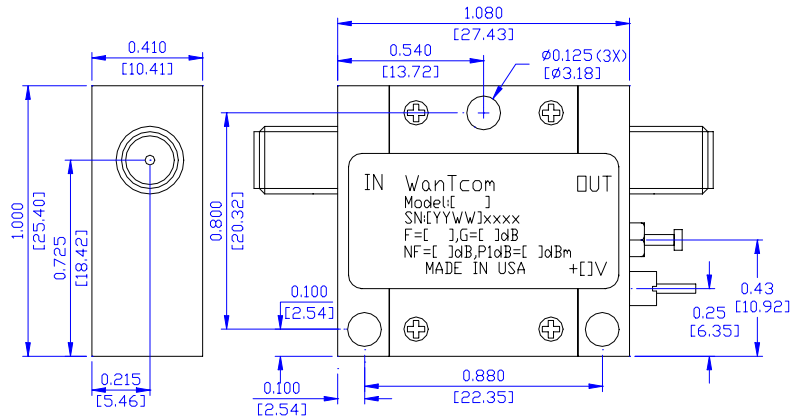


Typical Data



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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Small Signal S-Parameters:

!WBA0022A, +25C, S-parameters at $V_{dd}=+5V$, $I_{dd}=140mA$. Last updated 8/30/07.
GHZ s MA R 50

!Freq(GHz)	MAGS11	ANGS11	MAGS21	ANGS21	MAGS12	ANGS12	MAGS22	ANGS22
0.001	0.12	-78.70	8.71	78.60	0.0014	83.10	0.83	-155.40
0.030	0.11	-15.80	34.04	4.50	0.0057	8.50	0.10	97.10
0.05	0.10	-19.79	34.53	-1.08	0.0057	5.65	0.07	95.45
0.10	0.10	-30.57	34.54	-11.29	0.0058	-0.19	0.04	89.95
0.20	0.11	-55.27	33.44	-26.40	0.0058	-3.63	0.03	73.30
0.50	0.16	-143.15	32.89	-62.72	0.0064	-10.77	0.03	65.75
0.80	0.17	153.84	33.51	-103.94	0.0072	-29.61	0.05	-10.90
1.00	0.16	125.46	32.56	-130.83	0.0074	-41.25	0.05	-57.16
1.20	0.14	102.92	31.34	-156.09	0.0073	-55.22	0.06	-98.96
1.50	0.09	80.19	30.67	167.10	0.0067	-73.73	0.06	-163.60
1.80	0.06	130.59	31.26	128.90	0.0059	-93.36	0.06	143.68
2.00	0.14	138.74	32.08	101.59	0.0052	-105.01	0.06	112.60
2.30	0.34	107.08	32.81	56.30	0.0040	-122.36	0.08	78.19
2.50	0.47	77.72	31.77	23.74	0.0029	-134.99	0.10	59.29
3.00	0.64	6.75	23.43	-56.11	0.0013	-101.47	0.19	0.07
3.50	0.70	-50.94	15.59	-127.11	0.0025	-66.64	0.27	-64.22
4.00	0.72	-97.25	9.39	162.60	0.0045	-96.75	0.30	-128.12
4.50	0.78	-136.08	4.93	99.02	0.0042	-121.10	0.27	171.93
5.00	0.86	-177.35	2.44	40.15	0.0051	-144.79	0.26	115.14
5.50	0.88	139.61	1.04	-9.13	0.0041	-153.99	0.25	56.02

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 to 2 turns 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.

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.
