WBA0001A

1 ~ 300 MHz LOW NOISE AMPLIFIER

REV D
June 2021

Key Features

- 1 ~ 300 MHz
- 0.8 dB Noise Figure
- 22.0 dBm Output P_{1dB}
- 28.0 dB Gain
- **+/- 0.20 dB Gain Flatness**
- 1.5:1 VSWR
- Single power supply
- >34 years MTBF
- RoHS Compliance
- Meet MIL-STD-202g

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WBA0001A is integrated with 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 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-11 Gold plated housing.

Applications

- Radio Infrastructures
- SW Communications
- FM
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications WBA0001A at room temperature

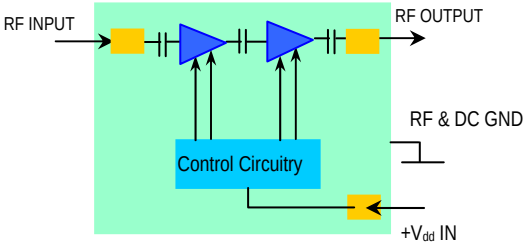
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	1 – 300 MHz	26	28	30	dB
2	Gain Variation	ΔG	1 – 300 MHz		**+/- 0.20**	+/-0.4	dB
3	Noise Figure	NF	10 – 30 MHz		2.0	3.0	dB
			30 – 300 MHz		0.8	1.3	
4	Input & Output VSWR	SWR_1	1 – 300 MHz		1.5:1	2:1	Ratio
5	Output VSWR	SWR_2	1 – 300 MHz		1.5:1	2:1	Ratio
6	Reverse Isolation	S_{12}	1 – 300 MHz		30		dB
7	Output Power 1dB Compression Point	P_{1dB}	1 – 300 MHz	19	22		dBm
8	Current Consumption	I_{dd}	V_{dd}		75		mA
9	Power Supply Voltage	V_{dd}	WBA0001A	+4.7	+5.0	+5.3	V
			WBA0001B	+9	+15	+16	
10	Thermal Resistance	$R_{th,c}$	Junction to case			40	°C/W
11	Operating Temperature	T_o		-40		+85	°C
12	Maximum Input RF CW Power	$P_{IN, MAX}$	DC – 6 GHz			15	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	6 (+16 V for WBA0001B)
Drain Current	mA	150
Total Power Dissipation	W	1.2
RF Input Power	dBm	15
Junction Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	40

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

Functional Block Diagram



Ordering Information

Model Number	Vdd
WBA0001A	**+5.0V**
WBA0001B	**+9 ~ +16V**

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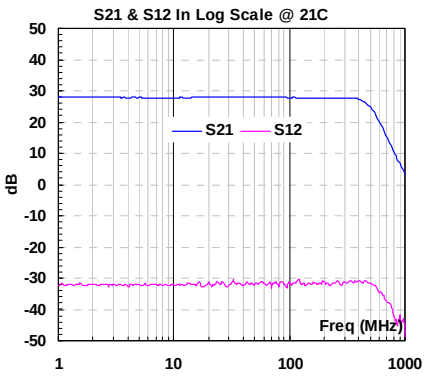
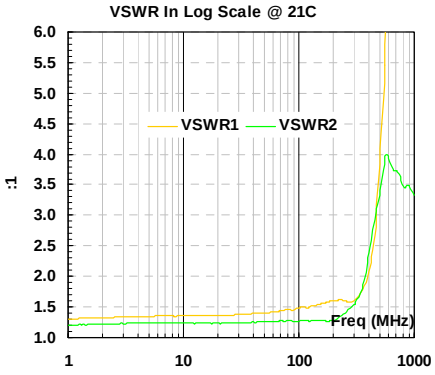
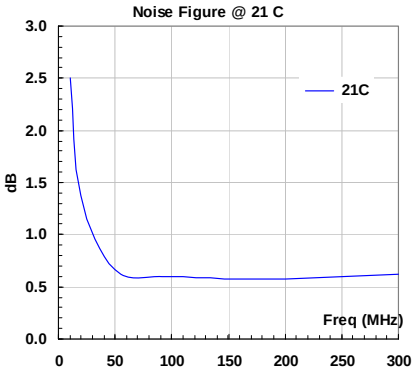
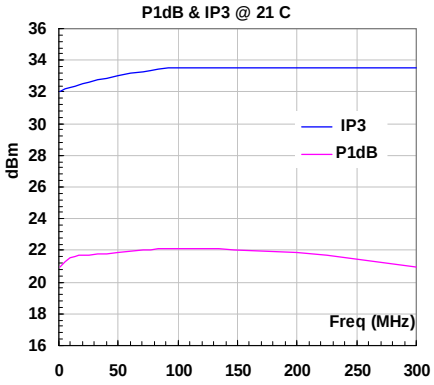
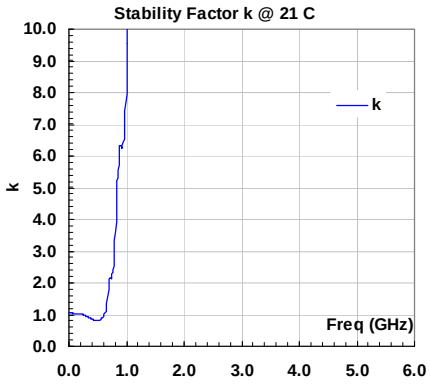
Typical Data:





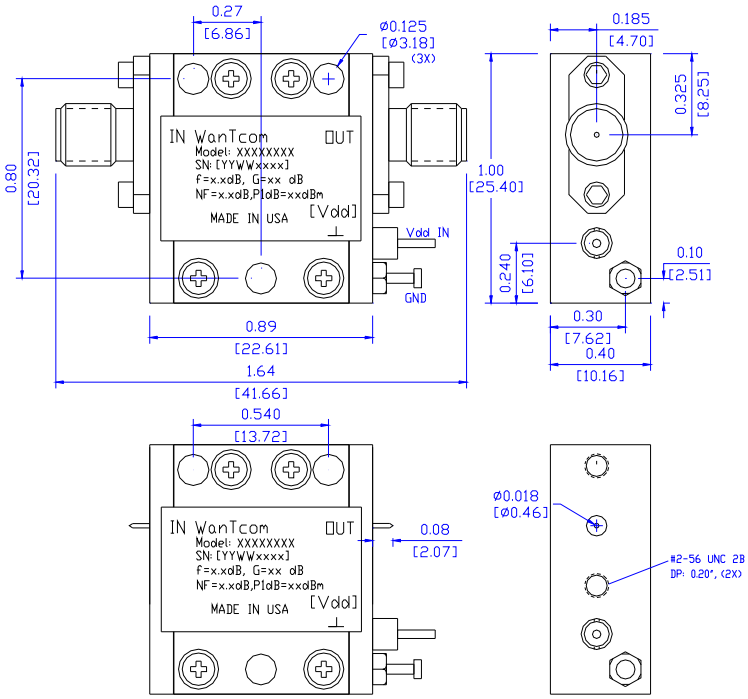






Outline, WP-11 Housing

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



Application Notes:

A. ESD Safe

Always handle the amplifier at ESD safe environment! ESD may damage the amplifier permanently.

B. 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 may occur to the SMA connectors of the amplifier. 8710-1582 (5 inch-lb) is one of the ideal torque wrench choice from Agilent Technology.

C. 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 only on the DC feed thru center pin. Solder the wounded wire and the center pin together. Make sure use smaller soldering iron tip such as 0.010” for this process soldering. Excessive heat and large tip may damage the feed thru pin. 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 with higher temperature and larger soldering tip such as 0.020”.

D. 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 tests. Always use the appropriate torque setting of the power screwdriver to mount them.

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