WBA0130-45A

100 – 3000 MHz LOW NOISE WIDE BAND AMPLIFIER

REV A
October 2015

Key Features

- 50 Ohm Impedance
- 100 ~ 3000 MHz Pass Band
- +/- 1.0 dB Gain Flatness
- 1.1 dB Noise Figure
- 25.0 dBm Output IP_3
- 47.0 dB Gain
- 12.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliance

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WBA0130-45A 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, 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-202g.

Applications

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

Specifications

Summary of the electrical specifications WBA0130-45A at room temperature

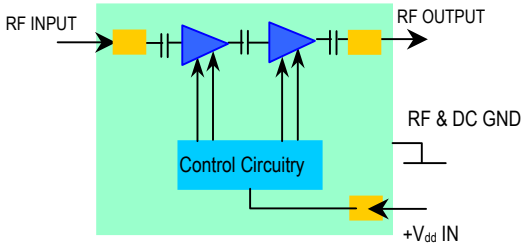
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	100 – 3000 MHz	45	47	49	dB
2	Gain Variation	ΔG	100 – 3000 MHz		+/- 1.0	+/-1.5	dB
3	Input VSWR	SWR_1	100 – 3000 MHz		1.6:1	1.9:1	Ratio
4	Output VSWR	SWR_2	100 – 3000 MHz		1.25:1	1.6:1	Ratio
5	Reverse Isolation	S_{12}	100 – 3000 MHz		65		dB
6	Noise Figure	NF	100 – 3000 MHz		1.1	1.3	dB
7	Output Power 1dB Compression Point	P_{1dB}	100 – 3000 MHz	10	12		dBm
8	Output-Third-Order Interception Point	IP_3	Two-Tone, P_{out} +0 dBm each, 1 MHz separation	22	25		dBm
9	Current Consumption	I_{dd}	V_{dd} being any value between +8 ~ +16V		75	85	mA
10	DC Power Supply Voltage	V_{dd}		+8	+15	+16	V
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
14	Stability Factor	*k*	DC – 26.5 GHz	1.0			--

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 16.0
DC Current	mA	100
Total Power Dissipation	W	1.5
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	WBA0130-45A

Specifications and information are subject to change without notice.

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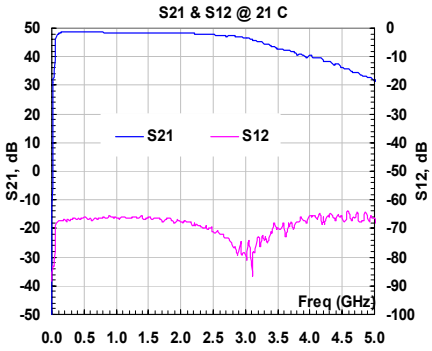
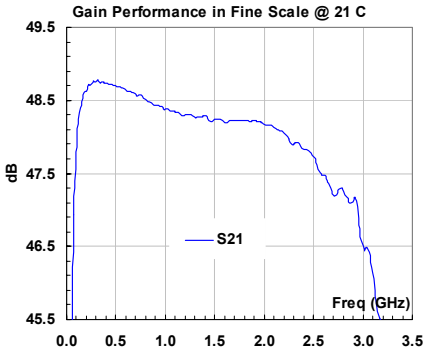
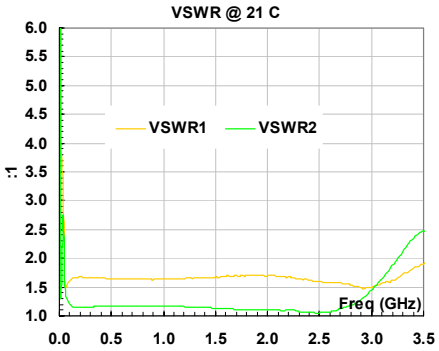
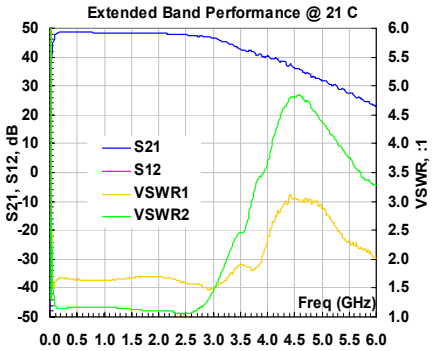
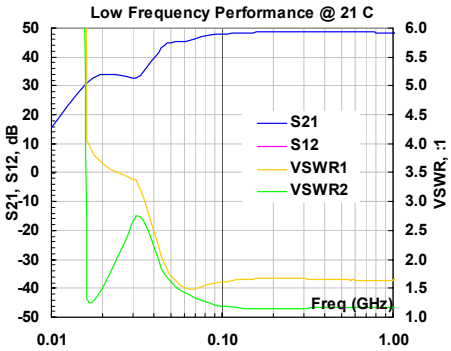
Typical Performance

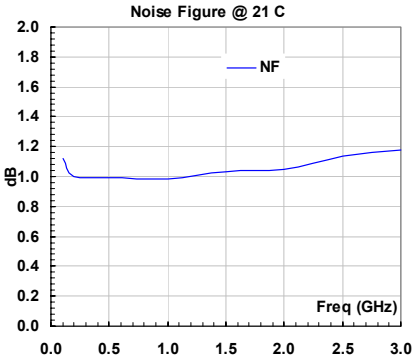


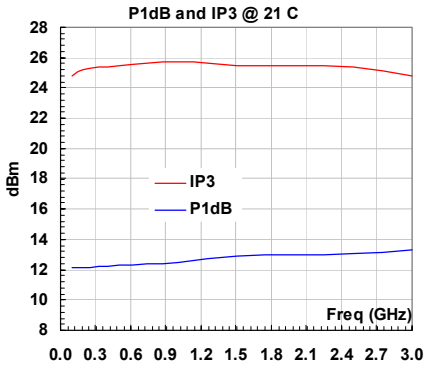


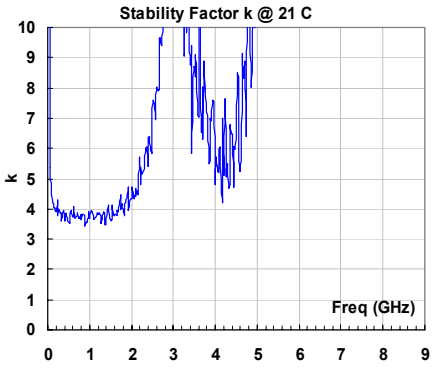












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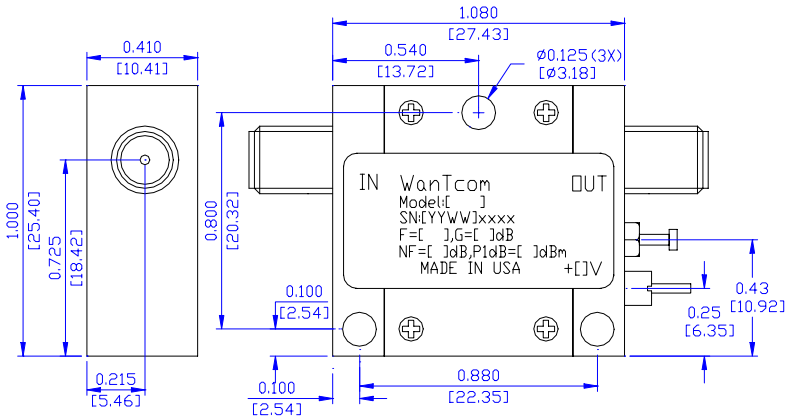
Outline, WP-5 Housing

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



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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