WBA0105B

100 – 550 MHz LOW NOISE WIDE BAND 1 Watt AMPLIFIER

REV B
March 2017

Key Features

- 50 Ohm Impedance
- 100 ~ 550 MHz
- 0.80 dB Noise Figure
- 44.0 dBm Output IP_3
- 35.0 dB Gain
- +/-0.3 dB Gain Flatness
- 30.0 dBm P_{1dB}
- 1.25:1 VSWR
- Single DC Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WBA0105B 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, wide bandwidth, high linearity, 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
- Broadcast
- CATV/DBS
- Defense
- Security System
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications WBA0105B at room temperature

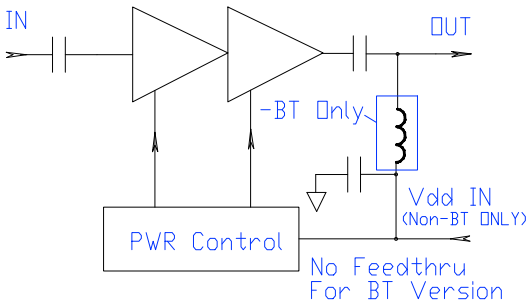
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	100 – 550 MHz	33	35		dB
2	Gain Variation	ΔG	100 – 550 MHz		+/- 0.3	+/-0.75	dB
3	Input Return Loss	S_{11}	100 – 550 MHz	18	20		dB
4	Output Return Loss	S_{22}	100 – 550 MHz	18	20		dB
5	Reverse Isolation	S_{12}	100 – 550 MHz		45		dB
6	Noise Figure	NF	100 – 550 MHz		0.80	1.1	dB
7	Output 1dB Gain Compression Point	P_{1dB}	100 – 550 MHz	28	30		dBm
8	Output Third Order Interception Point	IP_3	Two-tone, P_{out}=+10 dBm each, 1 MHz sep.	42	44		dBm
9	Current Consumption	I_{dd}	V_{dd} = +12V		260		mA
10	Power Supply Voltage	V_{dd}		+10	+12	+13	V
11	Thermal Resistance, Junction to Case	$R_{th,c}$	Last stage transistor V_{ds} = 10V, I_{ds} = 220 mA,			30	°C/W
12	Operating Temperature	T_o	--	-40		+85	°C
13	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 6 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, +13
Drain Current	mA	350
Total Power Dissipation	W	3.5
Input CW RF Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	30

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

Functional Block Diagram



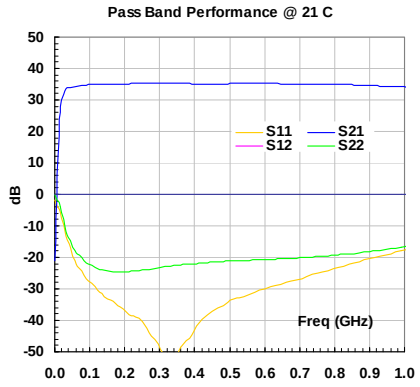
Ordering Information

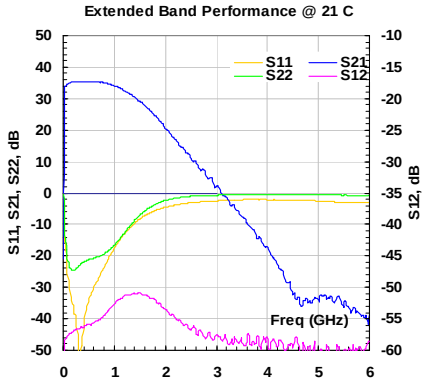
Model	WBA0105B

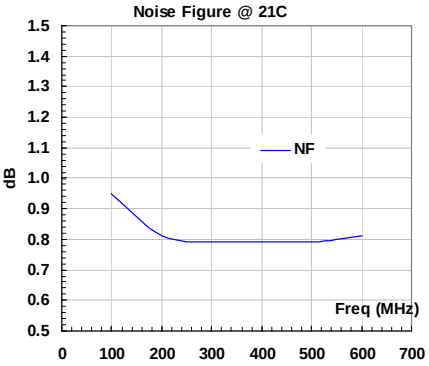
Contact the Factory for built-in output bias-T configuration.

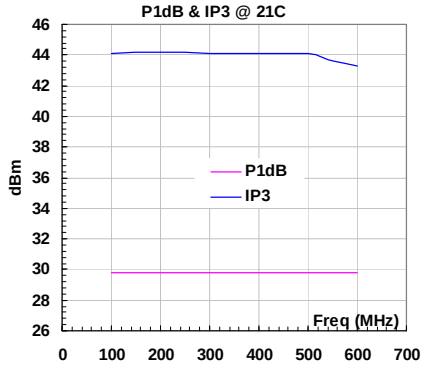
WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

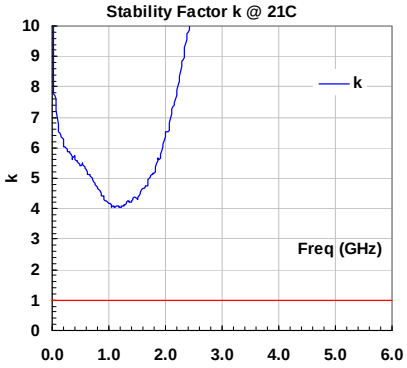
Typical Data





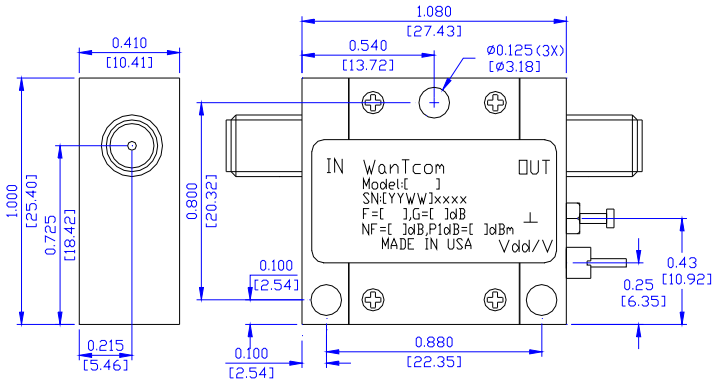






Outline, WP-5 Housing

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



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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 connectors. 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 length should be around 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped wire about 3/4 to 1 turn on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering joint by a Q-tip with alcohol to remove the flux and residue.

Do not use large soldering iron tip with more than 750 degree Fahrenheit to solder the wire and feed thru pin. Damage may occur to the feed thru. 0.010" size tip with 750 degree Fahrenheit temperature setting is suitable for the soldering works.

Repeat the process to solder the DC return wire on the ground turret. Higher temperature and larger tip can be used for this ground soldering.

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. Always use the appropriate torque setting of the power screwdriver to mount screws.

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