WBA0205A

0.2- 0.65 GHz LOW NOISE WIDE BAND AMPLIFIER

REV C
October 2013

Key Features

- 50 Ohm Impedance
- 0.2 ~ 0.65 GHz
- 0.60 dB Noise Figure
- 29.0 dBm Output IP_3
- 23.0 dB Gain
- +/-0.50 dB Gain Flatness
- 16.0 dBm P_{1dB}
- 1.35:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS compliant

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WBA0205A 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 DC power operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has field replaceable SMA connectorized Gold plated WP-11 housing.

The amplifier is designed to meet the rugged standard of MIL-STD-202.

Applications

- Mobile Infrastructures
- CATV
- Pager
- VHF & UHF
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications at room temperature, 21 ^{0}C

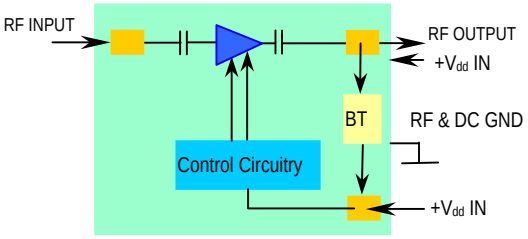
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	0.2 – 0.65 GHz	21.5	23	24.5	dB
2	Gain Variation	ΔG	0.2 – 0.65 GHz		+/- 0.5	+/-0.75	dB
3	Input VSWR	SWR_1	0.2 – 0.65 GHz		1.35:1	1.5:1	Ratio
4	Output VSWR	SWR_2	0.2 – 0.65 GHz		1.35:1	1.5:1	Ratio
5	Reverse Isolation	S_{12}	0.2 – 0.65 GHz		25		dB
6	Noise figure	NF	0.2 – 0.65 GHz		0.6	0.8	dB
7	Output Power 1dB Compression Point	P_{1dB}	0.2 – 0.65 GHz	13	16		dBm
8	Output-Third-Order Interception Point	IP_3	Two-Tone, P_{out} +0 dBm each, 1 MHz separation	25	29		dBm
9	Current Consumption	I_{dd}	V_{dd}= +5 V		35	40	mA
10	Power Supply Voltage	V_{dd}	WBA0205A	+4.7	+5	+5.3	V
			WBA0205B	+7.0		+25	
11	Thermal Resistance	$R_{th,c}$	Junction to case			220	^{o}C/W
12	Operating Temperature	T_o		-40		+85	^{o}C
13	Maximum CW RF Input Power	$P_{IN, MAX}$	DC – 6 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 6.0 (+25V for WBA0205B)
Drain Current	mA	80
Total Power Dissipation	mW	400
CW RF Input Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	220

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

Functional Block Diagram



Ordering Information

Model Number	WBA0205A	WBA0205ABT	WBA0205B	WBA0205BBT
Feature	V_{dd} =+5.0V	With bias-T at Output	V_{dd} = +7.0 ~ +25.0V	With bias-T at Output

Specifications and information are subject to change without notice.

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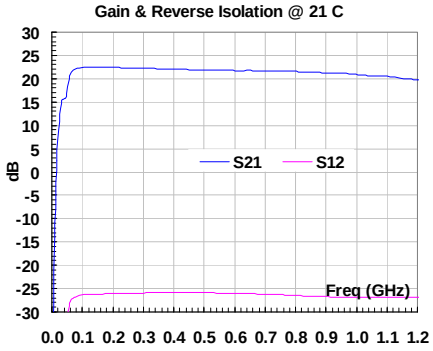
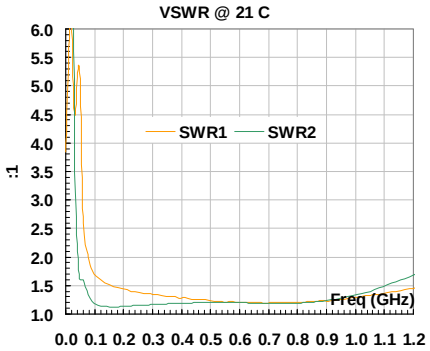
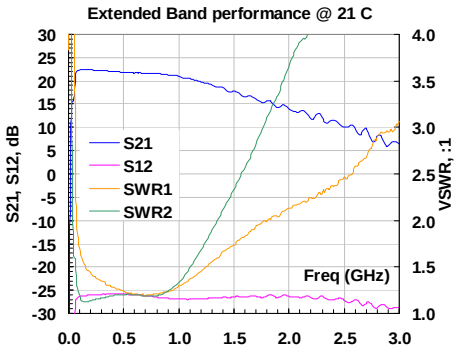
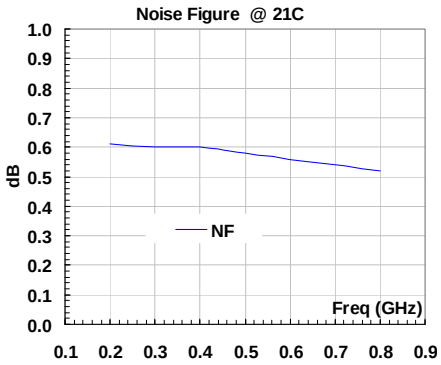
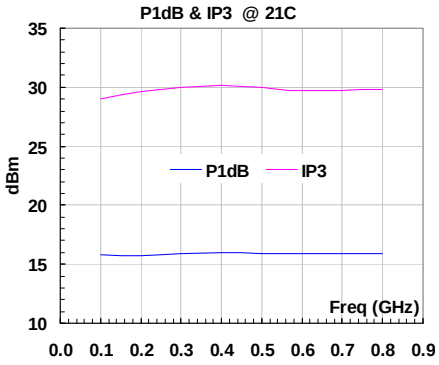
Typical Data

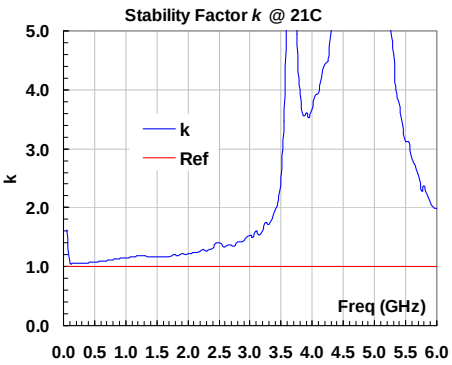








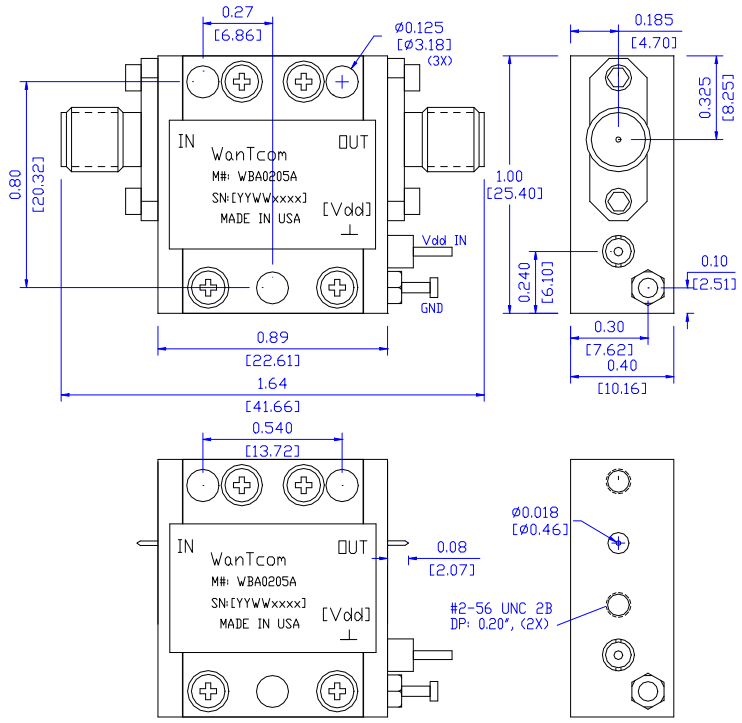




Outline, WP-11 Housing

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

V_{dd} IN feed thru and GND turret are not installed for -BT versions



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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.

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