WBA0180210A

0.27 dB ULTRA LOW NOISE FIGURE 180 – 210 MHz AMPLIFIER

REV A
January 2017

Key Features

- 0.27 dB Noise Figure @ RT
- +/-0.10 dB Gain Flatness
- 50 Ohm Impedance
- 180 ~ 210 MHz
- 27.0 dB Gain
- 10.0 dBm Output P_{1dB}
- 1.25:1 VSWR
- 23.0 dBm Output IP_3
- >34 years MTBF
- Unconditional Stable
- RoHS Compliant
- Meet MIL-STD-202g

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WBA0180210A 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 room temperature super conductive alike low noise performance with the best input and output matching in the specified frequency range. The amplifier has standard SMA connectorized WP-11 Gold plated housing.

Applications

- Magnetic Resonance Imaging
- VHF Communications
- Defense
- Measurement
- Fixed Wireless

Specifications

Summary of the electrical specifications at room temperature

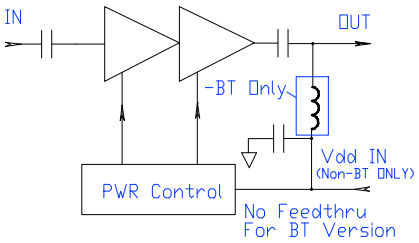
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	180 – 210 MHz	25	27	29	dB
2	**Gain Variation**	**ΔG**	180 – 210 MHz		**+/- 0.10**	**+/-0.25**	**dB**
3	Input VSWR	SWR_1	180 – 210 MHz		1.22:1	1.35:1	Ratio
4	Output VSWR	SWR_2	180 – 210 MHz		1.22:1	1.35:1	Ratio
5	**Noise Figure**	**NF**	**180 – 210 MHz**		**0.27**	**0.35**	**dB**
6	Reverse Isolation	S_{12}	180 – 210 MHz	40	50		dB
7	Output IP_3	IP_3	180 – 210 MHz	20	23		dBm
8	Output Power 1dB Compression Point	P_{1dB}	180 – 210 MHz	8	10		dBm
9	Current Consumption	I_{dd}	V_{dd} = 7 ~ 16V		25		mA
10	Power Supply Voltage	V_{dd}		+7	+12	+15	V
11	Operating Temperature	T_o		-40		+85	°C
12	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 6 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5/16.0
Drain Current	mA	50
Total Power Dissipation	mW	400
Input CW RF Power	dBm	10
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	120

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

Functional Block Diagram



Ordering Information

Without Output Bias-T	With Output Bias-T
WBA0180210A	**WBA0180210ABT**

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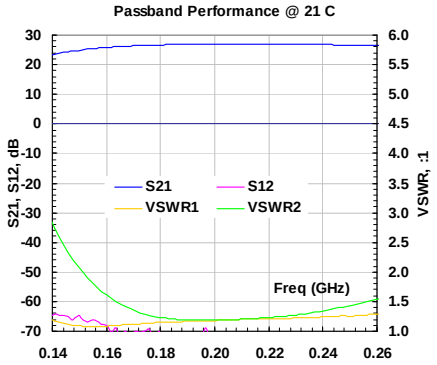
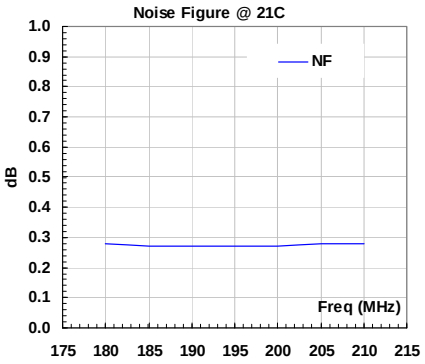
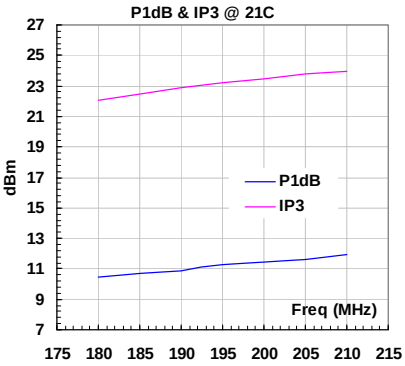
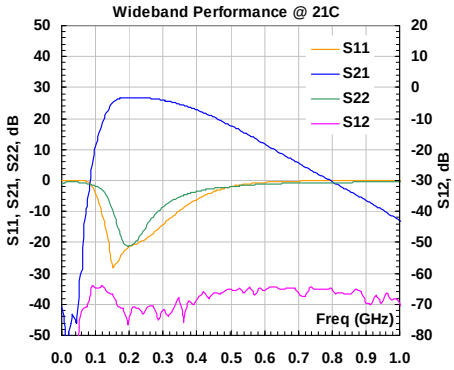
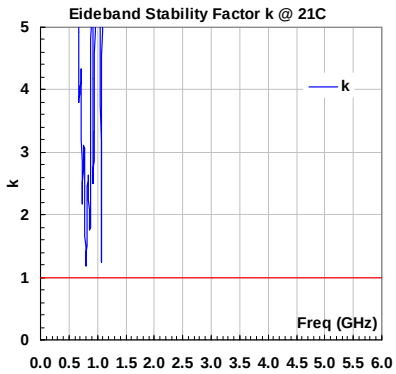
Typical Data:







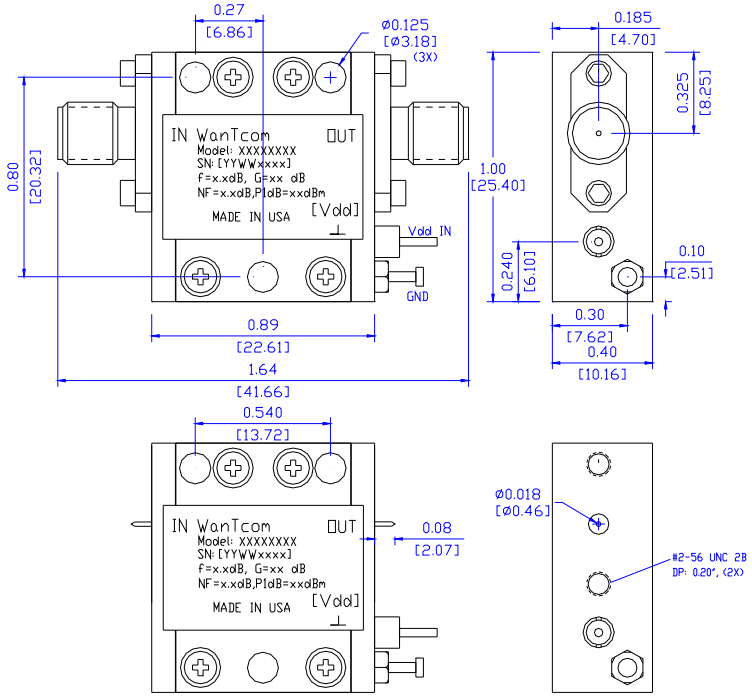




Outline, WP-11 Housing

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

V_{dd} IN Pin and Ground Turret are not installed for BT versions



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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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