



WBA0002M

50 Ohm LOW NOISE AMPLIFIER FOR MRI APPLICATIONS

REV B

September 2021

Key Features



- 50 Ohm
- 10.0 ~ 100.0 MHz
- 0.70 dB noise figure
- 22.0 dBm output IP₃
- 34.0 dB Gain
- 10.0 dBm P_{1dB}
- Single Power Supply
- >34 years MTBF
- Unconditional Stable
- RoHS compliant

Product Description

WBA0002M series integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband, and high linearity together. With single +7.0V ~ +13.0V 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-5 Gold plated housing.

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

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

Applications

- Radio Imaging
- VHF
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WBA0002M at room temperature

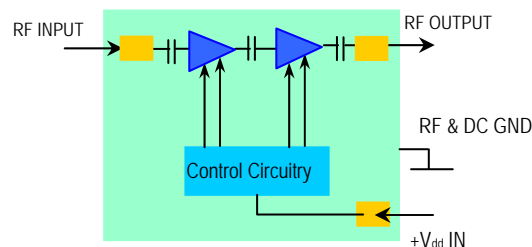
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	10.0 – 100.0 MHz		34		dB
2	Gain Variation	ΔG	10.0 – 100.0 MHz		+/- 0.2	+/-0.5	dB
3	Input VSWR	SWR_1	10.0 – 100.0 MHz			1.8:1	Ratio
4	Output VSWR	SWR_2	10.0 – 100.0 MHz			1.5:1	Ratio
5	Reverse Isolation	S_{12}	10.0 – 100.0 MHz		40		dB
6	Noise figure	NF	10.0 – 12.0 MHz			1.5	dB
			12.0 – 100.0 MHz		0.7	1.0	
7	Output Power 1dB Compression Point	P _{1dB}	10.0 – 100.0 MHz		10		dBm
8	Output-Third-Order Interception Point	IP ₃	Two-Tone, P _{out} +0 dBm each, 1 MHz separation	18	22		dBm
9	Current Consumption	I _{dd}			50		mA
10	Power Supply Voltage	V _{dd}		+7.0	+10	+13	V
11	Operating Temperature	T _o		-40		+85	°C
12	Maximum Input CW RF Input Power	P _{IN, MAX}	DC – 6 GHz			13	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	+16V
Drain Current	mA	50
Input CW RF Power	dBm	13
Junction 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

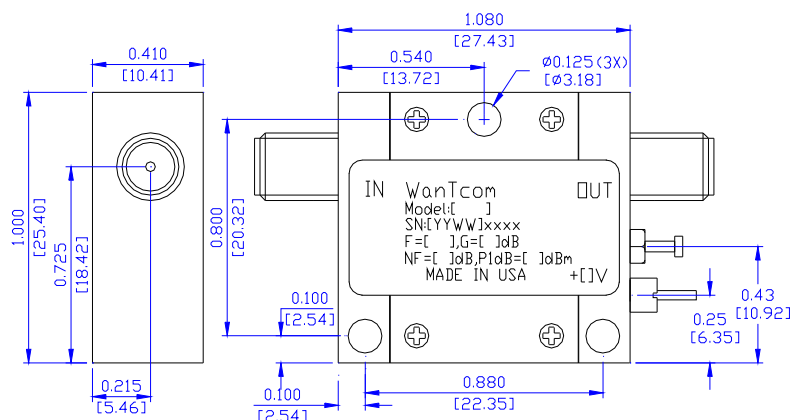
Model Number	WBA0002M
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Specifications and information are subject to change without notice.

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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 good 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 to 2 turns 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.

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.
