WBA0005A

70 - 500 MHz WIDE BAND LOW NOISE AMPLIFIER

REV A
May 2010

Key Features

- 70 ~ 500 MHz
- 30 dB Gain
- 12.0 dBm Output P_{1dB}
- 0.80 dB Noise Figure
- +/-0.50 dB Gain Flatness
- 1.5:1 VSWR
- Single power supply
- >34 years MTBF
- Unconditional stable
- RoHS compliant
- Meet MIL-STD-202

Product Description

WBA0005A integrates WanTcom proprietary power 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 +5.0V 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-11 gold plated housing.

Applications

- VHF & UHF
- Defense
- Point-to-Point
- Measurement
- Fixed Wireless

Preliminary

Specifications

Summary of the electrical specifications WBA0005A at room temperature

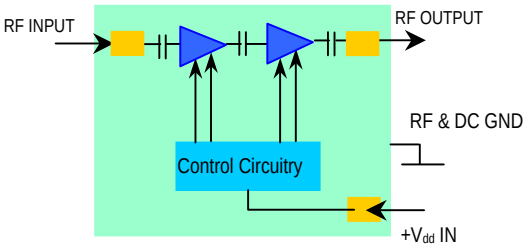
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	70 – 500 MHz		30		dB
2	Gain Variation	ΔG	70 – 500 MHz		+/- 0.5	+/-0.75	dB
3	Input Return Loss	S_{11}	70 – 500 MHz	14	18		dB
4	Output Return Loss	S_{22}	70 – 500 MHz	14	18		dB
5	Reverse Isolation	S_{12}	70 – 500 MHz		30		dB
6	Noise figure	NF	70 – 500 MHz		0.8	1.2	dB
7	Output Power 1dB compression Point	P_{1dB}	70 – 500 MHz		12		dBm
8	Current Consumption	I_{dd}	V_{dd}= +5 V		60		mA
9	Power Supply Voltage	V_{dd}		+4.7	+5	+5.2	V
10	Thermal Resistance	$R_{th,c}$	Junction to case, 2nd stage, 30 mA@3.0V			220	°C/W
11	Operating Temperature	T_o		-40		+85	°C
12	Maximum Average RF Input Power	$P_{IN, MAX}$	DC – 6 GHz			10	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	6
Drain Current	mA	100
Total Power Dissipation	mW	500
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	WBA0005A

Specifications and information are subject to change without notice.

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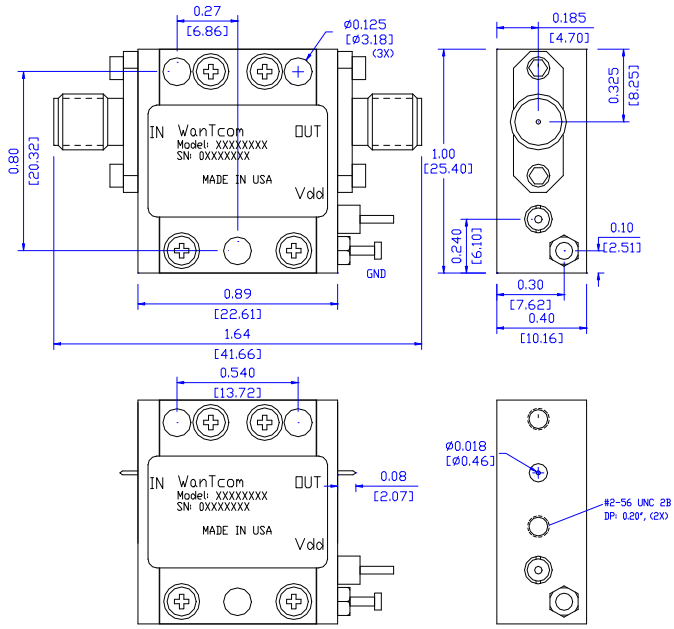
Typical Data:

Outline, WP-11 Housing

UNITS:	INCH [mm]
BODY:	Brass
Finish:	Gold Plating
RF Connector:	SMA F Gold Field Replaceable
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 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.

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