WBPA2040A

2.0- 4.0 GHz 1.5W LOW NOISE WIDE BAND POWER AMPLIFIER

REV A
January 2008

Key Features

- 2.0 ~ 4.0 GHz
- 2.5 dB Noise Figure
- 43.0 dBm Output IP_3
- 35.0 dB Gain
- 1.5W P_{1dB}
- 1.6:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

WBPA2040A integrates WanTcom proprietary low noise power amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum high efficiency, wideband, high linearity, and unconditional stable performances together. With single +10.0V DC operation, the amplifier has built in DC-DC converter and sequencing bias circuitries. The amplifier works in Class-A operation at 50-Ohm impedance system. The amplifier has standard SMA connectorized WP-6 gold plated housing.

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

Applications

- Mobile Infrastructures
- WiMAX
- Defense
- Security System
- Measurement
- Fixed Wireless

Preliminary

Additional Heat Sink Required!

Specifications

Summary of the electrical specifications WBPA2040A at room temperature

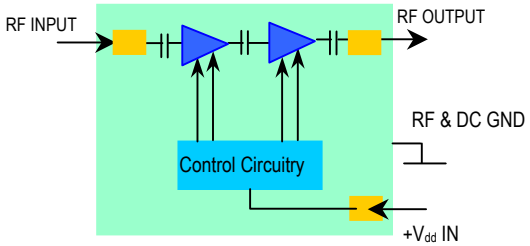
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	2.0 – 4.0 GHz		35		dB
2	Gain Variation	ΔG	2.0 – 4.0 GHz		+/- 1.0	+/-1.5	dB
3	Input VSWR	SWR_1	2.0 – 4.0 GHz		1.6:1	2:1	Ratio
4	Output VSWR	SWR_2	2.0 – 4.0 GHz		1.6:1	2:1	Ratio
5	Reverse Isolation	S_{12}	2.0 – 4.0 GHz	55	65		dB
6	Noise figure	NF	2.0 – 4.0 GHz		2.2	3.0	dB
7	Output Power 1dB compression Point	P_{1dB}	2.0 – 4.0 GHz	31.0	32.0		dBm
8	Output-Third-Order Interception point	IP_3	Two-Tone, P_{out} +20 dBm each, 1 MHz separation	42	44		dBm
9	Current Consumption	I_{dd}	V_{dd}= +10 V		550		mA
10	Power Supply Voltage	V_{dd}		+9.5	+10.0	+10.5	V
11	Thermal Resistance	$R_{th,c}$	Last Stage Transistor, V_{ds} = 10.0V, I_{ds} = 0.40A, Junction to case			18	°C/W
12	Operating Temperature	T_o		-40		+85	°C
13	Maximum Average RF Input Power	$P_{IN, MAX}$	2.0 – 4.0 GHz			5	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	10.5
Drain Current	mA	600
Total Power Dissipation	W	6
RF Input Power	dBm	10
Channel Temperature	°C	160
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	WBPA2040A

Specifications and information are subject to change without notice.

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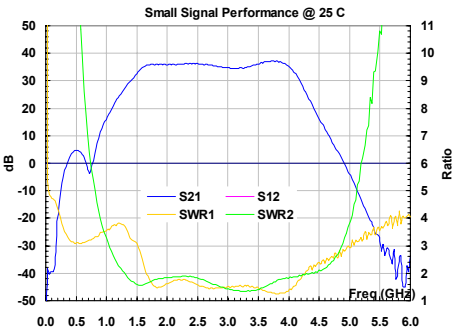
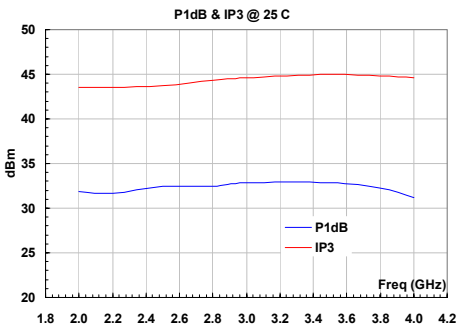
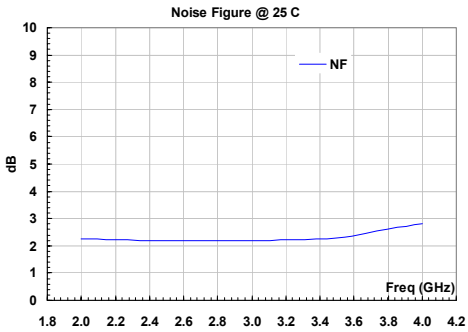
Typical Data

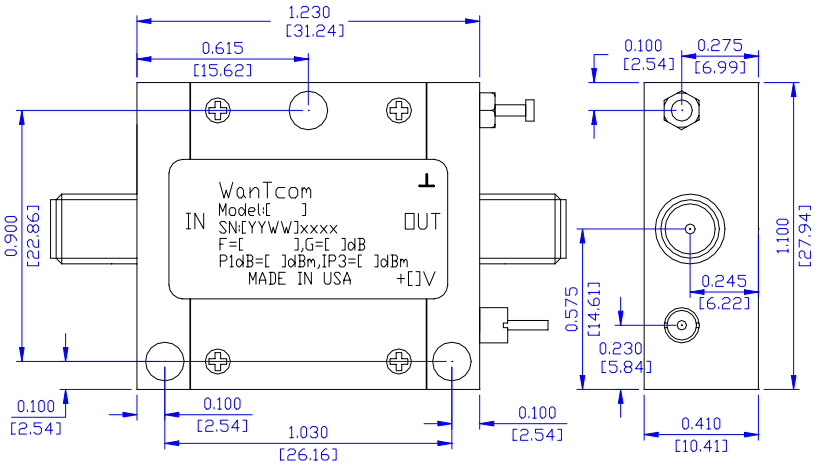






Outline, WP-6 Housing

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.

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