



WBPA0030A

20 MH - 2.8 GHz 2-Watt LOW NOISE POWER AMPLIFIER

REV C

November 2017

Key Features



- 50 Ohm Impedance
- 20 MHz – 2.8 GHz
- **+/- 0.3 dB Gain Flatness**
- 2.20 dB Noise Figure
- 45.0 dBm Output IP₃
- 36.0 dB Gain
- 32.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description



WBPA0030A 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 optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA connectorized WP-9 Gold plated housing.

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

Applications

- Mobile Infrastructures
- WiMax
- GPS
- CATV/DBS
- Defense
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WBPA0030A at room temperature

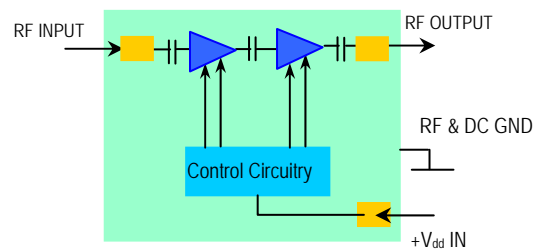
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	20 MHz – 2.75 GHz	35	36	38	dB
2	Gain Variation	ΔG	20 MHz – 2.75 GHz		+/- 0.3	+/-0.6	dB
3	Input VSWR	SWR ₁	20 MHz – 2.75 GHz		1.5:1	1.8:1	Ratio
4	Output VSWR	SWR ₂	20 MHz – 2.75 GHz		1.5:1	2:1	Ratio
5	Reverse Isolation	S ₁₂	20 MHz – 2.75 GHz	55	65		dB
6	Noise Figure	NF	20 MHz – 100 MHz		2.8	4.0	dB
			100 MHz – 2.8 GHz		2.2	3.0	
7	Output 1dB Gain Compression Point	P _{1dB}	20 MHz – 2.75 GHz	30	32		dBm
8	Output 3 rd Order Interception Point	IP ₃	Two-Tone, P _{out} +10 dBm each, 1 MHz separation	42	45		dBm
9	Output 2 nd Order Interception Point	IP ₂	Two-Tone, P _{out} +10 dBm each, 1 MHz separation	45	47		dBm
10	DC Current Consumption	I _{dd}	V _{dd} = +12V		600		mA
11	Power Supply Voltage	V _{dd}		+11.7	+12V	+12.3	V
12	Thermal Resistance	R _{th,c}	Junction to case, last stage transistor			18	°C/W
13	Operating Temperature	T _o		-40		+85	°C
14	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, 13
Drain Current	mA	700
Total Power Dissipation	W	0.8
Input CW RF Power	dBm	10
Junction Temperature	°C	170
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
R _{th,c} , last stage transistor, biased with 400 mA at 9.8V	°C/W	18

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

Functional Block Diagram



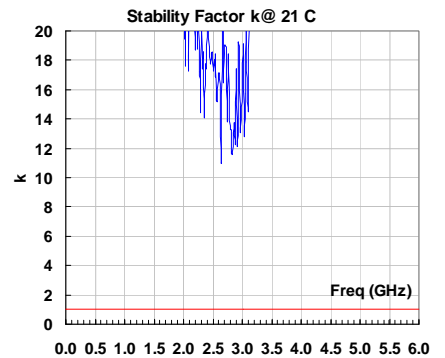
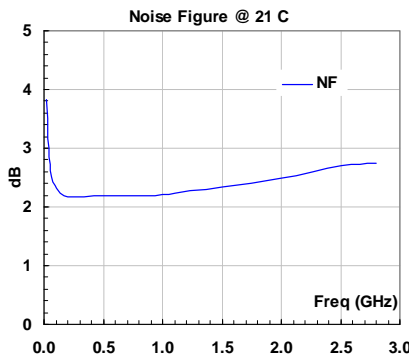
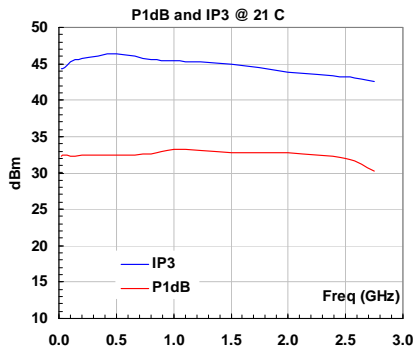
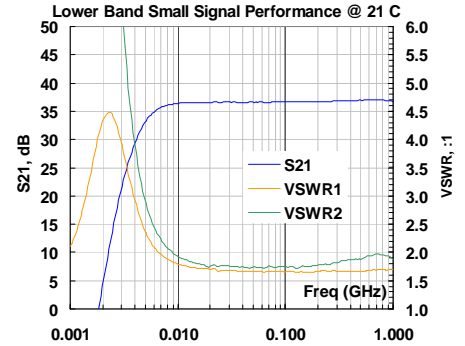
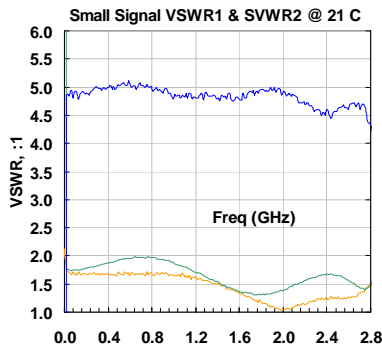
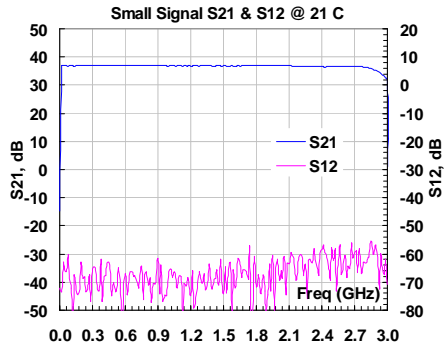
Ordering Information

Model Number	WBPA0030A
--------------	-----------

Specifications and information are subject to change without notice.

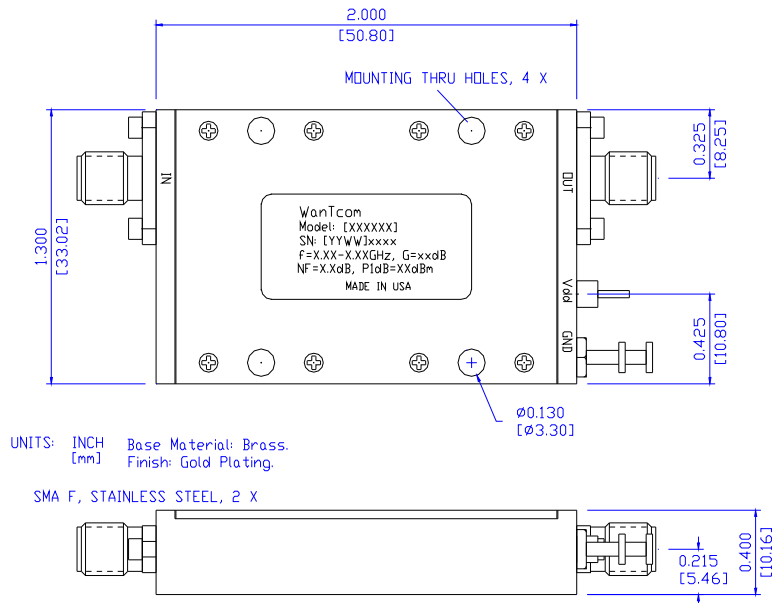


Typical Data



Outline, WP-9 Housing

UNITS: INCH
BODY: Brass
Finish: Gold Plating
RF Connector: SMA F Stainless Steel
V_{dd} PWR: Feed through



Specifications and information are subject to change without notice.



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 four 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. Additional heat sink is required. T-gon thermal film is required between the bottom of the PA and the chase for the effective thermal dissipation. Refer to AN-155 for heat sink design, http://wantcominc.com/engineering_tools.htm.
