



# WBPA0010A

## 30 – 90 MHz 4-WATT WIDE BAND POWER AMPLIFIER

REV E  
November 2017

### Key Features



- 50 Ohm Impedance
- 30 ~ 90 MHz
- 36.0 dBm Output  $P_{1dB}$
- 50.0 dBm Output  $IP_3$
- 20.0 dB Gain
- Exceptional Gain Flatness
- 1.22:1 VSWR
- Single Power Supply
- >68 years MTBF
- Unconditional Stable
- RoHS Compliant

### Product Description

WBPA0010A is integrated with WanTcom proprietary power amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize high power added efficiency, wideband, high linearity, and unconditional stable performances together. With single +10.0V 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-6 Gold plated housing.

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

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

### Applications

- Mobile Infrastructures
- VHF
- FM
- Defense
- Security System
- Measurement
- Fixed Wireless



### Specifications

Summary of the electrical specifications WBPA0010A at room temperature

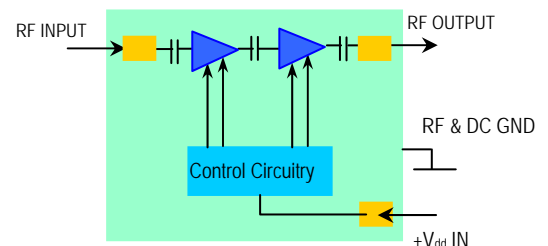
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	$S_{21}$	30 – 90 MHz	18	20	22	dB
2	Gain Variation	$\Delta G$	30 – 90 MHz		+/- 0.2	+/-0.50	dB
3	Input VSWR	$SWR_1$	30 – 90 MHz		1.22:1	1.25:1	Ratio
4	Output VSWR	$SWR_2$	30 – 90 MHz		1.5:1	1.6:1	Ratio
5	Reverse Isolation	$S_{12}$	30 – 90 MHz	40	45		dB
6	Noise Figure	NF	30 – 90 MHz	4		14	dB
7	Output 1dB Gain Compression Point	$P_{1dB}$	30 – 90 MHz	34	36		dBm
8	Output-Third-Order Interception Point	$IP_3$	Two-Tone, $P_{out}$ +20 dBm each, 1 MHz separation	45	50		dBm
9	Current Consumption	$I_{dd}$	$V_{dd} = +10$ V		850		mA
10	Power Supply Voltage	$V_{dd}$		+9	+10	+11	V
11	Thermal Resistance	$R_{th,c}$	Junction to case			8	°C/W
12	Operating Temperature	$T_o$		-40		+85	°C
13	Maximum CW RF Input Power	$P_{IN,MAX}$	DC – 6 GHz			20	dBm
14	Maximum Load Mismatch	$SWR_{LOAD}$	30 – 90 MHz, $P_{1dB}$ Output Power			10:1	Ratio

### Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, 12
Drain Current	A	1.0
Total Power Dissipation	W	12
CW RF Input Power	dBm	20
Junction Temperature	°C	170
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	8.0

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

### Functional Block Diagram



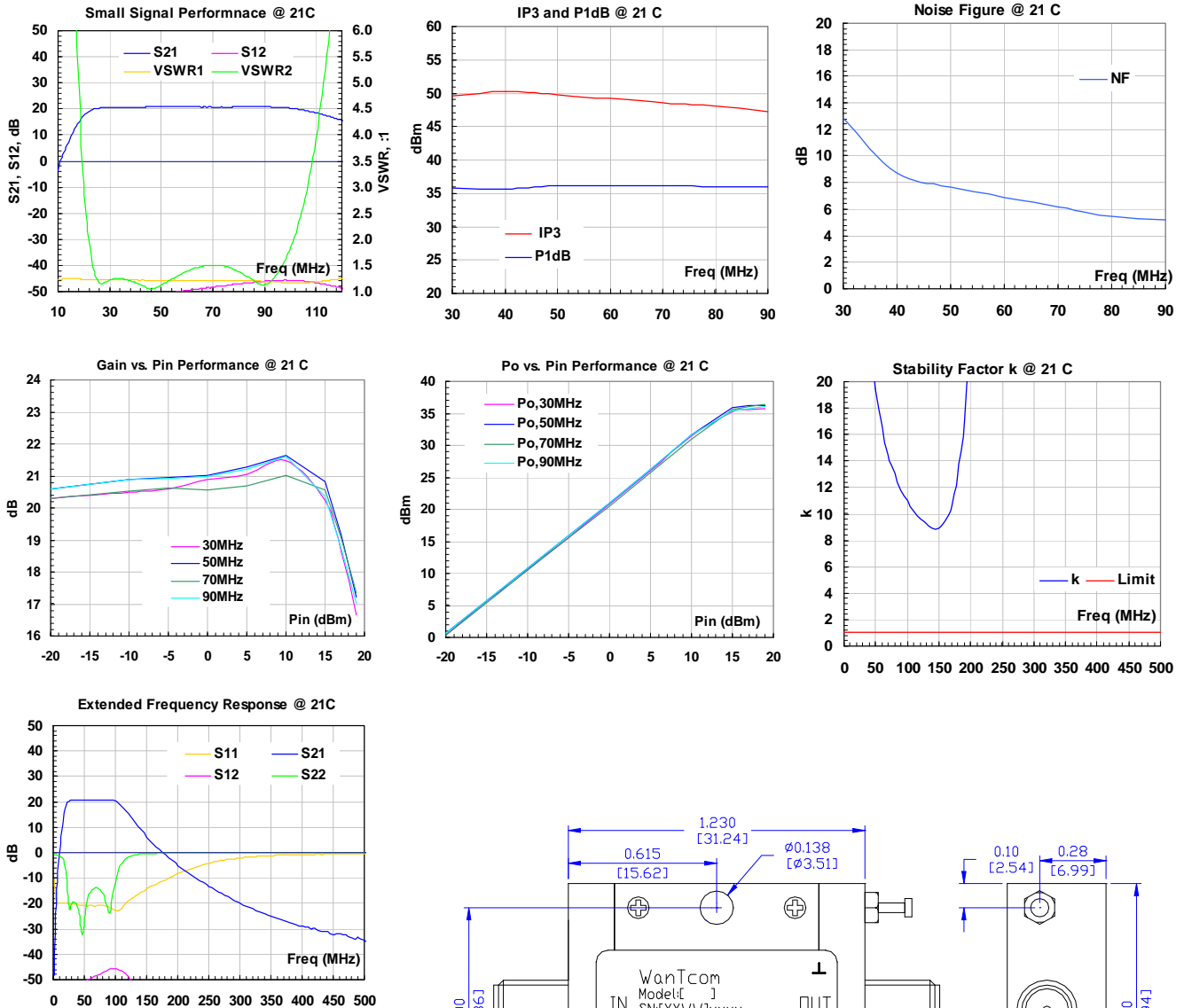
### Ordering Information

Model Number	WBPA0010A
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Specifications and information are subject to change without notice.

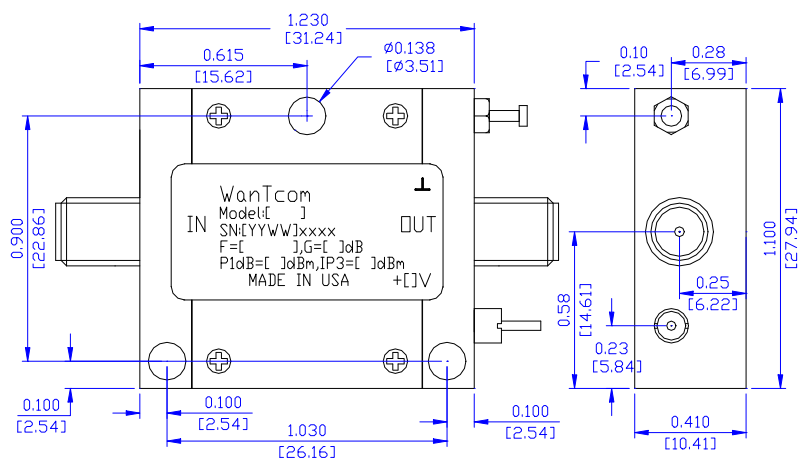


**Typical Data**



**Outline, WP-6 Housing**

UNITS: INCH  
[mm]  
BODY: Brass  
Finish: Gold Plating  
RF Connector: SMA F Gold  
V<sub>dd</sub> PWR: Feed through



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### 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.

High thermal conductivity thermal film such as T-gon is needed between the bottom of the PA and the heat sink surface. Refer to AN-155 for heat sink design, [http://wantcominc.com/engineering\\_tools.htm](http://wantcominc.com/engineering_tools.htm).

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