## **Key Features**



- 50 Ohm Impedance
- 1.0 ~ 1.6 GHz
- 2.6 dB Noise Figure
- 45.0 dBm Output IP<sub>3</sub>
- 27.0 dB Gain
- +/-0.5 dB Gain Flatness
- 33.0 dBm P<sub>1dB</sub>
- 1.35:1 VSWR
- Single DC Power Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

## **Product Description**



WBPA1016A is integrated with WanTcom proprietary power amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum high power, wide bandwidth, high linearity, and unconditional stable performances together. With single DC voltage operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA miniature connectorized WP-5 Gold plated housing.

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

## **Applications**

- Mobile Infrastructures
- GPS
- Astronomy
- Defense
- Security System
- Measurement
- Fixed Wireless



Additional heat sink is required for continuous operation!

## **Specifications**

Summary of the electrical specifications WBPA1016A at room temperature

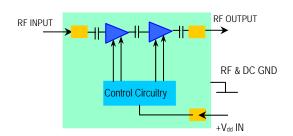
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S <sub>21</sub>	1.0 – 1.6 GHz	25	27	29	dB
2	Gain Variation	ΔG	1.0 – 1.6 GHz		+/- 0.5	+/-0.75	dB
3	Input VSWR	SWR₁	1.0 – 1.6 GHz		1.35:1	1.5:1	Ratio
4	Output VSWR	SWR <sub>2</sub>	1.0 – 1.6 GHz		1.35:1	1.5:1	Ratio
5	Reverse Isolation	S <sub>12</sub>	1.0 – 1.6 GHz		48		dB
6	Noise Figure	NF	1.0 – 1.6 GHz		2.6	3.0	dB
7	Output 1dB Gain Compression Point	P <sub>1dB</sub>	1.0 – 1.6 GHz	31	33		dBm
8	Output Third Order Interception Point	IP <sub>3</sub>	Two-tone, P <sub>out</sub> =+20 dBm each, 1 MHz sep.	42	45		dBm
9	Current Consumption	I <sub>dd</sub>	$V_{dd} = +12V$		500		mA
10	Power Supply Voltage	$V_{dd}$		+11.7	+12.0	+12.3	V
11	Thermal Resistance, Junction to Case	R <sub>th,c</sub>	Last stage transistor V <sub>ds</sub> = 10V, I <sub>ds</sub> = 400 mA			18	°C/W
12	Operating Temperature	To		-40		+85	°C
13	Maximum Input CW RF Power	P <sub>IN, MAX</sub>	DC – 6 GHz			13	dBm

# **Absolute Maximum Ratings**

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, +13V
Drain Current	mA	700
Total Power Dissipation	W	6.5
Input CW RF Power	dBm	13
Junction Temperature	°C	160
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	18

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

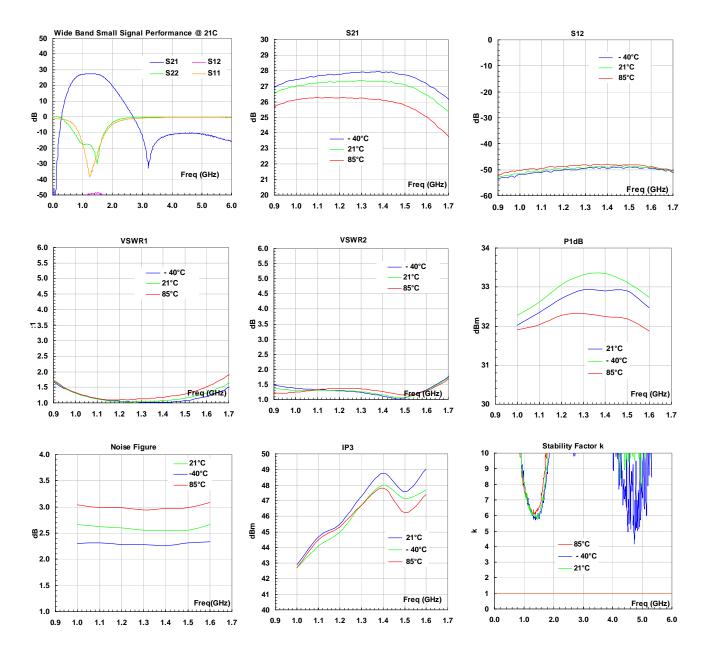
# **Functional Block Diagram**



# **Ordering Information**

Model Number	WBPA1016A
Model Number	WDPAIUIOA

# **Typical Data**



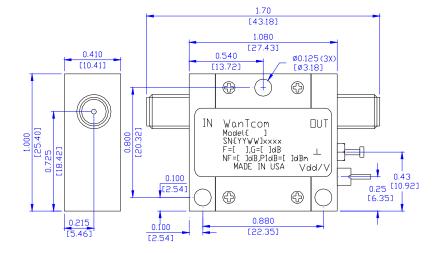
## **Outline, WP-5 Housing**

UNITS: INCH [mm]

BODY: Brass
Finish: Gold Plating
RF Connector: SMA F Gold
V<sub>dd</sub> PWR: Feed through

Tolerance:

X.XX +/- 0.020" X.XXX +/- 0.01"



## **Application Notes:**

#### A. SMA Torque Wrench Selection

Always use a torque wrench with  $5 \sim 6$  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 connectors. 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 length should be around 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped wire about 3/4 to 1 turn on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering joint by a Q-tip with alcohol to remove the flux and residue.

Do not use large soldering iron tip with more than 750 degree Fahrenheit to solder the wire and feed thru pin. Damage may occur to the feed thru. 0.010" size tip with 750 degree Fahrenheit temperature setting is suitable for the soldering works.

Repeat the process to solder the DC return wire on the ground turret. Higher temperature and larger tip can be used for this ground soldering.

#### C. Mounting the Amplifier

A 1.0" x 1.0" T-gon film is needed between the bottom of the PA and the heat sink for maximum thermal dissipation. Fail to do this may result the PA overheated and damaged. 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. Always use the appropriate torque setting of the power screwdriver to mount screws.

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