



WBPA0102A

70- 175 MHz 5 WATT POWER AMPLIFIER

REV A
March 2014

Key Features



- 50 Ohm Impedance
- 70 ~ 175 MHz
- 5 Watt Output P_{1dB}
- 47.0 dBm output IP_3
- 43.0 dB Gain
- 1.5 dB Noise Figure
- 1.5:1 VSWR
- Single Sower Supply
- >34 Years MTBF
- Unconditional Stable
- RoHS Compliant

Product Description

WBPA0102A integrates 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-202.

Applications

- Broadcast
- VHF
- CATV/DBS
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications WBPA0102A at room temperature

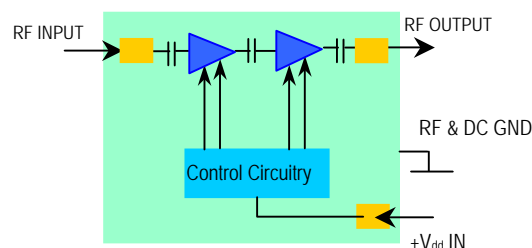
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	70 – 175 MHz		43		dB
2	Gain Variation	ΔG	70 – 175 MHz		+/- 0.3	+/-0.7	dB
3	Input VSWR	SWR_1	70 – 175 MHz		1.5:1	1.8:1	Ratio
4	Output VSWR	SWR_2	70 – 175 MHz		1.5:1	1.8:1	Ratio
5	Reverse Isolation	S_{12}	70 – 175 MHz		40		dB
6	Noise figure	NF	70 – 175 MHz		1.5		dB
7	Output Power 1dB compression Point	P_{1dB}	70 – 175 MHz	36	38		dBm
8	Output-Third-Order Interception point	IP_3	Two-Tone, P_{out} +28 dBm each, 1 MHz separation		47		dBm
9	Current Consumption	I_{dd}	V_{dd} = +28 V, No RF Power		130		mA
10	Power Added Efficiency	η	At P_{1dB} Output Power		40		%
11	Power Supply Voltage	V_{dd}			+28	30	V
12	Thermal Resistance	$R_{th,c}$	Junction to case, last stage transistor			9	°C/W
13	Operating Temperature	T_o		-10		+85	°C
14	Maximum Average RF Input Power	$P_{IN, MAX}$	DC – 6 GHz			24	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	32
Drain Current	mA	600
Total Power Dissipation	W	15
RF Input Power	dBm	22
Channel Temperature	°C	150
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	WBPA0102A
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Preliminary

Specifications and information are subject to change without notice.



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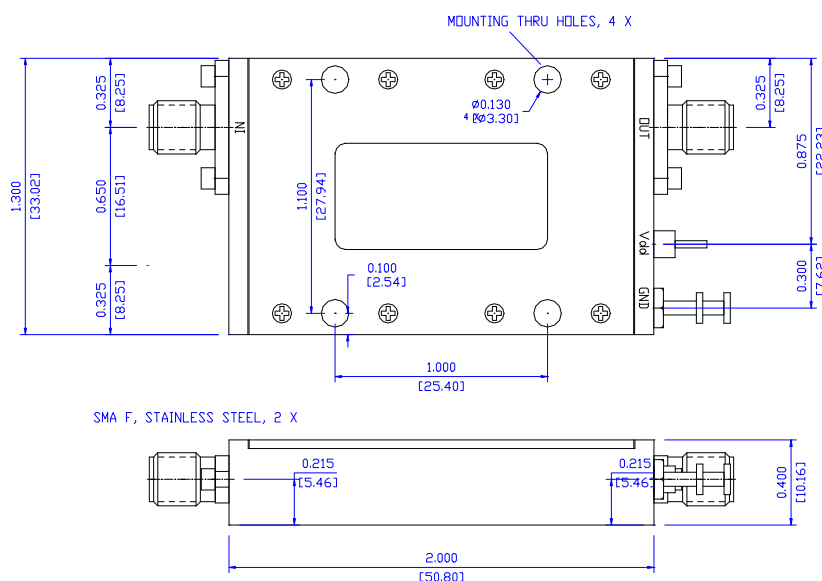
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Typical Data

Outline, WP-9 Housing

UNITS: INCH
[mm]
BODY: Brass
Finish: Gold Plating
RF Connector: SMA F Stainless Steel
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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