WPM0104A

100 - 400 MHz 3 WATTS WIDE BAND POWER AMPLIFIER

REV B
February 2017

Key Features

- 100 ~ 400 MHz
- 2.5 dB Noise Figure
- 49.0 dBm Output IP_3
- 36.0 dB Gain
- +/-0.50 dB Gain Flatness
- 35.0 dBm P_{1dB}
- 1.5:1 VSWR
- Single Power Supply
- >34 years MTBF
- Unconditional stable
- RoHS compliant

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WPM0104A is integrated by 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 +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 WanTcom WPM-5 Gold plated pallet.

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

Applications

- Mobile Infrastructures
- VHF, FM
- CATV
- Security System
- Measurement
- PA Driver

Specifications

Summary of the electrical specifications WPM0104A at room temperature

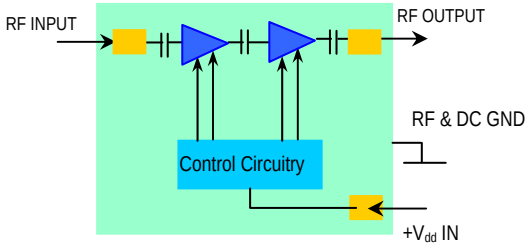
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	100 – 400 MHz		36		dB
2	Gain Variation	ΔG	100 – 400 MHz		+/- 0.5	+/-1.0	dB
3	Input VSWR	SWR_1	100 – 400 MHz		1.35:1	1.8:1	Ratio
4	Output VSWR	SWR_2	100 – 400 MHz		1.5:1	2:1	Ratio
5	Reverse Isolation	S_{12}	100 – 400 MHz		50		dB
6	Noise Figure	NF	100 – 400 MHz		2.5	3.0	dB
7	Output 1dB Gain Compression Point	P_{1dB}	100 – 400 MHz	34	35		dBm
8	Output-Third-Order Interception Point	IP_3	Two-Tone, P_{out} +26 dBm each, 1 MHz separation	45	49		dBm
9	Current Consumption	I_{dd}	V_{dd}= +10 V		950		mA
10	Power Supply Voltage	V_{dd}		+9.5	+10	+10.5	V
11	Thermal Resistance	$R_{th,c}$	Junction to case			8	°C/W
12	Operating Temperature	T_o		-40		+85	°C
13	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 6 GHz			20	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5,12
Drain Current	A	1.1
Total Power Dissipation	W	12
Input CW RF Power	dBm	20
Channel Temperature	°C	150
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
Thermal Resistance	°C/W	8

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

Functional Block Diagram



Ordering Information

Model Number	Package
WPM0104A	**WPM-5**
WBPA0104A	**WP-6**

Specifications and information are subject to change without notice.

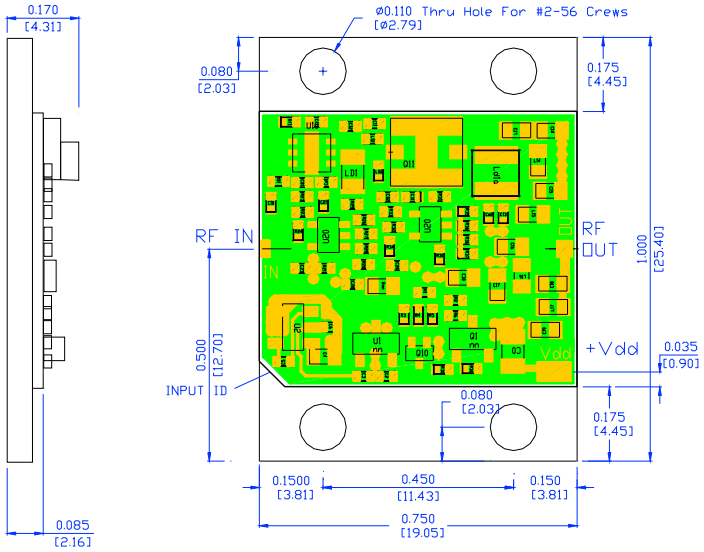
WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

Typical Data

Outline,

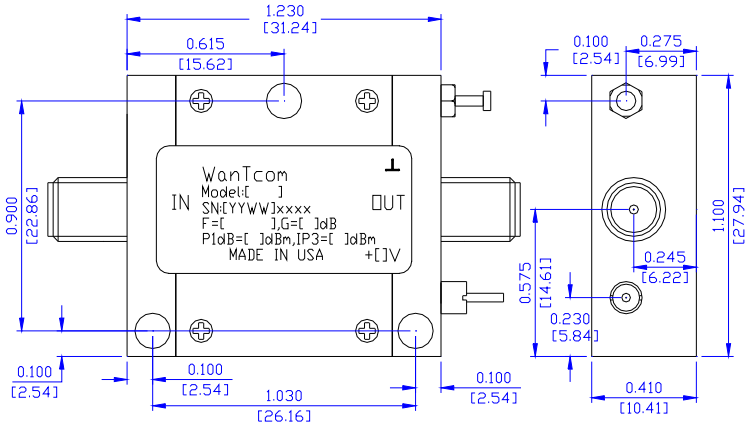
1. WPM-5 Pallet

UNITS:	INCH [mm]
BODY:	Brass
Finish:	Gold Plating
RF Launch:	Microstrip
V_{dd} PWR:	Feed through



2. WP-6

UNITS:	INCH [mm]
BODY:	Brass
Finish:	Gold Plating
RF Connector:	SMA F Gold
V_{dd} PWR:	Feed through



WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

Application Notes:

1. WBPA0104A

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 in WP-6 housing. 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 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 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 or heat sink. The sufficient heat sink is required. Thermal film such as T-gon is required between the bottom of the PA and the top of the heat sink for maximum heat dissipation. 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.

2. WPM0104A

D. Mounting the Amplifier

Use four pieces of #2-56 or M2.5 with longer than 3/8" screws for mounting the amplifier on a metal-based chase or heat sink. Thermal film such as T-gon is required between the bottom of the PA and the top of the heat sink for maximum heat dissipation. The sufficient heat sink is required. 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 the amplifier.

Always be very careful to solder the RF and DC connections to the amplifier. Use 0.01" diameter soldering iron tip to solder the connections. Do not touch any components of the amplifier.

******

WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com