



# WPM0003R

## 20 - 150 MHz 4 WATTS WIDE BAND POWER AMPLIFIER

REV A  
February 2012

### Key Features



- 20 ~ 150 MHz
- 2 ~ 4 dB noise figure
- 49.0 dBm output IP<sub>3</sub>
- 37.0 dB Gain
- +/-0.50 dB Gain Flatness
- 35 dBm P<sub>1dB</sub>
- 1.5:1 VSWR
- Single Power Supply
- >34 years MTBF
- Unconditional stable
- RoHS compliant

### Product Description

WPM0003R 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 +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-1 gold plated pallet.

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

### Applications

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

### Specifications

Summary of the electrical specifications WPM0003R at room temperature

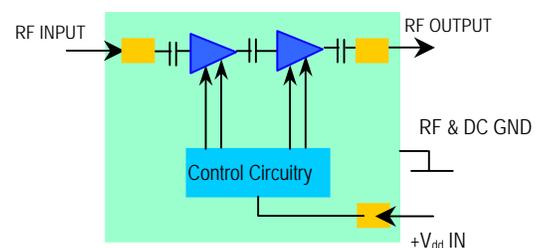
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S <sub>21</sub>	20 – 150 MHz		37		dB
2	Gain Variation	ΔG	20 – 150 MHz		+/- 0.5	+/-1.0	dB
3	Input VSWR	SWR <sub>1</sub>	20 – 150 MHz		1.35:1	1.8:1	Ratio
4	Output VSWR	SWR <sub>2</sub>	20 – 150 MHz		1.5:1	2:1	Ratio
5	Reverse Isolation	S <sub>12</sub>	20 – 150 MHz		60		dB
6	Noise figure	NF	20 – 150 MHz			5	dB
7	Output Power 1dB compression Point	P <sub>1dB</sub>	20 – 150 MHz	34	35		dBm
8	Output-Third-Order Interception point	IP <sub>3</sub>	Two-Tone, P <sub>out</sub> +26 dBm each, 1 MHz separation	45	49		dBm
9	Current Consumption	I <sub>dd</sub>	V <sub>dd</sub> = +10 V		950		mA
10	Power Supply Voltage	V <sub>dd</sub>		+9.5	+10	+10.5	V
11	Thermal Resistance	R <sub>th,c</sub>	Junction to case			8	°C/W
12	Operating Temperature	T <sub>o</sub>		-40		+85	°C
13	Maximum Average RF Input Power	P <sub>IN, MAX</sub>	DC ~ 6 GHz			20	dBm

### Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	12
Drain Current	A	1.1
Total Power Dissipation	W	12
RF Input 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



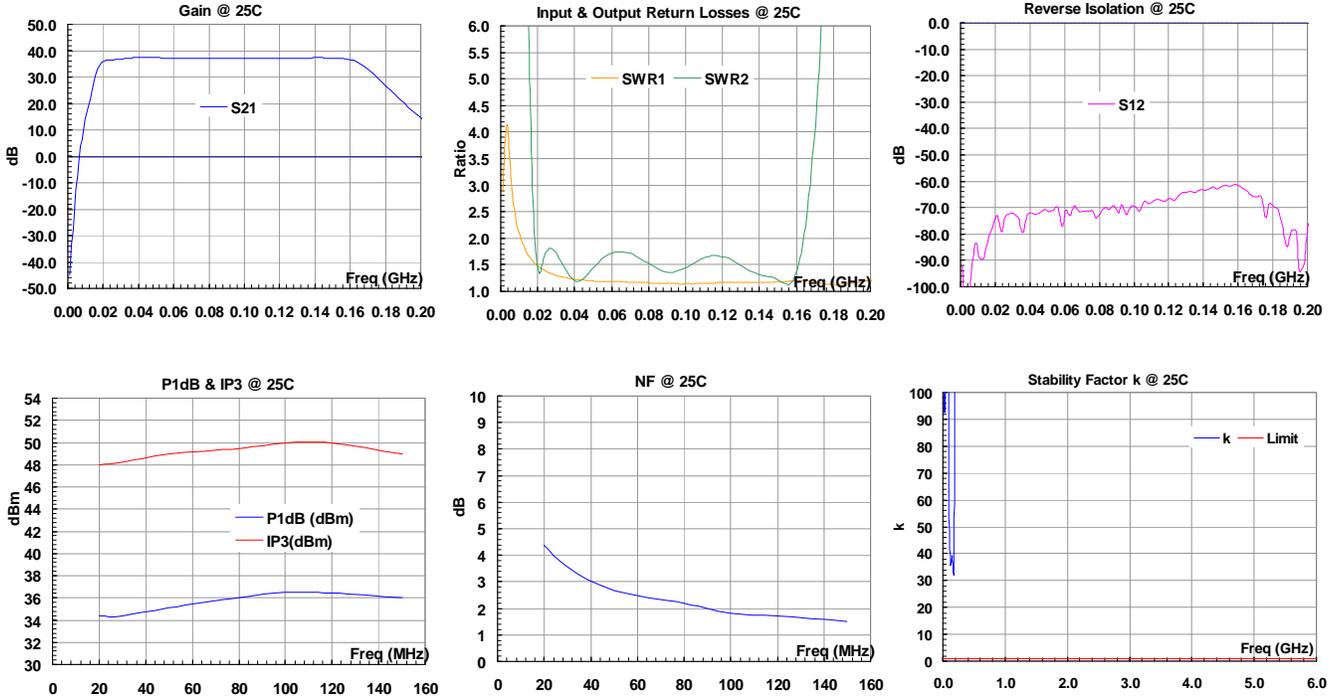
### Ordering Information

Model Number	WPM0003R
WPM0003R	WPM-1
WBPA0003R	WP-6

Specifications and information are subject to change without notice.



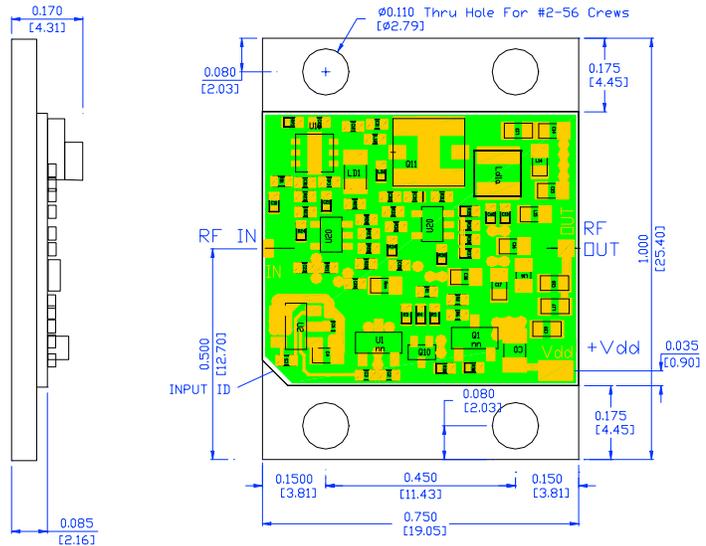
**Typical Data**



**Outline,**

**1. WPM-1 Pallet**

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

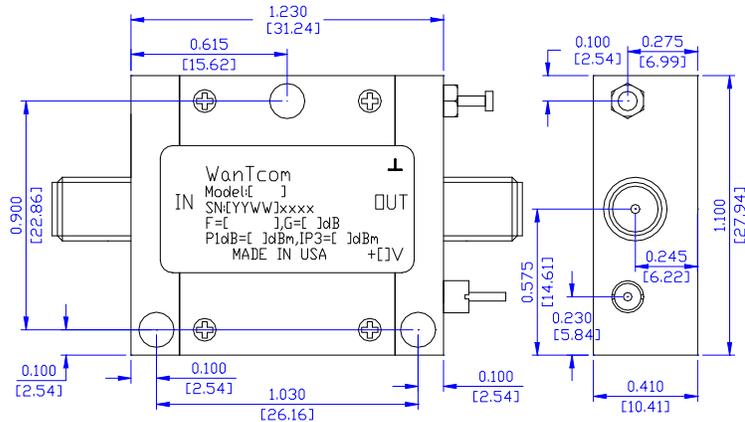


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### 2. WP-6

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



### Application Notes:

#### 1. WBPA0003R

##### 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. 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. WPM0003F

##### 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. The thermal compound is recommended between the bottom of the pallet and 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.

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