



WPM0003F

30 - 250 MHz 4 WATTS WIDE BAND POWER AMPLIFIER

REV C
November 2017

Key Features



- 50 Ohm Impedance
- 30 ~ 250 MHz
- 2 ~ 4 dB Noise Figure
- 49.0 dBm Output IP₃
- 38.0 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

WPM0003F is integrated with WanTcom proprietary power 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 or WP-6 housing.

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

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

Applications

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



WPM0003F



WBPA0003A

Specifications

Summary of the electrical specifications WPM0003F at room temperature

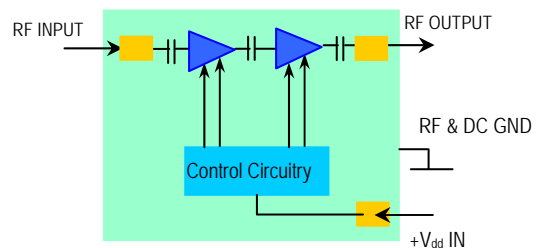
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	30 – 250 MHz		38		dB
2	Gain Variation	ΔG	30 – 250 MHz		+/- 0.5	+/-1.0	dB
3	Input VSWR	SWR ₁	30 – 250 MHz		1.35:1	1.8:1	Ratio
4	Output VSWR	SWR ₂	30 – 250 MHz		1.5:1	2:1	Ratio
5	Reverse Isolation	S ₁₂	30 – 250 MHz		60		dB
6	Noise Figure	NF	30 – 250 MHz		2.0	4.5	dB
7	Output 1dB Gain Compression Point	P _{1dB}	30 – 250 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, last stage power transistor		5	8	°C/W
12	Operating Temperature	T _o		-40		+85	°C
13	Maximum CW RF Input Power	P _{IN, MAX}	0.2 – 4.2 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
CW RF Input Power	dBm	20
Junction Temperature	°C	170
Storage Temperature	°C	-55 ~ 125
Operating Temperature	°C	-40 ~ 85
R _{th,c} , last stage transistor, biased with 800 mA at 9.8V	°C/W	8

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

Functional Block Diagram



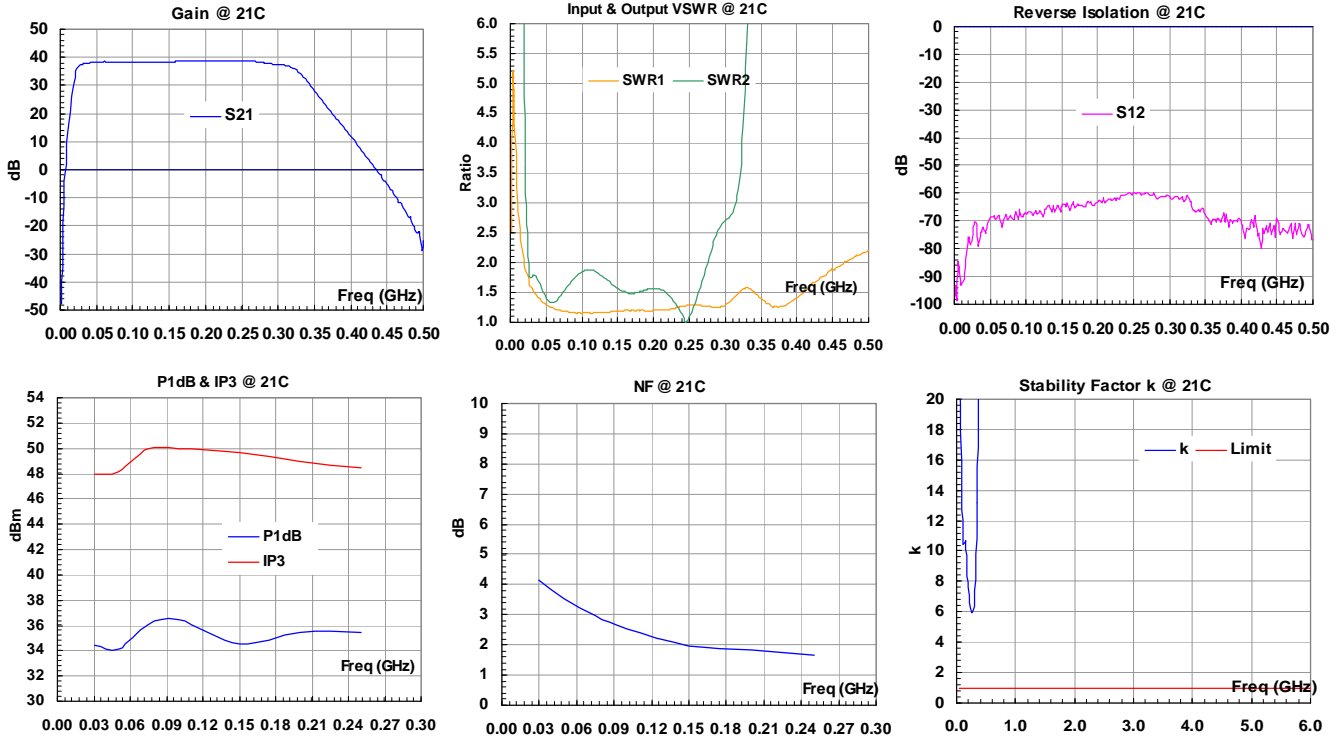
Ordering Information

Model Number	Package
WPM0003F	WPM-1
WBPA0003A	WP-6

Specifications and information are subject to change without notice.



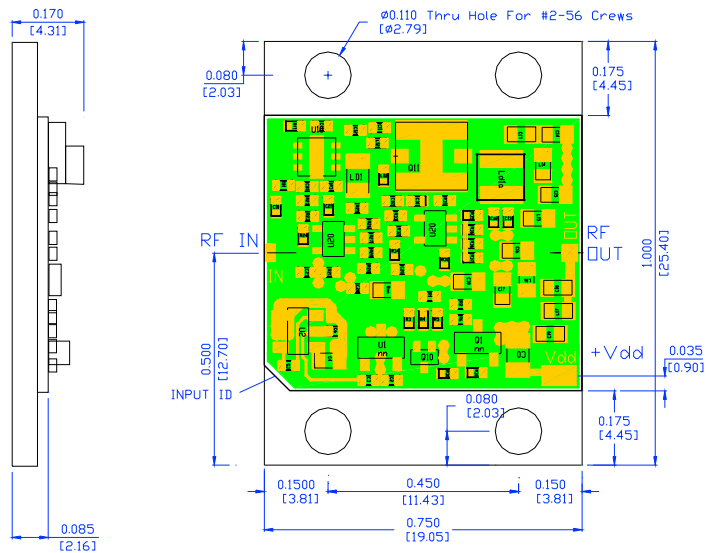
Typical Data



Outline,

1. WPM-1 Pallet

UNITS:	INCH
	[mm]
Pallet:	Brass
Finish:	Gold Plating
RF Launches:	Microstrip
V _{dd} PWR:	Microstrip



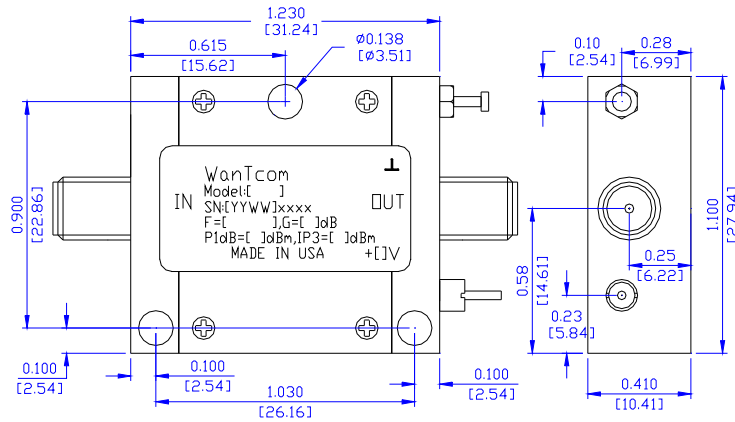
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2. WP-6

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

Tolerance: X.XXX - +/- 0.005"
X.XX - +/- 0.01"



Application Notes:

1. WBPA0003A

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 3/4 to 1 turn 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. Do not use larger soldering iron tip with more than 750 F temperature setting to solder the wire and pin. Too high temperature tip can damage the DC feed thru!

Repeat the process to solder the DC return wire on the ground turret. Larger soldering iron tip and higher temperature setting can be used for the soldering.

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. A piece of T-gon thermal film is needed in between the bottom of the PA and the heat sink to ensure the proper thermal dissipation. The sufficient heat sink is required. Refer to AN-155 for more detail heat sink design. 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. A piece of T-gon thermal film is needed in between the bottom of the PA and the heat sink to ensure the proper thermal dissipation. The sufficient heat sink is required. Refer to AN-155 for more detail heat sink design. 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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