WPA1623G

1.6 – 2.3 GHz 40W POWER AMPLIFIER

REV B
April 2022

Key Features

- 50 Ohm Impedance
- **1.6 ~ 2.3 GHz**
- 1.7 dB noise figure
- 48% Power Added Efficiency
- 48.0 dB Gain
- 46.0 dBm P_{sat}
- 1.22:1 VSWR
- Built-in Input Limiter
- Unconditional Stable
- Infinite Load VSWR Protection
- Over Heating Auto Shut Down
- **Made IN USA**

Product Description

CAUTION: ELECTROSTATIC DISCHARGE SENSITIVE

WPA1623G is integrated with WanTcom proprietary power amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum power added efficiency, wideband, high linearity, and unconditional stable performances together in one box. With single +28V 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-2 clear plated housing.

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

Applications

- Mobile Infrastructures
- DCS, PCS, 3G WCDMA
- Fixed Wireless

Ordering Information

Model No.	WPA1623G

Specifications

Heat sink required for continuous operation!

Summary of the electrical specifications WPA1623G at room temperature

Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Small Signal Gain	S_{21}	1.6 – 2.3 GHz		48		dB
2	Gain Variation	ΔG	1.6 – 2.3 GHz		+/-1.0		dB
3	Input VSWR	SWR_1	1.6 – 2.3 GHz		1.22:1	1.5:1	Ratio
4	Output VSWR	SWR_2	1.6 – 2.3 GHz		1.22:1	1.5:1	Ratio
5	Reverse Isolation	S_{12}	1.6 – 2.3 GHz		70		dB
6	Noise Figure	NF	1.6 – 2.3 GHz		1.7		dB
7	Output Saturated Power	P_{sat}	1.6 – 2.3 GHz	44	46		dBm
8	Output IP3	IP_3	1.6 – 2.3 GHz, 37 dBm each tone, 1 MHz sep.	55	59		dBm
9	DC Power Added Efficiency	η	P_o = 40 W	44	48		%
10	Current Consumption	I_{dd}	V_{dd}= +28 V, 0.37 A quiescent DC bias			3.5	A
11	Power Supply Voltage	V_{dd}	1.6 – 2.3 GHz	26	28	30	V
12	Base Temperature Monitoring Output	V_{to}	0.50 V at 0 °C, 10 mV per °C		10		mV/ °C
13	Thermal Resistance, Junction to case	$R_{th,c}$	Last stage power transistor, V_{ds} =28V, Ids =0.22A			1.3	°C/W
14	Operating Temperature	T_o	Base plate	-20		+70	°C
15	Over Temperature Auto Shut Down	T_{shut}	Base plate threshold temperature		85		°C
16	Maximum Input CW RF Power	$P_{IN, MAX}$	DC – 6 GHz			30	dBm

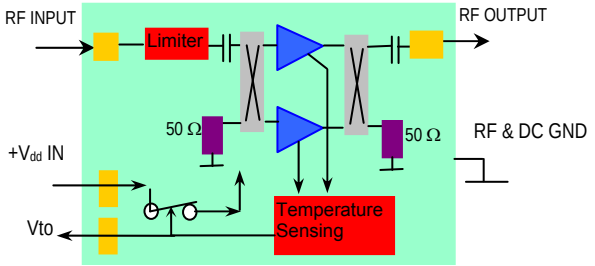
Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	-0.5, +30
DC Voltage Applied to V_{to}	**V**	**-8, +8**
DC Total Current	A	3.5
Total Power Dissipation (Minus RF Output Power)	W	56
CW RF Input Power	dBm	30
Junction Temperature	°C	220
Storage Temperature	°C	-55 ~ 150
Operating Temperature	°C	-20 ~ +85
Maximum Output Load VSWR	**:1**	**∞**
Thermal Resistance	°C/W	1.3

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

Never accidentally apply +28V on V_{to} pin! The amplifier will be permanently damaged if did.

Functional Block Diagram



Specifications and information are subject to change without notice.

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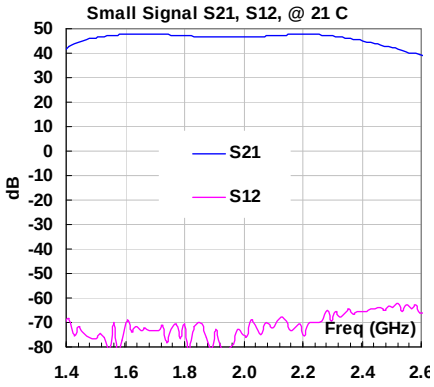
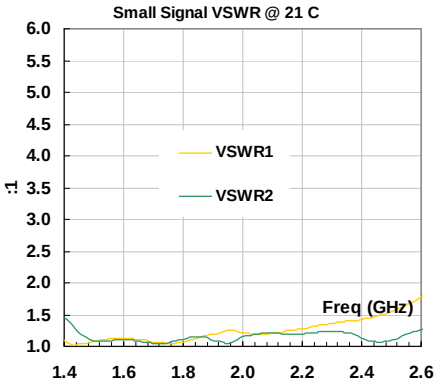
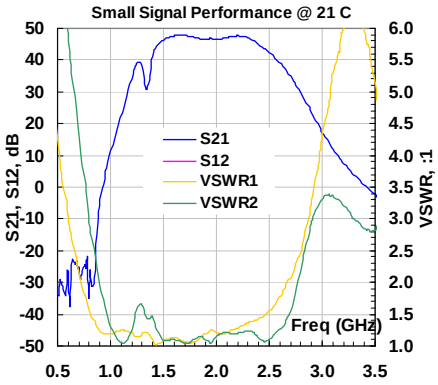
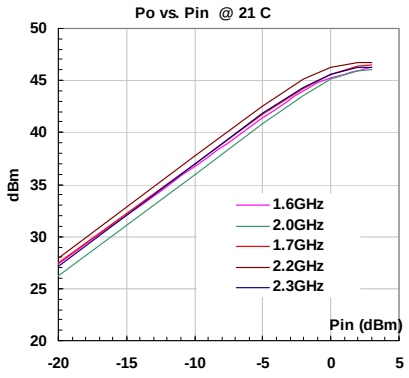
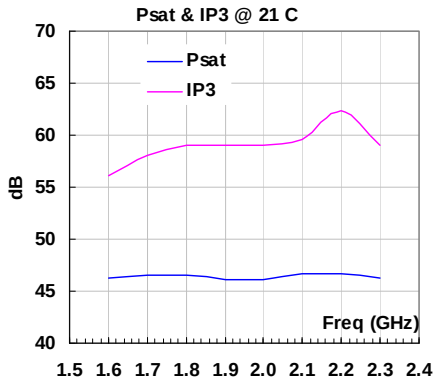
Typical Data

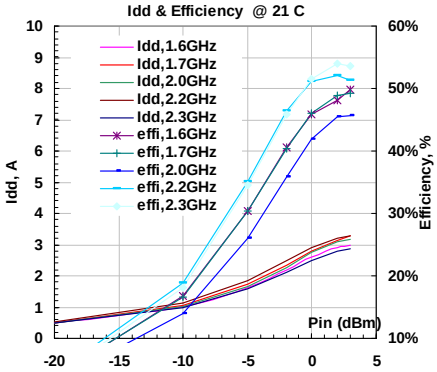


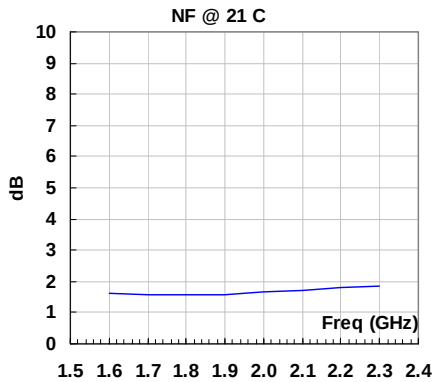


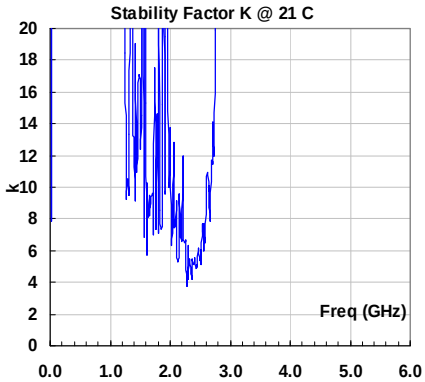












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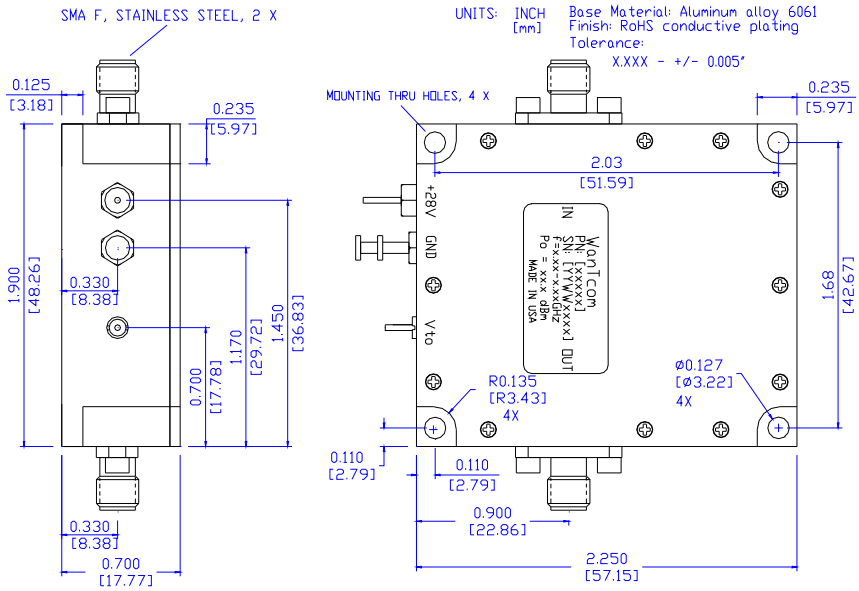
Outline, WP-2 Housing

UNITS:	INCH [mm]
BODY:	Aluminum Alloy
Finish:	Clear Plating
RF Connector:	SMA F Stainless
+28V DC I/O:	Feedthru



Application Notes:

A. Be careful of the 40 Watts output power!

Be very careful of the 40 Watts or higher output power from the amplifier! Always check the power settings to the input of the amplifier so that the output power is well below the maximum allowed power level of test equipment. Otherwise, the test equipment would be permanently damaged!

B. 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 ideal torque wrench choice from Agilent Technology.

C. Mounting the Amplifier

Use four 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. Additional heat sink is required. A T-gon thermal film is required between the bottom of the PA and the heat sink for the effective thermal dissipation. Refer to AN-155 for heat sink design, http://wantcominc.com/engineering_tools.htm.

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