



# WPA09-5055G

900 - 1000 MHz 30W POWER AMPLIFIER

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April 2014

## Key Features



- 50 Ohm Impedance
- 900 ~ 1000 MHz
- 4.3 dB Noise Figure
- 55% Power Added Efficiency
- 50.0 dB Gain
- 45.0 dBm  $P_{sat}$
- 1.35:1 VSWR
- Built-in Input Limiter
- Single Power Supply
- Unconditional Stable
- Infinite Load VSWR Protection
- Over Heating Auto Shut Down

## Product Description

WPA09-5055G integrates 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 Aluminum alloy housing.

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

## Applications

- Mobile Infrastructures
- GSM
- Fixed Wireless

## Ordering Information

| Model | WPA09-5055G |
|-------|-------------|
|-------|-------------|



## Specifications

Summary of the electrical specifications WPA09-5055G at room temperature

| Index | Testing Item                       | Symbol        | Test Constraints                              | Min  | Nom    | Max     | Unit  |
|-------|------------------------------------|---------------|-----------------------------------------------|------|--------|---------|-------|
| 1     | Small Signal Gain                  | $S_{21}$      | 900 – 1000 MHz                                | 48   | 50     | 52      | dB    |
| 2     | Gain Variation                     | $\Delta G$    | 900 – 1000 MHz                                |      | +/-0.5 | +/- 1.0 | dB    |
| 3     | Input VSWR                         | $SWR_1$       | 900 – 1000 MHz                                |      | 1.35:1 | 1.5:1   | Ratio |
| 4     | Output VSWR                        | $SWR_2$       | 900 – 1000 MHz                                |      | 1.35:1 | 1.5:1   | Ratio |
| 5     | Reverse Isolation                  | $S_{12}$      | 900 – 1000 MHz                                |      | 60     |         | dB    |
| 6     | Noise figure                       | NF            | 900 – 1000 MHz                                |      | 4.3    |         | dB    |
| 7     | Output Saturated Power             | $P_{sat}$     | 900 – 1000 MHz                                | 44   | 45     |         | dBm   |
| 8     | DC Power Added Efficiency          | $\eta$        | $P_o = 30$ W CW                               | 45   | 55     |         | %     |
| 9     | Current Consumption                | $I_{dd}$      | $V_{dd} = +28$ V, 0.330 Amp quiescent DC bias | 0.33 |        | 2.5     | A     |
| 10    | DC Power Supply Voltage            | $V_{dd}$      | 900 – 1000 MHz                                | 26   | 28     | 30      | V     |
| 11    | Thermal Resistance*                | $R_{th,c}$    | Junction to case                              |      |        | 1.3     | °C/W  |
| 12    | Operating Temperature              | $T_o$         | Base plate                                    | -20  |        | +70     | °C    |
| 13    | Over Temperature Auto Shut Down    | $T_{shut}$    | Base plate shut down threshold temperature    |      | 85     |         | °C    |
| 14    | Base Temperature Monitoring Output | $V_{to}$      | 0.50 V at 0 °C, 10 mV per °C                  |      | 10     |         | mV/°C |
| 15    | Maximum CW RF Input Power          | $P_{IN, MAX}$ | DC – 6 GHz                                    |      |        | 30      | dBm   |

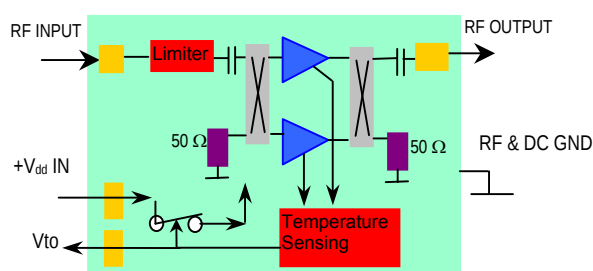
## Absolute Maximum Ratings

| Parameters              | Units | Ratings   |
|-------------------------|-------|-----------|
| DC Power Supply Voltage | V     | -0.5, +30 |
| DC Total Current        | A     | 2.5       |
| Total Power Dissipation | W     | 70        |
| CW RF Input Power       | dBm   | 30        |
| Channel Temperature     | °C    | 150       |
| Storage Temperature     | °C    | -55 ~ 150 |
| Operating Temperature   | °C    | -20 ~ +85 |
| Thermal Resistance*     | °C/W  | 1.3       |
| Voltage to Vto Pin      | V     | -0.5, +6  |

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

\*One of the last stage power transistor,  $V_{dd} = 28$  V,  $I_d = 1.1$  Max.

## Functional Block Diagram



Specifications and information are subject to change without notice.

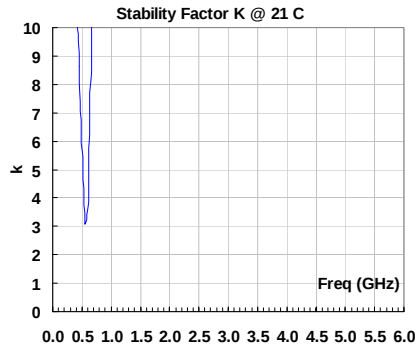
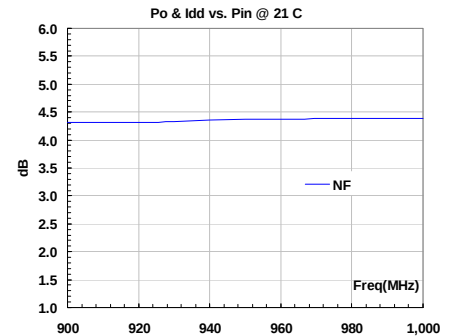
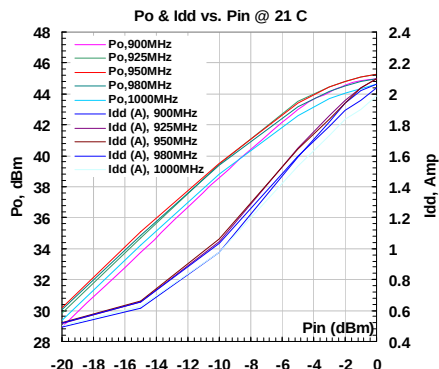
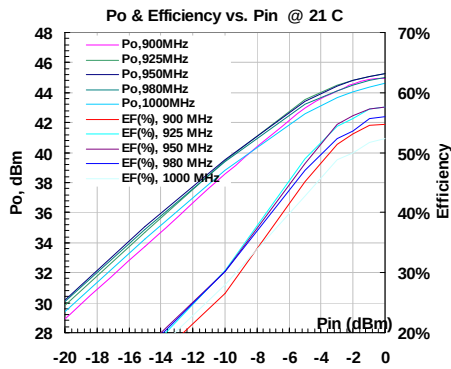
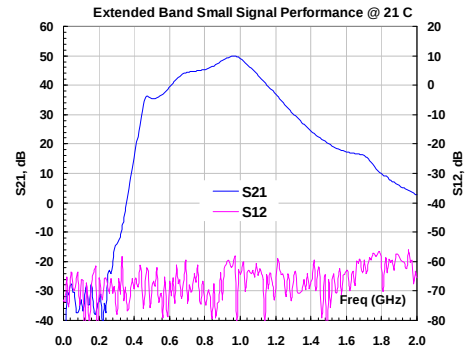
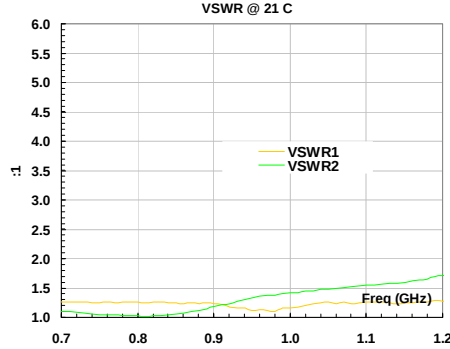
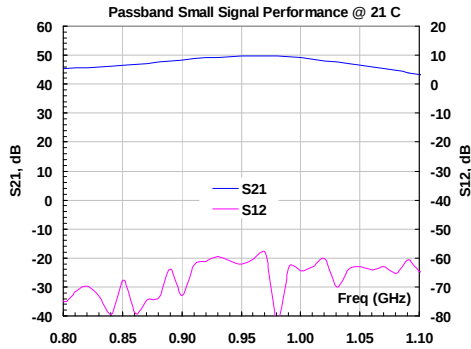


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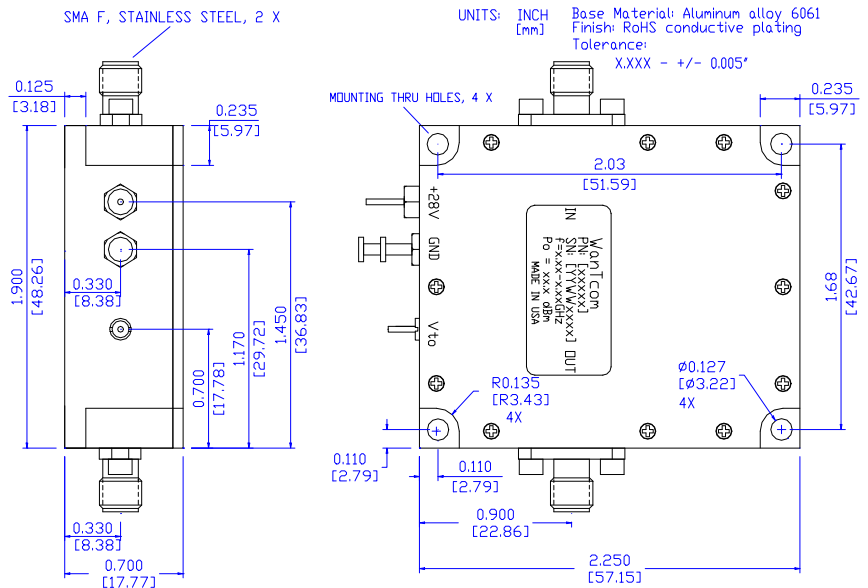
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## Typical Data



## Outline, WP-2 Housing

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



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### Application Notes:

#### A. Be careful of the 30 Watts output power!

**Be very careful of the 30 Watts output power of 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 4 pieces of #4-40 with longer than 3/8" screws for mounting the amplifier on a metal-based heat sink. 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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