



WEA102

0.1- 2.2 GHz LOW NOISE WIDE BAND AMPLIFIER

CAUTION:
ELECTROSTATIC DISCHARGE
SENSITIVE

REV C
June 2013

Key Features



- 50 Ohm Impedance
- 0.1 ~ 1.1 GHz Up to 2.2 GHz
- 0.80 dB Noise Figure
- 34.0 dBm Output IP₃
- 20.0 dB Gain
- 18.0 dBm P_{1dB}
- 16.0 dB Return Losses
- Single Power Supply
- >34 Years MTBF
- RoHS Compliant

Product Description

WEA102 integrates WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband matching, and high linearity performances together. With single +5.0V DC operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA Female connectorized gold plated WP-10E housing.

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

Applications

- Mobile Infrastructures
- GPS
- CATV/DBS
- WiMAX
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications at room temperature

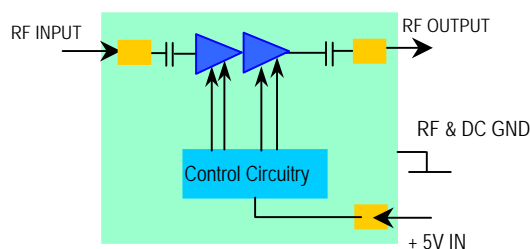
| Index | Testing Item | Symbol | Test Constraints | Min | Nom | Max | Unit |
|-------|---------------------------------------|----------------------|--|------|----------|--------|------|
| 1 | Gain | S ₂₁ | 0.1 – 1.1 GHz | 17 | | 24 | dB |
| 2 | Gain Variation | ΔG | Every 100 MHz bandwidth | | +/- 0.25 | +/-0.4 | dB |
| 3 | Input Return Loss | S ₁₁ | 0.1 – 1.1 GHz | 16 | 18 | | dB |
| 4 | Output Return Loss | S ₂₂ | 0.1 – 1.1 GHz | 16 | 18 | | dB |
| 5 | Reverse Isolation | S ₁₂ | 0.1 – 1.1 GHz | 20 | 22 | | dB |
| 6 | Noise figure | NF | 0.1 – 1.1 GHz | | 0.80 | 1.0 | dB |
| 7 | Output Power 1dB Compression Point | P _{1dB} | 0.1 – 1.1 GHz | 16 | 18 | | dBm |
| 8 | Output-Third-Order Interception Point | IP ₃ | Two-Tone, P _{out} = +0 dBm each, 1 MHz separation | 30 | 34 | | dBm |
| 9 | Current Consumption | I _{dd} | V _{dd} = + 5 V | 55 | 60 | 70 | mA |
| 10 | Power Supply Voltage | V _{dd} | | +4.7 | +5 | +5.3 | V |
| 11 | Thermal Resistance | R _{th,c} | Junction to case | | | 220 | °C/W |
| 12 | Operating Temperature | T _o | | -40 | | +85 | °C |
| 13 | Maximum Average RF Input Power | P _{IN, MAX} | DC – 6.0 GHz | | | 10 | dBm |

Absolute Maximum Ratings

| Parameters | Units | Ratings |
|-------------------------|-------|-----------|
| DC Power Supply Voltage | V | 6.0 |
| Drain Current | mA | 75 |
| Total Power Dissipation | mW | 450 |
| RF Input Power | dBm | 10 |
| Channel Temperature | °C | 150 |
| Storage Temperature | °C | -65 ~ 150 |
| Operating Temperature | °C | -54 ~ 100 |
| Thermal Resistance | °C/W | 220 |

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

Functional Block Diagram



Ordering Information

| | |
|--------------|--------|
| Model Number | WEA102 |
|--------------|--------|

Specifications and information are subject to change without notice.



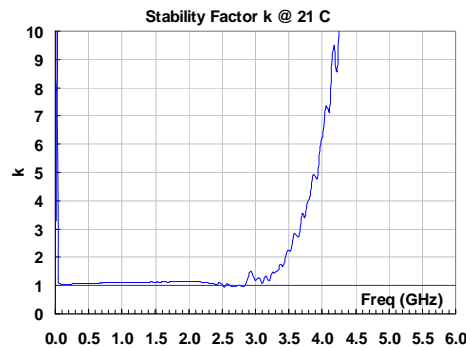
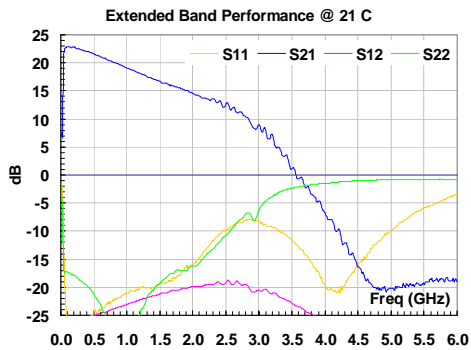
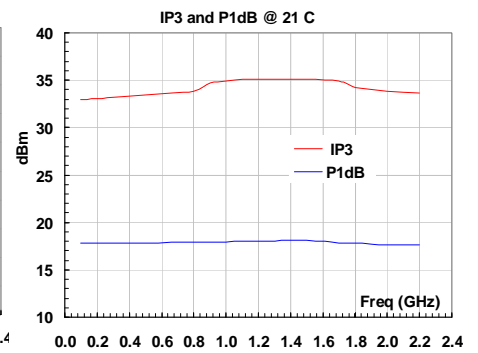
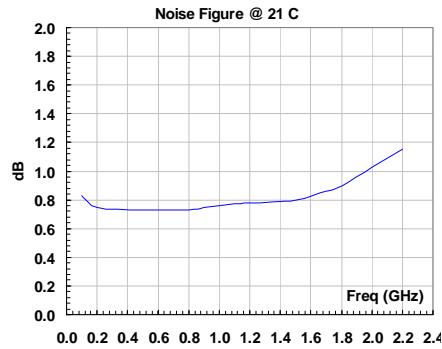
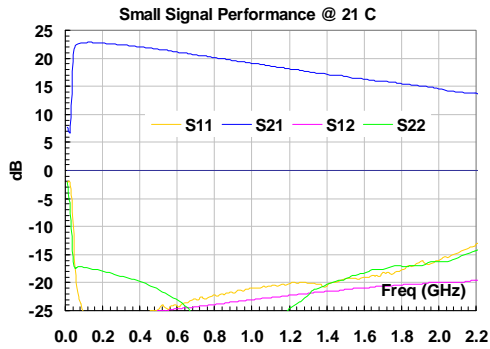
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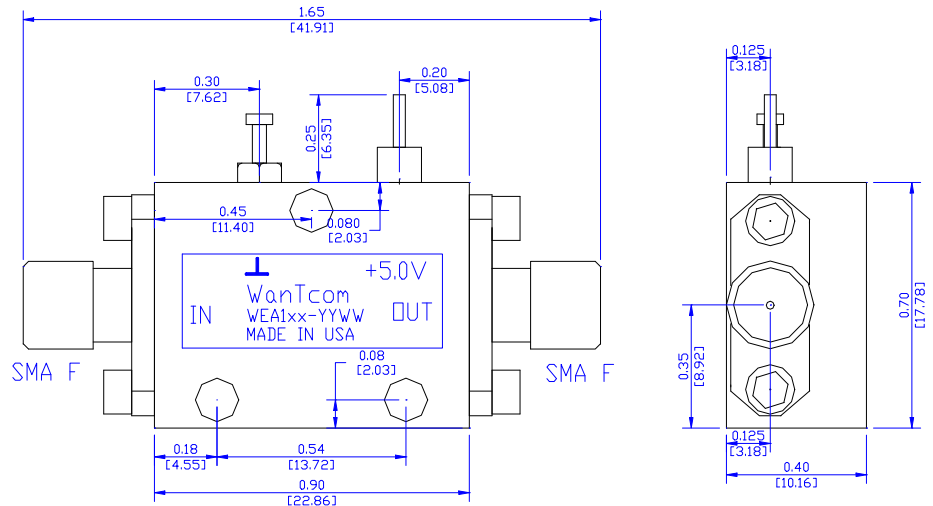
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Typical Data



Outline, WP-10E Housing

UNITS: INCH
BODY: Brass
Finish: Gold Plating
RF Connectors: SMA F Gold
V_{dd} PWR: Feed through



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Application Notes:

SMA Torque Wrench Selection

Always use a torque wrench with 5 ~ 6 inch-lb coupling torque setting for mating the SMA cable connectors to the amplifier connectors. Never use torque more than 8 inch-lb wrench for tightening the mating cable connectors to the amplifier connectors. Otherwise, the permanent damage may occur to the SMA connectors of the amplifier. 8710-1582 (5 inch-lb) wrench from Agilent Technology is one of the ideal example.

DC Power Line Connection

Strip the insulation layer at the end of a 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 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.

Repeat the process to solder the DC return wire on the ground turret. It is always helpful to use different color wires for DC wire and ground wire, such as red and black one.

Mounting the Amplifier

Use three 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.
