



# WHM0815AE

## 0.8- 1.3 GHz LOW NOISE WIDE BAND AMPLIFIER

REV A  
August 2008

### Key Features



- 0.8 ~ 1.3 GHz
- 1.1 dB Noise Figure
- 20.0 dBm Output IP<sub>3</sub>
- 30.0 dB Gain
- +/-0.20 dB Gain Flatness
- 5 dBm P<sub>1dB</sub>
- 1.3:1 VSWR Fully Matched
- Unconditional Stable,  $k > 1$
- >300 Years MTBF
- RoHS Compliant
- MLS-1 Moisture Sensitivity Level

### Product Description

WHM0913AE integrates WanTcom proprietary low noise amplifier technologies, high frequency micro electronic assembly techniques, and high reliability designs to realize optimum low noise figure, wideband, and high 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 0.25" x 0.20" x 0.06" surface mount package.

The amplifier is designed to meet the rugged standard of MIL-STD-883.

### Applications

- Mobile Infrastructures
- GPS
- Avionics
- Defense
- Security System
- Measurement
- Fixed Wireless

### Specifications

# Preliminary

Summary of the key electrical specifications at room temperature

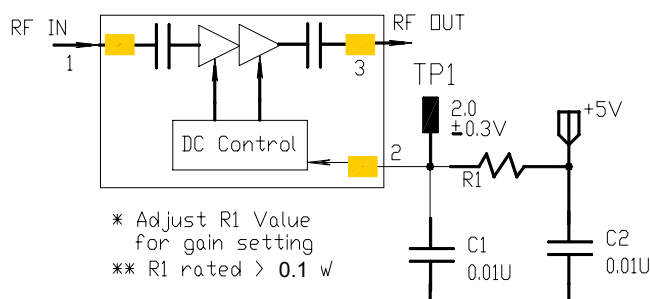
| Index | Testing Item                          | Symbol               | Test Constraints                                            | Min  | Nom     | Max      | Unit  |
|-------|---------------------------------------|----------------------|-------------------------------------------------------------|------|---------|----------|-------|
| 1     | Gain                                  | $S_{21}$             | 0.8 – 1.3 GHz                                               |      | 30      |          | dB    |
| 2     | Gain Variation                        | $\Delta G$           | 0.8 – 1.3 GHz                                               |      | +/-0.30 | +/- 0.50 | dB    |
| 3     | Input VSWR                            | $SWR_1$              | 0.8 – 1.3 GHz                                               |      | 1.3:1   | 1.5:1    | Ratio |
| 4     | Output VSWR                           | $SWR_2$              | 0.8 – 1.3 GHz                                               |      | 1.3:1   | 1.5:1    | Ratio |
| 5     | Reverse Isolation                     | $S_{12}$             | 0.8 – 1.3 GHz                                               | 35   | 40      |          | dB    |
| 6     | Noise Figure                          | NF                   | 0.8 – 1.3 GHz                                               |      | 1.0     | 1.3      | dB    |
| 7     | Output Power 1dB Compression Point    | P <sub>1dB</sub>     | 0.8 – 1.3 GHz                                               | 3    | 5       |          | dBm   |
| 8     | Output-Third-Order Interception point | IP <sub>3</sub>      | Two-Tone, P <sub>out</sub> = -10 dBm each, 1 MHz separation |      | 20      |          | dBm   |
| 9     | Current Consumption                   | I <sub>dd</sub>      | V <sub>dd</sub> = +5.0 V, with a 100 Ohm series resistor    |      | 30      |          | mA    |
| 10    | Power Supply Operating Voltage        | V <sub>dd</sub>      |                                                             | +4.7 | +5      | +5.3     | V     |
| 11    | Thermal Resistance                    | R <sub>th,c</sub>    | Junction to case                                            |      |         | 215      | °C/W  |
| 12    | Operating Temperature                 | T <sub>o</sub>       |                                                             | -55  |         | +100     | °C    |
| 13    | Maximum Average RF Input Power        | P <sub>IN, MAX</sub> | DC – 6.0 GHz                                                |      |         | 5        | dBm   |

### Absolute Maximum Ratings

| Parameters              | Units | Ratings    |
|-------------------------|-------|------------|
| DC Power Supply Voltage | V     | 7.0        |
| Drain Current           | mA    | 50         |
| Total Power Dissipation | mW    | 250        |
| RF Input Power          | dBm   | 5          |
| Channel Temperature     | °C    | 150        |
| Storage Temperature     | °C    | -65 ~ 150  |
| Operating Temperature   | °C    | -55 ~ +100 |
| Thermal Resistance      | °C/W  | 215        |

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

### Functional Block Diagram



### Ordering Information

| Model Number | WHM0815AE |
|--------------|-----------|
|--------------|-----------|

Specifications and information are subject to change without notice.



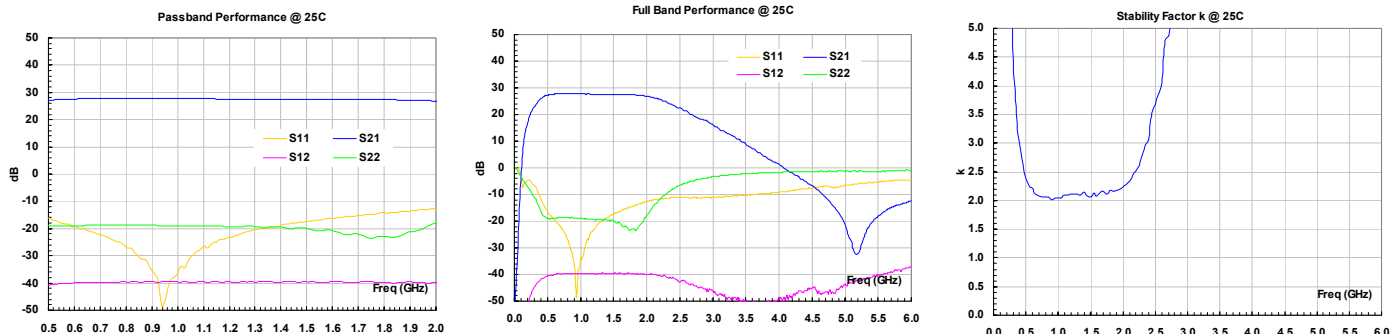
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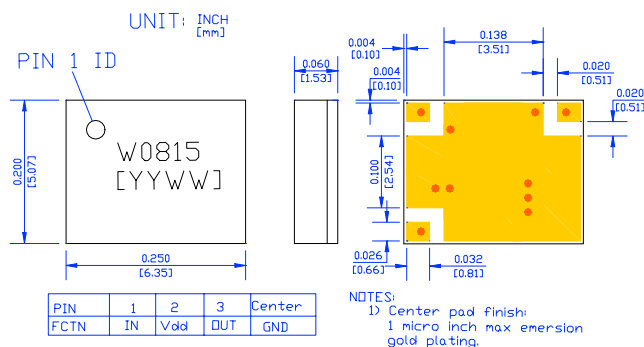
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Waffle pack with the capacity of 100 pieces (10 x 10) is used for the packing. Contact factory for tape and reel packing option for higher volume order.

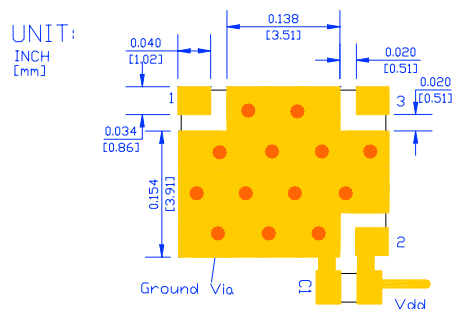
### Typical Data



### Outline, WHM-11



### Foot Print/Motherboard Layout



- NOTE:
1. THE BACKSIDE NEEDS TO BE METAL GROUND LAYER
  2. GROUND METALLIC VIA DIAMETER IS 0.024" (0.61 mm);
  3. C1 IS 0.01 UF OR LARGER VALUE CAPACITOR
  4. MATERIAL: FR-4, 4000-13, FROM NELCO
  5. USE PROPER WIDTH FOR 50-OHM LINES FOR OTHER PCB MATERIAL

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