WHM0815AE

0.8- 1.3 GHz LOW NOISE WIDE BAND AMPLIFIER

REV D
August 2012

Key Features

- 0.8 ~ 1.3 GHz
- 1.2 dB Noise Figure
- 20.0 dBm Output IP_3
- 30.0 dB Gain
- +/-0.30 dB Gain Flatness
- 6 dBm P_{1dB}
- 1.3:1 VSWR Fully Matched
- Unconditional Stable, $k > 1$
- >300 Years MTBF
- RoHS Compliant
- MLS-1 Moisture Sensitivity Level

Product Description

WHM0815AE 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 +3.0V 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

Summary of the key electrical specifications at room temperature, V_{dd}=5.0V, R_1 = 68.0 Ohm.

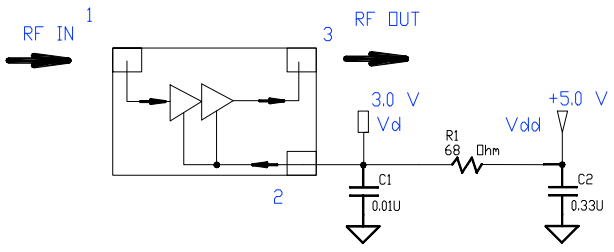
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S_{21}	0.8 – 1.3 GHz		30		dB
2	Gain Variation	ΔG	0.8 – 1.3 GHz		+/-0.30	+/- 0.75	dB
3	Input VSWR	SWR_1	0.8 – 1.3 GHz		1.3:1	1.5:1	Ratio
4	Output VSWR	SWR_2	0.8 – 1.3 GHz		1.3:1	1.5:1	Ratio
5	Reverse Isolation	S_{12}	0.8 – 1.3 GHz	30	40		dB
6	Noise Figure	NF	0.8 – 1.3 GHz		1.2	1.4	dB
7	Output Power 1dB Compression Point	P_{1dB}	0.8 – 1.3 GHz	4	6		dBm
8	Output-Third-Order Interception point	IP_3	Two-Tone, P_{out} = -10 dBm each, 1 MHz separation	17	20		dBm
9	Current Consumption	I_{dd}	V_{dd}= +5.0 V, with a 68.0 Ohm series resistor		30		mA
10	Power Supply Operating Voltage	V_d		+2.5	+3	+3.5	V
11	Thermal Resistance	$R_{th,c}$	Junction to case			215	°C/W
12	Operating Temperature	T_o		-54		+100	°C
13	Maximum Average RF Input Power	$P_{IN, MAX}$	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



Adjust R1 Value for desired Idd or Gain.

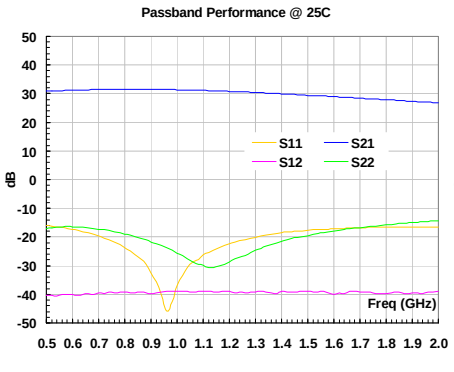
Ordering Information

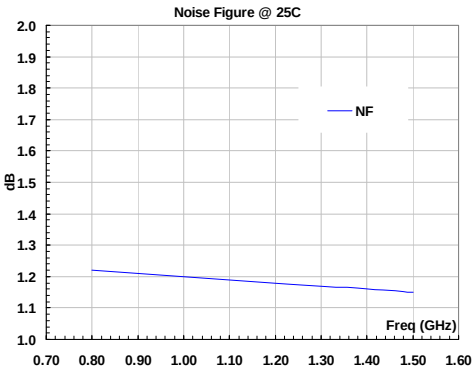
Model Number	WHM0815AE

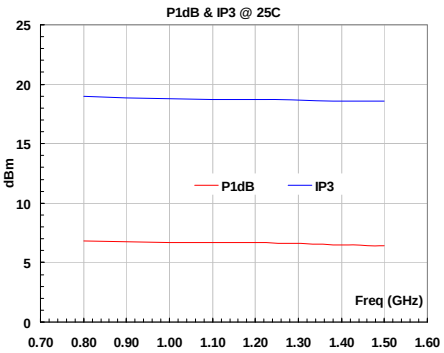
WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

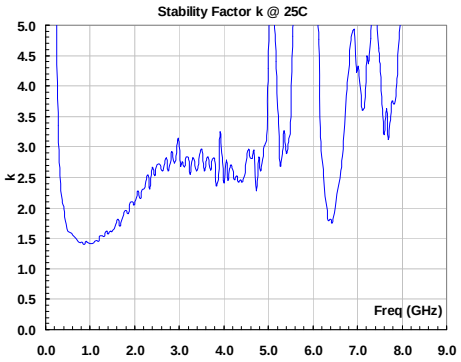
Waffle pack with the capacity of 100 pieces (10 x 10) is used for the packing. Contact factory for tape and reel packing option for higher volume order.

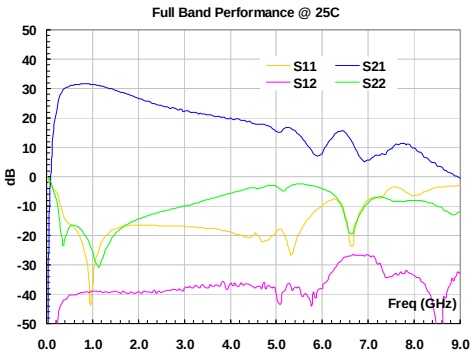
Typical Data



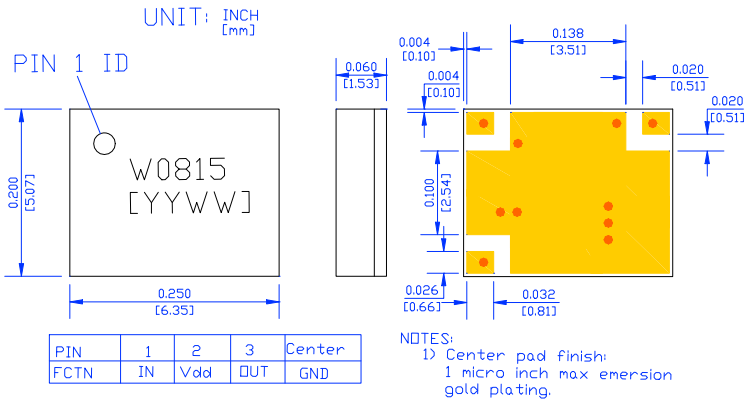




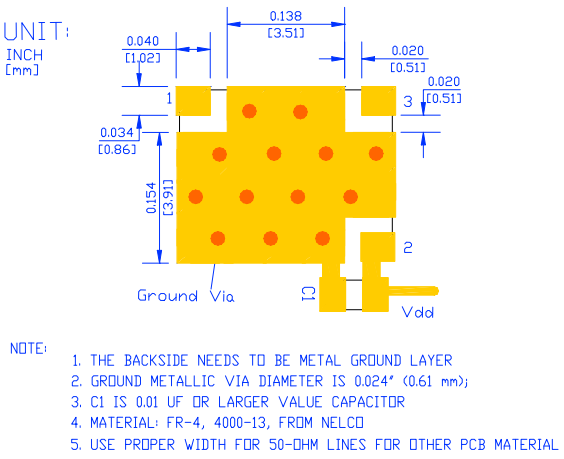




Outline, WHM-11



Foot Print/Motherboard Layout



WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com

Application Notes

R_1 selection is important to the total DC bias current and thus the gain and P_{1dB}, etc. For example, a typical 30 mA DC bias current setting from a +5V DC power supply requires a 68.0 Ohm pull-up resistor to drop the voltage from +5V to +3.0V. R_1 also provides a negative feedback for the DC bias current. This feedback is particular important for the temperature stability and the DC current consistency between each amplifier module in the volume production.

For DC voltage other than 5.0V, the R_1 value is determined by the following equation:

$$R_1 = (V_{dd} - V_d) / I_{dd}$$

Make sure the R_1 power rating is sufficient for the reliability consideration.

******

WanTcom, Inc ∗ Phone 01 952 448 6088 ∗ FAX: 01 952 448 7188 ∗ e-mail: sales@wantcominc.com ∗ Web site: www.wantcominc.com