

Low Noise, High Gain, High IP3 Amplifier

0.5 - 6.0 GHz



CGY2108GS

Rev. V1

Features

- Noise Figure:
 - 0.60 @ 0.9 GHz
 - 0.65 @ 1.9 GHz
 - 0.50 @ 1.9 GHz (Dual Mode)
 - 0.80 @ 3.2 GHz (SE Configuration)
- Gain:
 - 23.0 @ 0.9 GHz
 - 20.0 @ 1.9 GHz
 - 21.5 @ 1.9 GHz (Dual Mode)
 - 17.5 @ 3.2 GHz (SE Configuration)
- OIP3:
 - 36.5 @ 0.9 GHz
 - 32.5 @ 1.9 GHz (Dual Mode)
 - 29.0 @ 3.2 GHz (SE Configuration)
- P1dB:
 - 22.0 @ 1.9 GHz (Dual Mode)
- Highly Reliable pHEMT MMIC Process
- 100% RF Tested
- Samples & Demonstration Boards Available
- Space & MIL-STD Available
- Hermetic Ceramic Package
- RoHS* Compliant

Applications

- Space Models
- Base Station (LTE, GSM, CDMA, WCDMA, TD-SCDMA, CDMA2000, WiMAX, etc.)
- Tower Mounted Amplifiers
- Repeaters

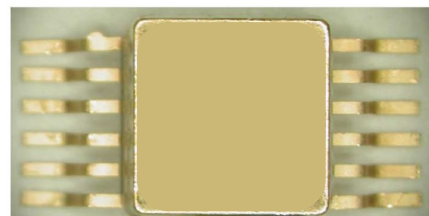
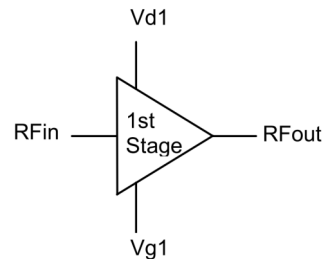
Description

The CGY2108GS is using the CGY2108UH die which is an extremely low noise cascade amplifier with state of the art noise figure and linearity suitable for applications from 0.5 to 6.0 GHz. The minimum noise figure of the CGY2108UH itself is below 0.32 dB at 1.9 GHz.

This device consists of a single amplifier chain and is ideal for use in a balanced configuration as well as a single ended amplifier.

The MMIC is manufactured using a qualified 0.25 μm pHEMT GaAs MMIC technology.

The device is available in a ceramic space grade hermetic package STRATEDGE G1616M-7F.



Pin Configuration

Pin #	Function
1	RF Input
2,3,9,11	Ground
4 - 8,12	Not Connected
10	RF Output

Ordering Information

Part Number	Package
CGY2108GS	package
CGY2108UH	Die

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

Low Noise, High Gain, High IP3 Amplifier

0.5 - 6.0 GHz



CGY2108GS

Rev. V1

Electrical Specifications: Freq. = 0.5 - 6.0 GHz, T_A = +23°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	@ Package Lead, 1.90 GHz @ Reference Board ^{1,3} , 1.95 GHz @ Demonstration Board ^{2,3} , 1.90 GHz	dB	—	22.0 22.0 20.3	—
Noise Figure	@ Package Lead, 1.90 GHz @ Reference Board ^{1,3} , 1.95 GHz @ Demonstration Board ^{2,3} , 1.90 GHz	dB	0.32 — —	— 0.50 0.65	—
Bias Voltage	@ Package Lead, 1.90 GHz @ Reference Board ^{1,3} , 1.95 GHz @ Demonstration Board ^{2,3} , 1.90 GHz	dB	—	4 5 5	—
Bias Current	@ Package Lead, 1.90 GHz, V _{EE} = -0.55 V @ Reference Board ^{1,3} , 1.95 GHz V _{EE1} = V _{EE2} = -0.55 V @ Demonstration Board ^{2,3} , 1.90 GHz V _{EE1} = V _{EE2} = -0.66 V	dB	—	50 50 50	—
Isolation	@ Reference Board ^{1,3} , 1.95 GHz IN1/IN2	dB	—	30	—
Reverse Isolation	@ Reference Board ^{1,3} , 1.95 GHz OUT/IN	dB	—	32	—
IIP3	@ Reference Board ^{1,2} , 1.95 GHz, 70 mA @ Demonstration Board ^{2,3} , 1.90 GHz	dBm	3.5 —	8.3 TBD	—
P1dB	@ Demonstration Board ^{2,3} , 1.90 GHz	dBm	—	10	—
Input Return Loss	@ Reference Board ^{1,3} , 1.95 GHz @ Demonstration Board ^{2,3} , 1.90 GHz 50 Ω Source	dB	—	-10 -22	—
Output Return Loss	@ Reference Board ^{1,3} , 1.95 GHz @ Demonstration Board ^{2,3} , 1.90 GHz 50 Ω Load	dB	—	-10 -22	—

1. Single ended configuration with on-board bias resistors.
2. Balanced configuration with on-board bias resistors.
3. Measured reference plane are the input and output SMA connectors.

Absolute Maximum Ratings^{4,5}

Parameter	Absolute Maximum
Input Power	10 dBm
Gate Voltage	-3 to +1 V
Drain Voltage	-3 to +10 V
Drain Current	70 mA
Junction Temperature	+150°C
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +150°C

4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

Thermal Characteristics

Parameter	Absolute Maximum
Thermal Resistance	70°C/W

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

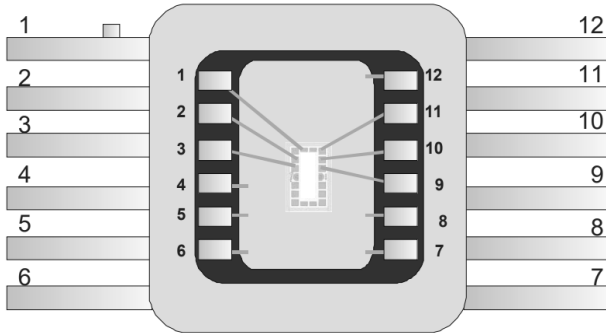
Low Noise, High Gain, High IP3 Amplifier 0.5 - 6.0 GHz



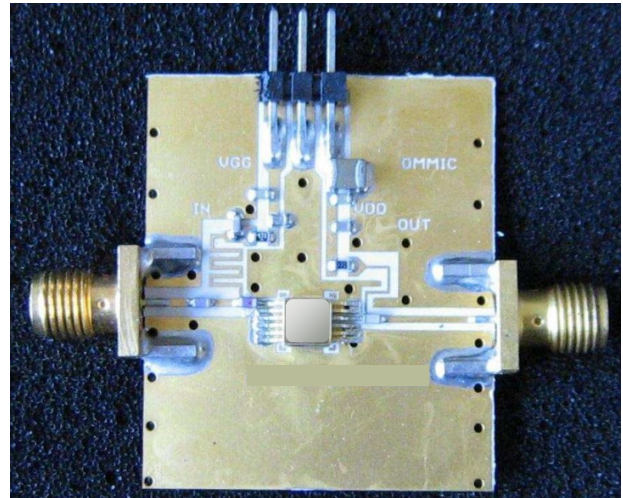
CGY2108GS

Rev. V1

Internal Bonding Diagram



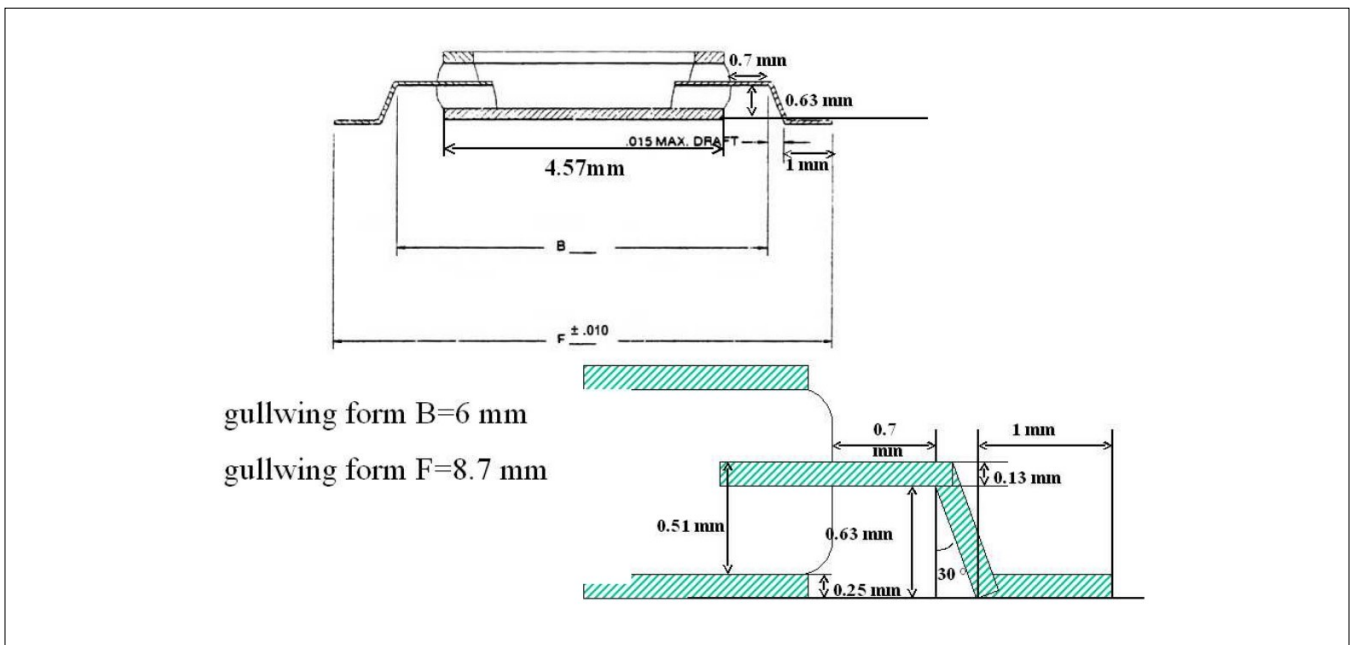
Reference Circuit Board, 1.9 GHz



Parts List

Part	Value	Case Style
TBD		

Dimensions of the Gullwing Leads



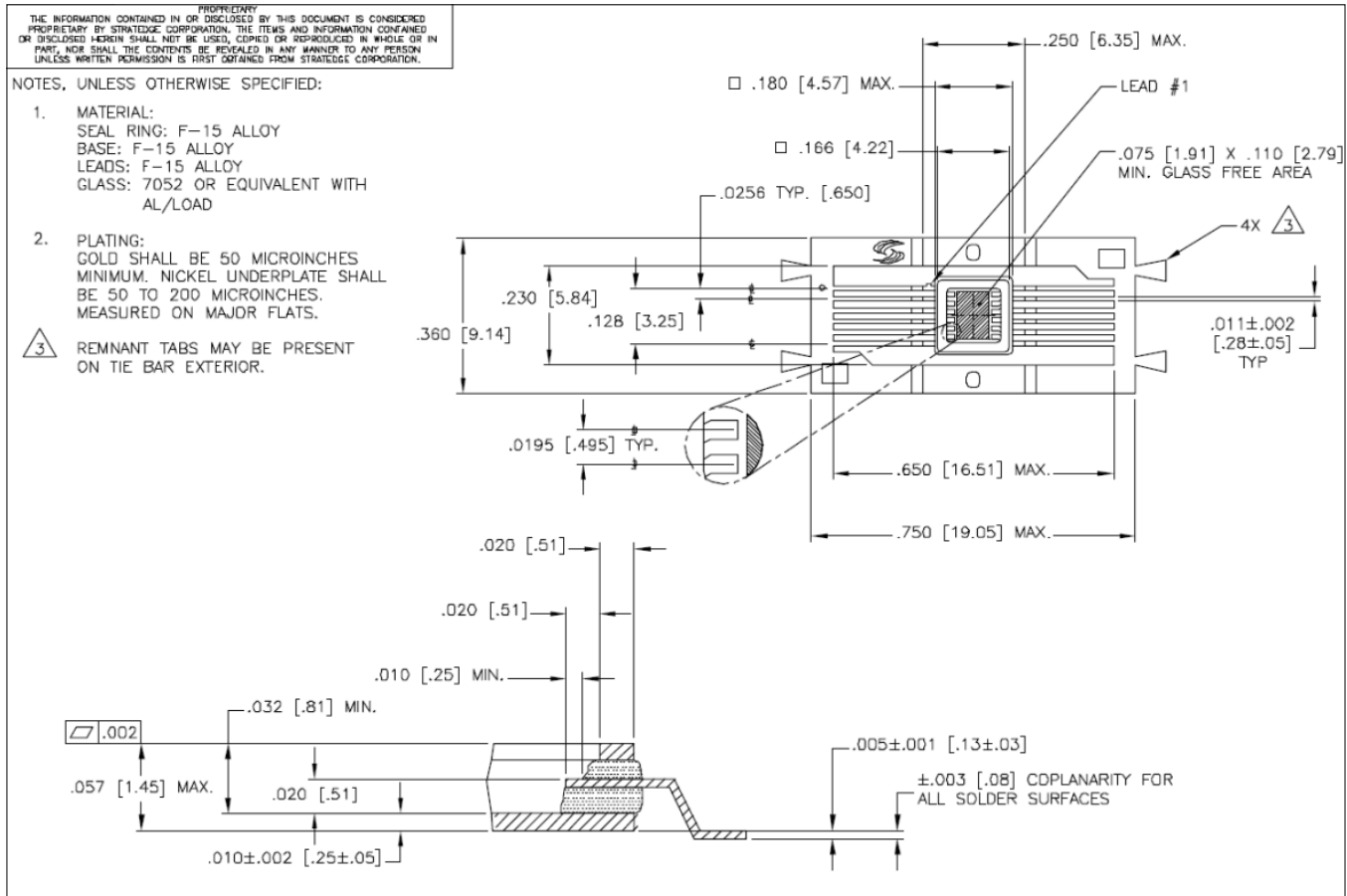
Low Noise, High Gain, High IP3 Amplifier 0.5 - 6.0 GHz



CGY2108GS

Rev. V1

Outline: 12-Lead Glass Flatpack (formed leads) & PCB Land Pattern



Low Noise, High Gain, High IP3 Amplifier

0.5 - 6.0 GHz



CGY2108GS

Rev. V1

MACOM Technology Solutions Inc. ("MACOM"). All rights reserved.

These materials are provided in connection with MACOM's products as a service to its customers and may be used for informational purposes only. Except as provided in its Terms and Conditions of Sale or any separate agreement, MACOM assumes no liability or responsibility whatsoever, including for (i) errors or omissions in these materials; (ii) failure to update these materials; or (iii) conflicts or incompatibilities arising from future changes to specifications and product descriptions, which MACOM may make at any time, without notice. These materials grant no license, express or implied, to any intellectual property rights.

THESE MATERIALS ARE PROVIDED "AS IS" WITH NO WARRANTY OR LIABILITY, EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT, ACCURACY OR COMPLETENESS, OR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.