

ADVANCE INFORMATION

CGY2272H/C1

76 GHz Radiometer Low Noise Amplifier

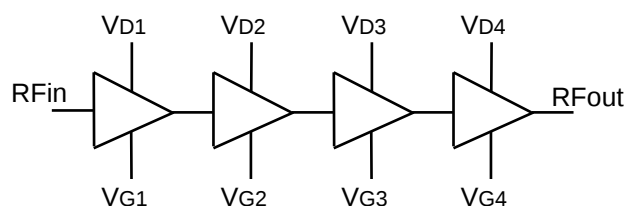
DESCRIPTION

The CGY2272UH/C1 is a high performance GaAs Low Noise Amplifier in the E Band around 76.5GHz

The CGY2272UH/C1 has an exceptionally low noise figure of 3dB and 32dB of gain over the whole 76.5 +/- 7.5 GHz band frequency band. The on chip matching provides 10 dB of Input Return Loss and Output Return Loss over the frequency range. It is especially adapted to support E-band passive imaging systems but can also be used in Radar, Telecommunication and instrumentation applications.

The die is manufactured using OMMIC's advanced 70nm gate length high indium contain MHEMT technology. The MMIC uses gold bonding pads and backside metallization and is fully protected with silicon nitride passivation to obtain the highest level of reliability.

- Operating frequency range : 69 to 84 GHz
- Noise Figure : 3dB from 71 to 86 GHz
- Gain : 25dB
- Input Return Loss : 10 dB
- Output Return Loss : 10 dB
- Power Supply : 40mA at 1.1V
- Delivered as 100 % on-wafer RF tested dies
- Die size = X x Y mm
- Device Availability (Q4 2013)
 - Tested, Inspected Known Good Die (KGD)
 - Demonstration Boards



APPLICATIONS

- Radiometer for medical and security
- Radar
- Telecommunications
- Instrumentation

CGY2272H/C1 Front end receiver Low Noise Amplifier Bloc diagram



FEATURES

Revision : 03/06/2013

OMMIC

2, Rue du Moulin – BP. 11 – 94 453

Website : www.ommic.com

Limeil-Brévannes Cedex – France.

Email : information@ommic.com

MAXIMUM VALUES

$T_{amb} = + 25\text{ }^{\circ}\text{C}$, at Die backside; unless otherwise specified.

Symbol	Parameter	Conditions	MIN.	MAX.	UNIT
$V_{G1}, V_{G2}, V_{G3}, V_{G4}$	Gate voltage		- 2.5	0	V
$V_{D1}, V_{D2}, V_{D3}, V_{D4}$	Drain voltage		0	1.2	V
$I_{D1}, I_{D2}, I_{D3}, I_{D4}$	Drain current			20	mA
$I_{G1}, I_{G2}, I_{G3}, I_{G4}$	Gate Current		- 1	+ 1	mA
P_{IN}	RF Input power			+ 1	dBm
T_{amb}	Ambient temperature		- 40	+ 85	$^{\circ}\text{C}$
T_j	Junction temperature			+ 175	$^{\circ}\text{C}$
T_{stg}	Storage temperature		- 55	+ 150	$^{\circ}\text{C}$

Operation of this device outside the parameter ranges given above may cause permanent damage

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	UNIT
$R_{th(j-amb)}$	Thermal resistance from junction to ambient (DC power at T_{amb} max)	TBD	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS

$T_{amb} = + 25\text{ }^{\circ}\text{C}$, $V_{D1} = V_{D2} = V_{D3} = V_{D4} = 1.1\text{V}$, $I_{D1} + I_{D2} + I_{D3} + I_{D4} = 40\text{ mA}$, unless otherwise specified.

Symbol	Parameter	Conditions	MIN.	TYP.	MAX.	UNIT
R_{Fin}	Input frequency		69		84	GHz
$V_{D1}, V_{D2}, V_{D3}, V_{D4}$	Drain Supply voltage			+ 1.1		V
$I_{D1} + I_{D2} + I_{D3} + I_{D4}$	Total supply current	$V_{D1} = 1.1\text{ V}$		40		mA
G	Gain			32		dB
NF	Noise Figure			3		dB
$IP1dB$	1dB compression point			5		dBm
$OIP3$	Output third order intercept point			14		dBm
ISO_{rev}	Reverse Isolation	R_{FOUT}/R_{FIN}		-50		dB
S_{11}	Input reflection coefficient	50 Ohms		10		dB
S_{22}	Output reflection coefficient	50 Ohms		10		dB

(*) Measurement reference planes are the INPUT and OUTPUT plans of the CGY2272UH/C1 MMIC.



Caution : This device is a high performance RF component and can be damaged by inappropriate handling. Standard ESD precautions should be followed. OMMIC document "OM-CI-MV/ 001/ PG" contains more information on the precautions to take.

PACKAGE

Type	Description	Terminals	Pitch (mm)	Package size (mm)
DIE	100% RF and DC on-wafer tested	-	-	X x Y x 0.1

SOLDERING

To avoid permanent damages or impact on reliability during soldering process, die temperature should never exceed 330°C.

Temperature in excess of 300°C should not be applied to the die longer than 1mn

Toxic fumes will be generated at temperatures higher than 400°C

DEFINITIONS

Limiting values definition

Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

Application information

Applications that are described herein for any of these products are for illustrative purposes only. OMMIC makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

DISCLAIMERS

Life support applications

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. OMMIC's customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify OMMIC for any damages resulting from such application.

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ORDERING INFORMATION

Generic type	Package type	Version	Sort Type	Description
CGY2122X	UH	C1	-	On-Wafer measured Die

