

# Advance Information

## CGY2750UH/C1

### 26 – 34 GHz 2 W T/R Chip

#### Description

The CGY2750UH/C1 is a high-performance GaN T/R chip MMIC designed to operate in the Ka-band.

The CGY2750UH/C1 is composed of one high-performance power amplifier, one low noise amplifier with a very good noise figure and a switch.

The performances of the CGY2750UH/C1 make it well suited to be used in Radar, Telecommunication and Space applications.

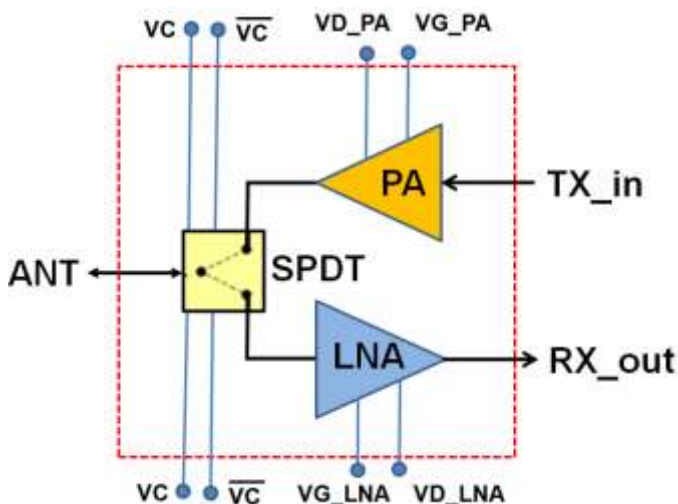
This technology is being evaluated for space applications.

#### Application

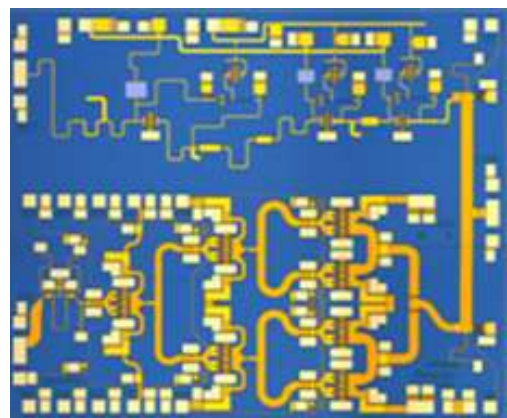
- ▶ Radar
- ▶ Telecommunications
- ▶ Spatial

#### Features

- ▶ Operating Range: 26 GHz to 34 GHz
- ▶ Gain: 20 dB
- ▶ NF: 3 dB
- ▶ Pout: 35 dBm
- ▶ 50 Ohms input and output matched
- ▶ Chip size = 3.65 x 3 mm<sup>2</sup>
- ▶ 50 Ohms input and output matched



CGY2750UH/C1 T/R chip block diagram



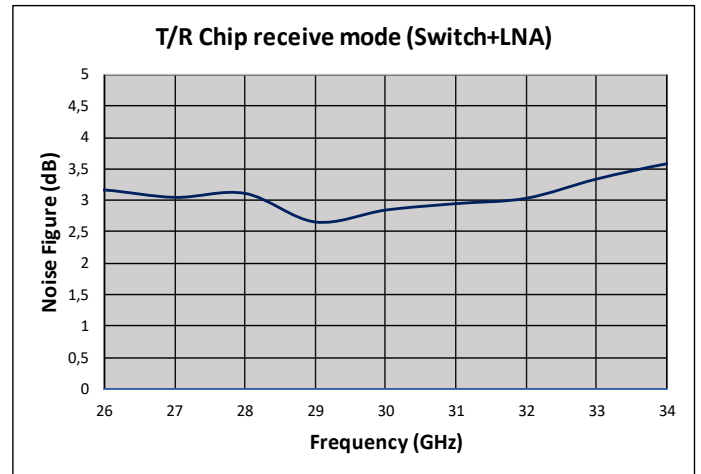
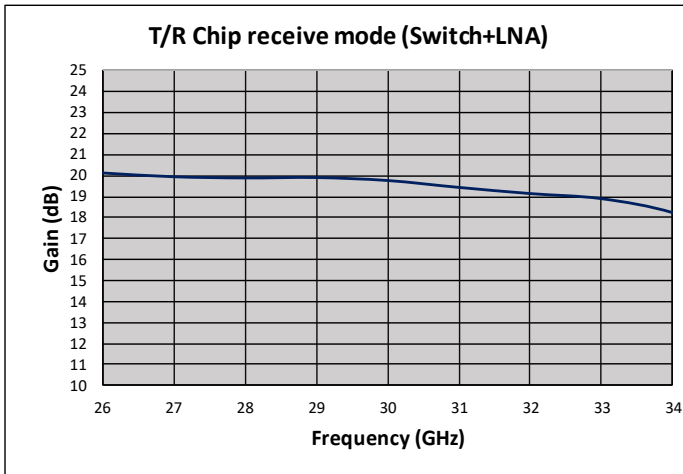
Bare die : 3.65 x 3 mm<sup>2</sup>

## ON WAFER MEASUREMENTS

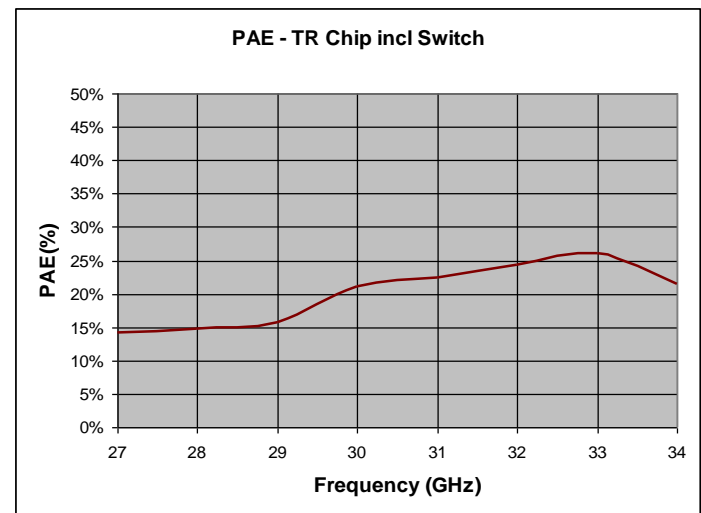
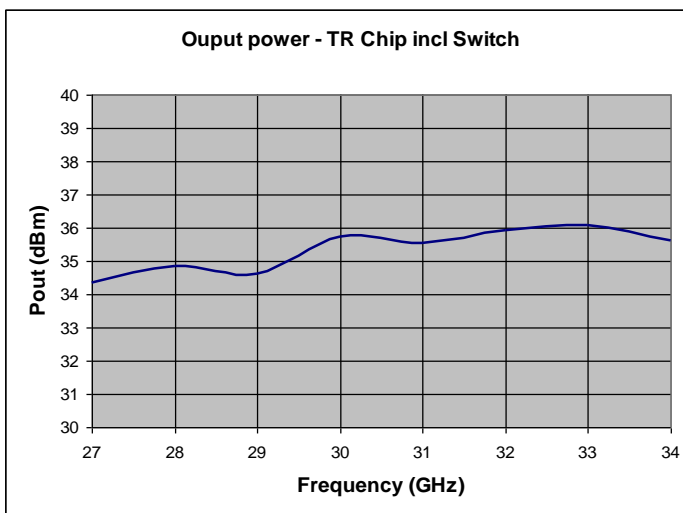
Conditions:  $T_{amb} = + 25^{\circ}C$ .

$V_D = 8.5 V$  ;  $V_S = -3 V$  ;  $I_{D(LNA)} = 90 mA$  ;  $V_{D1} = V_{D2} = V_{D3} = 12 V$  ;  $I_{D1} = 65 mA$  ;  $I_{D2} = 130 mA$  ;  $I_{D3} = 260 mA$   
 $V_{SWITCH(S1/S2)} = -21 V$

- Typical performance - Rx Mode



- Typical performance - Tx Mode



## PAD LAYOUT

The die positioned top view with RF input on the left and RF output on the right show DC accesses.

There are 3 RF ports to control the amplification of the signal Tx or Rx. The north pads are used to supply the low noise amplifier of the T/R chip while the south pads are used to supply the power amplifier. S1 and S2 are the name of the pads where the supply energy of the switch comes from.

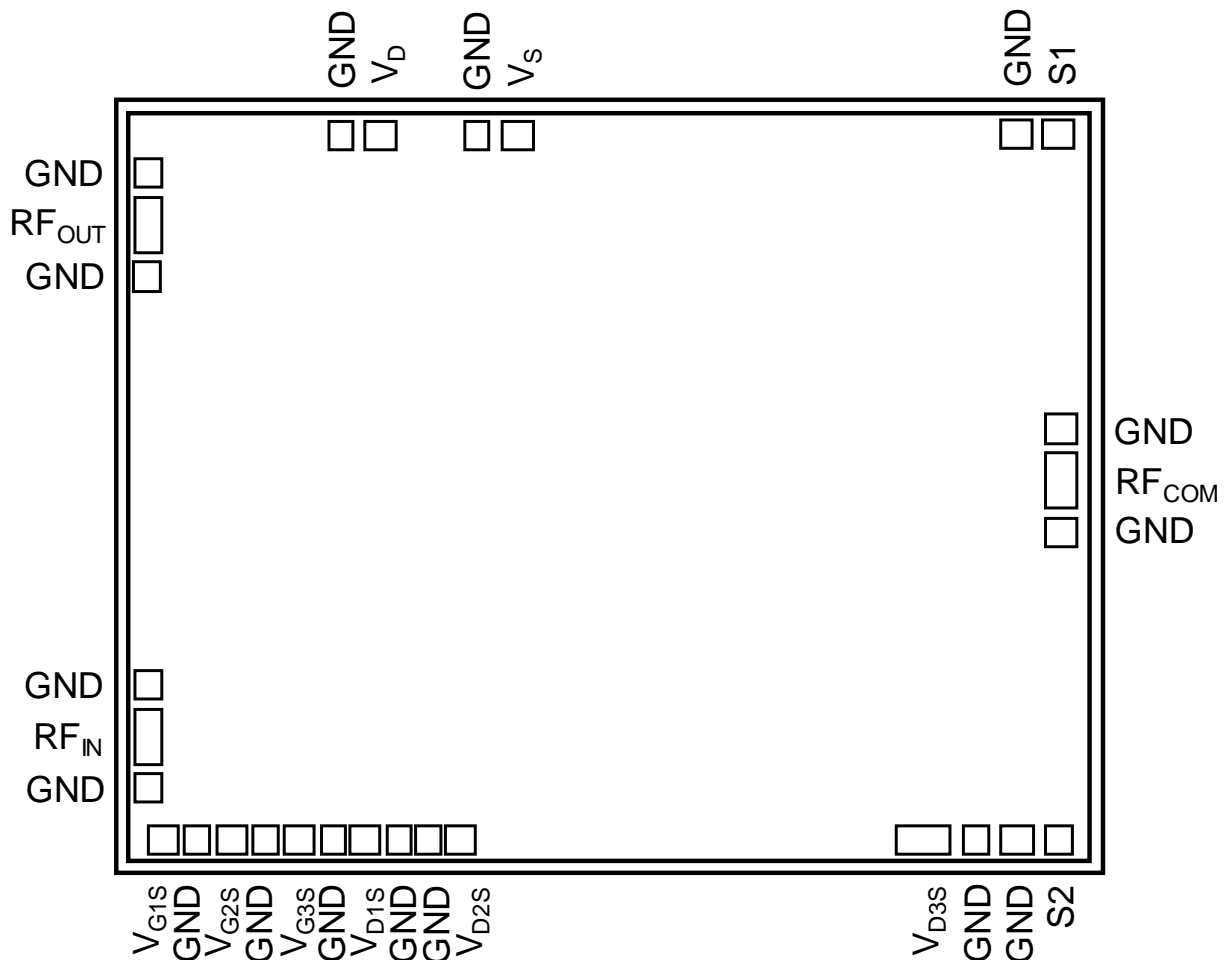


Figure 1: OMM9731UH/C1 Pad allocation

## PAD COORDINATES

The die positioned top view with RF input on the left and RF output on the right show DC accesses. The pads representing the different modes should be connected with a bonding to the ground when the corresponding mode is chosen.

## PINOUT

The amplifier has a North face and a south face, north is top and south is bottom when RF input is on the left an RF output on the right.

Symbol	Pad	Description
RFOUT	OUT	RF output
RFIN	IN	RF input
RFCOM	COM	RF command
VD	VD	Drain Voltage (Low noise amplifier)
VS	VS	Gate Voltage (Low noise amplifier)
VG1S	VG1	First stage Gate (amplifier South)
VG2S	VG2	Second stage Gate (amplifier South)
VG3S	VG3	Third stage Gate (amplifier South)
VD1S	VD1	First stage Drain (amplifier South)
VD2S	VD2	Second stage Drain (amplifier South)
VD3S	VD3	Third stage Drain (amplifier South)
S1	S1	North switch supply
S2	S2	South switch supply
GND	BACKSIDE	Ground

**Note:**

*In order to ensure good RF performances and stability It is key to connect to the ground the pad available on the backside of the die.*

**PINOUT**

The amplifier has a North face and a south face, north is top and south is bottom when RF input is on the left an RF output on the right.

Symbol	X coordinate (um)	Y coordinate (um)	Pad size (um x um)
GND	131	2722	100 x 100
RFOUT	131	2521	100 x 200
GND	131	2320	100 x 100
GND	131	731	100 x 100
RFIN	131	530	100 x 200
GND	131	329	100 x 100
GND	3519	1325	100 x 100
RFCOM	3519	1526	100 x 200
GND	3519	1727	100 x 100
VG1S	201	131	100 x 100
GND	316	131	80 x 100

VG2S	451	131	100 x 100
GND	566	131	80 x 100
VG3S	701	131	100 x 100
GND	816	131	80 x 100
VD1S	951	131	100 x 100
GND	1066	131	80 x 100
GND	1181	131	80 x 100
VD2S	1296	131	100 x 100
VD3S	3009	131	200 x 100
GND	3209	131	80 x 100
GND	3359	131	80 x 100
S2	3509	131	100 x 100
S1	3509	2869	100 x 100
GND	3359	2869	80 x 100
VS	1517	2867	103 x 103
GND	1366	2867	80 x 100
VD	598.5	2867	103 x 103
GND	447.5	2867	80 x 100



## 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.

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