

## 20-30GHz SUB-HARMONICALLY PUMPED MIXER GaAs Monolithic Microwave IC

### Description

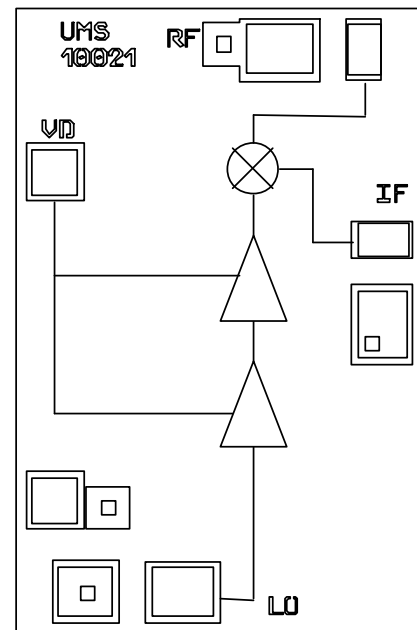
The CHM1290 is a MFC which integrates a self biased LO buffer amplifier and a sub-harmonically diodes mixer for 2LO suppression. It is usable both for up-conversion and down-conversion. It is designed for a wide range of applications, typically commercial communication systems for broadband local access (LMDS). The backside of the chip is both RF and DC grounds. This helps simplify the assembly process.

The circuit is manufactured with a PM-HEMT process, 0.25 $\mu$ m gate length, via holes through the substrate, air bridges and electron beam gate lithography. It is available in chip form.

### Main Features

- Broadband performance : 20-30GHz
- 10dB conversion Loss
- 29dB 2LO to RF isolation
- -4dBm LO input power
- -3dBm input power 1 dB compression
- Low DC power consumption, 33mA@4.0V
- Chip size : 0.86 X 1.28 X 0.10 mm

*Preliminary*



### Main Characteristics

Tamb. = 25°C

	Parameter	Min	Typ	Max	Unit
F <sub>RF</sub>	RF frequency range	20		30	GHz
F <sub>LO</sub>	LO frequency range	10		15	GHz
F <sub>IF</sub>	IF frequency range	DC		6	GHz
L <sub>c</sub>	Conversion Loss		10	12	dB

ESD Protection : Electrostatic discharge sensitive device. Observe handling precautions !

Preliminary

**Electrical Characteristics for Broadband Operation**

Tamb = +25°C, Vd = 4.0V Id=33mA

Symbol	Parameter	Min	Typ	Max	Unit
F <sub>RF</sub>	RF frequency range	20		30	GHz
F <sub>LO</sub>	LO frequency range	10		15	GHz
F <sub>IF</sub>	IF frequency range	DC		6	GHz
L <sub>c</sub>	Conversion Loss		10	12	dB
P <sub>LO</sub>	LO Input power		-4	8	dBm
2xLO Leak	2xLO Leakage (for P <sub>LO</sub> =-4dBm)		30		dBm
IP1dB	Input power at 1dB gain compression	-3	0	3	dBm
LO Match	LO Matching		2.0:1		
RF Match	RF Matching		2.0:1		
IF Match	IF Matching		2.0:1		
Sz	Chip size		1.1		mm <sup>2</sup>
Id	Bias current		33		mA

**Absolute Maximum Ratings**

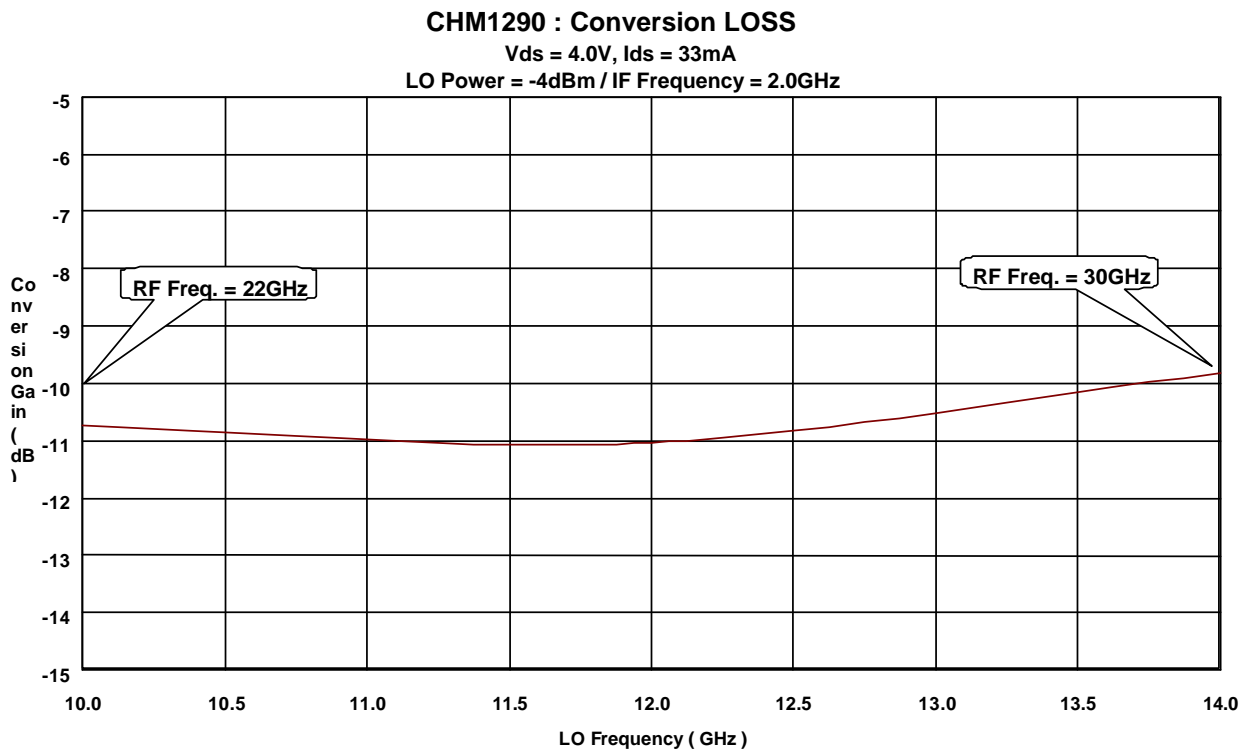
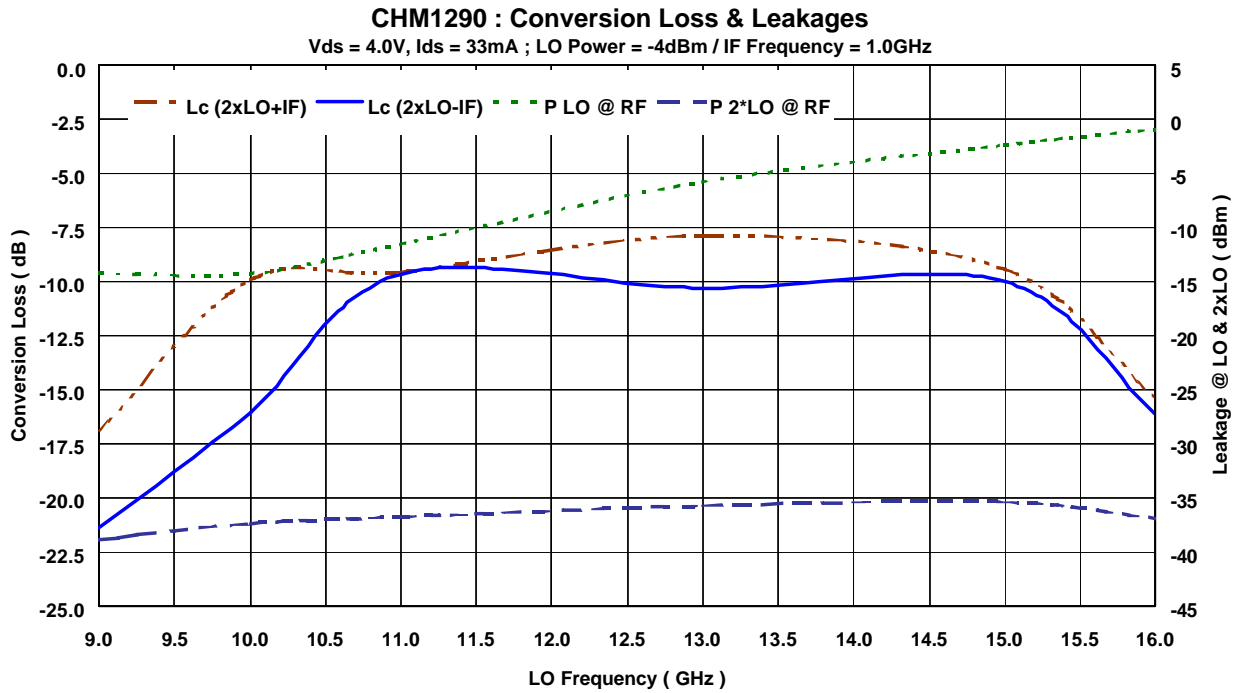
Tamb. = 25°C (1)

Symbol	Parameter	Values	Unit
Vd	Drain bias voltage	5.0	V
Id	Drain bias current	50	mA
Pin	Maximum peak input power overdrive (2)	TBD	dBm
Ta	Operating temperature range	-40 to +85	°C
Tstg	Storage temperature range	-55 to +155	°C

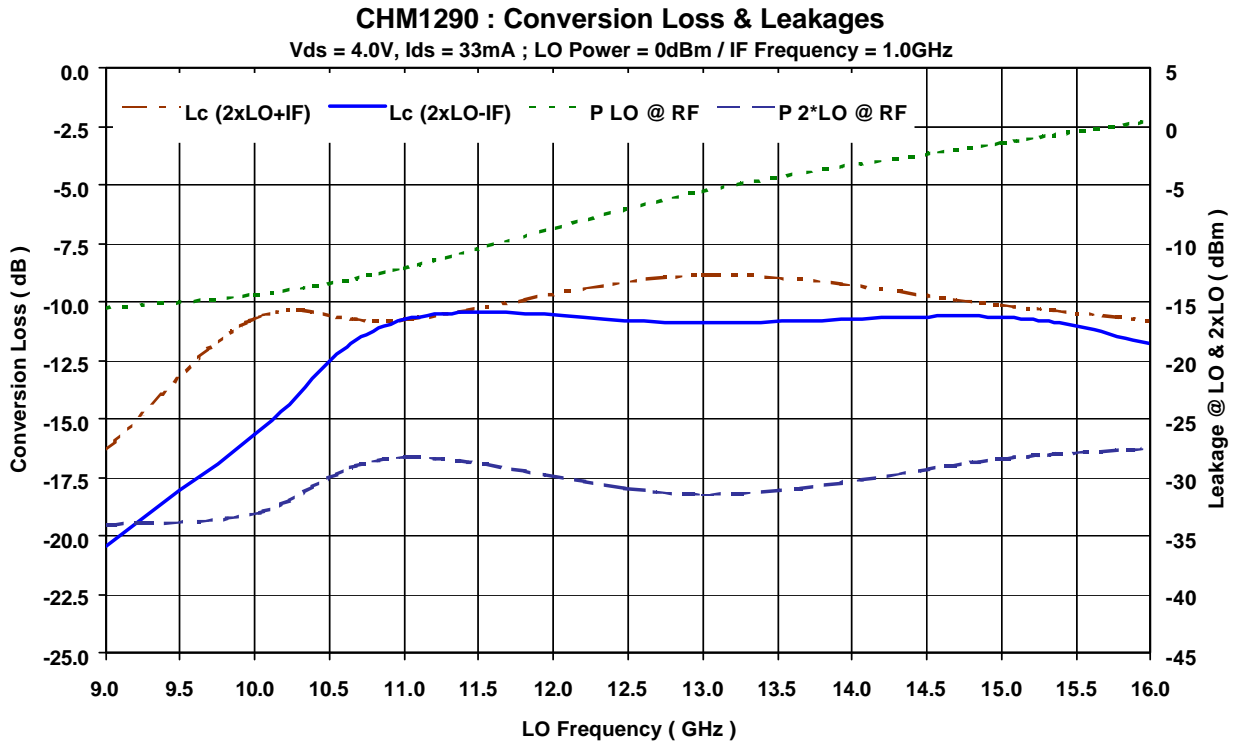
(1) Operation of this device above anyone of these parameters may cause permanent damage.

(2) Duration &lt; 1s.

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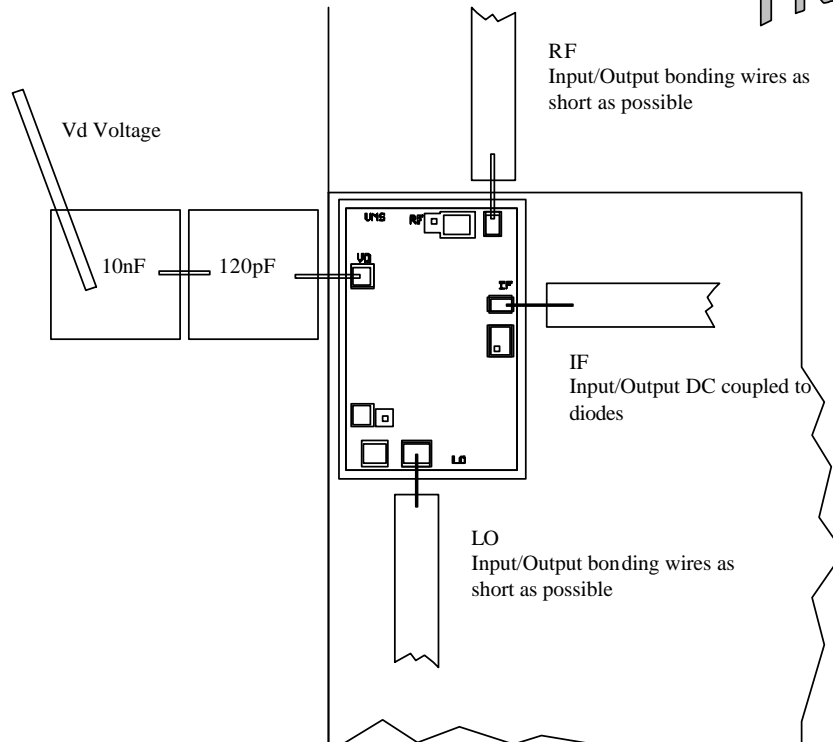


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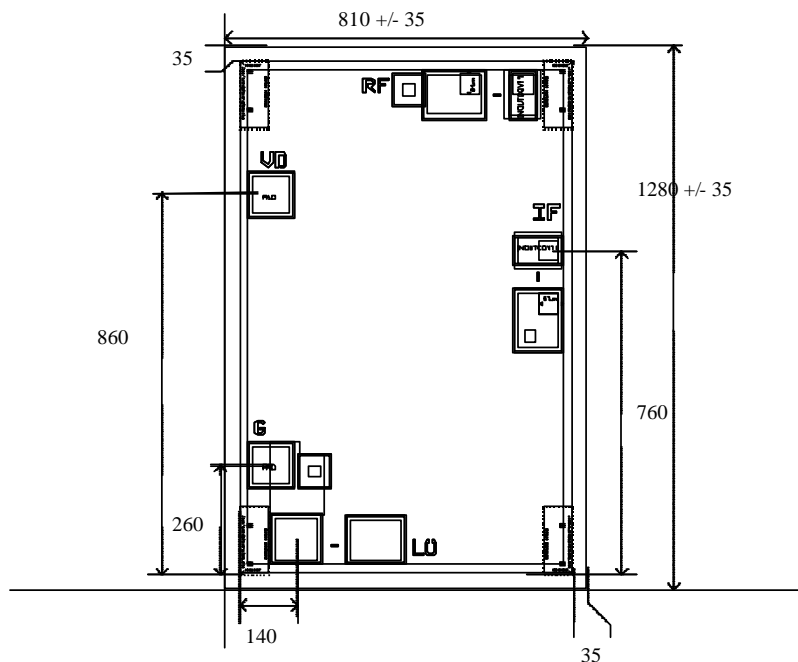
## Chip Assembly and Mechanical Data

*Preliminary*



Note : Supply feed should be capacitively bypassed. 25µm diameter gold wire is recommended

### Bonding pad positions



( Chip thickness : 100µm. All dimensions are in micrometers )

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## Ordering Information

Chip form : CHM1290-99F/00

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