

20-30GHz SUB-HARMONICALLY PUMPED MIXER

GaAs Monolithic Microwave IC

Description

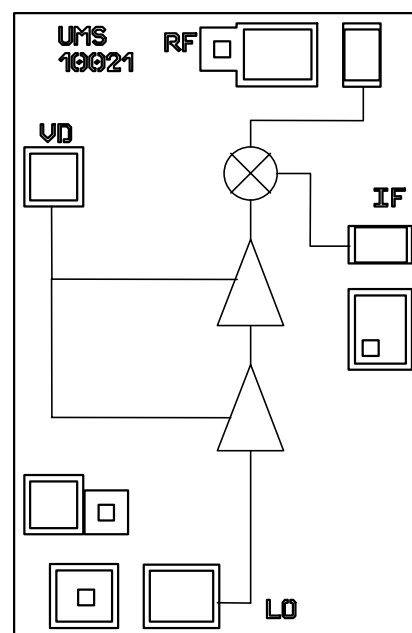
The CHM1290 is a MFC which integrates a self biased LO buffer amplifier and a sub-harmonically diodes mixer for 2LO suppression. It is usable both for up-conversion and down-conversion. It is designed for a wide range of applications, typically commercial communication systems for broadband local access (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, 0.25µm gate length, capacities over via holes, 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_{RF}	RF frequency range	20		30	GHz
F_{LO}	LO frequency range	10		15	GHz
F_{IF}	IF frequency range	DC		6	GHz
L_c	Conversion Loss		10	12	dB

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

*Preliminary***Electrical Characteristics for Broadband Operation**T_{amb} = +25°C, V_d = 4.0V I_d=33mA

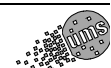
Symbol	Parameter	Min	Typ	Max	Unit
F _{RF}	RF frequency range	20		30	GHz
F _{LO}	LO frequency range	10		15	GHz
F _{IF}	IF frequency range	DC		6	GHz
L _c	Conversion Loss		10	12	dB
P _{LO}	LO Input power		-4	8	dBm
2xLO Leak	2xLO Leakage (for P _{LO} =-4dBm)		30		dBm
IP1dB	Input power at 1dB gain compression	-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 ²
I _d	Bias current		33		mA

Absolute Maximum RatingsT_{amb.} = 25°C (1)

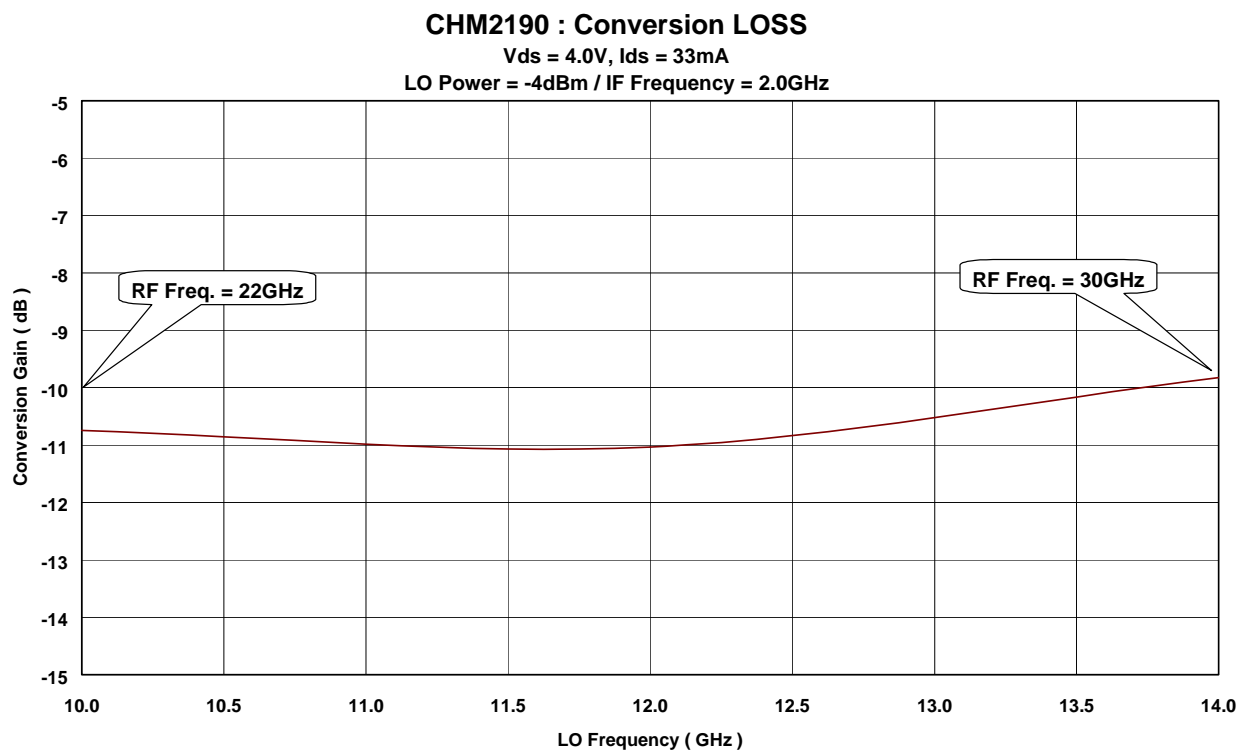
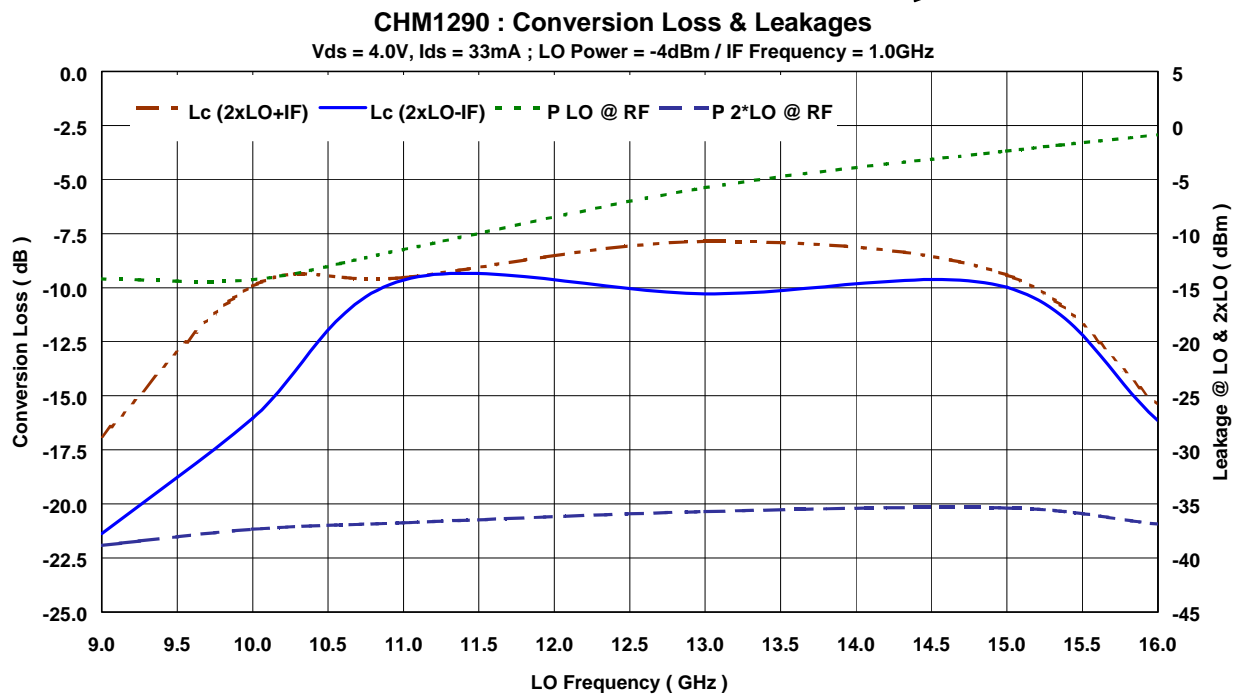
Symbol	Parameter	Values	Unit
V _d	Drain bias voltage	5.0	V
I _d	Drain bias current	50	mA
P _{in}	Maximum peak input power overdrive (2)	TBD	dBm
T _a	Operating temperature range	-40 to +85	°C
T _{stg}	Storage temperature range	-55 to +155	°C

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

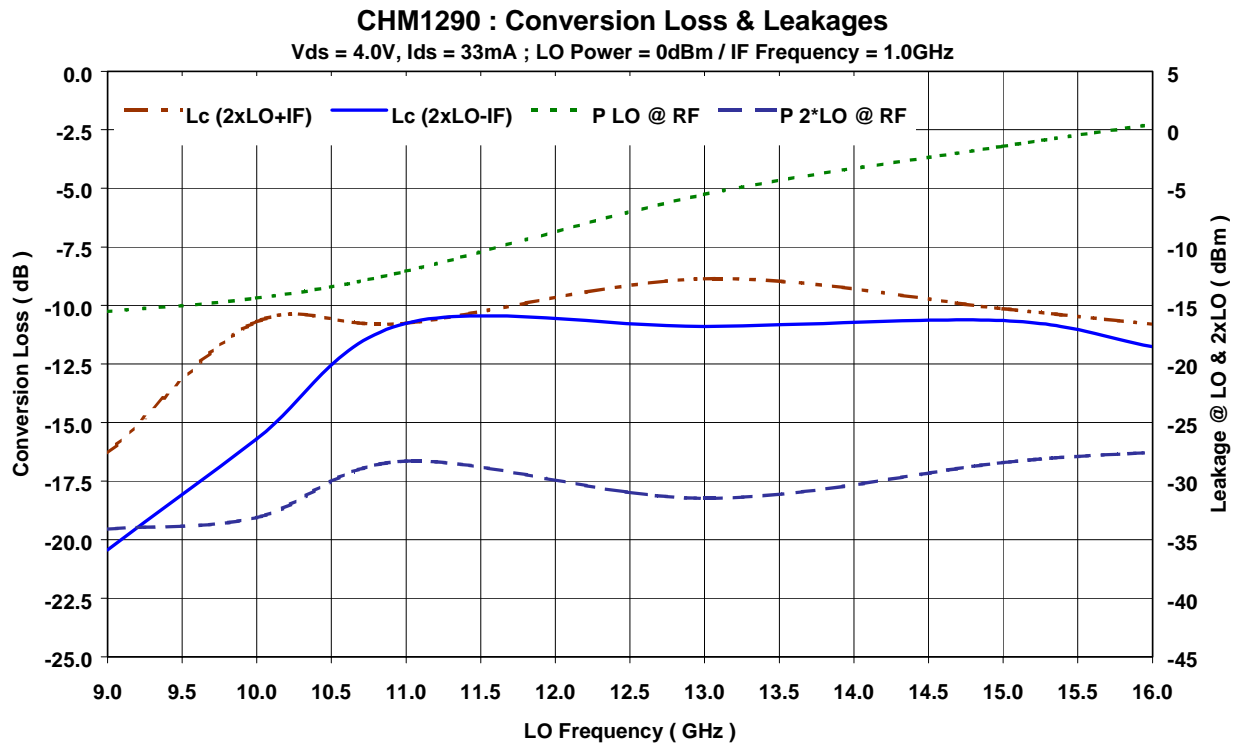
(2) Duration < 1s.



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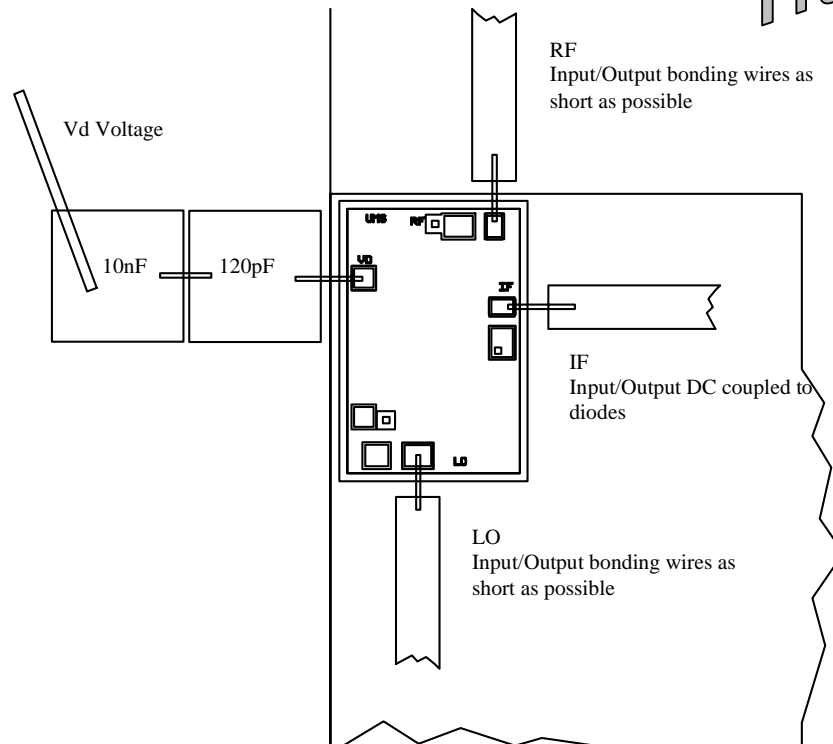


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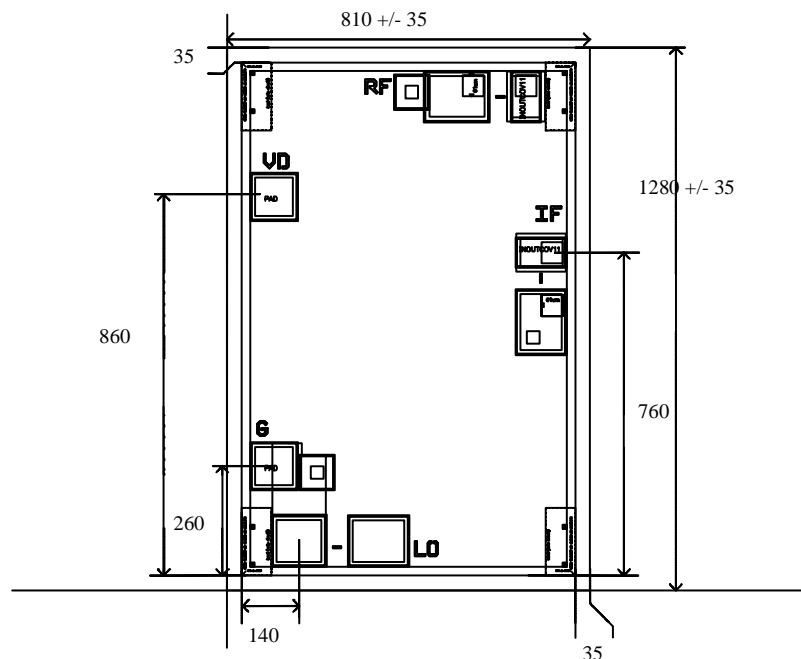
Chip Assembly and Mechanical Data

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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