10-40GHz Frequency Multiplier

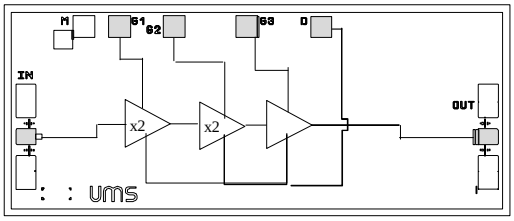
GaAs Monolithic Microwave IC

Description

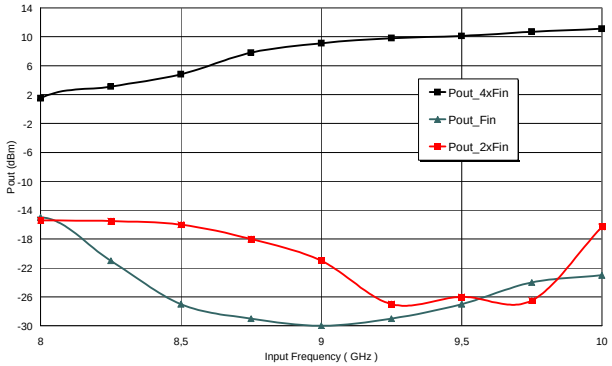
The CHX2092a is a cascadable by 4 frequency multiplier monolithic circuit.
It is designed for a wide range of applications, from military to commercial communication systems. The backside of the chip is both RF and DC grounded. This helps to simplify the assembly process.

The circuit is manufactured with a pHEMT process, 0.25µm gate length, via holes through the substrate, air bridges and electron beam gate lithography.

It is available in chip form



Harmonic Output power vs Frequency



Main Features

- Broadband performances: 9-10GHz
- 11dBm output power for +12dBm input power
- DC bias: Vd=3.5Volt@Id=80mA
- Chip size: 2.31 x 0.97 x 0.10mm

Main Characteristics

Tamb. = 25°C

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	9		10	GHz
Fout	Output frequency range	36		40	GHz
Pin	Input power		12		dBm
Pout_4xFin	4xFin Output power @ +12dBm input power	9	11		dBm

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

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Electrical Characteristics

Tamb = +25℃, Vd= 3.5V

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	9		10	GHz
Fout	Output frequency range	36		40	GHz
Pin	Input power	11	12	14	dBm
Pout_4xFin	4Xfin Output power for +12dBm input power	9	11		dBm
Pout_Fin	Fin level at the output	-18	-22		dBm
Pout_2xFin	2x Fin level at the output		-16		dBm
Pout_3xFin	3x Fin level at the output		-4		dBm
VSWRin	Input VSWR			2:1	
VSWRout	Output VSWR			2:1	
Id	Bias current		80	130	mA

Absolute Maximum Ratings

Tamb = +25℃

Symbol	Parameter	Values	Unit
Vd	Drain bias voltage	4	V
Id	Drain bias current	140	mA
Pin	Maximum Input power	16	dBm
Vg	Gate bias voltage	-2 to +0.4	V
Ta	Operating temperature range	-40 to +85	℃
Tstg	Storage temperature range	-55 to +155	℃

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

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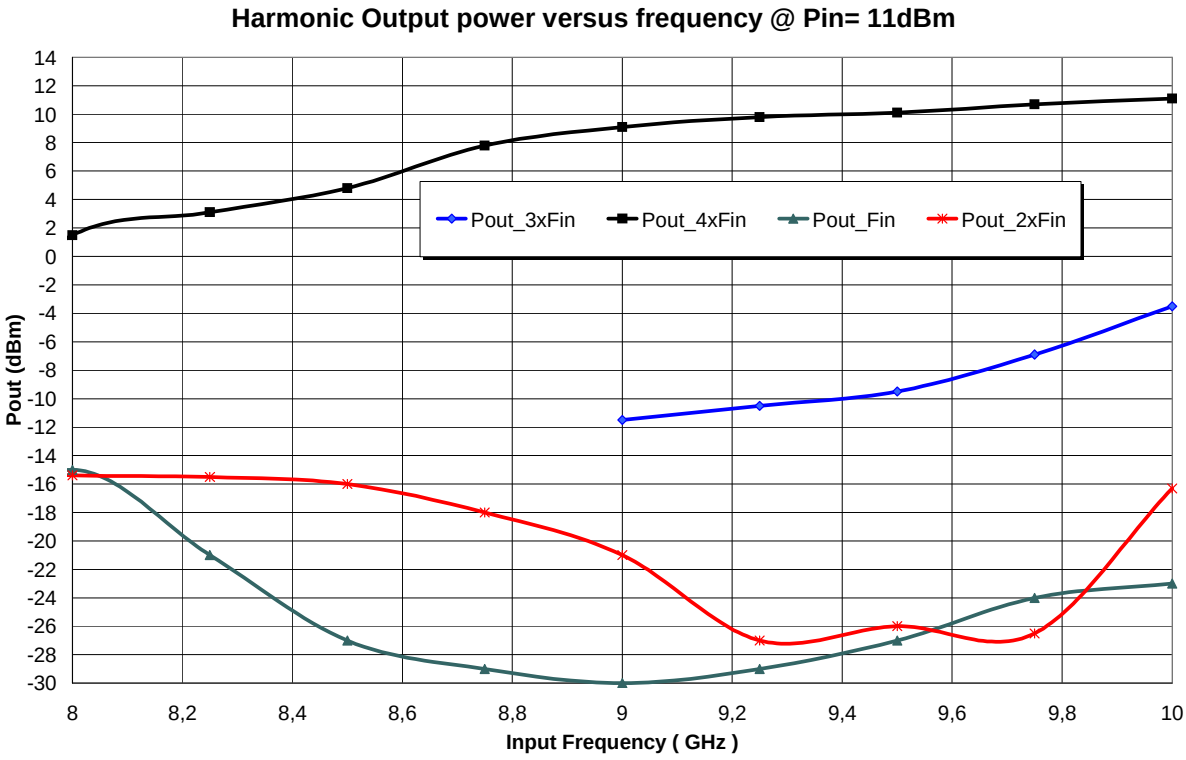
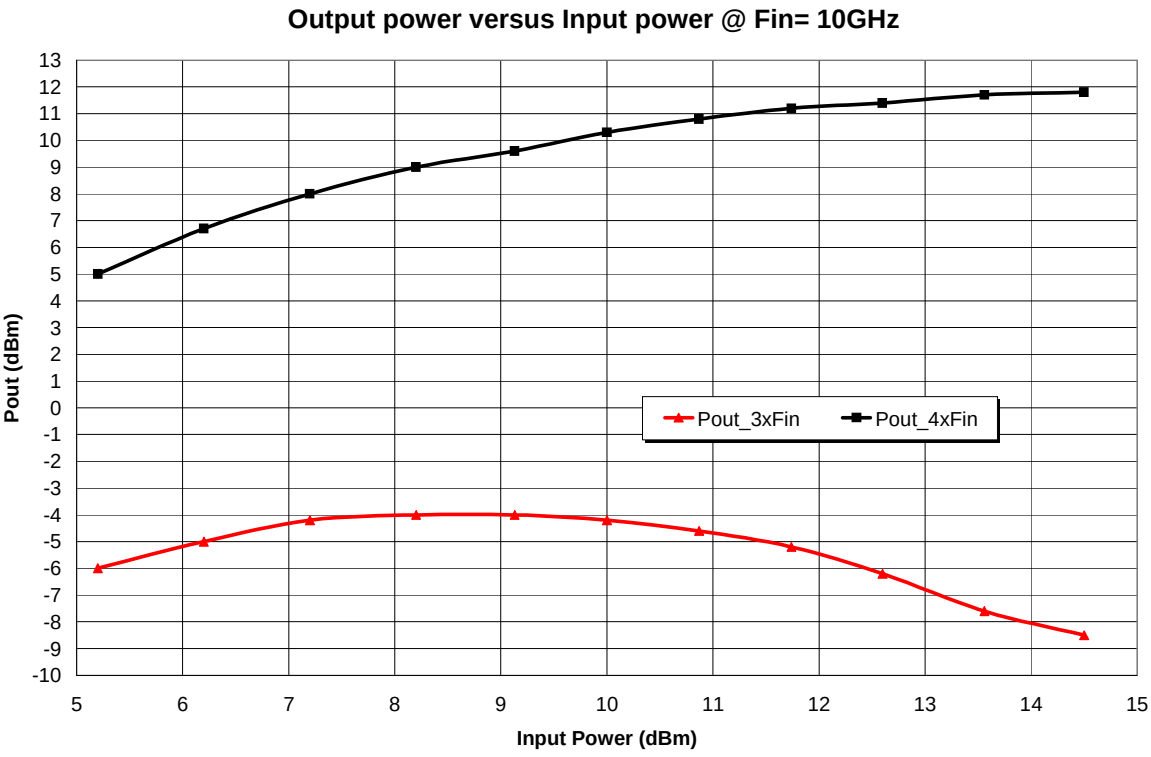
Typical on Jig Measurements.

Bias conditions: Vd = 3.5V, Vg12 = -0.8V, Vg3 = -0.2V





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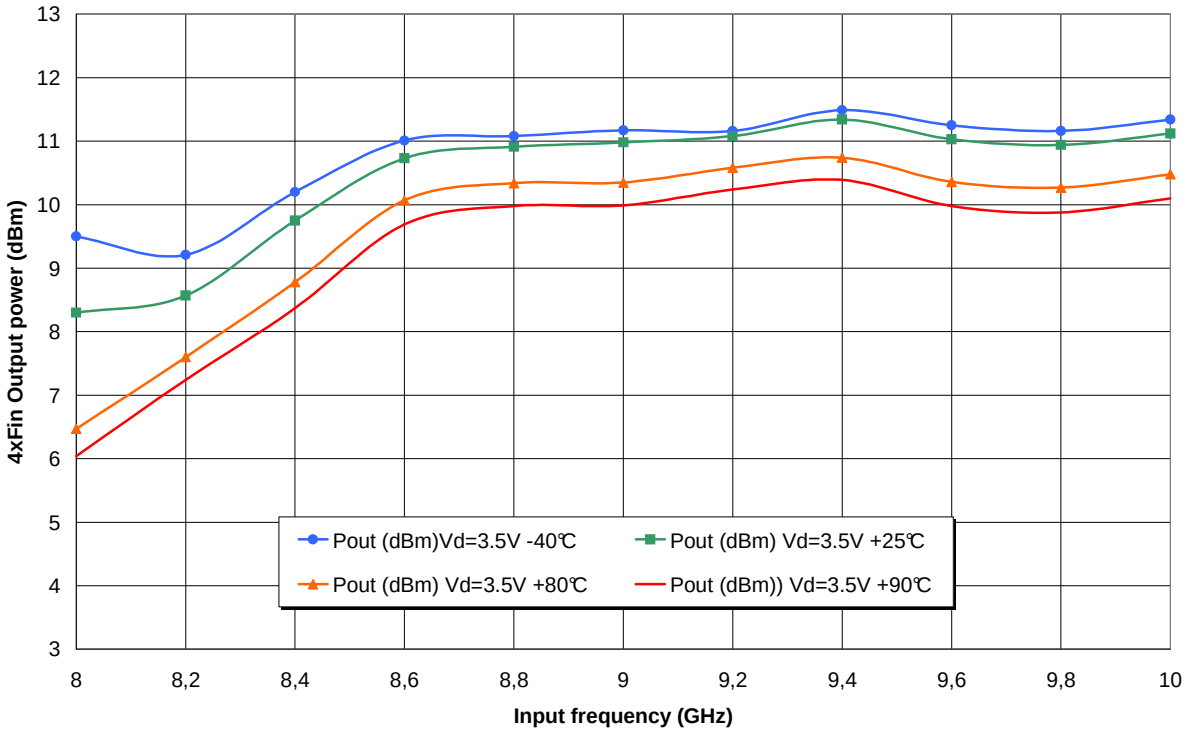
4x Fin Output power versus temperature @ Pin= 12dBm



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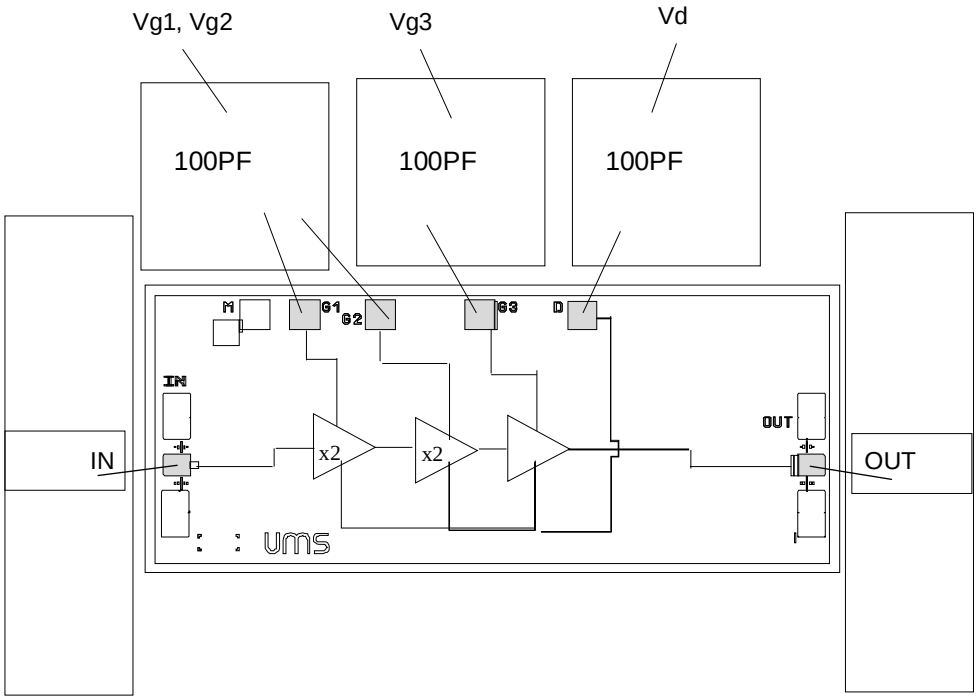
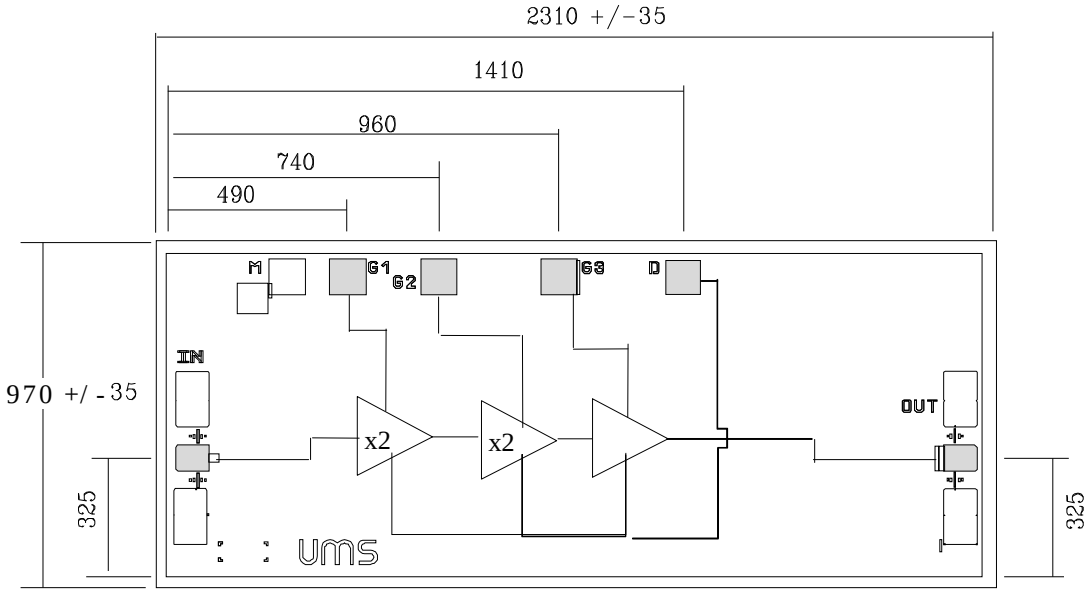
Chip Assembly and Mechanical data



Note: Supply feed should be capacitively bypassed. 25µm diameter gold wire is to be prefered.
Pad Size: 100 x 100µm



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

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Ordering Information

Chip form : CHX2092a99F/00

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