CHX2091-99F

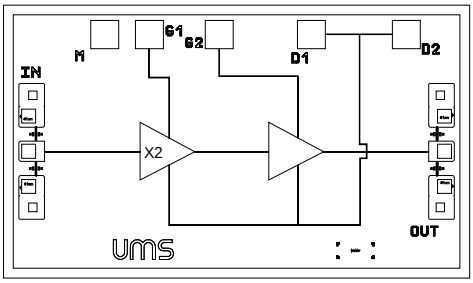
20-40GHz Frequency Multiplier

GaAs Monolithic Microwave IC

Description

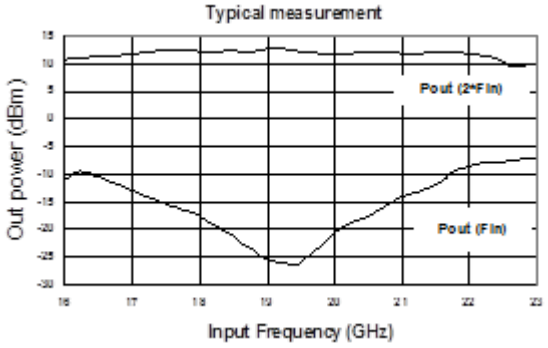
The CHX2091-99F is a cascadable by 2 frequency multiplier monolithic circuit.
It is designed for a wide range of applications, from military to commercial communication systems. The backside of the chip is both RF and DC grounds. This helps simplify the assembly process.

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



Main Features

- Broadband performances: Fin 17-20GHz
- 12dBm output power for +12dBm input power
- DC bias : Vd=3.5Volt@Id=50mA
- Chip size: 1.67 x 0.97 x 0.10 mm



Main Characteristics

Tamb.= +25°C

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	17		20	GHz
Fout	Output frequency range	34		40	GHz
Pin	Input power		12		dBm
Pout	Output power for +12dBm input power	10	12		dBm

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

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Electrical Characteristics

Tamb = +25°C, Vdd = 3.5V ; Vg1 = -0.9V ; Vg2 tuned for Id=50mA (# -0.4V) ; Pin = +12dBm

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	17		20	GHz
Fout	Output frequency range	34		40	GHz
Pin	Input power		12	15	dBm
Pout	Output power for +12dBm input power	10	12		dBm
Is/Fo	Fin rejection at the output (17 < Fin < 20GHz)	22	25		dBc
VSWRin	Input VSWR			2.5:1	
VSWRout	Output VSWR			2.5:1	
Id	Bias current with RF , Pin=+12dBm		50	70	mA

Absolute Maximum Ratings

Tamb = +25°C

Symbol	Parameter	Values	Unit
Vd	Drain bias voltage	5	V
Id	Drain bias current	120	mA
Vg	Gate bias voltage	-2 to +0.4	V
Pin	Input Power	17	dBm
Ta	Operating temperature range	-40 to +85	°C
Tstg	Storage temperature range	-55 to +155	°C

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

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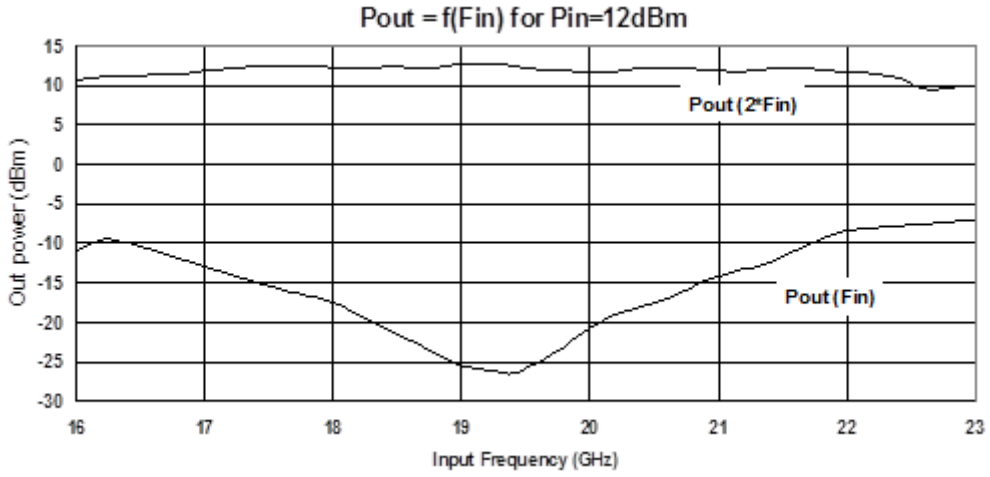
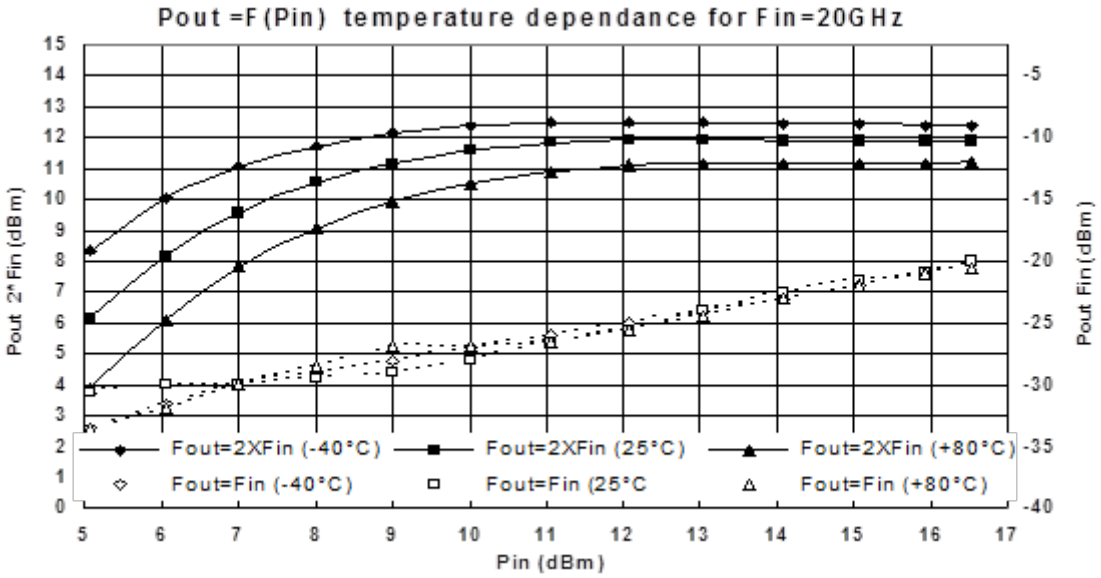
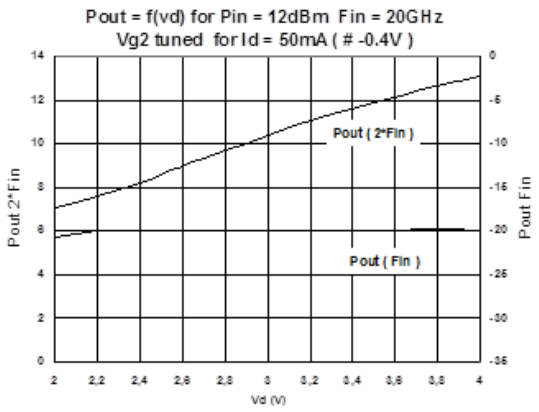
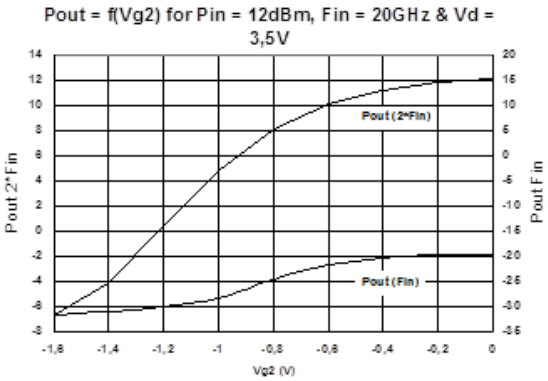
Typical on jig Measurements

Bias conditions: vd = 3.5V , Vg1 = -0.9V , Vg2 tuned for Id = 50mA (# -0.4V)









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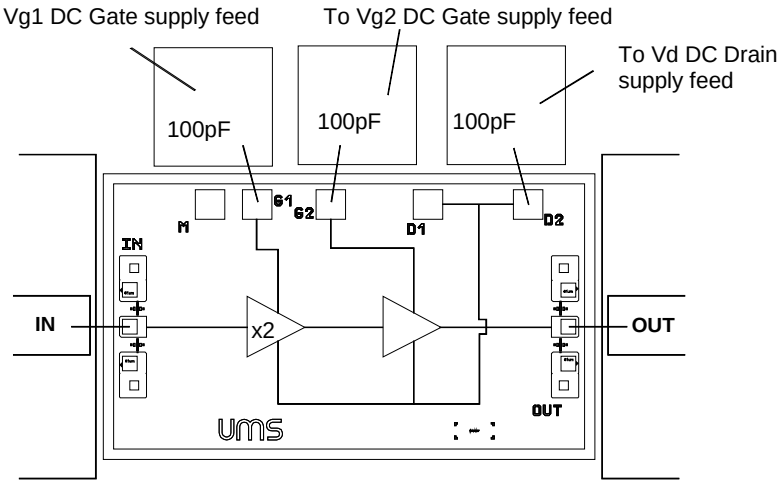
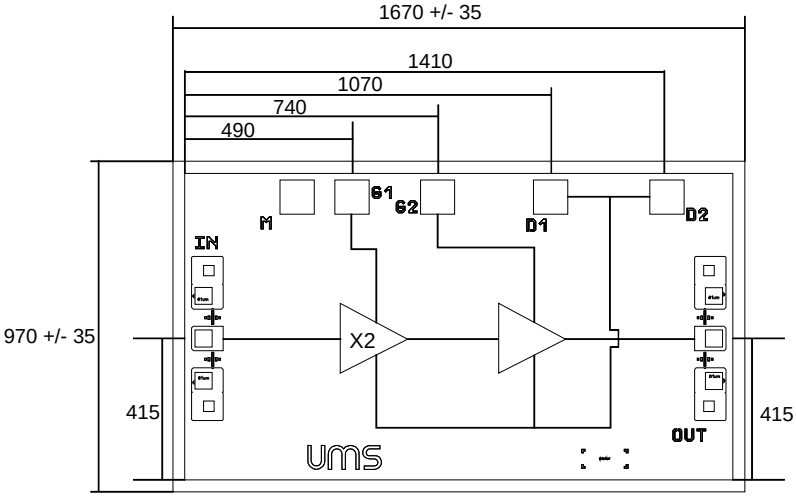
Chip Assembly and Mechanical Data

Vd = 3.5V Vg1 = -0.9V Vg2 tuned for Id = 50mA (# -0.4V)



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)

Ordering Information

Chip form : CHX2091-99F/00

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