

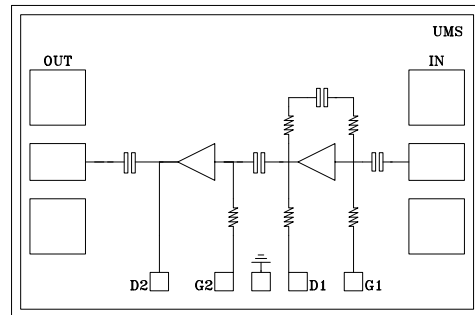
10-30GHz Frequency Multiplier

GaAs Monolithic Microwave IC

Description

The CHX2093a is a cascaded by 3 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 to simplify the assembly process.

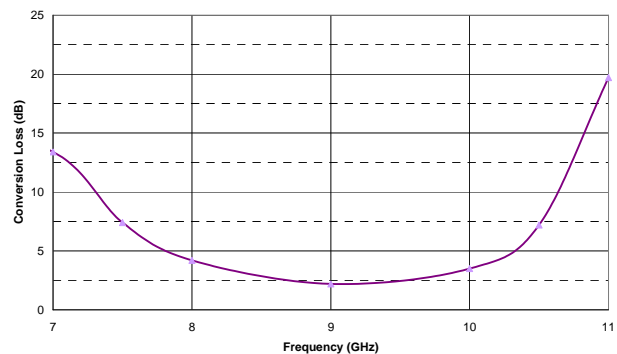
The circuit is manufactured with a pHEMT process, 0.25µm gate length, via holes through the substrate, air bridges and electron beam gate lithography.



Main Features

- Frequency performance: 9-10GHz
- 2.5dB conversion loss @ Pin=5dBm
- DC bias: Vd=3.5V @ Id=80mA
- Chip size: 1.94 x 1.17 x 0.10 mm

Conversion Loss @Pin=5dBm



Main Characteristics

Tamb. = 25°C

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	9		10	GHz
Fout	Output frequency range	27		30	GHz
Pin	Input power	5	7	9	dBm
Lc	Conversion loss @ Pin=5dBm	0.5	2.5	4	dB
	Pin=9dBm	3.5	5.5	7	dB

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

Electrical Characteristics

Tamb = +25°C, Vd = 3.5V, Id=80mA

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	9		10	GHz
Fout	Output frequency range	27		30	GHz
Pin	Input power	5	7	9	dBm
Lc	Conversion loss @ Pin=5dBm Pin=9dBm	0.5	2.5	4	dB
		3.5	5.5	7	dB
H1_sup	First harmonic suppression	5			dBc
H2_sup	Second harmonic suppression	10			dBc
VSWRin	Input VSWR			2:1	
Vd	Drain Voltage		3.5	3.8	V
Id	Drain current		80	100	mA
Vg	Gate voltage	-0.4	-0.2	0	V

Absolute Maximum Ratings (1)

Tamb = +25°C

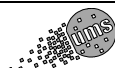
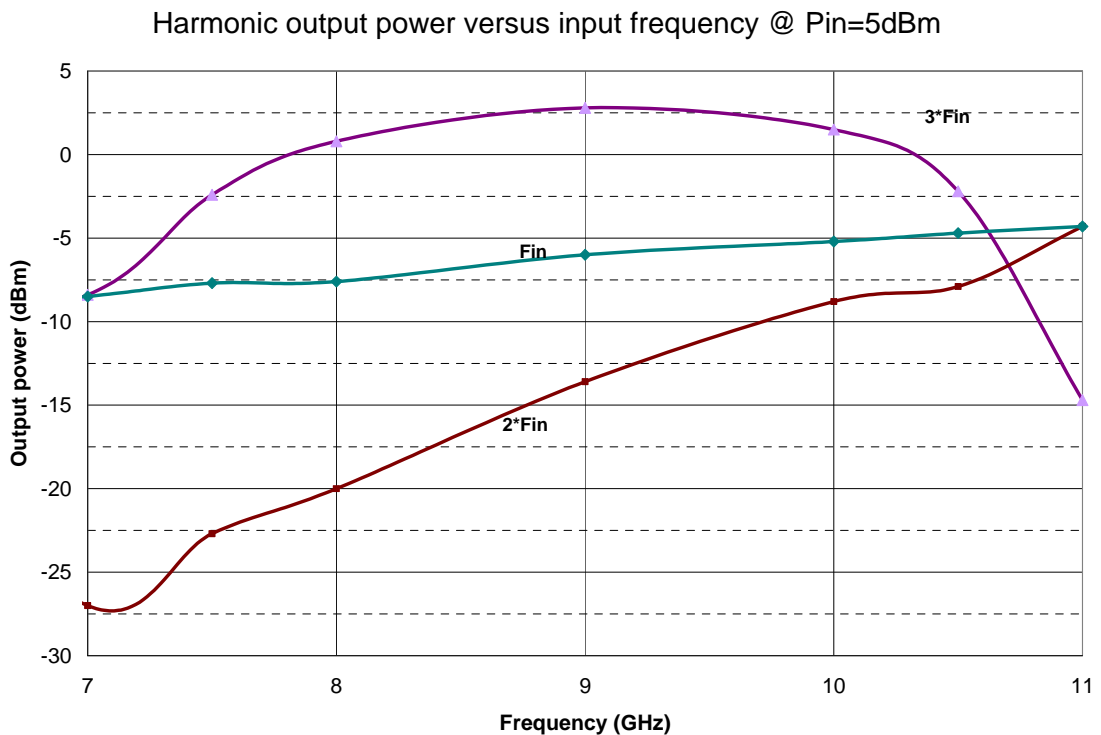
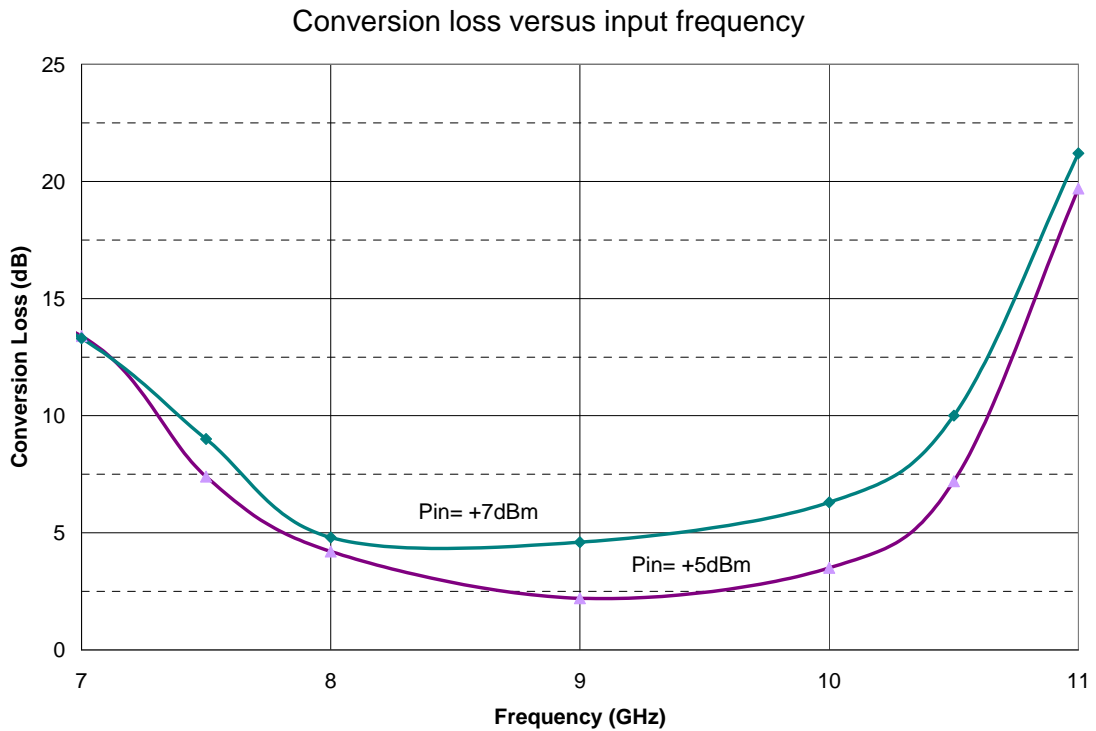
Symbol	Parameter	Values	Unit
Vd	Drain bias voltage	4	V
Vg	Gate bias voltage	-2	V
Pin	Maximum peak input power overdrive (2)	+15	dBm
Top	Operating temperature range	-40 to +85	°C
Tstg	Storage temperature range	-55 to +125	°C

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

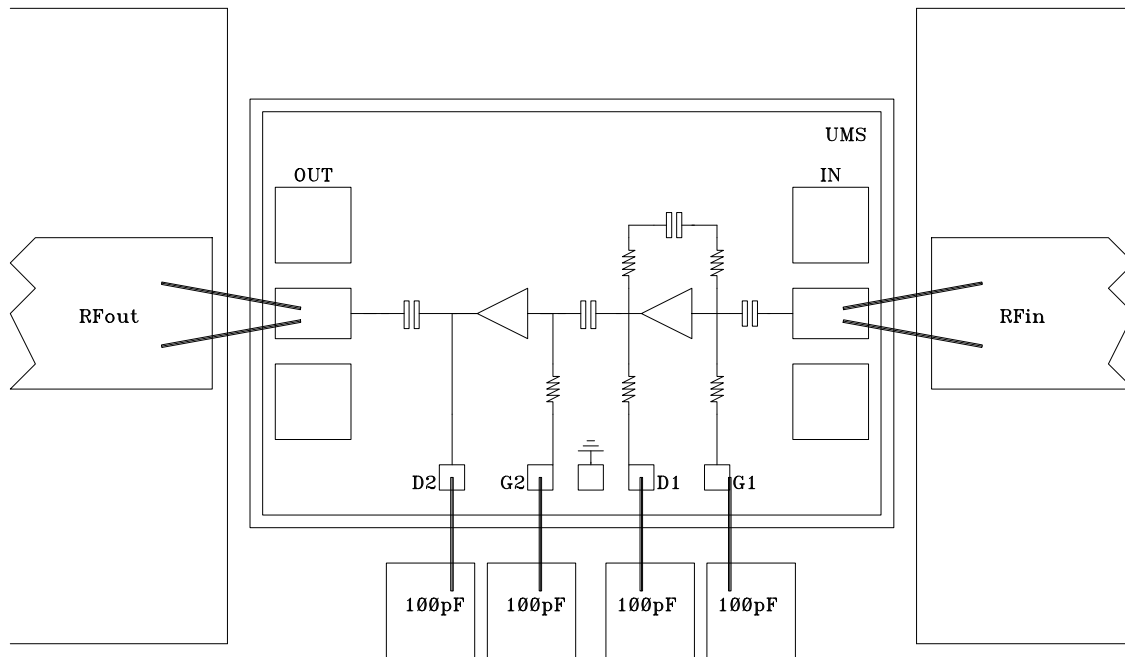
(2) Duration < 1s.

Typical results in test fixture

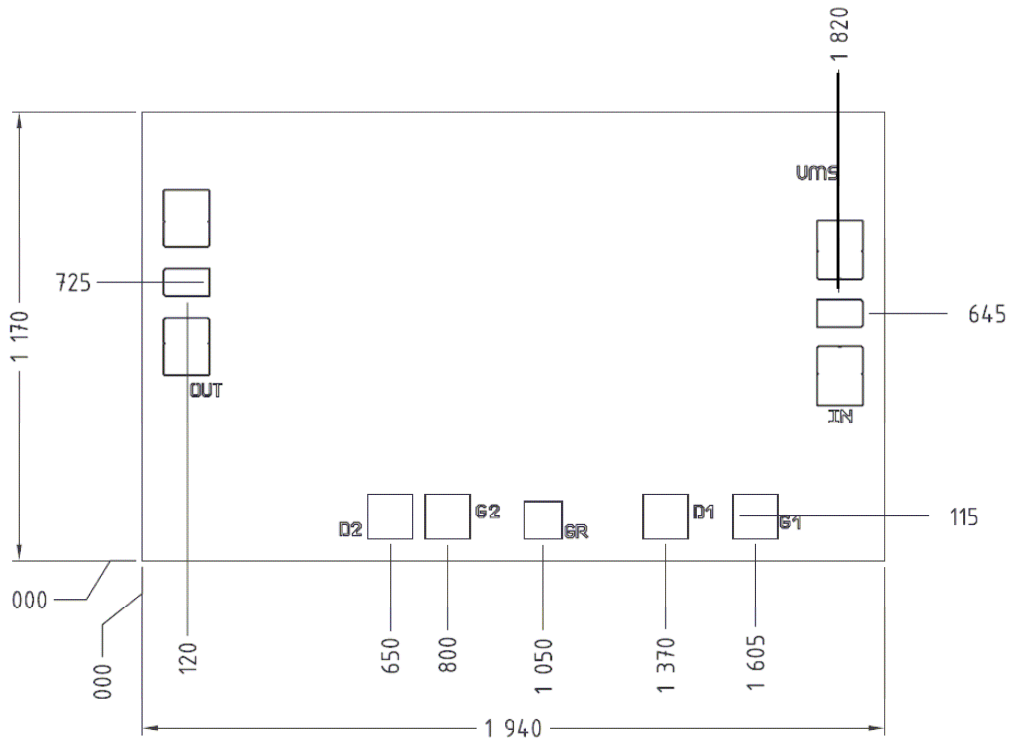
Tamb = 25°C, Vd=3.5V, Id=80mA



Chip Assembly and Mechanical Data



Note: Supply feed should be capacitively bypassed. 25 μ m diameter gold wire is to be preferred.



UNITS : μm
 Tol : $\pm 35\mu\text{m}$

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

ORDERING INFORMATION

Chip form : CHX2093a99F/00

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