

## 10-30GHz Frequency Multiplier

### GaAs Monolithic Microwave IC

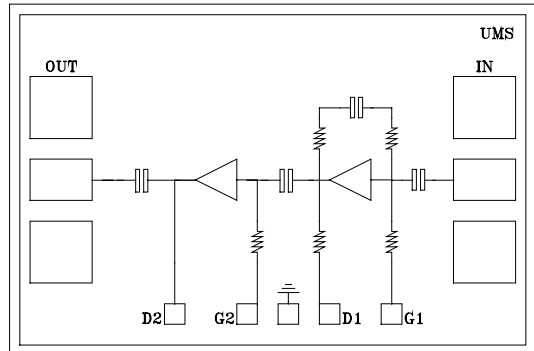
target

#### 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 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.



#### 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

#### 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
	First harmonic suppression	10			dBc
	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)**

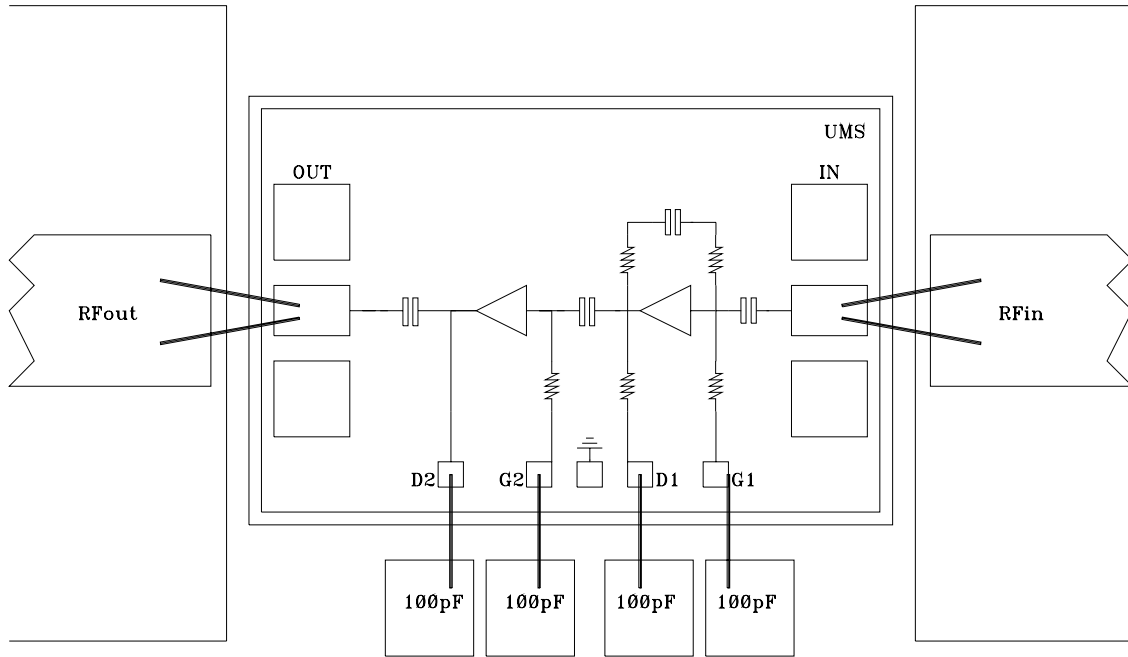
Tamb = +25°C

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

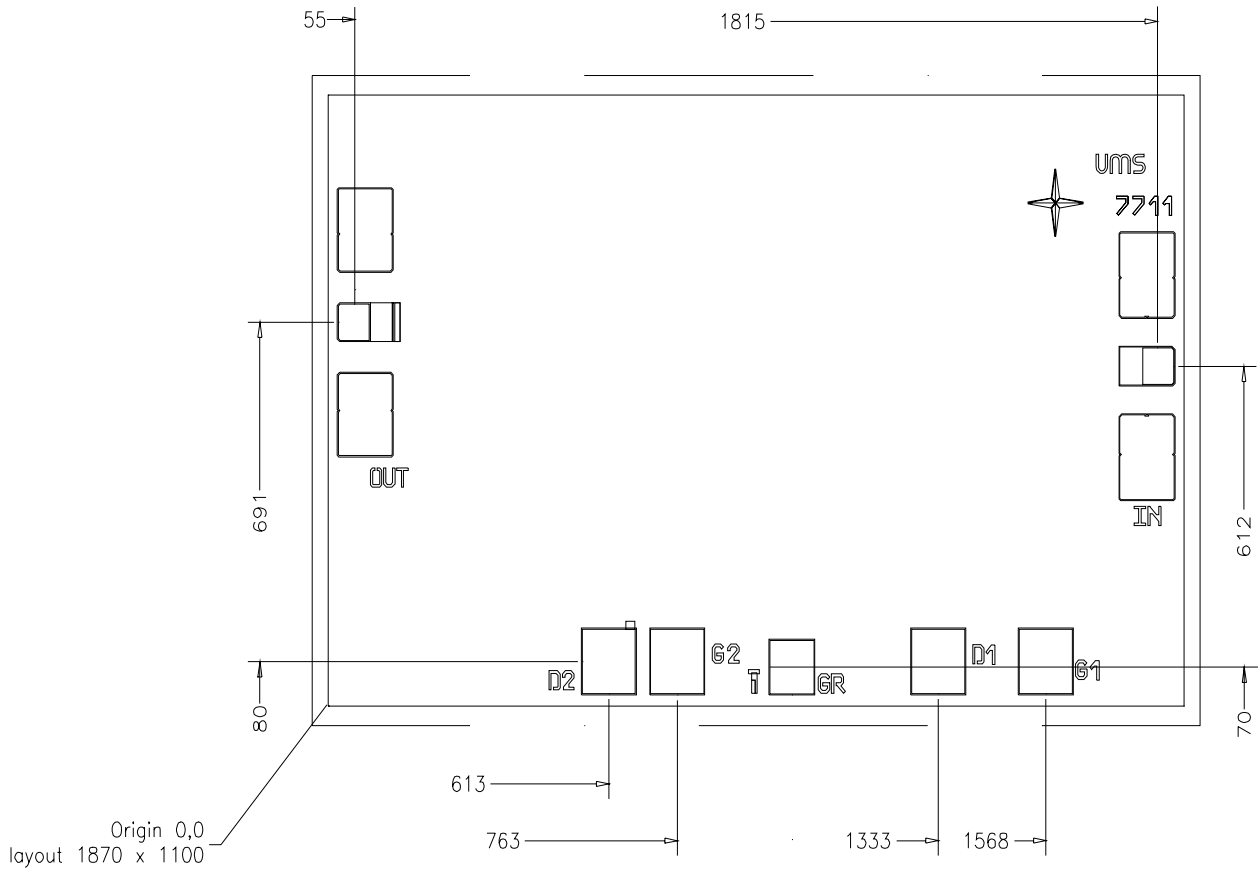
(1) Operation of this device above anyone of these paramaters may cause permanent damage.

(2) Duration &lt; 1s.

**Chip Assembly and Mechanical Data**



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



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

## ORDERING INFORMATION

Chip form : CHX2093a99FF/00

Information furnished is believed to be accurate and reliable. However **United Monolithic Semiconductors S.A.S.** assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of **United Monolithic Semiconductors S.A.S.** Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. **United Monolithic Semiconductors S.A.S.** products are not authorised for use as critical components in life support devices or systems without express written approval from **United Monolithic Semiconductors S.A.S.**