

10-30GHz Frequency Multiplier

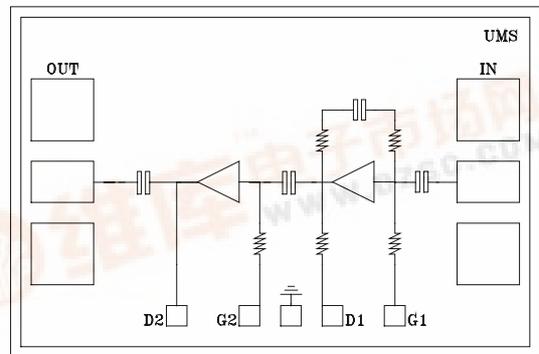
GaAs Monolithic Microwave IC

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 simplify the assembly process.

The circuit is manufactured with a PM-HEMT 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

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 | 0.5 | 2.5 | 4 | dB |
| | Pin=9dBm | 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)

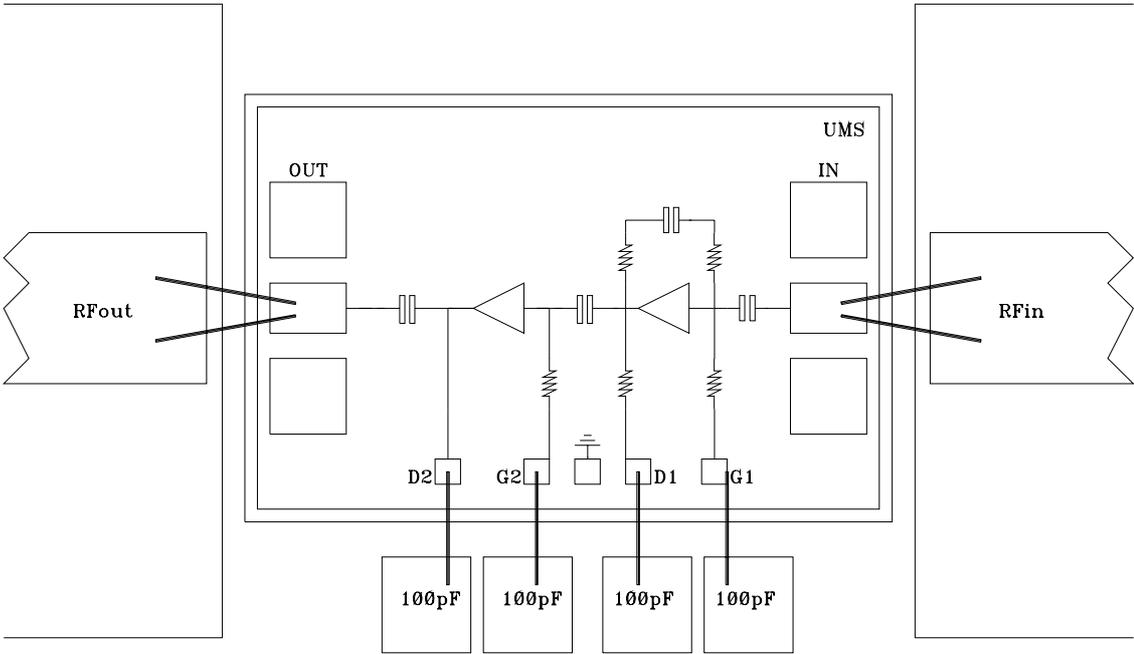
Tamb = +25°C

| 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 |

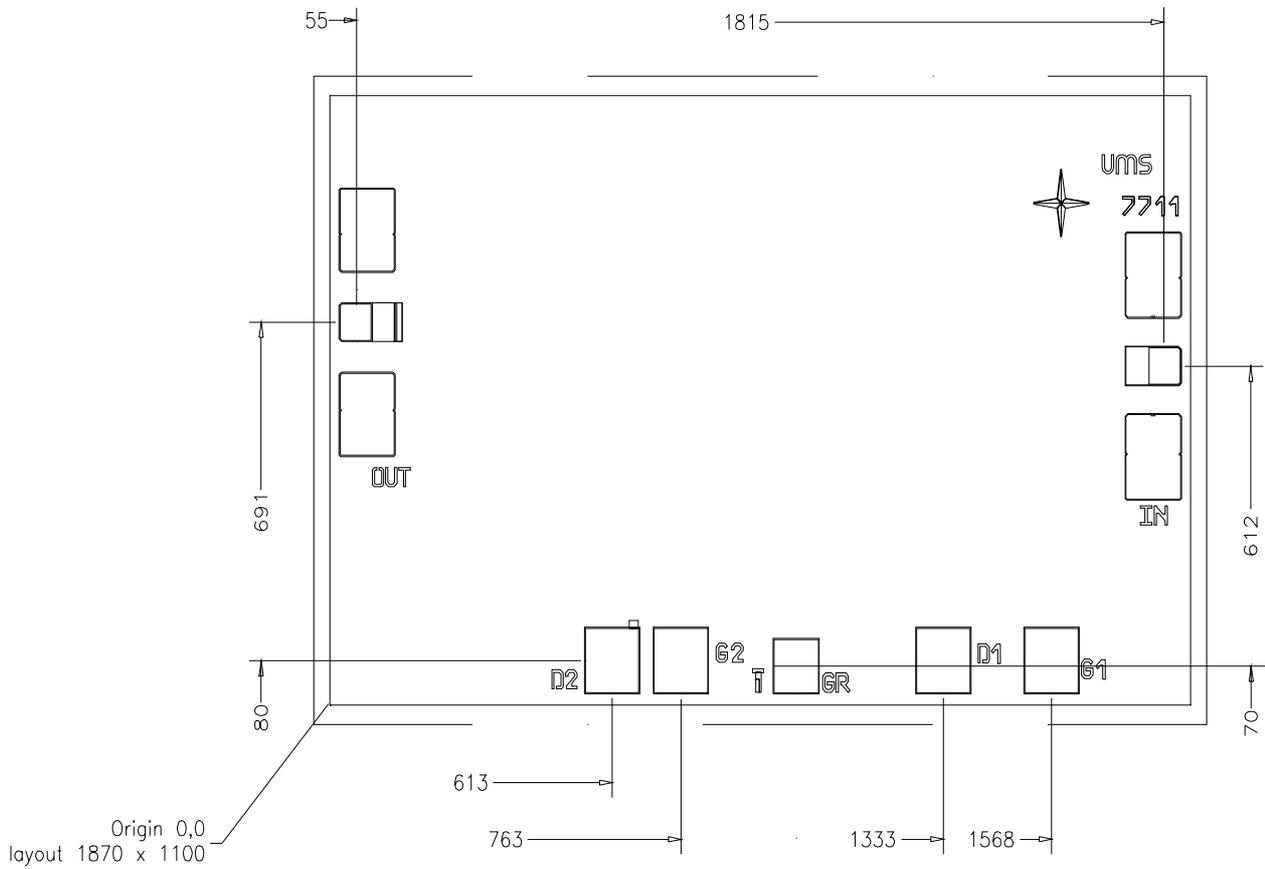
(1) Operation of this device above any of these parameters may cause permanent damage.

(2) Duration < 1s.

Chip Assembly and Mechanical Data



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



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

ORDERING INFORMATION

Chip form : CHX2093a99FF/00

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