30-60GHz Frequency Multiplier

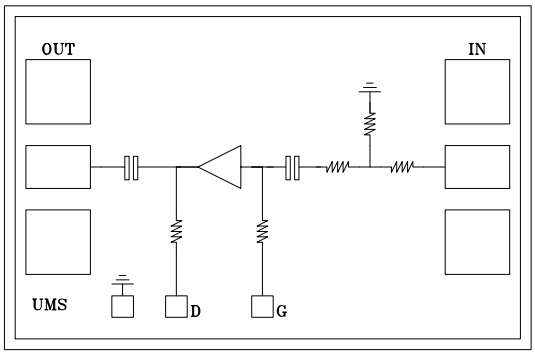
GaAs Monolithic Microwave IC

target

Description

The CHX2190a 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 PM-HEMT process, 0.15µm gate length, via holes through the substrate, air bridges and electron beam gate lithography.



Main Features

- Frequency performance: 28-30GHz
- 4dB conversion loss
- DC bias: Vd=3.3V @ Id<3mA
- Chip size: 1.47 x 1.12 x 0.10 mm

Main Characteristics

Tamb. = 25℃

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	28		30	GHz
Fout	Output frequency range	56		60	GHz
Pin	Input power	0	3	5	dBm
Lc	Conversion loss	1	4	6	dB

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

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Electrical Characteristics

Tamb = +25℃, Vd = 3.3V

Symbol	Parameter	Min	Typ	Max	Unit
Fin	Input frequency range	28		30	GHz
Fout	Output frequency range	56		60	GHz
Pin	Input power	0	3	5	dBm
Lc	Conversion loss	1	4	6	dB
	Harmonic suppression	15			dBc
VSWRin	Input VSWR		2:1	2.3:1	
Vd	Drain bias voltage		3.3	3.5	V
Id	Drain current (RF OFF)			3	mA
Vg	Gate voltage	-1.4	-1	-0.7	V

(1) With an Off chip 180° IF Divider

Absolute Maximum Ratings (1)

Tamb = +25℃

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	℃
Tstg	Storage temperature range	-55 to +125	℃

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

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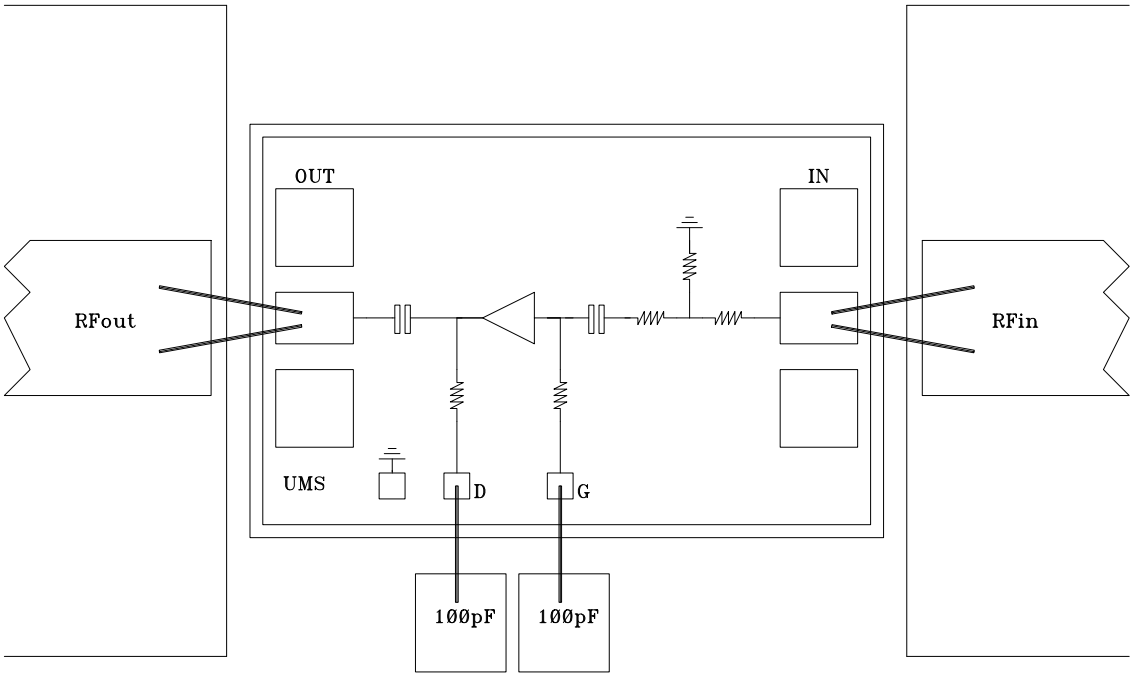
Chip Assembly and Mechanical Data



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

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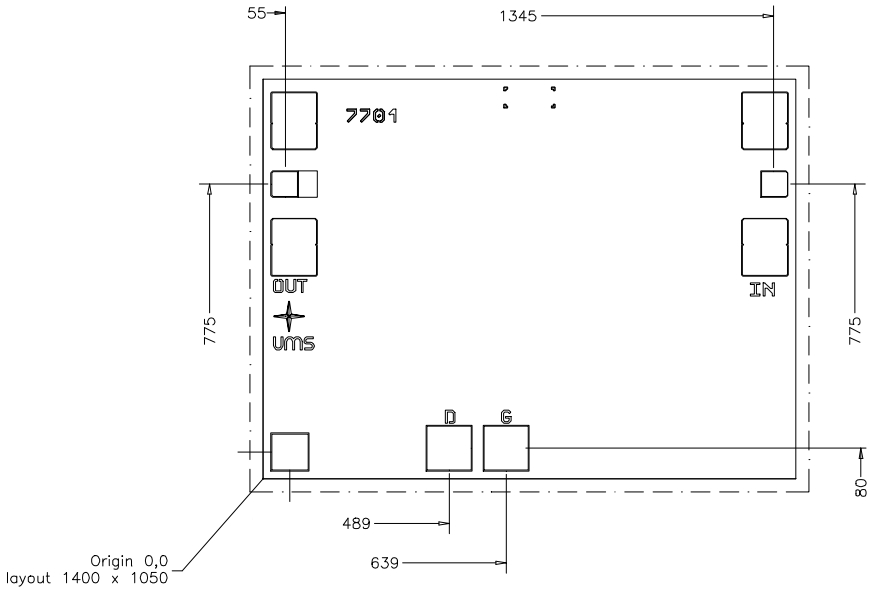

Bonding pad positions.
(Chip thickness: 100µm. All dimensions are in micrometers)

ORDERING INFORMATION

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