

## 20-30GHz High Power Amplifier

### GaAs Monolithic Microwave IC

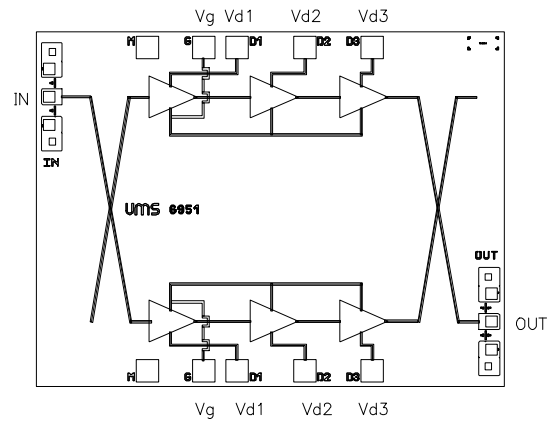
*preliminary*

#### Description

The CHA4092 is a high gain broadband three-stage balanced monolithic power amplifier. It is designed for a wide range of applications, from military to commercial communication systems.

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.

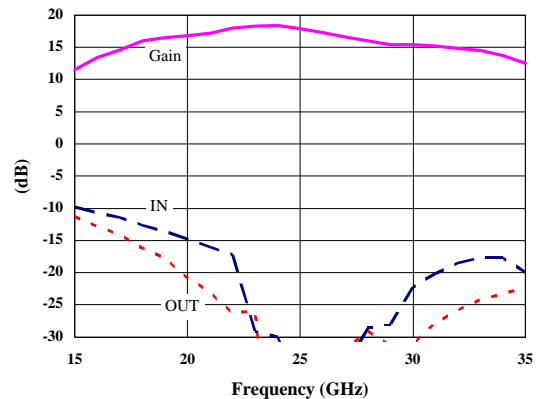
It is available in chip form.



#### Main Features

- ▮ Broadband performances : 20-30GHz
- ▮ 22 dBm output power ( 1dB gain comp. )
- ▮ 17 dB  $\pm$  1.5 dB gain
- ▮ Chip size : 1.65 X 2.15 X 0.10 mm

Typical on wafer measurements :



#### Main Characteristics

Tamb. = 25°C

Symbol	Parameter	Min	Typ	Max	Unit
Fop	Operating frequency range	20		30	GHz
G	Small signal gain	16	17		dB
P1dB	Output power at 1dB gain compression		22		dBm
Id	Bias current		700	900	mA

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

**Electrical Characteristics for Broadband Operation**

Tamb = +25°C, Vd1,2,3 = 3.5Volts

Symbol	Parameter	Min	Typ	Max	Unit
Fop	Operating frequency range (1)	20		30	GHz
G	Small signal gain (1) (2)	16	17		dB
$\Delta G$	Small signal gain flatness (1) (2)		$\pm 1.5$		dB
Is	Reverse isolation (1)		30		dB
P1db	Pulsed Output power at 1dB gain compression (1)		22		dBm
VSWRin	Input VSWR (1)			2.0:1	
VSWRout	Output VSWR (1)			2.0:1	
Id	Bias current		700	900	mA

(1) These values are representative of on-wafer measurements that are made without bonding wires at the RF ports. In the case of a jig or a module CW mode operation, the typical output power may be around 2dB less.

(2) Vd1,2,3 = 2Volts

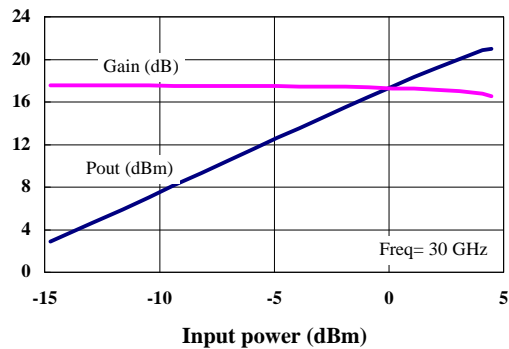
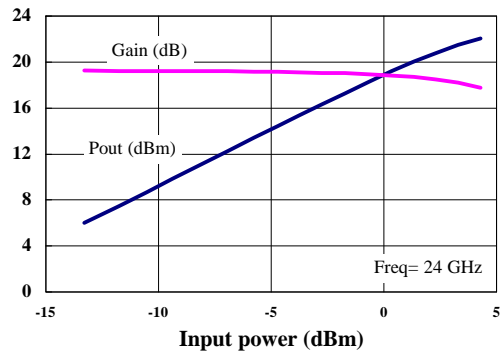
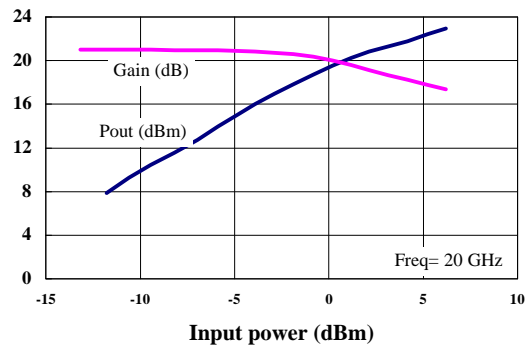
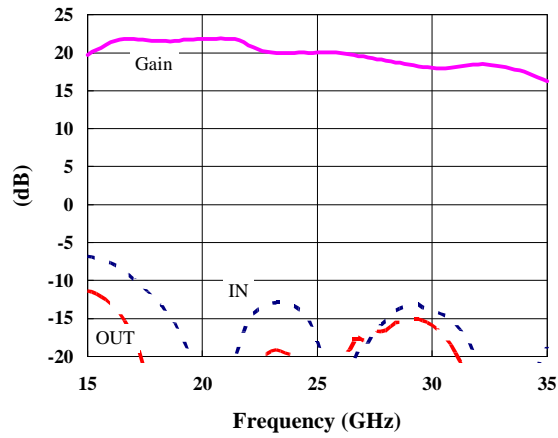
**Absolute Maximum Ratings**

Tamb. = 25°C (1)

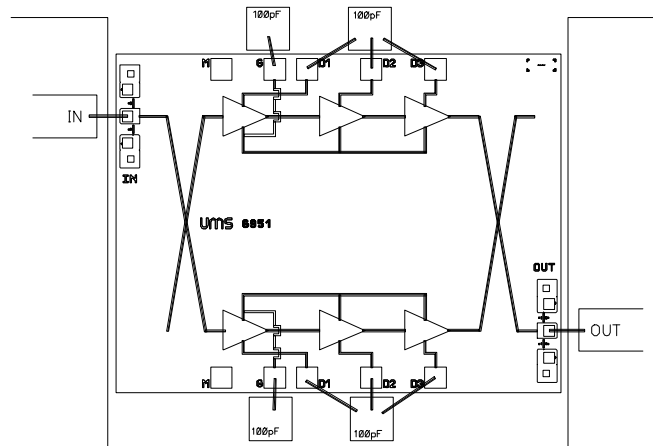
Symbol	Parameter	Values	Unit
Vd	Drain bias voltage	4	V
Id	Drain bias current	1200	mA
Vg	Gate bias voltage	-2 to +0.4	V
Ta	Operating temperature range	-40 to +85	°C
Tstg	Storage temperature range	-55 to +155	°C

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

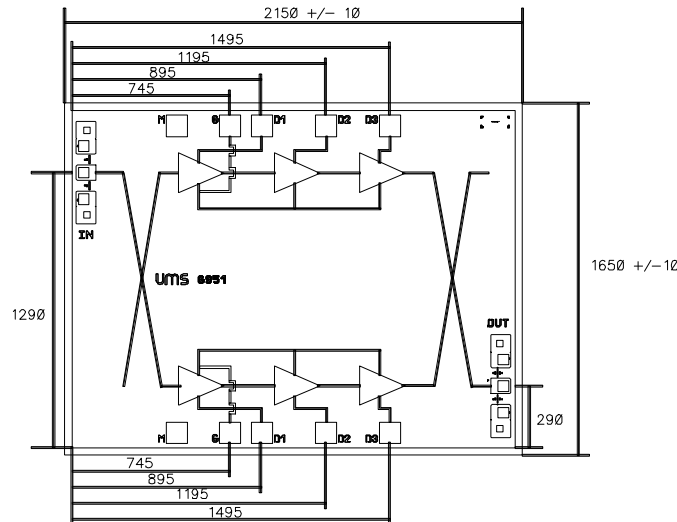
Bias Conditions :  $T_{amb} = +25^{\circ}\text{C}$ ,  $V_d = 3.5\text{Volt}$ ,  $V_g = -0.2\text{Volt}$ .



## Chip Assembly and Mechanical Data



Note : Supply feed should be capacitively bypassed.



**Bonding pad positions.**

## Ordering Information

: CHA4092-99F/00

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