

20-30GHz High Power Amplifier

GaAs Monolithic Microwave IC

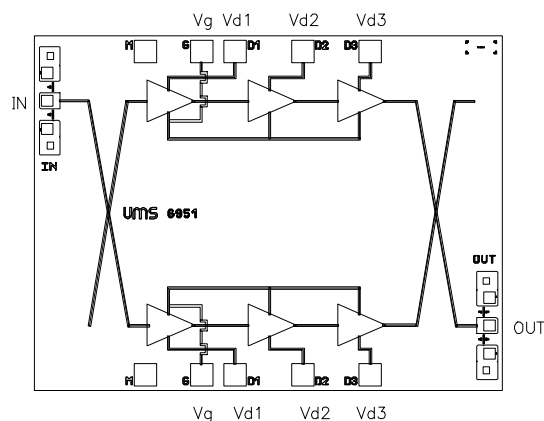
preliminary

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 μ m gate length, via holes through the substrate, air bridges and electron beam gate lithography.

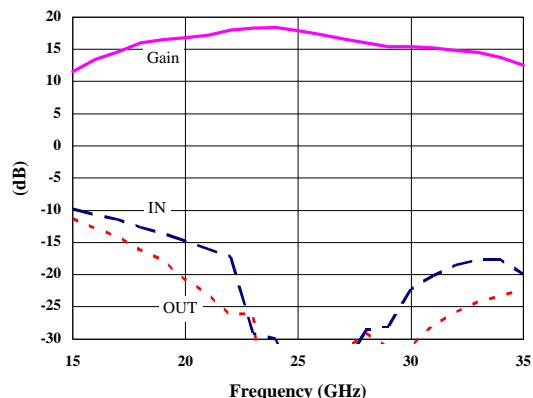
It is available in chip form.



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

T_{amb} = +25°C, V_{d1,2,3} = 3.5Volts

Symbol	Parameter	Min	Typ	Max	Unit
F _{op}	Operating frequency range (1)	20		30	GHz
G	Small signal gain (1) (2)	16	17		dB
ΔG	Small signal gain flatness (1) (2)		± 1.5		dB
I _s	Reverse isolation (1)		30		dB
P _{1dB}	Pulsed Output power at 1dB gain compression (1)		22		dBm
V _{SWRin}	Input VSWR (1)			2.0:1	
V _{SWRout}	Output VSWR (1)			2.0:1	
I _d	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) V_{d1,2,3} = 2Volts

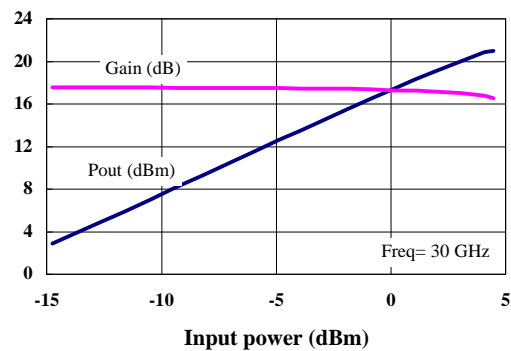
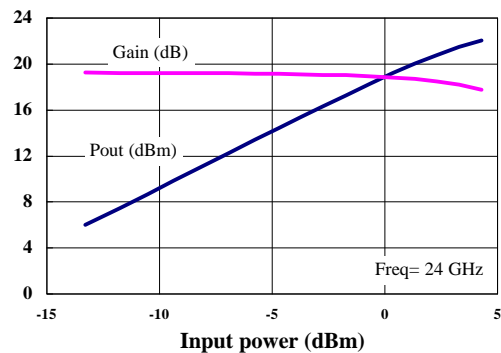
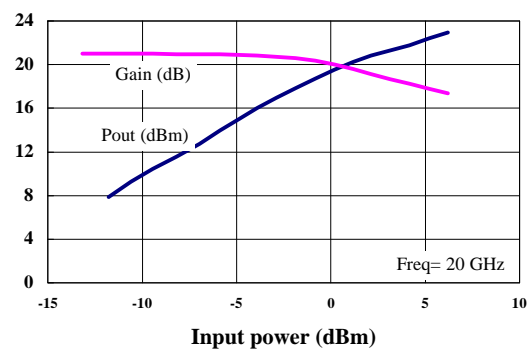
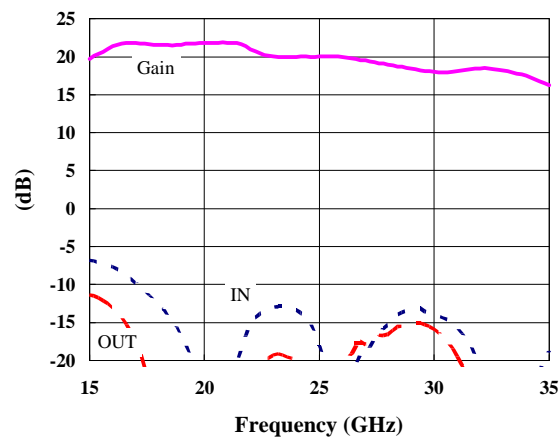
Absolute Maximum Ratings

T_{amb.} = 25°C (1)

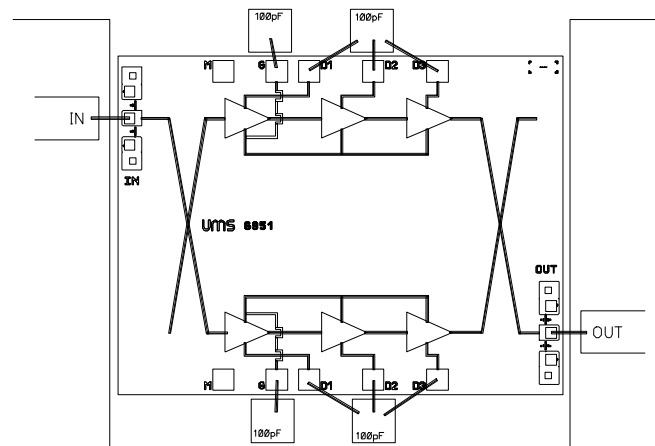
Symbol	Parameter	Values	Unit
V _d	Drain bias voltage	4	V
I _d	Drain bias current	1200	mA
V _g	Gate bias voltage	-2 to +0.4	V
T _a	Operating temperature range	-40 to +85	°C
T _{stg}	Storage temperature range	-55 to +155	°C

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

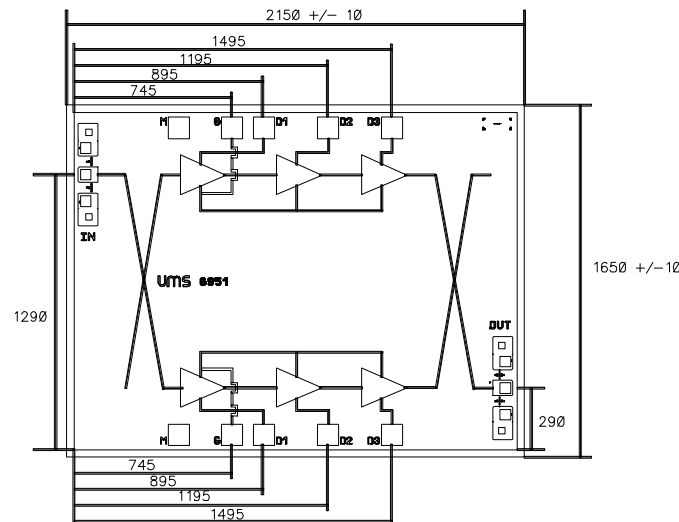
Bias Conditions : $T_{amb} = +25^{\circ}\text{C}$, $V_d = 3.5\text{V}$, $V_g = -0.2\text{V}$.



Chip Assembly and Mechanical Data



Note : Supply feed should be capacitively bypassed.



Bonding pad positions.

Ordering Information

: CHA4092-99F/00

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