

X Band Driver Amplifier

GaAs Monolithic Microwave IC

Description

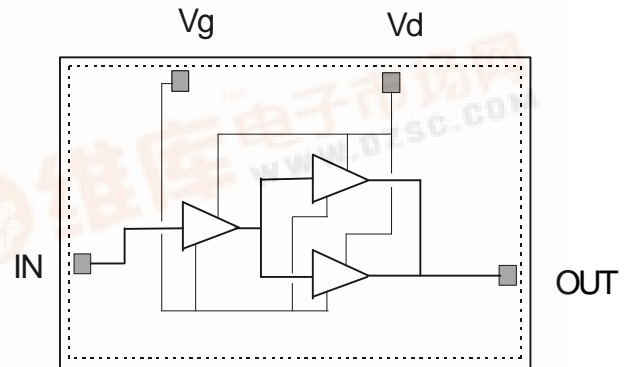
This CHA5010b is a two-stage monolithic driver amplifier.

The circuit is manufactured with a standard MESFET process : via holes through the substrate, air bridges and electron beam gate lithography.

It is available in chip form.

Main Features

- | Broadband performance : 9-10.5GHz
- | 27dBm output power
(pulsed meas., -1dB gain compression)
- | 15dB gain
- | ± 1.5 dB gain flatness
- | Chip size : 2,09 x 1,27 x 0.10 mm



Main Characteristics

Tamb. = 25°C

Symbol	Parameter	Min	Typ	Max	Unit
Fop	Operating frequency range	9		10.5	GHz
G	Small signal gain	14	15		dB
Pout	Output power (Pulsed meas., Pin = +13dBm)	26	27		dBm

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

Electrical Characteristics (1)

Tamb = +25°C, Vd = 8V, Vg = -1.5V

Symbol	Parameter	Min	Typ	Max	Unit
Fop	Operating frequency range	9		10.5	GHz
G	Small signal gain @ Pin = +5dBm	14	15		dB
ΔG	Small signal gain flatness		± 1.5		dB
P1db	Pulsed output power @ Pin = +13dBm	26	27		dBm
PAE	Power added efficiency at saturation		15		%
VSWRin	Input VSWR (2)			2.0:1	
Id	Bias current			520	mA

(1) These values are representative of on-wafer pulsed measurements that are made without bonding wires at the RF ports.

(2) Vd = 3.5V, Vg = -1.5V, [S] parameter measurements.

Absolute Maximum Ratings (1)

Tamb = +25°C

Symbol	Parameter	Values	Unit
Vd	Positive supply voltage	+10	V
Pdiss	Maximum power dissipated	7.0 @ Ta = +25°C 4.3 @ Ta = +70°C	W
Vg	Negative supply voltage	-3.5 to 0	V
Pin	Maximum peak input power overdrive (2)	+20	dBm
Ta	Operating temperature range	-25 to +70	°C
Tstg	Storage temperature range	-55 to +125	°C

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

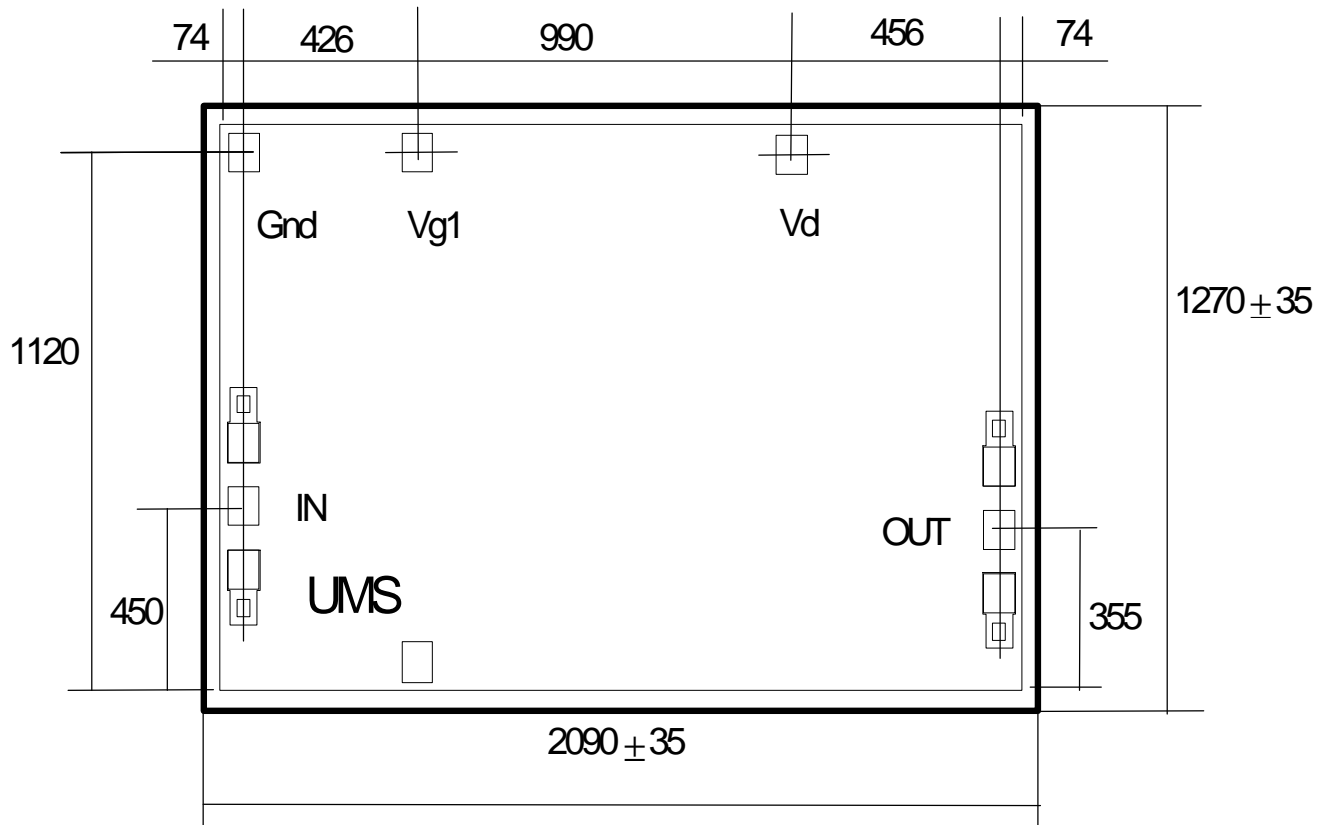
(2) Duration < 1s.

Typical On Wafer Scattering Parameters

Tamb = +25°C, Bias Conditions : Vd = +3.5V, Vg = -1.5V

Freq. GHz	S11 dB	S11 /°	S12 dB	S12 /°	S21 dB	S21 /°	S22 dB	S22 /°
2.00	-5.35	-109.2	-55.93	-22.8	-17.94	61.1	-0.89	-113.5
2.50	-3.66	-124.6	-49.08	-104.8	-12.92	-13.8	-5.12	-132.4
3.00	-2.44	-139.2	-55.27	146.9	-22.15	-111.5	-1.14	-127.3
3.50	-1.64	-153.7	-65.52	-164.9	-32.08	-148.9	-0.66	-148.8
4.00	-1.23	-168.0	-65.41	174.6	-41.95	173.3	-0.79	-166.6
4.50	-1.14	178.2	-66.55	111.1	-55.23	170.7	-1.10	175.7
5.00	-1.35	164.6	-62.69	58.7	-41.77	-130.7	-1.69	157.1
5.50	-1.85	150.7	-63.21	17.3	-24.61	-130.4	-2.70	135.3
6.00	-2.76	136.2	-61.27	25.1	-7.89	177.7	-4.52	107.9
6.50	-4.02	121.9	-52.79	-30.6	0.85	102.2	-7.17	70.7
7.00	-5.77	103.0	-45.72	-76.9	6.90	45.0	-9.17	6.2
7.50	-9.90	70.0	-38.39	-139.7	13.60	-16.2	-6.75	-76.9
8.00	-30.64	-156.2	-33.93	139.3	17.69	-100.9	-7.63	-155.2
8.50	-16.21	158.2	-34.35	72.7	16.58	-171.5	-17.46	-143.4
9.00	-17.14	154.5	-34.69	26.2	15.54	138.6	-10.44	-121.2
9.50	-16.15	161.7	-34.10	-15.8	15.56	93.0	-6.80	-145.7
10.00	-14.23	140.0	-32.64	-63.2	16.05	42.9	-5.52	177.5
10.50	-14.32	79.1	-32.41	-118.3	15.80	-15.8	-6.78	121.5
11.00	-12.68	-4.8	-34.15	-174.5	13.21	-75.2	-9.67	41.0
11.50	-9.50	-53.5	-37.14	140.8	9.36	-123.9	-8.56	-26.9
12.00	-7.26	-78.7	-40.31	103.6	5.50	-164.3	-6.54	-61.6
12.50	-5.60	-94.5	-43.56	69.4	1.81	159.5	-5.09	-81.6
13.00	-4.23	-106.5	-46.48	44.1	-1.77	125.7	-4.02	-95.5
13.50	-3.17	-117.0	-49.61	13.0	-5.36	93.8	-3.23	-105.9
14.00	-2.32	-126.3	-51.81	-18.7	-8.95	63.3	-2.58	-114.3
14.50	-1.69	-134.9	-54.83	-53.3	-12.57	33.7	-2.06	-121.6
15.00	-1.28	-142.7	-59.52	-66.4	-16.24	4.8	-1.66	-128.1
15.50	-0.91	-149.7	-62.73	-147.8	-19.95	-24.0	-1.34	-134.2
16.00	-0.69	-155.9	-61.49	170.2	-24.09	-53.2	-1.07	-139.8
16.50	-0.54	-161.7	-68.06	127.7	-28.46	-82.7	-0.85	-145.0
17.00	-0.43	-166.8	-58.31	125.2	-33.59	-109.6	-0.69	-149.6
17.50	-0.40	-171.6	-58.30	126.4	-38.98	-136.5	-0.56	-154.0
18.00	-0.38	-175.6	-63.76	97.9	-45.29	-159.7	-0.45	-157.7

Chip Mechanical Data



All dimensions are in micrometers

Pads : $100\mu\text{m} \times 100\mu\text{m}$
 Thickness: $100\mu\text{m} \pm 10\mu\text{m}$

Ordering Information

Chip form : CHA5010b99F/00

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