

13–16GHz High Power Amplifier

GaAs Monolithic Microwave IC

Target

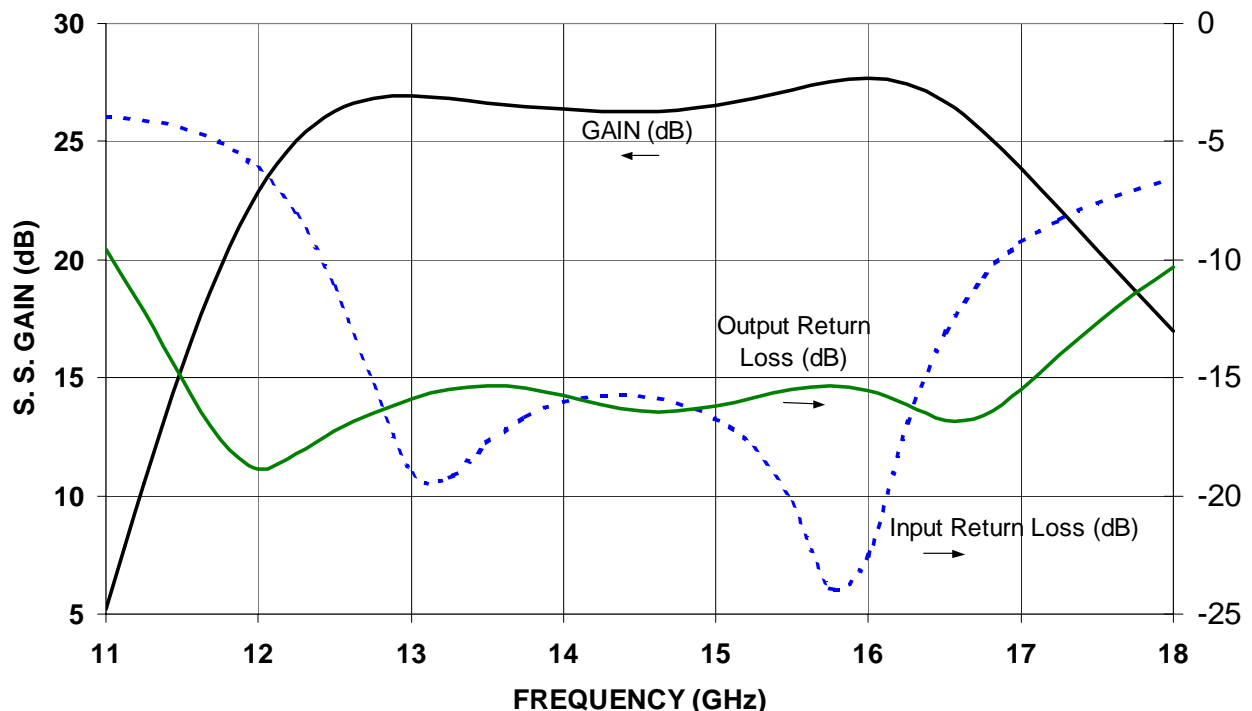
Description

The CHA5042 is a three-stage pHEMT HPA MMIC designed for VSAT ground terminals and other radio applications. The CHA5042 provides 29.5dBm nominal output power at 1dB gain compression over the 13-16GHz frequency range, and 26dB small-signal gain. This product will be available in chip form.

Main Features

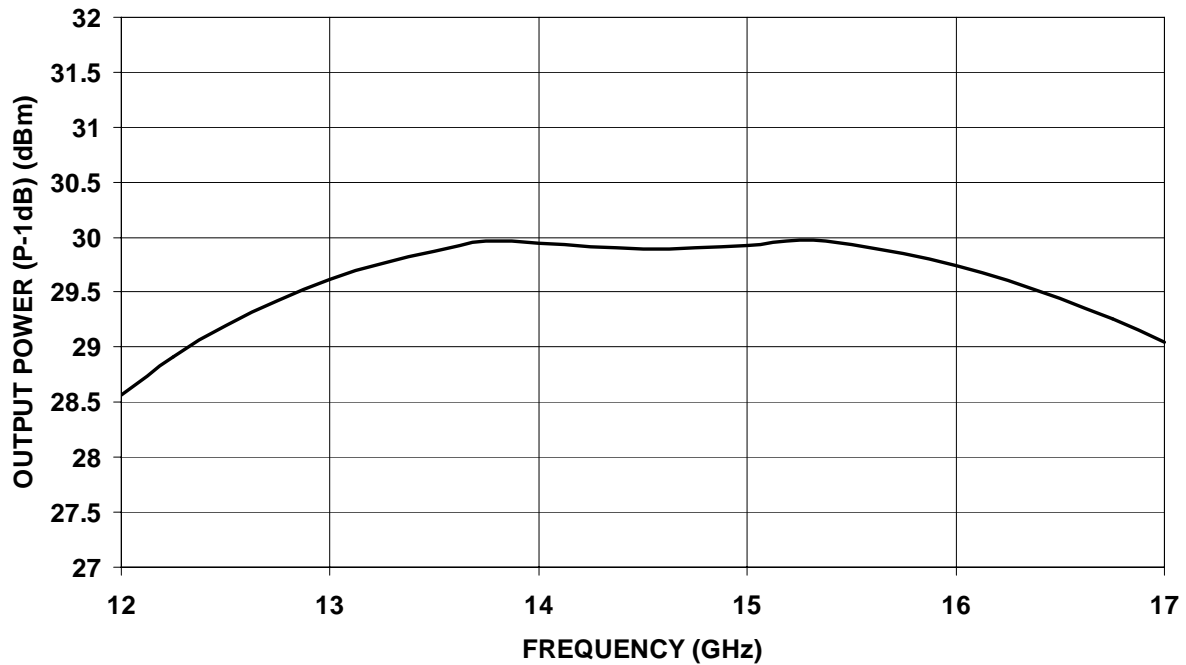
- Frequency Range: 13-16GHz
- Gain: 26dB
- Output Power (P-1dB): 29.5dBm
- Output TOI: 37.5dBm
- Input Return Loss: 15dB
- Output Return Loss: 15dB
- Bias: 9V, 0.4A
- Dimensions: 1.37 x 1.33 x 0.07 mm

Predicted Gain & Return





Predicted Output Power at 1dB Gain compression

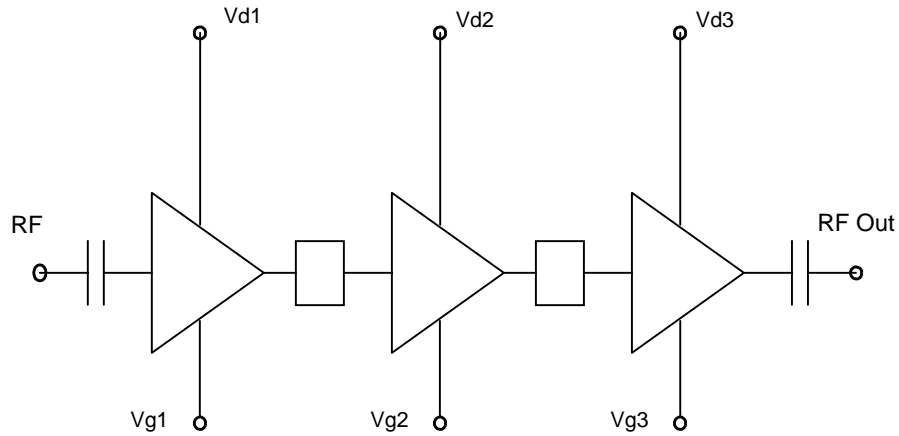


Symbol	Parameter	Values	Unit
Vds	Drain bias voltage_small signal	10.5	V
Ids	Drain bias current_small signal	650	mA
Vgs	Gate bias voltage	-2 to +0.4	V
Vdg	Maximum Drain Gate voltage (Vd-Vg)	+12	V
Pin	Maximum peak input power overdrive (2)	+18	dBm
Ta	Operating Temperature Range (3)	-45 to +80	C
Tstg	Storage Temperature Range	-55 to +125	C

- Operation of this device above any one of these parameters may cause permanent damage.
- Duration < 1 s
- AuSn solder mount to CuW or CuMo carrier assumed



Schematic



Typical Bias Conditions

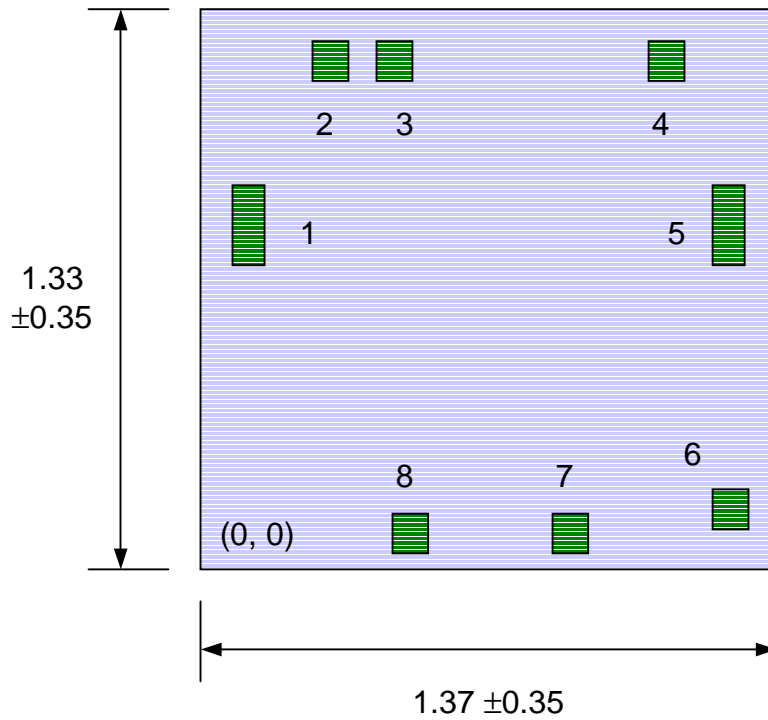
T_{amb.} = 25 °C

Symbol	Parameter	Values	Unit
Vd 1, 2, 3	Drain bias voltage	9.0	V
Vg 1, 2, 3	Gate bias voltage	-0.5	V
I _{dd}	Total drain current	400	mA



MMIC Outline & Bond Pads

Not to scale, dimensions are in millimeters

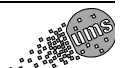
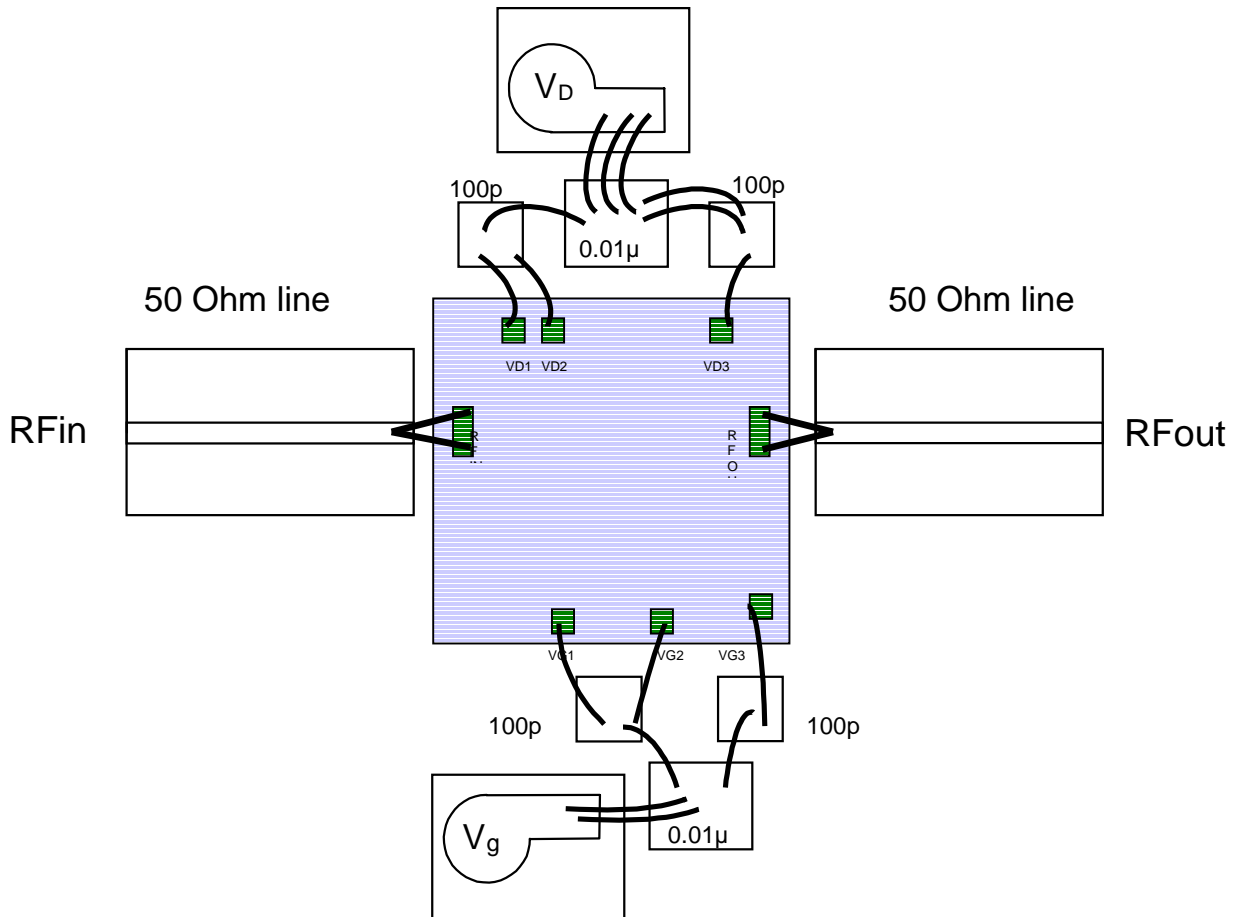


Bond Pad	Symbol	x-dim. (um)	y-dim. (um)	x-center (um)	y-center (um)
1	RF input	100	200	100	820
2	Vd1	100	100	285	1230
3	Vd2	100	90	450	1230
4	Vd3	100	100	1120	1235
5	RF output	100	200	1285	790
6	Vg3	100	100	1280	155
7	Vg2	100	100	895	105
8	Vg1	100	100	505	105

Chip size : 1370µm +/-35µm x 1330µm +/- 35µm



MMIC Assembly and Bonding Diagram (not to scale)



Target

Ordering Information

Chip form : CHA5042-99F/00

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