

## 23–34GHz High Power Amplifier GaAs Monolithic Microwave IC

**Target**

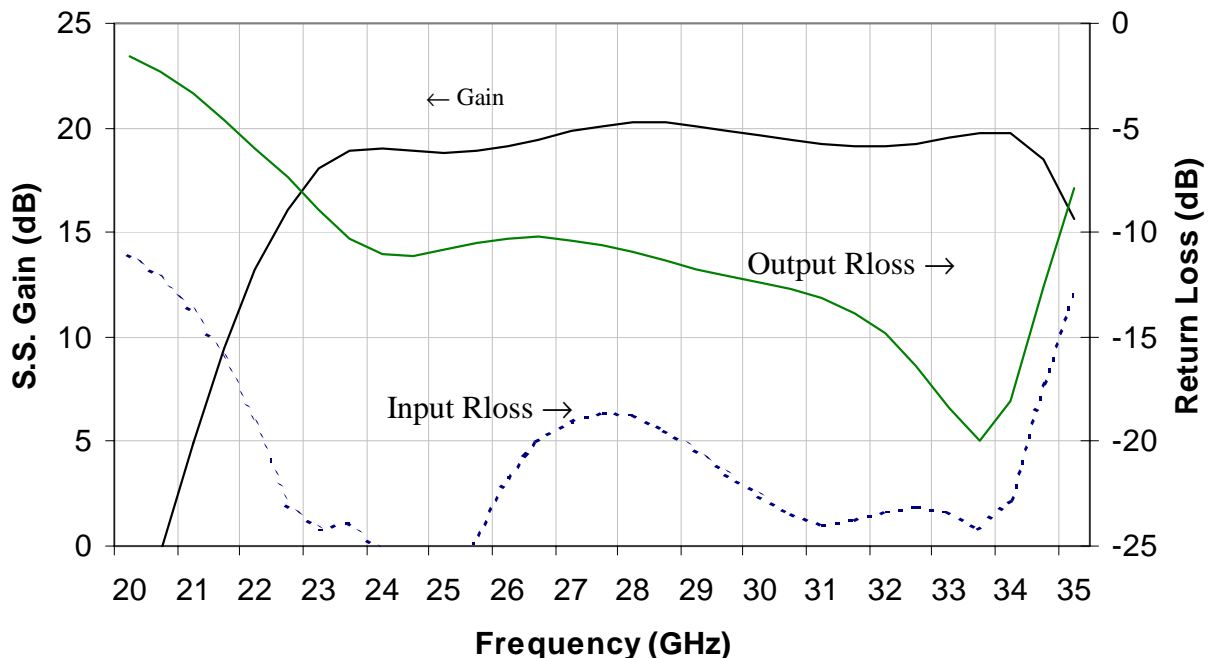
### Description

The CHA4042 is a three-stage pHEMT HPA MMIC designed for point-to-point and multi-point radio, and other Ka-band applications. The CHA4042 provides 25dBm nominal output power at 1dB gain compression over the 23-34GHz frequency range, and 20dB small signal gain. This product will be available in chip form.

### Main Features

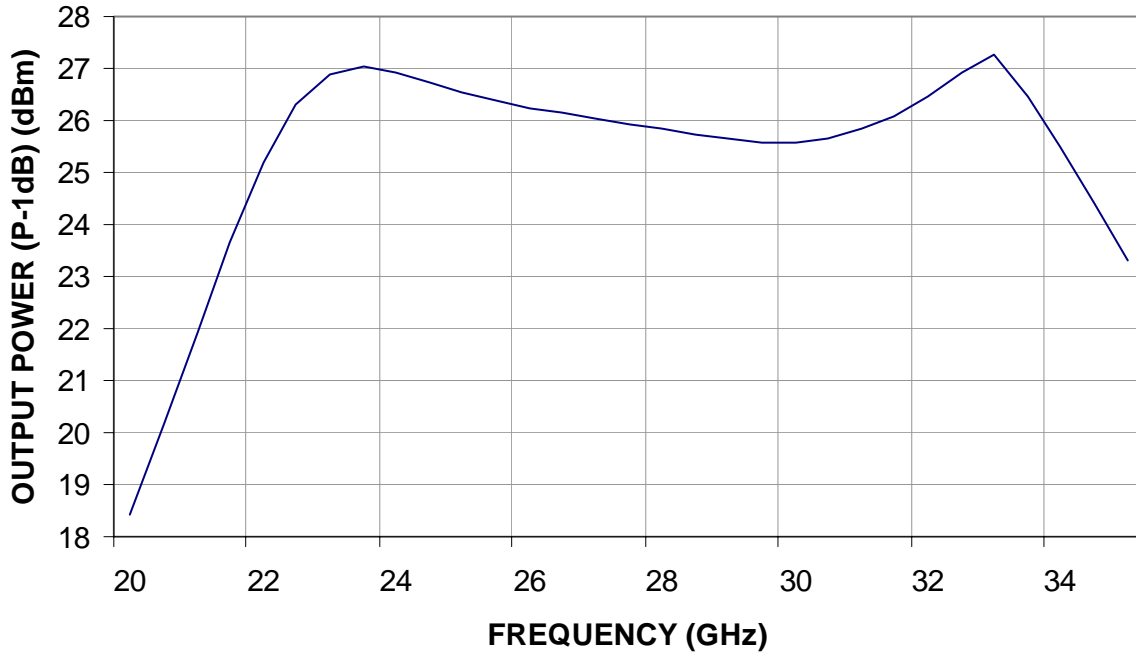
- Frequency Range: 23-34GHz
- Gain: 20dB
- Output Power (P-1dB): 25dBm
- Output TOI: 33dBm
- Input Return Loss: 18dB
- Output Return Loss: 11dB
- Bias: 6V, 300mA
- Dimensions: 1.93 x 1.09 x 0.07mm

### Predicted Gain & Return Loss





Predicted Output Power at 1-dB Gain Compression



**Absolute Maximum Ratings**

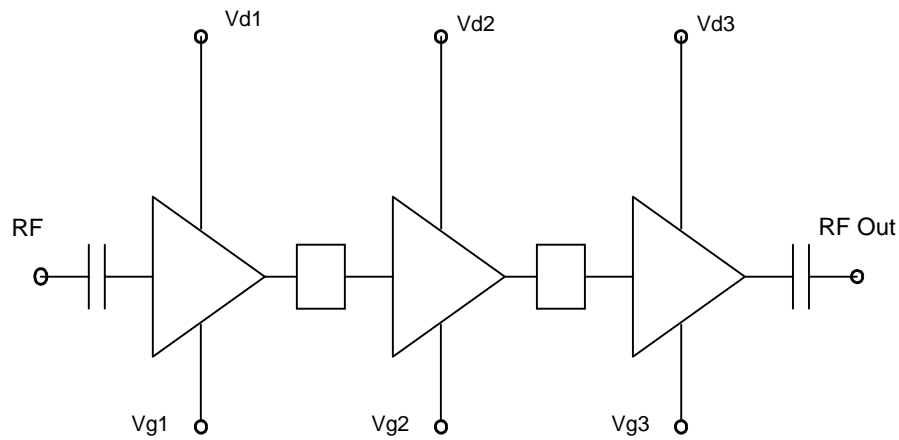
T<sub>amb</sub> = 25 °C (1)

Symbol	Parameter	Values	Unit
Vds	Drain bias voltage_small signal	6.25	V
I <sub>ds</sub>	Drain bias current_small signal	450	mA
V <sub>gs</sub>	Gate bias voltage	-2 to +0.4	V
V <sub>dg</sub>	Maximum Drain Gate voltage (V <sub>d</sub> -V <sub>g</sub> )	+8	V
P <sub>in</sub>	Maximum peak input power overdrive (2)	+15	dBm
T <sub>a</sub>	Operating Temperature Range (3)	-45 to +80	C
T <sub>stg</sub>	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



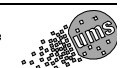
## Schematic



## Typical Bias Conditions

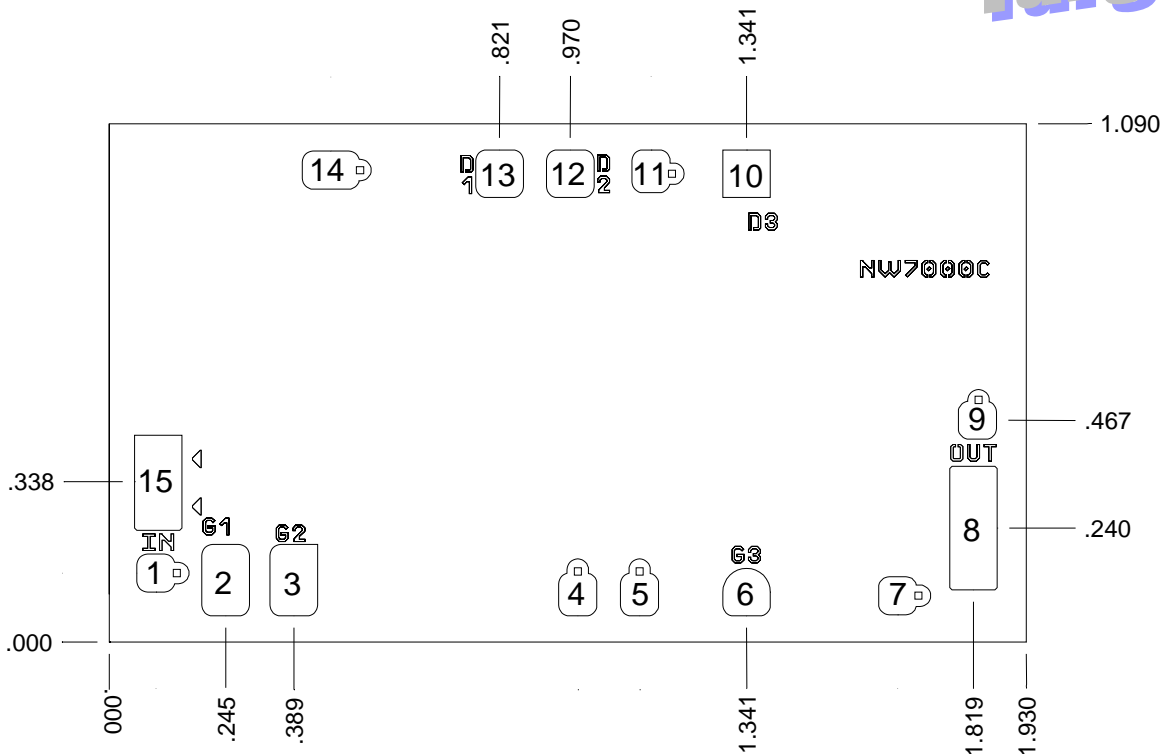
Tamb. = 25 °C

Symbol	Parameter	Values	Unit
Vd 1, 2, 3	Drain bias voltage	6.0	V
Vg 1, 2, 3	Gate bias voltage	-0.5	V
I <sub>dd</sub>	Total drain current	300	mA



## MMIC Outline & Bond Pads

Not to scale, dimensions are in millimeters



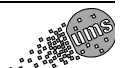
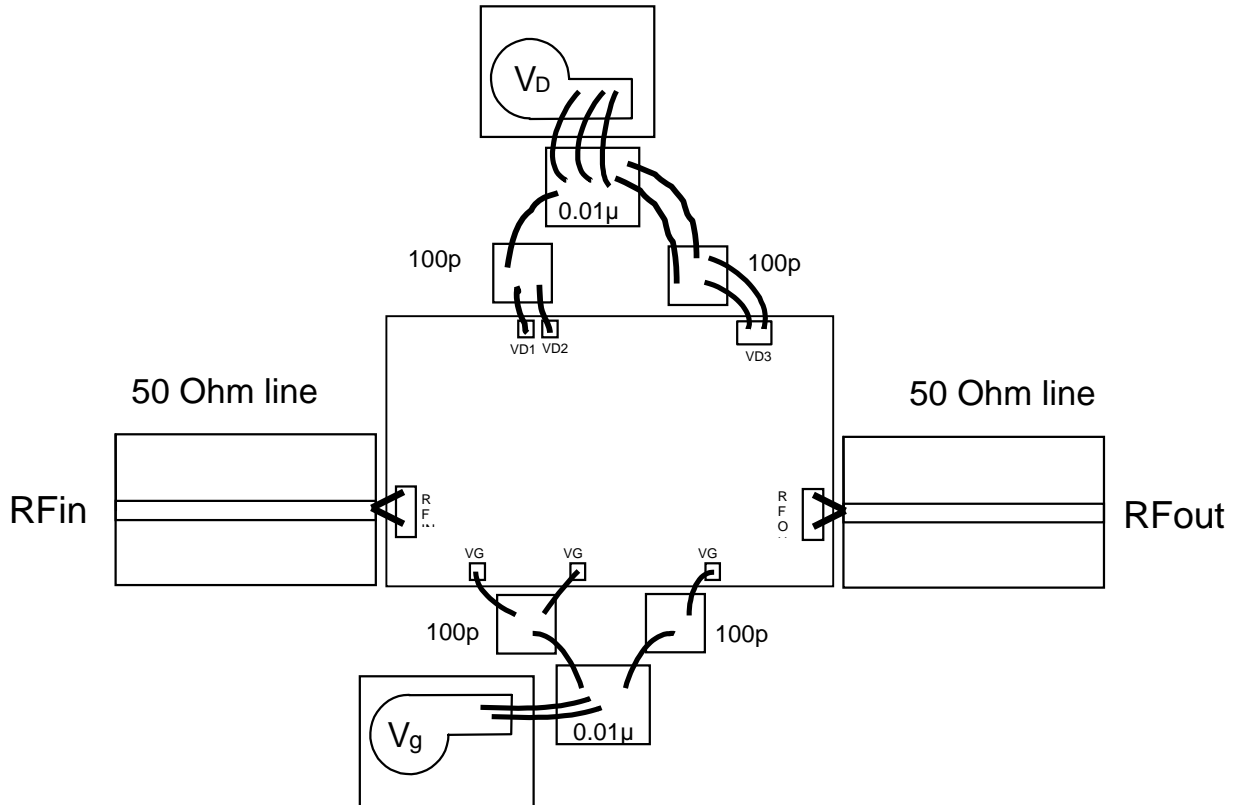
- |                         |                 |
|-------------------------|-----------------|
| Bond Pad #1, 7, 9: GND  | (0.080 x 0.080) |
| Bond Pad #4, 5, 11: GND | (0.080 x 0.090) |
| Bond Pad #14: GND       | (0.122 x 0.080) |
| Bond Pad #2: VG1        | (0.100 x 0.150) |
| Bond Pad #3: VG2        | (0.100 x 0.150) |
| Bond Pad #6: VG3        | (0.100 x 0.100) |
| Bond Pad #8: RF OUT     | (0.100 x 0.260) |
| Bond Pad #10: VD3       | (0.100 x 0.100) |
| Bond Pad #12: VD2       | (0.100 x 0.100) |
| Bond Pad #13: VD1       | (0.100 x 0.100) |
| Bond Pad #15: RF IN     | (0.100 x 0.200) |

Units: millimeters  
Thickness: 0.070

Chip size : 1930µm +/-35µm x 1090µm +/- 35µm



MMIC Assembly and Bonding Diagram ( not to scale )



The word "Target" is written in a bold, blue, sans-serif font. The letters are slightly shadowed, giving it a 3D appearance as if it's floating above the page.

## Ordering Information

Chip form : CHA4042-99F/00

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