

23–34GHz High Power Amplifier

GaAs Monolithic Microwave IC

Target

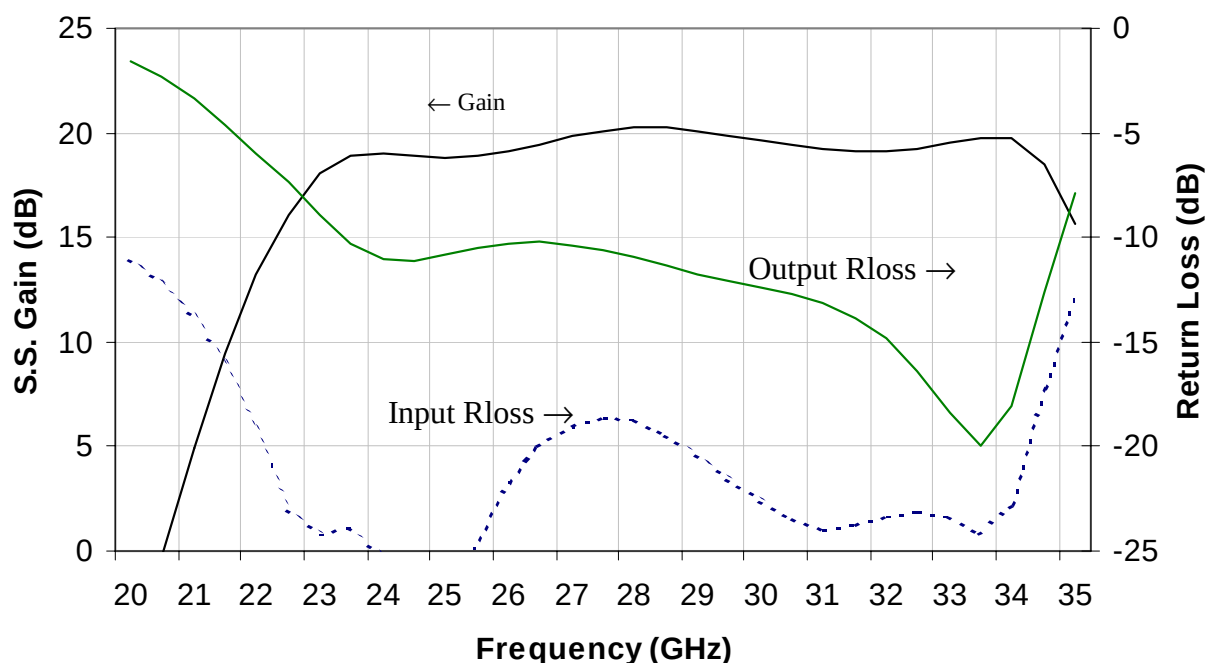
Description

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

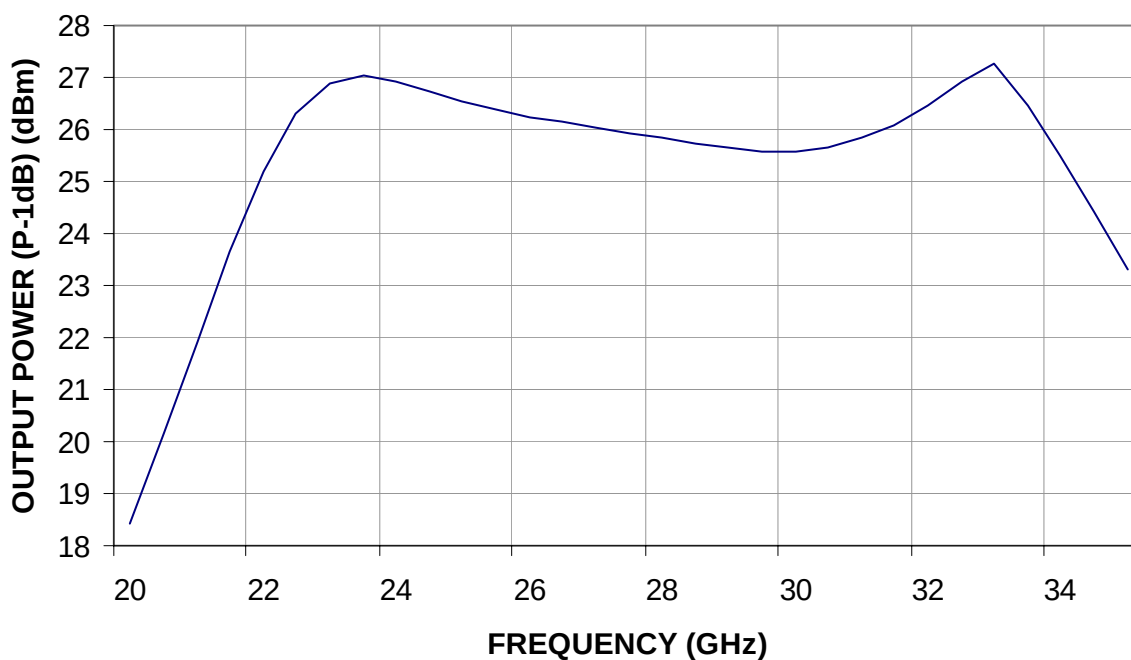
- Frequency Range: 23-34GHz
- Gain: 20dB
- Output Power (P-1dB): 25dBm
- Output TOL: 33dBm
- Input Return Loss: 18dB
- Output Return Loss: 11dB
- Bias: 6V, 300mA
- Dimensions: 1.93 x 1.09 x 0.07mm

Predicted Gain & Return Loss





Predicted Output Power at 1-dB Gain Compression



Absolute Maximum Ratings

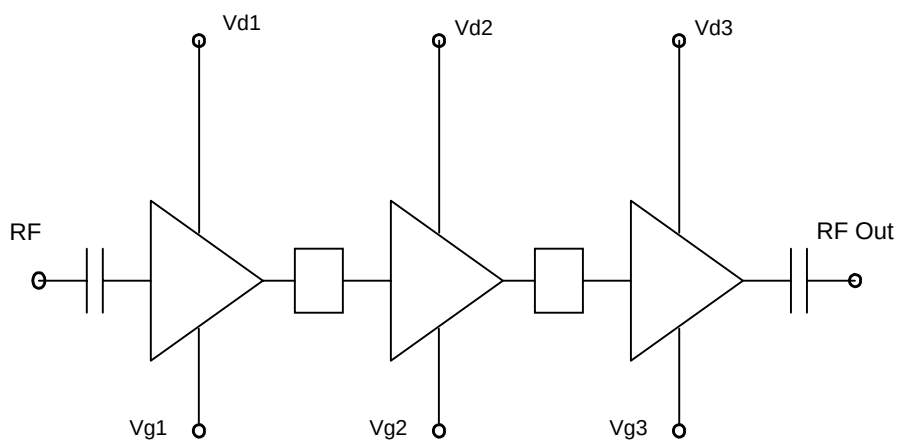
$T_{amb} = 25\text{ }^{\circ}\text{C}$ (1)

Symbol	Parameter	Values	Unit
Vds	Drain bias voltage_small signal	6.25	V
Ids	Drain bias current_small signal	450	mA
Vgs	Gate bias voltage	-2 to +0.4	V
Vdg	Maximum Drain Gate voltage (Vd-Vg)	+8	V
Pin	Maximum peak input power overdrive (2)	+15	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

Target

Schematic



Typical Bias Conditions

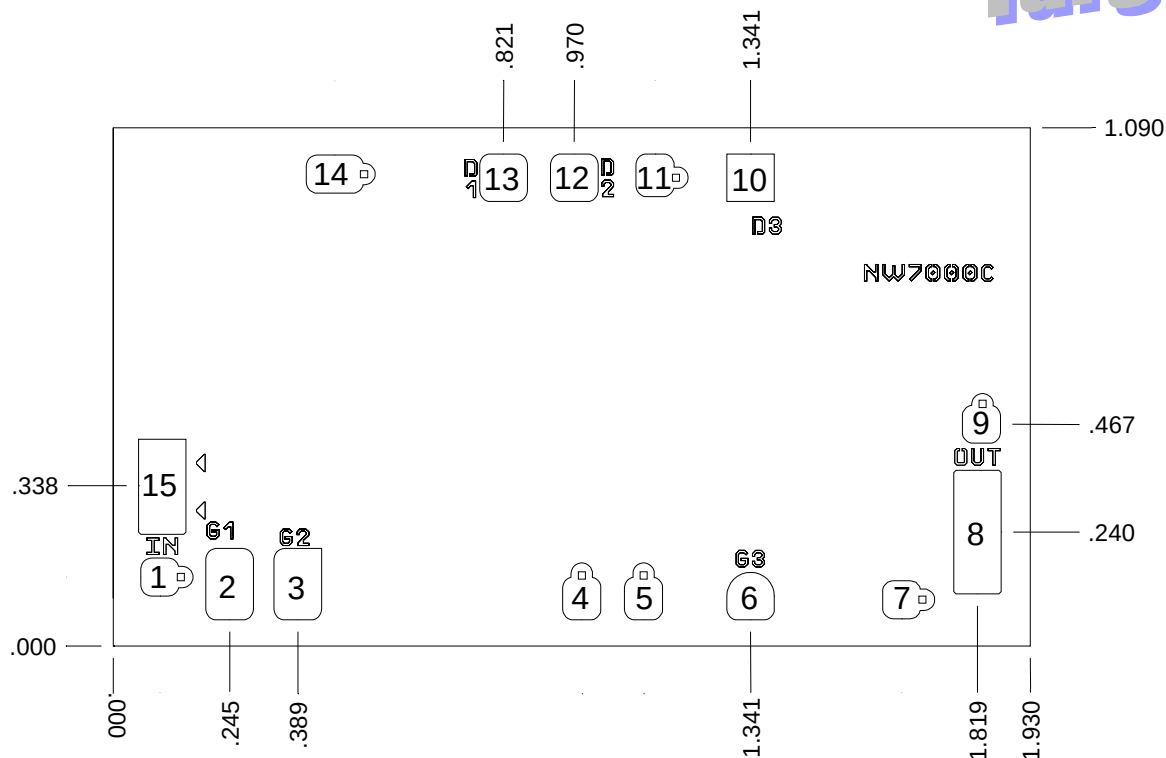
T_{amb.} = 25 °C

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 _{dd}	Total drain current	300	mA

MMIC Outline & Bond Pads

Not to scale, dimensions are in millimeters

Target

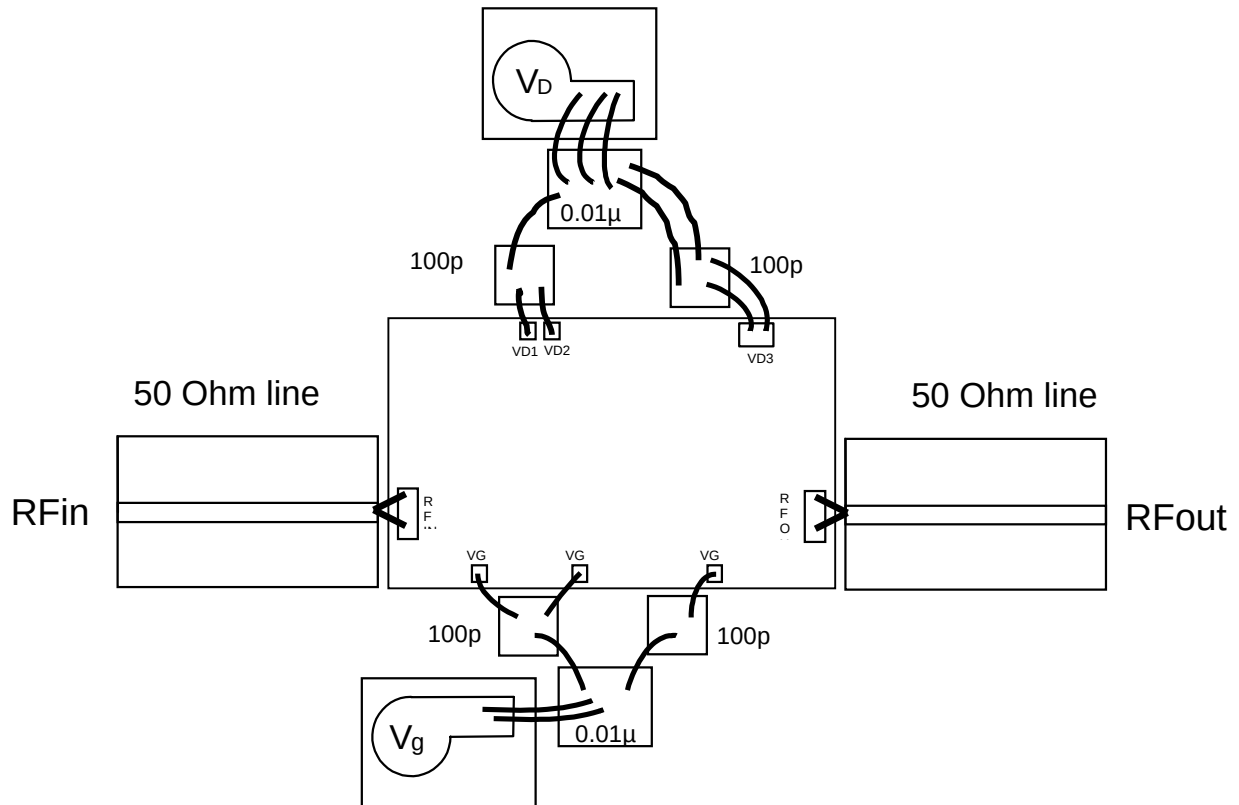


Bond Pad #1, 7, 9: GND	(0.080 x 0.080)
Bond Pad #4, 5, 11: GND	(0.080 x 0.090)
Bond Pad #14: GND	(0.122 x 0.080)
Bond Pad #2: VG1	(0.100 x 0.150)
Bond Pad #3: VG2	(0.100 x 0.150)
Bond Pad #6: VG3	(0.100 x 0.100)
Bond Pad #8: RF OUT	(0.100 x 0.260)
Bond Pad #10: VD3	(0.100 x 0.100)
Bond Pad #12: VD2	(0.100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



Target

Ordering Information

Chip form : CHA4042-99F/00

Information furnished is believed to be accurate and reliable. However **United Monolithic Semiconductors S.A.S.** assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of **United Monolithic Semiconductors S.A.S.**. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. **United Monolithic Semiconductors S.A.S.** products are not authorised for use as critical components in life support devices or systems without express written approval from **United Monolithic Semiconductors S.A.S.**

