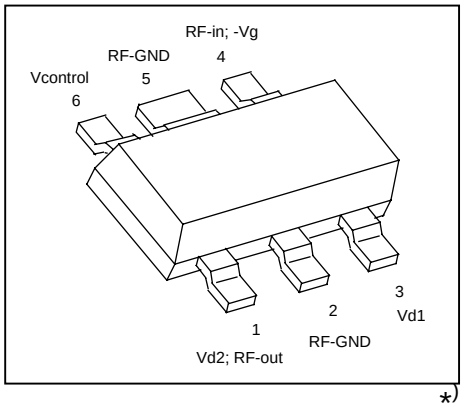
GaAs MMIC

Preliminary Data

- Variable gain amplifier (MMIC-Amplifier) for mobile communication
- Gain Control range over 50dB
- Positive Control Voltage
- 50Ω input and output matched
- Low power consumption
- Operating voltage range: 2.7 to 6 V
- Frequency range 800 MHz ... 2.5 GHz

ESD: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precautions!



*)

Type	Marking	Ordering code (taped)	Package[1)]
CGY 121 B	Y0S	Q62702-G0071	MW-6

Maximum ratings

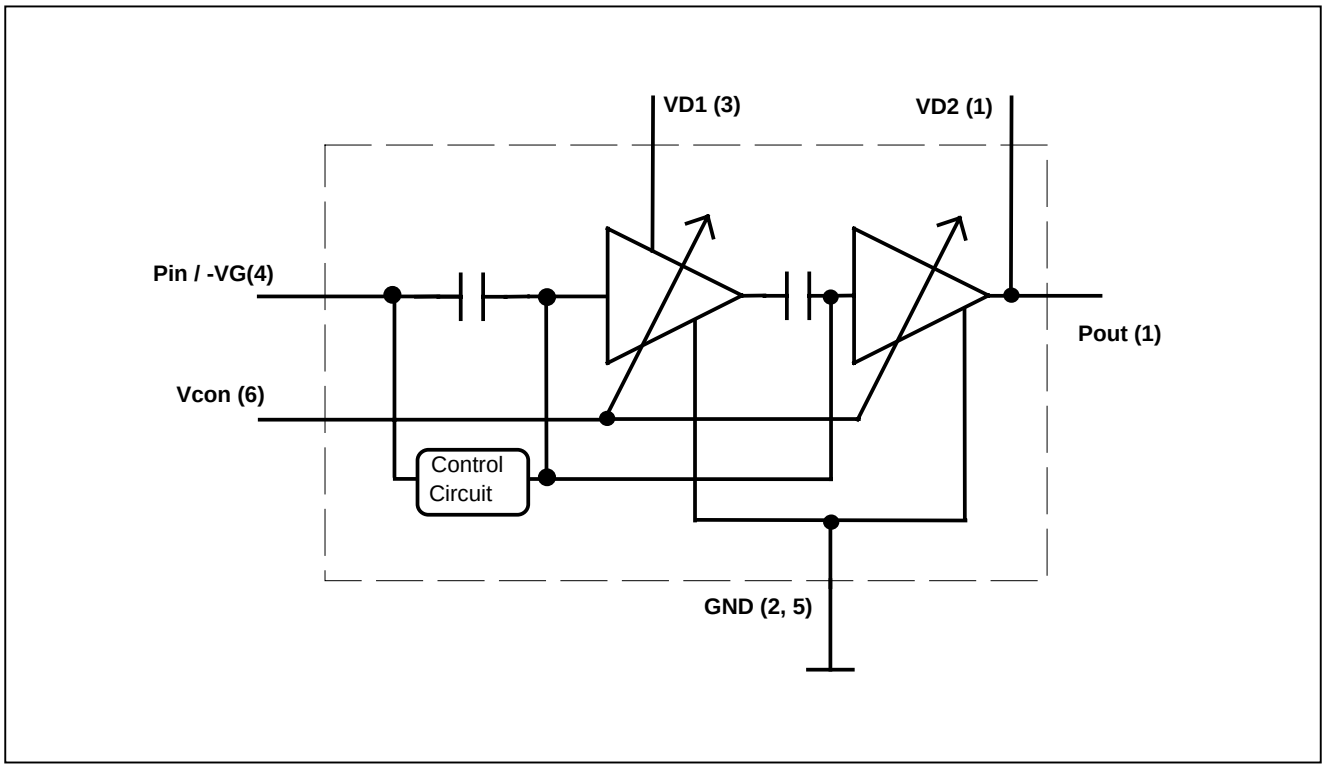
Characteristics	Symbol		Unit
Drain voltage	V_D	8	V
Neg. supply voltage	V_G	-8	V
Pos. control voltage	*Vcon*	4	V
Channel temperature	T_{Ch}	150	°C
Storage temperature range	T_{stg}	-55...+150	°C
Total power dissipation (TS ≤ 81°C) 2)	P_{tot}	550	mW

Thermal resistance

Characteristics	Symbol		Unit
Channel-soldering point (GND)	R_{thChS}	125	K/W

1) Dimensions see page 9.
2) Please care for sufficient heat dissipation on the pcb!
*) Pin-out changed compared to CGY120: 180° rotation

Functional block diagram:



Pin #		Configuration
1	**VD2 / Pout**	Drain voltage 2nd stage / RF-0utput
2	**RF-Gnd**	
3	**VD1**	Drain voltage 1st stage
4	**VG / Pin**	Negative voltage at current control circuit (-4V) / RF-Input
5	**RF-Gnd**	
6	**Vcontrol**	Positive voltage for gain control (0V....3V)

Electrical characteristics
(T_A = 25°C, f = 900 MHz, Vg = -4V, RS = RL = 50 Ω unless otherwise specified)

Characteristics	Symbol	min	typ	max	Unit
Power Gain Vd=5V; I=70mA; Vcon=3V	G	-	21.5	-	dB
Input return loss Vd=5V; I=70mA; Vcon=3V	RL_{in}	-	15	-	dB
Output return loss Vd=5V; I=70mA; Vcon=3V	RL_{out}	-	11	-	dB
Gain Control Range Vcon=3 V ... 0V; Vd=5V; I=70mA	dG	-	55	-	dB
1dB gain compression Vd=5V; I=70mA; Vcon=3V	P_{1dB}	-	16	-	dBm

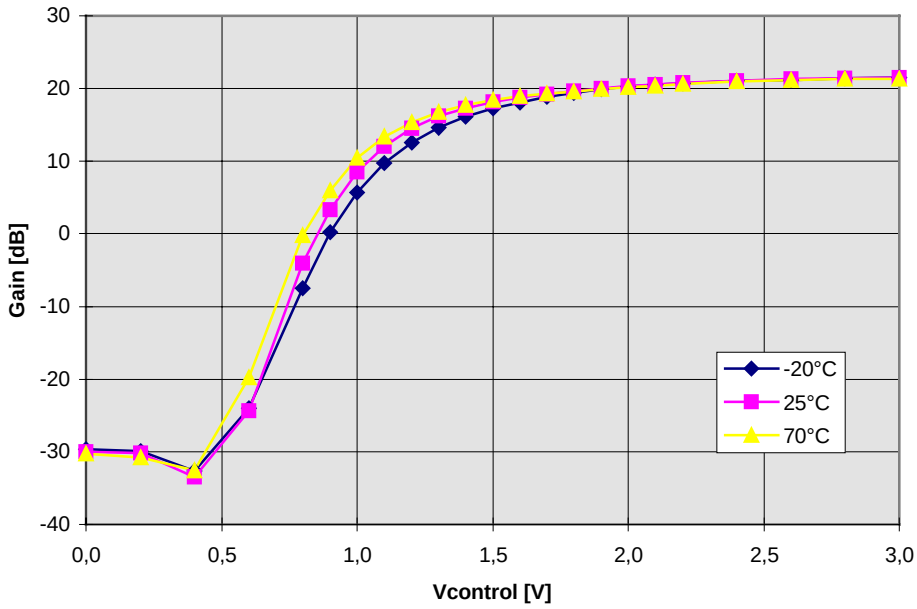
Electrical characteristics
(T_A = 25°C, f = 1800 MHz, Vg=-4V, RS = RL = 50 Ω unless otherwise specified)

Characteristics	Symbol	min	typ	max	Unit
Power Gain Vd=5V; I=70mA; Vcon=3V	G	-	19.5	-	dB
Input return loss Vd=5V; I=70mA; Vcon=3V	RL_{in}	-	10	-	dB
Output return loss Vd=5V; I=70mA; Vcon=3V	RL_{out}	-	8	-	dB
Gain Control Range Vcon=3 V ... 0V; Vd=5V; I=70mA	dG	-	55	-	dB
1dB gain compression Vd=5V; I=70mA; Vcon=3V	P_{1dB}	-	16	-	dBm

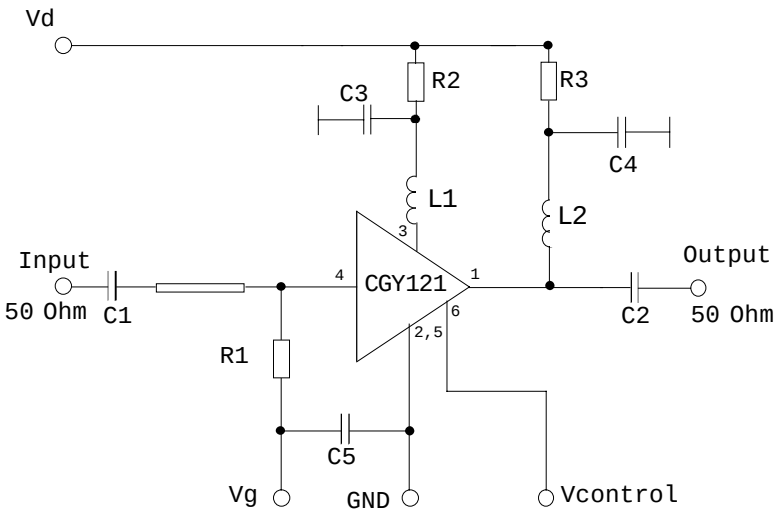
DC characteristics

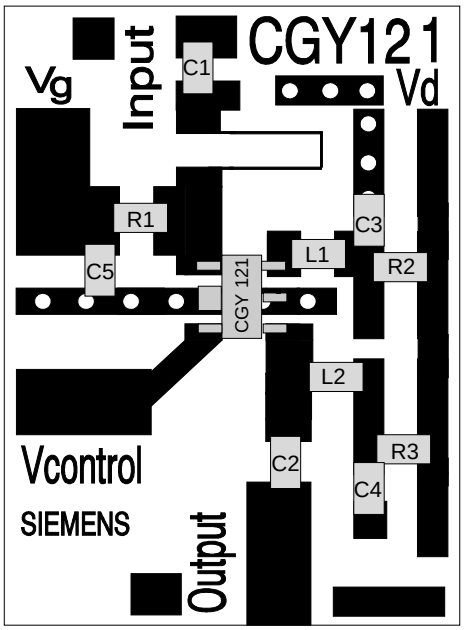
Characteristics	Symbol	min	typ	max	Unit
Gate current (Pin 4) Vg=-4V	Ig	-	1.0	-	mA
Control current (Pin 6) Vg=-4V; Vcon=0V...3V	Ic	-	0.5	-	mA
Supply current Vg = -4V; Vcon = 3V	Id	-	70	-	mA

Gain vs. Vcontrol and temperature
Operating Conditions : Vd=3V, Vg=-4V, Id=70mA, f=900MHz, Pin=-10dBm



Application Circuit
f = 900 MHz

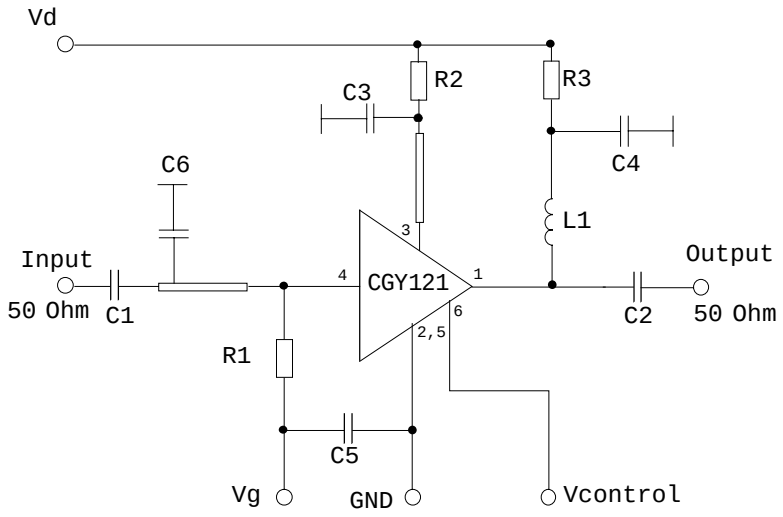


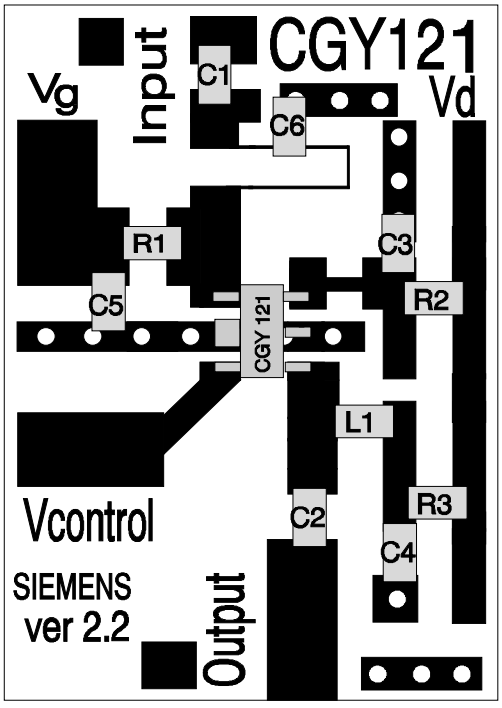


Parts List

Frequency	**900 MHz**	
C1, C2 (Siemens Size 0603)	22 pF	0603
C3, C4 (Siemens Size 0603)	100 nF	0603
C5 (Siemens Size 0603)	47 nF	0603
L1 (Coilcraft 0805CS-150XKBC)	15 nH	0805
L2 (Coilcraft 0805CS-270XMBC)	27 nH	0805
R1 (Siemens B 54102-A1271-J60)	270 Ohm	0805
R2 (Siemens B 54102-A1120-J60)	12 Ohm	0805
R3	6.8 Ohm	0805

Application Circuit
f = 1900 MHz

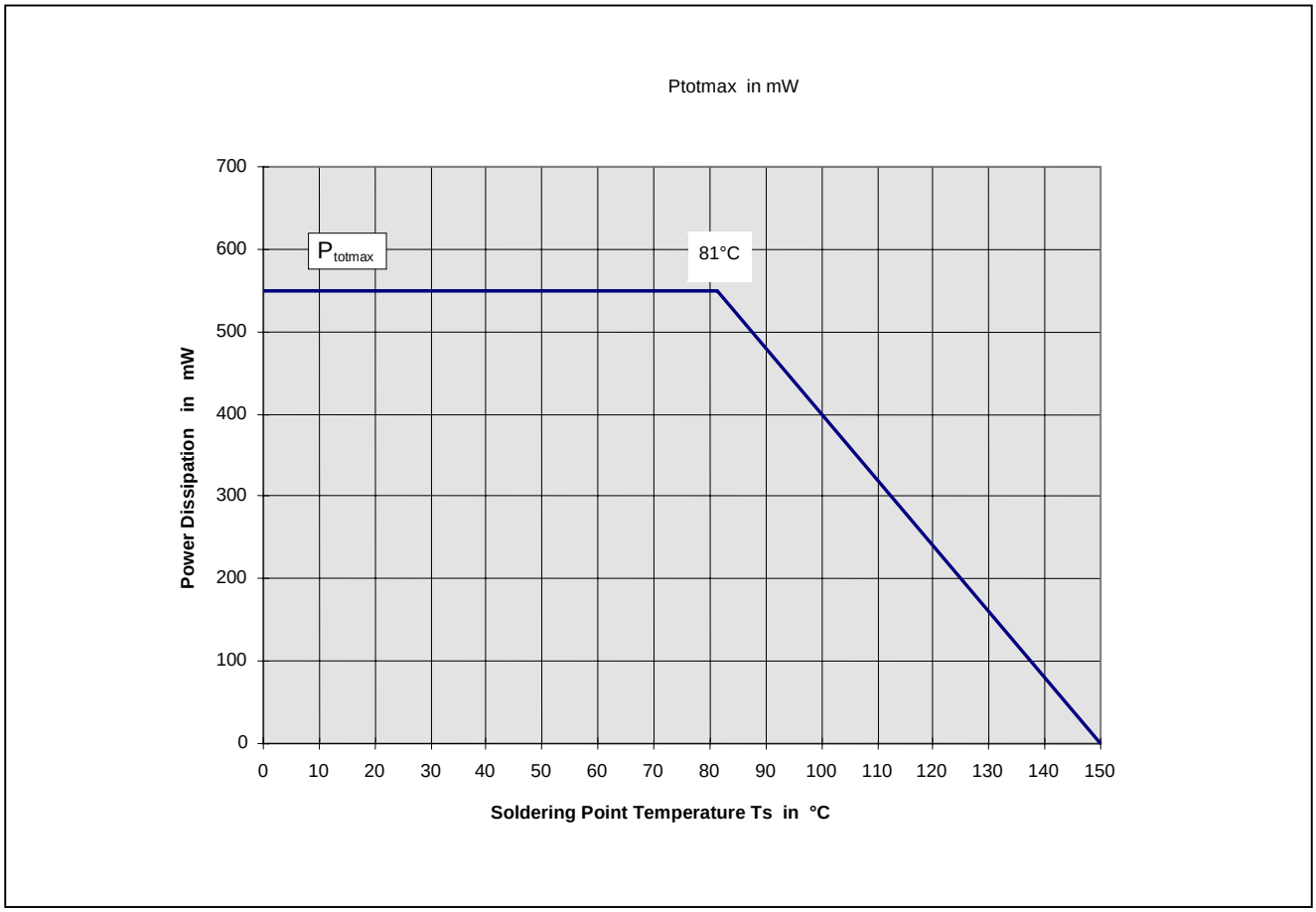




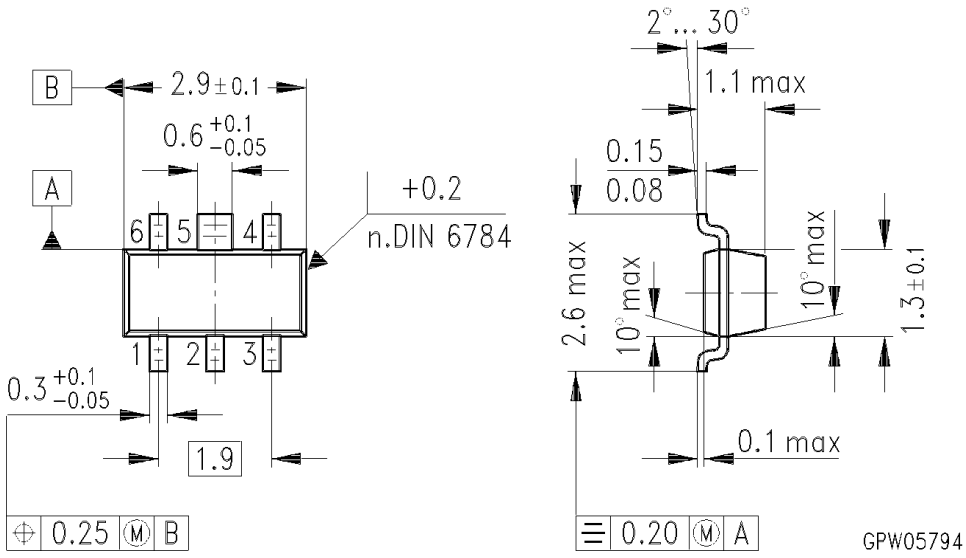
Parts List

Frequency	1900 MHz	
C1, C2 (Siemens size 0603)	12 pF	0603
C3, C4 (Siemens size 0603)	100 nF	0603
C5 (Siemens size 0603)	47 nF	0603
C6 (Siemens size 0603)	1.2 pF	0603
L1 (Coilcraft 0805CS-270XKBC)	15 nH	0805
R1 (Siemens B 54102-A1271-J60)	270 Ohm	0805
R2 (Siemens B 54102-A1120-J60)	12 Ohm	0805
R3	6.8 Ohm	0805

Total Power Dissipation Ptot = f(Ts)



Semiconductor Device Outline MW-6



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