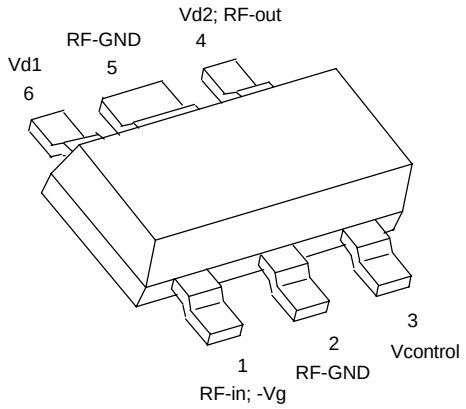
D a t a s h e e t

- ***** Monolithic microwave IC (MMIC-Amplifier) for mobile communication
- ***** Variable gain amplifier for GSM/PCN applications
- * Gain Control range over 50dB
- ***** 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 120	Y8	Q62702-G44	MW-6

Maximum ratings	**Symbol**		**Unit**
Drain voltage	V_D	8	V
Negative supply voltage	*Vg, Vcon*	-3	V
Channel temperature	T_{Ch}	150	°C
Storage temperature range	T_{stg}	-55...+150	°C
Total power dissipation (TS ≤ 84°C) 2)	P_{tot}	600	mW
Thermal resistance			
Channel-soldering point (GND)	R_{thchS}	≤ 110	K/W

1) Dimensions see chapter Package Outlines
2) Please care for sufficient heat dissipation on the pcb!

Rev 2

Electrical characteristics

T_A = 25°C f = 900 MHz RS = RL = 50 Ω unless otherwise specified

Characteristics	Symbol	min	typ	max	Unit
Power Gain	G				dB
Vd=3V; I=45mA; Vcon=2V		-	22	-	
Vd=5V; I=70mA; Vcon=2V		-	24	-	
Input return loss	RL_{in}				dB
Vd=3V; I=45mA; Vcon=2V		-	14	-	
Vd=5V; I=70mA; Vcon=2V		-	15	-	
Output return loss	RL_{out}				dB
Vd=3V; I=45mA; Vcon=2V		-	11	-	
Vd=5V; I=70mA; Vcon=2V		-	11	-	
Gain Control Range Vcon=2 V ... -2V; Vd=3V; I=45mA	dG	50	55	-	dB
1dBm gain compression	P_{1dB}				dBm
Vd=3V; I=45mA; Vcon=2V			14		
Vd=5V; I=70mA; Vcon=2V			21		

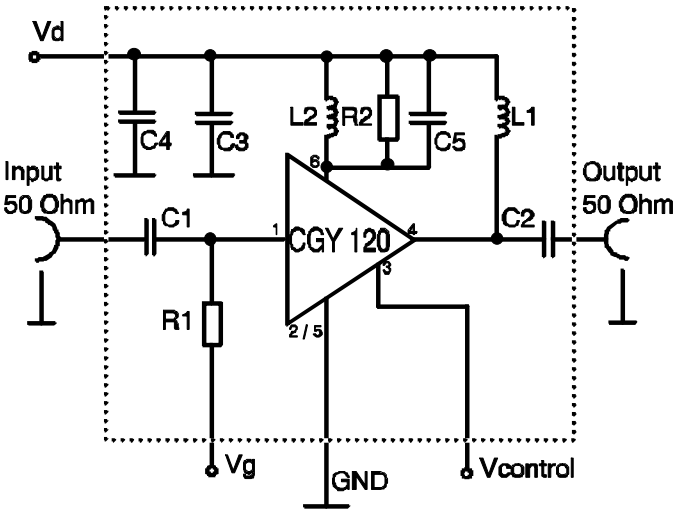
Electrical characteristics

T_A = 25°C f = 1800 MHz RS = RL = 50 Ω unless otherwise specified

Characteristics	Symbol	min	typ	max	Unit
Power Gain	G				dB
Vd=3V; I=45mA; Vcon=2V		-	20	-	
Vd=5V; I=70mA; Vcon=2V		-	22	-	
Input return loss	RL_{in}				dB
Vd=3V; I=45mA; Vcon=2V		-	10	-	
Vd=5V; I=70mA; Vcon=2V		-	10	-	
Output return loss	RL_{out}				dB
Vd=3V; I=45mA; Vcon=2V		-	8	-	
Vd=5V; I=70mA; Vcon=2V		-	8	-	
Gain Control Range Vcon=2 V ... -2V; Vd=3V; I=45mA	dG	50	55	-	dB
1dBm gain compression	P_{1dB}				dBm
Vd=3V; I=45mA; Vcon=2V			14		
Vd=5V; I=70mA; Vcon=2V			20		

Application Circuit

f=800MHz to 2GHz

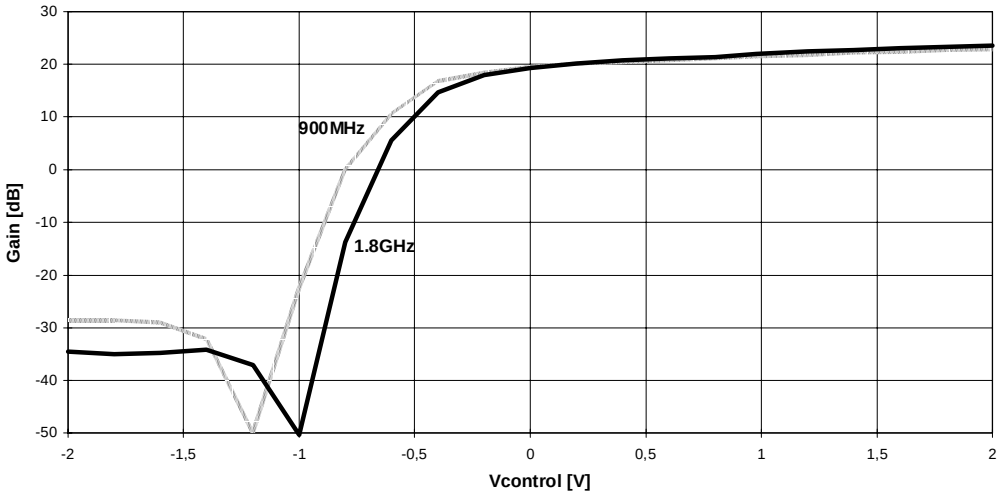


Frequency	900 MHz	1.8 GHz
L1	27 nH	27 nH
L2	22 nH	22 nH
C1	12 pF	12 pF
C2	12 pF	12 pF
C3	680 pF	680 pF
C4	22 pF	22 pF
C5		680 pF
R1	470 Ohm	470 Ohm
R2	510 Ohm	510 Ohm

C1 , C2 Siemens B37490-K5120-J62 R1 Siemens B54102-A1471-J60 L1 Coilcraft 0805CS-270XMBC
C4 Siemens B37940-K5220-J62 R2 Siemens B53102-A1511-J60 L2 Coilcraft 0805CS-220XMBC
C3 , C5 Siemens B37940-K5681-J62
For optimized device performance, Vg has to be adapted (Vg ≈ -1V...0V) to I ≈ 45mA at Vd-supply under condition Vcontrol=+2V.

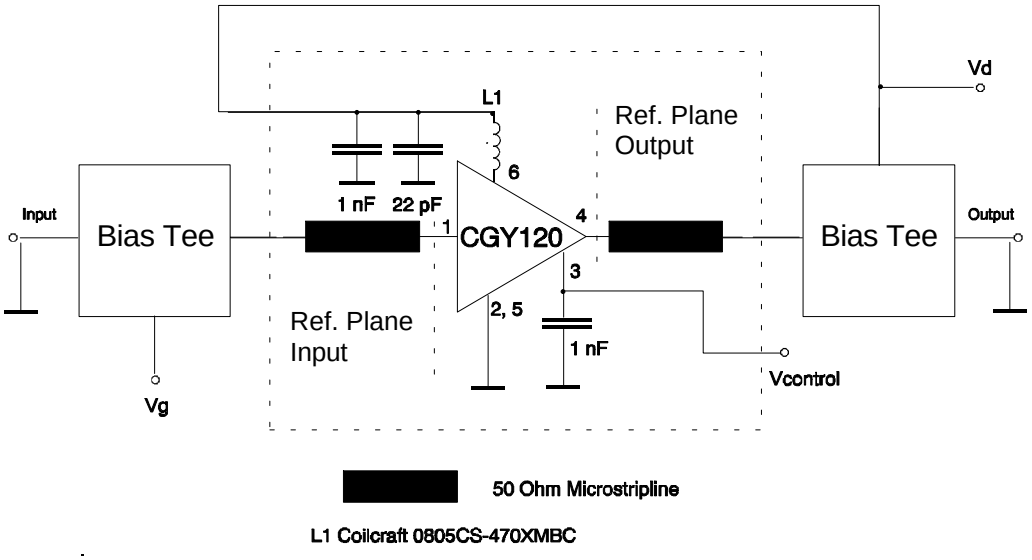
Gain vs. Vcontrol

Operating Conditions : Vd=3V, Id=45mA, Pin=-20dBm



Test setup for measuring S-parameters

f=10MHz to 3GHz



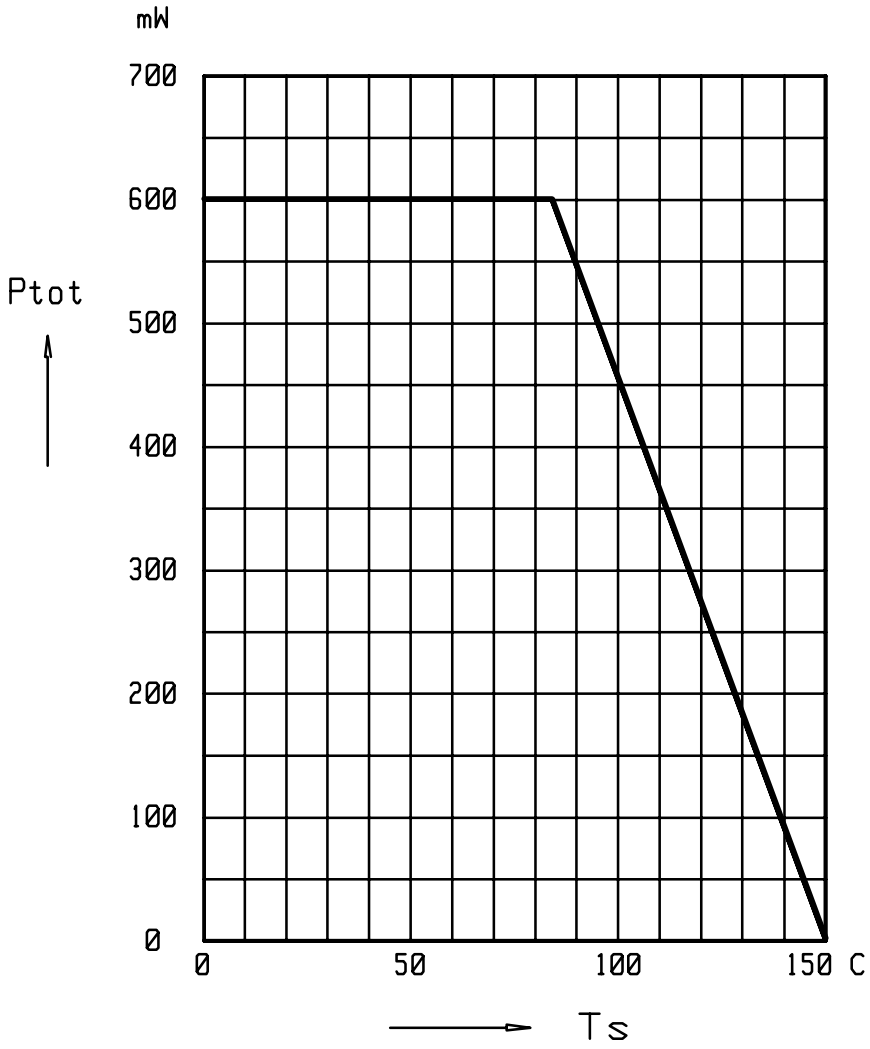
For optimized device performance, Vg has to be adapted (Vg ≈ -1V...0V) to I ≈ 45mA at Vd-supply under condition Vcontrol=+2V.

Measurement conditions: Vd=3V, Id=45mA, Vcon=2V

GHz S MA R 50

!f GHz	S11		S21		S12		S22	
!	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.100	0.84	-31.2	4.97	85.4	0.00512	155.7	0.31	81.6
0.200	0.68	-60.8	11.53	49.2	0.01753	100.4	0.32	2.9
0.300	0.51	-80.7	14.66	21.6	0.02396	71.8	0.30	-45.5
0.400	0.41	-96.1	16.30	1.7	0.02601	57.7	0.28	-76.5
0.500	0.34	-110.9	17.39	-15.1	0.02739	51.2	0.27	-99.4
0.600	0.29	-127.3	18.25	-30.4	0.02791	46.5	0.27	-118.4
0.700	0.29	-148.9	19.28	-43.7	0.02873	41.7	0.26	-141.0
0.800	0.24	-179.9	19.69	-60.9	0.02804	40.0	0.25	-159.3
0.900	0.21	146.5	19.56	-78.2	0.02608	40.9	0.21	-179.2
1.000	0.20	120.6	18.58	-94.5	0.02722	43.4	0.18	169.0
1.100	0.23	93.7	17.31	-110.6	0.02705	43.1	0.16	147.5
1.200	0.26	71.8	15.51	-125.2	0.02537	44.5	0.14	124.4
1.300	0.29	55.1	13.62	-138.6	0.02493	49.1	0.12	100.0
1.400	0.32	42.2	11.80	-150.5	0.02380	55.7	0.12	74.7
1.500	0.35	31.4	10.12	-160.7	0.02389	63.9	0.12	51.9
1.600	0.37	22.4	8.55	-170.6	0.02441	69.4	0.14	31.2
1.700	0.36	13.2	7.46	-174.4	0.02464	79.2	0.12	6.7
1.800	0.36	9.4	6.65	177.5	0.02872	87.1	0.12	7.1
1.900	0.36	6.6	5.88	170.8	0.03307	90.8	0.13	2.5
2.000	0.37	3.9	5.20	164.3	0.03675	94.9	0.14	-0.5
2.100	0.37	1.3	4.59	158.3	0.04202	97.5	0.15	-2.8
2.200	0.37	-1.2	4.13	152.9	0.04801	99.2	0.16	-4.7
2.300	0.37	-3.5	3.67	147.5	0.05315	100.8	0.17	-8.1
2.400	0.37	-5.1	3.31	142.6	0.05874	101.6	0.17	-10.9
2.500	0.37	-6.9	2.95	138.3	0.06440	101.6	0.17	-12.9
2.600	0.36	-10.0	2.74	134.1	0.07210	102.5	0.17	-14.8
2.700	0.35	-13.2	2.51	129.8	0.07855	102.5	0.16	-18.7
2.800	0.33	-14.5	2.34	124.8	0.08686	103.1	0.15	-20.6
2.900	0.32	-16.4	2.16	119.1	0.09724	102.5	0.15	-21.5
3.000	0.30	-17.9	1.97	113.8	0.10700	101.6	0.15	-25.0

Total Power Dissipation $P_{tot} = f(T_S)$



Permissible Pulse Load $P_{tot_max} / P_{tot_DC} = f(t_p)$

