

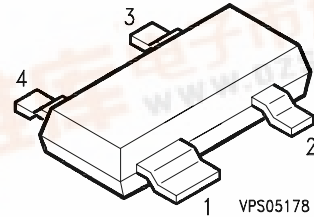
**SIEMENS**

**GaAs FET**

**CFY 30**

*Datasheet*

- \* Low noise (  $F_{min} = 1.4 \text{ dB @ 4 GHz}$  )
- \* High gain (  $11.5 \text{ dB typ. @ 4 GHz}$  )
- \* For oscillators up to 12 GHz
- \* For amplifiers up to 6 GHz
- \* Ion implanted planar structure
- \* Chip all gold metallization
- \* Chip nitride passivation



ESD: **E**lectrostatic **d**ischarge sensitive device, observe handling precautions!

Type	Marking	Ordering code (tape and reel)	Pin Configuration				Package 1)
			1	2	3	4	
CFY 30	A2	Q62703-F97	S	D	S	G	SOT-143

Maximum ratings	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	5	V
Drain-gate voltage	$V_{DG}$	7	V
Gate-source voltage	$V_{GS}$	-4 ... +0.5	V
Drain current	$I_D$	80	mA
Channel temperature	$T_{Ch}$	150	°C
Storage temperature range	$T_{stg}$	-40...+150	°C
Total power dissipation ( $T_S \leq 70^\circ\text{C}$ ) <sup>2)</sup>	$P_{tot}$	250	mW
Thermal resistance			
Channel-soldering point <sup>2)</sup>	$R_{thChS}$	<320	K/W

1) Dimensions see chapter Package Outlines

2)  $T_s$  is measured on the source 1 lead at the soldering point to the PCB.

Electrical characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Characteristics	Symbol	min	typ	max	Unit
Drain-source saturation current $V_{DS} = 3.5\text{ V}$ , $V_{GS} = 0\text{ V}$	$I_{DSS}$	20	50	80	mA
Pinch-off voltage $V_{DS} = 3.5\text{ V}$ $I_D = 1\text{ mA}$	$V_{GS(P)}$	-0.5	-1.3	-4.0	V
Transconductance $V_{DS} = 3.5\text{ V}$ $I_D = 15\text{ mA}$	$g_m$	20	30	-	mS
Gate leakage current $V_{DS} = 3.5\text{ V}$ $I_D = 15\text{ mA}$	$I_G$	-	0.1	2	$\mu\text{A}$
Noise figure $V_{DS} = 3.5\text{ V}$ $I_D = 15\text{ mA}$ $f = 4\text{ GHz}$ $f = 6\text{ GHz}$	$F$	- -	1.4 2.0	1.6 -	dB
Associated gain $V_{DS} = 3.5\text{ V}$ $I_D = 15\text{ mA}$ $f = 4\text{ GHz}$ $f = 6\text{ GHz}$	$G_a$	10 -	11.5 8.9	- -	dB
Maximum available gain $V_{DS} = 3.5\text{ V}$ $I_D = 15\text{ mA}$ $f = 6\text{ GHz}$	$MAG$	-	11.2	-	dB
Maximum stable gain $V_{DS} = 3.5\text{ V}$ $I_D = 15\text{ mA}$ $f = 4\text{ GHz}$	$MSG$	-	14.4	-	dB
Power output at 1 dB compression $V_{DS} = 4\text{ V}$ $I_D = 30\text{ mA}$ $f = 6\text{ GHz}$	$P_{1\text{ dB}}$	-	16	-	dBm

Typical Common Source Noise Parameters

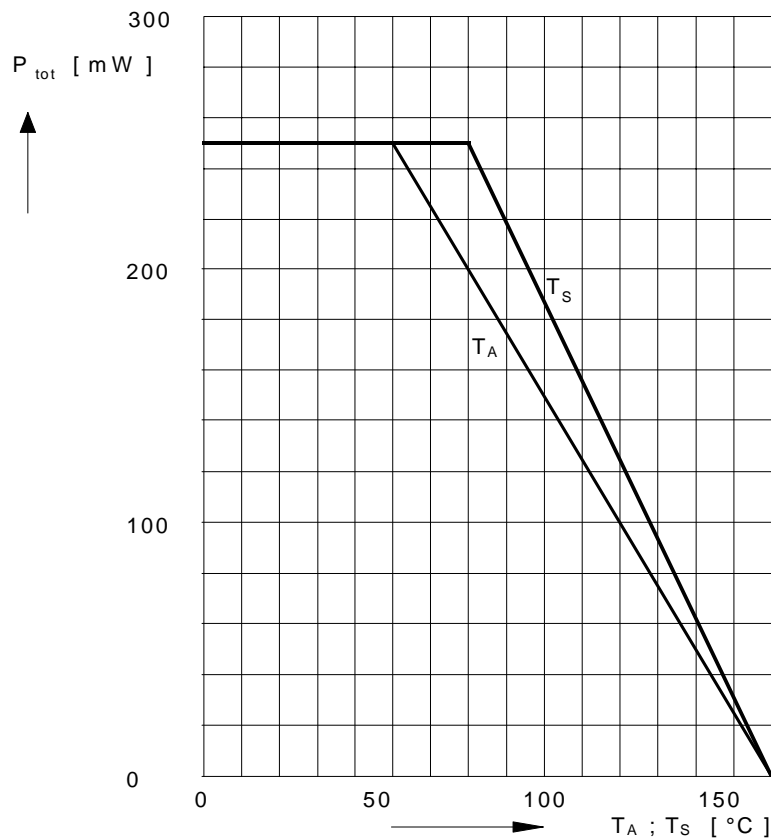
$I_D = 15 \text{ mA}$

$V_{DS} = 3.5 \text{ V}$

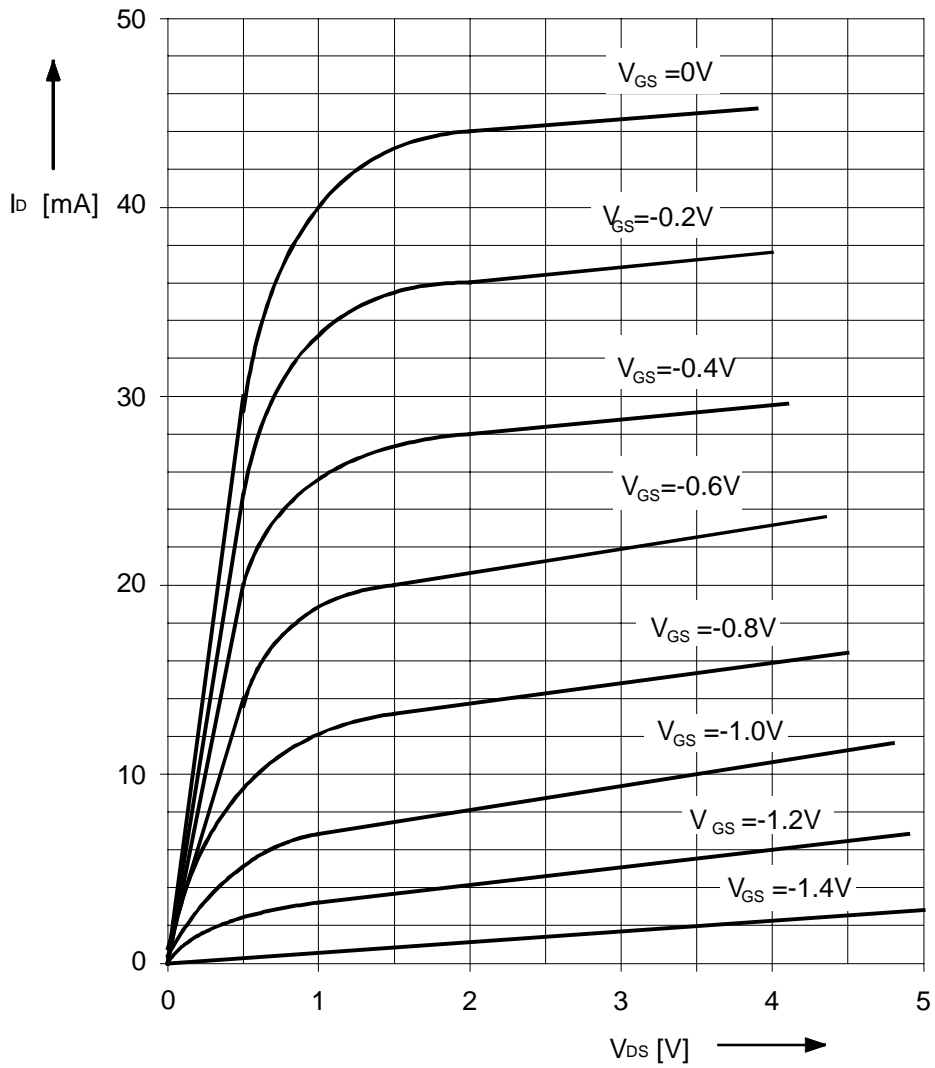
$Z_0 = 50 \Omega$

f	F <sub>min</sub>	G <sub>a</sub>	Γ <sub>opt</sub>		R <sub>n</sub>	N	F <sub>50Ω</sub>	G(F <sub>50Ω</sub> )
			MAG	ANG				
2	1.0	15.5	0.72	27	49	0.17	2.9	10.0
4	1.4	11.5	0.64	61	29	0.17	2.7	9.3
6	2.0	8.9	0.46	101	19	0.30	2.8	7.5
8	2.5	7.1	0.31	153	9	0.31	2.8	6.4
10	3.0	5.8	0.34	-133	14	0.38	3.4	4.2
12	3.5	5.0	0.41	-93	28	0.42	4.1	2.9

Total Power Dissipation  $P_{tot} = f(T_s; T_A)$



Output characteristics  $I_D = f(V_{DS})$



Typical Common Source S-Parameters

$I_D = 15 \text{ mA}$      $U_D = 3.5 \text{ V}$      $Z_0 = 50 \Omega$

f GHz	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
0.1	1.00	-1	2.43	178	0.003	87	0.70	-1
0.4	1.00	-6	2.43	171	0.010	23	0.69	-5
0.8	0.99	-14	2.43	162	0.020	78	0.68	-11
1.2	0.98	-21	2.43	154	0.030	72	0.67	-15
1.6	0.97	-28	2.44	145	0.040	66	0.66	-20
2.0	0.96	-36	2.45	137	0.050	60	0.65	-26
2.4	0.93	-44	2.47	129	0.058	55	0.64	-30
2.8	0.90	-53	2.49	120	0.066	50	0.62	-35
3.2	0.87	-62	2.50	111	0.074	45	0.60	-41
3.6	0.83	-72	2.50	102	0.082	39	0.57	-47
4.0	0.80	-82	2.50	93	0.090	32	0.54	-54
4.4	0.77	-92	2.51	83	0.097	25	0.50	-61
4.8	0.74	-104	2.49	73	0.103	18	0.46	-67
5.2	0.70	-115	2.45	64	0.108	12	0.43	-73
5.6	0.66	-127	2.41	54	0.112	6	0.40	-80
6.0	0.63	-139	2.36	45	0.114	0	0.36	-88
6.4	0.60	-150	2.30	37	0.115	-6	0.31	-98
6.8	0.57	-162	2.24	27	0.116	-11	0.27	-110
7.2	0.55	-174	2.19	17	0.116	-17	0.24	-122
7.6	0.54	172	2.14	8	0.116	-22	0.21	-137
8.0	0.53	160	2.08	-2	0.115	-27	0.19	-154
8.4	0.54	147	2.00	-11	0.113	-32	0.18	-173
8.8	0.55	135	1.92	-21	0.111	-37	0.18	171
9.2	0.56	124	1.83	-30	0.109	-42	0.19	155
9.6	0.57	114	1.72	-40	0.107	-46	0.21	141
10.0	0.58	106	1.61	-48	0.104	-50	0.23	128
10.4	0.59	98	1.51	-56	0.102	-53	0.26	118
10.8	0.60	91	1.42	-62	0.101	-56	0.29	108
11.2	0.61	85	1.35	-69	0.099	-58	0.32	100
11.6	0.62	79	1.30	-75	0.098	-60	0.34	93
12.0	0.62	74	1.25	-81	0.096	-63	0.36	85

Typical Common Source S-Parameters

$I_D = 30 \text{ mA}$      $U_D = 3.5 \text{ V}$      $Z_0 = 50 \Omega$

f	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
0.1	1.00	-2	3.23	178	0.002	85	0.71	-1
0.4	1.00	-8	3.21	171	0.009	79	0.70	-6
0.8	0.99	-16	3.19	162	0.017	73	0.69	-11
1.2	0.97	-24	3.18	153	0.025	70	0.67	-16
1.6	0.95	-32	3.17	143	0.034	65	0.66	-21
2.0	0.92	-40	3.17	135	0.042	61	0.65	-26
2.4	0.90	-48	3.17	127	0.051	56	0.63	-31
2.8	0.87	-58	3.17	119	0.059	50	0.61	-36
3.2	0.83	-68	3.16	109	0.067	45	0.58	-42
3.6	0.79	-79	3.12	99	0.073	40	0.55	-48
4.0	0.75	-91	3.08	88	0.079	34	0.52	-54
4.4	0.71	-102	3.04	78	0.084	28	0.50	-60
4.8	0.67	-114	3.00	68	0.089	21	0.47	-66
5.2	0.63	-126	2.95	58	0.092	15	0.43	-73
5.6	0.60	-138	2.87	49	0.094	10	0.38	-81
6.0	0.57	-150	2.77	40	0.096	4	0.34	-89
6.4	0.54	-162	2.68	31	0.097	-1	0.30	-99
6.8	0.52	-174	2.58	22	0.098	-6	0.27	-109
7.2	0.51	173	2.50	14	0.099	-11	0.24	-121
7.6	0.50	160	2.43	5	0.099	-16	0.21	-134
8.0	0.50	147	2.36	-4	0.099	-20	0.18	-148
8.4	0.51	135	2.26	-13	0.099	-24	0.16	-164
8.8	0.52	125	2.15	-22	0.099	-29	0.16	176
9.2	0.54	115	2.04	-30	0.099	-33	0.17	158
9.6	0.55	107	1.93	-39	0.099	-37	0.19	142
10.0	0.57	99	1.82	-47	0.099	-41	0.22	128
10.4	0.59	91	1.71	-54	0.100	-44	0.25	118
10.8	0.60	85	1.60	-62	0.101	-47	0.27	109
11.2	0.61	79	1.51	-69	0.102	-49	0.30	100
11.6	0.62	73	1.44	-75	0.103	-52	0.32	92
12.0	0.62	68	1.38	-82	0.104	-55	0.34	85