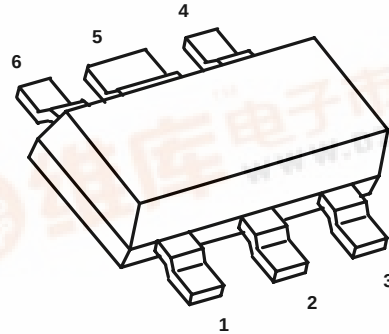


SIEMENS**GaAs FET****CLY 2***Datasheet*

- * Power amplifier for mobile phones
- * For frequencies up to 3 GHz
- * Operating voltage range: 2 to 6 V
- * P_{OUT} at $V_D=3V$, $f=1.8GHz$ typ. 23.5 dBm
- * High efficiency better 55 %



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

Type	Marking	Ordering code (taped)	Pin Configuration						Package 1)
			1	2	3	4	5	6	
CLY 2	Y2	Q62702-L96	G	S	D	D	S	G	MW 6

Maximum ratings	Symbol		Unit
Drain-source voltage	V_{DS}	9	V
Drain-gate voltage	V_{DG}	12	V
Gate-source voltage	V_{GS}	-6	V
Drain current	I_D	600	mA
Channel temperature	T_{Ch}	150	°C
Storage temperature	T_{stg}	-55...+150	°C
Total power dissipation ($T_S \leq 50^\circ C$) ²⁾	P_{tot}	900	mW

Thermal Resistance

Channel-soldering point ²⁾	R_{thChS}	≤ 110	K/W
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1) Dimensions see chapter Package Outlines

2) T_S is measured on the source lead at the soldering point to the pcb.

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

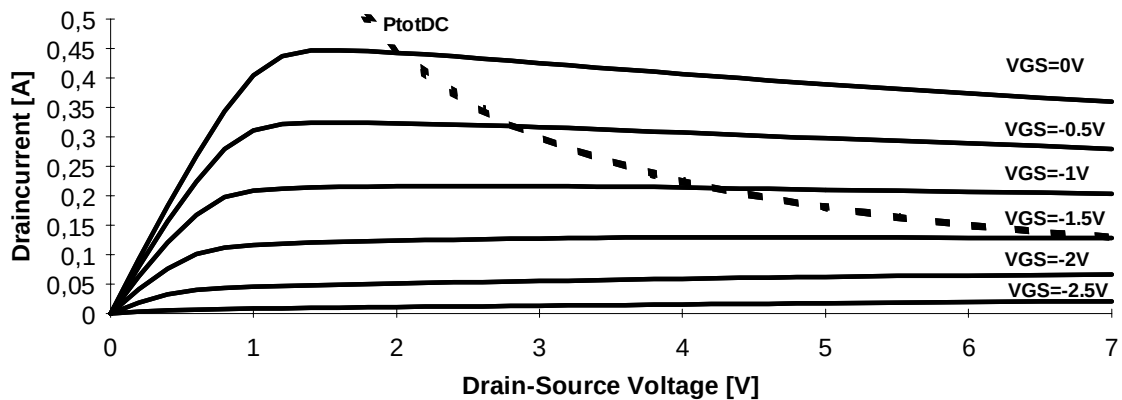
Characteristics	Symbol	min	typ	max	Unit
Drain-source saturation current $V_{DS} = 3\text{ V}$ $V_{GS} = 0\text{ V}$	I_{DSS}	300	450	650	mA
Drain-source pinch-off current $V_{DS} = 3\text{ V}$ $V_{GS} = -3.8\text{ V}$	$I_{D(p)}$	-	5	50	μA
Gate pinch-off current $V_{DS} = 3\text{ V}$ $V_{GS} = -3.8\text{ V}$	$I_{G(p)}$	-	5	20	μA
Pinch-off Voltage $V_{DS} = 3\text{ V}$ $I_D = 50\text{ }\mu\text{A}$	$V_{GS(p)}$	-3.8	-2.8	-1.8	V
Small Signal Gain *) $V_{DS} = 3\text{ V}$ $I_D = 180\text{ mA}$ $f = 1.8\text{ GHz}$ $P_{in} = -5\text{ dBm}$	G	-	15.5	-	dB
Small Signal Gain **) $V_{DS} = 3\text{ V}$ $I_D = 180\text{ mA}$ $f = 1.8\text{ GHz}$ $P_{in} = -5\text{ dBm}$	G	-	14.5	-	dB
Output Power $V_{DS} = 3\text{ V}$ $I_D = 180\text{ mA}$ $f = 1.8\text{ GHz}$ $P_{in} = 10\text{ dBm}$	P_O	22.5	23.5		dBm
1dB-Compression Point $V_{DS} = 3\text{ V}$ $I_D = 180\text{ mA}$ $f = 1.8\text{ GHz}$	P_{1dB}	-	23.5	-	dBm
1dB-Compression Point $V_{DS} = 5\text{ V}$ $I_D = 180\text{ mA}$ $f = 1.8\text{ GHz}$	P_{1dB}	-	27.0	-	dBm
Power Added Efficiency $V_{DS} = 3\text{ V}$ $I_D = 180\text{ mA}$ $f = 1.8\text{ GHz}$ $P_{in} = 10\text{ dBm}$	PAE	-	55	-	%

*) Matching conditions for maximum small signal gain (not identical with power matching conditions !)

**) Power matching conditions: $f = 1.8\text{ GHz}$

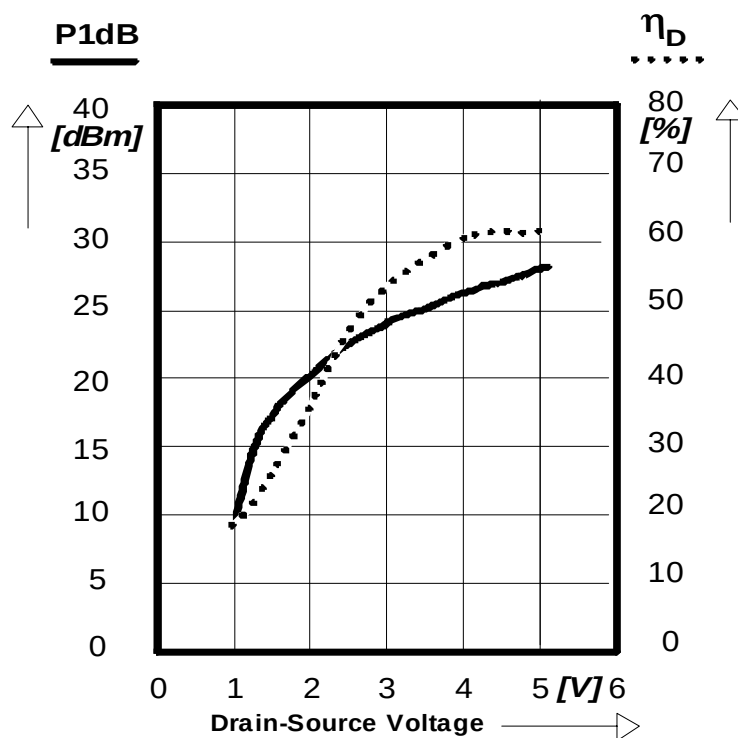
Source Match: Γ_{ms} : MAG = 0.74, ANG 132°; Load Match: Γ_{ml} : MAG 0.61, ANG -153°

Output Characteristics



Compression Power vs. Drain-Source Voltage

$f = 1.8GHz$; $I_D = 0.5I_{DSS}$



typ. Common Source S-Parameters
 $V_{DS} = 3 \text{ V}$ $I_D = 180 \text{ mA}$ $Z_0 = 50 \Omega$

f GHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.100	0.99	-12.0	9.17	171.6	0.007	83.3	0.15	-16.6
0.150	0.99	-17.9	9.11	167.4	0.011	80.8	0.16	-24.2
0.200	0.98	-23.7	9.01	163.4	0.014	77.6	0.16	-31.2
0.250	0.97	-29.5	8.89	159.3	0.017	74.7	0.16	-39.0
0.300	0.96	-35.1	8.75	155.4	0.021	72.4	0.16	-45.9
0.400	0.94	-46.0	8.40	147.8	0.026	67.0	0.17	-58.2
0.500	0.92	-56.4	8.03	140.7	0.031	62.5	0.18	-69.2
0.600	0.89	-66.2	7.61	134.1	0.036	58.0	0.18	-79.0
0.700	0.86	-75.4	7.22	128.0	0.039	54.4	0.19	-87.0
0.800	0.84	-84.1	6.82	122.3	0.043	51.2	0.20	-94.2
0.900	0.82	-92.1	6.45	117.2	0.045	48.3	0.20	-100.4
1.000	0.80	-99.7	6.10	112.3	0.048	46.1	0.21	-105.3
1.200	0.77	-113.6	5.45	103.6	0.052	41.8	0.22	-115.1
1.400	0.74	-125.9	4.92	95.8	0.055	38.6	0.23	-122.9
1.500	0.73	-131.5	4.71	92.1	0.056	37.2	0.23	-125.7
1.600	0.72	-137.1	4.48	88.5	0.057	36.2	0.24	-129.4
1.800	0.72	-147.4	4.10	81.7	0.059	34.0	0.25	-135.0
2.000	0.71	-157.2	3.77	75.0	0.060	31.9	0.26	-139.7
2.200	0.71	-165.3	3.47	68.8	0.062	31.2	0.27	-143.0
2.400	0.71	-173.3	3.19	63.0	0.063	29.7	0.29	-147.2
2.500	0.71	-177.4	3.06	60.1	0.063	28.9	0.29	-150.0
3.000	0.72	165.7	2.52	47.2	0.065	28.4	0.32	-159.7
3.500	0.74	151.7	2.12	36.4	0.066	29.7	0.36	-167.5
4.000	0.76	139.9	1.85	26.5	0.073	30.6	0.39	-173.1
4.500	0.78	127.4	1.61	15.3	0.078	28.2	0.42	179.2
5.000	0.79	116.7	1.43	4.6	0.085	24.0	0.45	174.3
5.500	0.80	106.3	1.23	-5.9	0.085	20.9	0.49	167.8
6.000	0.83	97.1	1.06	-14.8	0.087	17.7	0.52	160.9

Additional S-Parameter available on CD

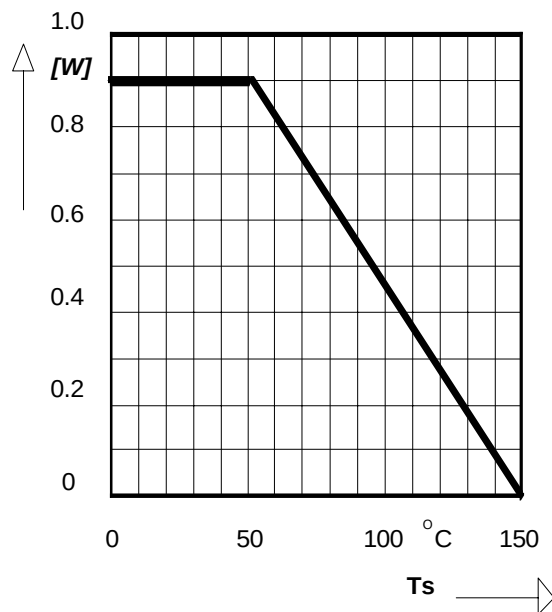
typ. Common Source S-Parameters
 $V_{DS} = 5\text{ V}$ $I_D = 180\text{ mA}$ $Z_0 = 50\ \Omega$

f GHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.100	0.99	-12.3	9.30	171.3	0.007	83.1	0.27	-10.8
0.150	0.99	-18.4	9.23	166.9	0.010	80.0	0.27	-15.8
0.200	0.98	-24.3	9.13	162.8	0.014	77.2	0.26	-20.4
0.250	0.97	-30.3	9.00	158.5	0.017	73.6	0.26	-25.7
0.300	0.96	-36.1	8.85	154.6	0.020	71.1	0.26	-30.5
0.400	0.94	-47.2	8.48	146.7	0.026	65.8	0.26	-39.2
0.500	0.91	-57.8	8.08	139.4	0.030	61.0	0.25	-47.7
0.600	0.89	-67.8	7.64	132.6	0.034	56.3	0.25	-55.4
0.700	0.86	-77.1	7.23	126.3	0.038	52.8	0.25	-62.2
0.800	0.84	-85.9	6.81	120.6	0.041	49.5	0.24	-68.6
0.900	0.81	-93.9	6.43	115.3	0.043	46.4	0.24	-74.1
1.000	0.80	-101.5	6.07	110.4	0.045	44.2	0.24	-79.2
1.200	0.76	-115.4	5.40	101.4	0.048	40.1	0.24	-88.8
1.400	0.74	-127.6	4.87	93.6	0.051	36.9	0.24	-96.8
1.500	0.73	-133.2	4.65	89.8	0.052	35.6	0.24	-100.2
1.600	0.72	-138.8	4.42	86.1	0.052	34.6	0.24	-103.9
1.800	0.72	-149.0	4.04	79.2	0.054	32.7	0.25	-110.4
2.000	0.71	-158.6	3.71	72.3	0.054	30.9	0.26	-116.2
2.200	0.71	-166.6	3.41	66.1	0.055	30.9	0.27	-120.4
2.400	0.71	-174.5	3.13	60.1	0.056	29.9	0.28	-125.6
2.500	0.71	-178.5	3.00	57.1	0.056	29.4	0.29	-129.1
3.000	0.73	164.9	2.47	43.9	0.057	30.8	0.32	-140.6
3.500	0.75	151.1	2.07	32.5	0.059	34.3	0.35	-150.6
4.000	0.77	139.4	1.80	22.1	0.067	36.7	0.40	-158.2
4.500	0.78	126.9	1.56	10.5	0.074	34.7	0.43	-167.6
5.000	0.79	116.1	1.37	-0.6	0.082	30.2	0.47	-174
5.500	0.81	105.6	1.18	-11.6	0.083	26.7	0.51	178
6.000	0.84	96.3	1.00	-20.8	0.086	22.9	0.54	169.6

Additional S-Parameter available on CD

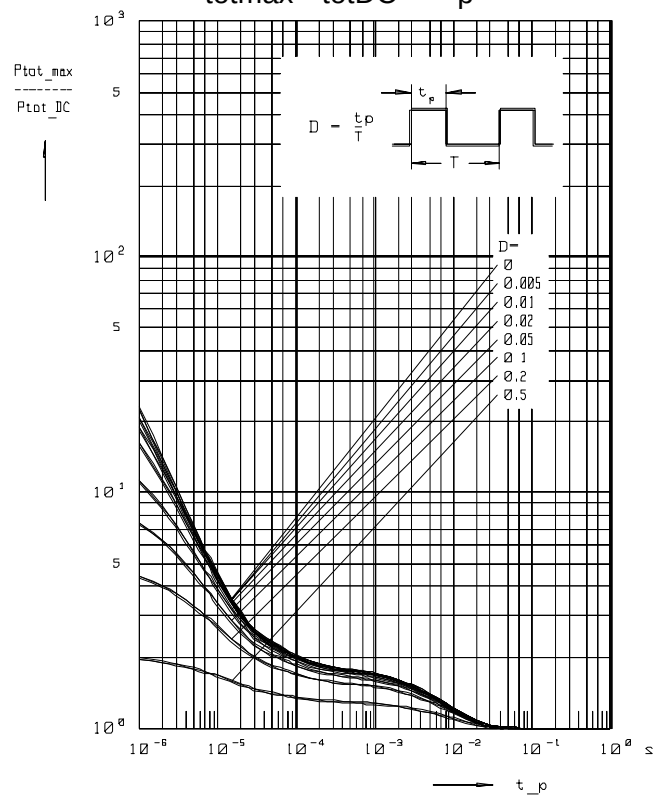
Total Power Dissipation

$$P_{\text{tot}} = f(T_s)$$



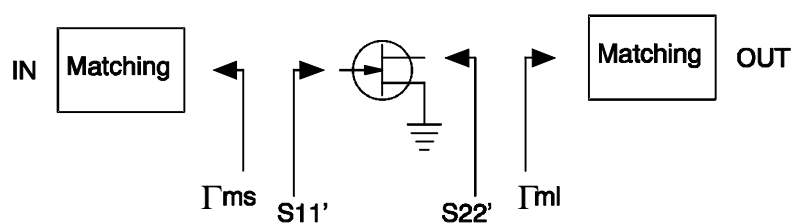
Permissible Pulse Load

$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$



CLY2 Power GaAs-FET Matching Conditions

Definition:



Measured Data:

Typ	f [GHz]	V _{DS} [V]	I _D [mA]	P-1dB [dBm]	Gain [dB]	Γ _{ms} MAG	Γ _{ms} ANG	Γ _{ml} MAG	Γ _{ml} ANG
CLY2	0.9	3	175	22.8	15.7	0.49	75	0.42	-165
		5	175	25.8	16.5	0.52	75	0.22	-172
		6	175	26.9	16.9	0.50	76	0.21	-156
	1.5	5	175	25.8	16.1	0.68	106	0.42	143
		6	175	26.9	16.9	0.76	113	0.34	139
	1.8	2	175	19.0	15.0	0.75	130	0.52	-171
		3	175	22.8	15.4	0.70	125	0.45	-172
		4	175	24.5	15.6	0.75	131	0.41	166
		5	175	25.8	15.7	0.72	131	0.38	163
		6	175	26.8	16.0	0.72	135	0.35	155
	2.4	3	175	21.5	13.0	0.70	158	0.46	-179
		5	175	26.1	13.0	0.67	152	0.36	-178

Note: Gain is small signal gain @ Γ_{ms} and Γ_{ml}