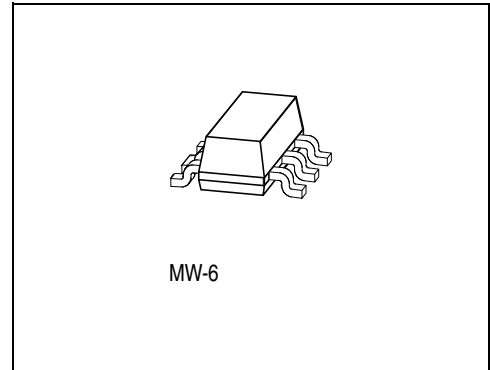


GaAs FET

Data Sheet

CLY 2

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



ESD: Electrostatic discharge sensitive device, observe handling precautions!

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

Maximum Ratings

Parameter	Symbol	Value	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 ($T_S \leq 50\text{ °C}$) ¹⁾	P_{tot}	900	mW

¹⁾ T_S is measured on the source lead at the soldering point to the pcb.

Thermal Resistance

Parameter	Symbol	Value	Unit
Channel-soldering point ¹⁾	R_{thChS}	≤ 110	K/W

¹⁾ T_S is measured on the source lead at the soldering point to the pcb.

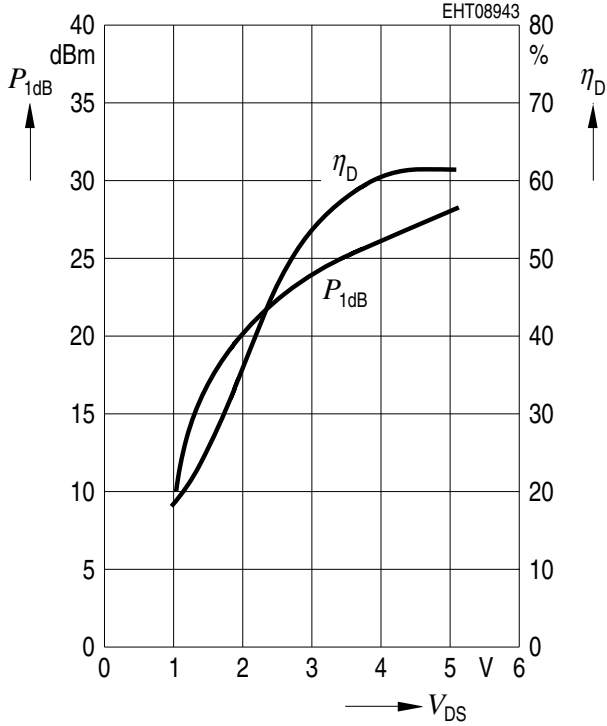
Electrical Characteristics
 $T_A = 25\text{ °C}$, unless otherwise specified.

Characteristics	Symbol	Limit Values			Unit	Test Conditions
		min.	typ.	max.		
Drain-source saturation current	I_{DSS}	300	450	650	mA	$V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$
Drain-source pinch-off current	$I_{D(p)}$	–	5	50	μA	$V_{DS} = 3\text{ V}$, $V_{GS} = -3.8\text{ V}$
Gate pinch-off current	$I_{G(p)}$	–	5	20	μA	$V_{DS} = 3\text{ V}$, $V_{GS} = -3.8\text{ V}$
Pinch-off Voltage	$V_{GS(p)}$	– 3.8	– 2.8	– 1.8	V	$V_{DS} = 3\text{ V}$, $I_D = 50\text{ }\mu\text{A}$
Small Signal Gain ¹⁾	G	–	15.5	–	dB	$V_{DS} = 3\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$, $P_{IN} = -5\text{ dBm}$
Small Signal Gain ²⁾	G	–	14.5	–	dB	$V_{DS} = 3\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$, $P_{IN} = -5\text{ dBm}$
Output Power	P_O	22.5	23.5	–	dBm	$V_{DS} = 3\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$, $P_{IN} = 10\text{ dBm}$
1 dB-Compression Point	$P_{1\text{ dB}}$	–	23.5	–	dBm	$V_{DS} = 3\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$
1 dB-Compression Point	$P_{1\text{ dB}}$	–	27.0	–	dBm	$V_{DS} = 5\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$
Power Added Efficiency	PAE	–	55	–	%	$V_{DS} = 3\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$, $P_{IN} = 10\text{ dBm}$
Noise figure	NF	–	1.48	–	dB	$V_{DS} = 3\text{ V}$, $I_D = 180\text{ mA}$, $f = 1.8\text{ GHz}$

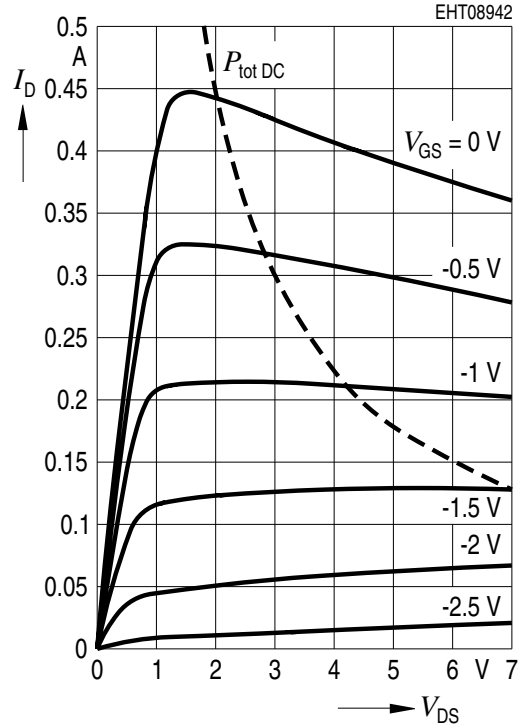
¹⁾ Matching conditions for maximum small signal gain (not identical with power matching conditions!).

²⁾ Power matching conditions: $f = 1.8\text{ GHz}$; Source Match: G_{MS} : MAG = 0.74, ANG 132°; Load Match: G_{ML} : MAG 0.61, ANG – 153°.

Compression Power vs. Drain-Source Voltage, $f = 1.8$ GHz; $I_{DS} = 0.5 \times I_{DSS}$



Output Characteristics



Typ. Common Source S-Parameters and Noise Data

$$V_{DS} = 3 \text{ V}, I_D = 180 \text{ mA}, Z_0 = 50 \Omega$$

<i>f</i>	S11		S21		S12		S22	
GHz	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

Typ. Common Source S-Parameters and Noise Data (cont'd)

$$V_{DS} = 3 \text{ V}, I_D = 180 \text{ mA}, Z_0 = 50 \ \Omega$$

<i>f</i>	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
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

<i>f</i>	F_{min}	Γ_{opt}		R_N	r_N
GHz	dB	MAG	ANG	Ω	-
0.9	0.79	0.564	61	13.4	0.267
1.8	1.47	0.585	99	13.6	0.272

Additional S-Parameter and noise data available on data disc!

Typ. Common Source S-Parameters and Noise Data
 $V_{DS} = 5 \text{ V}, I_D = 180 \text{ mA}, Z_0 = 50 \Omega$

<i>f</i>	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

Typ. Common Source S-Parameters and Noise Data (cont'd)

$$V_{DS} = 5 \text{ V}, I_D = 180 \text{ mA}, Z_0 = 50 \Omega$$

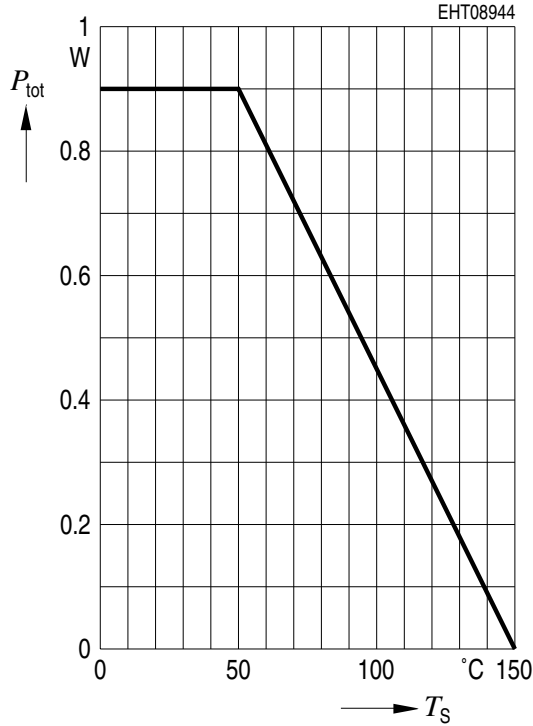
<i>f</i>	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.500	0.81	105.6	1.18	- 11.6	0.083	26.7	0.51	178
6.000	0.84	96.3	1.00	- 20.8	0.086	22.9	0.54	169.6

<i>f</i>	F_{min}	Γ_{opt}		R_N	r_N
GHz	dB	MAG	ANG	Ω	-
0.9	0.83	0.559	61	14.1	0.281
1.8	1.48	0.580	99	13.6	0.272

Additional S-Parameter available on data disc!

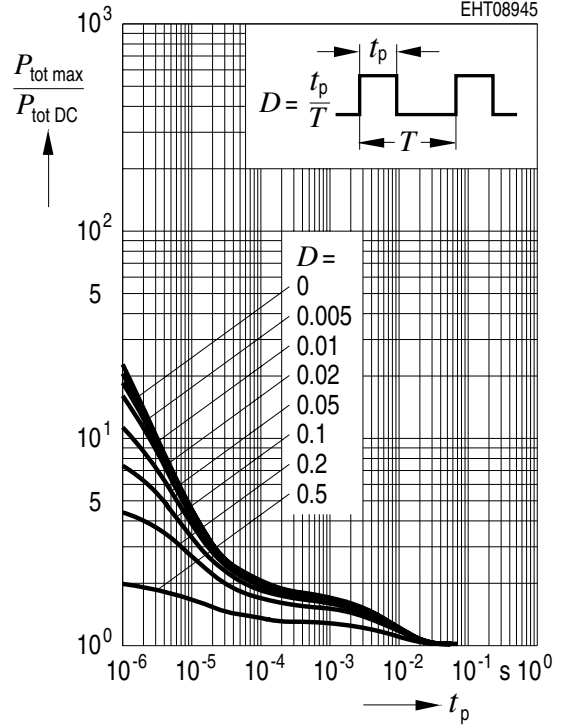
Total Power Dissipation

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



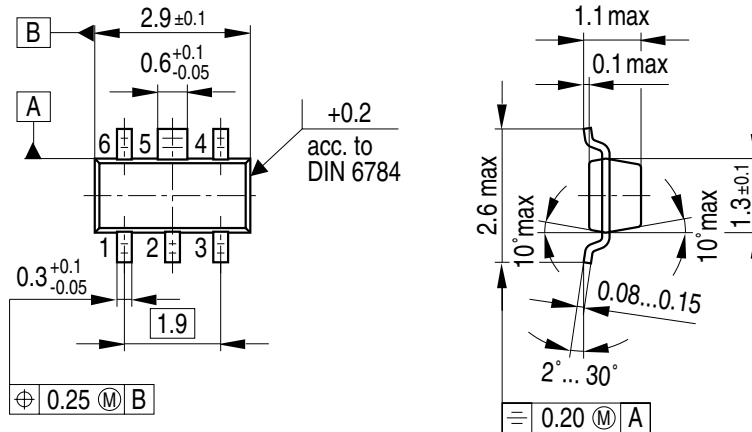
Permissible Pulse Load

$$P_{\text{tot_max}}/P_{\text{tot_DC}} = f(t_p)$$



Package Outlines

MW-6
(Special Package)



GPW05794

Sorts of Packing

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information".

SMD = Surface Mounted Device

Dimensions in mm