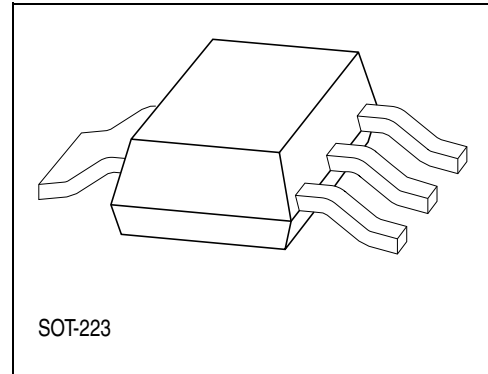


GaAs FET

Data Sheet

CLY 15

- Power amplifier for mobile phones
- For frequencies from 400 MHz to 2.5 GHz
- Operating voltage range: 2.7 to 6 V
- P_{OUT} at $V_D = 3\text{ V}$, $f = 1.8\text{ GHz}$ typ. 31.5 dBm
- Efficiency better 50%



ESD: Electrostatic discharge sensitive device, observe handling precautions!

Type	Marking	Ordering Code (taped)	Pin Configuration				Package
			1	2	3	4	
CLY 15	CLY 15	Q62702-L99	G	S	D	S	P-SOT223-4-2

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	5	A
Channel temperature	T_{Ch}	150	°C
Storage temperature	T_{stg}	- 55 ... + 150	°C
Total power dissipation ($T_S \leq 80\text{ °C}$) T_S : Temperature at soldering point	P_{tot}	4.7	W

Thermal Resistance

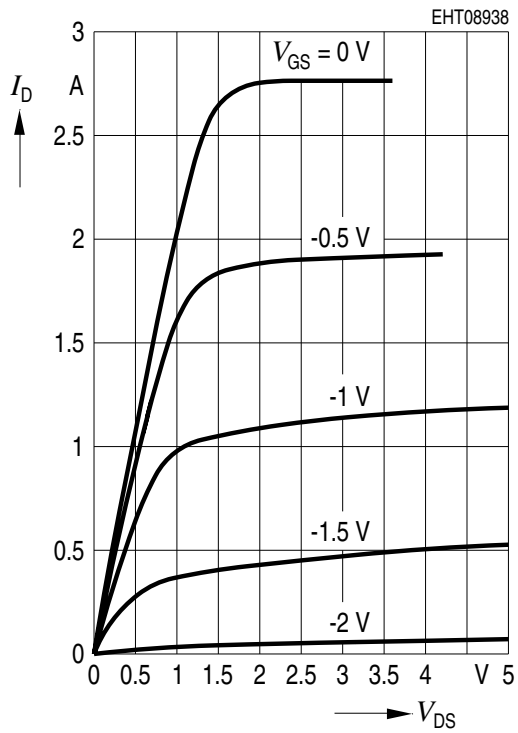
Parameter	Symbol	Value	Unit
Channel-soldering point (GND)	R_{thChS}	< 15	K/W

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

Characteristics	Symbol	Limit Values			Unit	Test Conditions
		min.	typ.	max.		
Drain-source saturation current ¹⁾	I_{DSS}	2.4	3.2	4.8	A	$V_{DS} = 3\text{ V}$ $V_{GS} = 0\text{ V}$
Cut-off current	I_D	–	–	400	μA	$V_{DS} = 3\text{ V}$ $V_{GS} = -3.8\text{ V}$
Gate cut-off current	I_G	–	20	70	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	$V_{DS} = 3\text{ V}$ $I_D = 400\text{ }\mu\text{A}$
Small Signal Gain ¹⁾	G	–	12	–	dB	$V_{DS} = 3\text{ V}$ $I_D = 1.4\text{ A}$ $f = 0.9\text{ GHz}$ $P_{IN} = 5\text{ dBm}$
Output Power ¹⁾	P_O	32	32.5	–	dBm	$V_{DS} = 3\text{ V}$ $I_D = 1.4\text{ A}$ $f = 0.9\text{ GHz}$ $P_{IN} = 23\text{ dBm}$
Output Power ¹⁾	P_O	34.5	35	–	dBm	$V_{DS} = 5\text{ V}$ $I_D = 1.4\text{ A}$ $f = 0.9\text{ GHz}$ $P_{IN} = 24\text{ dBm}$
1 dB-Compression Point ¹⁾	$P_{1\text{ dB}}$	–	31.5	–	dBm	$V_{DS} = 3\text{ V}$ $I_D = 1.4\text{ A}$ $f = 0.9\text{ GHz}$
1 dB-Compression Point ¹⁾	$P_{1\text{ dB}}$	–	34.5	–	dBm	$V_{DS} = 5\text{ V}$ $I_D = 1.4\text{ A}$ $f = 0.9\text{ GHz}$
Power Added Efficiency ¹⁾	η_D	45	50	–	%	$V_{DS} = 3\text{ V}$ $f = 0.9\text{ GHz}$ $P_{IN} = 23\text{ dBm}$

¹⁾ Pulsed measurement; duty cycle 1:10; $t_{ON} = 1\text{ ms}$, power matching conditions.

Output Characteristics



Typ. Common Source S-Parameter

$$V_{DS} = 3 \text{ V}, I_D = 1.4 \text{ A}, Z_0 = 50 \Omega$$

<i>f</i>	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.200	0.91	- 150.9	5.69	99.7	0.01	48.5	0.90	176.0
0.250	0.91	- 160.6	4.63	93.5	0.02	45.9	0.87	173.8
0.300	0.90	- 167.9	3.89	88.7	0.02	46.8	0.88	171.8
0.350	0.90	- 173.7	3.34	84.6	0.02	47.4	0.87	170.8
0.400	0.90	- 178.7	2.92	80.9	0.02	47.5	0.87	168.8
0.450	0.90	176.9	2.60	77.5	0.02	47.6	0.87	167.3
0.500	0.90	173.0	2.34	74.6	0.02	48.1	0.87	165.8
0.550	0.90	169.5	2.12	71.4	0.02	47.7	0.87	164.2
0.600	0.90	166.1	1.95	68.7	0.03	47.0	0.87	162.8
0.650	0.90	163.1	1.79	66.1	0.03	47.1	0.87	161.2
0.700	0.90	160.0	1.66	63.5	0.03	46.6	0.87	159.7
0.750	0.90	157.2	1.54	60.9	0.03	45.6	0.87	158.3
0.800	0.90	154.6	1.45	58.6	0.03	45.0	0.87	156.9
0.850	0.90	152.0	1.36	56.1	0.03	43.9	0.87	155.6
0.900	0.90	149.3	1.28	53.8	0.04	43.0	0.87	154.0
0.950	0.90	146.9	1.21	51.5	0.04	41.9	0.87	152.6
1.000	0.90	144.5	1.15	49.0	0.04	41.0	0.87	151.3
1.200	0.91	135.2	0.95	40.3	0.05	36.1	0.87	145.8
1.400	0.91	126.7	0.81	31.8	0.05	31.9	0.88	140.1
1.600	0.92	118.5	0.70	23.8	0.06	26.1	0.88	134.7
1.800	0.92	110.6	0.61	16.3	0.06	20.8	0.88	129.7
2.000	0.93	103.2	0.55	8.7	0.06	15.6	0.89	124.3
2.200	0.93	96.3	0.49	2.1	0.07	10.4	0.88	119.1
2.400	0.93	89.3	0.44	- 4.1	0.07	5.2	0.90	114.4
2.600	0.94	82.8	0.40	- 10.0	0.07	0.2	0.90	109.3
2.800	0.94	77.0	0.37	- 14.9	0.07	- 4.2	0.90	104.5

Typ. Common Source S-Parameter (cont'd)

$$V_{DS} = 3 \text{ V}, I_D = 1.4 \text{ A}, Z_0 = 50 \Omega$$

<i>f</i>	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
3.000	0.94	71.3	0.34	- 19.6	0.08	- 9.7	0.91	99.8
3.200	0.93	66.0	0.32	- 23.4	0.08	- 15.0	0.92	95.1
3.400	0.92	61.6	0.31	- 26.8	0.08	- 19.4	0.93	90.8
3.600	0.91	57.3	0.30	- 29.7	0.07	- 23.7	0.92	87.0
3.800	0.90	53.1	0.31	- 33.1	0.07	- 28.1	0.93	83.1
4.000	0.89	49.2	0.32	- 38.1	0.07	- 31.9	0.93	79.8
4.200	0.86	46.4	0.34	- 44.9	0.07	- 35.4	0.92	76.4
4.400	0.83	44.7	0.36	- 55.4	0.07	- 37.5	0.92	73.4
4.600	0.89	44.2	0.07	- 36.2	0.07	- 38.1	0.92	71.0
4.800	0.83	43.7	0.34	- 80.6	0.07	- 39.4	0.92	68.2
5.000	0.85	42.2	0.30	- 92.1	0.07	- 40.3	0.92	65.2
5.200	0.88	39.4	0.27	- 100.8	0.07	- 42.5	0.92	62.2
5.400	0.89	36.5	0.24	- 107.8	0.07	- 45.0	0.92	58.7
5.600	0.90	33.1	0.22	- 113.6	0.07	- 48.6	0.92	55.7
5.800	0.91	29.6	0.19	- 118.9	0.07	- 51.4	0.92	52.1
6.000	0.92	26.4	0.18	- 124.4	0.07	- 54.4	0.92	48.0

Typ. Common Source S-Parameter
 $V_{DS} = 5 \text{ V}, I_D = 1.4 \text{ A}, Z_0 = 50 \Omega$

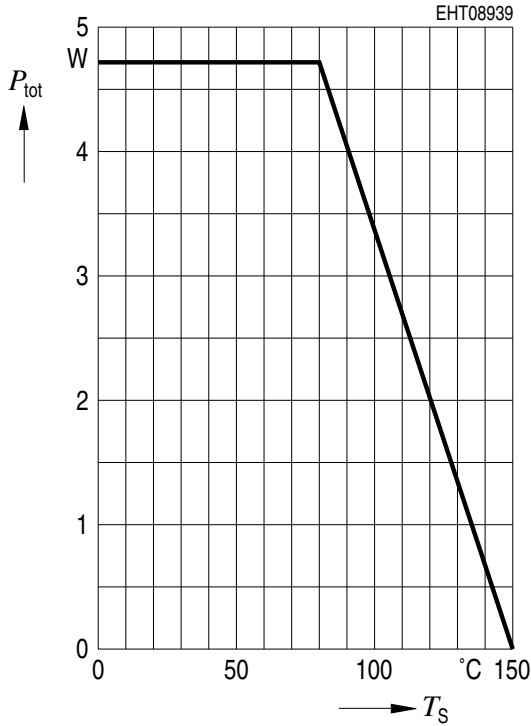
<i>f</i>	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.200	0.90	- 151.1	7.61	98.8	0.01	46.5	0.84	176.7
0.250	0.89	- 160.6	6.18	92.4	0.02	43.4	0.82	174.7
0.300	0.89	- 167.8	5.19	87.5	0.02	46.5	0.82	172.9
0.350	0.89	- 173.7	4.45	83.3	0.02	46.0	0.82	171.8
0.400	0.88	- 178.7	3.90	79.4	0.02	46.5	0.82	169.7
0.450	0.89	177.0	3.47	75.9	0.02	47.3	0.82	168.3
0.500	0.88	173.2	3.11	72.8	0.02	47.9	0.82	166.7
0.550	0.88	169.6	2.82	69.5	0.02	47.8	0.82	165.5
0.600	0.89	166.4	2.59	66.6	0.03	47.4	0.82	163.9
0.650	0.88	163.1	2.38	63.9	0.03	47.4	0.82	162.6
0.700	0.89	160.3	2.20	61.1	0.03	46.5	0.82	161.0
0.750	0.89	157.5	2.05	58.4	0.03	45.6	0.82	159.6
0.800	0.89	154.9	1.91	55.9	0.03	45.3	0.82	158.0
0.850	0.89	152.1	1.79	53.2	0.03	44.8	0.82	156.8
0.900	0.89	149.7	1.69	50.7	0.03	43.9	0.82	155.4
0.950	0.89	147.1	1.59	48.4	0.04	42.7	0.82	154.1
1.000	0.89	144.7	1.51	45.7	0.04	42.0	0.82	152.8
1.200	0.89	135.5	1.24	36.2	0.04	37.8	0.83	147.3
1.400	0.90	127.1	1.04	27.1	0.05	32.2	0.83	141.9
1.600	0.91	119.1	0.90	18.3	0.05	27.4	0.84	136.8
1.800	0.92	111.1	0.78	10.1	0.06	22.5	0.84	131.6
2.000	0.92	103.7	0.68	2.1	0.06	18.2	0.85	126.3
2.200	0.93	96.6	0.61	- 5.1	0.06	12.5	0.86	121.3
2.400	0.93	89.8	0.54	- 12.0	0.07	7.3	0.86	116.1
2.600	0.93	83.2	0.48	- 18.6	0.07	2.6	0.87	111.4
2.800	0.93	77.3	0.43	- 24.0	0.07	- 2.6	0.88	106.3

Typ. Common Source S-Parameter (cont'd)
 $V_{DS} = 5 \text{ V}, I_D = 1.4 \text{ A}, Z_0 = 50 \Omega$

<i>f</i>	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
3.000	0.93	71.8	0.39	- 29.3	0.07	- 7.2	0.89	101.8
3.200	0.92	66.6	0.37	- 33.5	0.07	- 12.1	0.90	97.2
3.400	0.92	61.8	0.34	- 37.2	0.07	- 16.8	0.91	92.5
3.600	0.91	57.9	0.32	- 40.5	0.07	- 21.1	0.91	88.8
3.800	0.90	54.1	0.32	- 43.9	0.07	- 24.9	0.92	85.1
4.000	0.88	50.5	0.31	- 48.3	0.07	- 27.6	0.92	81.4
4.200	0.87	47.8	0.32	- 53.8	0.07	- 31.5	0.92	78.1
4.400	0.86	45.7	0.32	- 60.9	0.07	- 33.4	0.92	74.9
4.600	0.85	43.4	0.32	- 68.9	0.07	- 35.4	0.92	72.2
4.800	0.85	42.3	0.31	- 77.5	0.07	- 37.2	0.92	69.3
5.000	0.86	40.3	0.30	- 86.7	0.07	- 39.3	0.92	66.2
5.200	0.87	37.7	0.28	- 94.5	0.07	- 41.6	0.92	63.1
5.400	0.88	35.2	0.26	- 101.8	0.07	- 44.0	0.92	59.6
5.600	0.89	32.1	0.24	- 108.4	0.08	- 48.5	0.92	56.6
5.800	0.90	29.0	0.22	- 114.5	0.08	- 50.3	0.92	53.0
6.000	0.90	26.0	0.21	- 121.1	0.08	- 54.0	0.93	49.0

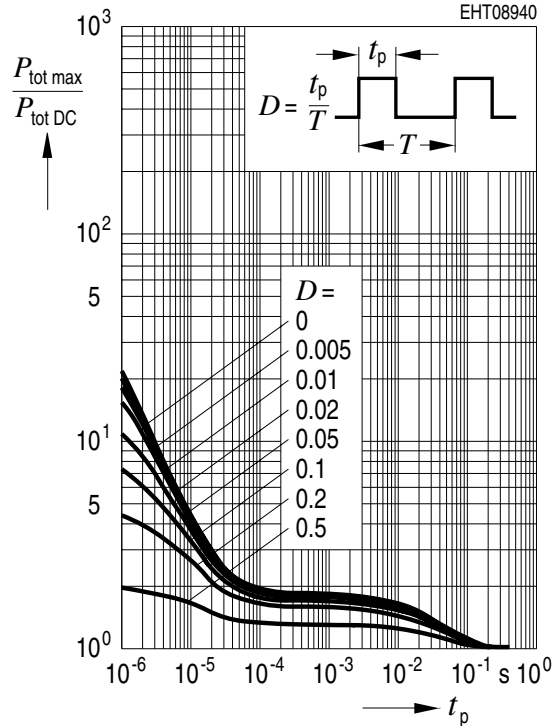
Total Power Dissipation

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



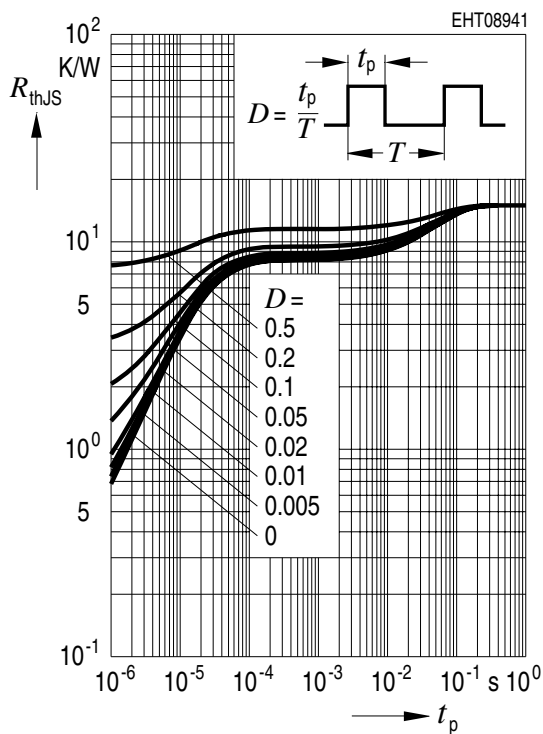
Permissible Pulse Load

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



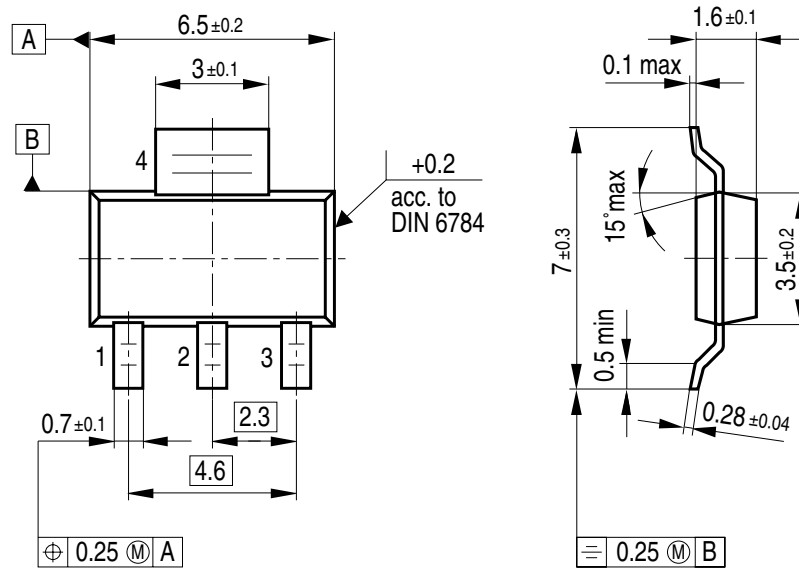
Permissible Pulse Load

$$R_{thJS} = f(t_p)$$



Package Outlines

P-SOT223-4-2
(Small Outline Transistor)



GPS05560

Sorts of Packing

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

SMD = Surface Mounted Device

Dimensions in mm