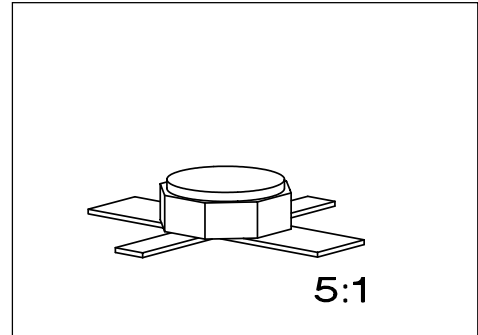


SIEMENS

GaAs FET

CFY 25

- Low noise
- High gain
- For front-end amplifiers
- Ion-implanted planar structure
- All gold metallization



ESD: Electrostatic discharge sensitive device, observe handling precautions!

Type	Marking	Ordering Code (tape and reel)	Pin Configuration				Package ¹⁾
			1	2	3	4	
CFY 25-17	C 5	Q62703-F106	D	S	G	S	Micro-X
CFY 25-20	C 6	Q62703-F107					
CFY 25-23	C 7	Q62703-F108					

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain-source voltage	V_{DS}	5	V
Drain-gate voltage	V_{DG}	7	
Gate-source voltage	V_{GS}	- 5 ... + 0	
Drain current	I_D	80	mA
Total power dissipation, $T_S \leq 56^\circ\text{C}^{2)}$	P_{tot}	250	mW
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	- 65 ... + 150	

Thermal Resistance

Channel - soldering point ²⁾	$R_{th\ chS}$	375	K/W
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¹⁾ For detailed information see chapter Package Outlines.

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

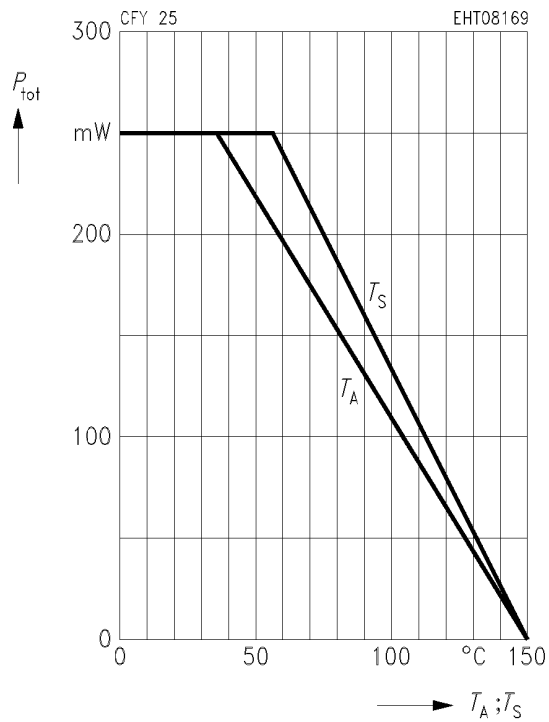
Electrical Characteristics

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

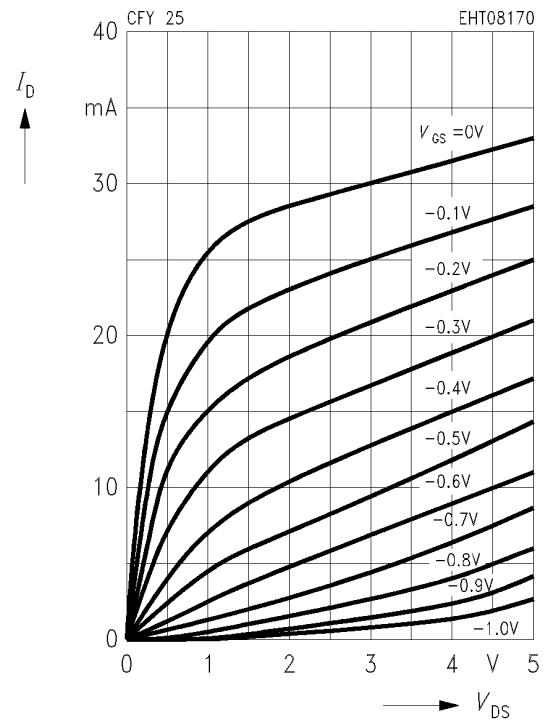
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Drain-source saturation current $V_{DS} = 3\text{ V}$, $V_{GS} = 0$	I_{DSS}	15	30	60	mA
Pinch-off voltage $I_D = 1\text{ mA}$, $V_{DS} = 3\text{ V}$	V_p	– 0.3	– 1.0	– 3.0	V
Gate leakage current $I_D = 15\text{ mA}$, $V_{DS} = 3\text{ V}$	I_G	–	0.1	2	μA
Transconductance $I_D = 15\text{ mA}$, $V_{DS} = 3\text{ V}$	g_m	30	40	–	mS
Noise figure $I_{DS} = 15\text{ mA}$, $V_{DS} = 3\text{ V}$, $f = 12\text{ GHz}$	F	–	1.6	1.7	dB
CFY 25-17		–	1.9	2.0	
CFY 25-20		–	2.2	2.3	
CFY 25-23		–			
Associated gain $I_{DS} = 15\text{ mA}$, $V_{DS} = 3\text{ V}$, $f = 12\text{ GHz}$	G_a	9	9.5	–	
CFY 25-17		8.5	9	–	
CFY 25-20		8.5	9	–	
CFY 25-23					

Total power dissipation $P_{\text{tot}} = f(T_S; T_A^*)$

* Package mounted on alumina

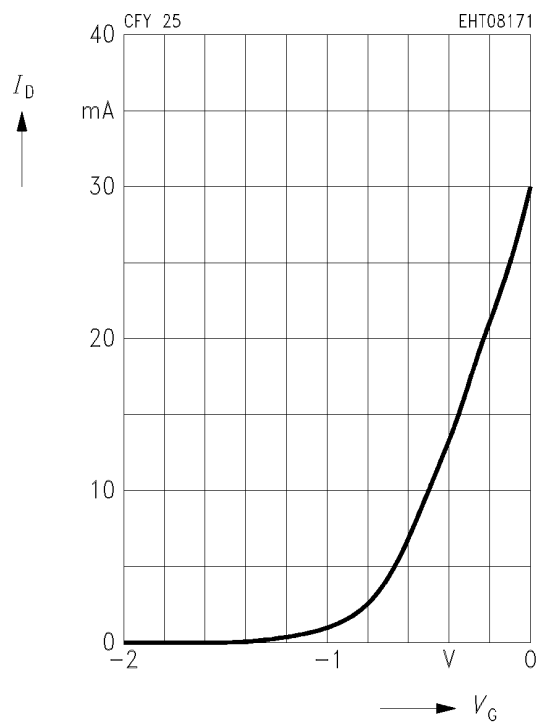


Output characteristics $I_D = f(V_{DS})$



Transfer characteristics $I_D = f(V_G)$

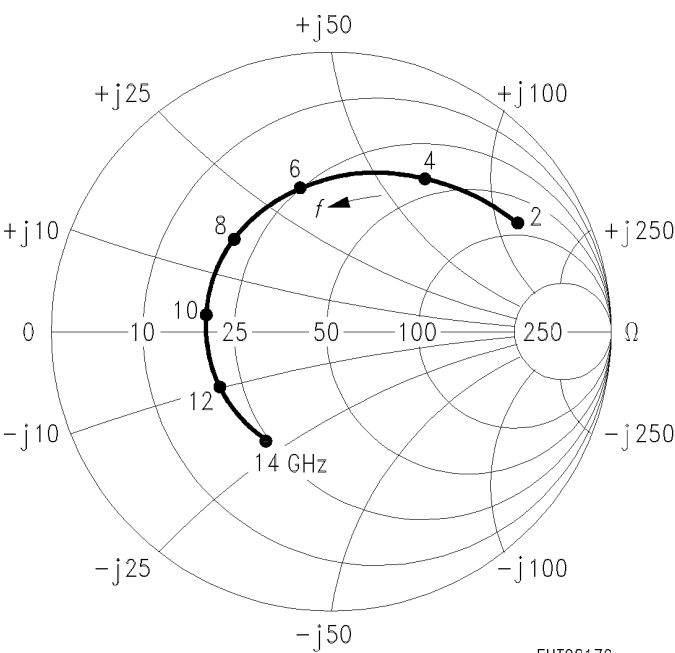
$V_{DS} = 3 \text{ V}$



Common Source Noise Parameters

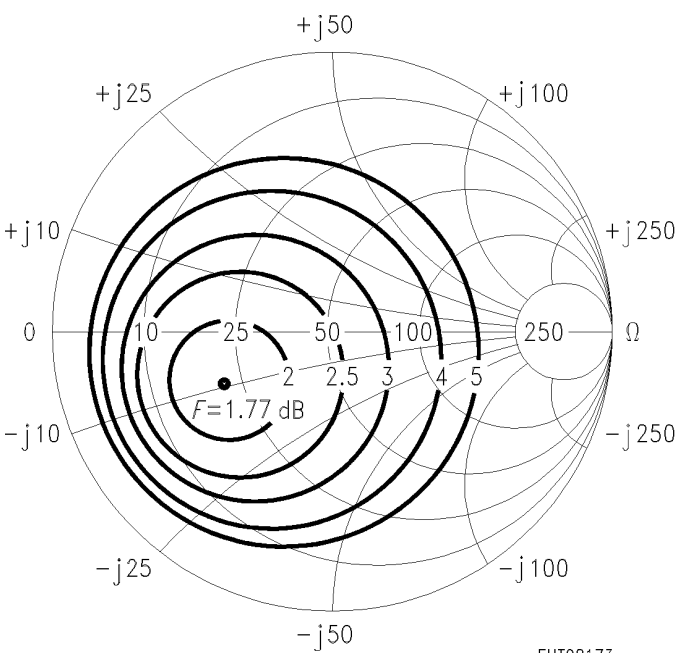
<i>f</i>	<i>F</i> _{min}	<i>G</i> _a	Γ_{opt}		<i>R</i> _N	<i>r</i> _N	<i>N</i>	<i>F</i> _{50 Ω}	<i>G</i> (<i>F</i> _{50 Ω})
GHz	dB	dB	MAG	ANG	Ω	—	—	dB	dB
<i>I</i> _D = 15 mA, <i>V</i> _{DS} = 3.0 V, <i>Z</i> ₀ = 50 Ω									
2	0.60	18.5	0.70	31	29	0.580	0.10	2.0	11.4
4	0.77	14.6	0.59	63	21	0.420	0.14	1.8	10.5
6	1.00	12.4	0.50	103	13	0.260	0.19	1.8	9.3
8	1.25	11.0	0.47	140	7.3	0.146	0.23	2.0	8.2
10	1.55	9.8	0.45	174	5.6	0.112	0.28	2.4	7.3
12	1.77	9.0	0.43	− 156	7.1	0.142	0.29	2.5	6.4
14	2.15	8.1	0.41	− 130	18	0.360	0.46	3.0	5.8

Source impedance for min. noise figure
*I*_D = 15 mA, *V*_{DS} = 3 V



EHT08172

Circles of constant noise figure
*I*_D = 15 mA, *V*_{DS} = 3 V, *f* = 12 GHz

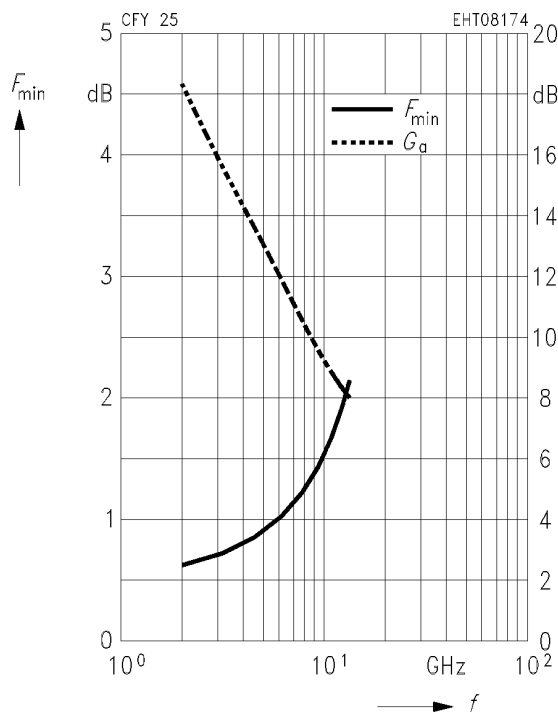


EHT08173

Minimum noise figure $F_{\min} = f(f)$

Associated gain $G_a = f(f)$

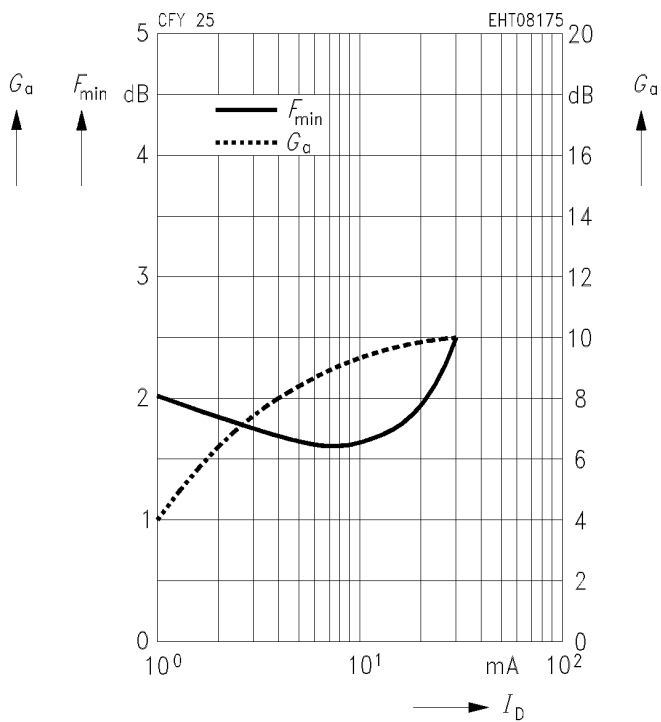
$I_D = 15\text{ mA}$, $V_{DS} = 3\text{ V}$, Z_{Sopt}



Minimum noise figure $F_{\min} = f(I_D)$

Associated gain $G_a = f(I_D)$

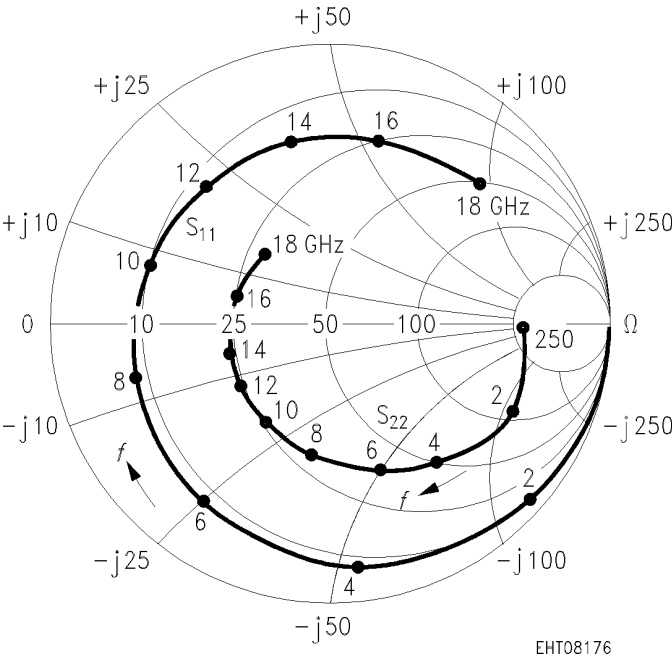
$V_{DS} = 3\text{ V}$, $f = 12\text{ GHz}$, Z_{Sopt}



Common Source S Parameters

<i>f</i>	<i>S</i> ₁₁		<i>S</i> ₂₁		<i>S</i> ₁₂		<i>S</i> ₂₂	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
<i>I</i> _D = 15 mA, <i>V</i> _{DS} = 3 V, <i>Z</i> ₀ = 50 Ω								
1.0	0.99	− 21	3.83	161	0.026	75	0.68	− 13
2.0	0.96	− 42	3.73	141	0.049	61	0.66	− 27
3.0	0.91	− 67	3.55	121	0.069	45	0.63	− 41
4.0	0.86	− 87	3.34	103	0.083	33	0.59	− 55
5.0	0.81	− 107	3.10	86	0.093	21	0.56	− 66
6.0	0.77	− 125	2.92	70	0.100	11	0.52	− 77
7.0	0.74	− 145	2.74	54	0.105	1	0.48	− 89
8.0	0.70	− 165	2.57	37	0.107	− 9	0.45	− 102
9.0	0.68	178	2.42	23	0.108	− 17	0.42	− 112
10.0	0.67	161	2.31	9	0.109	− 24	0.41	− 124
11.0	0.67	146	2.20	− 4	0.110	− 30	0.39	− 134
12.0	0.66	132	2.10	− 17	0.110	− 36	0.37	− 145
13.0	0.66	117	2.02	− 31	0.110	− 42	0.36	− 158
14.0	0.66	103	1.94	− 44	0.112	− 49	0.35	− 169
15.0	0.66	90	1.90	− 57	0.115	− 55	0.34	180
16.0	0.66	77	1.84	− 70	0.119	− 63	0.33	165
17.0	0.66	63	1.80	− 84	0.125	− 72	0.32	151
18.0	0.66	47	1.78	− 99	0.132	− 83	0.31	136

*S*₁₁, *S*₂₂
*I*_D = 15 mA, *V*_{DS} = 3 V, *Z*₀ = 50 Ω



*S*₁₂, *S*₂₁
*I*_D = 15 mA, *V*_{DS} = 3 V, *Z*₀ = 50 Ω

