ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{DS}	Drain to Source Voltage	V	4.0
V_{GS}	Gate to Source Voltage	V	-3.0
I_{DS}	Drain Current	mA	I_{DSS}
T_{CH}	Channel Temperature	°C	125
T_{STG}	Storage Temperature	°C	-65 to +125
P_T	Total Power Dissipation	mW	300

Note:
1. Operation in excess of any one of these conditions may result in permanent damage.

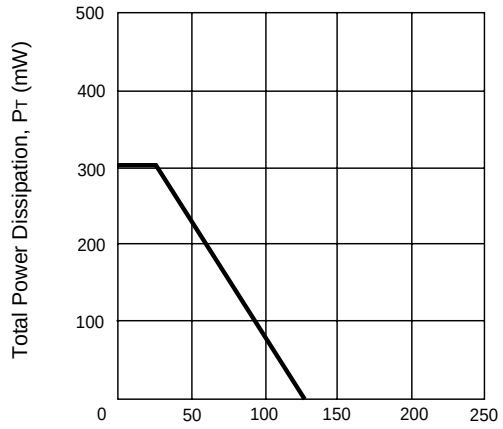
TYPICAL NOISE PARAMETERS (T_A = 25°C)

V_{DS} = 2 V, I_{DS} = 15 mA

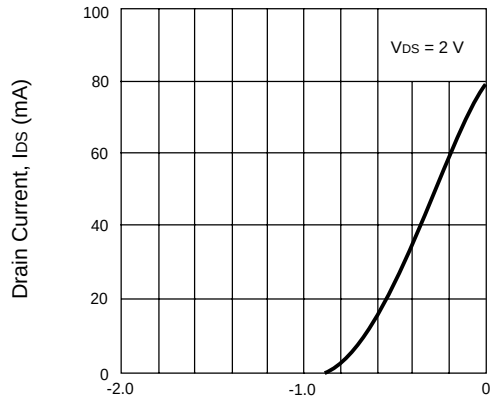
FREQ. (GHz)	NF_{MIN} (dB)	G_A (dB)	Γ_{OPT} MAG	Γ_{OPT} ANG	Rn/50
2	0.23	17.0	0.77	15	0.19
4	0.25	16.0	0.58	43	0.18
6	0.28	14.7	0.43	82	0.13
8	0.31	13.6	0.32	127	0.08
10	0.38	12.5	0.27	175	0.07
12	0.48	11.5	0.27	-139	0.10
14	0.60	10.5	0.34	-100	0.17
16	0.73	9.6	0.48	-70	0.29
18	0.88	8.8	0.69	-56	0.46

TYPICAL PERFORMANCE CURVES (T_A = 25°C)

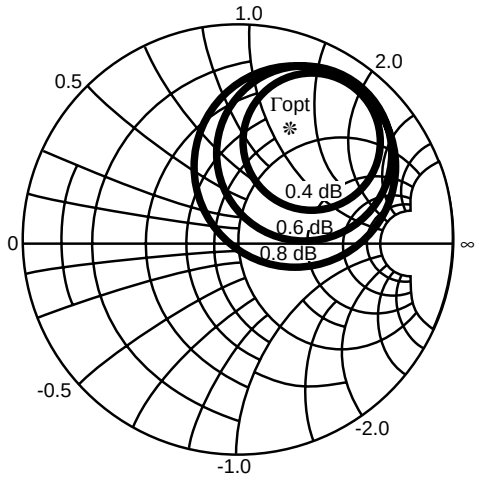
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



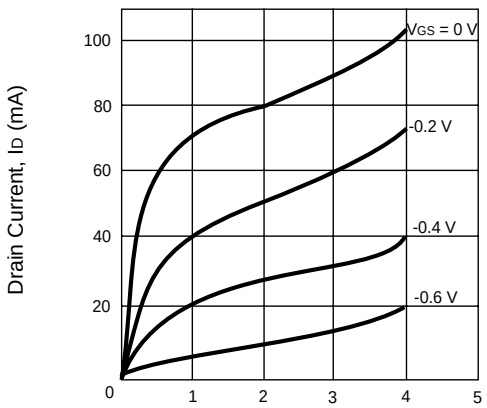
DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE



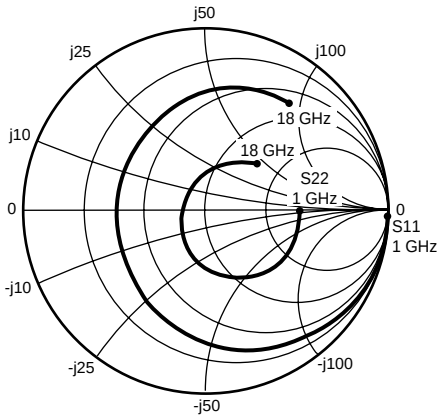
TYPICAL CONSTANT NOISE FIGURE CIRCLE (V_{DS} = 2 V, I_{DS} = 15 mA, f = 4 GHz)



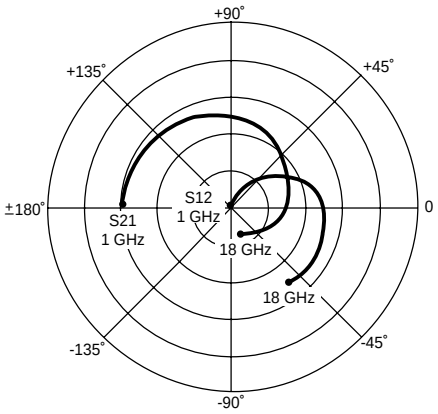
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



TYPICAL COMMON SOURCE SCATTERING PARAMETERS (T_A = 25°C)



Coordinates in Ohms
Frequency in GHz
V_{DS} = 2 V, I_D = 10 mA



V_{DS} = 2 V, I_D = 10 mA

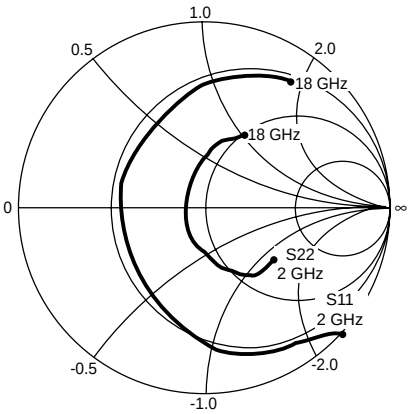
FREQUENCY	S11		S21		S12		S22		K	MAG[1]
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		(dB)
0.1	1.002	-2.0	5.985	177.7	0.002	96.6	0.538	-1.3	-0.17	34.5
0.5	0.996	-9.7	5.938	170.3	0.013	84.0	0.535	-7.5	0.06	26.7
1.0	0.981	-19.2	5.855	160.9	0.025	77.2	0.529	-15.1	0.14	23.7
1.5	0.960	-28.6	5.765	151.7	0.036	71.1	0.518	-22.4	0.21	22.0
2.0	0.933	-38.0	5.671	142.7	0.048	65.5	0.504	-29.9	0.26	20.8
2.5	0.903	-47.4	5.554	133.9	0.058	59.6	0.488	-37.0	0.32	19.8
3.0	0.869	-57.0	5.429	125.1	0.068	53.6	0.467	-44.3	0.37	19.0
3.5	0.829	-66.6	5.279	116.5	0.078	48.3	0.445	-51.5	0.43	18.3
4.0	0.788	-76.5	5.126	108.0	0.086	42.5	0.420	-58.3	0.49	17.7
4.5	0.746	-86.5	4.954	99.4	0.094	37.3	0.394	-65.9	0.54	17.2
5.0	0.702	-96.7	4.773	91.2	0.100	32.3	0.366	-73.2	0.60	16.8
5.5	0.662	-107.1	4.593	83.2	0.106	27.5	0.339	-81.0	0.65	16.4
6.0	0.625	-117.7	4.421	75.5	0.111	22.5	0.309	-88.6	0.70	16.0
6.5	0.594	-128.4	4.232	67.9	0.115	17.5	0.282	-96.4	0.75	15.7
7.0	0.566	-139.1	4.059	60.5	0.119	13.2	0.257	-104.5	0.79	15.3
7.5	0.545	-149.9	3.886	53.2	0.121	9.2	0.234	-112.8	0.84	15.1
8.0	0.528	-160.6	3.720	46.2	0.123	4.7	0.210	-121.7	0.88	14.8
8.5	0.514	-170.7	3.567	39.3	0.126	1.2	0.190	-129.4	0.92	14.5
9.0	0.511	179.1	3.426	32.5	0.128	-2.7	0.172	-139.7	0.95	14.3
9.5	0.510	168.8	3.292	25.8	0.129	-6.7	0.154	-150.9	0.98	14.1
10.0	0.514	158.8	3.151	19.0	0.131	-10.8	0.142	-164.7	1.01	13.2
10.5	0.521	148.9	3.021	12.5	0.132	-14.2	0.132	177.8	1.04	12.4
11.0	0.532	139.2	2.894	6.3	0.131	-17.9	0.122	158.9	1.08	11.7
11.5	0.543	131.0	2.764	0.2	0.132	-21.8	0.125	143.5	1.11	11.2
12.0	0.562	123.0	2.654	-6.0	0.132	-25.0	0.138	128.5	1.12	10.9
12.5	0.580	115.5	2.544	-12.2	0.131	-28.8	0.153	115.5	1.14	10.6
13.0	0.598	108.5	2.437	-18.1	0.131	-32.0	0.172	104.0	1.15	10.3
13.5	0.618	102.0	2.338	-24.2	0.130	-35.5	0.189	95.6	1.16	10.1
14.0	0.627	95.8	2.251	-30.3	0.129	-39.0	0.203	87.7	1.18	9.8
14.5	0.642	90.1	2.161	-36.3	0.129	-42.3	0.223	82.4	1.18	9.6
15.0	0.657	84.4	2.074	-42.3	0.130	-46.2	0.243	75.6	1.19	9.4
15.5	0.671	78.8	1.987	-48.6	0.127	-50.0	0.262	69.7	1.21	9.2
16.0	0.687	73.6	1.902	-54.5	0.126	-54.0	0.284	63.5	1.21	9.0
16.5	0.704	68.2	1.821	-60.3	0.126	-57.5	0.306	57.0	1.21	8.8
17.0	0.718	63.2	1.736	-66.0	0.123	-61.2	0.328	52.2	1.23	8.6
17.5	0.731	58.7	1.649	-71.7	0.121	-64.3	0.347	47.6	1.25	8.4
18.0	0.749	53.9	1.580	-77.1	0.120	-68.0	0.371	42.6	1.23	8.3

Note:
1. Gain Calculations:

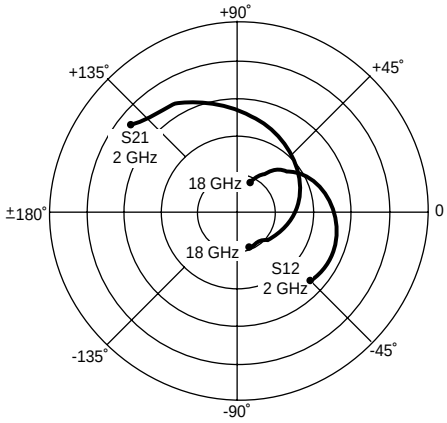
$MAG = \frac{|S_{21}|}{|S_{12}|}\left(K \pm \sqrt{K^2 - 1}\right)$. When $K \leq 1$, MAG is undefined and MSG values are used. $MSG = \frac{|S_{21}|}{|S_{12}|}$, $K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2\,|S_{12}\,S_{21}|}$, $\Delta = S_{11}\,S_{22} - S_{21}\,S_{12}$

MAG = Maximum Available Gain
MSG = Maximum Stable Gain

TYPICAL COMMON SOURCE SCATTERING PARAMETERS (T_A = 25°C)



Coordinates in Ohms
Frequency in GHz
V_{DS} = 2 V, I_D = 15 mA



V_{DS} = 2 V, I_D = 15 mA

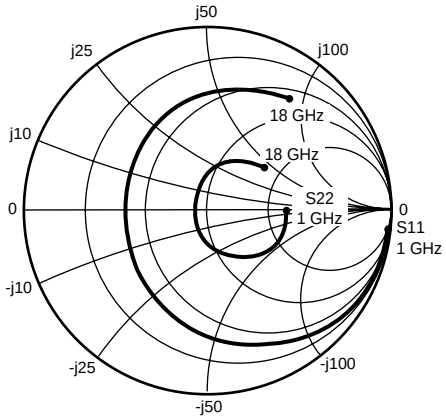
FREQUENCY	S11		S21		S12		S22		K	MAG[1]
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		(dB)
2.0	.998	-41.7	7.162	140.1	.042	68.4	.415	-27.5	.10	41.82
2.5	.927	-47.5	6.856	133.6	.050	65.9	.479	-35.8	.23	26.36
3.0	.860	-61.3	6.603	122.0	.057	57.5	.423	-43.0	.39	23.09
3.5	.829	-69.9	6.305	114.4	.064	54.1	.429	-47.9	.42	21.91
4.0	.802	-79.2	6.033	106.8	.071	49.6	.426	-51.7	.45	20.95
4.5	.716	-87.5	5.687	98.5	.075	45.8	.406	-56.2	.60	19.00
5.0	.659	-93.9	5.415	91.6	.081	41.1	.394	-59.7	.69	17.88
5.5	.601	-99.7	5.184	84.7	.085	38.9	.374	-63.3	.78	16.89
6.0	.592	-108.5	5.050	77.6	.091	35.2	.340	-68.1	.79	16.47
6.5	.550	-118.5	4.912	70.5	.096	30.8	.311	-73.0	.84	15.83
7.0	.514	-130.2	4.774	63.0	.102	27.3	.279	-79.1	.87	15.26
7.5	.488	-144.5	4.600	55.4	.107	22.0	.232	-87.5	.91	14.68
8.0	.464	-158.9	4.401	47.9	.109	18.6	.189	-97.7	.96	14.08
8.5	.463	-171.7	4.187	41.0	.113	14.9	.155	-109.3	.98	13.59
9.0	.468	176.6	3.997	34.1	.114	11.5	.134	-126.9	1.00	15.01
9.5	.472	166.4	3.812	27.7	.118	7.7	.121	-142.8	1.02	14.21
10.0	.472	156.2	3.628	21.5	.119	4.7	.111	-156.2	1.06	13.37
10.5	.476	147.0	3.477	15.6	.122	1.0	.103	-170.1	1.08	12.86
11.0	.476	137.8	3.351	9.6	.124	-2.5	.098	174.4	1.10	12.36
11.5	.488	127.7	3.251	3.5	.125	-5.8	.093	157.9	1.12	12.06
12.0	.518	118.1	3.150	-2.9	.128	-9.2	.105	137.6	1.10	11.98
12.5	.552	109.6	3.036	-9.7	.130	-12.9	.131	121.0	1.08	11.92
13.0	.593	101.9	2.875	-16.4	.131	-16.7	.177	107.0	1.07	11.79
13.5	.635	95.2	2.714	-22.7	.129	-21.2	.223	97.8	1.06	11.70
14.0	.661	90.1	2.546	-28.1	.126	-22.5	.259	91.0	1.08	11.29
14.5	.688	86.1	2.418	-32.6	.124	-24.9	.284	87.0	1.08	11.17
15.0	.707	82.2	2.327	-37.0	.127	-27.4	.316	86.0	1.05	11.30
15.5	.719	79.7	2.240	-41.8	.126	-28.8	.332	83.3	1.04	11.20
16.0	.730	76.1	2.168	-46.8	.129	-31.6	.352	81.7	1.01	11.55
16.5	.752	71.3	2.100	-52.7	.131	-33.2	.380	77.4	.98	10.74
17.0	.771	65.5	2.021	-58.4	.130	-38.5	.398	72.4	.96	10.78
17.5	.803	60.4	1.930	-65.1	.134	-42.2	.422	66.5	.89	11.05
18.0	.817	55.7	1.814	-70.5	.128	-44.3	.445	62.9	.91	10.92

Note:
1. Gain Calculations:

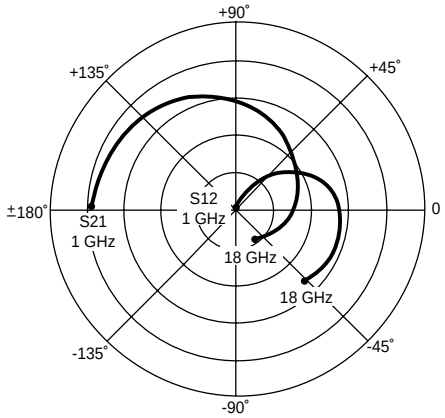
$$MAG = \frac{|S_{21}|}{|S_{12}|}\left(K \pm \sqrt{K^2 - 1}\right).$$ When K ≤ 1, MAG is undefined and MSG values are used. $$MSG = \frac{|S_{21}|}{|S_{12}|}, \quad K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2\,|S_{12}\,S_{21}|}, \quad \Delta = S_{11}\,S_{22} - S_{21}\,S_{12}$$

MAG = Maximum Available Gain
MSG = Maximum Stable Gain

TYPICAL COMMON SOURCE SCATTERING PARAMETERS (T_A = 25°C)



Coordinates in Ohms
Frequency in GHz
V_{DS} = 2 V, I_D = 20 mA



V_{DS} = 2 V, I_D = 20 mA

FREQUENCY	S11		S21		S12		S22		K	MAG[1]
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		(dB)
0.1	1.002	-2.2	7.768	177.7	0.003	83.5	0.439	-1.4	-0.01	33.9
0.5	0.994	-10.7	7.685	169.3	0.011	85.2	0.436	-7.7	0.08	28.4
1.0	0.974	-21.3	7.530	159.0	0.022	77.5	0.430	-15.5	0.18	25.3
1.5	0.946	-31.7	7.350	149.1	0.033	71.7	0.419	-23.1	0.26	23.5
2.0	0.911	-41.9	7.155	139.5	0.042	66.3	0.405	-30.5	0.33	22.3
2.5	0.870	-52.0	6.927	130.1	0.051	61.3	0.388	-37.8	0.40	21.3
3.0	0.826	-62.2	6.682	121.0	0.060	55.8	0.367	-45.0	0.47	20.5
3.5	0.780	-72.4	6.418	112.1	0.068	50.5	0.346	-52.1	0.53	19.7
4.0	0.733	-82.6	6.152	103.5	0.076	45.6	0.322	-58.7	0.60	19.1
4.5	0.685	-93.1	5.871	95.0	0.083	40.9	0.298	-66.3	0.65	18.5
5.0	0.640	-103.6	5.592	86.9	0.088	36.3	0.272	-73.5	0.71	18.0
5.5	0.599	-114.3	5.326	79.1	0.094	31.9	0.248	-81.3	0.76	17.6
6.0	0.565	-125.1	5.077	71.6	0.099	27.7	0.222	-89.0	0.81	17.1
6.5	0.536	-136.0	4.822	64.3	0.103	23.8	0.198	-97.3	0.85	16.7
7.0	0.512	-146.9	4.595	57.2	0.107	19.5	0.176	-106.2	0.90	16.3
7.5	0.496	-157.8	4.375	50.2	0.111	16.0	0.156	-115.6	0.93	16.0
8.0	0.483	-168.6	4.166	43.5	0.113	11.8	0.138	-126.3	0.97	15.7
8.5	0.473	-178.5	3.979	37.0	0.117	8.6	0.120	-135.8	1.00	15.3
9.0	0.475	171.5	3.807	30.4	0.120	5.0	0.107	-149.5	1.02	14.2
9.5	0.478	161.6	3.644	24.0	0.123	1.2	0.096	-165.3	1.04	13.5
10.0	0.487	152.0	3.479	17.6	0.125	-2.9	0.092	175.2	1.06	13.0
10.5	0.498	142.5	3.327	11.4	0.128	-6.2	0.097	152.5	1.07	12.5
11.0	0.514	133.3	3.181	5.4	0.128	-9.7	0.103	130.1	1.10	12.0
11.5	0.527	125.6	3.036	-0.4	0.130	-13.7	0.116	116.5	1.11	11.6
12.0	0.548	118.1	2.911	-6.4	0.131	-17.1	0.137	104.9	1.12	11.4
12.5	0.569	111.1	2.789	-12.3	0.132	-21.0	0.160	95.2	1.13	11.1
13.0	0.589	104.4	2.670	-18.0	0.132	-24.2	0.184	86.9	1.13	10.8
13.5	0.610	98.4	2.562	-23.8	0.132	-28.0	0.203	80.3	1.14	10.6
14.0	0.620	92.4	2.466	-29.7	0.134	-31.7	0.218	73.7	1.15	10.3
14.5	0.636	86.9	2.368	-35.5	0.134	-35.6	0.237	69.5	1.15	10.2
15.0	0.652	81.5	2.272	-41.4	0.134	-39.6	0.259	64.1	1.15	10.0
15.5	0.668	76.1	2.178	-47.5	0.134	-43.7	0.277	58.7	1.15	9.8
16.0	0.684	71.2	2.082	-53.2	0.133	-48.0	0.300	53.8	1.16	9.6
16.5	0.702	66.1	1.994	-58.8	0.132	-51.5	0.324	48.2	1.15	9.4
17.0	0.716	61.1	1.904	-64.3	0.130	-55.5	0.344	44.0	1.16	9.2
17.5	0.731	56.8	1.810	-69.8	0.128	-59.1	0.362	39.7	1.17	9.0
18.0	0.750	52.0	1.737	-75.0	0.127	-62.6	0.385	35.1	1.16	8.9

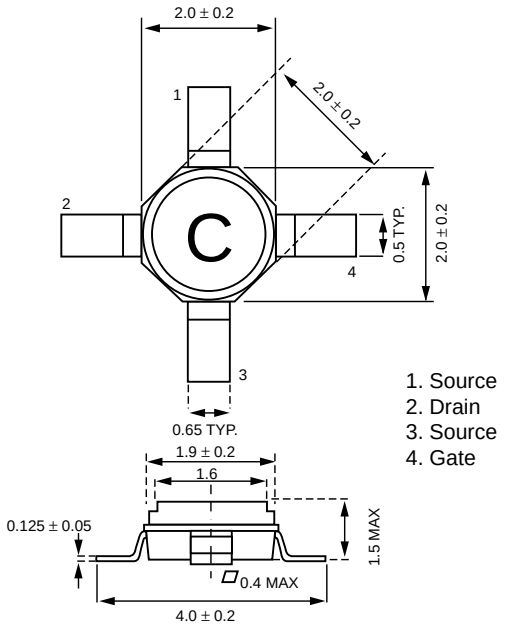
Note:
1. Gain Calculations:

$MAG = \frac{|S_{21}|}{|S_{12}|}\left(K \pm \sqrt{K^2 - 1}\right)$. When $K \le 1$, MAG is undefined and MSG values are used. $MSG = \frac{|S_{21}|}{|S_{12}|}$, $K = \frac{1 + |\Delta|^2 - |S_{11}|^2 - |S_{22}|^2}{2\,|S_{12}\,S_{21}|}$, $\Delta = S_{11}\,S_{22} - S_{21}\,S_{12}$

MAG = Maximum Available Gain
MSG = Maximum Stable Gain

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE S01



1. Source
2. Drain
3. Source
4. Gate

ORDERING INFORMATION

PART NUMBER	AVAILABILITY	PACKAGE
NE334S01	Bulk	S01
NE334S01-T1	Tape & reel 1K/reel	S01
NE334S01-T1B	Tape & reel 4K/reel	S01

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