DATA SHEET

NEC

HETERO JUNCTION FIELD EFFECT TRANSISITOR

NE3505M04

L to C BAND SUPER LOW NOISE AND HIGH-GAIN AMPLIFIER
N-CHANNEL HJ-FET

FEATURES

- **Super Low Noise Figure & Associated Gain :**
  - **NF=0.4dB TYP. Ga=15.5dB TYP. @f=4GHz**
  - **NF=0.35dB TYP. Ga=17dB TYP. @f=2.4GHz (Reference Only)**
  - **NF=0.45dB TYP. Ga=14dB TYP. @f=5.8GHz (Reference Only)**
- **Flat-lead 4-pin tin-type super mini-mold(M04) package**

APPLICATIONS

- **Satellite Radio(SDARS, DMB, etc.) antenna LNA**
- **5.8GHz-band WLAN LNA**
- **LNA for Micro-wave communication system**

ORDERING INFORMATION

PART NUMBER	Quantity	Marking	Packaging Style
NE3505M04	50pcs (Non reel)	V76	8 mm wide emboss taping 1pin(source), 2pin(Drain) feed hole direction
NE3505M04-T2	3 Kpcs/reel		

Remark To order evaluation samples, please contact your local NEC sales office.
Part number for sample order: NE3505M04

ABSOLUTE MAXIMUM RATINGS (T_A =+ 25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain to Source Voltage	V_{DS}	4.0	V
Gate to Source Voltage	V_{GS}	-3.0	V
Drain Current	I_D	I_{DSS}	mA
Gate Current	I_G	140	µA
Total Power Dissipation	P_{tot}	125	mW
Channel Temperature	T_{ch}	+125	°C
Storage Temperature	T_{stg}	- 65 to +125	°C

Caution : Observe precautions when handling because these devices are sensitive to electrostatic discharge.

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.
Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

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RECOMMENDED OPERATING CONDITIONS(TA = +25 °C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Drain to Source Voltage	V_{DS}	---	2	2.5	V
Drain Current	I_D	---	15	25	mA
Input Power	Pin	---	---	0	dBm

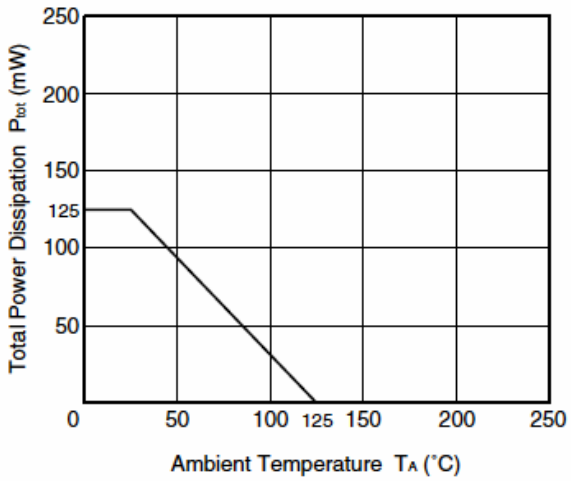
ELECTRICAL CHARACTERISTICS (T_A = +25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Gate to Source Leak Current	I_{GSO}	V_{GS}=-3V	---	0.5	10	uA
Saturated Drain Current	I_{DSS}	V_{DS}=2V, V_{GS}=0V	50	---	120	mA
Gate to Source Cutoff Voltage	$V_{GS(off)}$	V_{DS}=2V, I_D=100μA	-0.35	---	-1.5	V
Trans conductance	gm	V_{DS}=2V, I_D=15mA	70	---	---	mS
Noise Figure	NF	V_{DS}=2V, I_D=15mA f=4GHz	---	0.4	0.6	dB
Associated Gain	Ga		14	15.5	---	dB

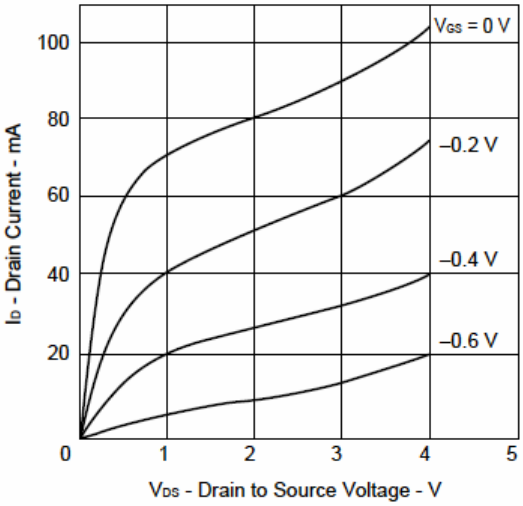
The information in this document is subject to change without notice.

TYPICAL CHARACTERISTICS (T_A = +25 °C)

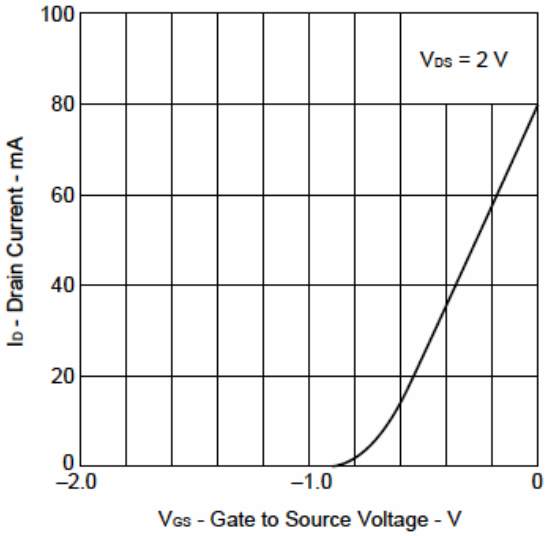
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE

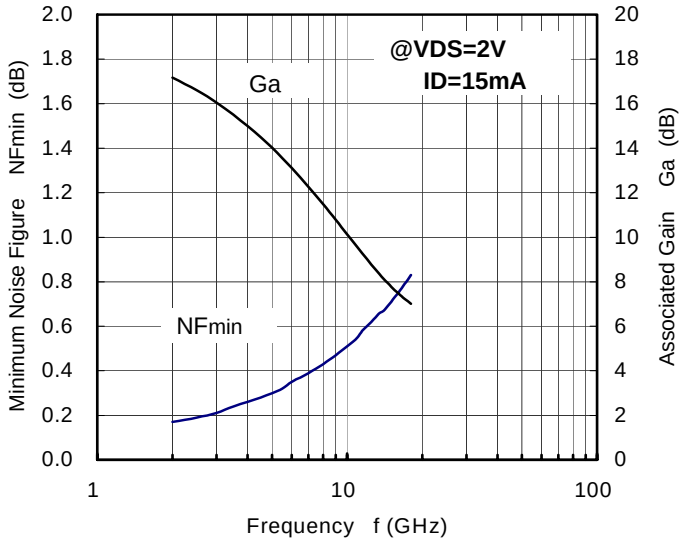


DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE

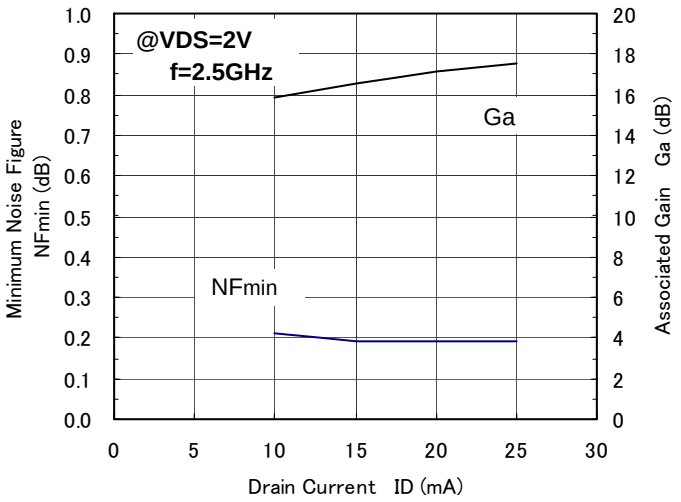


TYPICAL CHARACTERISTICS (TA = +25 °C)

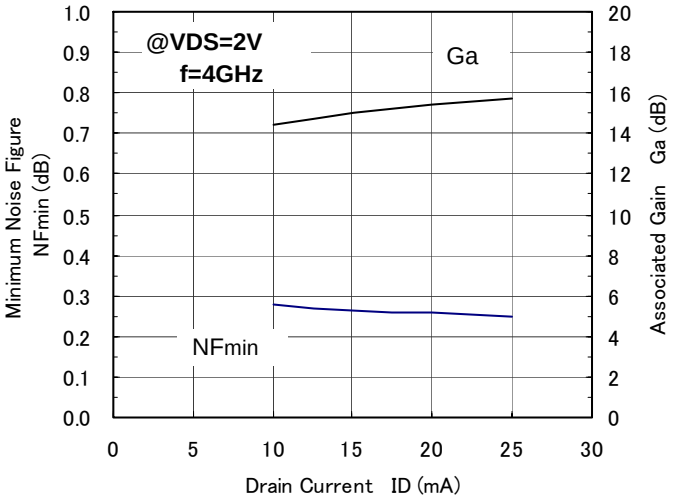
NOISE FIGURE, ASSOCIATED GAIN vs. FREQUENCY



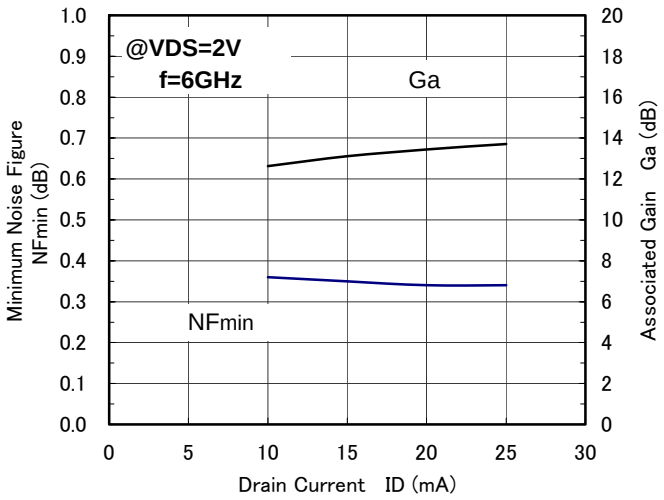
NOISE FIGURE, ASSOCIATED GAIN vs. DRAIN CURRENT



NOISE FIGURE, ASSOCIATED GAIN vs. DRAIN CURRENT

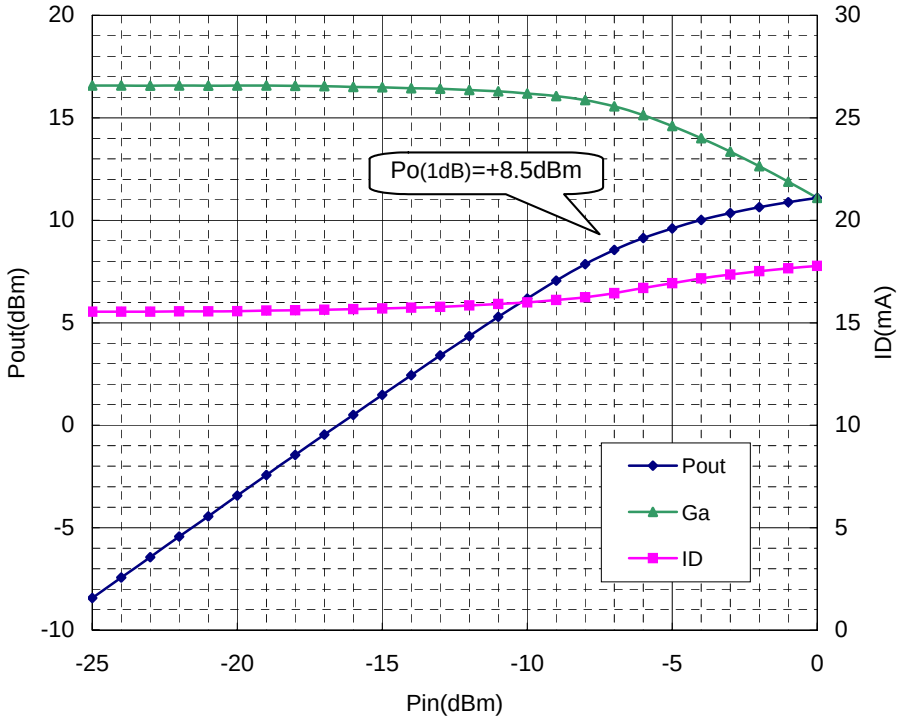


NOISE FIGURE, ASSOCIATED GAIN vs. DRAIN CURRENT

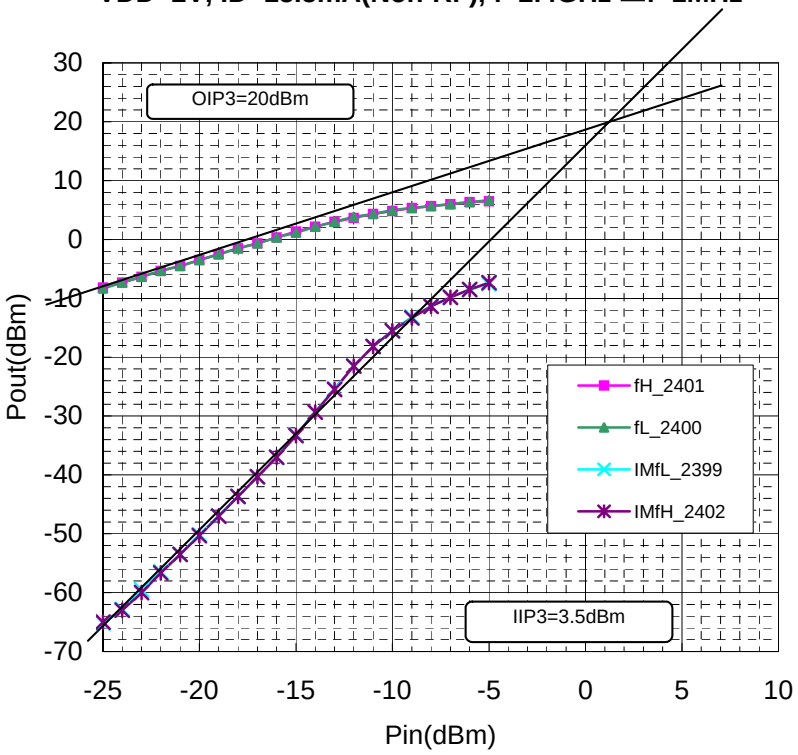


TYPICAL CHARACTERISTICS (T_A = +25 °C)

NE3505M04 Pin vs. Pout
VDD=2V, ID=15.5mA(Non-RF), f=2.4GHz

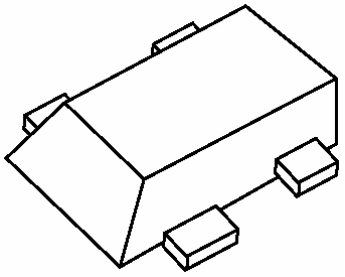


NE3505M04 Pin vs IM3
VDD=2V, ID=15.5mA(Non-RF), f=2.4GHz △f=1MHz

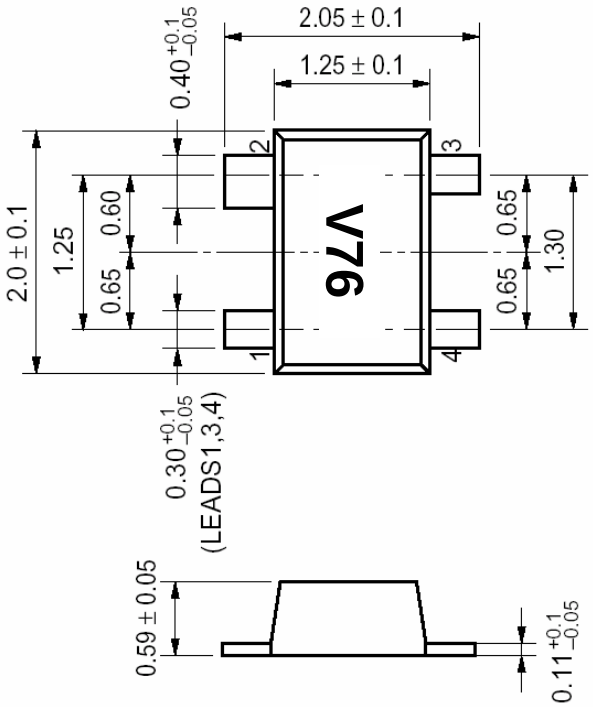


PACKAGE DIMENSIONS

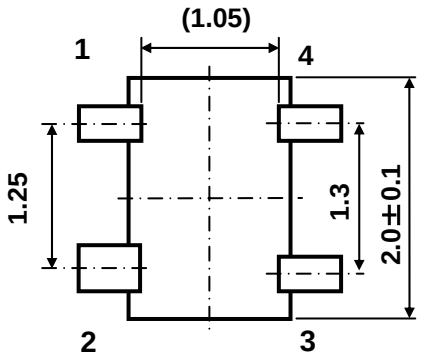
FLAT-LEAD 4-PIN THIN SUPER MINI-MOLD（unit：mm）



(Top View)



(Bottom View)



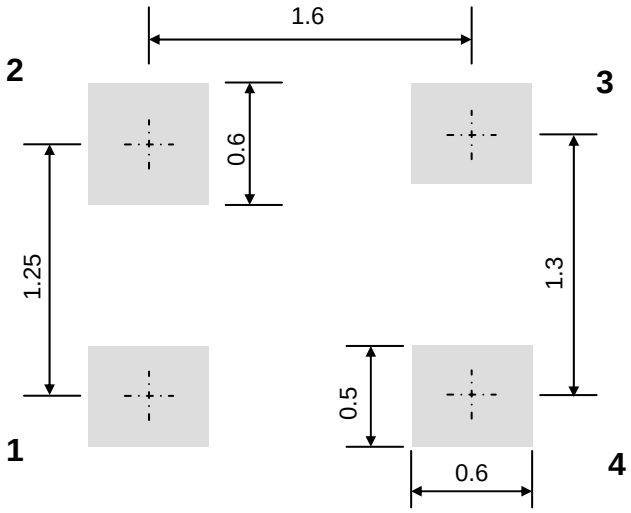
Pin Connections

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

MOUNTING PAD DIMENSIONS

FLAT-LEAD 4-PIN THIN-TYPE SUPER MINIMOLD(M04) PACKAGE (UNIT: mm)

(Reference Only)



RECOMMENDED SOLDERING CONDITIONS

This product should be soldered and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

Soldering Method	Soldering Conditions		Condition Symbol
Infrared Reflow	Peak temperature (package surface temperature) Time at peak temperature Time at temperature of 220°C or higher Preheating time at 120 to 180°C Maximum number of reflow processes Maximum chlorine content of rosin flux (% mass)	: 260°C or below : 10 seconds or less : 60 seconds or less : 120±30 seconds : 3 times : 0.2%(Wt.) or below	IR260
Partial Heating	Peak temperature (pin temperature) Soldering time (per side of device) Maximum chlorine content of rosin flux (% mass)	: 350°C or below : 3 seconds or less : 0.2%(Wt.) or below	HS350

Caution Do not use different soldering methods together (except for partial heating).

Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.

Reference Data

NE3505M04

S-parameter

VDS=2V, ID=10mA

Freq	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.924	-39.6	5.060	140.0	0.055	66.7	0.512	-28.7
2.5	0.882	-48.9	4.875	130.7	0.067	61.7	0.498	-35.2
3.0	0.840	-57.8	4.730	121.7	0.078	56.2	0.480	-42.0
3.5	0.798	-66.6	4.556	113.0	0.088	51.4	0.457	-48.4
4.0	0.750	-75.3	4.375	104.6	0.097	46.9	0.439	-54.5
4.5	0.704	-83.9	4.200	96.3	0.106	42.6	0.418	-60.6
5.0	0.664	-92.1	4.053	87.9	0.114	38.5	0.396	-67.0
5.5	0.622	-101.6	3.879	80.7	0.121	34.6	0.373	-72.5
6.0	0.579	-110.4	3.718	73.2	0.128	30.7	0.354	-78.1
6.5	0.542	-119.8	3.565	65.9	0.135	26.9	0.331	-83.5
7.0	0.511	-128.9	3.424	58.8	0.141	23.5	0.309	-88.7
7.5	0.481	-138.4	3.289	51.9	0.147	20.2	0.290	-94.0
8.0	0.458	-148.4	3.157	45.1	0.153	16.8	0.268	-99.7
8.5	0.438	-157.7	3.041	38.5	0.159	13.5	0.250	-105.0
9.0	0.421	-167.9	2.932	32.0	0.165	10.3	0.230	-110.4
9.5	0.411	-177.7	2.823	25.7	0.171	7.1	0.209	-116.4
10.0	0.406	172.5	2.725	19.5	0.177	3.9	0.190	-123.4
10.5	0.404	162.9	2.634	13.3	0.183	0.6	0.172	-129.9
11.0	0.402	153.3	2.548	7.2	0.188	-2.7	0.155	-138.7
11.5	0.406	143.7	2.464	1.1	0.194	-5.9	0.139	-149.3
12.0	0.410	134.7	2.386	-5.0	0.200	-9.3	0.127	-161.7
12.5	0.423	125.8	2.309	-11.0	0.205	-12.8	0.119	-176.2
13.0	0.435	117.5	2.235	-16.7	0.211	-16.1	0.116	167.3
13.5	0.448	109.1	2.161	-22.7	0.216	-19.7	0.120	150.9
14.0	0.470	101.6	2.089	-28.6	0.222	-23.4	0.127	135.6
14.5	0.489	94.4	2.017	-34.3	0.226	-26.9	0.142	119.2
15.0	0.509	87.6	1.949	-40.2	0.231	-30.7	0.160	108.2
15.5	0.531	81.4	1.880	-45.9	0.235	-34.4	0.176	97.0
16.0	0.554	75.4	1.812	-51.5	0.239	-38.2	0.199	85.5
16.5	0.577	70.1	1.748	-57.2	0.242	-42.2	0.225	77.9
17.0	0.595	64.8	1.684	-62.8	0.245	-45.9	0.243	69.6
17.5	0.620	59.6	1.621	-68.3	0.248	-50.1	0.268	61.3
18.0	0.634	55.4	1.564	-73.8	0.251	-53.9	0.293	54.6

Reference Data

NE3505M04

Noise parameter

VDS=2V, ID=10mA

Freq	Fmin	Gamma opt		Rn/50
(GHz)	(dB)	MAG	ANG	-
2.0	0.19	0.861	17.8	0.199
2.5	0.21	0.826	23.3	0.196
3.0	0.23	0.793	29.3	0.191
3.5	0.26	0.759	35.8	0.185
4.0	0.28	0.727	42.8	0.177
4.5	0.30	0.696	50.4	0.167
5.0	0.32	0.665	58.3	0.156
5.5	0.34	0.636	66.6	0.143
6.0	0.36	0.609	75.4	0.129
6.5	0.38	0.582	84.4	0.115
7.0	0.40	0.558	93.7	0.101
7.5	0.42	0.535	103.3	0.087
8.0	0.44	0.514	113.2	0.074
8.5	0.46	0.494	123.2	0.062
9.0	0.48	0.477	133.4	0.052
9.5	0.51	0.462	143.7	0.044
10.0	0.53	0.450	154.1	0.037
10.5	0.55	0.440	164.6	0.034
11.0	0.57	0.433	175.1	0.032
11.5	0.59	0.428	-174.4	0.034
12.0	0.61	0.426	-164.0	0.038
12.5	0.63	0.427	-153.6	0.044
13.0	0.65	0.431	-143.4	0.054
13.5	0.67	0.439	-133.3	0.066
14.0	0.69	0.450	-123.3	0.080
14.5	0.71	0.464	-113.6	0.097
15.0	0.73	0.482	-104.2	0.117
15.5	0.75	0.504	-95.0	0.140
16.0	0.77	0.529	-86.2	0.165
16.5	0.79	0.559	-77.7	0.193
17.0	0.81	0.592	-69.6	0.224
17.5	0.83	0.630	-61.9	0.257
18.0	0.85	0.672	-54.7	0.293

Reference Data

NE3505M04

S-parameter

VDS=2V, ID=15mA

Freq	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.906	-41.8	5.878	137.8	0.051	67.7	0.440	-28.3
2.5	0.857	-51.5	5.618	128.1	0.061	63.4	0.427	-34.5
3.0	0.809	-60.6	5.398	118.9	0.072	58.2	0.411	-41.0
3.5	0.761	-69.6	5.153	110.1	0.082	53.8	0.389	-46.9
4.0	0.709	-78.3	4.907	101.7	0.091	50.0	0.374	-52.9
4.5	0.660	-86.9	4.674	93.5	0.099	45.6	0.355	-58.4
5.0	0.618	-95.1	4.474	85.2	0.108	42.1	0.336	-64.5
5.5	0.576	-104.6	4.253	78.1	0.117	38.3	0.317	-69.8
6.0	0.532	-113.3	4.053	70.7	0.123	34.6	0.299	-75.0
6.5	0.496	-122.7	3.866	63.6	0.131	31.0	0.280	-80.0
7.0	0.465	-131.8	3.695	56.8	0.138	27.7	0.261	-84.8
7.5	0.437	-141.4	3.536	50.1	0.145	24.6	0.244	-90.0
8.0	0.416	-151.3	3.384	43.5	0.152	21.2	0.224	-95.4
8.5	0.399	-160.8	3.249	37.1	0.159	17.6	0.207	-100.5
9.0	0.384	-170.9	3.124	30.7	0.166	14.4	0.190	-105.6
9.5	0.376	179.3	3.000	24.6	0.173	11.0	0.171	-111.6
10.0	0.373	169.5	2.891	18.6	0.180	7.5	0.152	-118.3
10.5	0.373	159.9	2.791	12.7	0.187	4.1	0.135	-125.3
11.0	0.373	150.4	2.695	6.7	0.193	0.8	0.118	-134.4
11.5	0.379	140.8	2.604	0.8	0.200	-3.1	0.102	-146.9
12.0	0.386	131.9	2.519	-5.1	0.206	-6.5	0.091	-162.2
12.5	0.400	123.1	2.436	-11.0	0.213	-10.2	0.084	179.3
13.0	0.414	114.9	2.355	-16.6	0.219	-14.0	0.084	157.9
13.5	0.428	106.6	2.277	-22.4	0.225	-18.0	0.093	138.8
14.0	0.452	99.5	2.201	-28.1	0.231	-21.7	0.104	122.1
14.5	0.471	92.3	2.124	-33.8	0.235	-25.5	0.126	106.8
15.0	0.494	85.7	2.052	-39.5	0.240	-29.5	0.146	96.3
15.5	0.515	79.6	1.981	-45.1	0.245	-33.4	0.168	85.4
16.0	0.540	73.8	1.909	-50.6	0.248	-37.4	0.193	76.1
16.5	0.563	68.7	1.843	-56.1	0.251	-41.4	0.218	69.0
17.0	0.582	63.4	1.776	-61.7	0.254	-45.4	0.240	61.4
17.5	0.607	58.4	1.712	-67.1	0.258	-49.6	0.265	54.0
18.0	0.622	54.1	1.653	-72.5	0.260	-53.8	0.291	47.5

Reference Data

NE3505M04

Noise parameter

VDS=2V, ID=15mA

Freq (GHz)	Fmin (dB)	Gamma opt MAG	ANG	Rn/50 -
2.0	0.17	0.846	17.4	0.168
2.5	0.19	0.808	22.9	0.166
3.0	0.21	0.770	28.9	0.162
3.5	0.24	0.734	35.5	0.157
4.0	0.26	0.698	42.7	0.150
4.5	0.28	0.664	50.4	0.142
5.0	0.30	0.632	58.5	0.133
5.5	0.32	0.600	67.1	0.122
6.0	0.35	0.571	76.1	0.111
6.5	0.37	0.543	85.5	0.099
7.0	0.39	0.517	95.1	0.087
7.5	0.41	0.493	105.1	0.075
8.0	0.43	0.471	115.2	0.065
8.5	0.45	0.451	125.6	0.055
9.0	0.47	0.433	136.1	0.047
9.5	0.49	0.418	146.8	0.041
10.0	0.51	0.406	157.5	0.036
10.5	0.53	0.396	168.3	0.034
11.0	0.55	0.389	179.1	0.035
11.5	0.58	0.385	-170.1	0.037
12.0	0.60	0.385	-159.4	0.042
12.5	0.62	0.387	-148.9	0.049
13.0	0.64	0.392	-138.4	0.058
13.5	0.66	0.401	-128.2	0.069
14.0	0.67	0.414	-118.2	0.083
14.5	0.69	0.430	-108.5	0.100
15.0	0.71	0.450	-99.0	0.118
15.5	0.73	0.474	-89.9	0.140
16.0	0.75	0.502	-81.2	0.163
16.5	0.77	0.534	-73.0	0.190
17.0	0.79	0.570	-65.1	0.218
17.5	0.81	0.611	-57.8	0.250
18.0	0.83	0.656	-51.0	0.283

Reference Data

NE3505M04

S-parameter

VDS=2V, ID=20mA

Freq	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.892	-43.4	6.462	136.2	0.048	68.9	0.391	-27.2
2.5	0.838	-53.2	6.137	126.3	0.059	64.1	0.379	-33.1
3.0	0.786	-62.4	5.858	117.0	0.069	59.9	0.366	-39.4
3.5	0.735	-71.4	5.555	108.1	0.078	56.0	0.346	-45.0
4.0	0.680	-80.2	5.261	99.8	0.087	52.2	0.333	-50.6
4.5	0.630	-88.8	4.984	91.6	0.096	48.4	0.317	-55.7
5.0	0.586	-96.9	4.747	83.5	0.104	44.8	0.300	-61.5
5.5	0.544	-106.3	4.495	76.4	0.112	41.0	0.283	-66.6
6.0	0.500	-115.0	4.268	69.2	0.121	37.4	0.268	-71.5
6.5	0.466	-124.4	4.058	62.2	0.129	34.0	0.250	-76.6
7.0	0.435	-133.4	3.867	55.5	0.136	30.4	0.234	-81.1
7.5	0.409	-143.1	3.692	48.9	0.144	26.9	0.217	-85.8
8.0	0.390	-153.0	3.527	42.5	0.152	23.4	0.201	-91.3
8.5	0.374	-162.4	3.380	36.3	0.159	20.2	0.184	-95.7
9.0	0.360	-172.5	3.246	30.1	0.167	16.8	0.168	-101.3
9.5	0.354	177.5	3.113	24.1	0.174	13.1	0.150	-106.6
10.0	0.351	167.8	2.996	18.2	0.182	9.6	0.131	-113.5
10.5	0.353	158.1	2.890	12.3	0.188	6.0	0.115	-120.4
11.0	0.355	148.9	2.789	6.5	0.196	2.3	0.097	-128.7
11.5	0.362	139.0	2.692	0.7	0.204	-1.4	0.081	-144.2
12.0	0.369	130.5	2.604	-5.1	0.210	-5.0	0.071	-160.2
12.5	0.385	121.6	2.517	-10.9	0.217	-8.9	0.063	175.1
13.0	0.400	113.7	2.433	-16.4	0.223	-12.7	0.068	149.8
13.5	0.415	105.3	2.353	-22.1	0.230	-16.6	0.080	129.2
14.0	0.441	98.4	2.271	-27.7	0.235	-20.5	0.097	111.9
14.5	0.459	91.2	2.194	-33.2	0.240	-24.6	0.120	98.5
15.0	0.484	84.7	2.119	-38.9	0.245	-28.5	0.141	88.5
15.5	0.505	78.8	2.046	-44.4	0.249	-32.8	0.165	79.4
16.0	0.532	73.0	1.971	-49.9	0.253	-36.8	0.191	70.2
16.5	0.553	68.1	1.906	-55.3	0.257	-41.0	0.218	63.7
17.0	0.575	62.7	1.836	-60.8	0.260	-45.2	0.239	57.0
17.5	0.598	57.9	1.770	-66.1	0.263	-49.3	0.264	49.6
18.0	0.615	53.5	1.709	-71.4	0.265	-53.5	0.292	43.9

Reference Data

NE3505M04

Noise parameter

VDS=2V, ID=20mA

Freq (GHz)	Fmin (dB)	Gamma opt MAG	ANG	Rn/50 -
2.0	0.17	0.833	17.1	0.150
2.5	0.19	0.792	22.5	0.149
3.0	0.21	0.752	28.6	0.147
3.5	0.23	0.713	35.4	0.143
4.0	0.26	0.676	42.7	0.137
4.5	0.28	0.640	50.6	0.130
5.0	0.30	0.605	59.0	0.122
5.5	0.32	0.573	67.9	0.112
6.0	0.34	0.542	77.1	0.102
6.5	0.37	0.514	86.8	0.091
7.0	0.39	0.487	96.8	0.080
7.5	0.41	0.463	107.1	0.070
8.0	0.43	0.440	117.6	0.060
8.5	0.45	0.421	128.3	0.052
9.0	0.48	0.403	139.2	0.045
9.5	0.50	0.389	150.1	0.040
10.0	0.52	0.377	161.2	0.037
10.5	0.54	0.368	172.3	0.036
11.0	0.56	0.362	-176.7	0.038
11.5	0.58	0.359	-165.7	0.041
12.0	0.61	0.359	-154.8	0.047
12.5	0.63	0.363	-144.1	0.054
13.0	0.65	0.370	-133.5	0.064
13.5	0.67	0.380	-123.2	0.076
14.0	0.69	0.394	-113.2	0.091
14.5	0.71	0.412	-103.5	0.108
15.0	0.74	0.434	-94.2	0.127
15.5	0.76	0.460	-85.3	0.148
16.0	0.78	0.489	-76.8	0.172
16.5	0.80	0.523	-68.9	0.199
17.0	0.82	0.562	-61.5	0.228
17.5	0.84	0.604	-54.6	0.259
18.0	0.86	0.652	-48.5	0.293

Reference Data

NE3505M04

S-parameter

VDS=2V, ID=25mA

Freq	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.881	-44.5	6.895	134.9	0.046	70.6	0.354	-26.1
2.5	0.824	-54.5	6.519	125.0	0.057	66.2	0.345	-31.4
3.0	0.769	-63.7	6.190	115.6	0.066	61.9	0.333	-37.5
3.5	0.715	-72.7	5.845	106.7	0.075	58.2	0.315	-42.8
4.0	0.659	-81.5	5.512	98.4	0.084	53.9	0.305	-48.1
4.5	0.608	-90.0	5.202	90.2	0.094	50.1	0.290	-53.2
5.0	0.564	-98.1	4.936	82.3	0.102	46.9	0.277	-58.5
5.5	0.522	-107.4	4.662	75.2	0.111	42.9	0.260	-63.8
6.0	0.479	-116.0	4.417	68.1	0.119	39.6	0.248	-68.4
6.5	0.445	-125.5	4.191	61.2	0.128	35.8	0.232	-73.2
7.0	0.415	-134.4	3.986	54.7	0.136	32.6	0.216	-77.4
7.5	0.390	-144.1	3.801	48.2	0.144	29.2	0.203	-82.4
8.0	0.372	-154.0	3.626	41.8	0.152	25.4	0.185	-87.4
8.5	0.356	-163.4	3.470	35.7	0.160	22.0	0.170	-91.9
9.0	0.343	-173.6	3.330	29.6	0.168	18.5	0.154	-97.0
9.5	0.339	176.4	3.191	23.7	0.175	14.7	0.136	-101.8
10.0	0.337	166.8	3.069	17.8	0.183	11.2	0.118	-109.0
10.5	0.339	157.1	2.959	12.1	0.192	7.3	0.101	-115.1
11.0	0.342	147.8	2.855	6.4	0.198	3.7	0.085	-123.9
11.5	0.350	138.0	2.755	0.6	0.205	-0.1	0.067	-139.8
12.0	0.358	129.6	2.663	-5.1	0.213	-3.9	0.056	-157.9
12.5	0.375	120.6	2.574	-10.8	0.220	-7.7	0.050	171.6
13.0	0.390	112.8	2.486	-16.2	0.226	-11.8	0.056	141.9
13.5	0.405	104.5	2.405	-21.9	0.232	-15.8	0.072	121.0
14.0	0.432	97.8	2.322	-27.4	0.238	-19.8	0.090	104.6
14.5	0.451	90.6	2.242	-32.9	0.243	-24.1	0.117	92.6
15.0	0.477	84.1	2.166	-38.5	0.248	-28.1	0.139	83.5
15.5	0.498	78.2	2.092	-44.0	0.252	-32.0	0.163	75.6
16.0	0.525	72.5	2.017	-49.4	0.257	-36.3	0.191	65.9
16.5	0.546	67.8	1.948	-54.7	0.261	-40.4	0.216	61.0
17.0	0.568	62.2	1.877	-60.2	0.264	-44.6	0.240	53.9
17.5	0.592	57.6	1.810	-65.5	0.266	-49.0	0.264	46.9
18.0	0.608	53.1	1.749	-70.8	0.269	-53.1	0.293	41.7

Reference Data

NE3505M04

Noise parameter

VDS=2V, ID=25mA

Freq (GHz)	Fmin (dB)	Gamma opt MAG	ANG	Rn/50 -
2.0	0.16	0.822	17.1	0.139
2.5	0.19	0.778	22.6	0.139
3.0	0.21	0.736	28.8	0.137
3.5	0.23	0.695	35.7	0.134
4.0	0.25	0.656	43.2	0.129
4.5	0.28	0.619	51.3	0.122
5.0	0.30	0.584	60.0	0.114
5.5	0.32	0.551	69.1	0.106
6.0	0.34	0.519	78.7	0.096
6.5	0.37	0.490	88.6	0.086
7.0	0.39	0.464	98.9	0.076
7.5	0.41	0.439	109.5	0.066
8.0	0.43	0.418	120.3	0.057
8.5	0.46	0.398	131.3	0.050
9.0	0.48	0.382	142.5	0.044
9.5	0.50	0.368	153.7	0.040
10.0	0.52	0.357	165.1	0.038
10.5	0.55	0.349	176.4	0.038
11.0	0.57	0.345	-172.4	0.040
11.5	0.59	0.343	-161.2	0.045
12.0	0.61	0.345	-150.2	0.051
12.5	0.64	0.350	-139.3	0.060
13.0	0.66	0.358	-128.7	0.071
13.5	0.68	0.370	-118.4	0.084
14.0	0.71	0.386	-108.4	0.099
14.5	0.73	0.406	-98.8	0.117
15.0	0.75	0.429	-89.6	0.137
15.5	0.77	0.457	-80.9	0.159
16.0	0.80	0.489	-72.8	0.184
16.5	0.82	0.524	-65.2	0.211
17.0	0.84	0.564	-58.2	0.241
17.5	0.87	0.609	-51.9	0.273
18.0	0.89	0.658	-46.3	0.308

Reference Data

NE3505M04

S-parameter

VDS=3V, ID=15mA

Freq	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.913	-40.9	5.521	138.7	0.049	68.4	0.455	-26.8
2.5	0.867	-50.5	5.293	129.2	0.060	63.6	0.443	-32.8
3.0	0.822	-59.5	5.106	120.1	0.070	58.9	0.429	-39.1
3.5	0.776	-68.4	4.895	111.3	0.079	54.5	0.409	-44.9
4.0	0.725	-77.2	4.675	102.9	0.088	50.6	0.394	-50.5
4.5	0.678	-85.8	4.467	94.7	0.096	46.4	0.376	-56.1
5.0	0.636	-94.0	4.287	86.4	0.104	42.7	0.357	-61.9
5.5	0.594	-103.5	4.090	79.2	0.112	38.9	0.339	-67.0
6.0	0.551	-112.2	3.907	71.8	0.120	35.4	0.323	-71.9
6.5	0.516	-121.6	3.734	64.6	0.127	32.1	0.302	-76.9
7.0	0.484	-130.7	3.577	57.6	0.133	28.7	0.285	-81.5
7.5	0.455	-140.3	3.429	50.9	0.140	25.2	0.268	-86.4
8.0	0.434	-150.1	3.287	44.2	0.147	22.0	0.250	-91.5
8.5	0.416	-159.5	3.160	37.7	0.154	18.8	0.233	-96.0
9.0	0.400	-169.5	3.042	31.3	0.161	15.7	0.215	-101.1
9.5	0.392	-179.4	2.927	25.1	0.167	12.4	0.197	-106.4
10.0	0.388	171.0	2.823	19.0	0.174	9.0	0.179	-112.5
10.5	0.387	161.3	2.728	13.0	0.181	5.8	0.162	-118.2
11.0	0.387	152.0	2.638	7.0	0.188	2.2	0.143	-125.6
11.5	0.393	142.3	2.551	1.0	0.194	-1.1	0.127	-135.9
12.0	0.399	133.6	2.470	-5.0	0.201	-4.8	0.114	-147.4
12.5	0.412	124.6	2.390	-10.9	0.207	-8.2	0.101	-162.2
13.0	0.426	116.6	2.314	-16.6	0.214	-11.8	0.094	180.0
13.5	0.439	108.1	2.239	-22.5	0.220	-15.7	0.095	160.3
14.0	0.463	101.0	2.163	-28.3	0.225	-19.3	0.101	141.3
14.5	0.482	93.7	2.091	-34.0	0.231	-23.2	0.116	123.3
15.0	0.505	87.0	2.021	-39.8	0.236	-27.1	0.133	110.3
15.5	0.526	80.9	1.952	-45.5	0.241	-31.1	0.152	97.9
16.0	0.552	75.1	1.881	-51.1	0.245	-34.9	0.174	86.3
16.5	0.573	70.0	1.818	-56.7	0.249	-39.2	0.200	77.9
17.0	0.593	64.4	1.751	-62.4	0.253	-43.2	0.222	69.5
17.5	0.617	59.4	1.687	-67.9	0.256	-47.4	0.247	61.4
18.0	0.633	54.9	1.629	-73.3	0.259	-51.4	0.273	54.7

Reference Data

NE3505M04

Noise parameter

VDS=3V, ID=15mA

Freq	Fmin	Gamma opt		Rn/50
(GHz)	(dB)	MAG	ANG	-
2.0	0.19	0.855	17.4	0.186
2.5	0.22	0.818	22.8	0.183
3.0	0.24	0.782	28.7	0.179
3.5	0.26	0.747	35.2	0.174
4.0	0.28	0.713	42.3	0.166
4.5	0.30	0.680	49.8	0.157
5.0	0.32	0.648	57.8	0.147
5.5	0.35	0.618	66.2	0.135
6.0	0.37	0.589	75.0	0.123
6.5	0.39	0.561	84.2	0.110
7.0	0.41	0.535	93.6	0.096
7.5	0.43	0.511	103.4	0.083
8.0	0.45	0.489	113.3	0.071
8.5	0.48	0.469	123.5	0.060
9.0	0.50	0.451	133.9	0.051
9.5	0.52	0.436	144.3	0.044
10.0	0.54	0.423	154.9	0.039
10.5	0.56	0.412	165.5	0.036
11.0	0.58	0.404	176.2	0.035
11.5	0.60	0.400	-173.2	0.037
12.0	0.63	0.398	-162.6	0.041
12.5	0.65	0.399	-152.1	0.048
13.0	0.67	0.404	-141.7	0.057
13.5	0.69	0.412	-131.5	0.069
14.0	0.71	0.423	-121.5	0.083
14.5	0.73	0.438	-111.7	0.099
15.0	0.75	0.457	-102.2	0.119
15.5	0.77	0.480	-93.0	0.141
16.0	0.79	0.507	-84.1	0.166
16.5	0.82	0.538	-75.6	0.193
17.0	0.84	0.573	-67.5	0.223
17.5	0.86	0.613	-59.9	0.256
18.0	0.88	0.657	-52.7	0.292