

NPN SILICON RF TRANSISTOR FOR
HIGH-FREQUENCY LOW NOISE
3-PIN ULTRA SUPER MINIMOLD

FEATURES

- Low voltage operation, low phase distortion
- Ideal for OSC applications
- 3-pin ultra super minimold package

ORDERING INFORMATION

Part Number	Quantity	Supplying Form
2SC5675	50 pcs (Non reel)	• 8 mm wide embossed taping
2SC5675-T1	3 kpcs/reel	• Pin 3 (Collector) face the perforation side of the tape

Remark To order evaluation samples, consult your NEC sales representative.
Unit sample quantity is 50 pcs.

ABSOLUTE MAXIMUM RATINGS ($T_A = +25^{\circ}\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	9	V
Collector to Emitter Voltage	V_{CEO}	5.5	V
Emitter to Base Voltage	V_{EBO}	1.5	V
Collector Current	I_C	100	mA
Total Power Dissipation	P_{tot} ^{Note}	200	mW
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^{\circ}\text{C}$

Note Mounted on $1.08\text{ cm}^2 \times 1.0\text{ mm}$ (t) glass epoxy substrate

Because this product uses high-frequency technology, avoid excessive static electricity, etc.

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.

ELECTRICAL CHARACTERISTICS (T_A = +25°C)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I _{CBO}	V _{CB} = 5 V, I _E = 0 mA	–	–	200	nA
Emitter Cut-off Current	I _{EBO}	V _{BE} = 1 V, I _C = 0 mA	–	–	200	nA
DC Current Gain	h _{FE} ^{Note 1}	V _{CE} = 1 V, I _C = 10 mA	100	–	160	–
RF Characteristics						
Gain Bandwidth Product	f _T	V _{CE} = 1 V, I _C = 10 mA, f = 2 GHz	4.0	5.5	–	GHz
Insertion Power Gain	S _{21e} ²	V _{CE} = 1 V, I _C = 10 mA, f = 2 GHz	2.5	4.0	–	dB
Noise Figure	NF	V _{CE} = 1 V, I _C = 10 mA, f = 2 GHz, Z _S = Z _{opt}	–	1.8	3.0	dB
Reverse Transfer Capacitance	C _{re} ^{Note 2}	V _{CB} = 0.5 V, I _E = 0 mA, f = 1 MHz	–	0.9	1.2	pF

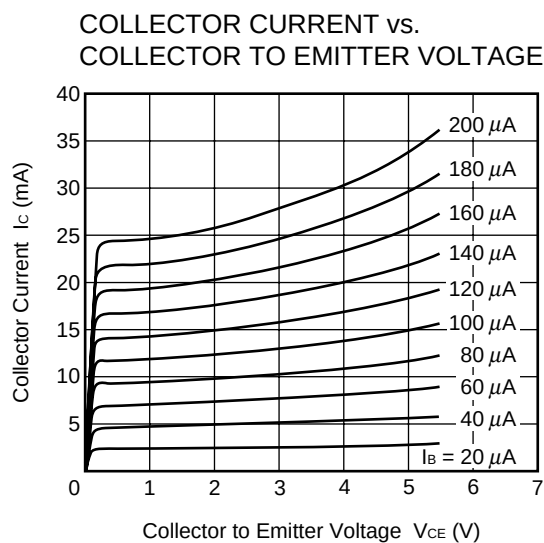
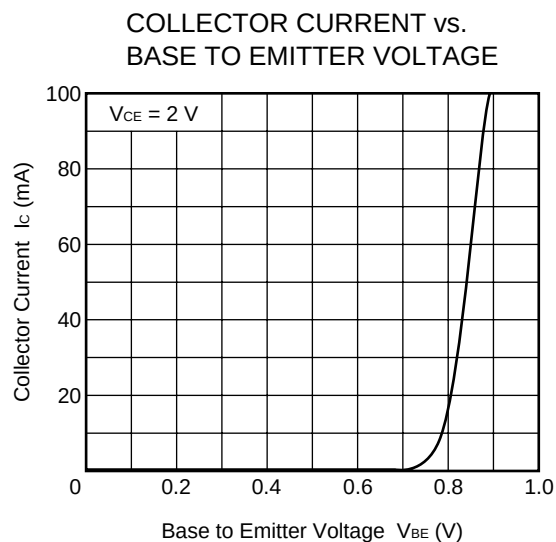
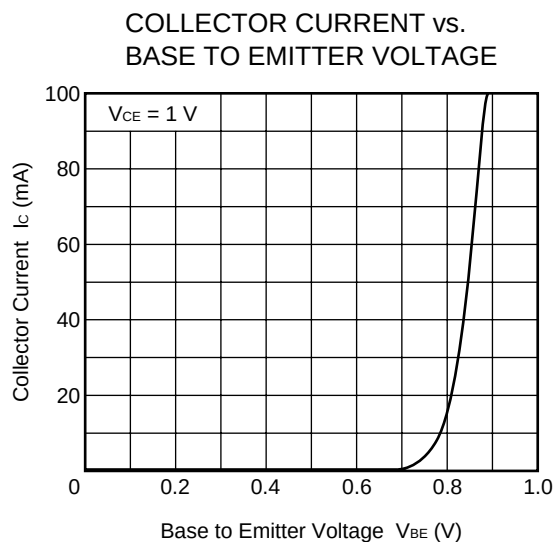
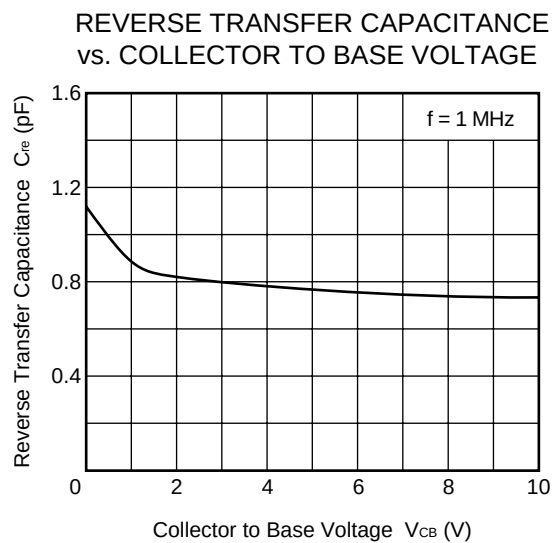
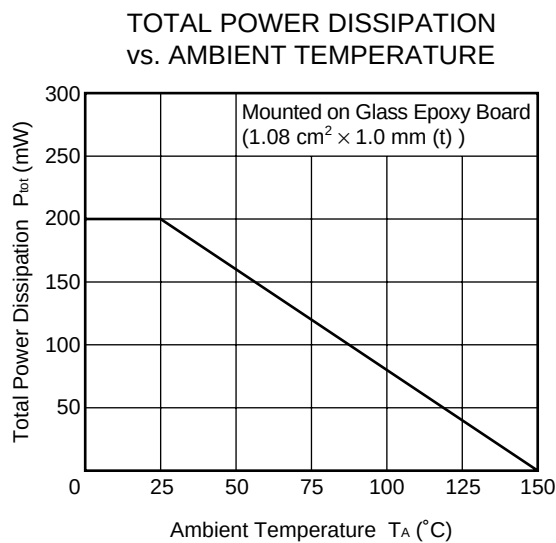
Notes 1. Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%

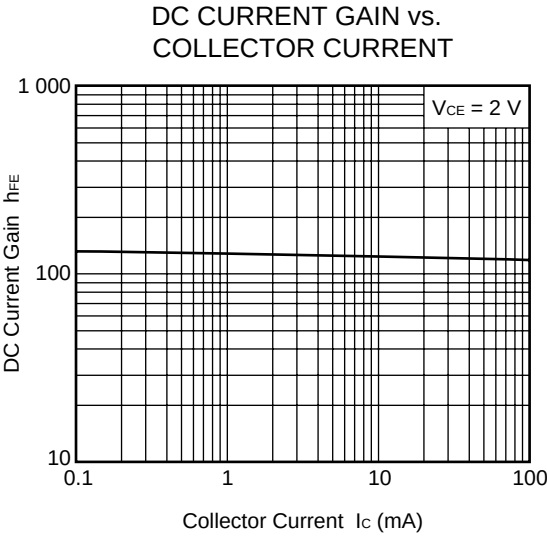
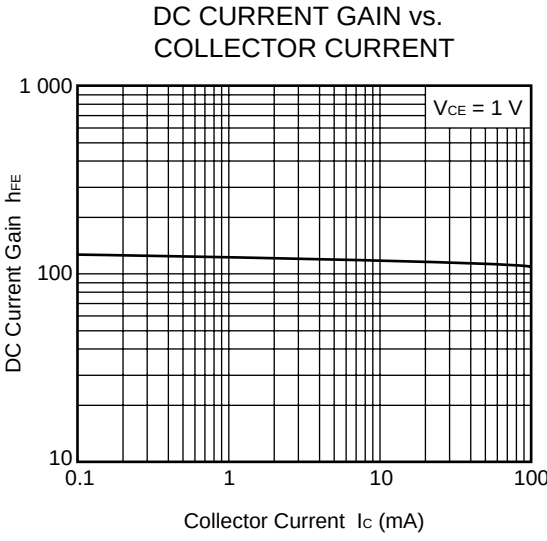
2. Collector to base capacitance measured using capacitance meter (self-balancing bridge method) when the emitter is connected to the guard pin

h_{FE} CLASSIFICATION

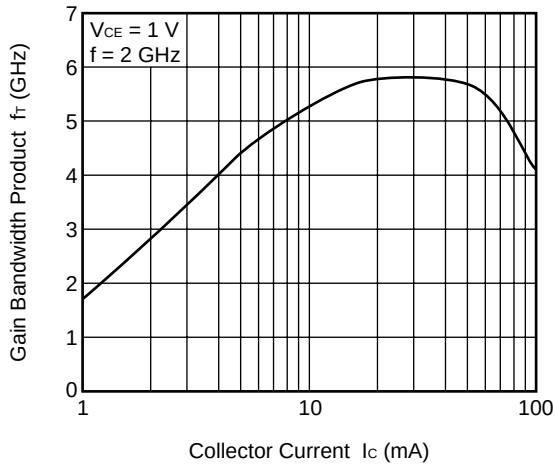
Rank	FB
Marking	UC
h _{FE} Value	100 to 160

TYPICAL CHARACTERISTICS (Unless otherwise specified, $T_A = +25^\circ\text{C}$)

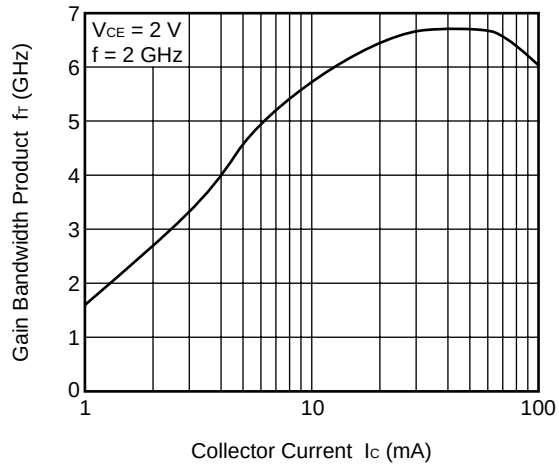




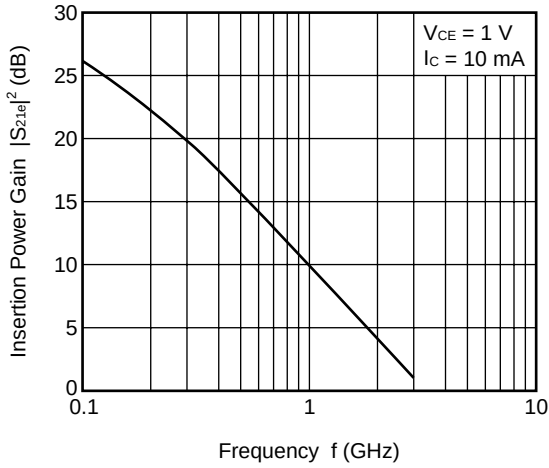
GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



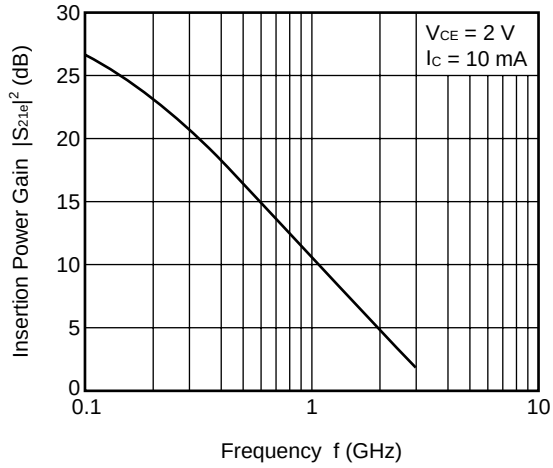
GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



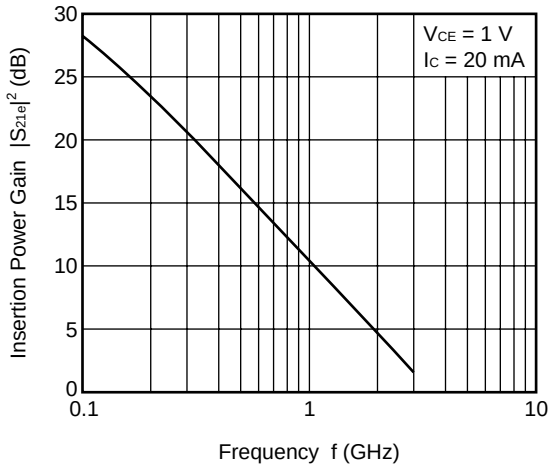
INSERTION POWER GAIN vs. FREQUENCY



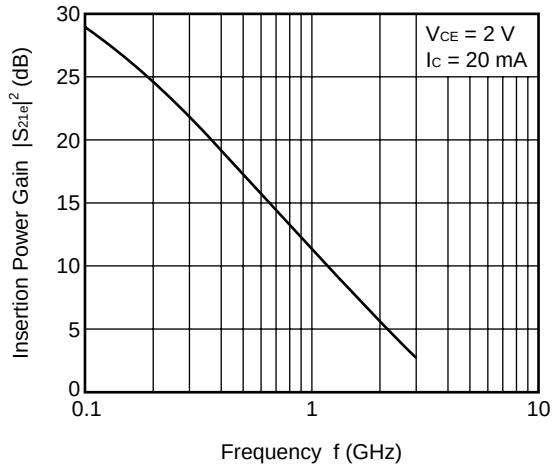
INSERTION POWER GAIN vs. FREQUENCY



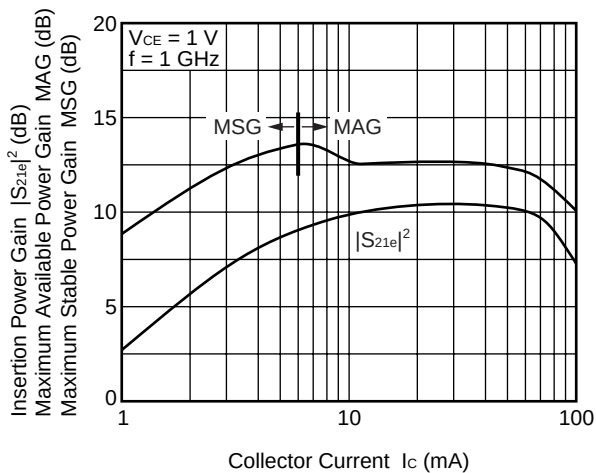
INSERTION POWER GAIN vs. FREQUENCY



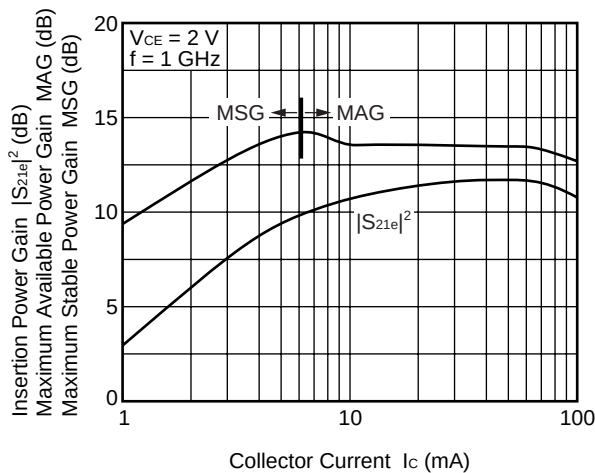
INSERTION POWER GAIN vs. FREQUENCY



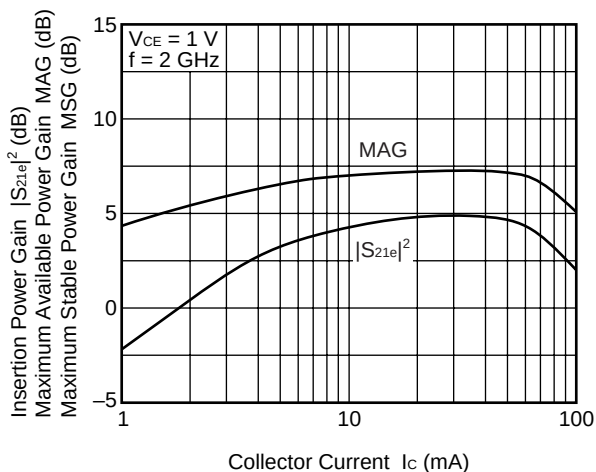
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



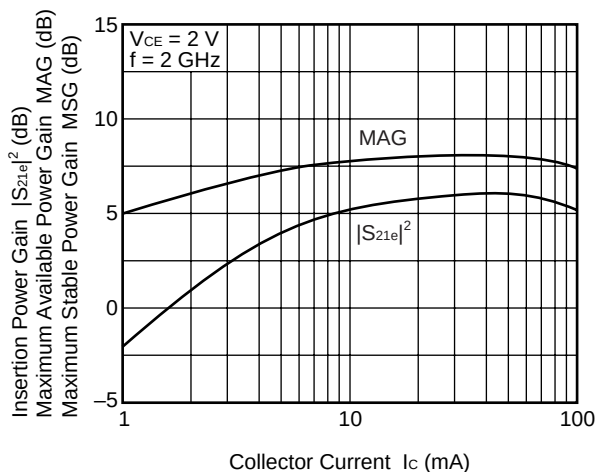
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



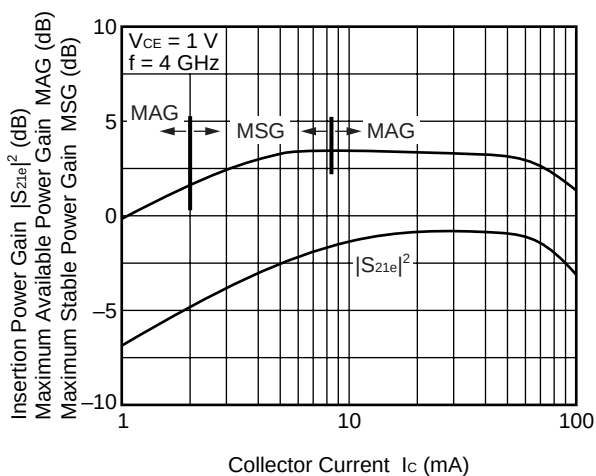
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



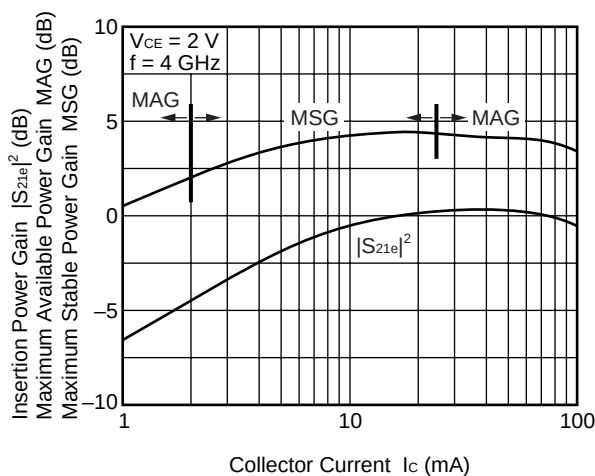
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



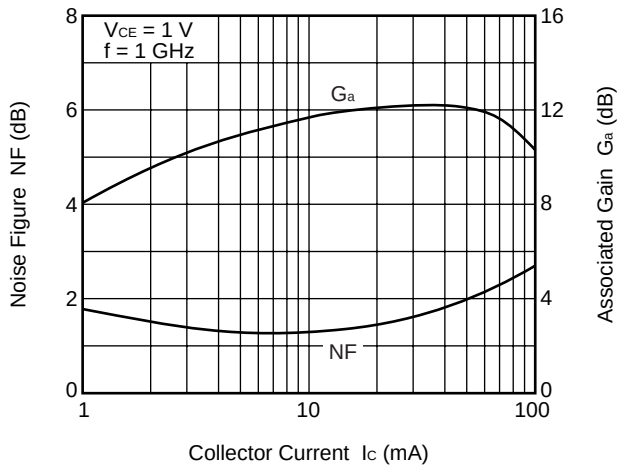
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



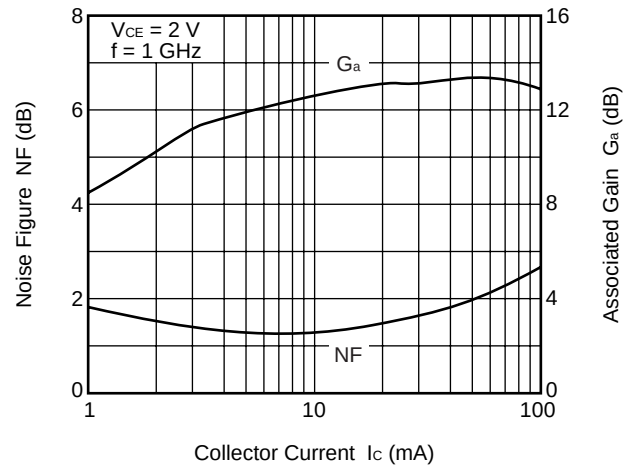
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



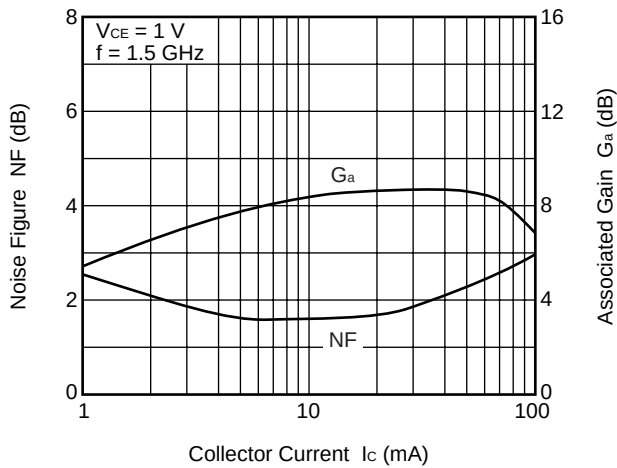
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



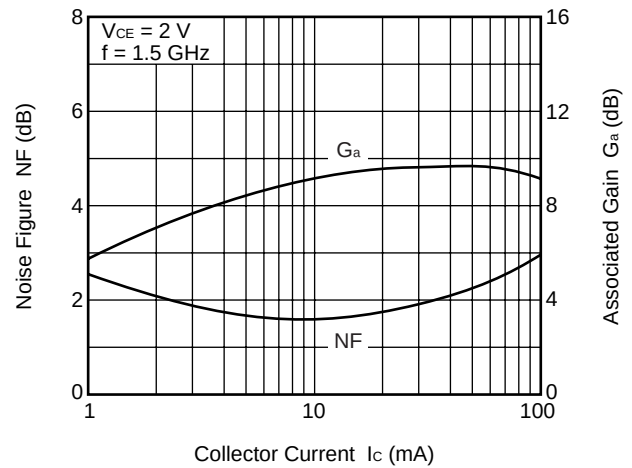
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



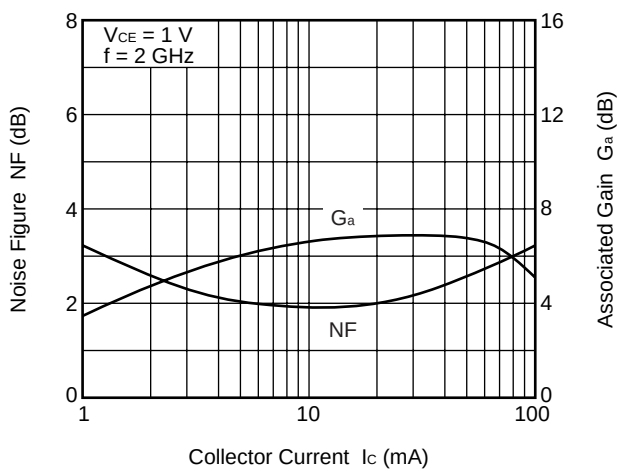
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



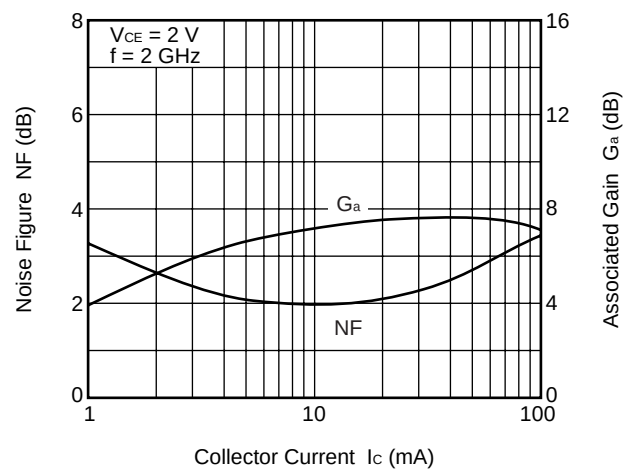
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



Remark The graphs indicate nominal characteristics.

S-PARAMETERS

Note When $K \geq 1$, the MAG (Maximum Available Gain) is used. $MAG = \left| \frac{S_{21}}{S_{12}} \right| (K - \sqrt{K^2 - 1})$

When $K < 1$, the MSG (Maximum Stable Gain) is used. $MSG = \left| \frac{S_{21}}{S_{12}} \right|$

$V_{CE} = 1 \text{ V}$, $I_C = 1 \text{ mA}$, $Z_0 = 50 \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG ^{Note} (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.949	-27.3	3.491	161.2	0.061	73.5	0.974	-11.1	0.068	17.58
0.2	0.915	-53.6	3.298	142.8	0.108	59.3	0.909	-20.7	0.124	14.84
0.3	0.858	-76.1	2.901	128.3	0.143	46.7	0.835	-28.1	0.189	13.07
0.4	0.820	-94.6	2.570	116.1	0.165	37.3	0.766	-33.8	0.242	11.93
0.5	0.789	-110.5	2.272	105.2	0.177	29.5	0.708	-38.3	0.305	11.08
0.6	0.766	-123.9	2.010	96.0	0.184	23.6	0.662	-41.8	0.365	10.39
0.7	0.751	-135.1	1.797	88.2	0.186	18.5	0.628	-45.2	0.425	9.84
0.8	0.741	-144.7	1.625	81.2	0.185	14.6	0.601	-48.3	0.486	9.43
0.9	0.732	-153.0	1.485	75.0	0.182	11.5	0.581	-51.2	0.553	9.12
1.0	0.731	-160.7	1.372	69.2	0.178	9.0	0.565	-54.4	0.611	8.88
1.1	0.729	-167.4	1.268	63.9	0.172	7.1	0.551	-57.6	0.681	8.68
1.2	0.727	-173.4	1.182	58.9	0.165	5.8	0.539	-61.1	0.767	8.56
1.3	0.729	-178.8	1.107	54.6	0.158	5.2	0.532	-64.7	0.837	8.46
1.4	0.731	175.5	1.039	49.9	0.150	5.1	0.525	-68.6	0.922	8.39
1.5	0.732	170.7	0.981	46.0	0.143	6.1	0.520	-72.7	1.011	7.71
1.6	0.737	165.9	0.934	42.1	0.136	7.7	0.515	-76.9	1.089	6.54
1.7	0.744	161.5	0.883	38.5	0.130	10.5	0.513	-81.4	1.160	5.89
1.8	0.745	157.1	0.849	35.1	0.126	14.0	0.510	-86.0	1.244	5.32
1.9	0.743	152.3	0.808	31.5	0.123	18.1	0.509	-90.7	1.354	4.63
2.0	0.752	148.3	0.770	28.3	0.123	23.3	0.508	-95.6	1.376	4.32
2.1	0.757	144.4	0.735	25.4	0.125	28.4	0.509	-100.5	1.391	3.98
2.2	0.767	141.0	0.705	22.8	0.130	33.1	0.511	-105.9	1.346	3.83
2.3	0.772	137.5	0.677	20.2	0.137	37.6	0.513	-111.0	1.310	3.59
2.4	0.777	134.0	0.653	18.5	0.147	41.0	0.515	-116.3	1.269	3.35
2.5	0.783	130.9	0.627	16.4	0.159	43.5	0.517	-121.8	1.218	3.15
2.6	0.789	127.9	0.601	14.5	0.171	45.5	0.521	-127.7	1.180	2.88
2.7	0.793	125.1	0.581	13.0	0.185	46.4	0.526	-133.3	1.144	2.67
2.8	0.796	122.9	0.561	11.6	0.199	47.1	0.532	-138.6	1.118	2.41
2.9	0.805	119.7	0.554	9.9	0.215	46.7	0.537	-143.9	1.046	2.80
3.0	0.811	117.6	0.535	9.8	0.230	46.2	0.538	-149.7	1.037	2.49
4.0	0.823	97.8	0.455	2.3	0.366	28.7	0.632	158.4	1.032	-0.16
5.0	0.838	85.1	0.433	-2.6	0.405	11.3	0.728	125.9	1.051	-1.08

$V_{CE} = 1\text{ V}$, $I_C = 3\text{ mA}$, $Z_0 = 50\ \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.862	-42.2	9.104	152.5	0.055	68.8	0.909	-22.2	0.082	22.18
0.2	0.782	-77.8	7.655	130.9	0.090	51.0	0.751	-38.2	0.193	19.29
0.3	0.717	-103.0	6.116	116.1	0.109	40.5	0.615	-48.2	0.289	17.50
0.4	0.681	-121.8	5.024	105.4	0.118	34.4	0.516	-54.5	0.375	16.29
0.5	0.661	-136.4	4.232	96.6	0.123	30.4	0.446	-58.8	0.461	15.36
0.6	0.645	-147.3	3.614	89.5	0.127	28.3	0.394	-62.1	0.552	14.54
0.7	0.641	-156.4	3.153	83.4	0.129	27.2	0.357	-65.0	0.632	13.87
0.8	0.635	-163.9	2.802	78.3	0.131	26.7	0.329	-67.7	0.716	13.30
0.9	0.634	-170.8	2.525	73.4	0.132	26.9	0.308	-70.4	0.793	12.80
1.0	0.638	-176.7	2.303	68.8	0.134	27.2	0.291	-73.5	0.853	12.35
1.1	0.637	178.0	2.110	64.6	0.136	28.1	0.278	-76.5	0.924	11.92
1.2	0.640	173.4	1.951	60.5	0.138	29.1	0.267	-80.0	0.982	11.50
1.3	0.642	169.0	1.820	57.1	0.141	30.2	0.260	-83.7	1.031	10.04
1.4	0.645	164.9	1.702	53.1	0.144	31.3	0.253	-87.9	1.078	9.04
1.5	0.648	160.7	1.599	49.8	0.148	32.7	0.248	-92.1	1.112	8.30
1.6	0.655	157.2	1.516	46.4	0.152	33.8	0.245	-96.8	1.129	7.81
1.7	0.661	153.4	1.435	43.1	0.157	34.9	0.243	-101.4	1.144	7.31
1.8	0.665	149.6	1.374	39.8	0.162	36.0	0.242	-106.6	1.155	6.89
1.9	0.667	145.6	1.304	36.5	0.168	36.8	0.242	-111.5	1.177	6.35
2.0	0.675	142.4	1.245	33.2	0.175	37.8	0.244	-116.8	1.170	6.03
2.1	0.683	139.2	1.191	30.4	0.182	38.3	0.246	-122.2	1.162	5.72
2.2	0.692	136.2	1.140	27.7	0.190	38.7	0.250	-127.9	1.144	5.48
2.3	0.699	133.4	1.099	24.8	0.198	39.1	0.255	-133.1	1.130	5.26
2.4	0.706	130.5	1.057	22.5	0.207	39.3	0.261	-138.7	1.117	5.01
2.5	0.714	127.8	1.018	19.8	0.215	39.2	0.267	-144.2	1.101	4.81
2.6	0.723	125.4	0.976	17.3	0.224	39.2	0.277	-149.6	1.085	4.61
2.7	0.729	122.9	0.943	15.0	0.233	38.9	0.286	-155.0	1.073	4.42
2.8	0.734	121.2	0.910	12.9	0.242	38.6	0.295	-160.1	1.067	4.16
2.9	0.748	118.6	0.893	10.5	0.252	37.9	0.306	-164.8	1.018	4.67
3.0	0.751	116.8	0.862	9.1	0.262	37.3	0.314	-170.1	1.024	4.23
4.0	0.796	99.2	0.646	-6.8	0.357	23.9	0.470	147.6	0.978	2.58
5.0	0.832	86.0	0.520	-13.8	0.393	10.2	0.621	121.8	1.005	0.79

$V_{CE} = 1 \text{ V}$, $I_C = 5 \text{ mA}$, $Z_o = 50 \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.789	-54.4	13.513	145.6	0.050	62.3	0.844	-31.7	0.150	24.29
0.2	0.700	-94.8	10.337	122.6	0.076	47.2	0.629	-51.6	0.270	21.35
0.3	0.643	-120.1	7.800	109.0	0.088	39.8	0.482	-62.7	0.398	19.45
0.4	0.618	-137.1	6.215	99.6	0.095	36.8	0.387	-70.1	0.511	18.15
0.5	0.607	-149.8	5.124	91.9	0.101	35.8	0.323	-75.4	0.612	17.07
0.6	0.600	-159.0	4.330	86.0	0.106	35.7	0.278	-79.9	0.707	16.13
0.7	0.598	-166.9	3.748	80.7	0.111	36.2	0.245	-84.0	0.791	15.30
0.8	0.597	-173.3	3.310	76.2	0.115	37.0	0.221	-88.0	0.863	14.57
0.9	0.599	-179.0	2.973	72.1	0.121	38.1	0.203	-91.9	0.923	13.91
1.0	0.605	176.1	2.705	68.0	0.126	38.8	0.189	-96.3	0.962	13.30
1.1	0.605	171.5	2.473	64.2	0.133	39.7	0.179	-100.4	1.009	12.13
1.2	0.608	167.3	2.286	60.5	0.139	40.4	0.171	-105.3	1.042	10.92
1.3	0.612	163.5	2.120	57.3	0.145	40.9	0.166	-110.1	1.070	10.03
1.4	0.617	159.9	1.980	53.7	0.152	41.4	0.163	-115.5	1.085	9.36
1.5	0.621	156.0	1.864	50.6	0.160	41.9	0.162	-120.7	1.099	8.75
1.6	0.625	152.7	1.763	47.4	0.167	41.9	0.162	-126.4	1.107	8.24
1.7	0.632	149.7	1.668	44.4	0.175	42.0	0.164	-131.4	1.108	7.79
1.8	0.636	146.2	1.591	41.3	0.183	41.8	0.167	-137.1	1.112	7.36
1.9	0.638	142.5	1.513	38.2	0.191	41.5	0.171	-142.2	1.123	6.87
2.0	0.647	139.3	1.441	35.2	0.198	41.3	0.177	-147.6	1.118	6.52
2.1	0.656	136.8	1.383	32.4	0.206	40.9	0.182	-152.8	1.106	6.28
2.2	0.665	133.9	1.323	29.9	0.215	40.3	0.190	-158.1	1.098	5.99
2.3	0.672	131.4	1.268	27.1	0.223	39.8	0.199	-163.0	1.091	5.70
2.4	0.679	128.6	1.223	24.8	0.232	39.1	0.207	-167.8	1.083	5.46
2.5	0.688	126.3	1.177	22.2	0.240	38.4	0.217	-172.4	1.072	5.27
2.6	0.695	124.1	1.132	19.8	0.249	37.8	0.228	-176.7	1.066	5.01
2.7	0.703	121.8	1.096	17.4	0.256	37.0	0.239	178.9	1.057	4.84
2.8	0.709	120.0	1.054	15.1	0.264	36.3	0.251	174.9	1.056	4.57
2.9	0.720	117.6	1.035	12.6	0.273	35.3	0.263	171.4	1.026	4.80
3.0	0.726	116.1	1.003	11.2	0.280	34.5	0.272	167.2	1.025	4.57
4.0	0.778	99.3	0.749	-6.7	0.357	21.1	0.429	136.0	0.989	3.22
5.0	0.829	86.5	0.592	-16.0	0.387	9.0	0.579	116.4	0.985	1.85

$V_{CE} = 1\text{ V}$, $I_C = 7\text{ mA}$, $Z_O = 50\ \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.743	-63.9	16.742	140.4	0.046	60.4	0.785	-39.3	0.174	25.56
0.2	0.641	-107.0	11.958	117.3	0.066	45.7	0.548	-61.4	0.348	22.56
0.3	0.602	-131.3	8.739	104.8	0.076	41.4	0.406	-73.8	0.491	20.59
0.4	0.586	-146.5	6.846	96.3	0.083	40.6	0.320	-82.7	0.616	19.15
0.5	0.580	-157.6	5.605	89.4	0.090	40.8	0.264	-89.5	0.719	17.95
0.6	0.576	-166.1	4.704	84.0	0.097	41.9	0.226	-95.8	0.810	16.87
0.7	0.579	-172.9	4.059	79.2	0.104	42.9	0.199	-101.7	0.876	15.93
0.8	0.580	-178.5	3.578	75.2	0.110	43.8	0.180	-107.5	0.936	15.10
0.9	0.582	176.6	3.216	71.2	0.118	44.8	0.166	-113.1	0.978	14.35
1.0	0.587	172.0	2.916	67.5	0.126	45.5	0.157	-119.0	1.008	13.09
1.1	0.592	167.8	2.663	64.0	0.134	45.8	0.150	-124.4	1.033	11.87
1.2	0.592	164.1	2.461	60.5	0.142	46.1	0.146	-130.4	1.058	10.91
1.3	0.596	160.6	2.284	57.4	0.151	46.1	0.145	-135.9	1.073	10.15
1.4	0.602	157.1	2.130	54.0	0.159	46.0	0.145	-141.7	1.083	9.51
1.5	0.608	153.7	2.001	51.0	0.168	45.9	0.147	-146.9	1.086	8.97
1.6	0.612	150.5	1.892	48.0	0.177	45.5	0.151	-152.3	1.089	8.47
1.7	0.620	147.6	1.788	45.1	0.186	45.0	0.156	-156.9	1.088	8.03
1.8	0.623	144.3	1.704	42.1	0.194	44.4	0.162	-161.7	1.090	7.60
1.9	0.624	140.8	1.621	39.1	0.202	43.6	0.169	-166.1	1.100	7.11
2.0	0.633	138.0	1.546	36.2	0.211	42.9	0.177	-170.5	1.094	6.78
2.1	0.641	135.1	1.482	33.5	0.219	42.0	0.184	-174.7	1.088	6.49
2.2	0.649	132.5	1.413	31.1	0.228	41.0	0.194	-179.1	1.085	6.14
2.3	0.661	130.1	1.361	28.4	0.237	40.2	0.204	177.1	1.068	6.00
2.4	0.668	127.6	1.309	26.1	0.245	39.2	0.214	173.3	1.065	5.71
2.5	0.677	125.3	1.257	23.6	0.253	38.2	0.224	169.6	1.059	5.48
2.6	0.681	123.1	1.213	21.1	0.261	37.4	0.235	166.4	1.057	5.20
2.7	0.691	120.9	1.169	18.7	0.269	36.3	0.247	162.8	1.050	5.01
2.8	0.695	119.4	1.128	16.5	0.276	35.4	0.259	159.6	1.052	4.72
2.9	0.710	117.2	1.108	14.1	0.284	34.3	0.271	156.9	1.022	5.00
3.0	0.715	115.4	1.074	12.7	0.291	33.3	0.280	153.3	1.024	4.71
4.0	0.771	99.4	0.806	-5.5	0.359	19.6	0.426	128.4	0.992	3.51
5.0	0.821	86.8	0.637	-15.8	0.384	8.1	0.566	112.4	0.990	2.20

$V_{CE} = 1\text{ V}$, $I_C = 10\text{ mA}$, $Z_O = 50\ \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.645	-78.2	20.410	134.1	0.042	56.5	0.711	-48.8	0.257	26.90
0.2	0.590	-120.6	13.452	111.9	0.057	46.4	0.464	-73.4	0.445	23.76
0.3	0.567	-142.9	9.584	100.7	0.066	44.7	0.338	-87.8	0.607	21.63
0.4	0.564	-156.2	7.416	93.2	0.073	45.8	0.268	-98.7	0.728	20.05
0.5	0.561	-165.4	6.016	87.1	0.082	47.4	0.224	-107.9	0.823	18.67
0.6	0.563	-172.2	5.045	82.3	0.090	48.8	0.196	-116.3	0.891	17.46
0.7	0.564	-178.6	4.338	77.9	0.099	49.7	0.178	-124.3	0.948	16.40
0.8	0.566	176.6	3.820	74.1	0.108	50.6	0.166	-131.7	0.989	15.47
0.9	0.570	172.1	3.424	70.5	0.118	51.1	0.159	-138.5	1.015	13.88
1.0	0.574	168.0	3.100	67.0	0.127	51.2	0.155	-145.0	1.034	12.74
1.1	0.579	164.4	2.832	63.7	0.137	51.2	0.153	-150.8	1.048	11.82
1.2	0.580	161.0	2.615	60.3	0.147	50.9	0.153	-156.6	1.061	11.00
1.3	0.586	157.8	2.424	57.4	0.157	50.5	0.156	-161.6	1.066	10.32
1.4	0.591	154.5	2.260	54.1	0.167	49.8	0.160	-166.5	1.072	9.69
1.5	0.596	151.3	2.121	51.4	0.177	49.2	0.164	-170.7	1.074	9.13
1.6	0.599	148.5	2.006	48.5	0.186	48.3	0.171	-175.0	1.076	8.64
1.7	0.607	145.5	1.894	45.6	0.196	47.4	0.177	-178.5	1.074	8.20
1.8	0.613	142.5	1.803	42.8	0.205	46.4	0.186	178.0	1.072	7.81
1.9	0.616	139.0	1.714	39.8	0.214	45.2	0.193	174.6	1.076	7.35
2.0	0.624	136.5	1.632	37.1	0.223	44.2	0.202	171.3	1.074	6.99
2.1	0.632	133.7	1.564	34.5	0.231	43.0	0.211	168.0	1.069	6.69
2.2	0.641	131.1	1.495	32.1	0.240	41.6	0.221	164.7	1.065	6.38
2.3	0.650	129.2	1.435	29.5	0.249	40.5	0.232	161.7	1.058	6.14
2.4	0.658	126.5	1.385	27.3	0.257	39.3	0.242	158.6	1.052	5.91
2.5	0.664	124.4	1.329	24.8	0.265	38.1	0.252	155.7	1.052	5.60
2.6	0.674	122.2	1.281	22.4	0.273	36.9	0.263	153.0	1.044	5.42
2.7	0.682	120.2	1.235	20.1	0.281	35.7	0.275	150.1	1.042	5.19
2.8	0.687	118.6	1.192	17.8	0.288	34.6	0.286	147.4	1.043	4.91
2.9	0.699	116.5	1.170	15.4	0.295	33.5	0.298	145.3	1.023	5.06
3.0	0.705	114.8	1.133	13.9	0.302	32.4	0.307	142.1	1.023	4.82
4.0	0.762	99.3	0.854	-4.2	0.362	18.1	0.438	121.5	1.000	3.63
5.0	0.817	86.7	0.676	-15.1	0.383	7.2	0.565	108.0	0.993	2.47

$V_{CE} = 1\text{ V}$, $I_C = 20\text{ mA}$, $Z_O = 50\ \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.544	-108.6	26.165	122.9	0.031	54.7	0.560	-68.7	0.400	29.26
0.2	0.538	-144.5	15.354	103.8	0.043	52.8	0.351	-98.2	0.656	25.55
0.3	0.537	-160.4	10.610	94.9	0.053	54.6	0.270	-116.4	0.807	22.98
0.4	0.539	-169.7	8.066	89.0	0.064	57.3	0.232	-130.1	0.902	21.03
0.5	0.545	-176.5	6.505	83.8	0.075	58.7	0.213	-141.1	0.953	19.39
0.6	0.546	178.3	5.431	79.6	0.086	59.5	0.203	-150.2	0.992	17.99
0.7	0.553	174.0	4.667	75.9	0.098	59.7	0.198	-157.6	1.012	16.10
0.8	0.556	169.9	4.105	72.6	0.109	59.6	0.197	-164.2	1.029	14.70
0.9	0.559	166.4	3.670	69.4	0.121	59.2	0.198	-169.7	1.040	13.59
1.0	0.565	162.8	3.319	66.1	0.133	58.5	0.201	-174.6	1.044	12.69
1.1	0.566	159.7	3.031	63.1	0.144	57.6	0.204	-178.8	1.052	11.83
1.2	0.571	156.6	2.795	60.0	0.156	56.6	0.208	177.1	1.054	11.13
1.3	0.576	153.8	2.587	57.3	0.167	55.4	0.213	173.5	1.056	10.46
1.4	0.580	151.1	2.412	54.3	0.178	54.2	0.220	170.4	1.056	9.87
1.5	0.585	147.9	2.261	51.7	0.189	52.9	0.226	167.5	1.057	9.32
1.6	0.591	145.5	2.141	49.0	0.200	51.5	0.234	164.7	1.053	8.90
1.7	0.599	142.9	2.018	46.2	0.210	50.2	0.241	162.1	1.051	8.44
1.8	0.606	140.0	1.921	43.5	0.220	48.6	0.249	159.6	1.048	8.08
1.9	0.606	136.6	1.825	40.8	0.229	47.0	0.257	157.1	1.055	7.58
2.0	0.615	134.3	1.737	38.1	0.239	45.5	0.267	154.9	1.052	7.22
2.1	0.625	131.6	1.661	35.7	0.247	44.0	0.275	152.3	1.047	6.94
2.2	0.631	129.3	1.586	33.2	0.257	42.3	0.286	149.7	1.047	6.58
2.3	0.643	127.5	1.522	30.8	0.265	40.9	0.296	147.3	1.040	6.36
2.4	0.647	125.1	1.468	28.6	0.274	39.3	0.306	145.0	1.039	6.08
2.5	0.656	122.8	1.410	26.4	0.282	37.9	0.316	142.5	1.037	5.81
2.6	0.664	121.1	1.356	23.9	0.290	36.4	0.326	140.2	1.034	5.57
2.7	0.670	118.8	1.308	21.7	0.297	35.0	0.338	137.7	1.035	5.29
2.8	0.678	117.5	1.263	19.6	0.304	33.8	0.349	135.5	1.033	5.08
2.9	0.691	115.4	1.240	17.1	0.310	32.5	0.359	133.8	1.017	5.20
3.0	0.696	114.0	1.202	15.8	0.316	31.3	0.366	131.1	1.020	4.93
4.0	0.753	98.9	0.909	-2.2	0.369	16.2	0.478	113.2	1.008	3.36
5.0	0.810	86.8	0.725	-13.4	0.383	5.6	0.584	102.0	1.001	2.63

$V_{CE} = 2\text{ V}$, $I_C = 1\text{ mA}$, $Z_0 = 50\ \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.963	-26.1	3.405	162.8	0.051	74.9	0.979	-9.4	0.044	18.22
0.2	0.922	-50.8	3.254	145.1	0.094	61.2	0.926	-17.7	0.117	15.38
0.3	0.869	-72.1	2.908	131.1	0.126	49.2	0.862	-24.3	0.181	13.64
0.4	0.831	-90.4	2.586	119.3	0.146	39.8	0.803	-29.5	0.230	12.48
0.5	0.802	-106.3	2.316	108.5	0.159	32.1	0.750	-33.4	0.289	11.64
0.6	0.775	-119.7	2.057	99.4	0.165	26.1	0.707	-36.8	0.351	10.95
0.7	0.759	-131.5	1.843	91.5	0.168	21.1	0.675	-39.8	0.404	10.39
0.8	0.748	-141.2	1.673	84.5	0.168	17.1	0.649	-42.6	0.465	9.99
0.9	0.736	-149.9	1.532	78.3	0.165	14.0	0.630	-45.2	0.533	9.67
1.0	0.734	-157.8	1.416	72.5	0.161	11.4	0.613	-48.1	0.592	9.44
1.1	0.731	-164.8	1.309	67.3	0.156	9.6	0.601	-50.9	0.662	9.24
1.2	0.728	-171.0	1.220	62.3	0.149	8.4	0.588	-54.1	0.747	9.12
1.3	0.729	-176.9	1.145	58.0	0.143	7.9	0.580	-57.4	0.818	9.03
1.4	0.731	177.7	1.077	53.4	0.136	8.0	0.573	-60.8	0.901	8.98
1.5	0.733	172.2	1.012	49.6	0.130	9.2	0.566	-64.6	0.993	8.93
1.6	0.736	167.4	0.967	45.8	0.123	11.1	0.561	-68.4	1.071	7.31
1.7	0.741	163.0	0.915	42.3	0.118	14.1	0.556	-72.3	1.158	6.50
1.8	0.740	158.4	0.878	38.5	0.113	18.2	0.553	-76.4	1.256	5.85
1.9	0.742	153.5	0.833	34.9	0.112	22.9	0.550	-80.8	1.337	5.26
2.0	0.750	149.6	0.796	31.8	0.112	28.4	0.547	-85.3	1.357	4.95
2.1	0.755	145.4	0.763	29.0	0.114	34.0	0.546	-89.8	1.360	4.66
2.2	0.761	141.6	0.730	26.3	0.120	39.0	0.546	-94.6	1.332	4.38
2.3	0.769	138.1	0.704	23.9	0.129	43.7	0.546	-99.5	1.265	4.29
2.4	0.773	134.7	0.676	21.8	0.139	47.1	0.544	-104.5	1.227	4.00
2.5	0.779	131.5	0.649	19.6	0.151	49.5	0.543	-109.6	1.180	3.77
2.6	0.784	128.6	0.626	17.7	0.164	51.5	0.546	-115.3	1.127	3.64
2.7	0.786	125.5	0.605	15.9	0.178	52.3	0.548	-120.8	1.099	3.40
2.8	0.790	123.3	0.582	14.4	0.193	52.7	0.551	-126.0	1.075	3.12
2.9	0.800	120.2	0.574	12.9	0.209	52.3	0.552	-131.1	0.997	4.39
3.0	0.804	118.1	0.555	12.7	0.224	51.7	0.550	-136.9	0.999	3.94
4.0	0.816	98.2	0.468	4.2	0.370	33.1	0.622	168.3	1.010	0.43
5.0	0.836	85.1	0.444	-1.2	0.413	14.2	0.715	132.0	1.038	-0.88

$V_{CE} = 2 \text{ V}$, $I_C = 3 \text{ mA}$, $Z_0 = 50 \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.872	-37.4	8.946	154.8	0.049	68.5	0.926	-18.5	0.131	22.60
0.2	0.800	-71.5	7.724	134.0	0.080	53.7	0.791	-32.3	0.188	19.84
0.3	0.727	-96.4	6.298	119.4	0.098	43.1	0.666	-40.9	0.280	18.07
0.4	0.685	-115.5	5.247	108.6	0.108	36.9	0.571	-46.3	0.361	16.85
0.5	0.660	-130.4	4.450	99.5	0.114	32.8	0.502	-49.7	0.447	15.92
0.6	0.642	-142.0	3.815	92.4	0.117	30.4	0.451	-52.3	0.536	15.13
0.7	0.637	-151.7	3.337	86.2	0.120	29.0	0.414	-54.4	0.611	14.45
0.8	0.629	-159.7	2.973	80.8	0.121	28.4	0.385	-56.4	0.695	13.90
0.9	0.624	-166.9	2.680	76.0	0.122	28.5	0.363	-58.4	0.775	13.40
1.0	0.629	-173.2	2.448	71.4	0.124	28.9	0.346	-60.7	0.833	12.96
1.1	0.626	-178.5	2.245	67.2	0.125	29.7	0.333	-62.9	0.910	12.54
1.2	0.627	176.3	2.080	63.1	0.127	30.8	0.320	-65.7	0.970	12.14
1.3	0.631	171.7	1.936	59.6	0.129	32.0	0.311	-68.7	1.019	10.90
1.4	0.634	167.3	1.811	55.7	0.132	33.4	0.302	-71.8	1.062	9.84
1.5	0.640	162.9	1.700	52.3	0.136	34.9	0.296	-75.4	1.093	9.11
1.6	0.640	159.1	1.613	48.9	0.140	36.3	0.290	-79.2	1.127	8.45
1.7	0.648	155.4	1.524	45.7	0.144	37.7	0.286	-83.1	1.139	7.97
1.8	0.652	151.6	1.458	42.2	0.150	39.0	0.281	-87.5	1.148	7.55
1.9	0.652	147.5	1.386	39.0	0.155	40.0	0.279	-91.9	1.174	6.99
2.0	0.662	144.1	1.321	35.9	0.162	41.1	0.276	-96.6	1.160	6.69
2.1	0.670	140.8	1.267	32.9	0.169	42.0	0.275	-101.5	1.148	6.42
2.2	0.674	137.7	1.211	30.2	0.177	42.5	0.274	-106.8	1.148	6.03
2.3	0.686	134.9	1.168	27.4	0.185	43.2	0.274	-111.9	1.114	5.95
2.4	0.690	131.8	1.121	25.0	0.194	43.4	0.275	-117.2	1.110	5.60
2.5	0.702	129.1	1.081	22.5	0.203	43.5	0.277	-122.8	1.082	5.52
2.6	0.708	126.7	1.037	19.8	0.212	43.6	0.282	-128.6	1.070	5.28
2.7	0.715	124.1	1.005	17.3	0.221	43.3	0.286	-134.3	1.053	5.17
2.8	0.720	122.2	0.964	15.2	0.231	43.1	0.292	-139.7	1.049	4.85
2.9	0.733	119.6	0.947	12.8	0.241	42.4	0.297	-145.0	1.001	5.73
3.0	0.740	117.9	0.913	11.5	0.251	41.9	0.301	-150.8	0.997	5.61
4.0	0.786	99.8	0.682	-5.5	0.354	28.2	0.437	159.1	0.953	2.85
5.0	0.830	86.6	0.543	-13.4	0.397	13.3	0.595	128.5	0.977	1.36

$V_{CE} = 2 \text{ V}$, $I_C = 5 \text{ mA}$, $Z_0 = 50 \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.787	-48.4	13.789	148.0	0.044	65.7	0.867	-26.9	0.159	24.97
0.2	0.699	-88.3	10.888	125.6	0.068	50.3	0.671	-44.0	0.270	22.04
0.3	0.636	-113.3	8.342	111.8	0.080	42.3	0.527	-53.4	0.396	20.17
0.4	0.610	-131.2	6.699	102.1	0.087	39.2	0.430	-59.0	0.500	18.85
0.5	0.588	-144.2	5.554	94.3	0.093	37.9	0.364	-62.5	0.609	17.78
0.6	0.580	-154.2	4.709	88.3	0.098	37.8	0.317	-65.2	0.701	16.83
0.7	0.580	-162.8	4.079	82.9	0.102	38.3	0.283	-67.5	0.779	16.01
0.8	0.576	-169.7	3.609	78.4	0.107	39.1	0.257	-69.8	0.854	15.28
0.9	0.576	-175.6	3.240	74.2	0.112	40.0	0.237	-72.1	0.914	14.62
1.0	0.581	178.7	2.947	70.1	0.117	41.0	0.221	-74.6	0.957	14.00
1.1	0.582	174.1	2.695	66.4	0.123	41.9	0.209	-77.3	1.003	13.09
1.2	0.582	170.0	2.490	62.7	0.129	42.6	0.198	-80.6	1.040	11.63
1.3	0.588	166.0	2.313	59.6	0.135	43.3	0.190	-84.0	1.061	10.83
1.4	0.592	162.3	2.161	56.1	0.142	43.8	0.182	-88.2	1.081	10.09
1.5	0.597	158.1	2.028	53.0	0.149	44.3	0.177	-92.3	1.094	9.47
1.6	0.601	154.9	1.920	49.9	0.156	44.6	0.172	-97.2	1.100	8.97
1.7	0.607	151.6	1.813	46.8	0.163	44.7	0.170	-101.9	1.106	8.47
1.8	0.613	148.1	1.730	43.8	0.171	44.7	0.168	-107.5	1.104	8.09
1.9	0.616	144.4	1.642	40.6	0.179	44.5	0.168	-112.8	1.113	7.59
2.0	0.625	141.2	1.569	37.6	0.187	44.4	0.168	-118.7	1.104	7.29
2.1	0.634	138.1	1.502	34.8	0.194	44.1	0.169	-124.5	1.097	6.99
2.2	0.641	135.5	1.436	32.1	0.203	43.5	0.171	-130.7	1.091	6.66
2.3	0.651	133.0	1.385	29.5	0.211	43.2	0.175	-136.6	1.076	6.49
2.4	0.658	130.1	1.329	27.2	0.219	42.7	0.179	-142.6	1.071	6.20
2.5	0.668	127.6	1.280	24.6	0.228	41.9	0.184	-148.5	1.057	6.04
2.6	0.674	125.4	1.232	22.2	0.236	41.4	0.192	-154.1	1.054	5.76
2.7	0.685	123.2	1.190	19.6	0.244	40.6	0.199	-159.8	1.039	5.67
2.8	0.689	121.4	1.145	17.4	0.253	39.9	0.208	-165.1	1.040	5.33
2.9	0.703	119.0	1.124	15.0	0.261	39.0	0.217	-169.7	1.008	5.80
3.0	0.709	117.3	1.087	13.3	0.269	38.2	0.225	-175.2	1.006	5.59
4.0	0.765	100.5	0.811	-5.3	0.352	24.9	0.377	145.5	0.964	3.63
5.0	0.823	87.3	0.630	-15.8	0.388	12.0	0.540	122.4	0.960	2.10

$V_{CE} = 2\text{ V}$, $I_C = 7\text{ mA}$, $Z_O = 50\ \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.745	-59.5	17.412	143.1	0.041	60.7	0.814	-33.4	0.189	26.29
0.2	0.635	-100.0	12.806	120.0	0.060	49.1	0.587	-52.6	0.346	23.29
0.3	0.584	-124.6	9.478	107.3	0.070	43.8	0.442	-62.4	0.492	21.31
0.4	0.569	-141.1	7.492	98.7	0.077	42.8	0.351	-68.7	0.607	19.91
0.5	0.553	-152.8	6.136	91.6	0.083	42.9	0.291	-72.8	0.718	18.70
0.6	0.553	-161.6	5.174	86.0	0.089	43.9	0.248	-76.4	0.800	17.63
0.7	0.552	-169.2	4.473	81.2	0.096	44.9	0.218	-79.5	0.871	16.70
0.8	0.552	-175.1	3.945	77.1	0.103	45.9	0.195	-82.8	0.929	15.85
0.9	0.554	179.5	3.539	73.2	0.110	46.8	0.178	-86.1	0.971	15.09
1.0	0.558	174.8	3.213	69.5	0.117	47.5	0.164	-89.8	1.001	14.20
1.1	0.564	170.6	2.932	66.0	0.125	48.0	0.153	-93.4	1.025	12.75
1.2	0.562	166.6	2.706	62.5	0.133	48.3	0.144	-97.9	1.053	11.69
1.3	0.567	162.6	2.510	59.3	0.141	48.5	0.138	-102.5	1.066	10.94
1.4	0.573	159.1	2.346	56.1	0.149	48.5	0.133	-108.0	1.073	10.32
1.5	0.576	155.6	2.197	53.3	0.157	48.3	0.130	-113.4	1.084	9.68
1.6	0.582	152.3	2.080	50.3	0.166	48.0	0.129	-119.4	1.082	9.23
1.7	0.590	149.5	1.965	47.3	0.174	47.6	0.129	-125.1	1.081	8.78
1.8	0.593	146.4	1.871	44.4	0.183	47.1	0.131	-131.4	1.085	8.33
1.9	0.598	142.5	1.777	41.5	0.191	46.3	0.133	-137.1	1.089	7.87
2.0	0.609	139.6	1.697	38.5	0.199	45.7	0.137	-143.4	1.078	7.59
2.1	0.617	136.8	1.622	35.9	0.208	44.9	0.140	-149.2	1.075	7.26
2.2	0.621	134.1	1.551	33.3	0.216	44.0	0.147	-155.4	1.077	6.86
2.3	0.634	131.7	1.492	30.6	0.225	43.2	0.154	-160.9	1.060	6.73
2.4	0.642	129.2	1.435	28.3	0.233	42.4	0.161	-166.3	1.055	6.45
2.5	0.651	126.7	1.383	25.9	0.241	41.3	0.169	-171.6	1.047	6.25
2.6	0.659	124.6	1.328	23.3	0.249	40.5	0.179	-176.1	1.043	5.99
2.7	0.667	122.6	1.284	21.1	0.257	39.5	0.189	179.0	1.036	5.82
2.8	0.674	120.9	1.236	18.7	0.265	38.7	0.199	174.6	1.036	5.53
2.9	0.687	118.6	1.215	16.3	0.273	37.6	0.210	170.8	1.010	5.88
3.0	0.693	116.9	1.173	14.7	0.280	36.6	0.219	166.3	1.010	5.60
4.0	0.755	100.6	0.877	-4.3	0.353	23.1	0.369	135.9	0.975	3.95
5.0	0.814	87.8	0.684	-15.7	0.384	11.0	0.523	117.5	0.966	2.50

$V_{CE} = 2\text{ V}$, $I_C = 10\text{ mA}$, $Z_O = 50\ \Omega$

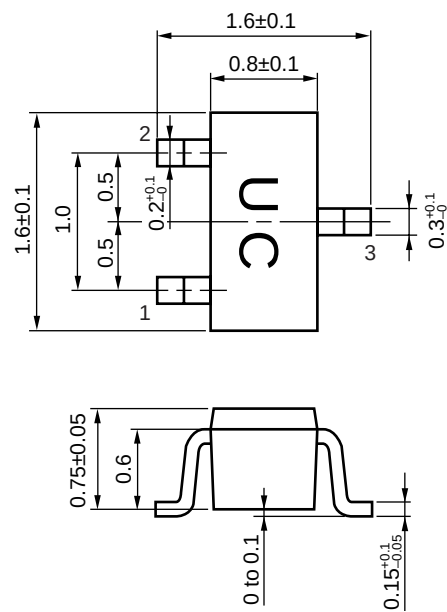
Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.655	-69.3	21.367	137.2	0.036	58.4	0.746	-41.4	0.263	27.68
0.2	0.583	-112.8	14.596	114.8	0.051	49.1	0.500	-62.2	0.433	24.54
0.3	0.541	-136.0	10.481	103.1	0.061	47.0	0.364	-73.1	0.604	22.36
0.4	0.530	-150.6	8.155	95.3	0.068	47.8	0.284	-80.4	0.727	20.78
0.5	0.527	-160.8	6.645	89.0	0.076	49.1	0.232	-86.2	0.819	19.43
0.6	0.528	-168.5	5.570	84.0	0.084	50.4	0.197	-91.5	0.888	18.20
0.7	0.532	-174.8	4.807	79.7	0.093	51.3	0.171	-96.7	0.936	17.14
0.8	0.534	179.6	4.240	75.9	0.101	52.3	0.153	-101.8	0.976	16.22
0.9	0.533	175.3	3.791	72.4	0.110	52.8	0.139	-107.1	1.011	14.74
1.0	0.540	170.6	3.433	68.8	0.119	53.1	0.129	-113.0	1.028	13.59
1.1	0.544	166.7	3.139	65.6	0.128	53.1	0.121	-118.4	1.041	12.66
1.2	0.543	163.4	2.892	62.2	0.137	52.8	0.116	-124.7	1.060	11.74
1.3	0.551	160.1	2.683	59.4	0.147	52.4	0.114	-130.8	1.062	11.10
1.4	0.554	156.7	2.502	56.3	0.156	52.0	0.114	-137.3	1.070	10.43
1.5	0.562	153.3	2.347	53.5	0.166	51.3	0.115	-143.1	1.068	9.92
1.6	0.566	150.3	2.221	50.6	0.175	50.5	0.118	-149.2	1.068	9.44
1.7	0.576	147.4	2.093	47.7	0.184	49.8	0.121	-154.7	1.066	8.99
1.8	0.579	144.4	1.994	45.0	0.193	48.7	0.127	-160.1	1.067	8.57
1.9	0.582	140.9	1.896	42.0	0.201	47.7	0.133	-165.1	1.073	8.09
2.0	0.591	138.1	1.803	39.3	0.210	46.8	0.140	-169.9	1.069	7.73
2.1	0.603	135.4	1.727	36.7	0.219	45.6	0.147	-174.8	1.059	7.48
2.2	0.609	132.9	1.648	34.2	0.228	44.4	0.156	-179.5	1.060	7.10
2.3	0.621	130.8	1.586	31.7	0.236	43.3	0.165	176.3	1.047	6.94
2.4	0.628	128.1	1.525	29.5	0.245	42.1	0.175	172.2	1.045	6.65
2.5	0.637	126.0	1.468	27.0	0.253	41.0	0.185	168.1	1.040	6.41
2.6	0.646	123.9	1.413	24.5	0.261	39.9	0.195	164.7	1.036	6.18
2.7	0.654	121.9	1.365	22.2	0.269	38.7	0.206	160.9	1.031	5.99
2.8	0.660	120.0	1.316	19.9	0.276	37.7	0.217	157.5	1.032	5.70
2.9	0.674	118.0	1.289	17.5	0.283	36.5	0.228	154.8	1.011	5.95
3.0	0.681	116.5	1.248	16.0	0.290	35.4	0.237	151.1	1.010	5.73
4.0	0.746	100.8	0.935	-3.0	0.356	21.4	0.378	127.3	0.983	4.20
5.0	0.808	88.0	0.733	-14.9	0.381	10.0	0.518	112.5	0.972	2.84

$V_{CE} = 2 \text{ V}$, $I_C = 20 \text{ mA}$, $Z_O = 50 \Omega$

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.521	-97.1	28.285	126.0	0.028	58.5	0.595	-58.1	0.403	29.99
0.2	0.497	-136.5	17.134	106.2	0.040	54.6	0.362	-82.4	0.652	26.37
0.3	0.496	-154.6	11.853	97.0	0.049	56.2	0.260	-96.6	0.802	23.81
0.4	0.494	-165.5	9.071	90.7	0.059	58.8	0.207	-108.0	0.895	21.84
0.5	0.497	-173.0	7.317	85.5	0.070	60.1	0.176	-117.9	0.949	20.20
0.6	0.498	-178.7	6.120	81.3	0.081	61.0	0.157	-127.2	0.987	18.80
0.7	0.508	176.5	5.250	77.5	0.092	61.1	0.145	-135.7	1.006	17.12
0.8	0.507	172.5	4.628	74.2	0.102	61.1	0.138	-143.7	1.026	15.57
0.9	0.511	168.6	4.138	71.1	0.113	60.7	0.134	-150.6	1.036	14.46
1.0	0.519	165.1	3.742	67.9	0.124	60.0	0.134	-157.1	1.039	13.58
1.1	0.523	161.6	3.415	64.9	0.135	59.3	0.134	-162.9	1.045	12.73
1.2	0.525	158.7	3.142	61.9	0.146	58.3	0.137	-168.5	1.051	11.95
1.3	0.529	156.0	2.915	59.2	0.157	57.2	0.141	-173.4	1.052	11.29
1.4	0.537	153.0	2.712	56.3	0.168	56.1	0.146	-177.6	1.050	10.72
1.5	0.543	149.9	2.546	53.7	0.178	54.9	0.152	178.5	1.050	10.18
1.6	0.547	147.2	2.401	51.0	0.189	53.5	0.159	174.9	1.050	9.69
1.7	0.553	144.6	2.266	48.4	0.198	52.2	0.166	171.7	1.050	9.21
1.8	0.560	141.8	2.157	45.6	0.208	50.8	0.174	168.6	1.047	8.83
1.9	0.563	138.5	2.047	42.9	0.217	49.3	0.182	165.6	1.052	8.35
2.0	0.574	136.2	1.948	40.3	0.226	47.9	0.191	162.8	1.047	8.02
2.1	0.580	133.5	1.862	37.8	0.235	46.3	0.200	159.8	1.048	7.65
2.2	0.592	131.2	1.781	35.5	0.244	44.7	0.211	156.8	1.042	7.37
2.3	0.601	129.2	1.707	33.0	0.253	43.4	0.221	154.0	1.038	7.09
2.4	0.610	126.7	1.643	30.8	0.262	41.9	0.232	151.2	1.034	6.85
2.5	0.619	124.6	1.580	28.6	0.270	40.5	0.242	148.5	1.032	6.59
2.6	0.630	122.7	1.519	26.2	0.278	39.1	0.253	145.9	1.027	6.37
2.7	0.636	120.6	1.467	23.9	0.285	37.7	0.264	143.1	1.027	6.10
2.8	0.644	119.3	1.411	21.7	0.292	36.5	0.276	140.6	1.027	5.83
2.9	0.657	117.2	1.386	19.3	0.299	35.2	0.286	138.7	1.012	5.99
3.0	0.664	115.5	1.341	17.9	0.305	34.0	0.295	135.7	1.014	5.70
4.0	0.733	100.7	1.009	-0.7	0.362	19.1	0.418	116.9	0.994	4.45
5.0	0.797	88.1	0.794	-13.1	0.380	8.1	0.536	105.1	0.987	3.20

PACKAGE DIMENSIONS

3-PIN ULTRA SUPER MINIMOLD (UNIT: mm)



PIN CONNECTIONS

1. Emitter
2. Base
3. Collector

[MEMO]

[MEMO]

[MEMO]

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