

NPN SILICON RF TRANSISTOR (WITH 2 DIFFERENT ELEMENTS)
IN A FLAT-LEAD 6-PIN THIN-TYPE ULTRA SUPER MINIMOLD

FEATURES

- Flat-lead 6-pin thin-type ultra super minimold package
- Low voltage operation
- 2 different built-in transistors (2SC5435, 2SC5600)

Q1: Built-in high gain transistor

$f_T = 12.0 \text{ GHz TYP.}$, $|S_{21e}|^2 = 8.5 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_C = 10 \text{ mA, } f = 2 \text{ GHz}$

Q2: Built-in low phase distortion transistor suited for OSC operation

$f_T = 5.0 \text{ GHz TYP.}$, $|S_{21e}|^2 = 4.0 \text{ dB TYP. @ } V_{CE} = 1 \text{ V, } I_C = 5 \text{ mA, } f = 2 \text{ GHz}$

BUILT-IN TRANSISTORS

	Q1	Q2
3-pin thin-type ultra super minimold part No.	2SC5435	2SC5600

ORDERING INFORMATION

Part Number	Quantity	Supplying Form
μ PA841TC	50 pcs (Non reel)	• 8 mm wide embossed taping • Pin 6 (Q1 Base), Pin 5 (Q2 Emitter), Pin 4 (Q2 Base) face the perforation side of the tape
μ PA841TC-T1	3 kpcs/reel	

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

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.

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C)

Parameter	Symbol	Ratings		Unit
		Q1	Q2	
Collector to Base Voltage	V _{CBO}	9	9	V
Collector to Emitter Voltage	V _{CEO}	6	5.5	V
Emitter to Base Voltage	V _{EBO}	2	1.5	V
Collector Current	I _C	30	100	mA
Total Power Dissipation	P _{tot} ^{Note}	180	200	mW
		230 in 2 elements		
Junction Temperature	T _j	150		°C
Storage Temperature	T _{stg}	−65 to +150		°C

Note Mounted on 1.08 cm² × 1.0 mm (t) glass epoxy substrate

ELECTRICAL CHARACTERISTICS (T_A = +25°C)

(1) Q1

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Collector Cut-off Current	I _{CBO}	V _{CB} = 5 V, I _E = 0 mA	–	–	100	nA
Emitter Cut-off Current	I _{EBO}	V _{BE} = 1 V, I _C = 0 mA	–	–	100	nA
DC Current Gain	h _{FE} ^{Note 1}	V _{CE} = 3 V, I _C = 10 mA	75	–	150	–
Gain Bandwidth Product	f _T	V _{CE} = 3 V, I _C = 10 mA, f = 2 GHz	10.0	12.0	–	GHz
Insertion Power Gain	S _{21e} ²	V _{CE} = 3 V, I _C = 10 mA, f = 2 GHz	7.0	8.5	–	dB
Noise Figure	NF	V _{CE} = 3 V, I _C = 3 mA, f = 2 GHz, Z _S = Z _{opt}	–	1.5	2.5	dB
Reverse Transfer Capacitance	C _{re} ^{Note 2}	V _{CB} = 3 V, I _E = 0 mA, f = 1 MHz	–	0.4	0.7	pF

(2) Q2

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Collector Cut-off Current	I _{CBO}	V _{CB} = 5 V, I _E = 0 mA	–	–	600	nA
Emitter Cut-off Current	I _{EBO}	V _{BE} = 1 V, I _C = 0 mA	–	–	600	nA
DC Current Gain	h _{FE} ^{Note 1}	V _{CE} = 1 V, I _C = 5 mA	100	–	160	–
Gain Bandwidth Product (1)	f _T	V _{CE} = 1 V, I _C = 5 mA, f = 2 GHz	3.5	5.0	–	GHz
Gain Bandwidth Product (2)	f _T	V _{CE} = 1 V, I _C = 15 mA, f = 2 GHz	5.5	6.5	–	GHz
Insertion Power Gain (1)	S _{21e} ²	V _{CE} = 1 V, I _C = 5 mA, f = 2 GHz	3.5	4.0	–	dB
Insertion Power Gain (2)	S _{21e} ²	V _{CE} = 1 V, I _C = 15 mA, f = 2 GHz	4.5	5.5	–	dB
Noise Figure	NF	V _{CE} = 1 V, I _C = 5 mA, f = 2 GHz, Z _S = Z _{opt}	–	1.5	2.5	dB
Reverse Transfer Capacitance	C _{re} ^{Note 2}	V _{CB} = 0.5 V, I _E = 0 mA, f = 1 MHz	–	0.8	1.0	pF

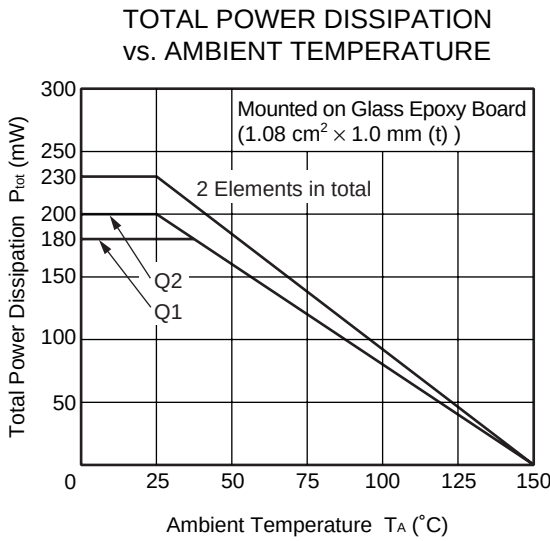
Notes 1. Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%

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

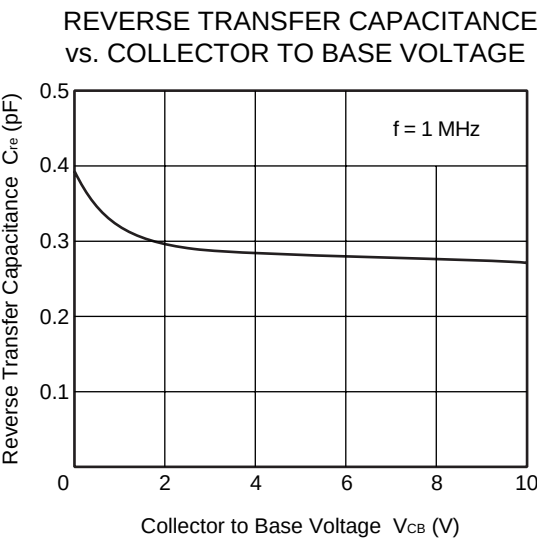
h_{FE} CLASSIFICATION

Rank	FB
Marking	2A
h_{FE} Value of Q1	75 to 150
h_{FE} Value of Q2	100 to 160

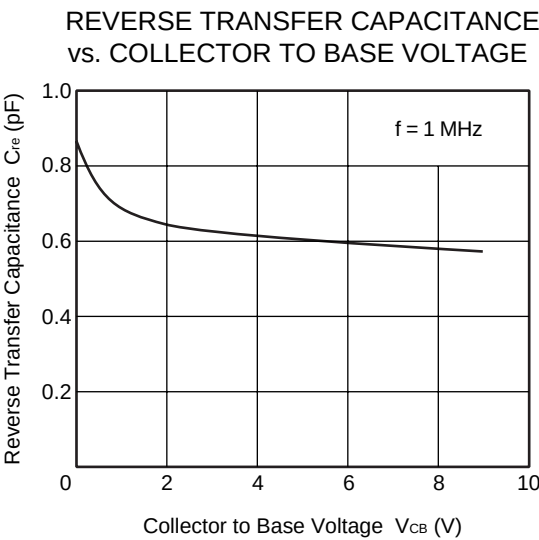
TYPICAL CHARACTERISTICS (Unless otherwise specified, $T_A = +25^{\circ}\text{C}$)



Q1

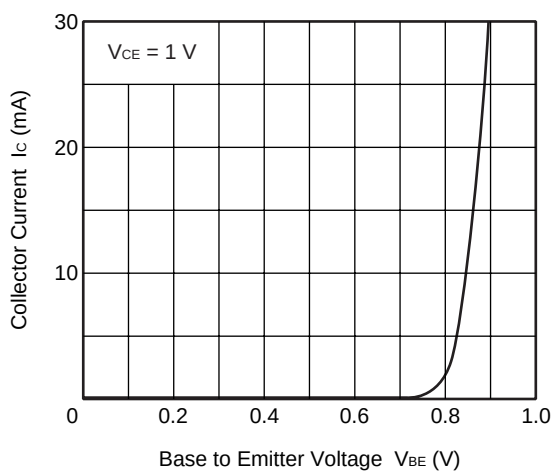


Q2



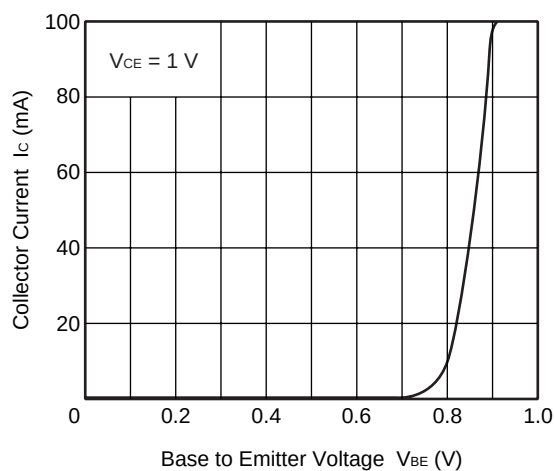
Q1

COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE

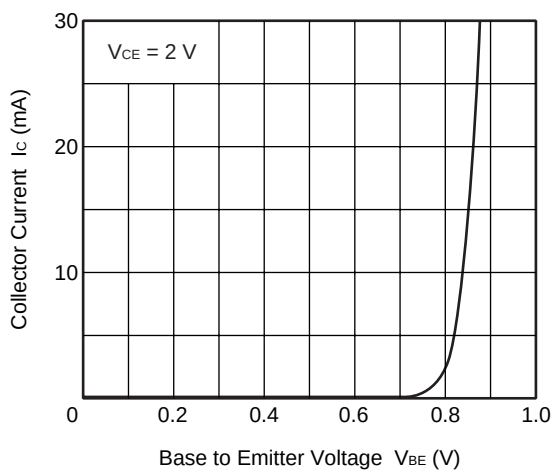


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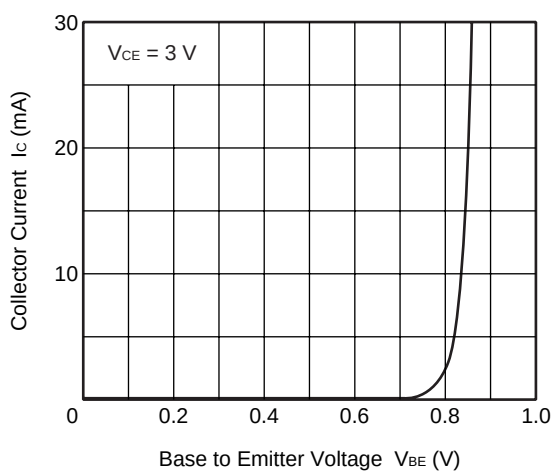
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



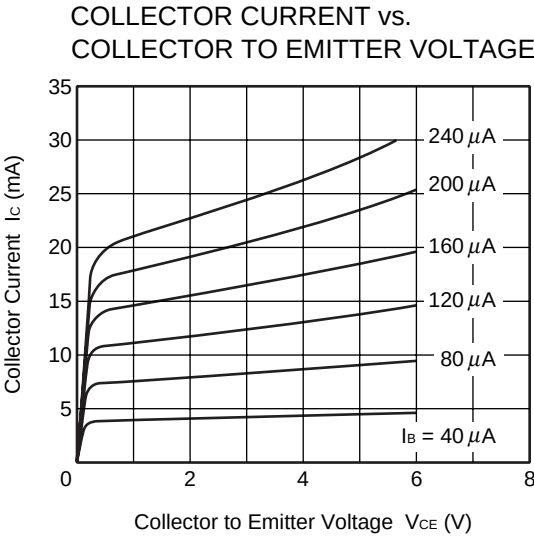
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



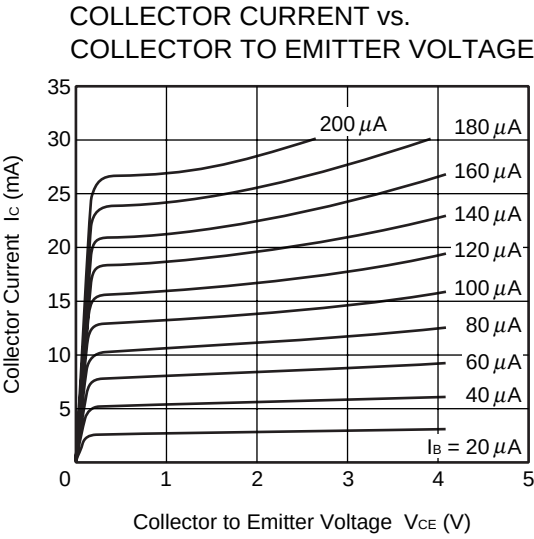
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



Q1

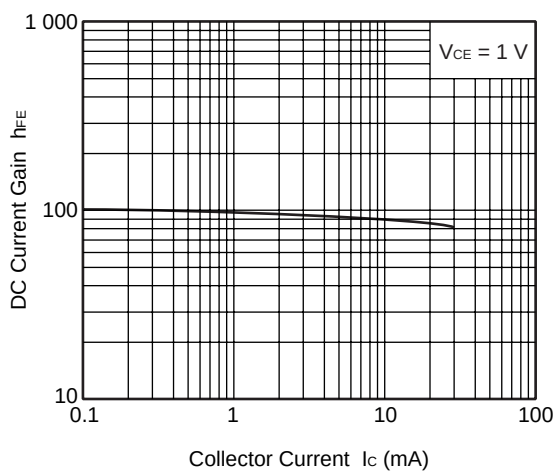


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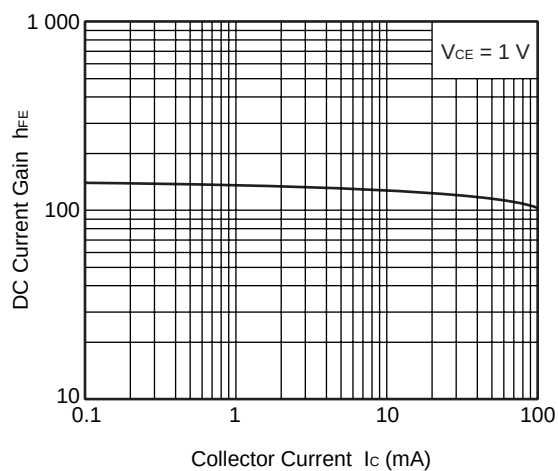
Q1

DC CURRENT GAIN vs.
COLLECTOR CURRENT

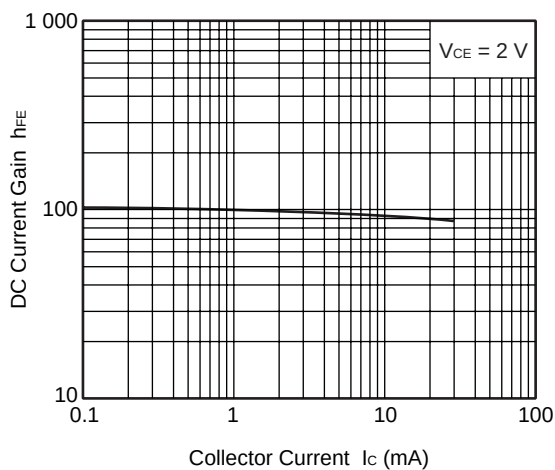


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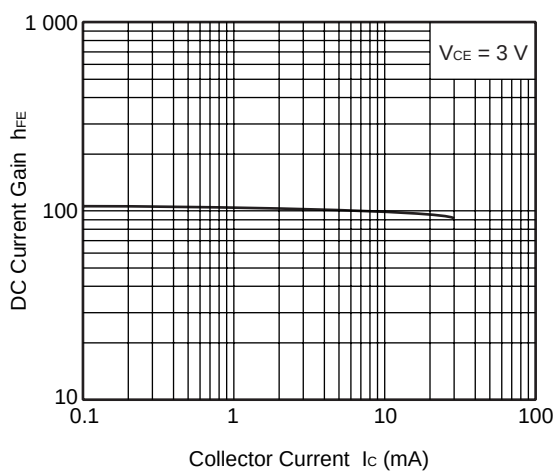
DC CURRENT GAIN vs.
COLLECTOR CURRENT



DC CURRENT GAIN vs.
COLLECTOR CURRENT

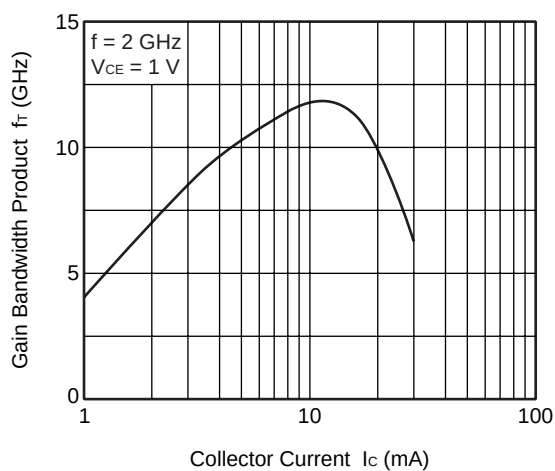


DC CURRENT GAIN vs.
COLLECTOR CURRENT



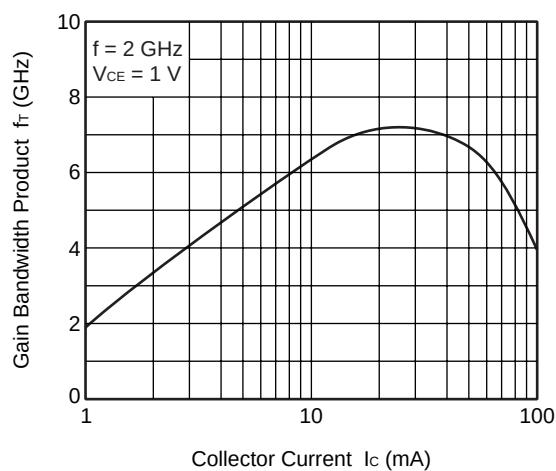
Q1

GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT

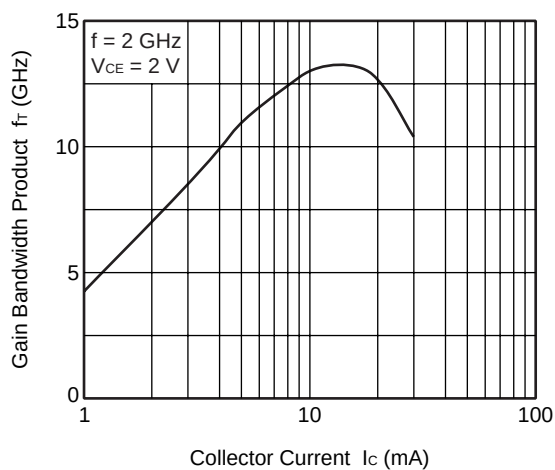


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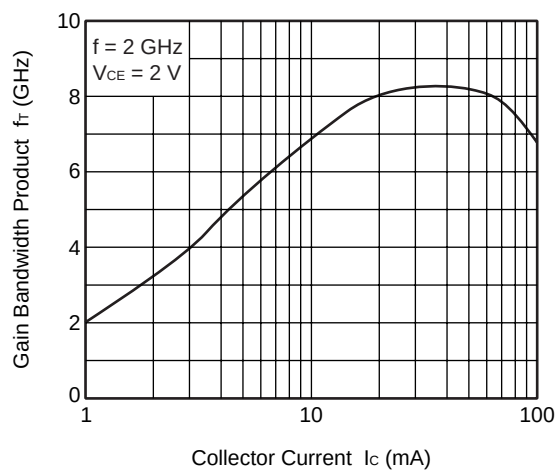
GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



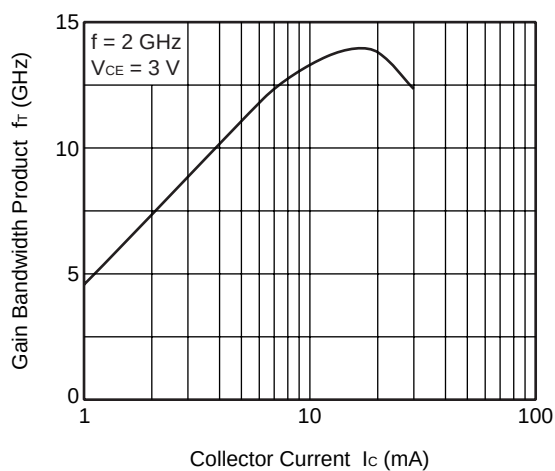
GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT

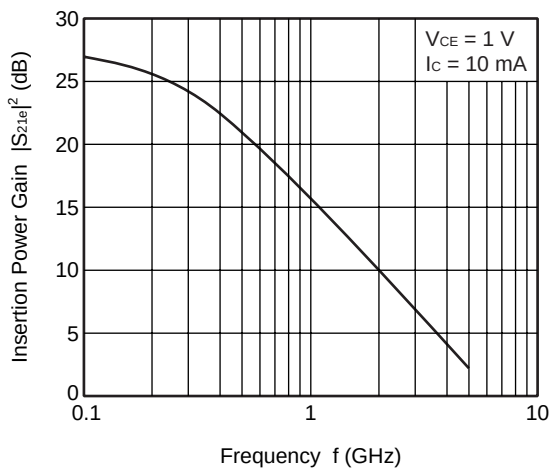


GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



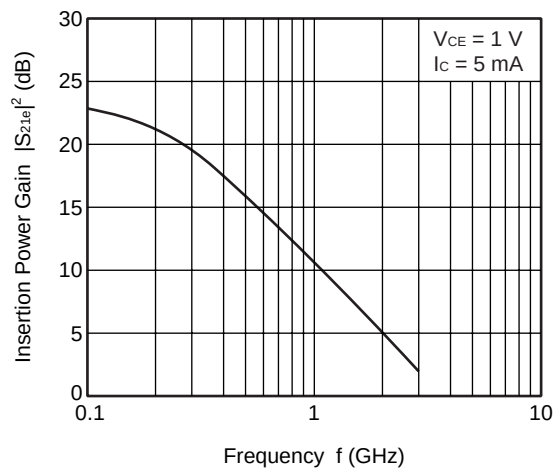
Q1

INSERTION POWER GAIN vs. FREQUENCY

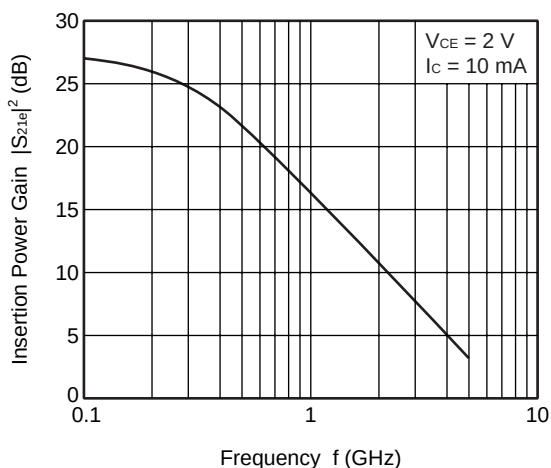


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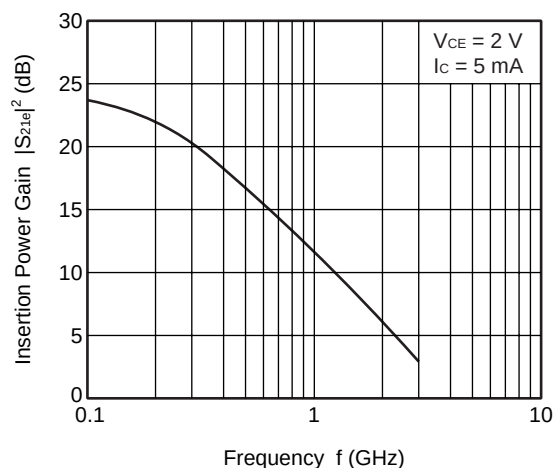
INSERTION POWER GAIN vs. FREQUENCY



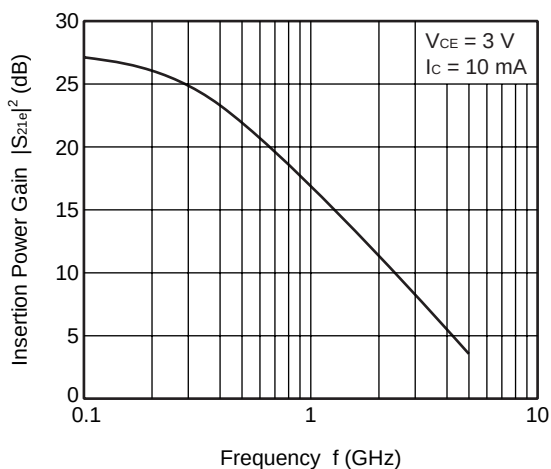
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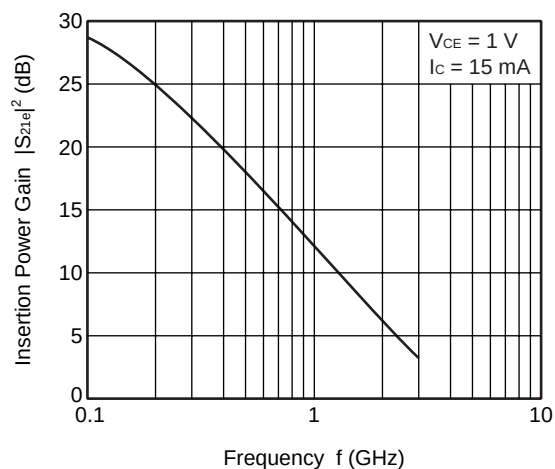
INSERTION POWER GAIN vs. FREQUENCY



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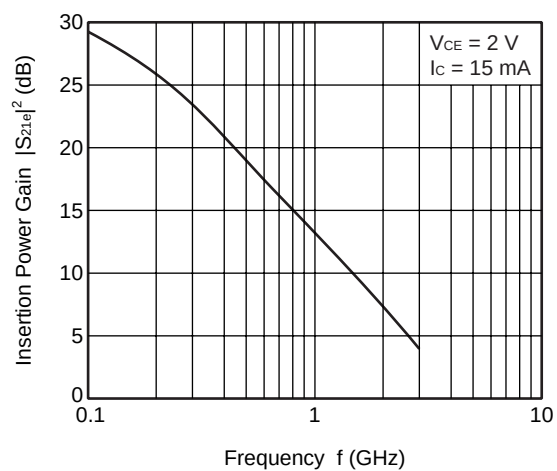


INSERTION POWER GAIN vs. FREQUENCY



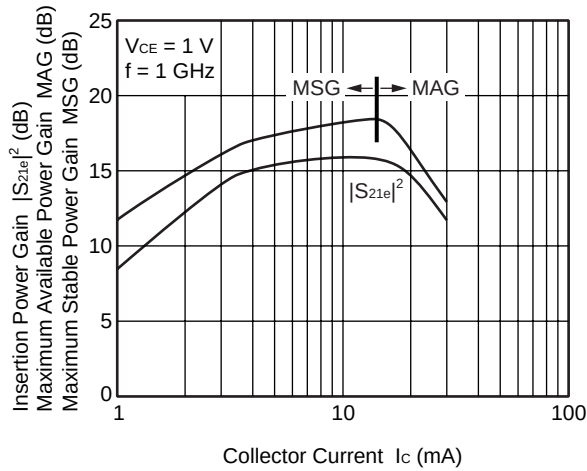
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INSERTION POWER GAIN vs. FREQUENCY



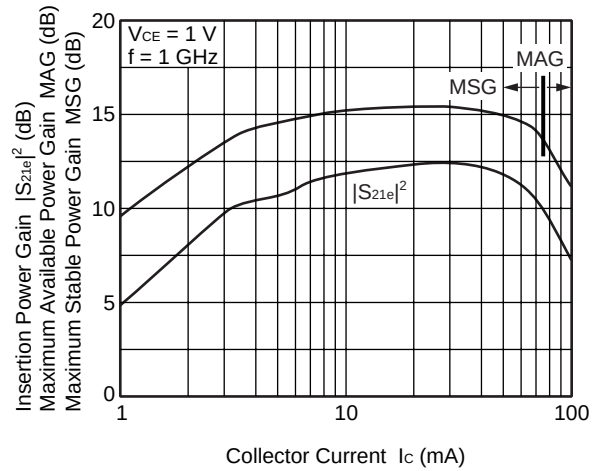
Q1

INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT

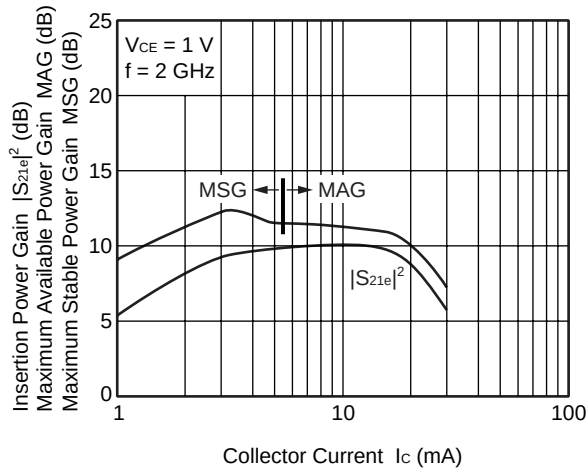


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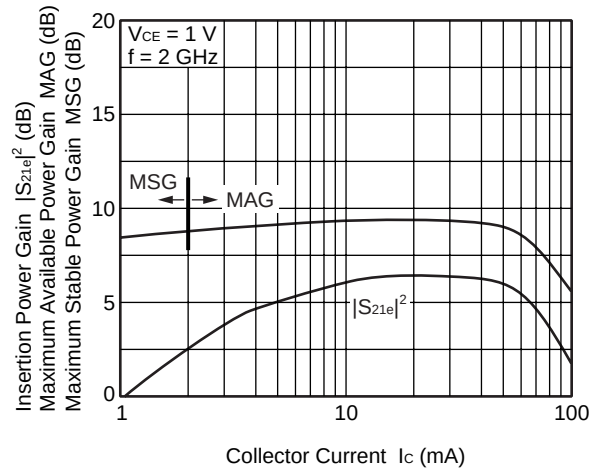
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



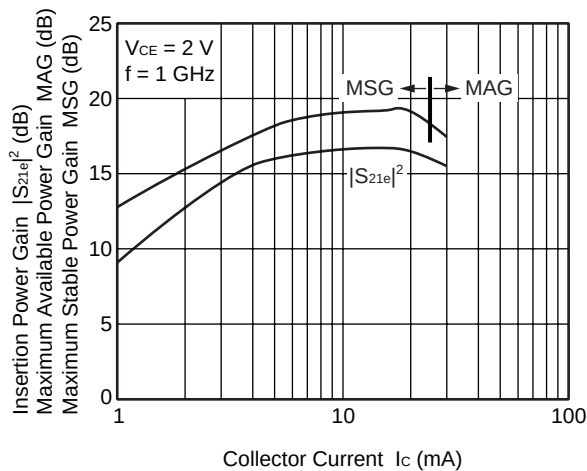
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



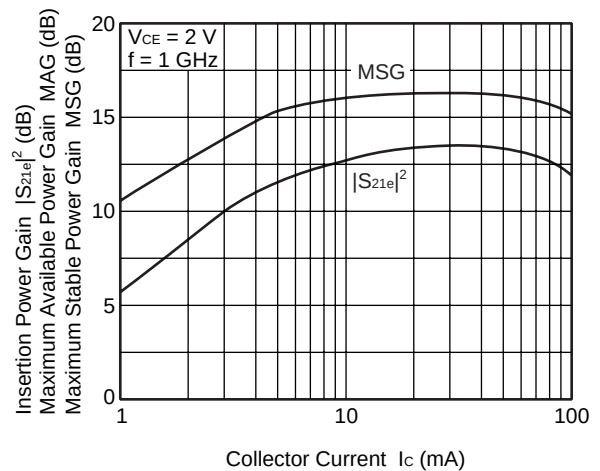
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



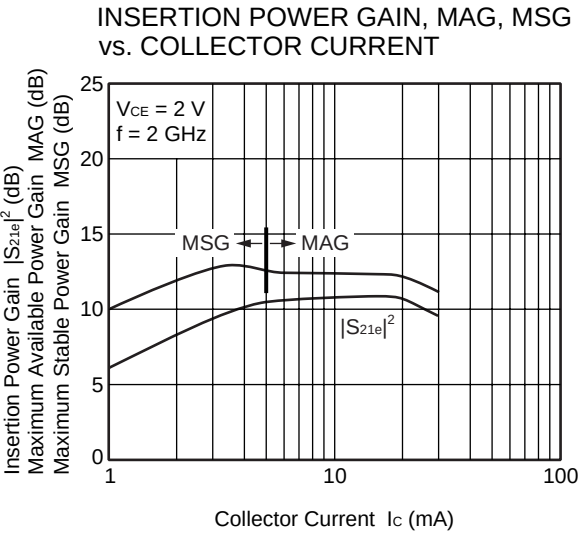
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



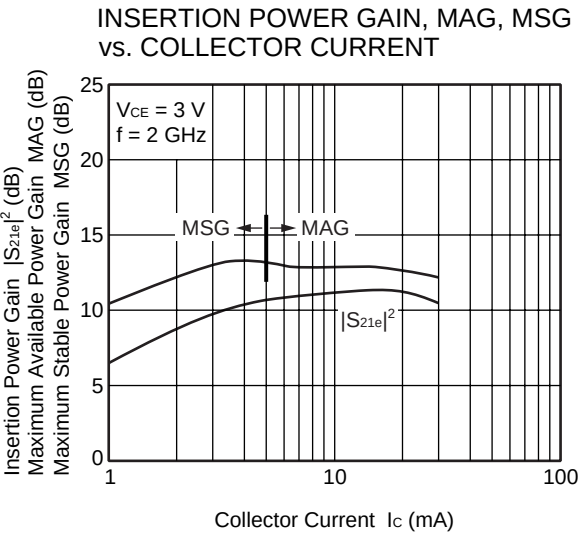
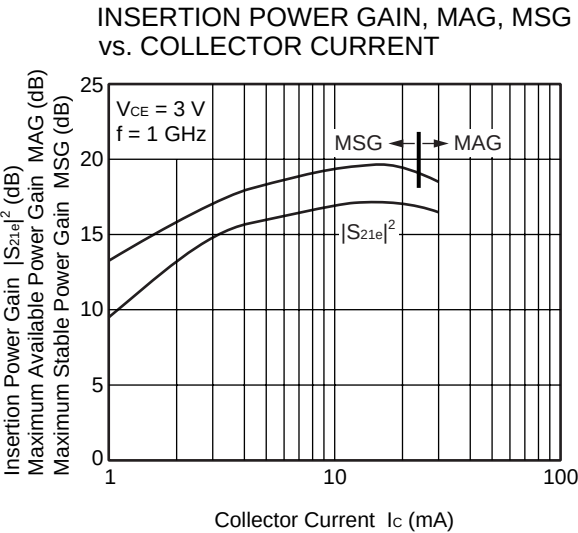
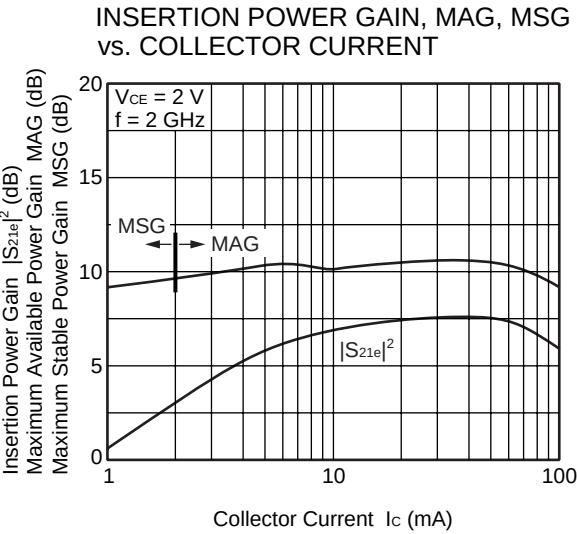
INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT



Q1

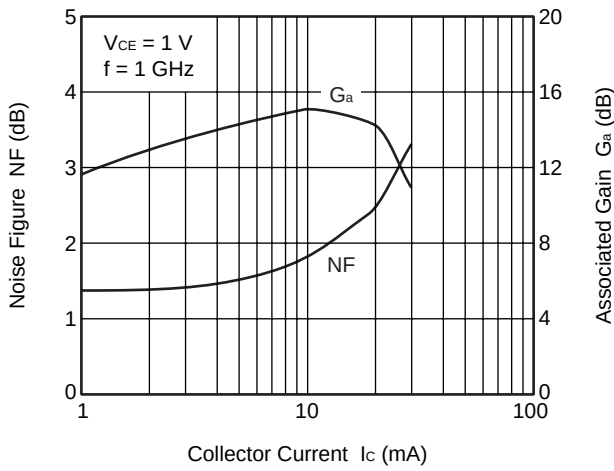


Q2



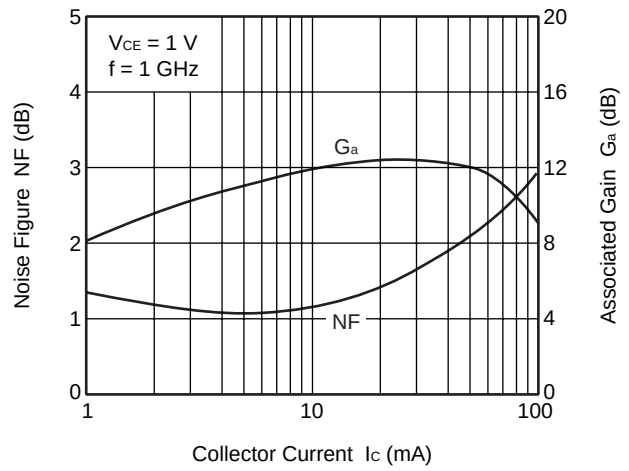
Q1

NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT

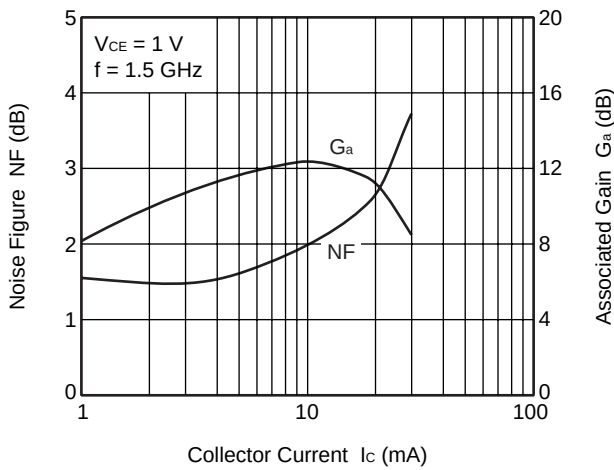


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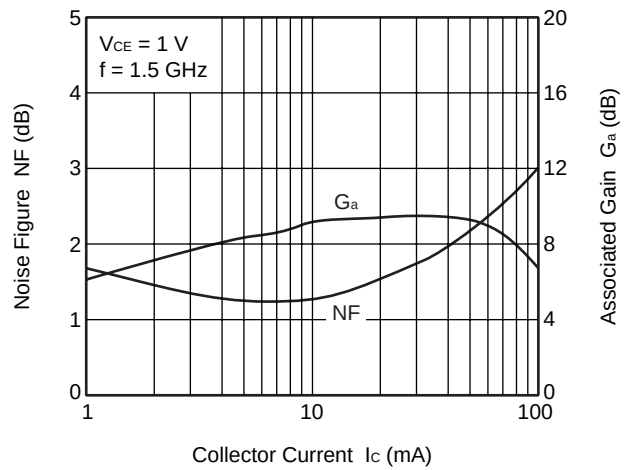
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



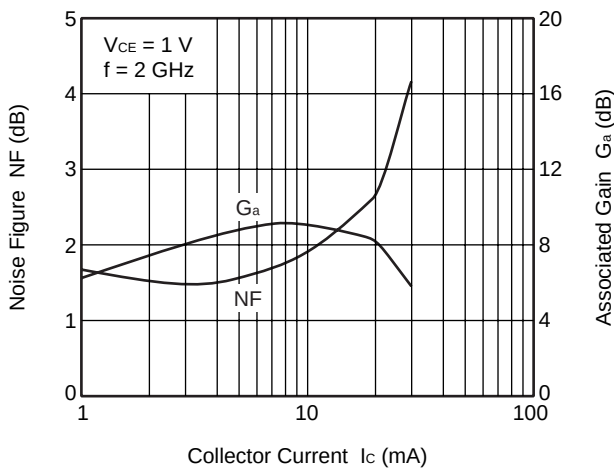
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



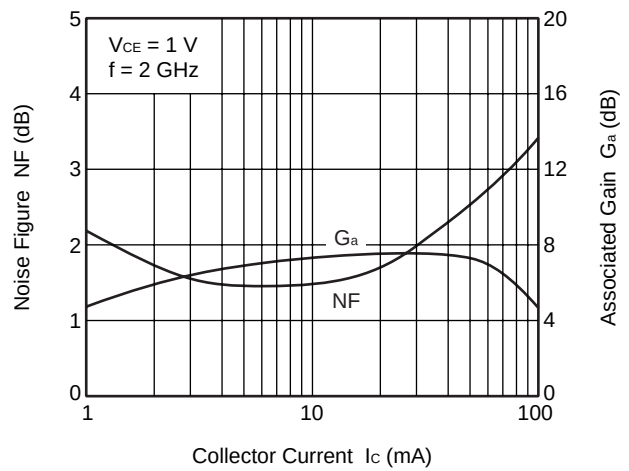
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT

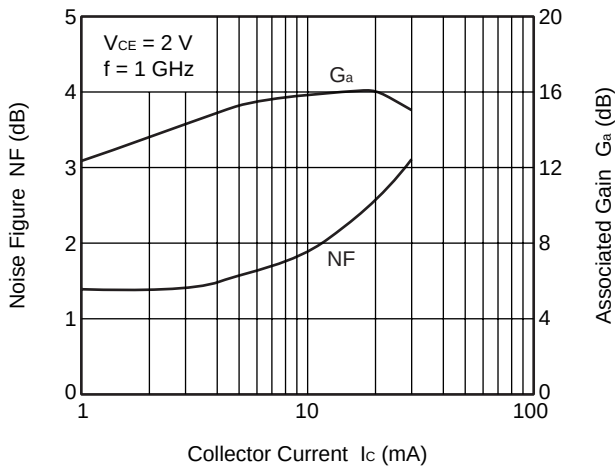


NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



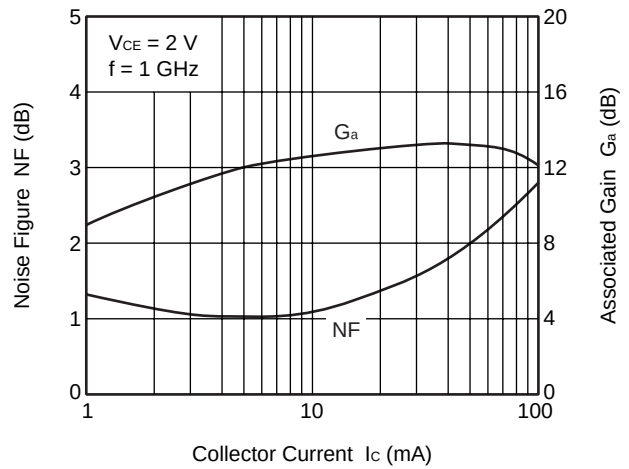
Q1

NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT

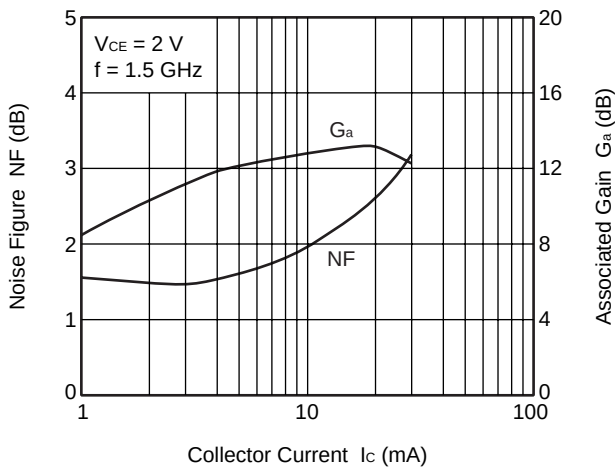


Q2

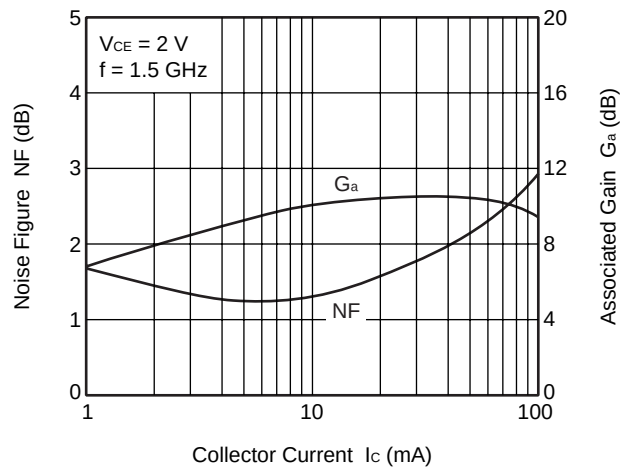
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



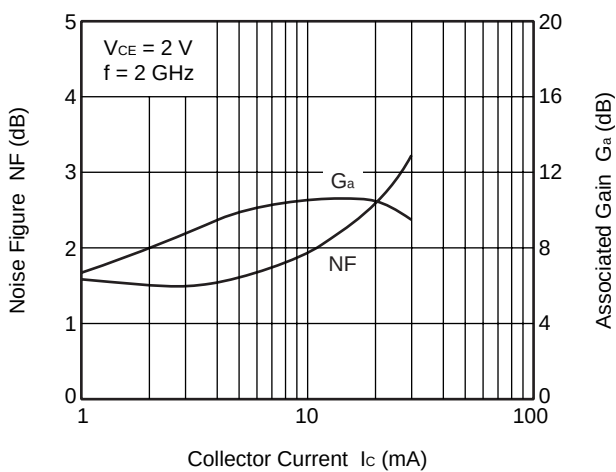
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



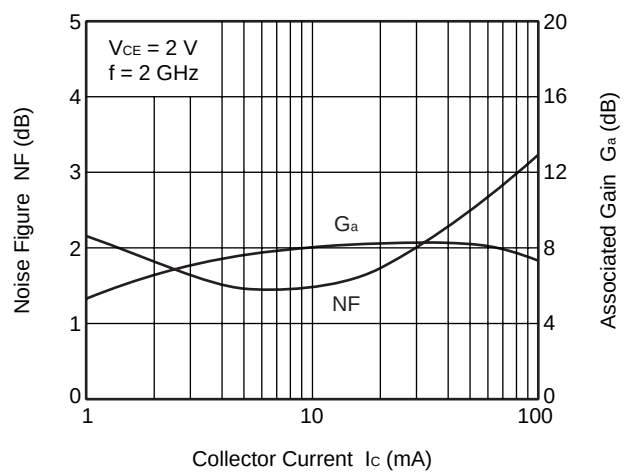
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT

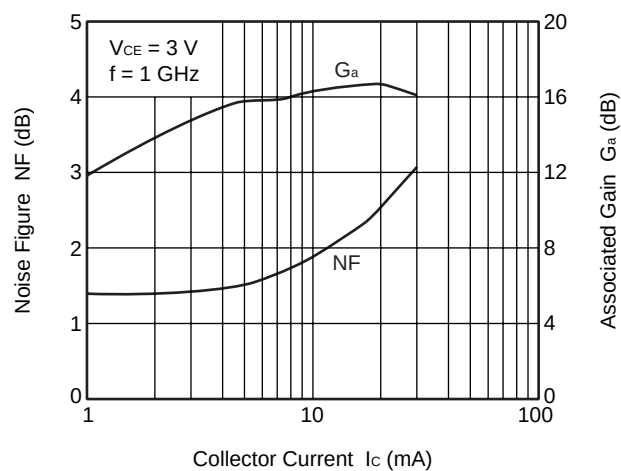


NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT

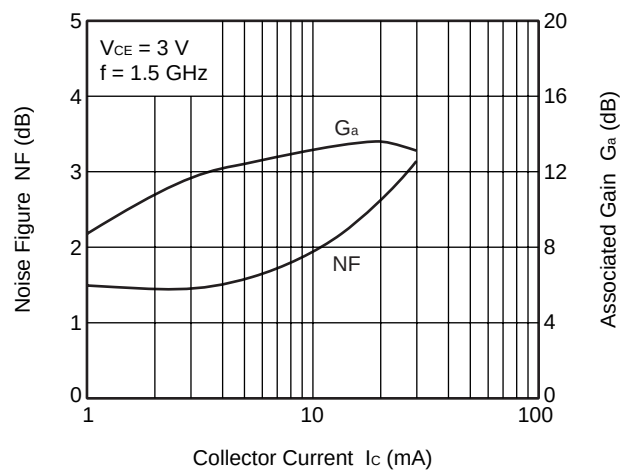


Q1

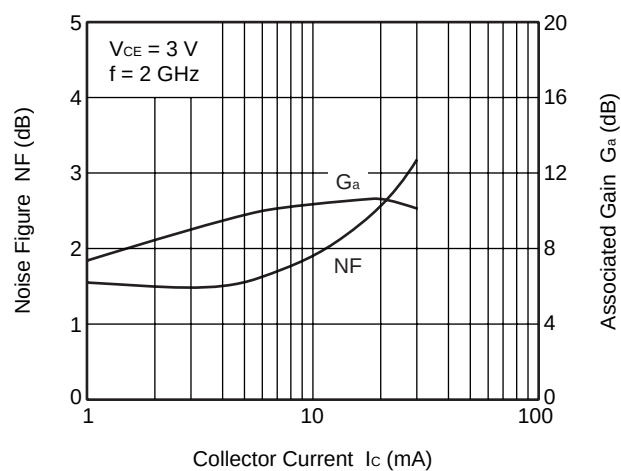
NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



NOISE FIGURE, ASSOCIATED GAIN
vs. COLLECTOR CURRENT



Remark The graphs indicate nominal characteristics.

S-PARAMETERS Q1

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. $MSG = \left| \frac{S_{21}}{S_{12}} \right|$

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

Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)	Note
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)			
0.1	0.971	-6.0	3.361	174.4	0.019	93.1	1.010	-4.1	-0.109	22.47	
0.2	0.989	-13.3	3.383	167.7	0.041	75.7	1.005	-7.5	0.169	19.16	
0.3	0.975	-21.4	3.319	159.8	0.063	77.8	1.004	-11.7	0.092	17.20	
0.4	0.950	-29.8	3.276	151.9	0.085	69.9	0.993	-15.8	0.184	15.87	
0.5	0.914	-37.8	3.163	145.0	0.109	65.9	0.978	-19.9	0.204	14.62	
0.6	0.869	-45.0	3.036	138.8	0.125	62.4	0.948	-23.7	0.225	13.86	
0.7	0.823	-51.5	2.906	133.2	0.141	56.7	0.922	-27.5	0.279	13.13	
0.8	0.792	-57.9	2.810	128.6	0.154	53.2	0.884	-30.8	0.304	12.61	
0.9	0.756	-64.4	2.731	123.0	0.167	50.1	0.852	-33.6	0.345	12.13	
1.0	0.730	-71.3	2.664	117.8	0.176	46.2	0.817	-36.4	0.383	11.79	
1.1	0.699	-77.4	2.567	112.8	0.185	43.5	0.788	-39.0	0.415	11.43	
1.2	0.666	-84.3	2.475	107.7	0.193	40.3	0.758	-41.3	0.455	11.09	
1.3	0.630	-91.2	2.384	102.7	0.199	38.2	0.730	-43.7	0.487	10.78	
1.4	0.599	-97.5	2.298	98.2	0.205	35.5	0.702	-46.1	0.527	10.50	
1.5	0.565	-103.8	2.201	93.9	0.209	33.4	0.677	-48.3	0.570	10.23	
1.6	0.535	-110.3	2.128	89.8	0.215	31.6	0.651	-50.2	0.606	9.95	
1.7	0.512	-116.6	2.064	86.3	0.218	28.7	0.630	-52.6	0.640	9.77	
1.8	0.493	-123.2	1.998	82.2	0.220	27.7	0.611	-54.2	0.670	9.58	
1.9	0.473	-130.5	1.931	78.2	0.224	26.0	0.590	-56.1	0.702	9.36	
2.0	0.462	-137.6	1.871	74.2	0.225	24.6	0.574	-58.4	0.725	9.19	
2.1	0.443	-144.6	1.802	70.5	0.225	22.3	0.550	-60.3	0.779	9.03	
2.2	0.439	-151.0	1.759	67.1	0.225	21.4	0.540	-62.6	0.796	8.93	
2.3	0.431	-157.4	1.697	63.9	0.223	20.3	0.525	-63.9	0.836	8.81	
2.4	0.427	-163.4	1.638	60.9	0.223	19.5	0.504	-66.2	0.881	8.67	
2.5	0.425	-169.3	1.595	58.0	0.223	18.8	0.491	-68.1	0.908	8.55	
2.6	0.422	-174.3	1.536	55.2	0.220	17.6	0.479	-70.1	0.958	8.44	
2.7	0.428	179.5	1.494	52.5	0.218	17.4	0.467	-71.8	0.988	8.37	
2.8	0.426	175.6	1.446	50.0	0.218	16.8	0.460	-73.7	1.021	7.33	
2.9	0.424	170.9	1.402	46.8	0.219	16.9	0.446	-75.3	1.063	6.52	
3.0	0.425	165.4	1.373	43.8	0.221	17.0	0.441	-77.9	1.071	6.30	
4.0	0.499	131.4	1.084	22.3	0.221	19.6	0.387	-105.4	1.268	3.80	
5.0	0.569	107.3	0.867	4.4	0.264	21.6	0.406	-135.2	1.212	2.38	

V_{CE} = 1 V, I_C = 3 mA, Z_O = 50 Ω

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	0.886	-12.7	10.153	169.3	0.018	89.5	0.983	-8.9	-0.048	27.58
0.2	0.872	-26.4	9.861	157.1	0.041	68.6	0.951	-16.7	0.246	23.85
0.3	0.811	-39.6	9.201	146.0	0.055	67.3	0.907	-24.5	0.219	22.23
0.4	0.734	-52.8	8.544	135.7	0.072	63.1	0.842	-31.1	0.281	20.76
0.5	0.662	-63.8	7.795	127.0	0.085	57.4	0.777	-36.4	0.368	19.64
0.6	0.596	-74.2	7.084	120.1	0.094	54.6	0.709	-40.7	0.432	18.77
0.7	0.538	-83.2	6.447	114.0	0.102	50.8	0.653	-44.3	0.506	18.02
0.8	0.494	-91.5	5.967	109.1	0.109	48.7	0.600	-47.3	0.564	17.38
0.9	0.454	-100.1	5.515	103.8	0.116	47.8	0.556	-49.3	0.619	16.76
1.0	0.424	-109.0	5.146	98.9	0.121	46.1	0.518	-51.4	0.666	16.28
1.1	0.396	-116.0	4.785	94.9	0.126	46.1	0.487	-53.1	0.712	15.80
1.2	0.371	-124.0	4.467	90.8	0.131	44.7	0.459	-54.9	0.755	15.33
1.3	0.350	-132.1	4.156	87.0	0.136	44.7	0.435	-56.6	0.793	14.84
1.4	0.333	-139.2	3.901	83.8	0.141	44.0	0.410	-58.1	0.834	14.40
1.5	0.318	-146.2	3.668	80.6	0.143	43.5	0.388	-60.3	0.882	14.09
1.6	0.309	-154.3	3.466	77.5	0.152	43.3	0.370	-62.1	0.901	13.59
1.7	0.304	-161.4	3.294	75.0	0.154	42.1	0.353	-64.0	0.935	13.30
1.8	0.304	-168.6	3.138	71.7	0.159	42.5	0.337	-65.4	0.957	12.96
1.9	0.303	-176.2	2.982	68.8	0.164	42.5	0.320	-67.2	0.980	12.59
2.0	0.309	178.2	2.848	66.1	0.169	41.4	0.309	-69.3	0.996	12.27
2.1	0.315	172.0	2.703	63.5	0.175	41.2	0.290	-71.6	1.020	11.04
2.2	0.323	167.5	2.607	60.9	0.178	41.3	0.283	-74.4	1.029	10.61
2.3	0.326	162.5	2.498	58.6	0.182	40.8	0.272	-75.5	1.050	10.00
2.4	0.336	158.2	2.398	56.4	0.187	40.3	0.258	-78.7	1.063	9.54
2.5	0.344	154.2	2.318	54.2	0.193	39.9	0.248	-80.9	1.069	9.19
2.6	0.348	150.9	2.222	51.9	0.196	39.3	0.240	-83.5	1.093	8.69
2.7	0.362	147.4	2.141	50.0	0.200	39.2	0.230	-86.0	1.101	8.36
2.8	0.366	144.6	2.061	47.8	0.204	38.3	0.225	-88.3	1.118	7.96
2.9	0.368	140.6	1.992	45.5	0.213	38.4	0.217	-90.7	1.118	7.62
3.0	0.379	137.3	1.949	43.2	0.218	37.8	0.215	-94.2	1.109	7.50
4.0	0.467	116.3	1.495	25.3	0.263	33.4	0.191	-136.3	1.138	5.29
5.0	0.538	98.6	1.194	9.2	0.319	24.7	0.242	-164.7	1.092	3.89

V_{CE} = 1 V, I_C = 5 mA, Z_O = 50 Ω

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	0.839	-17.5	13.951	166.1	0.019	79.8	0.983	-11.9	0.074	28.69
0.2	0.788	-34.2	13.227	151.7	0.034	69.7	0.911	-21.4	0.209	25.89
0.3	0.704	-49.4	11.882	138.9	0.048	66.7	0.836	-30.3	0.265	23.89
0.4	0.619	-64.6	10.635	128.1	0.064	58.3	0.750	-36.9	0.396	22.20
0.5	0.541	-76.9	9.409	119.4	0.075	56.7	0.672	-42.1	0.473	21.01
0.6	0.479	-87.7	8.341	112.8	0.081	55.1	0.601	-46.0	0.551	20.10
0.7	0.427	-97.8	7.458	107.1	0.089	52.1	0.545	-49.1	0.628	19.24
0.8	0.394	-106.9	6.785	102.5	0.095	51.8	0.496	-51.4	0.685	18.55
0.9	0.362	-115.8	6.203	97.8	0.101	51.3	0.457	-52.9	0.738	17.86
1.0	0.341	-124.9	5.720	93.4	0.106	50.3	0.423	-54.3	0.785	17.30
1.1	0.318	-132.1	5.267	89.8	0.113	50.6	0.397	-55.6	0.826	16.67
1.2	0.304	-140.4	4.884	86.3	0.118	50.6	0.373	-57.2	0.864	16.17
1.3	0.291	-148.5	4.525	82.8	0.125	49.9	0.353	-58.6	0.894	15.59
1.4	0.282	-155.5	4.239	80.0	0.130	50.0	0.333	-60.0	0.926	15.12
1.5	0.276	-162.9	3.968	77.1	0.136	49.3	0.315	-62.0	0.955	14.65
1.6	0.274	-170.6	3.728	74.2	0.144	49.0	0.300	-64.0	0.971	14.14
1.7	0.277	-177.2	3.539	71.9	0.148	47.9	0.285	-66.1	0.994	13.80
1.8	0.282	176.5	3.362	69.0	0.152	48.8	0.272	-67.6	1.013	12.74
1.9	0.287	170.4	3.189	66.4	0.160	48.6	0.259	-69.5	1.021	12.09
2.0	0.296	165.4	3.037	63.8	0.165	47.3	0.249	-72.3	1.033	11.53
2.1	0.302	160.1	2.887	61.6	0.170	46.2	0.232	-74.4	1.056	10.85
2.2	0.314	156.3	2.772	59.4	0.175	46.8	0.227	-78.1	1.059	10.50
2.3	0.322	152.6	2.646	57.2	0.182	45.8	0.216	-79.5	1.069	10.03
2.4	0.332	148.9	2.540	55.2	0.187	45.2	0.205	-83.3	1.077	9.63
2.5	0.341	145.7	2.451	53.1	0.195	44.9	0.196	-86.2	1.075	9.31
2.6	0.346	142.9	2.350	51.1	0.199	44.1	0.190	-88.7	1.093	8.87
2.7	0.357	139.4	2.264	49.2	0.203	43.9	0.181	-92.0	1.104	8.51
2.8	0.364	137.3	2.178	47.2	0.208	42.6	0.176	-95.0	1.110	8.18
2.9	0.368	134.0	2.109	45.0	0.217	42.8	0.168	-97.8	1.109	7.87
3.0	0.379	131.1	2.052	42.9	0.222	41.9	0.170	-102.7	1.106	7.69
4.0	0.468	113.0	1.574	25.9	0.273	35.1	0.170	-151.0	1.110	5.59
5.0	0.536	96.9	1.251	10.2	0.330	25.2	0.230	-176.4	1.075	4.11

V_{CE} = 1 V, I_C = 7 mA, Z_O = 50 Ω

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	0.785	-20.6	17.388	163.0	0.013	98.9	0.956	-14.5	-0.153	31.18
0.2	0.711	-41.5	16.050	146.6	0.033	68.3	0.865	-25.7	0.254	26.84
0.3	0.614	-58.6	13.915	133.1	0.045	61.2	0.767	-34.7	0.374	24.93
0.4	0.525	-74.9	12.073	122.1	0.059	59.3	0.670	-41.4	0.472	23.14
0.5	0.451	-87.7	10.419	114.0	0.068	57.5	0.590	-45.7	0.569	21.85
0.6	0.397	-99.5	9.104	107.6	0.073	57.3	0.520	-48.9	0.652	20.94
0.7	0.355	-109.8	8.028	102.4	0.082	55.0	0.470	-51.2	0.721	19.90
0.8	0.330	-119.8	7.247	98.2	0.086	54.3	0.425	-53.1	0.782	19.26
0.9	0.307	-128.7	6.559	93.9	0.096	54.8	0.391	-54.0	0.820	18.36
1.0	0.294	-138.1	6.002	89.9	0.100	53.7	0.363	-55.5	0.863	17.79
1.1	0.279	-145.5	5.508	86.5	0.106	54.2	0.339	-56.4	0.901	17.16
1.2	0.270	-153.1	5.099	83.2	0.112	53.9	0.320	-57.8	0.931	16.60
1.3	0.265	-161.1	4.699	80.1	0.120	53.7	0.304	-59.0	0.951	15.94
1.4	0.261	-168.0	4.393	77.6	0.126	53.5	0.285	-60.4	0.976	15.43
1.5	0.261	-174.8	4.120	74.7	0.130	53.6	0.271	-62.6	1.002	14.70
1.6	0.265	178.3	3.866	72.1	0.139	53.1	0.258	-64.9	1.007	13.90
1.7	0.267	172.3	3.654	70.1	0.145	51.9	0.246	-66.6	1.027	13.02
1.8	0.276	166.6	3.471	67.4	0.149	52.6	0.234	-68.5	1.043	12.41
1.9	0.283	161.1	3.280	65.1	0.158	51.9	0.221	-70.4	1.047	11.84
2.0	0.296	157.5	3.133	62.5	0.165	50.7	0.213	-73.3	1.044	11.49
2.1	0.305	152.6	2.971	60.2	0.169	50.0	0.198	-76.8	1.068	10.85
2.2	0.315	149.5	2.848	58.3	0.177	49.8	0.194	-80.6	1.067	10.50
2.3	0.323	146.5	2.717	56.3	0.182	49.1	0.185	-82.1	1.077	10.05
2.4	0.333	143.4	2.608	54.3	0.188	48.3	0.173	-86.1	1.083	9.66
2.5	0.344	140.4	2.526	52.3	0.197	47.5	0.167	-89.4	1.073	9.43
2.6	0.349	137.8	2.414	50.3	0.200	46.7	0.161	-93.0	1.094	8.95
2.7	0.364	135.1	2.322	48.4	0.206	46.8	0.153	-96.7	1.095	8.64
2.8	0.367	133.1	2.238	46.5	0.212	45.4	0.150	-100.0	1.101	8.31
2.9	0.370	129.9	2.161	44.5	0.220	45.3	0.143	-104.3	1.103	7.96
3.0	0.384	127.2	2.104	42.5	0.226	44.1	0.147	-108.8	1.094	7.82
4.0	0.471	111.3	1.609	26.0	0.279	36.6	0.162	-160.6	1.097	5.71
5.0	0.536	95.9	1.283	10.6	0.335	25.6	0.227	177.0	1.068	4.24

V_{CE} = 1 V, I_C = 10 mA, Z_O = 50 Ω

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	0.688	-28.1	22.214	158.8	0.017	86.2	0.925	-18.2	0.060	31.13
0.2	0.602	-52.1	19.367	139.6	0.031	63.0	0.795	-30.8	0.367	27.99
0.3	0.493	-72.1	15.974	125.7	0.040	60.9	0.677	-39.8	0.481	26.07
0.4	0.413	-89.7	13.326	115.3	0.051	59.0	0.573	-45.3	0.599	24.17
0.5	0.359	-103.6	11.211	107.9	0.059	58.7	0.497	-48.6	0.692	22.76
0.6	0.320	-116.2	9.662	102.2	0.066	59.8	0.436	-50.8	0.770	21.67
0.7	0.292	-127.3	8.429	97.4	0.073	58.1	0.392	-52.2	0.834	20.64
0.8	0.278	-136.6	7.537	93.6	0.079	58.5	0.354	-53.3	0.879	19.77
0.9	0.266	-145.8	6.792	89.6	0.087	58.5	0.327	-54.0	0.912	18.92
1.0	0.263	-154.8	6.191	86.0	0.094	58.1	0.303	-55.0	0.940	18.20
1.1	0.254	-162.1	5.651	83.1	0.101	59.0	0.286	-55.4	0.965	17.48
1.2	0.250	-169.0	5.215	80.2	0.108	58.3	0.268	-56.7	0.986	16.83
1.3	0.253	-175.9	4.810	77.4	0.116	58.6	0.257	-58.5	0.997	16.16
1.4	0.253	178.5	4.482	75.0	0.123	58.2	0.241	-59.2	1.015	14.86
1.5	0.257	173.0	4.181	72.4	0.128	57.6	0.229	-61.8	1.041	13.92
1.6	0.262	166.3	3.931	70.0	0.137	57.3	0.217	-64.0	1.041	13.34
1.7	0.272	161.7	3.703	68.0	0.143	55.9	0.208	-66.2	1.052	12.74
1.8	0.282	157.3	3.529	65.4	0.149	55.9	0.196	-68.3	1.058	12.27
1.9	0.290	151.8	3.338	63.3	0.158	55.7	0.187	-70.9	1.060	11.76
2.0	0.301	149.3	3.168	61.0	0.165	54.3	0.180	-74.0	1.064	11.30
2.1	0.313	145.4	3.014	59.1	0.170	53.3	0.166	-77.9	1.074	10.82
2.2	0.324	143.0	2.882	57.2	0.178	53.1	0.163	-81.9	1.072	10.46
2.3	0.330	140.4	2.755	55.0	0.183	51.9	0.155	-84.1	1.083	10.03
2.4	0.342	137.8	2.651	53.2	0.191	51.0	0.145	-89.2	1.078	9.71
2.5	0.351	135.2	2.549	51.3	0.198	50.6	0.139	-92.8	1.079	9.38
2.6	0.356	133.1	2.443	49.4	0.202	49.6	0.134	-97.1	1.093	8.96
2.7	0.371	130.9	2.352	47.6	0.208	49.0	0.128	-101.3	1.092	8.68
2.8	0.376	129.2	2.262	45.8	0.215	47.6	0.127	-104.8	1.096	8.34
2.9	0.382	126.2	2.184	43.7	0.223	47.5	0.121	-109.9	1.095	8.03
3.0	0.391	123.7	2.129	41.7	0.230	46.3	0.126	-115.8	1.088	7.86
4.0	0.478	109.3	1.624	25.6	0.284	37.9	0.160	-169.8	1.088	5.77
5.0	0.545	94.8	1.290	10.7	0.340	26.1	0.228	171.0	1.060	4.28

V_{CE} = 1 V, I_C = 20 mA, Z₀ = 50 Ω

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	0.487	-49.7	27.437	147.4	0.019	79.0	0.807	-25.6	0.310	31.54
0.2	0.407	-85.0	20.968	125.8	0.025	52.3	0.618	-38.8	0.626	29.31
0.3	0.342	-110.8	15.877	113.0	0.032	60.3	0.493	-44.6	0.766	26.95
0.4	0.314	-129.5	12.601	104.4	0.042	61.8	0.407	-47.4	0.849	24.73
0.5	0.295	-143.9	10.341	98.2	0.051	64.3	0.353	-47.9	0.914	23.04
0.6	0.289	-154.3	8.765	93.7	0.058	65.5	0.312	-48.0	0.978	21.80
0.7	0.286	-163.5	7.564	89.9	0.067	65.3	0.284	-48.0	1.001	20.31
0.8	0.291	-170.2	6.723	86.6	0.072	64.9	0.260	-48.4	1.047	18.36
0.9	0.292	-176.7	6.008	83.2	0.083	64.8	0.243	-48.0	1.044	17.32
1.0	0.298	177.7	5.453	80.1	0.089	64.4	0.229	-48.6	1.064	16.31
1.1	0.294	172.4	4.951	77.5	0.097	64.7	0.219	-49.0	1.081	15.32
1.2	0.299	167.7	4.573	74.8	0.103	63.8	0.208	-50.4	1.101	14.53
1.3	0.306	163.2	4.202	72.4	0.113	63.7	0.200	-52.0	1.098	13.79
1.4	0.308	159.2	3.910	70.0	0.122	62.4	0.190	-53.3	1.101	13.13
1.5	0.316	155.5	3.664	67.8	0.127	62.3	0.181	-56.1	1.120	12.50
1.6	0.327	151.2	3.439	65.5	0.136	61.3	0.172	-58.4	1.115	11.97
1.7	0.334	147.6	3.244	63.6	0.140	59.9	0.166	-61.4	1.133	11.42
1.8	0.346	144.6	3.059	61.2	0.147	60.0	0.155	-63.3	1.137	10.92
1.9	0.355	140.8	2.918	59.1	0.156	59.2	0.148	-66.4	1.129	10.54
2.0	0.364	139.1	2.766	56.7	0.164	58.0	0.143	-70.3	1.126	10.10
2.1	0.375	136.2	2.622	55.1	0.170	56.6	0.131	-74.6	1.139	9.62
2.2	0.385	134.9	2.508	53.0	0.178	56.5	0.128	-79.8	1.134	9.27
2.3	0.391	132.5	2.395	51.2	0.185	55.3	0.122	-82.1	1.137	8.88
2.4	0.402	130.6	2.302	49.3	0.191	54.2	0.115	-88.4	1.139	8.55
2.5	0.410	128.8	2.216	47.4	0.199	53.4	0.111	-92.5	1.131	8.26
2.6	0.415	126.8	2.122	45.7	0.204	52.4	0.108	-98.4	1.145	7.85
2.7	0.428	124.9	2.040	43.8	0.209	51.6	0.103	-103.9	1.149	7.55
2.8	0.433	123.4	1.967	42.1	0.216	50.2	0.103	-108.6	1.149	7.25
2.9	0.436	121.1	1.896	40.2	0.226	49.7	0.099	-115.3	1.143	6.93
3.0	0.449	119.0	1.851	38.2	0.233	48.8	0.105	-121.1	1.131	6.80
4.0	0.524	105.9	1.420	22.3	0.289	39.4	0.158	-175.7	1.122	4.79
5.0	0.580	91.9	1.131	7.9	0.346	26.8	0.235	166.6	1.095	3.26

V_{CE} = 2 V, I_C = 1 mA, Z₀ = 50 Ω

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	0.989	-6.3	3.469	174.8	0.022	80.7	0.998	-3.7	0.117	21.99
0.2	0.993	-12.5	3.518	168.3	0.031	79.8	1.008	-6.5	0.104	20.54
0.3	0.979	-19.9	3.450	160.9	0.053	79.9	1.010	-10.3	0.072	18.17
0.4	0.952	-28.3	3.418	153.3	0.072	72.1	0.999	-14.0	0.163	16.77
0.5	0.916	-35.6	3.303	146.6	0.093	67.7	0.988	-17.7	0.198	15.50
0.6	0.874	-42.4	3.181	140.7	0.108	64.3	0.962	-21.0	0.221	14.69
0.7	0.835	-49.0	3.049	135.2	0.123	59.6	0.937	-24.5	0.259	13.95
0.8	0.802	-55.0	2.952	130.8	0.133	55.2	0.904	-27.6	0.299	13.46
0.9	0.768	-61.0	2.872	125.6	0.145	52.2	0.875	-30.0	0.338	12.95
1.0	0.738	-67.5	2.812	120.3	0.153	48.7	0.844	-32.4	0.379	12.65
1.1	0.709	-73.7	2.724	115.5	0.160	46.5	0.816	-35.0	0.403	12.30
1.2	0.677	-80.2	2.635	110.8	0.167	43.6	0.788	-36.9	0.440	11.98
1.3	0.638	-86.7	2.535	105.8	0.174	41.6	0.763	-39.1	0.474	11.63
1.4	0.608	-92.7	2.441	101.6	0.180	39.2	0.735	-41.0	0.515	11.32
1.5	0.572	-98.7	2.345	97.2	0.184	36.8	0.712	-43.1	0.559	11.06
1.6	0.540	-105.1	2.265	93.2	0.190	35.1	0.690	-44.9	0.594	10.77
1.7	0.515	-110.9	2.196	89.7	0.192	32.7	0.670	-47.1	0.629	10.59
1.8	0.495	-117.6	2.132	85.7	0.195	31.6	0.650	-48.5	0.657	10.39
1.9	0.474	-124.8	2.061	81.7	0.198	30.2	0.632	-50.1	0.688	10.17
2.0	0.460	-131.7	2.005	77.6	0.200	28.4	0.618	-52.1	0.711	10.01
2.1	0.440	-138.5	1.938	74.1	0.201	26.9	0.595	-53.6	0.759	9.83
2.2	0.430	-145.2	1.886	70.7	0.200	26.2	0.582	-56.0	0.785	9.75
2.3	0.421	-151.7	1.820	67.7	0.200	24.9	0.570	-57.1	0.820	9.59
2.4	0.415	-158.2	1.760	64.7	0.199	24.2	0.550	-59.2	0.864	9.47
2.5	0.410	-163.7	1.709	61.9	0.200	23.6	0.538	-60.8	0.893	9.31
2.6	0.407	-169.4	1.647	59.0	0.197	22.8	0.523	-62.7	0.946	9.22
2.7	0.410	-175.6	1.602	56.4	0.196	22.6	0.513	-64.3	0.976	9.13
2.8	0.408	-179.7	1.555	53.5	0.197	22.0	0.506	-65.9	1.004	8.57
2.9	0.401	174.9	1.506	50.6	0.198	22.4	0.493	-67.2	1.050	7.44
3.0	0.408	169.9	1.477	47.6	0.201	22.6	0.488	-69.6	1.047	7.34
4.0	0.476	133.8	1.166	26.0	0.210	25.8	0.425	-94.4	1.221	4.62
5.0	0.549	108.7	0.938	7.8	0.258	28.2	0.431	-122.8	1.147	3.29

V_{CE} = 2 V, I_C = 3 mA, Z_O = 50 Ω

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	0.906	-10.6	9.331	170.7	0.021	76.6	0.996	-7.0	0.180	26.46
0.2	0.898	-22.3	9.170	159.9	0.031	74.6	0.973	-13.3	0.161	24.66
0.3	0.841	-33.8	8.660	149.6	0.047	69.5	0.940	-19.4	0.214	22.61
0.4	0.776	-45.8	8.178	139.7	0.065	64.0	0.889	-25.2	0.288	20.99
0.5	0.713	-55.7	7.573	131.6	0.078	62.0	0.840	-29.7	0.324	19.88
0.6	0.646	-64.9	6.973	124.7	0.084	57.9	0.779	-33.7	0.390	19.18
0.7	0.585	-73.1	6.398	118.6	0.094	53.8	0.729	-37.0	0.465	18.32
0.8	0.538	-80.8	5.979	113.7	0.101	51.8	0.679	-39.7	0.518	17.72
0.9	0.495	-88.5	5.574	108.6	0.108	50.1	0.636	-41.5	0.574	17.12
1.0	0.460	-96.7	5.231	103.6	0.112	48.7	0.598	-43.1	0.621	16.68
1.1	0.426	-103.0	4.892	99.3	0.115	48.3	0.568	-44.8	0.669	16.27
1.2	0.397	-110.5	4.590	95.2	0.120	47.0	0.540	-46.3	0.712	15.81
1.3	0.369	-118.2	4.297	91.2	0.127	46.7	0.516	-47.8	0.749	15.30
1.4	0.344	-124.8	4.044	87.9	0.131	45.9	0.491	-49.1	0.794	14.91
1.5	0.323	-132.0	3.806	84.5	0.133	45.2	0.469	-50.6	0.841	14.57
1.6	0.308	-139.9	3.610	81.4	0.141	44.9	0.450	-52.0	0.860	14.09
1.7	0.296	-146.8	3.426	78.7	0.143	44.1	0.434	-53.6	0.899	13.81
1.8	0.291	-154.7	3.272	75.4	0.146	44.1	0.417	-54.5	0.925	13.49
1.9	0.284	-162.9	3.119	72.5	0.152	44.3	0.403	-56.0	0.944	13.11
2.0	0.289	-169.2	2.990	69.8	0.158	43.8	0.392	-57.6	0.951	12.78
2.1	0.287	-176.3	2.848	67.0	0.161	43.1	0.371	-59.0	0.989	12.48
2.2	0.292	178.1	2.743	64.3	0.165	43.4	0.363	-61.4	1.000	12.21
2.3	0.296	172.0	2.625	62.1	0.170	43.1	0.353	-62.2	1.015	11.15
2.4	0.303	167.2	2.528	59.7	0.172	42.4	0.335	-64.5	1.041	10.43
2.5	0.310	162.6	2.446	57.3	0.178	41.9	0.325	-66.1	1.045	10.08
2.6	0.313	158.7	2.343	55.3	0.181	41.5	0.315	-68.0	1.070	9.49
2.7	0.325	154.1	2.261	53.3	0.184	41.5	0.307	-69.6	1.083	9.14
2.8	0.329	150.9	2.177	51.0	0.189	40.8	0.301	-71.2	1.094	8.74
2.9	0.332	146.4	2.111	48.6	0.196	41.3	0.290	-72.8	1.098	8.41
3.0	0.341	142.6	2.059	46.4	0.201	40.6	0.287	-75.9	1.094	8.23
4.0	0.435	119.5	1.591	28.2	0.247	36.7	0.231	-108.3	1.114	6.03
5.0	0.508	101.4	1.269	11.4	0.303	29.0	0.255	-139.2	1.067	4.63

V_{CE} = 2 V, I_C = 5 mA, Z_O = 50 Ω

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	0.826	-15.7	14.757	166.7	0.012	79.9	0.982	-10.0	0.087	31.05
0.2	0.788	-31.2	14.032	152.7	0.025	67.5	0.920	-18.9	0.253	27.51
0.3	0.706	-45.9	12.687	140.3	0.040	70.0	0.853	-26.4	0.257	24.99
0.4	0.622	-59.7	11.431	129.5	0.054	61.8	0.776	-32.3	0.396	23.24
0.5	0.543	-71.3	10.123	121.1	0.066	58.8	0.705	-36.3	0.484	21.86
0.6	0.476	-81.3	9.013	114.4	0.071	58.7	0.636	-39.4	0.557	21.04
0.7	0.420	-90.3	8.058	108.7	0.080	55.5	0.586	-41.9	0.633	20.06
0.8	0.382	-98.8	7.350	104.1	0.083	54.8	0.539	-43.5	0.694	19.45
0.9	0.346	-107.3	6.704	99.6	0.090	54.3	0.501	-44.4	0.747	18.71
1.0	0.320	-116.1	6.188	95.2	0.096	53.6	0.471	-45.5	0.787	18.09
1.1	0.295	-123.0	5.709	91.6	0.101	54.5	0.447	-46.3	0.827	17.51
1.2	0.276	-130.6	5.309	88.2	0.104	53.5	0.427	-47.4	0.870	17.07
1.3	0.261	-139.5	4.928	84.7	0.113	53.6	0.406	-48.5	0.889	16.40
1.4	0.249	-146.7	4.601	81.9	0.119	53.4	0.388	-49.5	0.916	15.87
1.5	0.242	-154.9	4.316	79.0	0.122	53.1	0.369	-50.8	0.951	15.47
1.6	0.237	-163.4	4.067	76.3	0.130	52.9	0.353	-52.2	0.965	14.96
1.7	0.233	-169.9	3.849	74.0	0.134	52.2	0.342	-53.6	0.990	14.59
1.8	0.237	-177.2	3.661	71.4	0.139	52.3	0.329	-54.6	1.004	13.81
1.9	0.241	175.2	3.473	68.8	0.146	52.5	0.317	-56.1	1.011	13.10
2.0	0.251	170.0	3.313	66.3	0.152	51.4	0.306	-58.1	1.018	12.55
2.1	0.258	164.0	3.153	63.9	0.157	50.6	0.289	-59.7	1.039	11.83
2.2	0.270	159.9	3.027	61.9	0.163	50.8	0.285	-62.2	1.037	11.52
2.3	0.275	155.7	2.898	59.8	0.169	50.0	0.274	-63.0	1.047	11.02
2.4	0.284	151.7	2.783	57.7	0.173	49.4	0.259	-65.7	1.062	10.54
2.5	0.296	148.3	2.678	55.7	0.181	49.2	0.252	-67.4	1.056	10.25
2.6	0.300	145.0	2.566	53.5	0.184	48.3	0.243	-69.8	1.076	9.75
2.7	0.314	141.9	2.476	51.9	0.188	48.0	0.234	-71.6	1.083	9.43
2.8	0.319	139.1	2.387	49.9	0.194	46.7	0.229	-73.6	1.088	9.09
2.9	0.324	135.4	2.295	47.8	0.202	47.0	0.219	-75.6	1.091	8.71
3.0	0.334	132.3	2.249	45.5	0.208	46.1	0.218	-79.1	1.082	8.60
4.0	0.430	114.6	1.725	28.7	0.260	39.6	0.173	-120.0	1.086	6.44
5.0	0.503	98.3	1.377	12.8	0.317	29.8	0.212	-152.1	1.046	5.06

V_{CE} = 2 V, I_C = 7 mA, Z_O = 50 Ω

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	0.782	-19.1	18.503	163.7	0.015	76.8	0.965	-13.0	0.151	30.99
0.2	0.714	-37.3	17.075	147.8	0.024	69.8	0.880	-22.3	0.263	28.44
0.3	0.616	-53.9	14.933	134.6	0.036	64.5	0.793	-30.2	0.372	26.22
0.4	0.523	-68.9	13.025	123.7	0.050	60.1	0.704	-35.4	0.493	24.18
0.5	0.445	-80.8	11.282	115.4	0.060	60.6	0.630	-39.1	0.573	22.72
0.6	0.386	-91.7	9.880	109.3	0.065	60.3	0.565	-41.3	0.656	21.84
0.7	0.344	-100.9	8.739	104.0	0.071	57.9	0.516	-43.2	0.726	20.87
0.8	0.308	-110.3	7.872	99.9	0.078	58.2	0.475	-44.1	0.780	20.06
0.9	0.281	-119.0	7.135	95.6	0.084	57.9	0.442	-44.6	0.827	19.30
1.0	0.265	-128.0	6.550	91.5	0.090	56.6	0.417	-45.3	0.860	18.61
1.1	0.244	-135.4	6.007	88.4	0.096	57.4	0.395	-45.8	0.897	17.98
1.2	0.233	-143.6	5.579	85.1	0.101	57.8	0.377	-46.7	0.924	17.43
1.3	0.224	-152.1	5.143	82.1	0.109	57.4	0.362	-47.7	0.942	16.75
1.4	0.217	-159.6	4.803	79.4	0.114	57.1	0.343	-48.4	0.971	16.26
1.5	0.216	-167.7	4.496	76.8	0.119	56.7	0.329	-50.0	0.991	15.77
1.6	0.216	-175.4	4.229	74.3	0.127	56.5	0.318	-51.3	0.996	15.21
1.7	0.217	177.9	4.003	72.1	0.132	55.3	0.306	-52.9	1.014	14.08
1.8	0.227	171.7	3.790	69.6	0.138	56.0	0.294	-54.0	1.024	13.45
1.9	0.232	164.3	3.598	67.4	0.145	55.4	0.282	-55.3	1.032	12.85
2.0	0.244	160.7	3.431	64.9	0.151	54.4	0.275	-57.4	1.032	12.46
2.1	0.253	155.5	3.266	62.9	0.157	53.7	0.257	-59.4	1.047	11.85
2.2	0.266	152.1	3.134	60.8	0.163	53.5	0.253	-62.3	1.047	11.52
2.3	0.272	148.5	2.993	58.8	0.169	53.4	0.244	-63.0	1.055	11.05
2.4	0.282	145.7	2.871	56.9	0.175	52.2	0.231	-65.9	1.061	10.63
2.5	0.291	142.2	2.777	54.9	0.182	51.3	0.223	-67.7	1.057	10.37
2.6	0.298	139.2	2.651	52.9	0.185	50.7	0.215	-70.2	1.077	9.86
2.7	0.314	137.0	2.556	51.1	0.191	50.3	0.205	-72.1	1.076	9.58
2.8	0.318	134.5	2.458	49.6	0.197	49.2	0.201	-74.1	1.083	9.20
2.9	0.324	131.3	2.377	47.3	0.206	49.4	0.192	-76.8	1.078	8.91
3.0	0.336	128.5	2.312	45.1	0.213	48.3	0.191	-80.5	1.069	8.75
4.0	0.428	112.5	1.775	28.8	0.265	40.7	0.156	-127.1	1.076	6.58
5.0	0.500	97.2	1.415	13.2	0.323	29.9	0.201	-158.5	1.041	5.18

V_{CE} = 2 V, I_C = 10 mA, Z_O = 50 Ω

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	0.711	-23.0	22.667	160.5	0.018	76.1	0.942	-15.1	0.216	31.00
0.2	0.623	-45.7	20.213	142.6	0.027	58.6	0.834	-26.0	0.417	28.78
0.3	0.509	-62.5	16.948	128.6	0.035	64.7	0.728	-33.2	0.469	26.89
0.4	0.421	-78.8	14.313	118.2	0.043	60.8	0.631	-37.8	0.594	25.18
0.5	0.357	-90.9	12.167	110.3	0.053	62.8	0.559	-40.4	0.675	23.63
0.6	0.312	-102.4	10.502	104.6	0.058	61.9	0.500	-42.0	0.757	22.56
0.7	0.276	-113.0	9.187	99.8	0.068	60.8	0.458	-42.9	0.806	21.32
0.8	0.255	-122.9	8.237	96.1	0.071	61.7	0.423	-43.6	0.860	20.62
0.9	0.235	-132.3	7.424	92.1	0.080	60.7	0.395	-43.5	0.888	19.65
1.0	0.227	-141.5	6.775	88.6	0.085	61.3	0.372	-44.2	0.921	19.02
1.1	0.212	-148.9	6.194	85.7	0.092	62.1	0.356	-44.5	0.944	18.27
1.2	0.205	-156.8	5.730	82.7	0.097	61.0	0.338	-45.2	0.974	17.71
1.3	0.204	-164.9	5.283	79.9	0.106	61.1	0.328	-46.2	0.977	16.98
1.4	0.202	-172.6	4.931	77.4	0.113	60.6	0.313	-46.8	0.994	16.41
1.5	0.203	-179.3	4.615	74.9	0.117	60.1	0.300	-48.5	1.018	15.15
1.6	0.209	173.0	4.331	72.6	0.127	59.7	0.288	-49.8	1.015	14.60
1.7	0.214	167.6	4.100	70.5	0.130	58.9	0.278	-51.4	1.034	13.86
1.8	0.224	162.2	3.886	68.2	0.137	58.9	0.268	-52.6	1.039	13.34
1.9	0.234	155.9	3.677	65.7	0.144	58.4	0.257	-54.1	1.044	12.80
2.0	0.244	152.2	3.503	63.6	0.152	57.5	0.250	-56.3	1.039	12.41
2.1	0.256	148.5	3.328	61.7	0.156	56.5	0.234	-58.1	1.056	11.83
2.2	0.266	146.2	3.193	59.6	0.163	56.3	0.230	-61.4	1.055	11.50
2.3	0.275	142.9	3.044	57.9	0.169	55.6	0.221	-62.0	1.059	11.06
2.4	0.285	139.8	2.931	55.9	0.176	53.7	0.207	-65.4	1.061	10.70
2.5	0.296	137.8	2.827	54.1	0.184	53.3	0.201	-67.2	1.054	10.45
2.6	0.302	135.3	2.707	52.3	0.188	52.8	0.193	-70.2	1.071	9.97
2.7	0.315	132.9	2.604	50.8	0.193	52.3	0.185	-72.2	1.075	9.64
2.8	0.321	130.8	2.503	48.9	0.199	50.7	0.181	-75.4	1.079	9.29
2.9	0.327	128.0	2.417	46.7	0.207	50.6	0.171	-77.2	1.077	8.98
3.0	0.339	125.5	2.359	44.7	0.215	49.7	0.170	-81.6	1.065	8.85
4.0	0.431	111.2	1.805	28.8	0.269	41.5	0.143	-132.9	1.066	6.70
5.0	0.503	96.8	1.436	13.5	0.328	30.4	0.194	-163.6	1.034	5.28

V_{CE} = 2 V, I_C = 20 mA, Z₀ = 50 Ω

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	0.516	-36.0	30.648	152.6	0.013	73.9	0.882	-20.2	0.305	33.83
0.2	0.427	-64.4	24.557	131.5	0.019	58.4	0.717	-31.1	0.577	31.10
0.3	0.333	-86.3	19.083	118.2	0.026	68.8	0.597	-36.8	0.701	28.72
0.4	0.277	-105.0	15.356	109.0	0.038	64.9	0.511	-39.1	0.773	26.09
0.5	0.243	-119.0	12.689	102.4	0.049	67.6	0.452	-39.5	0.820	24.15
0.6	0.224	-132.6	10.808	97.8	0.051	69.9	0.406	-39.4	0.907	23.24
0.7	0.208	-143.2	9.336	93.6	0.061	66.2	0.377	-39.5	0.931	21.85
0.8	0.205	-152.4	8.293	90.4	0.067	67.4	0.353	-39.4	0.959	20.91
0.9	0.205	-162.4	7.435	87.0	0.074	67.1	0.335	-38.8	0.978	20.00
1.0	0.207	-169.5	6.751	83.9	0.081	66.9	0.319	-39.1	0.992	19.19
1.1	0.201	-175.9	6.169	81.3	0.088	66.9	0.309	-39.2	1.007	17.92
1.2	0.204	177.5	5.685	78.8	0.095	66.4	0.297	-40.1	1.020	16.92
1.3	0.208	172.0	5.238	76.3	0.103	66.0	0.289	-41.0	1.022	16.14
1.4	0.213	166.5	4.868	74.2	0.111	65.0	0.278	-41.8	1.030	15.37
1.5	0.218	162.1	4.553	71.8	0.114	64.8	0.268	-43.6	1.053	14.58
1.6	0.228	156.7	4.273	69.5	0.125	63.9	0.259	-45.2	1.042	14.09
1.7	0.234	152.2	4.033	67.8	0.129	62.5	0.251	-46.8	1.060	13.47
1.8	0.246	148.1	3.824	65.5	0.135	62.7	0.241	-48.0	1.062	12.99
1.9	0.258	144.2	3.621	63.4	0.145	62.2	0.231	-49.8	1.055	12.56
2.0	0.267	142.3	3.445	61.1	0.152	60.8	0.224	-52.1	1.054	12.14
2.1	0.281	138.9	3.274	59.5	0.156	59.5	0.211	-54.1	1.067	11.63
2.2	0.293	137.3	3.130	57.7	0.165	59.6	0.208	-58.1	1.057	11.32
2.3	0.300	135.3	2.996	56.0	0.170	58.8	0.199	-58.7	1.067	10.89
2.4	0.310	132.9	2.877	54.0	0.176	57.0	0.186	-62.0	1.070	10.51
2.5	0.320	131.1	2.767	52.1	0.185	56.6	0.180	-64.0	1.060	10.25
2.6	0.325	128.6	2.648	50.5	0.189	55.5	0.173	-67.2	1.075	9.78
2.7	0.337	127.2	2.549	48.9	0.196	54.8	0.165	-69.2	1.076	9.47
2.8	0.345	125.6	2.454	47.1	0.202	53.5	0.161	-73.0	1.078	9.15
2.9	0.348	123.0	2.364	45.1	0.211	52.7	0.154	-75.4	1.075	8.82
3.0	0.363	120.8	2.310	43.2	0.217	51.9	0.153	-80.4	1.065	8.72
4.0	0.450	108.4	1.769	27.6	0.273	43.0	0.132	-136.7	1.062	6.59
5.0	0.519	94.8	1.408	12.4	0.332	31.0	0.190	-167.3	1.030	5.21

V_{CE} = 3 V, I_C = 1 mA, Z₀ = 50 Ω

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	0.983	-6.0	3.714	174.9	0.015	77.2	1.009	-3.9	0.162	23.84
0.2	0.988	-12.7	3.739	168.4	0.031	78.5	1.007	-6.2	0.129	20.79
0.3	0.975	-20.0	3.675	160.9	0.046	77.0	1.010	-10.0	0.116	19.01
0.4	0.950	-28.2	3.628	153.3	0.068	71.5	1.000	-13.6	0.181	17.28
0.5	0.915	-35.4	3.505	146.9	0.087	68.0	0.988	-17.3	0.197	16.06
0.6	0.872	-42.4	3.375	140.8	0.100	64.3	0.962	-20.4	0.225	15.28
0.7	0.829	-48.5	3.222	135.3	0.114	59.9	0.937	-23.8	0.269	14.52
0.8	0.795	-54.5	3.133	131.0	0.124	56.1	0.903	-26.8	0.303	14.03
0.9	0.759	-60.7	3.033	125.7	0.136	53.0	0.875	-29.2	0.342	13.50
1.0	0.731	-67.0	2.981	120.7	0.144	49.8	0.845	-31.4	0.381	13.17
1.1	0.702	-73.0	2.874	116.0	0.150	47.2	0.817	-33.8	0.410	12.82
1.2	0.666	-79.6	2.779	111.1	0.156	44.5	0.792	-35.7	0.449	12.51
1.3	0.631	-85.8	2.667	106.3	0.162	43.0	0.764	-37.6	0.483	12.17
1.4	0.597	-92.0	2.565	102.1	0.168	40.4	0.739	-39.7	0.522	11.83
1.5	0.563	-97.8	2.468	97.8	0.171	38.6	0.715	-41.7	0.565	11.59
1.6	0.530	-104.1	2.379	94.0	0.176	36.8	0.693	-43.3	0.603	11.30
1.7	0.503	-110.0	2.312	90.4	0.180	34.3	0.674	-45.3	0.640	11.10
1.8	0.481	-116.6	2.243	86.5	0.182	33.7	0.656	-46.6	0.667	10.92
1.9	0.458	-123.7	2.172	82.6	0.185	32.5	0.639	-48.2	0.696	10.70
2.0	0.445	-130.7	2.109	78.7	0.188	30.7	0.624	-50.1	0.720	10.50
2.1	0.426	-137.4	2.033	75.2	0.189	29.6	0.604	-51.6	0.766	10.32
2.2	0.418	-144.2	1.981	71.8	0.188	28.7	0.589	-53.9	0.791	10.22
2.3	0.408	-150.8	1.910	68.8	0.189	27.8	0.579	-54.8	0.822	10.05
2.4	0.401	-157.0	1.848	65.8	0.187	26.9	0.557	-56.7	0.875	9.94
2.5	0.397	-163.0	1.794	63.1	0.190	26.6	0.547	-58.5	0.893	9.75
2.6	0.393	-168.3	1.728	60.2	0.187	25.8	0.534	-60.2	0.950	9.65
2.7	0.393	-174.5	1.679	57.7	0.187	25.9	0.524	-61.7	0.977	9.53
2.8	0.391	-178.7	1.629	55.1	0.188	24.9	0.515	-63.1	1.012	8.71
2.9	0.389	175.7	1.574	52.0	0.190	25.5	0.502	-64.4	1.052	7.80
3.0	0.391	170.2	1.544	49.2	0.193	25.8	0.496	-66.6	1.051	7.65
4.0	0.462	134.2	1.222	27.6	0.206	29.2	0.433	-90.6	1.200	5.02
5.0	0.536	108.8	0.982	9.0	0.257	30.4	0.432	-118.1	1.122	3.70

V_{CE} = 3 V, I_C = 3 mA, Z_O = 50 Ω

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	0.900	-10.2	9.852	170.6	0.015	71.2	1.002	-6.6	0.248	28.19
0.2	0.890	-22.4	9.659	159.9	0.031	73.1	0.970	-12.7	0.199	24.98
0.3	0.838	-33.6	9.120	149.4	0.044	71.4	0.940	-19.0	0.197	23.15
0.4	0.770	-45.4	8.581	139.6	0.059	65.0	0.889	-24.3	0.288	21.60
0.5	0.701	-55.3	7.927	131.3	0.073	62.0	0.838	-28.6	0.346	20.38
0.6	0.635	-64.3	7.295	124.6	0.079	60.0	0.780	-32.4	0.394	19.65
0.7	0.575	-72.0	6.709	118.7	0.089	55.5	0.731	-35.5	0.474	18.78
0.8	0.527	-79.6	6.252	113.7	0.093	53.2	0.680	-38.0	0.534	18.27
0.9	0.483	-87.2	5.819	108.5	0.100	51.3	0.642	-39.6	0.590	17.63
1.0	0.447	-94.8	5.468	103.7	0.105	50.0	0.606	-41.1	0.638	17.17
1.1	0.411	-101.2	5.087	99.6	0.110	50.3	0.576	-42.5	0.682	16.67
1.2	0.382	-108.8	4.784	95.4	0.114	48.1	0.548	-43.7	0.728	16.23
1.3	0.354	-116.1	4.471	91.5	0.119	48.2	0.526	-45.1	0.765	15.74
1.4	0.330	-122.6	4.208	88.1	0.124	47.6	0.502	-46.3	0.805	15.30
1.5	0.308	-129.7	3.957	84.9	0.127	47.3	0.482	-47.5	0.848	14.93
1.6	0.291	-137.9	3.746	81.7	0.133	47.3	0.463	-49.0	0.873	14.48
1.7	0.278	-145.1	3.567	79.1	0.137	45.7	0.447	-50.2	0.906	14.17
1.8	0.273	-152.8	3.404	76.1	0.140	46.8	0.432	-51.4	0.928	13.85
1.9	0.265	-161.3	3.250	73.2	0.146	46.7	0.417	-52.4	0.945	13.46
2.0	0.268	-167.9	3.101	70.2	0.151	45.9	0.406	-54.2	0.960	13.12
2.1	0.266	-175.5	2.967	67.6	0.154	44.8	0.387	-55.4	0.994	12.85
2.2	0.274	178.5	2.857	65.2	0.159	45.6	0.379	-57.7	0.997	12.55
2.3	0.275	173.5	2.747	62.9	0.163	45.3	0.369	-58.4	1.015	11.53
2.4	0.283	167.7	2.632	60.7	0.168	44.6	0.353	-60.3	1.034	10.84
2.5	0.289	163.5	2.541	58.5	0.173	44.1	0.343	-61.9	1.041	10.43
2.6	0.294	159.3	2.438	56.3	0.175	43.5	0.333	-63.7	1.066	9.87
2.7	0.307	154.2	2.352	54.2	0.179	43.9	0.323	-65.2	1.075	9.51
2.8	0.310	151.5	2.271	52.1	0.184	42.8	0.317	-66.8	1.085	9.14
2.9	0.313	146.8	2.191	49.7	0.192	43.2	0.306	-68.1	1.090	8.75
3.0	0.324	142.8	2.142	47.4	0.196	43.1	0.303	-70.9	1.084	8.61
4.0	0.417	119.9	1.654	29.3	0.242	38.7	0.241	-101.0	1.107	6.36
5.0	0.494	101.8	1.325	12.7	0.300	31.1	0.259	-131.5	1.050	5.08

V_{CE} = 3 V, I_C = 5 mA, Z_O = 50 Ω

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	0.856	-14.5	14.101	167.7	0.023	69.3	0.984	-9.1	0.309	27.95
0.2	0.814	-29.0	13.540	154.3	0.029	68.9	0.934	-17.0	0.260	26.76
0.3	0.730	-42.7	12.348	142.3	0.039	65.2	0.876	-23.9	0.309	24.98
0.4	0.649	-55.9	11.237	131.5	0.052	61.1	0.804	-29.6	0.394	23.37
0.5	0.569	-66.7	10.036	123.2	0.064	60.6	0.738	-33.7	0.459	21.94
0.6	0.501	-76.1	8.981	116.4	0.070	58.4	0.673	-36.7	0.539	21.11
0.7	0.444	-84.6	8.076	110.8	0.078	56.5	0.620	-39.0	0.608	20.13
0.8	0.401	-92.9	7.377	106.1	0.081	54.8	0.574	-40.7	0.674	19.60
0.9	0.361	-101.1	6.766	101.4	0.089	54.3	0.540	-41.5	0.721	18.82
1.0	0.333	-109.0	6.263	97.2	0.093	54.0	0.507	-42.7	0.767	18.27
1.1	0.305	-115.7	5.783	93.3	0.098	55.3	0.482	-43.5	0.808	17.72
1.2	0.281	-123.7	5.380	89.8	0.102	53.8	0.459	-44.4	0.851	17.22
1.3	0.262	-131.7	4.995	86.4	0.108	53.9	0.442	-45.5	0.877	16.64
1.4	0.247	-138.6	4.681	83.5	0.115	53.6	0.421	-46.4	0.905	16.10
1.5	0.236	-146.6	4.391	80.7	0.118	52.9	0.405	-47.5	0.938	15.69
1.6	0.228	-155.8	4.137	77.9	0.127	52.8	0.389	-48.8	0.948	15.13
1.7	0.223	-163.0	3.915	75.7	0.130	52.2	0.377	-50.2	0.977	14.80
1.8	0.227	-170.7	3.727	72.8	0.134	53.1	0.363	-51.1	0.992	14.43
1.9	0.225	-178.6	3.541	70.1	0.142	52.2	0.352	-52.4	0.999	13.97
2.0	0.235	174.8	3.385	67.8	0.147	51.4	0.341	-54.1	1.008	13.07
2.1	0.239	168.3	3.221	65.3	0.152	51.4	0.324	-55.4	1.030	12.21
2.2	0.250	164.0	3.091	63.1	0.157	51.5	0.318	-57.8	1.033	11.83
2.3	0.257	159.1	2.959	61.0	0.162	50.5	0.308	-58.6	1.042	11.35
2.4	0.265	155.2	2.838	59.0	0.168	49.7	0.293	-60.7	1.054	10.85
2.5	0.275	151.4	2.747	56.9	0.174	49.4	0.285	-62.2	1.053	10.58
2.6	0.281	148.1	2.626	54.9	0.178	48.7	0.276	-64.4	1.071	10.06
2.7	0.294	144.4	2.533	53.2	0.183	48.6	0.265	-65.8	1.077	9.72
2.8	0.301	141.6	2.438	51.2	0.188	47.5	0.261	-67.6	1.081	9.39
2.9	0.304	137.8	2.348	49.1	0.197	47.5	0.251	-69.3	1.084	9.00
3.0	0.315	134.5	2.299	46.9	0.202	47.0	0.248	-72.4	1.075	8.89
4.0	0.412	115.7	1.765	29.9	0.253	40.7	0.193	-108.2	1.083	6.68
5.0	0.487	99.2	1.413	13.7	0.312	31.3	0.219	-140.5	1.037	5.38

V_{CE} = 3 V, I_C = 7 mA, Z_O = 50 Ω

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	0.798	-18.2	18.146	164.7	0.017	102.8	0.970	-12.1	-0.176	30.39
0.2	0.732	-35.2	16.914	149.1	0.024	65.3	0.893	-20.6	0.319	28.41
0.3	0.637	-50.5	14.932	136.1	0.037	66.3	0.811	-28.1	0.361	26.11
0.4	0.540	-64.8	13.112	125.2	0.047	61.5	0.727	-33.2	0.479	24.48
0.5	0.462	-76.1	11.427	117.0	0.057	60.6	0.657	-36.5	0.564	23.00
0.6	0.401	-86.2	10.040	110.7	0.061	61.2	0.592	-38.9	0.643	22.13
0.7	0.350	-95.3	8.890	105.3	0.070	58.7	0.545	-40.3	0.714	21.05
0.8	0.316	-104.1	8.044	101.0	0.074	59.3	0.503	-41.3	0.770	20.38
0.9	0.285	-112.1	7.293	96.8	0.081	58.1	0.472	-41.8	0.814	19.52
1.0	0.265	-121.5	6.715	92.9	0.086	57.4	0.444	-42.5	0.853	18.93
1.1	0.243	-128.5	6.158	89.5	0.092	58.7	0.425	-43.1	0.884	18.25
1.2	0.226	-136.5	5.705	86.4	0.096	57.7	0.405	-43.8	0.921	17.72
1.3	0.215	-145.4	5.277	83.2	0.104	58.0	0.391	-44.6	0.935	17.04
1.4	0.207	-153.2	4.924	80.7	0.111	57.9	0.373	-45.1	0.956	16.47
1.5	0.202	-160.9	4.610	78.0	0.115	57.6	0.359	-46.7	0.982	16.01
1.6	0.200	-169.4	4.349	75.4	0.123	57.3	0.346	-47.8	0.989	15.48
1.7	0.203	-177.0	4.116	73.4	0.128	56.2	0.335	-49.1	1.005	14.66
1.8	0.206	175.8	3.903	71.0	0.133	56.8	0.324	-50.1	1.019	13.83
1.9	0.213	168.1	3.699	68.3	0.140	56.7	0.312	-51.4	1.026	13.24
2.0	0.224	163.9	3.532	66.0	0.147	55.5	0.303	-53.2	1.023	12.87
2.1	0.235	158.4	3.373	64.0	0.151	54.7	0.286	-54.7	1.041	12.25
2.2	0.244	154.9	3.222	61.9	0.157	54.6	0.283	-57.6	1.041	11.87
2.3	0.250	150.6	3.082	59.9	0.164	53.8	0.273	-58.1	1.048	11.41
2.4	0.262	147.1	2.953	58.1	0.169	52.9	0.259	-60.5	1.059	10.95
2.5	0.270	143.9	2.857	56.0	0.176	52.2	0.250	-62.2	1.055	10.67
2.6	0.276	141.3	2.732	54.2	0.180	51.6	0.241	-64.4	1.073	10.17
2.7	0.291	138.2	2.633	52.5	0.185	51.4	0.233	-66.4	1.074	9.87
2.8	0.297	136.1	2.539	50.5	0.192	50.0	0.228	-67.9	1.074	9.56
2.9	0.301	132.3	2.447	48.3	0.200	50.0	0.218	-69.9	1.077	9.19
3.0	0.313	129.6	2.401	46.4	0.206	49.2	0.218	-73.7	1.062	9.13
4.0	0.408	113.4	1.836	30.1	0.259	41.8	0.167	-114.3	1.069	6.90
5.0	0.485	98.1	1.467	14.4	0.317	31.5	0.200	-147.1	1.030	5.60

V_{CE} = 3 V, I_C = 10 mA, Z_O = 50 Ω

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	0.724	-22.6	22.804	161.2	0.016	78.8	0.949	-13.9	0.173	31.43
0.2	0.637	-43.2	20.446	143.5	0.023	65.0	0.844	-24.1	0.362	29.57
0.3	0.527	-59.2	17.254	129.6	0.034	70.7	0.742	-31.5	0.430	27.04
0.4	0.436	-74.6	14.654	119.2	0.042	62.0	0.648	-35.6	0.586	25.40
0.5	0.364	-85.9	12.477	111.4	0.052	64.0	0.582	-38.3	0.661	23.78
0.6	0.314	-97.1	10.802	105.6	0.057	64.6	0.521	-39.4	0.742	22.76
0.7	0.273	-106.9	9.466	100.7	0.065	61.9	0.481	-40.4	0.800	21.61
0.8	0.249	-116.5	8.475	97.0	0.069	62.1	0.445	-40.9	0.857	20.92
0.9	0.227	-125.9	7.653	93.2	0.078	62.4	0.418	-40.9	0.880	19.93
1.0	0.213	-135.3	6.988	89.6	0.082	61.6	0.397	-41.2	0.919	19.33
1.1	0.200	-142.2	6.398	86.6	0.089	62.5	0.380	-41.5	0.937	18.56
1.2	0.190	-150.9	5.927	83.7	0.094	61.4	0.364	-41.9	0.964	17.99
1.3	0.186	-159.5	5.467	80.7	0.102	61.5	0.352	-43.0	0.974	17.30
1.4	0.184	-166.6	5.100	78.4	0.109	61.0	0.337	-43.6	0.985	16.68
1.5	0.185	-174.4	4.773	75.8	0.114	61.3	0.325	-45.2	1.004	15.81
1.6	0.188	176.6	4.489	73.6	0.122	60.4	0.314	-46.2	1.009	15.07
1.7	0.192	169.9	4.233	71.5	0.126	59.3	0.305	-47.8	1.029	14.23
1.8	0.200	164.7	4.012	69.3	0.132	59.8	0.294	-48.7	1.034	13.69
1.9	0.210	158.2	3.812	66.8	0.141	59.2	0.283	-50.2	1.031	13.24
2.0	0.220	154.5	3.633	64.8	0.147	58.0	0.275	-52.0	1.035	12.79
2.1	0.234	149.7	3.457	63.0	0.151	57.8	0.260	-53.9	1.049	12.24
2.2	0.244	147.2	3.314	60.9	0.159	57.3	0.256	-56.6	1.044	11.92
2.3	0.253	143.8	3.164	59.0	0.164	56.4	0.248	-57.3	1.050	11.48
2.4	0.264	140.9	3.042	57.1	0.171	55.1	0.233	-60.0	1.055	11.08
2.5	0.272	138.4	2.924	55.3	0.179	54.4	0.226	-61.9	1.050	10.77
2.6	0.278	136.4	2.800	53.5	0.182	53.7	0.218	-64.2	1.068	10.28
2.7	0.293	133.4	2.701	51.9	0.188	53.3	0.210	-66.1	1.065	10.01
2.8	0.300	131.6	2.604	50.1	0.193	52.0	0.205	-68.2	1.069	9.68
2.9	0.304	128.2	2.506	47.9	0.204	51.7	0.195	-70.3	1.066	9.33
3.0	0.318	125.9	2.445	46.1	0.210	50.9	0.194	-74.1	1.057	9.21
4.0	0.411	111.4	1.876	30.1	0.264	42.7	0.149	-119.4	1.058	7.04
5.0	0.485	97.2	1.496	14.8	0.322	31.9	0.190	-152.6	1.026	5.69

$V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$, $Z_o = 50\ \Omega$

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	0.554	-33.6	31.372	153.5	0.012	66.8	0.894	-19.2	0.346	34.12
0.2	0.443	-59.7	25.428	132.8	0.021	62.5	0.738	-29.1	0.531	30.91
0.3	0.338	-78.7	19.843	119.3	0.025	67.5	0.621	-34.9	0.688	28.95
0.4	0.280	-96.7	16.062	110.1	0.036	65.9	0.532	-36.9	0.764	26.46
0.5	0.236	-110.2	13.306	103.6	0.044	68.1	0.476	-37.2	0.835	24.85
0.6	0.208	-123.3	11.340	98.7	0.051	70.3	0.430	-37.3	0.883	23.43
0.7	0.192	-134.9	9.808	94.5	0.059	68.1	0.402	-37.1	0.920	22.24
0.8	0.185	-144.7	8.729	91.3	0.064	69.1	0.374	-37.1	0.954	21.32
0.9	0.178	-154.8	7.822	88.0	0.073	67.3	0.359	-36.5	0.965	20.33
1.0	0.178	-162.6	7.104	85.0	0.080	66.8	0.343	-36.8	0.978	19.50
1.1	0.172	-169.6	6.485	82.3	0.086	67.7	0.332	-36.9	0.998	18.79
1.2	0.174	-177.5	5.979	79.7	0.092	67.2	0.322	-37.6	1.012	17.47
1.3	0.177	175.6	5.502	77.4	0.100	66.3	0.313	-38.7	1.015	16.66
1.4	0.181	169.9	5.132	75.1	0.107	65.7	0.301	-39.3	1.020	15.92
1.5	0.185	164.2	4.792	72.9	0.111	65.3	0.291	-40.8	1.043	15.07
1.6	0.196	157.8	4.505	70.7	0.122	64.7	0.281	-42.0	1.030	14.62
1.7	0.205	153.4	4.242	69.0	0.125	63.2	0.275	-43.6	1.046	13.97
1.8	0.216	149.8	4.033	66.7	0.132	63.5	0.264	-44.9	1.047	13.52
1.9	0.226	145.2	3.814	64.8	0.140	62.8	0.256	-46.2	1.047	13.03
2.0	0.235	142.9	3.628	62.6	0.147	62.0	0.248	-48.6	1.047	12.59
2.1	0.250	139.1	3.454	61.1	0.153	61.2	0.234	-50.7	1.055	12.11
2.2	0.260	138.2	3.310	58.9	0.159	60.4	0.230	-53.9	1.053	11.78
2.3	0.267	135.2	3.160	57.1	0.167	59.4	0.223	-54.6	1.053	11.37
2.4	0.279	133.3	3.024	55.3	0.172	58.0	0.210	-57.0	1.060	10.95
2.5	0.290	131.4	2.925	53.7	0.179	57.3	0.203	-59.3	1.054	10.71
2.6	0.295	129.5	2.793	51.9	0.184	56.5	0.195	-61.7	1.067	10.23
2.7	0.309	127.3	2.696	50.5	0.190	55.6	0.187	-64.0	1.065	9.95
2.8	0.315	126.2	2.593	48.7	0.196	54.2	0.183	-66.2	1.067	9.63
2.9	0.322	123.2	2.502	46.5	0.204	54.1	0.173	-68.7	1.068	9.29
3.0	0.334	121.1	2.440	44.8	0.214	53.1	0.172	-73.0	1.050	9.21
4.0	0.423	109.1	1.869	29.4	0.267	44.2	0.133	-124.2	1.056	7.00
5.0	0.495	95.9	1.487	14.3	0.327	32.4	0.181	-157.8	1.023	5.65

S-PARAMETERS Q2

V_{CE} = 1 V, I_C = 1 mA, Z_O = 50 Ω

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	0.991	-19.4	3.621	166.8	0.048	87.1	0.999	-8.5	-0.113	18.76
0.2	0.984	-39.3	3.495	152.7	0.088	63.3	0.962	-15.4	0.147	15.98
0.3	0.946	-58.5	3.218	139.1	0.122	56.7	0.924	-22.5	0.113	14.22
0.4	0.896	-76.2	2.924	126.8	0.152	46.4	0.872	-28.3	0.171	12.84
0.5	0.851	-91.2	2.618	116.8	0.175	38.8	0.818	-33.2	0.208	11.75
0.6	0.816	-103.4	2.358	108.8	0.183	33.1	0.766	-37.2	0.241	11.09
0.7	0.790	-114.1	2.147	101.5	0.193	27.5	0.724	-40.7	0.288	10.45
0.8	0.787	-123.4	1.993	95.4	0.195	22.7	0.682	-43.6	0.316	10.10
0.9	0.774	-132.4	1.841	88.8	0.197	19.1	0.652	-46.3	0.356	9.69
1.0	0.771	-140.6	1.724	82.5	0.196	15.9	0.626	-48.9	0.387	9.45
1.1	0.760	-147.8	1.599	77.3	0.192	13.5	0.606	-51.4	0.431	9.21
1.2	0.751	-154.4	1.493	72.3	0.189	10.8	0.589	-53.9	0.484	8.98
1.3	0.744	-160.5	1.387	67.4	0.184	9.6	0.573	-56.6	0.542	8.78
1.4	0.738	-165.7	1.311	63.5	0.179	8.3	0.557	-59.7	0.598	8.65
1.5	0.737	-170.7	1.236	59.5	0.171	7.0	0.549	-62.8	0.657	8.59
1.6	0.737	-175.7	1.171	55.6	0.166	7.1	0.538	-65.6	0.713	8.50
1.7	0.741	179.8	1.123	52.3	0.159	6.3	0.531	-69.4	0.755	8.50
1.8	0.750	175.0	1.074	48.4	0.151	7.1	0.526	-72.6	0.785	8.51
1.9	0.750	170.2	1.021	44.5	0.144	8.9	0.522	-76.2	0.854	8.49
2.0	0.752	166.5	0.970	41.1	0.140	10.8	0.520	-80.3	0.918	8.42
2.1	0.752	162.8	0.920	38.0	0.135	13.5	0.513	-84.5	1.012	7.69
2.2	0.756	159.4	0.887	35.2	0.129	17.9	0.515	-88.9	1.064	6.84
2.3	0.757	156.5	0.849	32.6	0.127	21.9	0.511	-93.0	1.131	6.05
2.4	0.767	153.8	0.815	30.2	0.126	25.9	0.509	-98.0	1.141	5.82
2.5	0.772	151.1	0.790	28.1	0.130	31.0	0.505	-102.7	1.130	5.64
2.6	0.771	148.2	0.755	26.0	0.132	35.1	0.507	-107.2	1.193	4.92
2.7	0.782	145.1	0.728	23.8	0.137	39.7	0.507	-111.8	1.157	4.86
2.8	0.782	143.2	0.701	22.1	0.146	42.4	0.511	-116.4	1.139	4.54
2.9	0.781	140.7	0.673	20.0	0.157	46.5	0.511	-120.8	1.145	4.02
3.0	0.785	137.9	0.652	17.9	0.170	48.1	0.519	-125.6	1.079	4.13
4.0	0.824	119.0	0.517	9.4	0.299	46.5	0.598	-173.1	0.911	2.38
5.0	0.820	104.5	0.470	6.6	0.415	29.6	0.679	153.2	0.966	0.54

V_{CE} = 1 V, I_C = 3 mA, Z_O = 50 Ω

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	0.905	-33.5	10.568	158.4	0.046	75.5	0.939	-19.2	0.021	23.62
0.2	0.856	-64.3	9.334	138.9	0.072	54.9	0.817	-32.8	0.153	21.11
0.3	0.777	-88.9	7.733	123.8	0.095	45.6	0.697	-43.2	0.223	19.11
0.4	0.715	-108.7	6.456	112.2	0.108	39.4	0.592	-50.5	0.300	17.76
0.5	0.674	-123.2	5.436	103.7	0.118	35.9	0.512	-55.3	0.379	16.64
0.6	0.654	-134.4	4.702	97.4	0.119	33.8	0.447	-58.9	0.450	15.96
0.7	0.641	-143.6	4.126	91.9	0.124	32.5	0.400	-61.7	0.519	15.23
0.8	0.642	-150.9	3.714	87.1	0.128	31.5	0.363	-64.3	0.567	14.64
0.9	0.636	-158.3	3.350	82.2	0.130	31.9	0.331	-66.2	0.631	14.11
1.0	0.636	-164.4	3.059	77.6	0.133	31.7	0.309	-69.0	0.678	13.63
1.1	0.631	-169.8	2.808	73.8	0.135	32.6	0.292	-70.7	0.737	13.19
1.2	0.626	-174.9	2.601	70.1	0.136	32.8	0.277	-73.5	0.799	12.81
1.3	0.627	-179.2	2.395	66.3	0.142	33.7	0.264	-76.5	0.835	12.27
1.4	0.625	177.0	2.234	63.3	0.146	34.9	0.251	-79.8	0.883	11.86
1.5	0.628	173.1	2.100	60.2	0.146	35.8	0.242	-83.4	0.931	11.57
1.6	0.633	169.2	1.983	57.0	0.151	36.1	0.233	-87.3	0.953	11.19
1.7	0.638	165.9	1.883	54.5	0.154	36.4	0.227	-91.5	0.977	10.87
1.8	0.647	162.2	1.790	51.2	0.156	37.9	0.221	-95.2	0.994	10.58
1.9	0.651	158.5	1.696	48.4	0.163	39.2	0.216	-99.6	1.011	9.55
2.0	0.657	155.7	1.611	45.2	0.169	39.7	0.212	-104.5	1.017	9.00
2.1	0.659	152.9	1.531	42.6	0.173	39.9	0.210	-110.1	1.045	8.16
2.2	0.663	150.6	1.464	40.1	0.179	40.9	0.212	-115.0	1.054	7.71
2.3	0.669	148.4	1.399	37.7	0.186	41.8	0.209	-119.4	1.058	7.29
2.4	0.678	146.3	1.353	35.6	0.192	42.4	0.213	-125.6	1.046	7.17
2.5	0.682	144.1	1.307	33.2	0.200	42.5	0.215	-130.9	1.038	6.95
2.6	0.684	142.1	1.250	31.1	0.204	42.8	0.220	-135.4	1.060	6.37
2.7	0.695	139.7	1.209	28.7	0.212	43.4	0.223	-140.7	1.041	6.32
2.8	0.695	138.2	1.161	26.7	0.219	42.9	0.232	-144.9	1.051	5.87
2.9	0.696	136.1	1.126	24.4	0.229	43.4	0.237	-149.6	1.047	5.59
3.0	0.704	133.7	1.097	22.1	0.238	43.2	0.250	-153.8	1.022	5.73
4.0	0.762	118.6	0.845	6.2	0.317	37.7	0.383	168.8	0.932	4.25
5.0	0.787	105.6	0.673	-3.7	0.404	25.2	0.507	145.0	0.918	2.22

V_{CE} = 1 V, I_C = 5 mA, Z_O = 50 Ω

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	0.857	-40.6	14.145	154.1	0.043	71.9	0.902	-24.7	0.065	25.14
0.2	0.790	-76.0	11.832	132.6	0.065	51.7	0.735	-41.3	0.194	22.59
0.3	0.706	-102.1	9.354	117.7	0.082	44.1	0.597	-52.2	0.289	20.60
0.4	0.656	-121.4	7.570	107.1	0.091	39.6	0.488	-59.9	0.388	19.19
0.5	0.624	-134.9	6.276	99.4	0.099	38.4	0.411	-64.4	0.482	18.02
0.6	0.612	-144.9	5.368	93.7	0.103	38.2	0.352	-68.6	0.563	17.17
0.7	0.605	-153.2	4.679	88.8	0.111	37.9	0.308	-71.1	0.629	16.27
0.8	0.607	-159.8	4.194	84.5	0.113	37.9	0.277	-74.4	0.685	15.70
0.9	0.604	-166.3	3.768	80.0	0.119	39.0	0.250	-76.9	0.737	15.00
1.0	0.608	-171.8	3.427	75.9	0.123	39.4	0.229	-80.0	0.780	14.45
1.1	0.602	-176.4	3.125	72.3	0.128	40.5	0.213	-81.9	0.834	13.87
1.2	0.603	179.2	2.887	68.9	0.133	40.8	0.202	-85.8	0.872	13.38
1.3	0.599	175.1	2.656	65.5	0.139	41.9	0.190	-89.9	0.917	12.83
1.4	0.603	171.6	2.477	62.7	0.145	42.1	0.179	-93.9	0.940	12.31
1.5	0.607	168.5	2.321	59.8	0.150	42.4	0.172	-99.2	0.968	11.91
1.6	0.614	164.6	2.192	57.0	0.157	42.9	0.164	-104.1	0.974	11.44
1.7	0.619	161.4	2.080	54.4	0.163	42.5	0.160	-109.2	0.986	11.06
1.8	0.628	158.0	1.973	51.4	0.167	43.5	0.156	-114.1	1.001	10.55
1.9	0.629	154.6	1.870	48.5	0.174	44.3	0.155	-120.5	1.020	9.45
2.0	0.637	152.1	1.777	45.7	0.181	43.6	0.154	-125.6	1.018	9.10
2.1	0.641	149.4	1.682	43.3	0.188	43.8	0.155	-132.6	1.036	8.37
2.2	0.646	147.7	1.609	40.8	0.193	43.7	0.161	-137.6	1.038	8.00
2.3	0.650	145.1	1.535	38.5	0.200	43.7	0.160	-142.9	1.054	7.44
2.4	0.657	143.2	1.480	36.3	0.207	43.7	0.167	-148.9	1.046	7.23
2.5	0.666	141.1	1.427	34.2	0.215	43.3	0.170	-154.2	1.035	7.07
2.6	0.662	138.8	1.363	32.2	0.220	43.6	0.178	-158.1	1.069	6.32
2.7	0.669	137.2	1.317	30.3	0.226	44.0	0.183	-162.8	1.066	6.07
2.8	0.672	136.3	1.279	28.5	0.236	43.3	0.194	-165.2	1.048	5.99
2.9	0.675	134.2	1.242	26.1	0.247	43.4	0.204	-169.8	1.042	5.77
3.0	0.685	132.1	1.213	23.8	0.255	42.5	0.217	-173.0	1.017	5.98
4.0	0.749	117.2	0.930	6.9	0.322	35.2	0.351	156.9	0.954	4.61
5.0	0.779	105.0	0.744	-3.7	0.400	23.3	0.468	138.0	0.929	2.70

V_{CE} = 1 V, I_C = 7 mA, Z_O = 50 Ω

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	0.793	-52.5	18.676	148.3	0.036	75.5	0.849	-32.7	-0.011	27.17
0.2	0.705	-91.2	14.443	125.2	0.055	47.4	0.631	-51.5	0.271	24.19
0.3	0.632	-116.9	10.828	111.4	0.068	44.5	0.490	-63.1	0.395	22.04
0.4	0.601	-134.5	8.561	101.8	0.078	42.2	0.386	-71.2	0.513	20.42
0.5	0.581	-146.5	6.991	95.3	0.085	43.9	0.319	-76.8	0.612	19.13
0.6	0.576	-155.0	5.919	90.4	0.090	44.9	0.268	-81.6	0.699	18.19
0.7	0.573	-162.1	5.127	86.0	0.098	44.8	0.232	-85.3	0.757	17.18
0.8	0.576	-167.8	4.573	82.0	0.104	45.6	0.206	-89.8	0.804	16.45
0.9	0.578	-173.2	4.096	78.0	0.112	46.9	0.183	-94.2	0.842	15.64
1.0	0.584	-177.7	3.709	74.4	0.118	47.6	0.169	-98.9	0.871	14.96
1.1	0.579	178.1	3.394	71.0	0.126	48.5	0.156	-102.0	0.907	14.30
1.2	0.579	174.0	3.123	68.0	0.132	48.8	0.147	-107.7	0.938	13.73
1.3	0.581	170.8	2.868	64.9	0.142	49.4	0.143	-113.0	0.956	13.06
1.4	0.581	167.7	2.675	62.4	0.150	49.2	0.135	-118.4	0.974	12.51
1.5	0.588	164.9	2.510	59.8	0.154	48.8	0.134	-125.1	0.995	12.11
1.6	0.593	161.4	2.353	57.0	0.165	49.0	0.131	-131.4	0.995	11.53
1.7	0.600	158.6	2.240	54.6	0.171	48.2	0.135	-137.9	1.003	10.85
1.8	0.609	155.5	2.125	51.7	0.177	48.7	0.134	-143.8	1.009	10.23
1.9	0.613	152.5	2.012	49.1	0.186	48.3	0.136	-149.7	1.012	9.68
2.0	0.621	150.3	1.915	46.4	0.193	47.6	0.139	-154.8	1.011	9.33
2.1	0.624	147.8	1.810	44.2	0.200	46.8	0.147	-161.6	1.029	8.51
2.2	0.631	146.1	1.729	41.9	0.208	47.1	0.155	-165.1	1.026	8.20
2.3	0.635	143.8	1.648	39.6	0.216	46.5	0.157	-169.7	1.034	7.70
2.4	0.642	142.4	1.591	37.6	0.224	45.8	0.170	-174.5	1.026	7.53
2.5	0.650	140.5	1.540	35.6	0.233	45.4	0.175	-178.7	1.015	7.46
2.6	0.651	138.4	1.476	33.5	0.237	44.8	0.185	178.9	1.032	6.85
2.7	0.664	136.6	1.422	31.2	0.244	44.2	0.193	174.3	1.022	6.74
2.8	0.662	135.3	1.368	29.3	0.252	43.8	0.202	172.7	1.030	6.29
2.9	0.663	133.1	1.327	27.2	0.263	43.4	0.212	169.6	1.027	6.02
3.0	0.671	131.1	1.297	25.1	0.270	42.4	0.222	167.6	1.014	6.08
4.0	0.733	117.7	1.008	8.8	0.335	34.3	0.353	146.8	0.962	4.79
5.0	0.768	105.6	0.811	-2.8	0.404	22.0	0.456	132.1	0.934	3.03

V_{CE} = 1 V, I_C = 10 mA, Z_O = 50 Ω

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	0.732	-63.5	22.710	143.1	0.039	53.8	0.785	-39.4	0.253	27.70
0.2	0.643	-104.7	16.341	119.4	0.049	45.4	0.550	-60.5	0.351	25.20
0.3	0.586	-128.8	11.832	106.8	0.057	45.6	0.413	-72.6	0.500	23.14
0.4	0.571	-144.3	9.170	98.5	0.067	45.5	0.319	-81.7	0.618	21.33
0.5	0.557	-155.0	7.454	92.6	0.076	48.1	0.261	-88.2	0.716	19.89
0.6	0.558	-162.1	6.290	88.1	0.083	50.2	0.219	-94.3	0.789	18.80
0.7	0.557	-168.5	5.434	84.0	0.093	50.7	0.189	-99.9	0.834	17.67
0.8	0.564	-173.4	4.821	80.5	0.100	52.0	0.168	-106.1	0.870	16.83
0.9	0.565	-178.1	4.311	76.8	0.109	52.4	0.151	-111.7	0.897	15.96
1.0	0.570	177.9	3.906	73.2	0.118	52.9	0.142	-118.2	0.914	15.19
1.1	0.566	174.0	3.558	70.2	0.126	53.6	0.132	-122.8	0.948	14.52
1.2	0.568	170.6	3.282	67.4	0.135	53.2	0.129	-130.1	0.962	13.86
1.3	0.568	167.6	3.008	64.4	0.144	53.4	0.127	-136.0	0.980	13.19
1.4	0.570	164.7	2.811	62.0	0.154	53.2	0.125	-142.4	0.987	12.61
1.5	0.579	162.0	2.626	59.5	0.160	53.1	0.128	-148.7	0.999	12.14
1.6	0.584	158.9	2.467	56.9	0.170	52.0	0.132	-154.8	0.999	11.61
1.7	0.592	156.1	2.335	54.6	0.177	51.2	0.138	-160.0	1.006	10.74
1.8	0.600	153.5	2.219	51.7	0.184	51.1	0.141	-165.6	1.009	10.24
1.9	0.604	150.5	2.103	49.4	0.194	50.9	0.146	-171.0	1.010	9.73
2.0	0.611	148.4	1.992	46.7	0.202	49.7	0.154	-174.7	1.013	9.25
2.1	0.616	146.2	1.892	44.6	0.209	48.4	0.163	179.9	1.024	8.63
2.2	0.623	144.4	1.804	42.3	0.218	48.5	0.171	177.5	1.019	8.34
2.3	0.629	142.5	1.728	40.1	0.227	48.0	0.175	173.2	1.018	8.00
2.4	0.636	141.0	1.662	38.2	0.234	46.9	0.188	170.0	1.016	7.73
2.5	0.644	139.2	1.607	36.1	0.243	45.9	0.195	166.8	1.006	7.71
2.6	0.646	137.4	1.537	34.2	0.247	45.5	0.205	165.1	1.021	7.03
2.7	0.654	135.4	1.483	32.1	0.256	44.8	0.214	161.6	1.017	6.83
2.8	0.655	134.1	1.427	30.2	0.263	43.5	0.222	160.0	1.022	6.44
2.9	0.654	132.4	1.381	28.1	0.272	43.3	0.232	157.4	1.027	6.04
3.0	0.664	130.2	1.355	26.0	0.280	42.3	0.243	155.8	1.011	6.22
4.0	0.726	117.2	1.050	10.0	0.343	33.4	0.362	139.8	0.969	4.86
5.0	0.757	105.5	0.850	-1.8	0.406	20.9	0.453	127.1	0.949	3.21

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

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	0.581	-93.3	30.515	130.3	0.025	59.7	0.642	-56.5	0.285	30.92
0.2	0.551	-131.2	18.907	109.2	0.036	45.6	0.399	-80.4	0.551	27.19
0.3	0.535	-150.6	13.075	99.3	0.043	56.4	0.293	-95.0	0.745	24.85
0.4	0.535	-161.8	9.967	92.8	0.057	56.0	0.229	-107.7	0.814	22.41
0.5	0.535	-169.3	8.020	88.1	0.069	58.7	0.192	-117.4	0.869	20.66
0.6	0.537	-174.2	6.742	84.4	0.078	62.2	0.171	-127.6	0.920	19.39
0.7	0.540	-178.7	5.797	81.0	0.088	61.4	0.155	-135.9	0.944	18.20
0.8	0.549	177.6	5.132	77.8	0.099	61.0	0.148	-143.1	0.949	17.16
0.9	0.551	174.1	4.565	74.8	0.109	61.5	0.145	-151.1	0.967	16.24
1.0	0.558	170.8	4.128	71.5	0.119	61.1	0.145	-156.9	0.972	15.41
1.1	0.555	167.8	3.762	68.7	0.130	61.2	0.143	-161.8	0.983	14.62
1.2	0.557	165.0	3.470	66.2	0.139	60.0	0.148	-167.5	0.991	13.97
1.3	0.559	162.3	3.178	63.4	0.151	59.8	0.152	-171.6	0.997	13.24
1.4	0.563	160.1	2.966	61.4	0.162	58.2	0.157	-176.9	0.997	12.63
1.5	0.568	157.5	2.769	58.8	0.170	57.5	0.164	179.8	1.005	11.67
1.6	0.576	154.9	2.607	56.5	0.182	56.7	0.172	176.0	1.000	11.56
1.7	0.583	152.4	2.461	54.3	0.188	54.7	0.180	172.5	1.006	10.69
1.8	0.591	150.1	2.329	51.5	0.197	54.5	0.187	168.9	1.006	10.26
1.9	0.598	147.3	2.213	49.3	0.209	53.3	0.195	166.1	1.000	10.19
2.0	0.604	145.4	2.097	46.8	0.216	52.1	0.203	163.3	1.005	9.44
2.1	0.609	143.4	1.983	44.9	0.223	50.9	0.215	160.1	1.017	8.70
2.2	0.617	142.1	1.894	42.8	0.232	50.2	0.225	158.9	1.013	8.44
2.3	0.620	140.3	1.806	40.7	0.241	49.1	0.231	155.3	1.017	7.96
2.4	0.629	138.9	1.745	38.7	0.249	47.7	0.242	153.1	1.010	7.84
2.5	0.638	137.2	1.683	36.9	0.259	47.1	0.249	150.8	1.001	7.92
2.6	0.638	135.5	1.610	35.0	0.265	46.1	0.258	149.4	1.012	7.17
2.7	0.649	133.8	1.552	32.8	0.271	45.0	0.267	146.8	1.009	7.00
2.8	0.649	132.5	1.493	31.0	0.278	43.8	0.274	145.6	1.015	6.55
2.9	0.648	130.5	1.450	29.1	0.289	43.4	0.284	143.9	1.017	6.20
3.0	0.660	128.8	1.417	27.1	0.295	42.0	0.293	142.7	1.005	6.39
4.0	0.720	116.3	1.102	11.5	0.354	31.9	0.400	130.1	0.979	4.93
5.0	0.753	105.2	0.896	-0.1	0.411	19.3	0.470	119.4	0.962	3.39

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

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	0.984	-19.1	3.923	167.5	0.040	78.7	0.998	-7.6	0.028	19.96
0.2	0.989	-38.3	3.801	153.9	0.074	65.8	0.969	-13.9	0.110	17.10
0.3	0.942	-56.7	3.506	140.8	0.103	58.0	0.934	-20.3	0.113	15.32
0.4	0.898	-74.0	3.202	128.8	0.132	48.9	0.884	-25.7	0.160	13.84
0.5	0.853	-88.8	2.883	119.0	0.152	40.7	0.835	-30.3	0.204	12.78
0.6	0.816	-101.2	2.597	111.1	0.159	35.2	0.785	-33.9	0.235	12.12
0.7	0.791	-111.8	2.363	104.4	0.168	30.0	0.746	-37.1	0.272	11.49
0.8	0.781	-121.2	2.199	98.2	0.170	25.5	0.706	-39.8	0.308	11.11
0.9	0.768	-130.3	2.033	91.9	0.173	22.0	0.675	-42.1	0.348	10.71
1.0	0.766	-138.7	1.903	85.9	0.172	19.0	0.649	-44.4	0.376	10.44
1.1	0.754	-145.9	1.762	80.6	0.168	16.9	0.629	-46.6	0.427	10.21
1.2	0.745	-152.8	1.650	75.8	0.165	14.7	0.611	-48.8	0.475	9.99
1.3	0.735	-158.9	1.534	71.1	0.162	13.5	0.595	-51.2	0.540	9.77
1.4	0.727	-164.2	1.446	67.2	0.157	12.5	0.581	-53.9	0.602	9.63
1.5	0.727	-169.4	1.367	63.3	0.151	11.7	0.571	-56.7	0.656	9.56
1.6	0.729	-174.5	1.294	59.5	0.147	11.8	0.559	-59.2	0.710	9.45
1.7	0.731	-179.0	1.240	56.2	0.142	11.3	0.553	-62.4	0.754	9.42
1.8	0.739	176.0	1.184	52.1	0.135	13.7	0.547	-65.1	0.792	9.44
1.9	0.737	171.3	1.126	48.6	0.131	15.4	0.541	-68.4	0.858	9.34
2.0	0.743	167.4	1.072	45.0	0.127	18.0	0.537	-72.2	0.899	9.25
2.1	0.742	163.5	1.019	42.1	0.123	20.1	0.529	-75.8	0.998	9.18
2.2	0.746	160.3	0.977	39.0	0.120	25.3	0.529	-80.0	1.043	7.85
2.3	0.745	157.1	0.937	36.7	0.121	29.3	0.527	-83.5	1.085	7.11
2.4	0.754	154.5	0.903	34.3	0.121	33.6	0.520	-88.2	1.105	6.77
2.5	0.758	151.6	0.873	32.0	0.125	38.1	0.516	-92.4	1.105	6.48
2.6	0.758	148.7	0.837	29.7	0.128	42.5	0.514	-96.8	1.150	5.80
2.7	0.768	145.7	0.806	27.7	0.134	46.2	0.513	-101.2	1.106	5.80
2.8	0.769	143.8	0.777	25.6	0.143	48.5	0.515	-105.4	1.084	5.58
2.9	0.765	141.3	0.747	23.6	0.156	51.5	0.513	-109.5	1.086	5.02
3.0	0.774	138.4	0.725	21.3	0.168	52.9	0.518	-114.4	1.010	5.73
4.0	0.813	119.4	0.569	10.4	0.297	50.4	0.576	-162.6	0.869	2.83
5.0	0.816	105.0	0.498	6.5	0.419	33.1	0.654	161.3	0.927	0.75

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

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	0.939	-28.4	9.630	161.3	0.036	84.0	0.964	-14.7	-0.098	24.25
0.2	0.887	-55.9	8.779	143.3	0.066	56.2	0.866	-26.0	0.184	21.23
0.3	0.805	-79.1	7.497	128.6	0.086	49.6	0.767	-35.0	0.200	19.40
0.4	0.742	-98.6	6.405	116.9	0.100	42.7	0.673	-41.2	0.268	18.05
0.5	0.693	-113.8	5.459	108.0	0.111	38.7	0.595	-45.4	0.339	16.92
0.6	0.667	-125.5	4.762	101.3	0.114	35.8	0.532	-48.4	0.406	16.22
0.7	0.647	-135.2	4.207	95.5	0.120	33.2	0.484	-50.7	0.475	15.46
0.8	0.644	-143.4	3.803	90.6	0.120	32.3	0.445	-52.6	0.527	15.02
0.9	0.635	-151.3	3.446	85.7	0.124	31.8	0.415	-54.0	0.584	14.45
1.0	0.635	-158.0	3.157	80.8	0.126	31.6	0.390	-55.7	0.629	14.00
1.1	0.628	-163.9	2.903	76.6	0.126	32.3	0.373	-57.2	0.694	13.64
1.2	0.624	-169.4	2.694	72.9	0.128	32.3	0.355	-59.3	0.747	13.23
1.3	0.620	-174.1	2.470	69.4	0.130	33.5	0.341	-61.4	0.810	12.79
1.4	0.618	-178.2	2.313	66.2	0.133	34.3	0.327	-63.8	0.855	12.39
1.5	0.620	177.4	2.176	62.9	0.134	35.0	0.316	-66.6	0.904	12.10
1.6	0.624	173.3	2.053	59.8	0.138	36.7	0.304	-69.0	0.928	11.71
1.7	0.629	169.5	1.954	57.1	0.140	36.7	0.296	-72.4	0.956	11.44
1.8	0.637	165.7	1.854	53.7	0.142	38.7	0.289	-75.2	0.984	11.17
1.9	0.639	162.0	1.761	50.7	0.148	40.5	0.281	-78.0	0.996	10.75
2.0	0.645	159.0	1.676	47.4	0.153	41.1	0.276	-82.4	1.006	9.93
2.1	0.647	155.7	1.589	45.0	0.157	41.9	0.265	-86.6	1.044	8.76
2.2	0.655	153.4	1.526	42.4	0.162	43.4	0.266	-90.9	1.035	8.58
2.3	0.656	150.7	1.458	39.9	0.168	44.4	0.262	-94.1	1.051	7.99
2.4	0.665	148.8	1.406	37.6	0.174	44.6	0.258	-100.1	1.044	7.79
2.5	0.672	146.4	1.359	35.4	0.182	45.7	0.255	-104.3	1.029	7.70
2.6	0.673	144.2	1.300	33.3	0.186	46.3	0.255	-108.9	1.054	7.02
2.7	0.685	142.0	1.256	30.8	0.194	47.0	0.253	-114.2	1.029	7.07
2.8	0.687	140.1	1.210	28.8	0.202	47.0	0.259	-118.6	1.027	6.79
2.9	0.684	137.8	1.165	26.5	0.212	47.5	0.259	-123.2	1.040	6.18
3.0	0.695	135.6	1.139	24.1	0.221	47.7	0.268	-128.1	1.000	7.00
4.0	0.755	119.7	0.873	7.3	0.307	42.7	0.369	-174.8	0.899	4.54
5.0	0.786	106.5	0.695	-3.1	0.403	29.5	0.492	156.0	0.872	2.37

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

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	0.851	-39.0	15.112	155.3	0.035	66.6	0.912	-21.9	0.135	26.34
0.2	0.782	-71.7	12.744	134.3	0.057	53.4	0.758	-36.6	0.218	23.50
0.3	0.693	-97.3	10.222	119.5	0.070	49.0	0.624	-46.3	0.290	21.65
0.4	0.638	-116.7	8.302	108.8	0.082	42.9	0.516	-52.4	0.405	20.03
0.5	0.601	-130.4	6.897	101.1	0.089	41.6	0.441	-56.1	0.499	18.89
0.6	0.587	-141.0	5.911	95.5	0.092	40.7	0.383	-58.9	0.581	18.08
0.7	0.576	-149.5	5.156	90.5	0.099	40.9	0.342	-60.5	0.649	17.19
0.8	0.577	-156.5	4.615	86.4	0.102	41.6	0.306	-62.2	0.706	16.56
0.9	0.573	-163.0	4.155	82.1	0.109	42.4	0.282	-63.9	0.752	15.83
1.0	0.576	-168.7	3.779	77.8	0.113	42.6	0.260	-65.5	0.796	15.26
1.1	0.571	-173.5	3.453	74.4	0.117	44.4	0.246	-66.9	0.845	14.70
1.2	0.570	-178.0	3.187	71.1	0.122	44.3	0.231	-69.3	0.883	14.16
1.3	0.569	177.9	2.929	67.8	0.129	45.1	0.218	-71.6	0.918	13.56
1.4	0.569	174.3	2.740	64.9	0.135	46.0	0.206	-74.6	0.949	13.09
1.5	0.575	170.6	2.566	62.2	0.139	46.6	0.197	-78.2	0.973	12.68
1.6	0.580	167.0	2.418	59.5	0.147	47.0	0.188	-81.7	0.977	12.16
1.7	0.585	163.7	2.295	56.9	0.151	46.2	0.181	-86.1	0.996	11.82
1.8	0.597	160.5	2.181	53.8	0.158	47.7	0.172	-89.9	0.991	11.41
1.9	0.600	157.0	2.065	51.2	0.165	48.0	0.165	-93.8	1.004	10.60
2.0	0.605	154.4	1.961	48.3	0.174	47.4	0.164	-99.0	1.001	10.36
2.1	0.609	151.8	1.860	46.0	0.177	47.6	0.155	-105.4	1.031	9.12
2.2	0.615	149.7	1.777	43.6	0.185	48.1	0.158	-110.6	1.026	8.84
2.3	0.621	147.8	1.702	41.3	0.192	47.9	0.154	-115.2	1.029	8.43
2.4	0.630	145.8	1.639	39.2	0.199	47.6	0.157	-122.8	1.022	8.25
2.5	0.636	143.7	1.586	37.0	0.208	47.8	0.155	-128.5	1.012	8.16
2.6	0.639	141.4	1.520	34.9	0.213	47.2	0.159	-133.1	1.025	7.57
2.7	0.650	139.5	1.463	32.8	0.220	47.0	0.160	-139.4	1.018	7.42
2.8	0.651	138.0	1.412	30.7	0.227	46.6	0.166	-143.8	1.022	7.04
2.9	0.650	136.1	1.363	28.5	0.238	46.8	0.171	-149.3	1.025	6.62
3.0	0.660	133.6	1.335	26.2	0.246	45.9	0.182	-153.2	0.999	7.35
4.0	0.727	119.4	1.027	9.1	0.319	39.2	0.305	168.2	0.930	5.08
5.0	0.766	106.9	0.821	-3.0	0.398	26.9	0.425	146.9	0.891	3.14

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

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	0.802	-45.9	18.711	151.1	0.032	69.2	0.878	-27.4	0.085	27.68
0.2	0.723	-81.9	15.009	129.1	0.051	50.4	0.681	-43.1	0.271	24.70
0.3	0.629	-107.3	11.524	114.8	0.061	48.0	0.546	-52.9	0.379	22.75
0.4	0.588	-126.5	9.192	104.9	0.072	44.9	0.436	-59.0	0.498	21.07
0.5	0.562	-139.3	7.548	97.9	0.080	44.8	0.368	-62.6	0.593	19.77
0.6	0.551	-148.8	6.424	92.8	0.083	46.6	0.313	-65.1	0.683	18.87
0.7	0.547	-156.7	5.569	88.2	0.091	45.3	0.275	-66.9	0.744	17.88
0.8	0.550	-162.5	4.976	84.5	0.097	47.0	0.247	-69.1	0.785	17.11
0.9	0.550	-168.4	4.460	80.4	0.104	47.8	0.223	-70.6	0.824	16.32
1.0	0.554	-173.6	4.045	76.6	0.110	48.7	0.203	-72.9	0.859	15.65
1.1	0.549	-178.1	3.698	73.3	0.117	50.0	0.191	-74.4	0.895	15.01
1.2	0.549	177.8	3.404	70.2	0.122	50.2	0.177	-77.8	0.930	14.45
1.3	0.548	174.2	3.128	67.1	0.131	50.5	0.169	-80.9	0.950	13.78
1.4	0.549	170.9	2.924	64.6	0.138	50.1	0.156	-84.2	0.970	13.26
1.5	0.556	167.6	2.740	62.0	0.144	50.9	0.148	-89.3	0.988	12.81
1.6	0.562	164.1	2.574	59.3	0.153	51.0	0.141	-94.4	0.989	12.26
1.7	0.567	161.3	2.441	56.7	0.158	50.3	0.136	-99.2	1.000	11.88
1.8	0.577	158.1	2.314	53.9	0.164	51.0	0.129	-104.2	1.007	10.98
1.9	0.582	154.9	2.194	51.2	0.174	50.7	0.125	-109.7	1.005	10.59
2.0	0.591	152.4	2.087	48.5	0.181	50.0	0.125	-115.5	1.001	10.44
2.1	0.595	150.2	1.973	46.4	0.188	49.5	0.121	-124.0	1.019	9.37
2.2	0.602	148.0	1.887	44.1	0.195	49.7	0.127	-130.2	1.019	9.02
2.3	0.606	146.0	1.804	41.9	0.202	49.2	0.123	-135.3	1.027	8.51
2.4	0.613	144.4	1.738	39.9	0.211	48.7	0.130	-143.2	1.017	8.36
2.5	0.621	142.3	1.682	37.7	0.219	48.2	0.132	-148.7	1.008	8.31
2.6	0.624	140.6	1.608	35.7	0.223	48.0	0.137	-153.3	1.023	7.65
2.7	0.636	138.5	1.550	33.5	0.231	47.4	0.142	-160.2	1.014	7.54
2.8	0.635	137.1	1.495	31.7	0.239	46.4	0.149	-163.6	1.020	7.11
2.9	0.637	135.1	1.446	29.3	0.249	46.5	0.158	-168.3	1.018	6.83
3.0	0.646	133.0	1.415	27.2	0.256	45.6	0.168	-171.3	1.001	7.21
4.0	0.714	119.1	1.091	10.4	0.325	37.7	0.296	158.1	0.947	5.26
5.0	0.753	106.9	0.872	-2.2	0.399	25.6	0.407	140.8	0.912	3.40

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

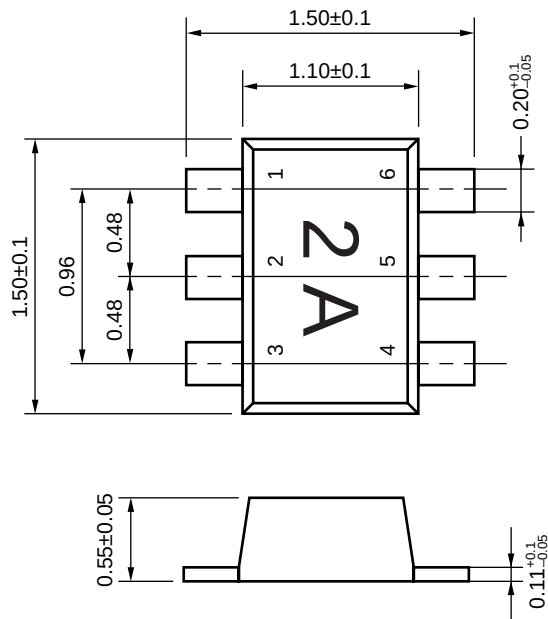
Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.750	-56.5	23.514	146.0	0.027	64.8	0.823	-33.9	0.112	29.36
0.2	0.644	-95.7	17.490	122.6	0.045	47.2	0.593	-51.3	0.357	25.88
0.3	0.572	-120.7	12.917	109.5	0.054	46.3	0.456	-60.9	0.490	23.82
0.4	0.541	-137.5	10.084	100.7	0.063	48.6	0.356	-67.2	0.612	22.06
0.5	0.526	-149.2	8.204	94.5	0.073	49.9	0.292	-70.9	0.700	20.53
0.6	0.523	-157.4	6.928	89.9	0.077	52.7	0.245	-74.0	0.781	19.52
0.7	0.521	-163.9	5.995	85.9	0.086	52.5	0.212	-76.3	0.825	18.41
0.8	0.523	-169.3	5.321	82.3	0.093	53.4	0.187	-79.3	0.868	17.58
0.9	0.527	-174.6	4.765	78.7	0.102	54.0	0.166	-81.7	0.888	16.68
1.0	0.531	-178.7	4.312	75.1	0.108	54.9	0.153	-85.3	0.919	16.02
1.1	0.526	177.4	3.932	72.2	0.117	55.8	0.139	-87.4	0.942	15.26
1.2	0.528	173.5	3.628	69.5	0.125	55.4	0.128	-92.4	0.962	14.64
1.3	0.529	170.1	3.328	66.6	0.135	55.2	0.122	-96.6	0.972	13.92
1.4	0.534	167.5	3.108	63.9	0.143	55.3	0.112	-101.6	0.980	13.36
1.5	0.537	164.5	2.906	61.5	0.149	55.0	0.110	-108.4	0.998	12.89
1.6	0.543	161.3	2.723	58.8	0.160	54.0	0.107	-115.8	0.994	12.30
1.7	0.551	158.6	2.583	56.8	0.165	53.3	0.104	-122.9	1.004	11.55
1.8	0.562	155.9	2.448	54.1	0.172	53.6	0.101	-129.8	1.005	11.11
1.9	0.567	152.4	2.323	51.5	0.181	53.0	0.100	-136.5	1.008	10.54
2.0	0.574	150.6	2.204	48.8	0.190	51.8	0.104	-143.6	1.005	10.19
2.1	0.578	148.1	2.090	46.8	0.197	51.6	0.109	-152.9	1.021	9.39
2.2	0.586	146.6	1.996	44.7	0.205	51.1	0.117	-156.8	1.016	9.13
2.3	0.591	144.5	1.905	42.4	0.214	50.1	0.117	-163.6	1.017	8.70
2.4	0.600	142.7	1.836	40.4	0.222	49.4	0.126	-169.5	1.011	8.54
2.5	0.607	141.2	1.774	38.5	0.230	48.7	0.132	-174.4	1.005	8.45
2.6	0.610	139.5	1.698	36.6	0.236	48.2	0.141	-177.7	1.015	7.82
2.7	0.622	137.2	1.636	34.4	0.242	47.6	0.147	177.2	1.011	7.64
2.8	0.624	136.0	1.578	32.5	0.250	46.6	0.156	175.1	1.013	7.31
2.9	0.624	134.2	1.527	30.4	0.261	46.2	0.167	171.3	1.013	6.99
3.0	0.636	132.0	1.493	28.4	0.267	45.3	0.176	169.7	0.997	7.47
4.0	0.702	119.0	1.156	11.7	0.333	36.2	0.301	147.8	0.956	5.41
5.0	0.744	106.9	0.927	-0.8	0.400	24.1	0.401	134.1	0.927	3.64

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

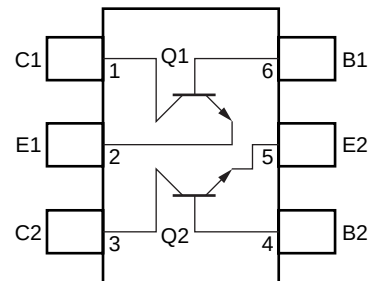
Frequency (GHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂		K	MAG/MSG (dB)
	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)	MAG.	ANG. (deg.)		
0.1	0.576	-82.7	32.751	133.7	0.019	74.7	0.684	-47.8	0.229	32.37
0.2	0.516	-122.3	20.941	111.9	0.033	49.5	0.430	-67.0	0.558	27.98
0.3	0.491	-143.9	14.639	101.4	0.039	56.1	0.309	-77.0	0.743	25.75
0.4	0.490	-156.1	11.171	94.7	0.051	59.8	0.235	-85.3	0.819	23.37
0.5	0.484	-164.6	9.005	89.8	0.065	60.6	0.188	-90.6	0.859	21.41
0.6	0.489	-170.0	7.567	86.3	0.072	63.7	0.157	-97.0	0.914	20.24
0.7	0.489	-175.5	6.505	82.5	0.082	62.6	0.134	-102.3	0.936	18.99
0.8	0.496	-179.0	5.770	79.5	0.090	62.8	0.119	-108.6	0.957	18.08
0.9	0.499	176.8	5.143	76.4	0.102	63.4	0.107	-115.2	0.959	17.03
1.0	0.506	173.6	4.652	73.3	0.112	62.7	0.101	-122.0	0.962	16.18
1.1	0.504	170.4	4.245	70.5	0.121	62.9	0.094	-127.8	0.979	15.47
1.2	0.507	167.5	3.891	67.9	0.130	61.6	0.092	-135.7	0.987	14.76
1.3	0.510	164.8	3.578	65.4	0.141	61.2	0.093	-142.2	0.989	14.03
1.4	0.514	162.2	3.339	63.2	0.151	60.2	0.091	-150.6	0.993	13.44
1.5	0.521	160.0	3.125	61.0	0.159	59.8	0.097	-157.2	0.999	12.94
1.6	0.527	157.0	2.931	58.4	0.171	58.4	0.102	-163.1	0.994	12.35
1.7	0.534	154.7	2.767	56.5	0.177	57.0	0.110	-168.7	1.002	11.67
1.8	0.545	152.2	2.633	53.7	0.184	56.7	0.115	-174.5	1.000	11.46
1.9	0.548	149.4	2.488	51.5	0.195	56.0	0.120	-179.7	1.002	10.79
2.0	0.560	147.7	2.358	49.3	0.205	54.3	0.129	176.7	0.996	10.61
2.1	0.565	145.5	2.233	47.1	0.210	53.3	0.139	171.2	1.009	9.69
2.2	0.571	143.9	2.132	45.1	0.221	52.6	0.149	169.6	1.004	9.45
2.3	0.575	142.3	2.034	42.9	0.229	51.4	0.156	165.1	1.009	8.91
2.4	0.586	140.8	1.960	41.0	0.237	50.5	0.167	162.2	1.002	8.87
2.5	0.594	139.3	1.892	39.1	0.246	49.5	0.174	158.6	0.997	8.86
2.6	0.595	137.6	1.809	37.3	0.252	48.6	0.183	156.7	1.008	8.00
2.7	0.610	135.7	1.743	35.2	0.258	47.4	0.192	153.6	1.002	8.02
2.8	0.609	134.4	1.678	33.5	0.265	46.5	0.198	152.8	1.009	7.42
2.9	0.610	132.5	1.627	31.3	0.276	46.0	0.210	150.2	1.008	7.15
3.0	0.620	130.6	1.588	29.4	0.283	44.7	0.218	149.4	0.999	7.50
4.0	0.689	118.1	1.231	13.3	0.343	34.7	0.334	135.3	0.972	5.55
5.0	0.733	106.8	0.996	0.9	0.403	22.3	0.412	124.5	0.946	3.93

PACKAGE DIMENSIONS

FLAT-LEAD 6-PIN THIN-TYPE ULTRA SUPER MINIMOLD (UNIT: mm)



(Top View)



PIN CONNECTIONS

1. Collector (Q1)
2. Emitter (Q1)
3. Collector (Q2)
4. Base (Q2)
5. Emitter (Q2)
6. Base (Q1)

[MEMO]

[MEMO]

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