Advance Information **RF Transistor for Low Noise Amplifier**

12 V, 100 mA, $f_T = 10$ GHz typ.

This RF transistor is designed for low noise amplifier applications. MCPH package is suitable for use under high temperature environment because it has superior heat radiation characteristics. This RF transistor is AEC–Q101 qualified and PPAP capable for automotive applications.

Features

- Low-noise Use: NF = 1.2 dB typ. (f = 1 GHz)
- High Cut-off Frequency: $f_T = 10$ GHz typ. ($V_{CE} = 5$ V)
- High Gain: $|S21e|^2 = 17 \text{ dB typ.} (f = 1 \text{ GHz})$
- MCPH4 Package is Pin-compatible with SC-82FL
- AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- Low Noise Amplifier for Digital Radio
- Low Noise Amplifier for TV
- Low Noise Amplifier for FM Radio
- RF Amplifier for UHF Application

MAXIMUM RATINGS at $T_A = 25^{\circ}C$

Rating	Symbol	Value	Unit
Collector to Base Voltage	V _{CBO}	20	V
Collector to Emitter Voltage	V _{CEO}	12	V
Emitter to Base Voltage	V _{EBO}	2	V
Collector Current	۱ _C	100	mA
Collector Dissipation	P _C	450	mW
Operating Junction and Storage Temper- ature	T _J , T _{stg}	–55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

This document contains information on a new product. Specifications and information herein are subject to change without notice.

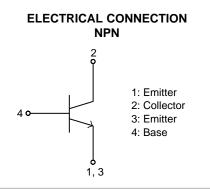


ON Semiconductor®

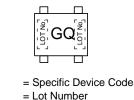
www.onsemi.com



SC-82FL MCPH4 CASE 419AR



MARKING DIAGRAM



GQ

ΧХ

ORDERING INFORMATION

Device	Package	Shipping [†]
NSVF4015SG4T1G	SC-82FL (Pb-Free)	3000 / Tape & Reel

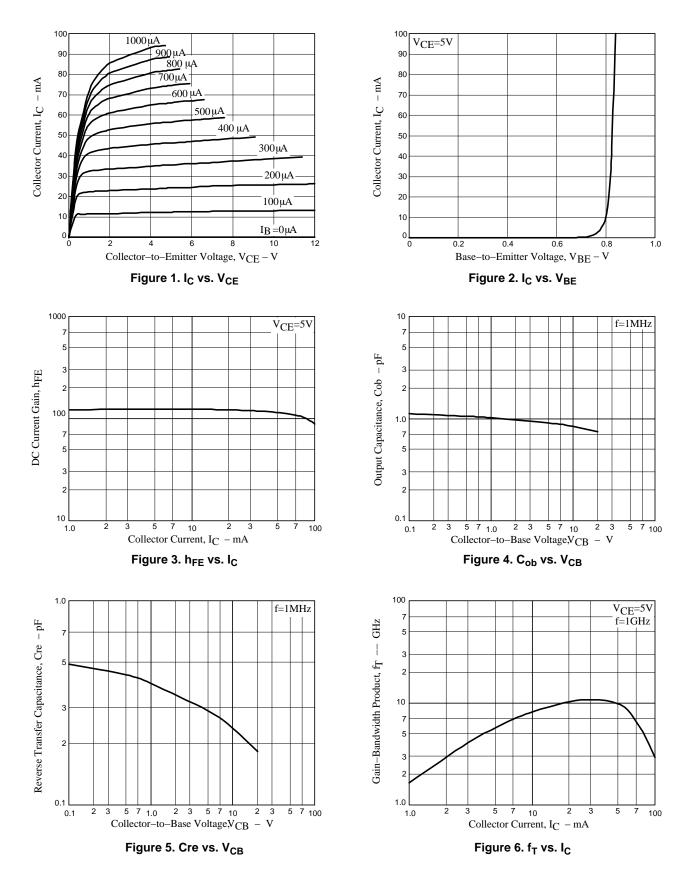
+For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

Table 1. ELECTRICAL CHARACTERISTICS at $T_A = 25^{\circ}C$ (Note 1)

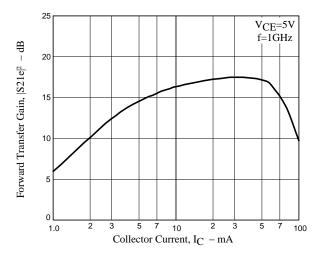
				Value		
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Collector Cutoff Current	I _{CBO}	$V_{CB} = 5 \text{ V}, \text{ I}_{E} = 0 \text{ A}$			1.0	μΑ
Emitter Cutoff Current	I _{EBO}	$V_{EB} = 1 \text{ V}, \text{ I}_{C} = 0 \text{ A}$			1.0	μΑ
DC Current Gain	h _{FE}	$V_{CE} = 5 \text{ V}, \text{ I}_{C} = 50 \text{ mA}$	60		150	
Gain-Bandwidth Product	f _T	$V_{CE} = 5 \text{ V}, \text{ I}_{C} = 30 \text{ mA}$	8	10		GHz
Forward Transfer Gain	S21e ²	$V_{CE} = 5 \text{ V}, \text{ I}_{C} = 30 \text{ mA}, \text{ f} = 1 \text{ GHz}$	14	17		dB
Noise Figure	NF	V_{CE} = 5 V, I_C = 10 mA, f = 1 GHz		1.2	1.8	dB

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.1. Pay attention to handling since it is liable to be affected by static electricity due to the high-frequency process adopted.

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS





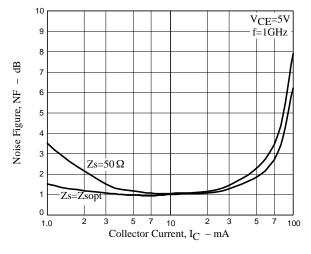


Figure 8. NF vs. I_C

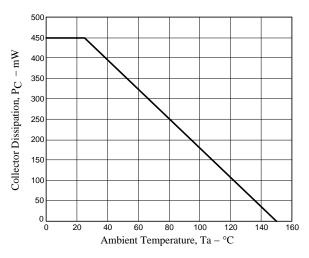


Figure 9. P_C vs. T_A

	(
/CE=3V, IC=1	0mA							
Freq(MHz)	S11	∠S11	S21	∠S21	S12	∠ S12	S22	∠S22
100	0.763	-38.0	22.980	155.3	0.018	71.5	0.923	-22.7
200	0.733	-71.8	20.122	135.9	0.031	58.6	0.798	-40.2
300	0.702	-98.5	17.019	121.3	0.038	50.6	0.703	-53.5
400	0.690	-116.5	14.110	110.7	0.043	46.3	0.626	-62.9
500	0.701	-127.2	12.307	103.5	0.048	45.0	0.592	-67.4
600	0.679	-137.1	10.431	97.5	0.050	43.7	0.531	-72.0
700	0.663	-145.1	8.949	92.7	0.052	43.6	0.484	-75.2
800	0.651	-152.1	7.848	88.4	0.054	43.9	0.446	-78.7
900	0.646	-157.6	6.993	84.8	0.057	44.0	0.422	-81.6
1000	0.639	-162.3	6.272	81.9	0.059	45.1	0.404	-84.4
1200	0.635	-170.2	5.211	76.5	0.063	47.1	0.375	-88.7
1400	0.634	-176.5	4.462	71.7	0.068	49.1	0.362	-92.4
1600	0.633	177.9	3.907	67.3	0.073	51.2	0.352	-95.9
1800	0.636	173.2	3.463	63.4	0.079	52.7	0.351	-99.0
2000	0.637	169.1	3.122	59.5	0.085	54.3	0.352	-102.3
2200	0.637	164.9	2.838	55.8	0.091	55.5	0.356	-105.2
2400	0.638	161.0	2.604	52.1	0.098	56.5	0.364	-108.1
2600	0.639	157.3	2.413	48.7	0.105	57.2	0.372	-111.1
2800	0.642	153.7	2.244	45.1	0.112	57.9	0.384	-113.5
3000	0.641	150.0	2.095	41.8	0.120	57.8	0.396	-116.2

Freq(MHz)	S11	∠S11	S21	∠S21	S12	∠ S12	S22	∠ S22
100	0.542	-76.9	42.437	142.3	0.013	63.9	0.801	-36.2
200	0.542	-118.2	30.735	119.6	0.015	53.9	0.602	-56.8
300	0.588	-118.2	22.677	119.0	0.020	52.3	0.505	-69.3
400	0.626	-150.0	17.506	98.4	0.024	53.8	0.303	-77.9
500	0.635	-155.0	14.522	92.7	0.027	55.6	0.448	-79.8
600	0.630	-161.3	12.035	88.5	0.035	57.8	0.423	-83.6
700	0.627	-166.4	10.249	85.2	0.035	59.8	0.350	-85.0
800	0.626	-170.9	8.902	82.2	0.042	61.3	0.330	-90.4
900	0.627	-174.7	7.888	79.5	0.042	62.3	0.327	-93.2
1000	0.626	-177.8	7.046	77.3	0.045	63.4	0.303	-96.1
1200	0.629	176.7	5.835	73.1	0.057	65.4	0.287	-100.4
1200	0.631	170.7	4.976	69.2	0.065	66.2	0.287	-100.4
1600	0.633	167.7	4.344	65.6	0.003	66.5	0.280	-105.0
1800	0.637	163.9	3.854	62.0	0.075	66.8	0.280	-100.7
2000	0.638	160.5	3.474	58.7	0.090	66.6	0.281	-112.5
2200	0.638	156.8	3.160	55.5	0.090	66.5	0.293	-115.1
2400	0.640	153.5	2.900	52.2	0.108	65.8	0.302	-117.3
2600	0.640	155.5	2.684	49.0	0.100	65.2	0.302	-119.5
2800	0.642	136.2	2.499	45.9	0.117	64.3	0.312	-121.6
3000	0.640	143.6	2.337	42.8	0.125	63.6	0.337	-123.8
Freq(MHz)	S11	∠\$11	S21	∠ S21	S12	∠ \$12	S22	∠S22
100	0.514	-110.3	43.067	133.3				
200	-			155.5	0.011	59.0	0.700	-40.9
	0.607	-141.4	29.221	112.3	0.011 0.016	59.0 53.1	0.700 0.495	-40.9 -58.9
300	0.607							
300 400		-141.4	29.221	112.3	0.016	53.1	0.495	-58.9
	0.642	-141.4 -154.9	29.221 20.818	112.3 101.0	0.016 0.019	53.1 55.3	0.495 0.417	-58.9 -68.7
400	0.642 0.657	-141.4 -154.9 -162.5	29.221 20.818 15.865	112.3 101.0 94.1	0.016 0.019 0.023	53.1 55.3 58.5	0.495 0.417 0.376	-58.9 -68.7 -75.5
400 500	0.642 0.657 0.660	-141.4 -154.9 -162.5 -165.8	29.221 20.818 15.865 13.033	112.3 101.0 94.1 88.9	0.016 0.019 0.023 0.027	53.1 55.3 58.5 61.4	0.495 0.417 0.376 0.360	-58.9 -68.7 -75.5 -75.7
400 500 600	0.642 0.657 0.660 0.659	-141.4 -154.9 -162.5 -165.8 -170.3	29.221 20.818 15.865 13.033 10.812	112.3 101.0 94.1 88.9 85.3	0.016 0.019 0.023 0.027 0.030	53.1 55.3 58.5 61.4 64.0	0.495 0.417 0.376 0.360 0.330	-58.9 -68.7 -75.5 -75.7 -78.7
400 500 600 700	0.642 0.657 0.660 0.659 0.658	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3	29.221 20.818 15.865 13.033 10.812 9.213	112.3 101.0 94.1 88.9 85.3 82.3	0.016 0.019 0.023 0.027 0.030 0.034	53.1 55.3 58.5 61.4 64.0 66.1	0.495 0.417 0.376 0.360 0.330 0.307	-58.9 -68.7 -75.5 -75.7 -75.7 -78.7 -81.5
400 500 600 700 800	0.642 0.657 0.660 0.659 0.658 0.658	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8	29.221 20.818 15.865 13.033 10.812 9.213 7.995	112.3 101.0 94.1 88.9 85.3 82.3 79.5	0.016 0.019 0.023 0.027 0.030 0.034 0.038	53.1 55.3 58.5 61.4 64.0 66.1 67.8	0.495 0.417 0.376 0.360 0.330 0.307 0.291	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5
400 500 600 700 800 900	0.642 0.657 0.660 0.659 0.658 0.660 0.663	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1
400 500 600 700 800 900 1000	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8	0.016 0.019 0.023 0.027 0.030 0.034 0.034 0.038 0.042 0.046	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7
400 500 600 700 800 900 1000 1200	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662 0.666	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042 0.046 0.055	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7 -93.7
400 500 600 700 800 900 1000 1200 1400	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.663 0.662 0.666 0.670	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0 167.9	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247 4.475	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8 67.0	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042 0.046 0.055 0.063	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9 71.3	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268 0.269	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7 -93.7 -93.7
400 500 600 700 800 900 1000 1200 1400 1600	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662 0.666 0.666 0.670 0.673	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0 167.9 164.1	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247 4.475 3.897	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8 67.0 63.4	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042 0.046 0.055 0.063 0.072	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9 71.3 71.5	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268 0.269 0.270	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7 -93.7 -93.7 -97.1 -100.2
400 500 600 700 800 900 1000 1200 1400 1600 1800	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662 0.666 0.673 0.676	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0 167.9 164.1 160.6	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247 4.475 3.897 3.469	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8 67.0 63.4 59.9	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042 0.046 0.055 0.063 0.072 0.080	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9 71.3 71.5 71.4	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268 0.269 0.270 0.275	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7 -93.7 -93.7 -97.1 -100.2 -103.3
400 500 600 700 800 900 1000 1200 1400 1600 1800 2000	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662 0.666 0.670 0.673 0.676 0.678	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0 167.9 164.1 160.6 157.5	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247 4.475 3.897 3.469 3.113	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8 67.0 63.4 59.9 56.5	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042 0.046 0.046 0.055 0.063 0.072 0.080 0.089	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9 71.3 71.5 71.4 71.0	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268 0.269 0.270 0.275 0.284	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7 -93.7 -93.7 -97.1 -100.2 -103.3 -106.5
400 500 600 700 800 900 1000 1200 1400 1600 1800 2000 2200	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662 0.666 0.670 0.673 0.676 0.678 0.679	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0 167.9 164.1 160.6 157.5 154.1	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247 4.475 3.897 3.469 3.113 2.836	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8 67.0 63.4 59.9 56.5 53.1	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.046 0.055 0.063 0.072 0.080 0.089 0.098	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9 71.3 71.5 71.4 71.0 70.4	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268 0.269 0.270 0.275 0.284 0.275 0.284 0.293	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -89.7 -93.7 -93.7 -97.1 -100.2 -103.3 -106.5 -109.3
400 500 600 700 800 900 1000 1200 1400 1600 1800 2000 2200 2400	0.642 0.657 0.660 0.659 0.658 0.660 0.663 0.662 0.666 0.670 0.673 0.676 0.678 0.679 0.681	-141.4 -154.9 -162.5 -165.8 -170.3 -174.3 -177.8 179.2 176.6 172.0 167.9 164.1 160.6 157.5 154.1 150.9	29.221 20.818 15.865 13.033 10.812 9.213 7.995 7.097 6.333 5.247 4.475 3.897 3.469 3.113 2.836 2.598	112.3 101.0 94.1 88.9 85.3 82.3 79.5 77.1 74.8 70.8 67.0 63.4 59.9 56.5 53.1 49.8	0.016 0.019 0.023 0.027 0.030 0.034 0.038 0.042 0.046 0.055 0.063 0.072 0.080 0.098 0.107	53.1 55.3 58.5 61.4 64.0 66.1 67.8 68.6 69.6 70.9 71.3 71.5 71.4 71.0 70.4 69.8	0.495 0.417 0.376 0.360 0.330 0.307 0.291 0.284 0.277 0.268 0.269 0.270 0.275 0.284 0.293 0.304	-58.9 -68.7 -75.5 -75.7 -78.7 -81.5 -84.5 -84.5 -87.1 -93.7 -93.7 -93.7 -97.1 -100.2 -103.3 -106.5 -109.3 -111.9

CE=3V, IC=8	•	,						
Freq(MHz)	S11	∠S11	S21	∠ S21	S12	∠ S12	S22	∠S22
100	0.662	-146.8	29.622	120.5	0.011	47.5	0.455	-44.8
200	0.751	-164.0	16.762	102.8	0.014	46.9	0.315	-52.9
300	0.774	-171.2	11.369	94.2	0.017	52.5	0.288	-57.1
400	0.783	-175.6	8.549	88.9	0.019	58.6	0.279	-61.3
500	0.778	-178.0	6.977	84.2	0.023	62.0	0.283	-61.0
600	0.778	179.0	5.801	81.0	0.027	66.0	0.272	-62.9
700	0.778	176.3	4.965	78.3	0.030	68.6	0.265	-65.2
800	0.780	173.9	4.316	75.7	0.034	70.2	0.260	-68.0
900	0.782	171.6	3.846	73.3	0.038	71.9	0.263	-70.7
1000	0.782	169.6	3.439	71.0	0.042	73.0	0.263	-73.7
1200	0.787	166.0	2.860	66.6	0.051	74.5	0.268	-78.5
1400	0.789	162.5	2.454	62.4	0.059	75.3	0.278	-83.1
1600	0.792	159.2	2.139	58.4	0.068	75.7	0.288	-87.5
1800	0.796	156.0	1.912	54.5	0.077	75.7	0.300	-91.7
2000	0.797	153.1	1.721	50.8	0.086	75.4	0.314	-96.1
2200	0.797	149.9	1.569	47.1	0.095	75.0	0.328	-100.0
2400	0.799	146.8	1.436	43.4	0.105	74.1	0.343	-103.8
2600	0.800	143.8	1.331	39.9	0.115	73.4	0.359	-107.4
2800	0.801	140.6	1.238	36.5	0.125	72.2	0.377	-110.9
3000	0.799	137.4	1.157	33.3	0.135	71.1	0.394	-114.4
Freq(MHz)	S11	∠\$11	S21	∠S21	S12	∠ S12	S22	∠ S22
100	0.771	-35.8	23.180	156.3	0.016	72.7	0.933	-20.3
200	0.741	-68.2	20.484	137.3	0.028	60.4	0.820	-36.2
300	0.706	-94.4	17.503	122.8	0.035	53.0	0.722	-48.5
400	0.691	-112.7	14.633	111.9	0.040	48.5	0.656	-57.3
500	0.701	-123.8	12.817	104.7	0.044	47.2	0.622	-61.7
600	0.677	-133.9	10.891	98.4	0.047	46.0	0.560	-66.0
700	0.659	-142.2	9.349	93.5	0.049	45.5	0.513	-68.9
800	0.646	-149.5	8.209	89.1	0.051	45.7	0.474	-72.0
900	0.640				0.001			
		-155.2	7.315	85.3	0.053	46.1	0.449	-74.7
1000	0.633	-155.2 -160.1	7.315 6.557	85.3 82.3		46.1 46.9	0.449 0.428	-74.7 -77.4
1000 1200					0.053			
1200 1400	0.633 0.628 0.625	-160.1 -168.2 -174.7	6.557 5.459 4.663	82.3 76.8 71.9	0.053 0.055 0.060 0.064	46.9 49.0 51.0	0.428 0.399 0.385	-77.4 -81.4 -84.9
1200 1400 1600	0.633 0.628 0.625 0.625	-160.1 -168.2 -174.7 179.5	6.557 5.459 4.663 4.086	82.3 76.8 71.9 67.5	0.053 0.055 0.060 0.064 0.069	46.9 49.0 51.0 53.3	0.428 0.399	-77.4 -81.4 -84.9 -88.4
1200 1400	0.633 0.628 0.625	-160.1 -168.2 -174.7	6.557 5.459 4.663	82.3 76.8 71.9	0.053 0.055 0.060 0.064	46.9 49.0 51.0	0.428 0.399 0.385	-77.4 -81.4 -84.9 -88.4 -91.5
1200 1400 1600	0.633 0.628 0.625 0.625	-160.1 -168.2 -174.7 179.5	6.557 5.459 4.663 4.086	82.3 76.8 71.9 67.5	0.053 0.055 0.060 0.064 0.069	46.9 49.0 51.0 53.3	0.428 0.399 0.385 0.373	-77.4 -81.4 -84.9 -88.4
1200 1400 1600 1800	0.633 0.628 0.625 0.625 0.625	-160.1 -168.2 -174.7 179.5 174.7	6.557 5.459 4.663 4.086 3.616	82.3 76.8 71.9 67.5 63.5	0.053 0.055 0.060 0.064 0.069 0.075	46.9 49.0 51.0 53.3 54.8	0.428 0.399 0.385 0.373 0.372	-77.4 -81.4 -84.9 -88.4 -91.5
1200 1400 1600 1800 2000	0.633 0.628 0.625 0.625 0.627 0.628	-160.1 -168.2 -174.7 179.5 174.7 170.5	6.557 5.459 4.663 4.086 3.616 3.260	82.3 76.8 71.9 67.5 63.5 59.5	0.053 0.055 0.060 0.064 0.069 0.075 0.080	46.9 49.0 51.0 53.3 54.8 56.6	0.428 0.399 0.385 0.373 0.372 0.372	-77.4 -81.4 -84.9 -88.4 -91.5 -94.9
1200 1400 1600 1800 2000 2200	0.633 0.628 0.625 0.625 0.627 0.628 0.628	-160.1 -168.2 -174.7 179.5 174.7 170.5 166.2	6.557 5.459 4.663 4.086 3.616 3.260 2.960	82.3 76.8 71.9 67.5 63.5 59.5 55.7	0.053 0.055 0.060 0.064 0.069 0.075 0.080 0.086	46.9 49.0 51.0 53.3 54.8 56.6 57.9	0.428 0.399 0.385 0.373 0.372 0.372 0.376	-77.4 -81.4 -84.9 -88.4 -91.5 -94.9 -98.0
1200 1400 1600 1800 2000 2200 2400	0.633 0.628 0.625 0.625 0.627 0.628 0.628 0.628	-160.1 -168.2 -174.7 179.5 174.7 170.5 166.2 162.2	6.557 5.459 4.663 4.086 3.616 3.260 2.960 2.715	82.3 76.8 71.9 67.5 63.5 59.5 55.7 52.0	0.053 0.055 0.060 0.064 0.069 0.075 0.080 0.086 0.093	46.9 49.0 51.0 53.3 54.8 56.6 57.9 58.9	0.428 0.399 0.385 0.373 0.372 0.372 0.376 0.383	-77.4 -81.4 -84.9 -88.4 -91.5 -94.9 -98.0 -101.1

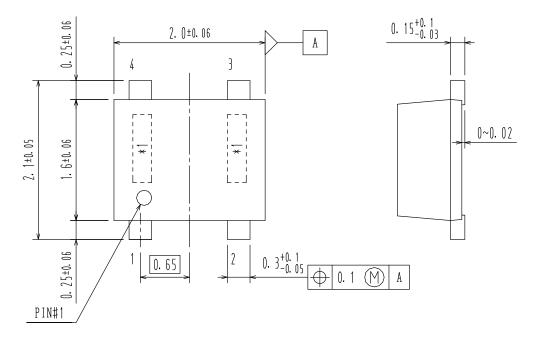
CE=5V, IC=3						-		
Freq(MHz)	S11	∠\$11	S21	∠S21	S12	∠ \$12	S22	∠S22
100	0.542	-70.6	43.013	144.3	0.012	66.3	0.826	-31.8
200	0.577	-112.5	32.303	121.4	0.018	56.3	0.636	-50.4
300	0.599	-134.2	24.068	107.8	0.022	55.0	0.539	-61.6
400	0.611	-146.5	18.636	99.4	0.025	55.5	0.478	-69.3
500	0.620	-151.9	15.457	93.6	0.029	57.7	0.454	-71.4
600	0.614	-158.6	12.813	89.2	0.033	59.6	0.410	-74.7
700	0.611	-164.1	10.898	85.6	0.036	61.5	0.376	-77.5
800	0.610	-168.7	9.470	82.5	0.039	62.9	0.351	-80.5
900	0.611	-172.7	8.381	79.8	0.043	64.1	0.337	-83.2
1000	0.610	-176.0	7.487	77.5	0.047	65.3	0.324	-85.8
1200	0.612	178.3	6.186	73.2	0.054	66.8	0.306	-89.7
1400	0.615	173.4	5.277	69.2	0.062	67.7	0.299	-93.1
1600	0.617	169.0	4.596	65.6	0.070	68.2	0.296	-96.3
1800	0.620	165.1	4.085	62.0	0.078	68.6	0.297	-99.3
2000	0.622	161.6	3.669	58.7	0.086	68.4	0.301	-102.5
2200	0.622	158.0	3.344	55.5	0.095	68.3	0.307	-105.1
2400	0.625	154.6	3.065	52.1	0.103	67.8	0.316	-107.9
2600	0.625	151.3	2.835	48.8	0.112	67.2	0.326	-110.5
2800	0.628	148.0	2.638	45.7	0.120	66.5	0.339	-113.0
3000	0.626	144.6	2.464	42.6	0.129	65.6	0.352	-115.5
Freq(MHz)	S11	∠S11	S21	∠S21	S12	∠ S12	S22	∠S22
100	0.479	-97.2	42.927	137.2	0.010	63.4	0.761	-35.0
200	0.566	-132.9	32.978	115.4	0.015	56.7	0.560	-51.6
300	0.603	-148.8	23.718	103.2	0.018	58.0	0.485	
400	0.620	-157.8	18.120					-60.6
500	0.625			95.7	0.021	60.4	0.427	-66.9
600		-161.4	14.893	90.4	0.021 0.025	60.4 63.7	0.427 0.410	-66.9 -68.0
	0.624	-166.7	12.324	90.4 86.4	0.021 0.025 0.029	60.4 63.7 66.0	0.427 0.410 0.375	-66.9 -68.0 -70.7
700	0.624	-166.7 -171.0	12.324 10.482	90.4 86.4 83.2	0.021 0.025 0.029 0.032	60.4 63.7 66.0 68.0	0.427 0.410 0.375 0.348	-66.9 -68.0 -70.7 -73.2
800	0.624 0.626	-166.7 -171.0 -174.8	12.324 10.482 9.088	90.4 86.4 83.2 80.4	0.021 0.025 0.029 0.032 0.036	60.4 63.7 66.0 68.0 69.2	0.427 0.410 0.375 0.348 0.328	-66.9 -68.0 -70.7 -73.2 -75.9
800 900	0.624 0.626 0.628	-166.7 -171.0 -174.8 -178.1	12.324 10.482 9.088 8.053	90.4 86.4 83.2 80.4 77.9	0.021 0.025 0.029 0.032 0.036 0.040	60.4 63.7 66.0 68.0 69.2 70.4	0.427 0.410 0.375 0.348 0.328 0.317	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4
800 900 1000	0.624 0.626 0.628 0.628	-166.7 -171.0 -174.8 -178.1 179.1	12.324 10.482 9.088 8.053 7.184	90.4 86.4 83.2 80.4 77.9 75.6	0.021 0.025 0.029 0.032 0.036 0.040 0.044	60.4 63.7 66.0 68.0 69.2 70.4 70.9	0.427 0.410 0.375 0.348 0.328 0.317 0.308	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9
800 900 1000 1200	0.624 0.626 0.628 0.628 0.633	-166.7 -171.0 -174.8 -178.1 179.1 174.2	12.324 10.482 9.088 8.053 7.184 5.943	90.4 86.4 83.2 80.4 77.9 75.6 71.5	0.021 0.025 0.029 0.032 0.036 0.040 0.044 0.052	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6
800 900 1000 1200 1400	0.624 0.626 0.628 0.628 0.633 0.633	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8	12.324 10.482 9.088 8.053 7.184 5.943 5.061	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2
800 900 1000 1200 1400 1600	0.624 0.626 0.628 0.628 0.633 0.633 0.636 0.640	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1	0.021 0.025 0.029 0.032 0.036 0.040 0.044 0.052	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6
800 900 1000 1200 1400	0.624 0.626 0.628 0.628 0.633 0.636 0.640 0.643	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9 162.3	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407 3.917	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1 60.6	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060 0.069 0.077	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292 0.295	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2
800 900 1000 1200 1400 1600	0.624 0.626 0.628 0.628 0.633 0.633 0.636 0.640	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9 162.3 159.1	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060 0.069	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2 -91.5
800 900 1000 1200 1400 1600 1800	0.624 0.626 0.628 0.628 0.633 0.636 0.640 0.643	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9 162.3	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407 3.917	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1 60.6	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060 0.069 0.077	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7 72.7 72.6	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292 0.295	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2 -91.5 -94.7
800 900 1000 1200 1400 1600 1800 2000	0.624 0.626 0.628 0.628 0.633 0.633 0.636 0.640 0.643 0.645	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9 162.3 159.1	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407 3.917 3.518	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1 60.6 57.2	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060 0.069 0.077 0.086	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7 72.7 72.6 72.3	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292 0.295 0.301	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2 -91.5 -94.7 -98.1
800 900 1000 1200 1400 1600 1800 2000 2200	0.624 0.626 0.628 0.633 0.633 0.636 0.640 0.643 0.645 0.645	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9 162.3 159.1 155.6	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407 3.917 3.518 3.202	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1 60.6 57.2 54.0	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060 0.069 0.077 0.086 0.094	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7 72.7 72.6 72.3 71.8	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292 0.292 0.295 0.301 0.309	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2 -91.5 -94.7 -98.1 -101.1 -104.0
800 900 1000 1200 1400 1600 1800 2000 2200 2400	0.624 0.626 0.628 0.628 0.633 0.636 0.640 0.643 0.645 0.646	-166.7 -171.0 -174.8 -178.1 179.1 174.2 169.8 165.9 162.3 159.1 155.6 152.4	12.324 10.482 9.088 8.053 7.184 5.943 5.061 4.407 3.917 3.518 3.202 2.931	90.4 86.4 83.2 80.4 77.9 75.6 71.5 67.7 64.1 60.6 57.2 54.0 50.6	0.021 0.025 0.029 0.032 0.036 0.040 0.040 0.044 0.052 0.060 0.069 0.077 0.086 0.094 0.103	60.4 63.7 66.0 68.0 69.2 70.4 70.9 72.2 72.7 72.6 72.3 71.8 71.1	0.427 0.410 0.375 0.348 0.328 0.317 0.308 0.295 0.292 0.292 0.292 0.295 0.301 0.309 0.319	-66.9 -68.0 -70.7 -73.2 -75.9 -78.4 -80.9 -84.6 -88.2 -91.5 -94.7 -98.1 -101.1

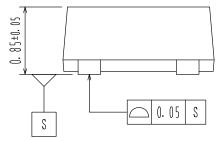
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Freq(MHz)	S11	∠\$11	S21	∠ S21	S12	∠ S12	S22	∠ S22
100	0.558	-133.0	39.014	127.8	0.009	54.5	0.618	-33.7
200	0.671	-155.6	23.364	107.6	0.012	52.6	0.457	-41.5
300	0.704	-165.1	16.107	97.6	0.014	57.5	0.415	-45.4
400	0.718	-170.7	12.150	91.5	0.017	62.9	0.395	-49.0
500	0.716	-173.4	9.907	86.7	0.021	66.8	0.385	-50.4
600	0.717	-177.0	8.214	83.3	0.024	69.5	0.378	-52.4
700	0.718	179.9	7.015	80.4	0.028	72.5	0.364	-54.4
800	0.720	177.1	6.091	77.8	0.031	73.9	0.354	-57.0
900	0.723	174.5	5.413	75.3	0.035	75.7	0.351	-59.7
1000	0.723	172.3	4.829	72.9	0.039	76.8	0.346	-62.4
1200	0.728	168.3	4.009	68.8	0.047	78.1	0.343	-67.0
1400	0.731	164.7	3.423	64.7	0.055	78.9	0.347	-71.8
1600	0.735	161.2	2.987	60.8	0.063	78.9	0.352	-76.2
1800	0.738	157.9	2.662	57.1	0.072	79.1	0.359	-80.6
2000	0.740	155.0	2.393	53.5	0.081	78.7	0.369	-85.3
2200	0.741	151.7	2.179	50.0	0.090	78.2	0.379	-89.5
2400	0.743	148.6	1.993	46.4	0.099	77.4	0.391	-93.5
2600	0.744	145.6	1.843	43.0	0.109	76.5	0.404	-97.4
2800	0.746	142.4	1.716	39.6	0.119	75.4	0.418	-101.3
3000	0.744	139.2	1.601	36.3	0.129	74.2	0.433	-105.1
CE=8V, IC=1 Freq(MHz)	S11	∠S11	S21	∠ S21	S12	∠ S12	S22	∠ S22
100	0.784	-33.9	22.973	157.1	0.014	73.5	0.941	-18.1
200	0.754	-64.8	20.491	138.6	0.025	62.4	0.839	-32.6
300	0.715	-90.5	17.690	124.1	0.032	55.0	0.739	-44.1
400	0.697	-109.0	14.905	113.1	0.037	50.3	0.685	-52.2
500	0.704	-120.4	13.108	105.8	0.041	49.3	0.652	-56.5
600	0.678	-130.9	11.176	99.3	0.044	47.7	0.591	-60.6
700	0.659	-139.5	9.599	94.2	0.046	47.3	0.544	-63.3
800	0.645	-146.9	8.439	89.7	0.048	47.3	0.504	-66.1
900	0.638	-152.9	7.523	85.8	0.050	47.5	0.478	-68.7
1000	0.629	-158.0	6.746	82.7	0.052	48.6	0.457	-71.2
1200	0.623	-166.3	5.618	77.1	0.056	50.5	0.427	-75.0
1200 1400	0.621	-173.1	4.797	72.1	0.060	52.6	0.411	-78.5
1200 1400 1600	0.621 0.620	-173.1 -179.0	4.797 4.199	72.1 67.5	0.060 0.065	52.6 55.0	0.411 0.399	-78.5 -81.8
1200 1400 1600 1800	0.621 0.620 0.622	-173.1 -179.0 176.1	4.797 4.199 3.717	72.1 67.5 63.4	0.060 0.065 0.071	52.6 55.0 56.9	0.411 0.399 0.398	-78.5 -81.8 -85.2
1200 1400 1600 1800 2000	0.621 0.620 0.622 0.623	-173.1 -179.0 176.1 171.8	4.797 4.199 3.717 3.348	72.1 67.5 63.4 59.4	0.060 0.065 0.071 0.076	52.6 55.0 56.9 58.6	0.411 0.399	-78.5 -81.8 -85.2 -88.5
1200 1400 1600 1800 2000 2200	0.621 0.620 0.622 0.623 0.623	-173.1 -179.0 176.1 171.8 167.4	4.797 4.199 3.717	72.1 67.5 63.4 59.4 55.5	0.060 0.065 0.071 0.076 0.082	52.6 55.0 56.9 58.6 60.1	0.411 0.399 0.398 0.397 0.401	-78.5 -81.8 -85.2 -88.5 -91.7
1200 1400 1600 1800 2000 2200 2400	0.621 0.620 0.622 0.623 0.623 0.623	-173.1 -179.0 176.1 171.8 167.4 163.5	4.797 4.199 3.717 3.348	72.1 67.5 63.4 59.4 55.5 51.8	0.060 0.065 0.071 0.076	52.6 55.0 56.9 58.6 60.1 61.4	0.411 0.399 0.398 0.397	-78.5 -81.8 -85.2 -88.5 -91.7 -95.0
1200 1400 1600 1800 2000 2200	0.621 0.620 0.622 0.623 0.623 0.625 0.625	-173.1 -179.0 176.1 171.8 167.4	4.797 4.199 3.717 3.348 3.039	72.1 67.5 63.4 59.4 55.5 51.8 48.2	0.060 0.065 0.071 0.076 0.082	52.6 55.0 56.9 58.6 60.1 61.4 62.2	0.411 0.399 0.398 0.397 0.401	-78.5 -81.8 -85.2 -88.5
1200 1400 1600 1800 2000 2200 2400	0.621 0.620 0.622 0.623 0.623 0.623	-173.1 -179.0 176.1 171.8 167.4 163.5	4.797 4.199 3.717 3.348 3.039 2.786	72.1 67.5 63.4 59.4 55.5 51.8	0.060 0.065 0.071 0.076 0.082 0.089	52.6 55.0 56.9 58.6 60.1 61.4	0.411 0.399 0.398 0.397 0.401 0.407	-78.5 -81.8 -85.2 -88.5 -91.7 -95.0

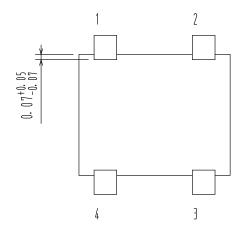
Freq(MHz)	0mA S11	∠\$11	S21	∠S21	S12	∠ S12	S22	∠S22
100	0.556	-65.2	43.179	145.8	0.011	67.8	0.846	-28.0
200	0.578	-106.8	32.894	143.0	0.011	57.9	0.669	-44.6
300	0.578	-129.7	24.775	129.0	0.017	56.2	0.584	-54.7
400	0.604	-142.8	19.256	100.3	0.021	57.0	0.501	-61.6
500	0.614	-148.7	15.997	94.4	0.021	59.0	0.488	-63.9
600	0.606	-155.8	13.266	89.8	0.031	60.8	0.443	-66.9
700	0.603	-161.6	11.285	86.1	0.034	62.5	0.409	-69.3
800	0.602	-166.5	9.802	82.9	0.037	64.2	0.382	-72.0
900	0.602	-170.7	8.672	80.0	0.041	65.4	0.366	-74.3
1000	0.600	-174.1	7.739	77.6	0.044	66.3	0.352	-76.7
1200	0.603	179.9	6.401	73.3	0.051	68.1	0.333	-80.3
1400	0.605	174.9	5.453	69.2	0.059	69.2	0.325	-83.7
1600	0.607	170.4	4.753	65.4	0.066	69.8	0.321	-87.0
1800	0.611	166.4	4.215	61.8	0.074	70.0	0.321	-90.2
2000	0.613	162.9	3.791	58.4	0.082	69.9	0.325	-93.4
2200	0.614	159.2	3.445	55.1	0.090	70.1	0.330	-96.5
2400	0.616	155.8	3.155	51.7	0.099	69.6	0.339	-99.4
2600	0.617	152.4	2.916	48.4	0.107	69.1	0.349	-102.4
2800	0.619	149.1	2.711	45.2	0.115	68.5	0.361	-105.3
3000 CE=8V, IC=5	0.619 OmA	145.7	2.531	42.0	0.124	67.5	0.375	1
3000 CE=8V, IC=5 Freq(MHz)	0.619 0mA S11	145.7 ∠S11	2.531 S21	42.0 ∠ S21	 S12	∠ S12	\$22	∠ S22
3000 CE=8V, IC=5 Freq(MHz) 100	0.619 0mA S11 0.477	145.7 ∠S11 -88.8	2.531 S21 42.926	42.0 ∠ S21 139.6	S12 0.009	∠ S12 65.5	S22 0.793	∠ S22 -30.4
3000 CE=8V, IC=5 Freq(MHz) 100 200	0.619 0mA S11 0.477 0.554	145.7 ∠S11 -88.8 -127.0	2.531 S21 42.926 34.154	42.0 ∠ S21 139.6 117.2	S12 0.009 0.014	∠ S12 65.5 59.2	S22 0.793 0.603	∠S22 -30.4 -45.1
3000 CE=8V, IC=5 Freq(MHz) 100 200 300	0.619 0mA S11 0.477 0.554 0.589	145.7 ∠S11 -88.8 -127.0 -144.5	2.531 S21 42.926 34.154 24.758	42.0 ∠ S21 139.6 117.2 104.4	S12 0.009 0.014 0.017	∠ S12 65.5 59.2 59.1	S22 0.793 0.603 0.529	∠ S22 -30.4 -45.1 -53.1
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400	0.619 0mA S11 0.477 0.554 0.589 0.606	145.7 ∠S11 -88.8 -127.0 -144.5 -154.4	2.531 S21 42.926 34.154 24.758 18.954	42.0 ∠ S21 139.6 117.2 104.4 96.6	S12 0.009 0.014 0.017 0.020	∠ S12 65.5 59.2 59.1 61.9	S22 0.793 0.603 0.529 0.478	∠ S22 -30.4 -45.1 -53.1 -58.7
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613	∠S11 -88.8 -127.0 -144.5 -154.4 -158.4	2.531 S21 42.926 34.154 24.758 18.954 15.585	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2	S12 0.009 0.014 0.017 0.020 0.024	∠ S12 65.5 59.2 59.1 61.9 64.8	\$22 0.793 0.603 0.529 0.478 0.453	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611	145.7 ∠S11 -88.8 -127.0 -144.5 -154.4 -158.4 -164.1	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0	S12 0.009 0.014 0.017 0.020 0.024 0.027	∠ S12 65.5 59.2 59.1 61.9 64.8 67.3	S22 0.793 0.603 0.529 0.478 0.453 0.416	-30.4 -45.1 -53.1 -58.7 -60.2 -62.6
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611	145.7 ∠S11 -88.8 -127.0 -144.5 -154.4 -158.4 -164.1 -168.8	2.531 [S21] 42.926 34.154 24.758 18.954 15.585 12.888 10.954	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031	∠ S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1	S22 0.793 0.603 0.529 0.478 0.453 0.416 0.388	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613	145.7 ∠S11 -88.8 -127.0 -144.5 -154.4 -158.4 -164.1 -168.8 -172.8	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034	∠ S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4	S22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -64.8 -67.2
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613 0.616	$\begin{array}{c} 145.7\\ \swarrow S11\\ -88.8\\ -127.0\\ -144.5\\ -154.4\\ -158.4\\ -164.1\\ -168.8\\ -172.8\\ -172.8\\ -176.3\end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7 78.1	S12 0.009 0.014 0.020 0.024 0.027 0.031 0.034 0.038	∠ S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5	\$22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -64.8 -67.2 -69.5
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613 0.616 0.615	$\begin{array}{c} 145.7\\ \swarrow S11\\ -88.8\\ -127.0\\ -144.5\\ -154.4\\ -158.4\\ -164.1\\ -168.8\\ -172.8\\ -172.8\\ -176.3\\ -179.2\\ \end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7 78.1 75.7	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042	∠ S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3	S22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613 0.616 0.615 0.619	$\begin{array}{c} 145.7\\ \swarrow S11\\ -88.8\\ -127.0\\ -144.5\\ -154.4\\ -158.4\\ -164.1\\ -168.8\\ -172.8\\ -176.3\\ -179.2\\ 175.7\end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7 78.1 75.7 71.6	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7	S22 0.793 0.603 0.529 0.478 0.453 0.453 0.416 0.388 0.366 0.355 0.343 0.329	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.611 0.613 0.616 0.615 0.619 0.623	$\begin{array}{c} 145.7\\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	2.531 [S21] 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7 78.1 75.7 71.6 67.7	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057	∠ S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1	\$22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400 1600	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.611 0.613 0.616 0.615 0.619 0.623 0.626	$\begin{array}{c} \angle \$11\\ -\$8.8\\ -127.0\\ -144.5\\ -154.4\\ -158.4\\ -164.1\\ -168.8\\ -172.8\\ -176.3\\ -179.2\\ 175.7\\ 171.2\\ 167.2 \end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272 4.586	$\begin{array}{c} 42.0\\ \hline \\ & \swarrow S21\\ \hline \\ 139.6\\ \hline \\ 117.2\\ \hline \\ 104.4\\ 96.6\\ \hline \\ 91.2\\ \hline \\ 87.0\\ \hline \\ 83.7\\ \hline \\ 80.7\\ \hline \\ 78.1\\ \hline \\ 75.7\\ \hline \\ 71.6\\ \hline \\ 67.7\\ \hline \\ 64.0\\ \hline \end{array}$	S12 0.009 0.014 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057 0.065	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1 74.5	S22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324 0.323	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0 -82.4
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400 1600 1800	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.613 0.611 0.613 0.616 0.615 0.619 0.623 0.626 0.631	$\begin{array}{c} \angle S11 \\ -88.8 \\ -127.0 \\ -144.5 \\ -154.4 \\ -158.4 \\ -164.1 \\ -168.8 \\ -172.8 \\ -172.8 \\ -176.3 \\ -179.2 \\ 175.7 \\ 171.2 \\ 167.2 \\ 163.5 \end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272 4.586 4.071	$\begin{array}{c} 42.0\\ \hline \\ & \swarrow S21\\ 139.6\\ 117.2\\ 104.4\\ 96.6\\ 91.2\\ 87.0\\ 83.7\\ 80.7\\ 78.1\\ 75.7\\ 71.6\\ 67.7\\ 64.0\\ 60.4\\ \end{array}$	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057 0.065 0.073	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1 74.5 74.4	S22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324 0.323 0.325	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0 -82.4 -85.8
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400 1600 1800 2000	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.613 0.616 0.615 0.619 0.623 0.626 0.631 0.633	$\begin{array}{c} 145.7 \\ \swarrow S11 \\ -88.8 \\ -127.0 \\ -144.5 \\ -154.4 \\ -158.4 \\ -164.1 \\ -168.8 \\ -172.8 \\ -176.3 \\ -179.2 \\ 175.7 \\ 171.2 \\ 167.2 \\ 163.5 \\ 160.2 \\ \end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272 4.586 4.071 3.658	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7 78.1 75.7 71.6 67.7 64.0 60.4 57.0	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057 0.065 0.073 0.081	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1 74.5 74.4 74.0	\$22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324 0.323 0.325 0.331	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0 -82.4 -85.8 -89.4
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400 1200 1400 1600 1800 2000 2200	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613 0.616 0.615 0.619 0.623 0.626 0.631 0.633 0.634	$\begin{array}{c} \angle S11 \\ -88.8 \\ -127.0 \\ -144.5 \\ -154.4 \\ -158.4 \\ -164.1 \\ -168.8 \\ -172.8 \\ -176.3 \\ -179.2 \\ 175.7 \\ 171.2 \\ 167.2 \\ 163.5 \\ 160.2 \\ 156.7 \end{array}$	2.531 [S21] 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272 4.586 4.071 3.658 3.322	$\begin{array}{r} 42.0\\ \swarrow S21\\ 139.6\\ 117.2\\ 104.4\\ 96.6\\ 91.2\\ 87.0\\ 83.7\\ 80.7\\ 78.1\\ 75.7\\ 71.6\\ 67.7\\ 64.0\\ 60.4\\ 57.0\\ 53.7\\ \end{array}$	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057 0.065 0.073 0.081 0.090	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1 74.5 74.4 74.0 73.7	\$22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324 0.323 0.325 0.331 0.337	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0 -82.4 -85.8 -89.4 -92.7
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400 1600 1800 2000 2200 2400	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613 0.616 0.615 0.619 0.623 0.623 0.626 0.631 0.633 0.634 0.637	$\begin{array}{c} \angle $11\\ -88.8\\ -127.0\\ -144.5\\ -154.4\\ -158.4\\ -164.1\\ -168.8\\ -172.8\\ -176.3\\ -179.2\\ 175.7\\ 171.2\\ 167.2\\ 167.2\\ 163.5\\ 160.2\\ 156.7\\ 153.5\\ \end{array}$	2.531 S21 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272 4.586 4.071 3.658 3.322 3.041	$\begin{array}{c} 42.0\\ \hline \\ & \swarrow S21\\ \hline \\ 139.6\\ \hline \\ 117.2\\ \hline \\ 104.4\\ 96.6\\ \hline \\ 91.2\\ \hline \\ 87.0\\ \hline \\ 83.7\\ \hline \\ 80.7\\ \hline \\ 78.1\\ \hline \\ 75.7\\ \hline \\ 71.6\\ \hline \\ 67.7\\ \hline \\ 71.6\\ \hline \\ 67.7\\ \hline \\ 64.0\\ \hline \\ 60.4\\ \hline \\ 57.0\\ \hline \\ 53.7\\ \hline \\ 50.3\\ \hline \end{array}$	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057 0.065 0.073 0.081 0.090 0.099	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1 74.5 74.4 74.0 73.7 73.0	S22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324 0.323 0.325 0.331 0.337 0.347	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0 -82.4 -85.8 -89.4 -92.7 -95.9
3000 CE=8V, IC=5 Freq(MHz) 100 200 300 400 500 600 700 800 900 1000 1200 1400 1200 1400 1600 1800 2000 2200	0.619 0mA S11 0.477 0.554 0.589 0.606 0.613 0.611 0.611 0.613 0.616 0.615 0.619 0.623 0.626 0.631 0.633 0.634	$\begin{array}{c} \angle S11 \\ -88.8 \\ -127.0 \\ -144.5 \\ -154.4 \\ -158.4 \\ -164.1 \\ -168.8 \\ -172.8 \\ -176.3 \\ -179.2 \\ 175.7 \\ 171.2 \\ 167.2 \\ 163.5 \\ 160.2 \\ 156.7 \end{array}$	2.531 [S21] 42.926 34.154 24.758 18.954 15.585 12.888 10.954 9.503 8.407 7.494 6.192 5.272 4.586 4.071 3.658 3.322	42.0 ∠ S21 139.6 117.2 104.4 96.6 91.2 87.0 83.7 80.7 78.1 75.7 71.6 67.7 64.0 60.4 57.0 53.7	S12 0.009 0.014 0.017 0.020 0.024 0.027 0.031 0.034 0.038 0.042 0.049 0.057 0.065 0.073 0.081 0.090	\angle S12 65.5 59.2 59.1 61.9 64.8 67.3 69.1 70.4 71.5 72.3 73.7 74.1 74.5 74.4 74.0 73.7	\$22 0.793 0.603 0.529 0.478 0.453 0.416 0.388 0.366 0.355 0.343 0.329 0.324 0.323 0.325 0.331 0.337	∠ S22 -30.4 -45.1 -53.1 -58.7 -60.2 -62.6 -64.8 -67.2 -69.5 -71.9 -75.5 -79.0 -82.4 -85.8 -89.4

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