



SANYO Semiconductors

DATA SHEET

2SC5347

NPN Epitaxial Planar Silicon Transistor
 High-Frequency Semi-Power Output Stage,
 Low-Noise Medium Output Amplifier Applications

Features

- High-frequency medium output amplification
 ($V_{CE}=5V$, $I_C=50mA$)
 : $f_T=4.7GHz$ typ ($f=1GHz$).
 : $|S_{21e}|^2=8dB$ typ ($f=1GHz$).
 : $NF=1.8dB$ typ ($f=1GHz$).

Specifications

Absolute Maximum Ratings at $T_a=25^\circ C$

| Parameter | Symbol | Conditions | Ratings | 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 | I_C | | 150 | mA |
| Collector Dissipation | P_C | Mounted on a ceramic board (900mm ² ×0.8mm) | 1.3 | W |
| Junction Temperature | T_J | | 150 | °C |
| Storage Temperature | T_{stg} | | -55 to +150 | °C |

Electrical Characteristics at $T_a=25^\circ C$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|------------------------------|---------------|-------------------------------------|---------|-----|------|---------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=10V$, $I_E=0A$ | | | 1.0 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=1V$, $I_C=0A$ | | | 10 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=5V$, $I_C=50mA$ | 60* | | 270* | |
| Gain-Bandwidth Product | f_T | $V_{CE}=5V$, $I_C=50mA$ | 3 | 4.7 | | GHz |
| Output Capacitance | C_{ob} | $V_{CB}=10V$, $f=1MHz$ | | 1.3 | 2.0 | pF |
| Reverse Transfer Capacitance | C_{re} | $V_{CB}=10V$, $f=1MHz$ | | 0.9 | | pF |
| Forward Transfer Gain | $ S_{21e} ^2$ | $V_{CE}=5V$, $I_C=50mA$, $f=1GHz$ | 6 | 8 | | dB |
| Noise Figure | NF | $V_{CE}=5V$, $I_C=50mA$, $f=1GHz$ | | 1.8 | 3.0 | dB |

Marking : CZ

* : The 2SC5347 is classified by 50mA h_{FE} as follows :

| Rank | D | E | F |
|----------|-----------|-----------|------------|
| h_{FE} | 60 to 120 | 90 to 180 | 135 to 270 |

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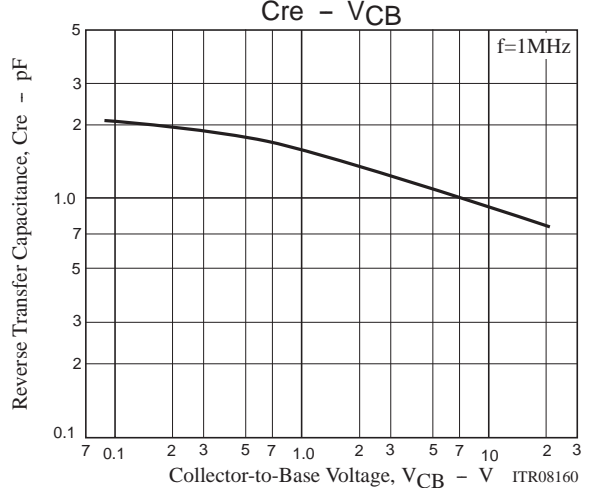
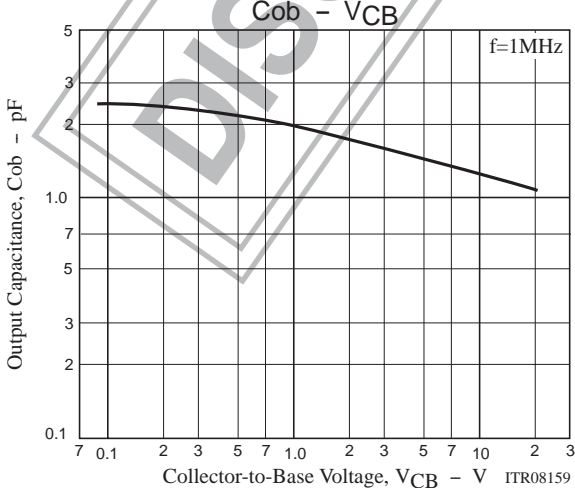
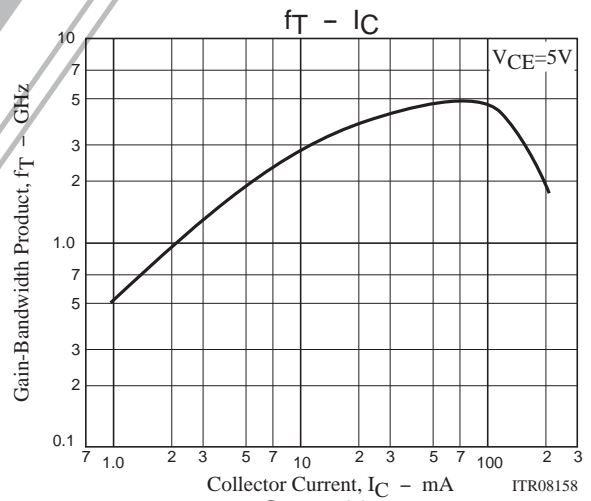
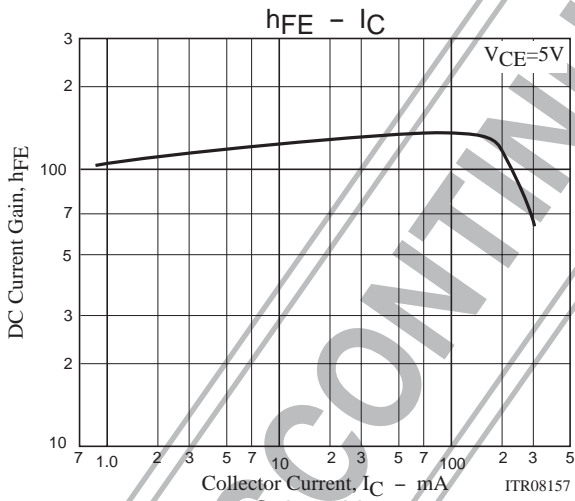
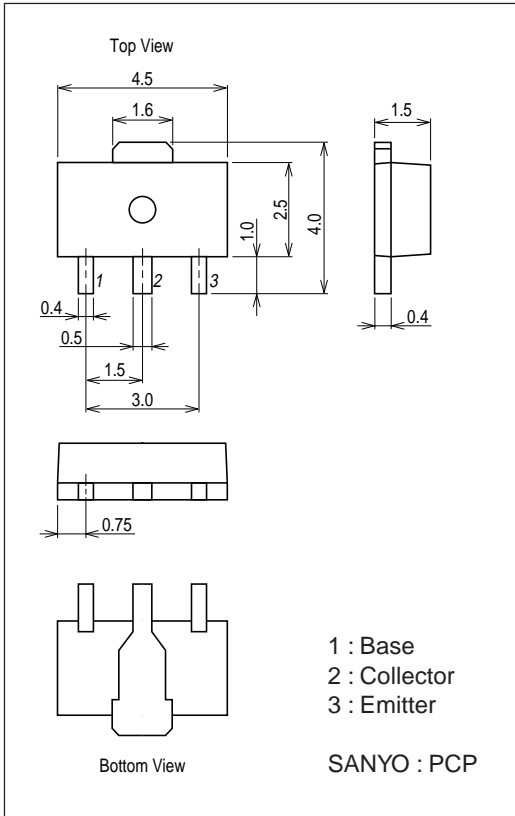
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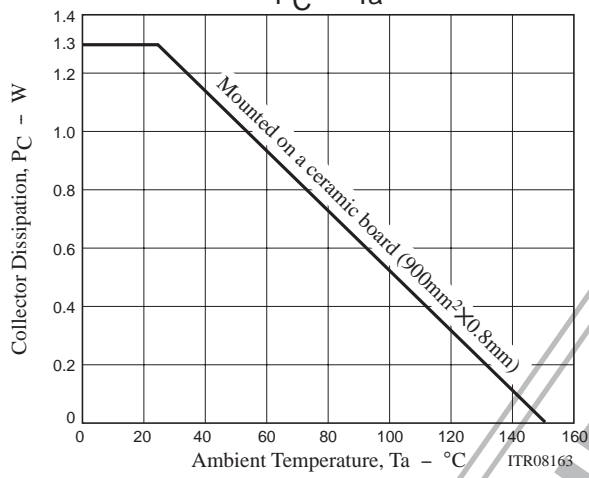
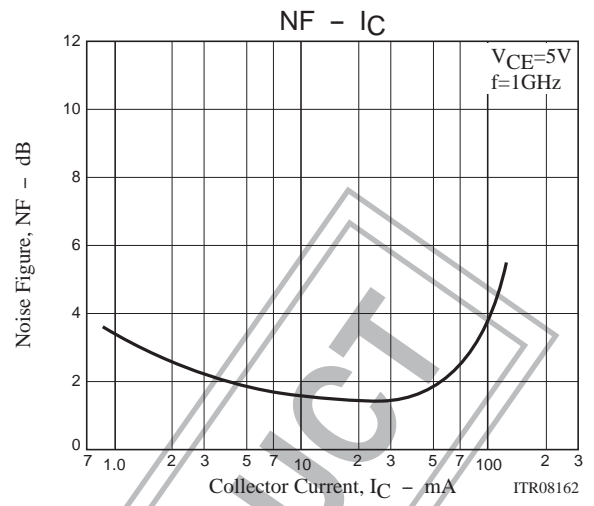
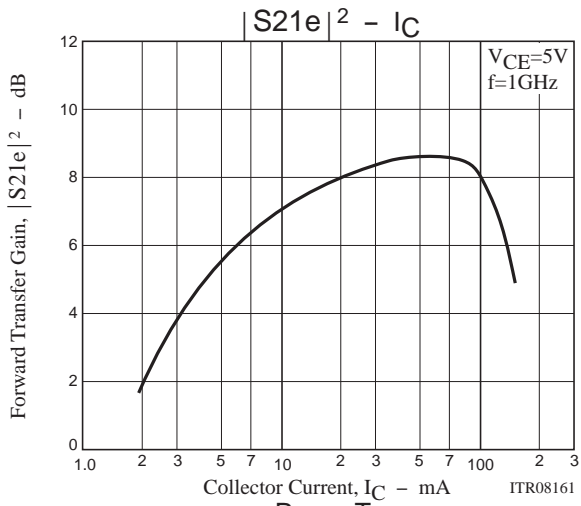
SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Package Dimensions

unit : mm (typ)
7007A-004





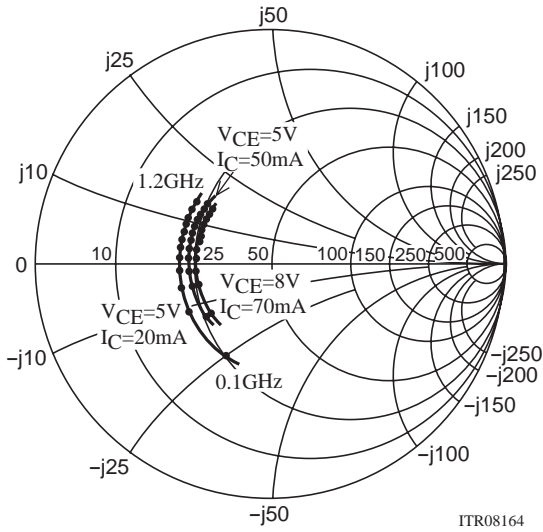
DISCONTINUED PRODUCT

2SC5347

S Parameter

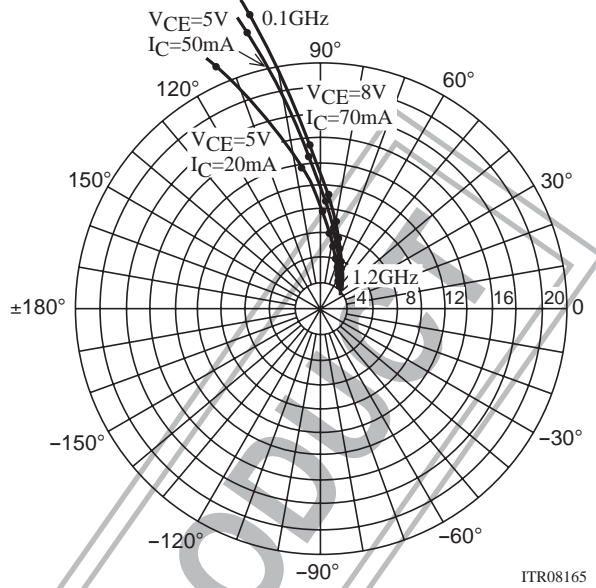
S11e

f=100MHz to 1200MHz(100MHz Step)



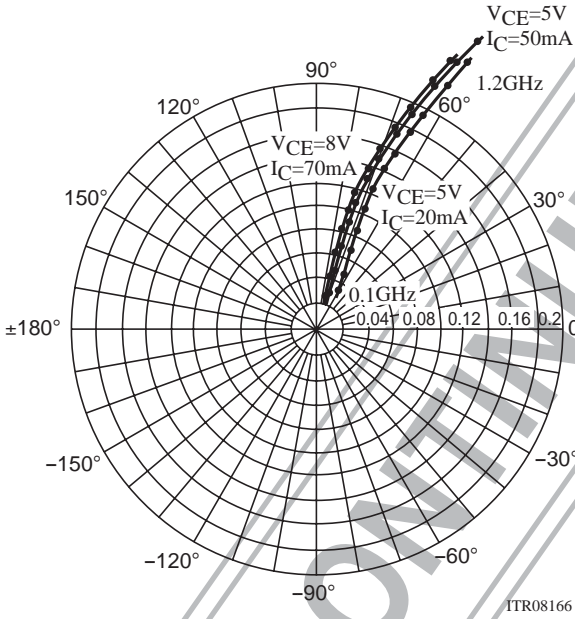
S21e

f=100MHz to 1200MHz(100MHz Step)



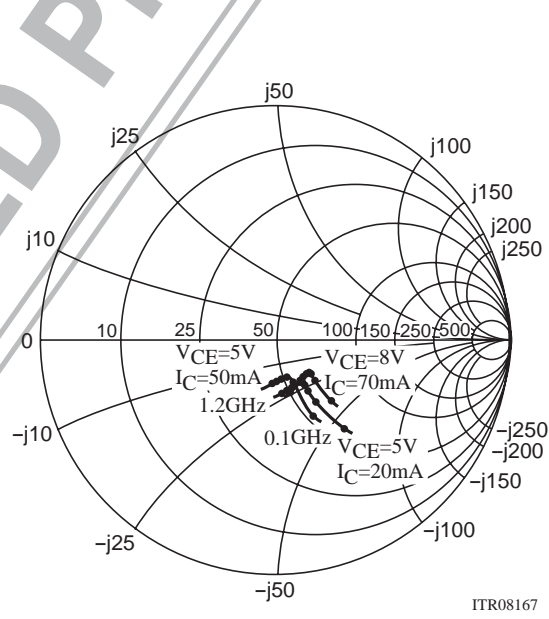
S12e

f=100MHz to 1200MHz(100MHz Step)



S22e

f=100MHz to 1200MHz(100MHz Step)



DISCONTINUED PRODUCT

2SC5347

S Parameters (Common emitter)

$V_{CE}=5V, I_C=50mA, Z_O=50\Omega$

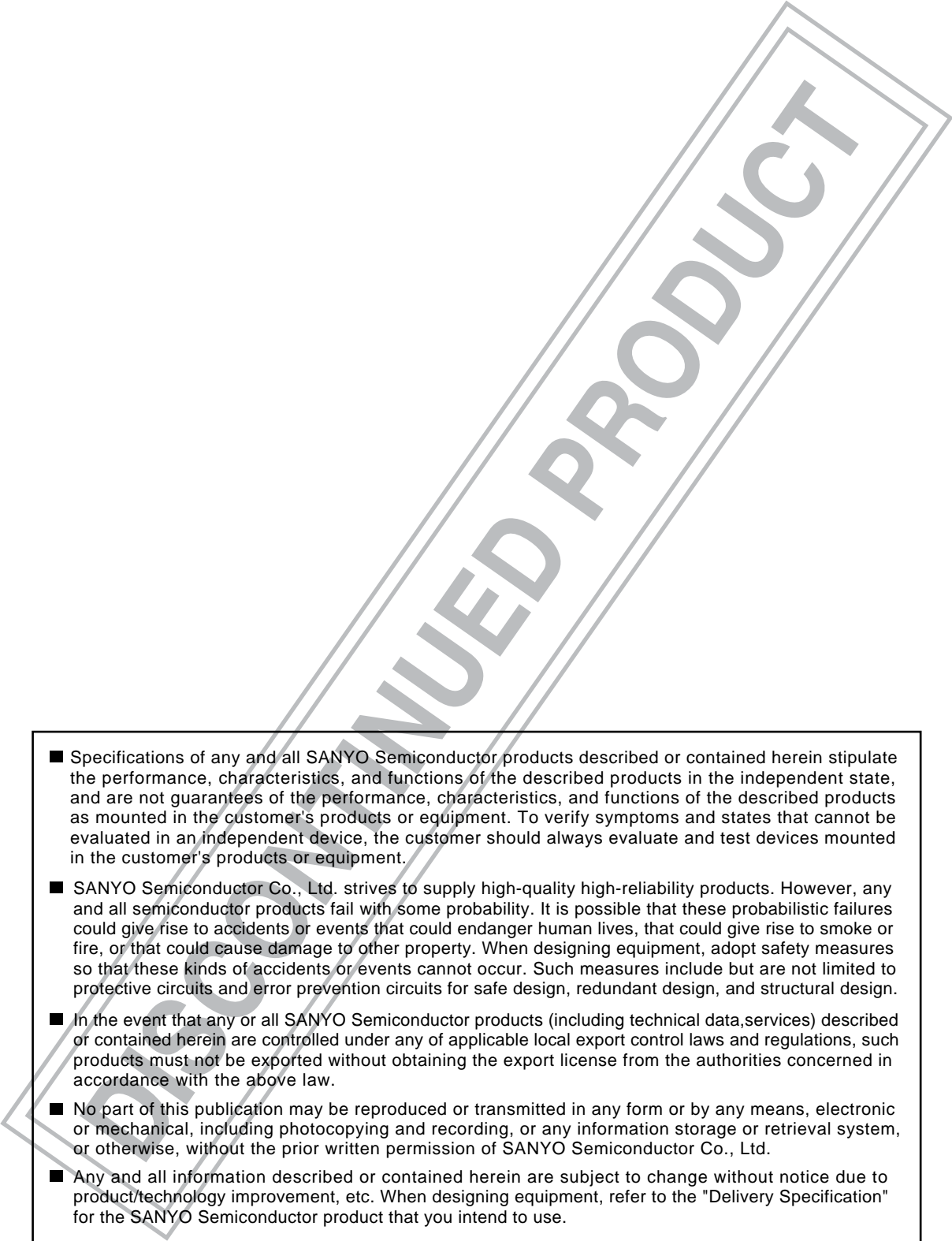
| Freq(MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|-----------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 100 | 0.358 | -141.0 | 24.005 | 105.9 | 0.027 | 68.4 | 0.342 | -63.0 |
| 200 | 0.354 | -165.7 | 12.593 | 93.3 | 0.047 | 72.7 | 0.205 | -68.4 |
| 300 | 0.355 | -176.8 | 8.532 | 86.8 | 0.068 | 74.1 | 0.166 | -69.7 |
| 400 | 0.359 | 174.9 | 6.428 | 81.9 | 0.089 | 73.7 | 0.149 | -72.3 |
| 500 | 0.359 | 169.3 | 5.293 | 77.6 | 0.110 | 72.8 | 0.145 | -75.3 |
| 600 | 0.362 | 163.9 | 4.360 | 73.5 | 0.130 | 71.7 | 0.143 | -78.6 |
| 700 | 0.366 | 158.5 | 3.774 | 69.9 | 0.151 | 70.2 | 0.147 | -82.1 |
| 800 | 0.364 | 153.5 | 3.334 | 66.4 | 0.171 | 68.6 | 0.151 | -85.6 |
| 900 | 0.368 | 149.8 | 2.995 | 62.9 | 0.191 | 66.7 | 0.158 | -90.1 |
| 1000 | 0.370 | 145.3 | 2.725 | 59.4 | 0.210 | 65.1 | 0.166 | -92.3 |
| 1100 | 0.373 | 141.5 | 2.494 | 56.5 | 0.230 | 63.0 | 0.170 | -95.1 |
| 1200 | 0.377 | 137.6 | 2.307 | 53.0 | 0.248 | 61.4 | 0.177 | -97.8 |

$V_{CE}=5V, I_C=20mA, Z_O=50\Omega$

| Freq(MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|-----------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 100 | 0.445 | -115.4 | 21.095 | 113.8 | 0.032 | 59.7 | 0.479 | -52.4 |
| 200 | 0.400 | -149.6 | 11.567 | 97.4 | 0.049 | 63.4 | 0.300 | -58.0 |
| 300 | 0.394 | -165.7 | 7.917 | 89.3 | 0.066 | 67.0 | 0.242 | -58.8 |
| 400 | 0.391 | -176.5 | 5.974 | 82.5 | 0.085 | 68.5 | 0.214 | -60.0 |
| 500 | 0.391 | 176.7 | 4.845 | 78.4 | 0.103 | 68.8 | 0.203 | -62.2 |
| 600 | 0.392 | 169.4 | 4.065 | 73.9 | 0.122 | 68.6 | 0.199 | -64.7 |
| 700 | 0.393 | 163.8 | 3.522 | 70.0 | 0.141 | 67.8 | 0.198 | -67.9 |
| 800 | 0.394 | 158.4 | 3.114 | 66.4 | 0.159 | 67.1 | 0.201 | -71.2 |
| 900 | 0.396 | 154.1 | 2.798 | 62.5 | 0.178 | 65.7 | 0.204 | -74.7 |
| 1000 | 0.399 | 149.3 | 2.548 | 58.9 | 0.196 | 64.5 | 0.212 | -78.1 |
| 1100 | 0.403 | 144.9 | 2.333 | 55.5 | 0.215 | 62.9 | 0.218 | -81.4 |
| 1200 | 0.408 | 141.0 | 2.158 | 51.8 | 0.233 | 61.8 | 0.224 | -84.1 |

$V_{CE}=8V, I_C=70mA, Z_O=50\Omega$

| Freq(MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|-----------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 100 | 0.328 | -141.2 | 25.505 | 105.1 | 0.024 | 70.5 | 0.348 | -50.8 |
| 200 | 0.323 | -165.7 | 13.334 | 93.0 | 0.043 | 75.0 | 0.233 | -48.9 |
| 300 | 0.323 | -176.6 | 9.025 | 86.7 | 0.062 | 75.8 | 0.204 | -47.0 |
| 400 | 0.326 | 175.1 | 6.819 | 81.8 | 0.081 | 75.5 | 0.191 | -48.0 |
| 500 | 0.325 | 169.5 | 5.481 | 77.8 | 0.100 | 74.5 | 0.187 | -50.5 |
| 600 | 0.328 | 163.6 | 4.612 | 73.7 | 0.119 | 73.4 | 0.185 | -53.6 |
| 700 | 0.330 | 158.4 | 3.980 | 70.2 | 0.139 | 71.8 | 0.188 | -57.3 |
| 800 | 0.333 | 153.5 | 3.524 | 66.7 | 0.157 | 70.4 | 0.191 | -60.9 |
| 900 | 0.335 | 150.0 | 3.148 | 63.3 | 0.177 | 68.5 | 0.198 | -65.1 |
| 1000 | 0.341 | 144.7 | 2.866 | 60.0 | 0.194 | 67.1 | 0.204 | -69.0 |
| 1100 | 0.345 | 141.2 | 2.629 | 57.0 | 0.213 | 65.1 | 0.208 | -72.1 |
| 1200 | 0.348 | 138.0 | 2.424 | 53.4 | 0.230 | 62.6 | 0.215 | -75.3 |

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