

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC5066

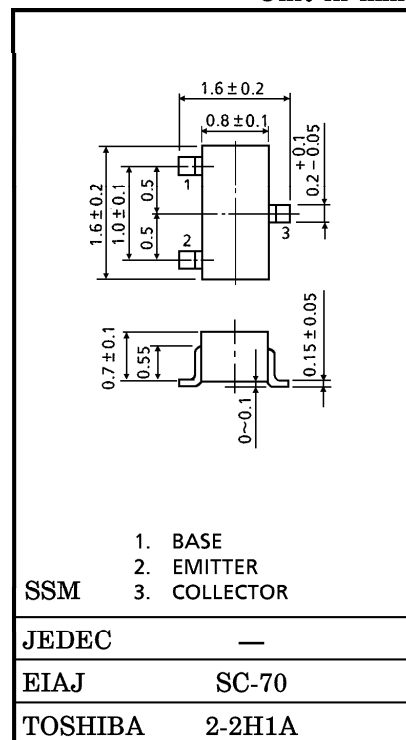
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

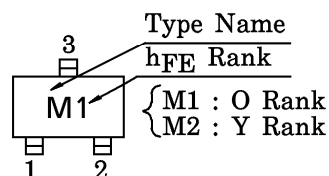
- Low Noise Figure, High Gain.
- $NF=1.1dB, |S_{21e}|^2=12dB (f=1GHz)$

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|-----------------------------|------------------|---------|------|
| Collector-Base Voltage | V _{CB0} | 20 | V |
| Collector-Emitter Voltage | V _{CEO} | 12 | V |
| Emitter-Base Voltage | V _{EBO} | 3 | V |
| Base Current | I _B | 15 | mA |
| Collector Current | I _C | 30 | mA |
| Collector Power Dissipation | P _C | 100 | mW |
| Junction Temperature | T _j | 125 | °C |
| Storage Temperature Range | T _{stg} | -55~125 | °C |



MARKING



Weight : 2.4mg

MICROWAVE CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------|-------------------------------------|---|------|------|------|------|
| Transition Frequency | f _T | V _{CE} =5V, I _C =10mA | 5 | 7 | — | GHz |
| Insertion Gain | S _{21e} ² (1) | V _{CE} =5V, I _C =10mA, f=500MHz | — | 17 | — | dB |
| | S _{21e} ² (2) | V _{CE} =5V, I _C =10mA, f=1GHz | 8.5 | 12 | — | |
| Noise Figure | NF (1) | V _{CE} =5V, I _C =3mA, f=500MHz | — | 1 | — | dB |
| | NF (2) | V _{CE} =5V, I _C =3mA, f=1GHz | — | 1.1 | 2.0 | |

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

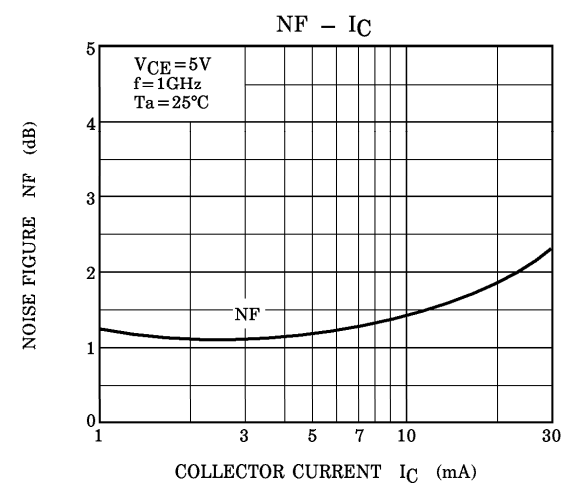
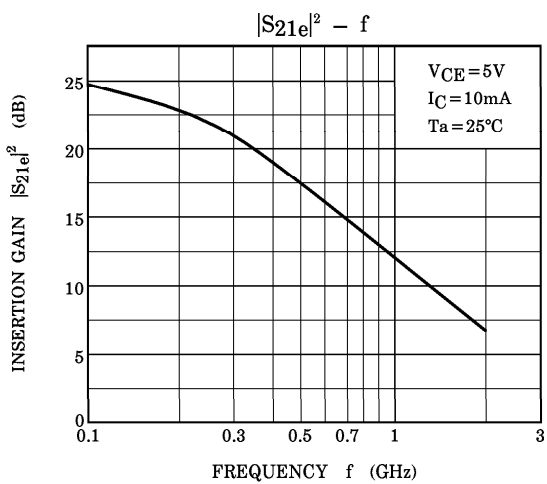
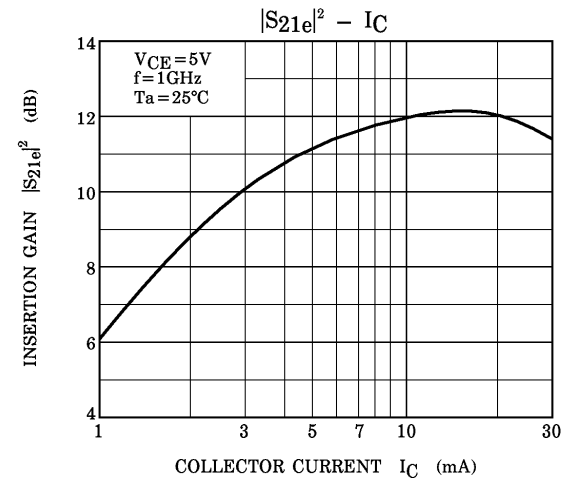
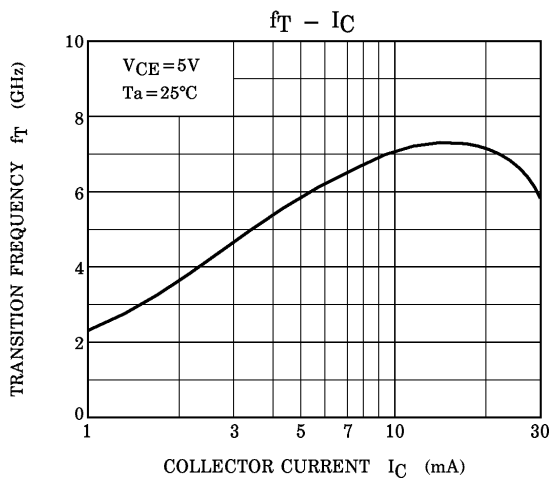
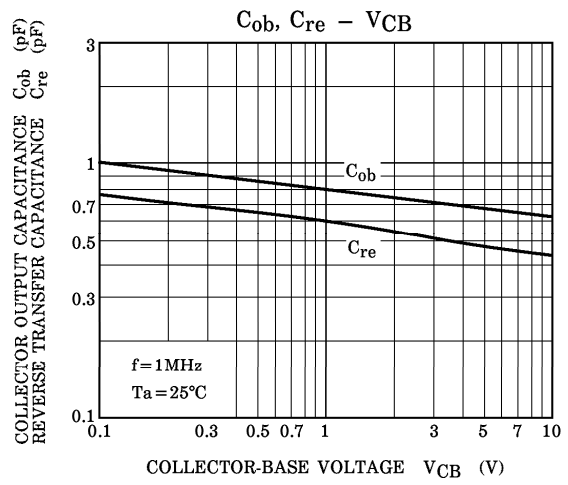
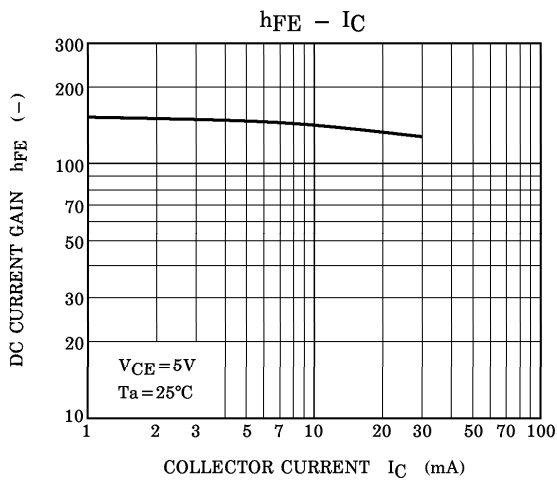
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|------------------------------|--------------------------|--|----------|------|------|------|
| Collector Cut-off Current | I _{CB0} | V _{CB} =10V, I _E =0 | — | — | 1 | μA |
| Emitter Cut-off Current | I _{EBO} | V _{EB} =1V, I _C =0 | — | — | 1 | μA |
| DC Current Gain | h _{FE} (Note 1) | V _{CE} =5V, I _C =10mA | 80 | — | 240 | — |
| Output Capacitance | C _{ob} | V _{CB} =5V, I _E =0, f=1MHz | — | 0.7 | — | pF |
| Reverse Transfer Capacitance | C _{re} | | (Note 2) | — | 0.45 | 0.9 |

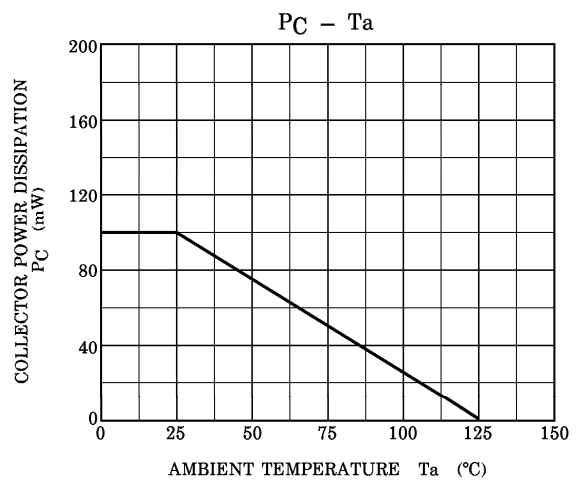
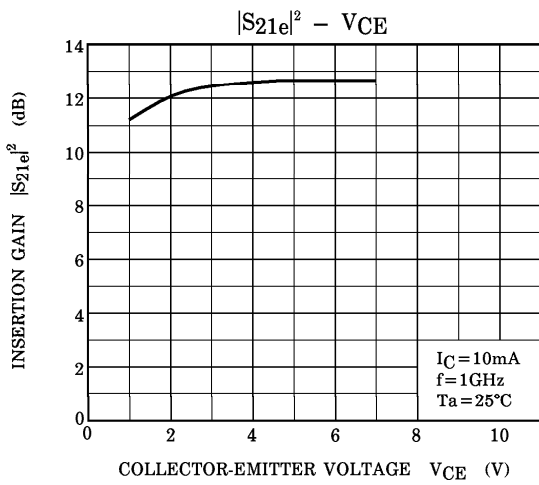
(Note 1) h_{FE} Classification O : 80~160, Y : 120~240

(Note 2) C_{re} is measured by 3 terminal method with capacitance bridge.

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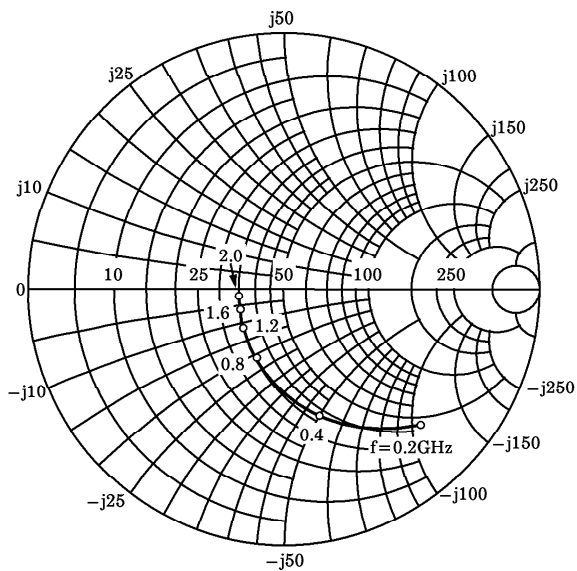
S-Parameter $Z_0 = 50\Omega$, $T_a = 25^\circ\text{C}$
 $V_{CE} = 5\text{V}$, $I_C = 5\text{mA}$

| frequency (MHz) | S11 | | S21 | | S12 | | S22 | |
|--------------------|-------|--------|--------|-------|-------|------|-------|-------|
| | Mag. | Ang. | Mag. | Ang. | Mag. | Ang. | Mag. | Ang. |
| 200 | 0.753 | -43.7 | 10.247 | 140.6 | 0.040 | 65.6 | 0.827 | -22.6 |
| 400 | 0.531 | -75.1 | 7.684 | 117.1 | 0.060 | 57.1 | 0.648 | -30.3 |
| 600 | 0.384 | -96.4 | 5.815 | 103.0 | 0.074 | 56.1 | 0.551 | -32.0 |
| 800 | 0.305 | -112.6 | 4.523 | 93.6 | 0.086 | 57.0 | 0.500 | -32.3 |
| 1000 | 0.255 | -126.5 | 3.788 | 86.3 | 0.099 | 58.9 | 0.472 | -32.4 |
| 1200 | 0.224 | -138.4 | 3.244 | 80.7 | 0.112 | 60.2 | 0.455 | -32.2 |
| 1400 | 0.203 | -150.1 | 2.833 | 75.4 | 0.127 | 60.3 | 0.442 | -32.6 |
| 1600 | 0.187 | -159.4 | 2.529 | 70.6 | 0.139 | 60.0 | 0.434 | -33.0 |
| 1800 | 0.174 | -166.5 | 2.283 | 66.7 | 0.150 | 60.3 | 0.429 | -32.6 |
| 2000 | 0.176 | -171.2 | 2.107 | 63.0 | 0.164 | 59.2 | 0.428 | -32.2 |

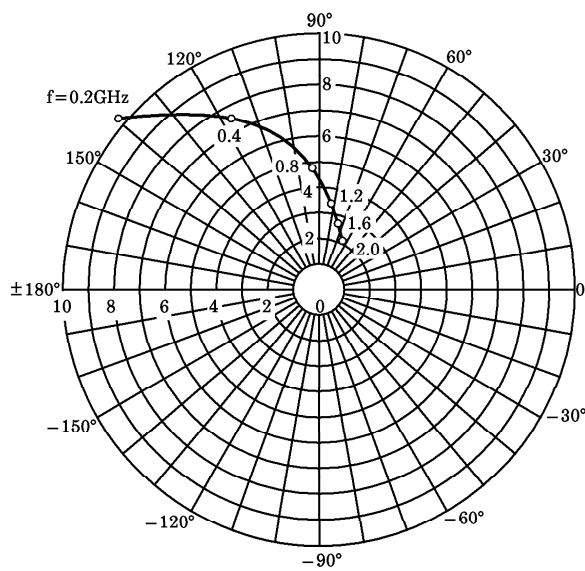
$V_{CE} = 5\text{V}$, $I_C = 10\text{mA}$

| frequency (MHz) | S11 | | S21 | | S12 | | S22 | |
|--------------------|-------|--------|--------|-------|-------|------|-------|-------|
| | Mag. | Ang. | Mag. | Ang. | Mag. | Ang. | Mag. | Ang. |
| 200 | 0.591 | -58.0 | 14.955 | 129.6 | 0.034 | 64.3 | 0.714 | -27.5 |
| 400 | 0.367 | -90.3 | 9.581 | 107.5 | 0.052 | 61.9 | 0.534 | -30.8 |
| 600 | 0.260 | -110.7 | 6.781 | 96.1 | 0.067 | 63.9 | 0.462 | -30.1 |
| 800 | 0.209 | -126.9 | 5.207 | 88.6 | 0.083 | 65.2 | 0.428 | -29.2 |
| 1000 | 0.178 | -141.8 | 4.269 | 82.5 | 0.100 | 66.4 | 0.412 | -28.6 |
| 1200 | 0.160 | -153.7 | 3.618 | 77.7 | 0.117 | 66.7 | 0.403 | -28.3 |
| 1400 | 0.150 | -166.3 | 3.152 | 72.7 | 0.135 | 65.4 | 0.398 | -28.8 |
| 1600 | 0.141 | -175.2 | 2.801 | 68.7 | 0.149 | 64.0 | 0.393 | -29.4 |
| 1800 | 0.130 | 178.2 | 2.521 | 65.0 | 0.163 | 63.4 | 0.392 | -29.0 |
| 2000 | 0.133 | 174.0 | 2.314 | 61.7 | 0.179 | 61.3 | 0.395 | -28.6 |

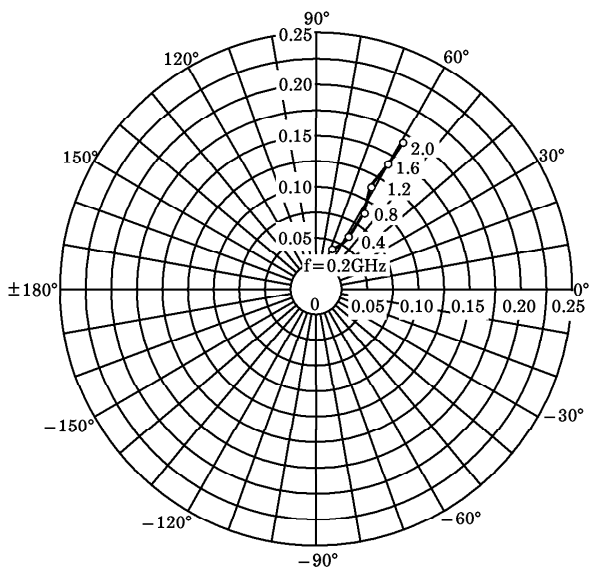
S_{11e}
 V_{CE}=5V
 I_C=5mA
 T_a=25°C
 (UNIT : Ω)



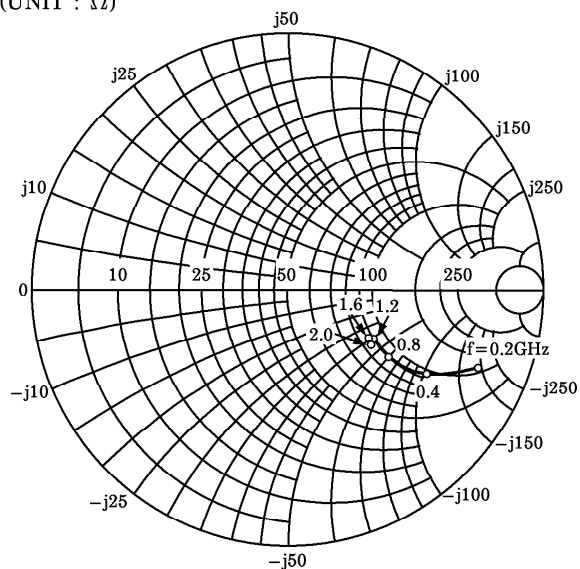
S_{21e}
 V_{CE}=5V
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 T_a=25°C



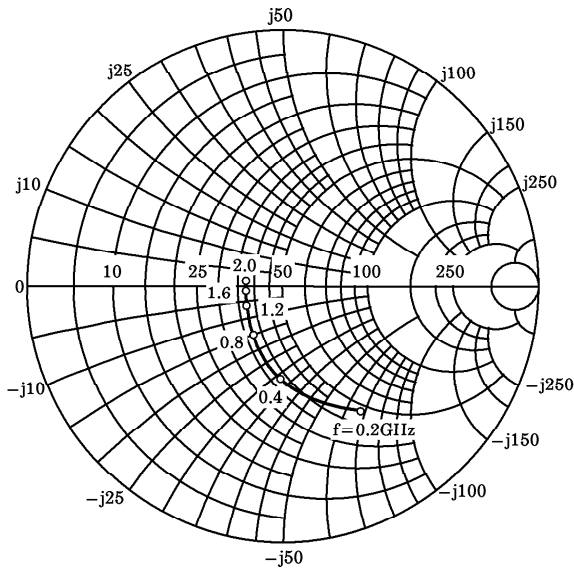
S_{12e}
 V_{CE}=5V
 I_C=5mA
 T_a=25°C



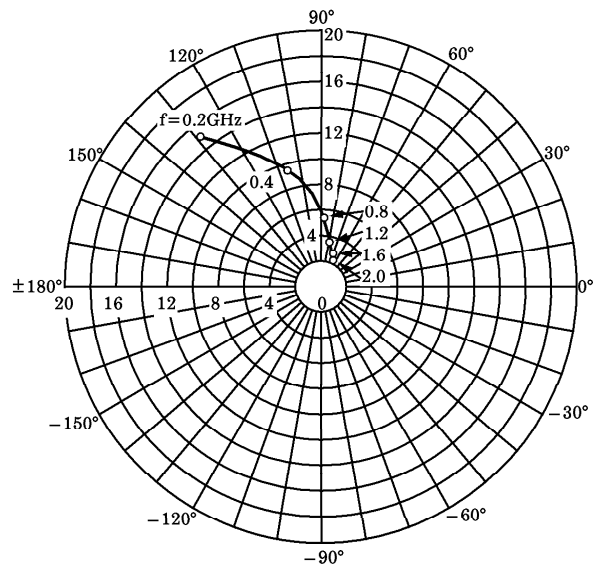
S_{22e}
 V_{CE}=5V
 I_C=5mA
 T_a=25°C
 (UNIT : Ω)



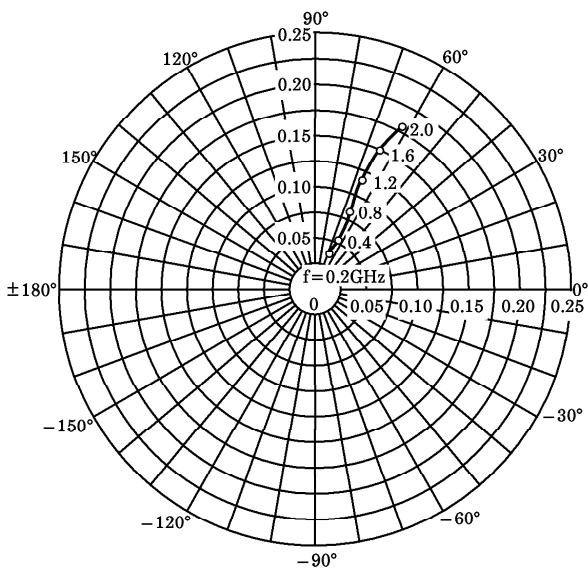
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