

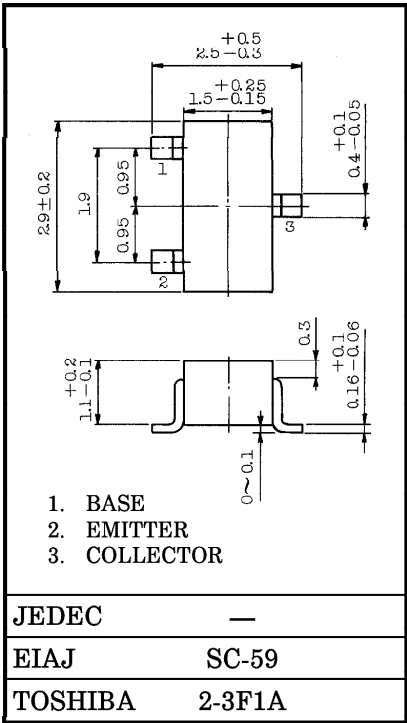
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC3606

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS.

- Low Noise Figure, High Gain.
- $NF=1.1dB$ ,  $|S_{21e}|^2=11dB$  ( $f=1GHz$ )

Unit in mm



MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC              | SYMBOL    | RATING         | UNIT       |
|-----------------------------|-----------|----------------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | 20             | V          |
| Collector-Emitter Voltage   | $V_{CEO}$ | 12             | V          |
| Emitter-Base Voltage        | $V_{EBO}$ | 3              | V          |
| Collector Current           | $I_C$     | 80             | mA         |
| Base Current                | $I_B$     | 40             | mA         |
| Collector Power Dissipation | $P_C$     | 150            | mW         |
| Junction Temperature        | $T_j$     | 125            | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$ | $-55 \sim 125$ | $^\circ C$ |

MICROWAVE CHARACTERISTICS ( $T_a = 25^\circ C$ )

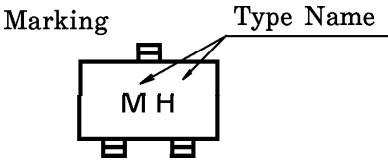
| CHARACTERISTIC       | SYMBOL           | TEST CONDITION                   | MIN. | TYP. | MAX. | UNIT |
|----------------------|------------------|----------------------------------|------|------|------|------|
| Transition Frequency | $f_T$            | $V_{CE}=10V, I_C=20mA$           | 5    | 7    | —    | GHz  |
| Insertion Gain       | $ S_{21e} ^2(1)$ | $V_{CE}=10V, I_C=20mA, f=500MHz$ | —    | 16.5 | —    | dB   |
|                      | $ S_{21e} ^2(2)$ | $V_{CE}=10V, I_C=20mA, f=1GHz$   | 7.5  | 11   | —    |      |
| Noise Figure         | NF (1)           | $V_{CE}=10V, I_C=5mA, f=500MHz$  | —    | 1    | —    | dB   |
|                      | NF (2)           | $V_{CE}=10V, I_C=5mA, f=1GHz$    | —    | 1.1  | 2    |      |

Weight : 0.012g

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

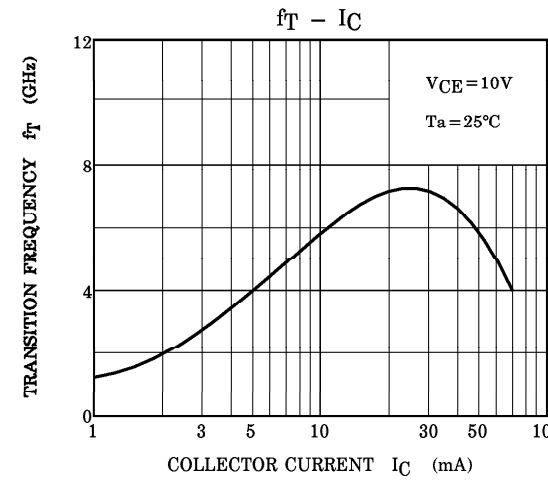
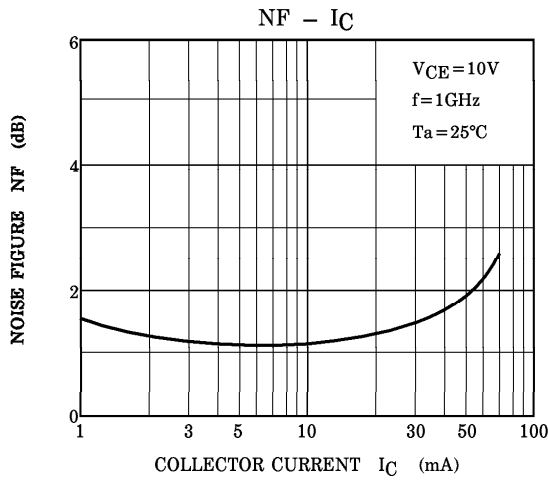
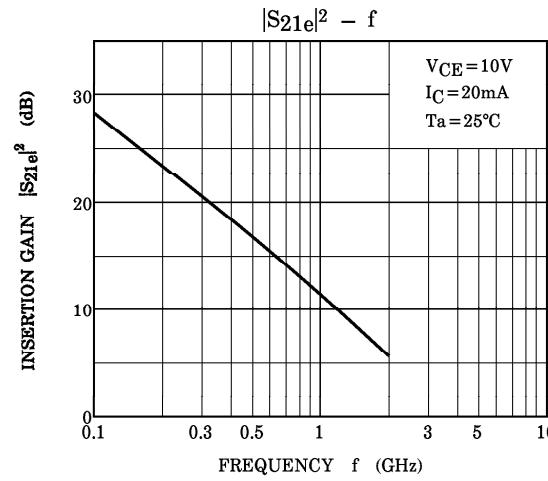
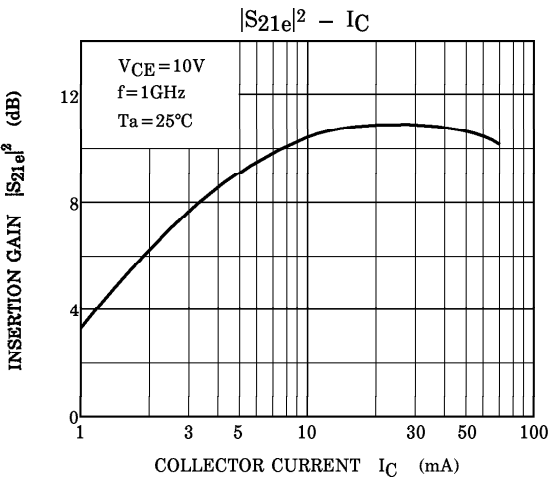
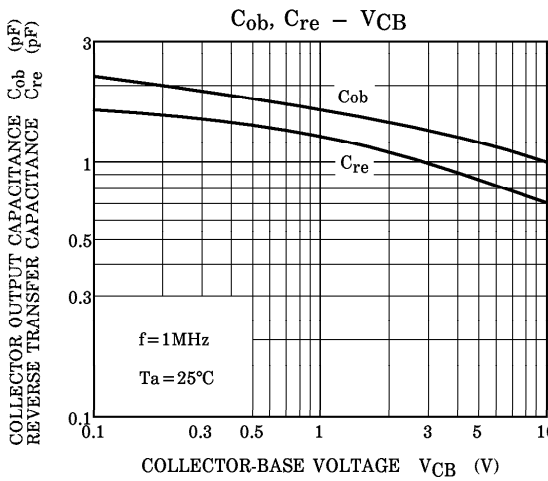
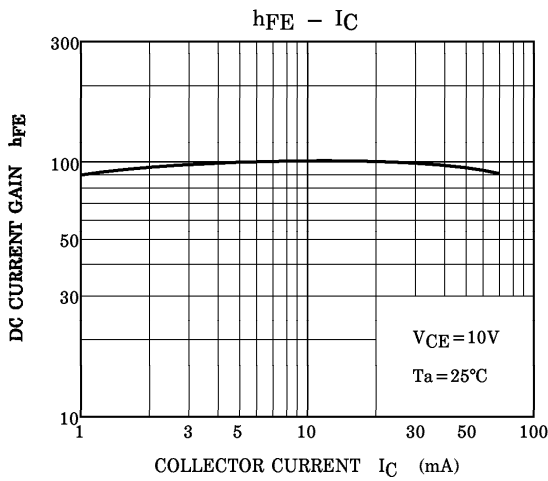
| CHARACTERISTIC               | SYMBOL    | TEST CONDITION                        | MIN. | TYP. | MAX. | UNIT    |
|------------------------------|-----------|---------------------------------------|------|------|------|---------|
| Collector Cut-off Current    | $I_{CBO}$ | $V_{CB}=10V, I_E=0$                   | —    | —    | 1    | $\mu A$ |
| Emitter Cut-off Current      | $I_{EBO}$ | $V_{EB}=1V, I_C=0$                    | —    | —    | 1    | $\mu A$ |
| DC Current Gain              | $h_{FE}$  | $V_{CE}=10V, I_C=20mA$                | 30   | —    | 250  | pF      |
| Output Capacitance           | $C_{ob}$  | $V_{CB}=10V, I_E=0, f=1MHz$<br>(Note) | —    | 1.0  | —    | pF      |
| Reverse Transfer Capacitance | $C_{re}$  |                                       | —    | 0.7  | 1.15 |         |

Note :  $C_{re}$  is measured by 3 terminal method with Capacitance Bridge.



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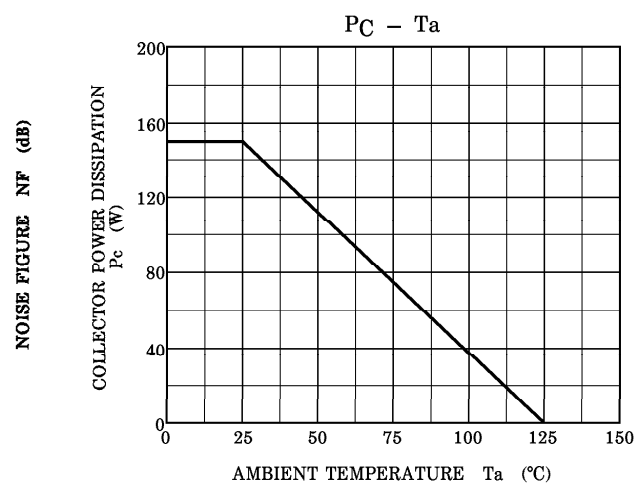
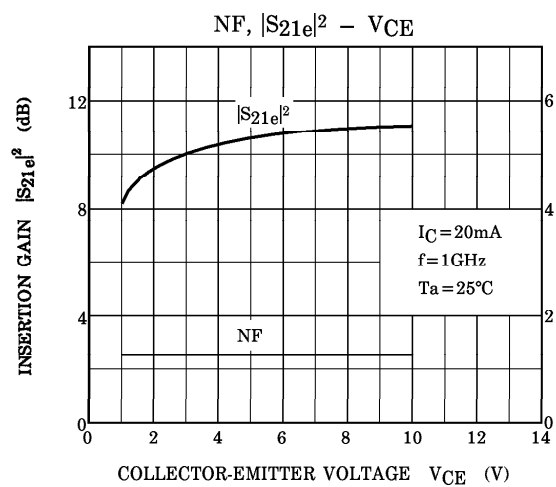
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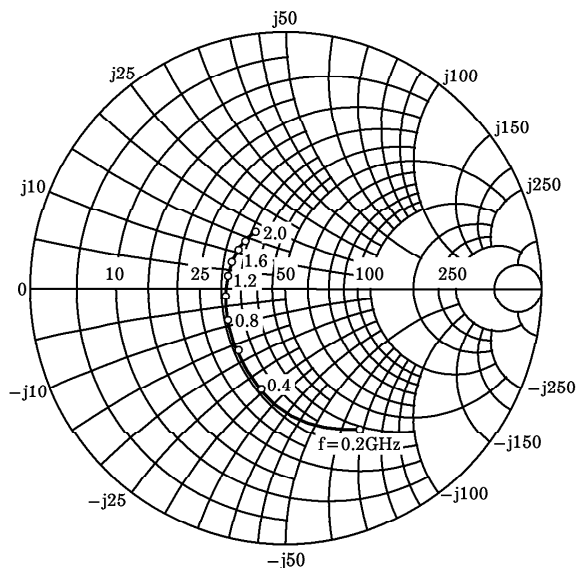
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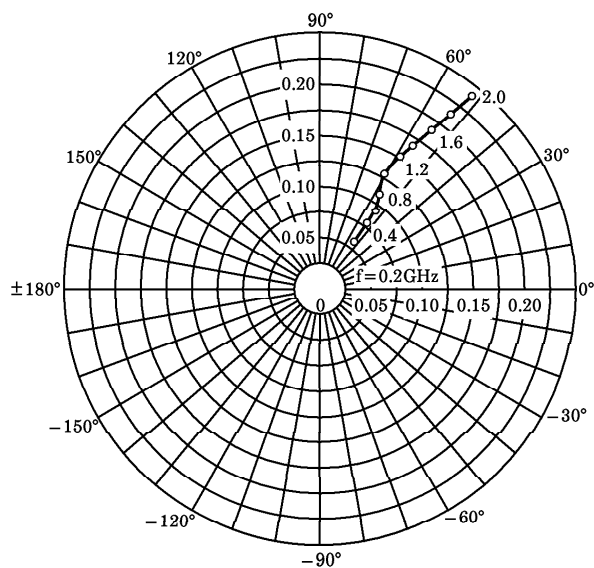
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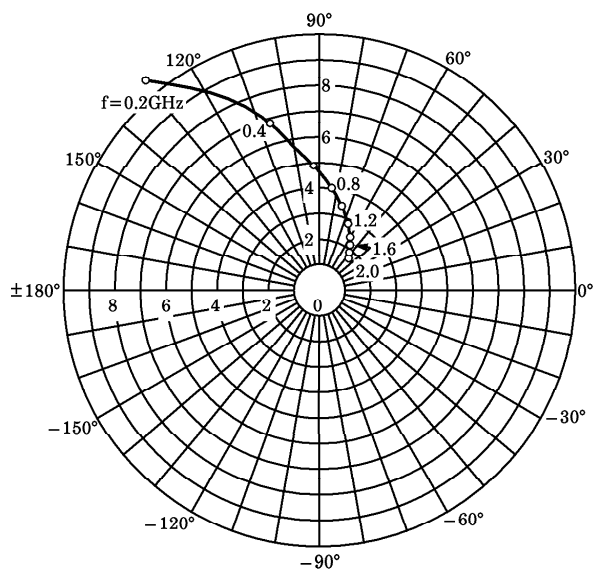
$S_{11e}$   
 $V_{CE} = 10V$   
 $I_C = 5mA$   
 $T_a = 25^\circ C$   
 (Unit :  $\Omega$ )



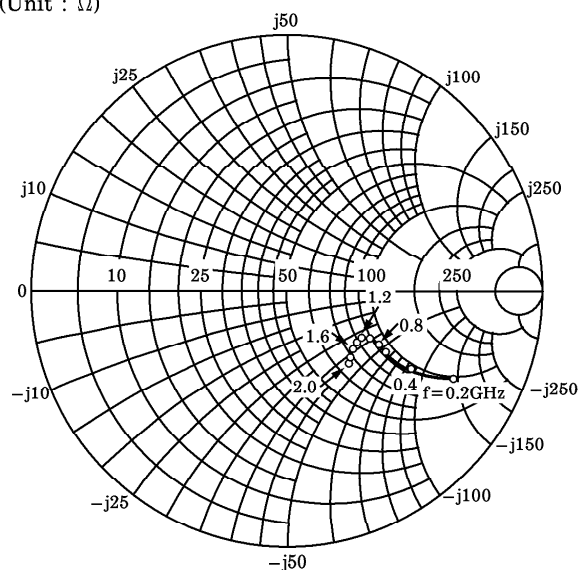
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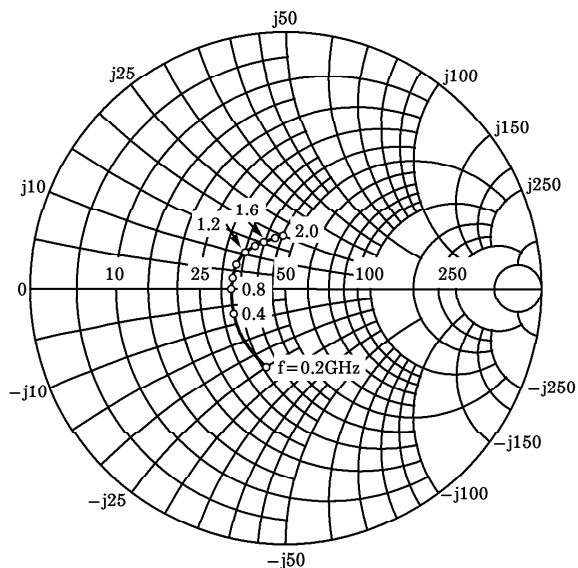
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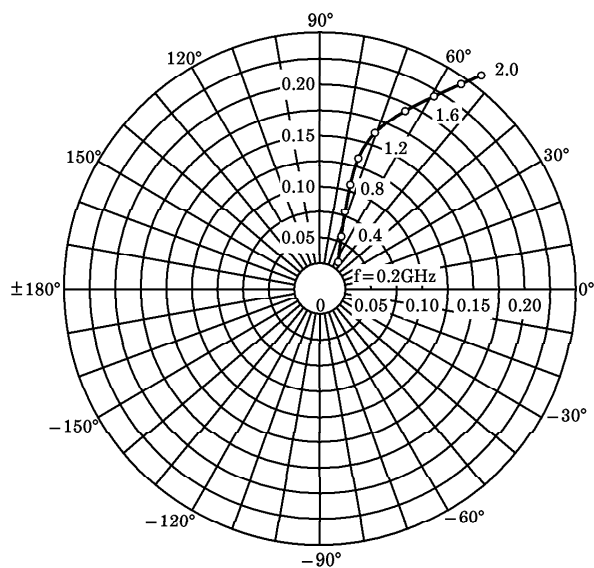
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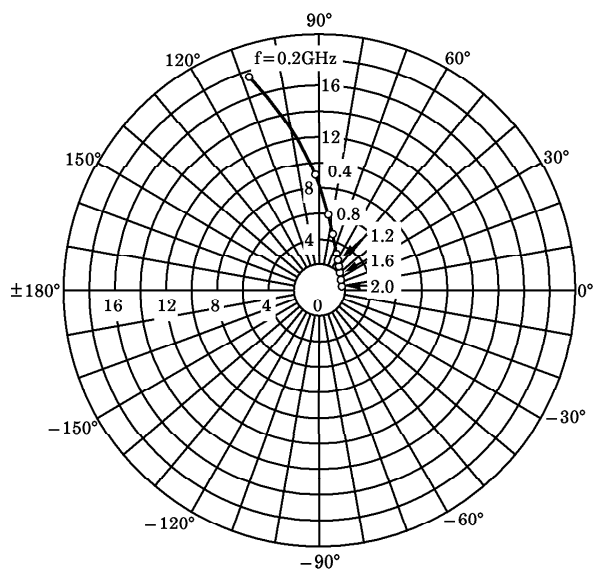
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