# ハリコンNPNエピタキシアルプレーナ形トランジスタ
# ILICON NPN EPITAXIAL PLANAR TRANSISTOR

# 2SC2114

TENTATIVE

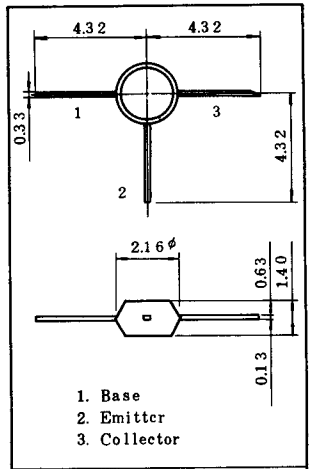
○ UHF～C バンド低雑音増幅用

○ UHF～C Band Low Noise Amplifier Applications

○ 高速度スイッチング用

○ High Speed Switching Appications

- $f_T = 7GHz$
- $|S_{21e}|^2 = 7dB$ ( f = 2GHz )




| | |
|---|---|
| JEDEC | |
| EIAJ | |
| TOSHIBA | 2-2B1A |

最大定格 MAXIMUM RATINGS ($T_a$ = 25℃)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| コレクタベース間電圧 | $V_{CBO}$ | 15 | V |
| コレクタエミッタ間電圧 | $V_{CEO}$ | 8 | V |
| エミッタベース間電圧 | $V_{EBO}$ | 3.0 | V |
| コレクタ電流 | $I_C$ | 80 | mA |
| エミッタ電流 | $I_E$ | -80 | mA |
| コレクタ損失 | $P_C$ | 225 | mW |
| 接合部温度 | $T_j$ | 125 | ℃ |
| 保存温度 | $T_{stg}$ | -65～125 | ℃ |

マイクロ波特性 MICROWAVE CHARACTERISTICS ($T_a$=25℃)

| CHARACTERISTIC | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| トランジション周波数 | $f_T$ | $V_{CE}$ = 5V, $I_C$ = 30mA | — | 7.0 | — | GHz |
| 挿入電力利得 | $\|S_{21e}\|^2$ | $V_{CE}$ = 5V, $I_C$ = 30mA, f = 2GHz | 5.5 | 7.0 | — | dB |
| | | $V_{CE}$ = 3V, $I_C$ = 50mA, f = 2GHz | — | 6.5 | — | dB |
| 雑音指数 | NF | $V_{CE}$ = 5V, $I_C$ = 30mA, f = 2GHz | — | 4.0 | — | dB |

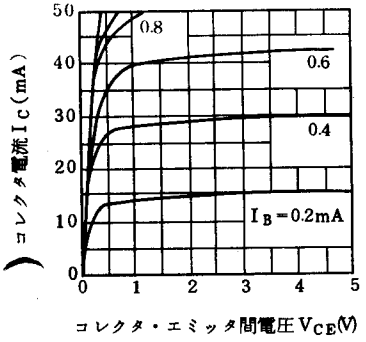
電気的特性 ELECTRICAL CHARACTERISTICS ($T_a$ = 25℃)

| CHARACTERISTIC | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| コレクタしゃ断電流 | $I_{CBO}$ | $V_{CB}$=10V, $I_E$=0 | — | — | 0.1 | μA |
| エミッタしゃ断電流 | $I_{EBO}$ | $V_{EB}$=2V, $I_C$=0 | — | — | 1.0 | μA |
| 直流電流増幅率 | $h_{FE}$ | $V_{CE}$=3V, $I_C$=50mA | 30 | 75 | — | — |
| コレクタ・エミッタ間飽和電圧 | $V_{CE}$(sat) | $I_C$=30mA, $I_B$=3mA | — | 0.25 | — | V |
| ベース・エミッタ間飽和電圧 | $V_{BE}$(sat) | $I_C$=30mA, $I_B$=3mA | — | 0.87 | — | V |
| コレクタ出力容量 | $C_{ob}$ | $V_{CB}$=5V, $I_E$=0 f=1MHz (Note 1) | — | 1.0 | 1.3 | pF |
| 帰還容量 | $C_{re}$ | | — | 0.8 | — | pF |
| 入力容量 | $C_{ib}$ | $I_C$=0, $V_{EB}$=0 f=1MHz | — | 1.7 | — | pF |
| ベース拡がり抵抗 | $r_{bb'}$ | $V_{CB}$=5V, $I_C$=5mA | — | 30 | — | Ω |

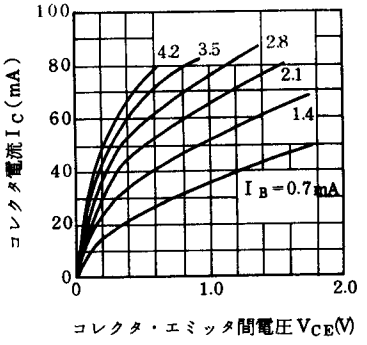
Note 1 ; CreはBoonton Electronics Corp.製75D Direct Capacitance Bridgeによって三端子法で測定。

Cre is Measured by 3−Terminal Method with Boorton Electronics Corp. 75D Direct Capacitance Bridge.

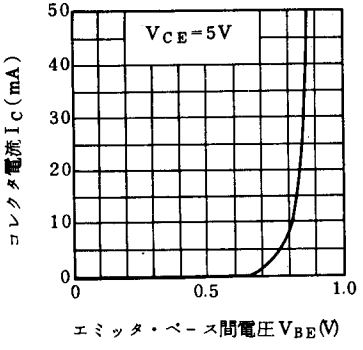
$I_C-V_{CE}$(1)



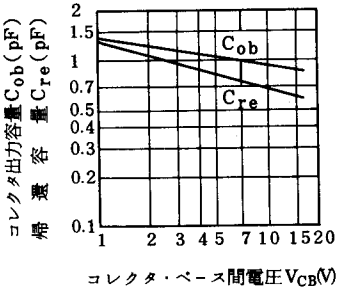

$I_C-V_{CE}$(2)



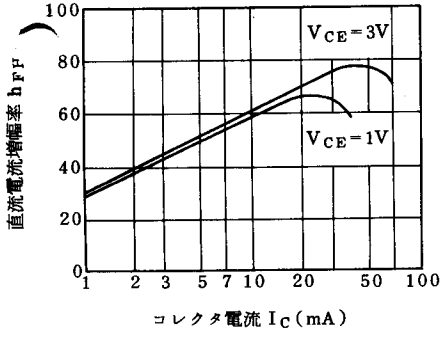

$I_C-V_{BE}$



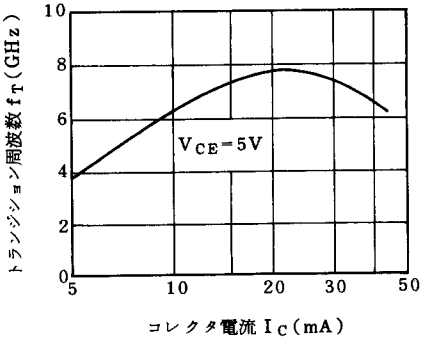

$C_{ob}$, $C_{re}-V_{CB}$



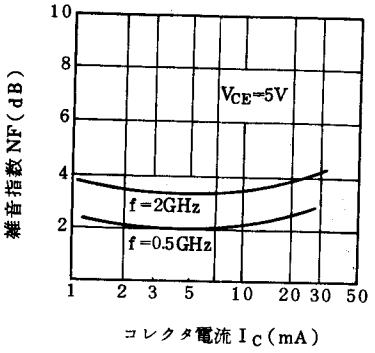

$h_{FE}-I_C$



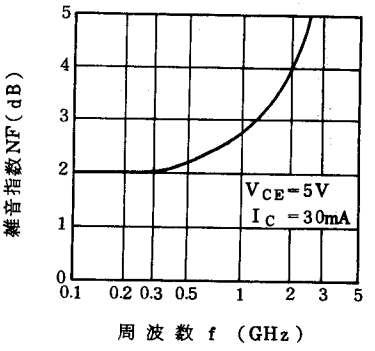

$f_T-I_C$



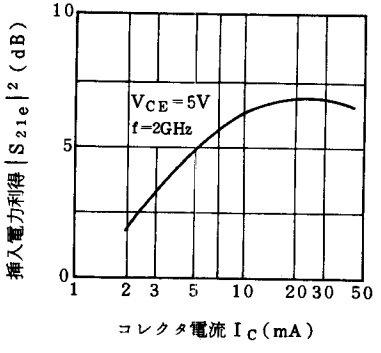
NF－$I_C$



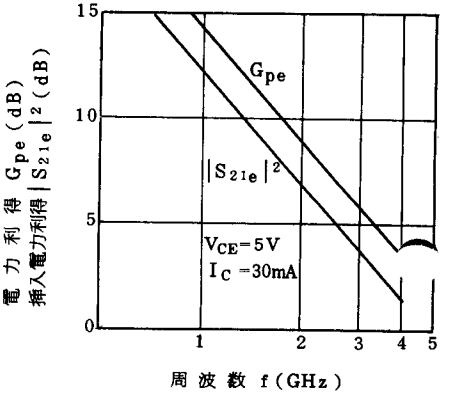

NF－f




$|S_{21e}|^2$－$I_C$

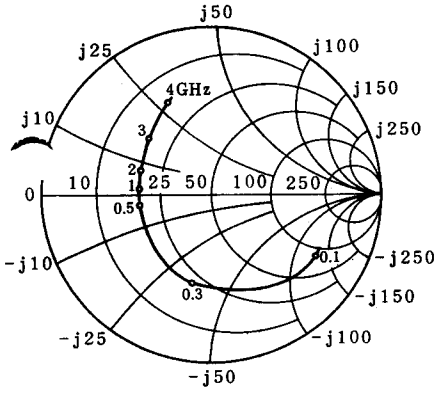



$|S_{21e}|^2$, $G_{pe}$－f



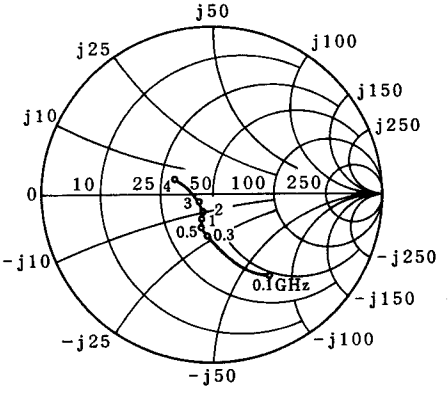
2SC2114のエミッタ接地，小信号Sパラメータ

COMMON EMITTER SMALL SIGNAL S-PARAMETERS OF 2SC2114



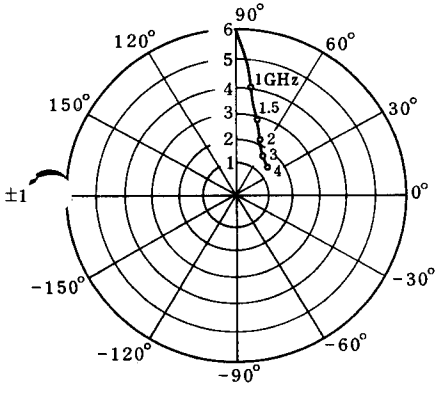

$S_{11e}$

(Unit in Ω)

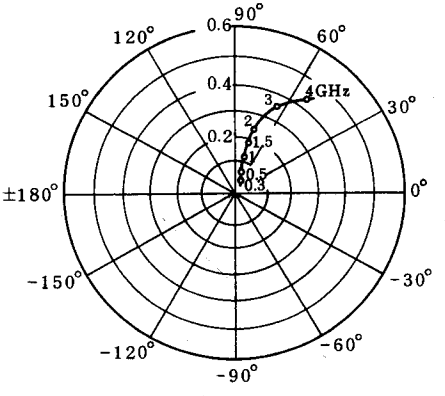



$S_{22e}$

(Unit in Ω)




$S_{21e}$




$S_{12e}$