# 2SC3934

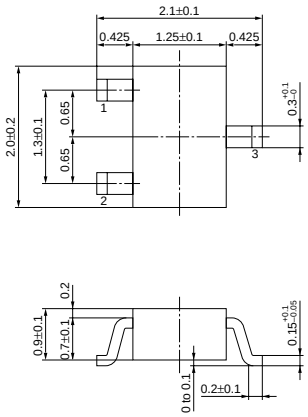
## Silicon NPN epitaxial planer type

For high-frequency wide-band low-noise amplification

### Features

- High transition frequency $f_T$.
- S-Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

Unit: mm




1:Base
2:Emitter EIAJ:SC–70
3:Collector S–Mini Type Package

Marking symbol : 1U

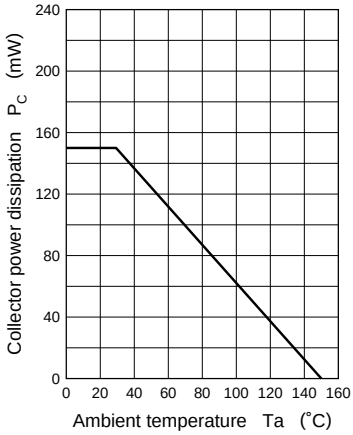
### Absolute Maximum Ratings (Ta=25˚C)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | 15 | V |
| Collector to emitter voltage | $V_{CEO}$ | 12 | V |
| Emitter to base voltage | $V_{EBO}$ | 2.5 | V |
| Peak collector current | $I_{CP}$ | 50 | mA |
| Collector current | $I_C$ | 30 | mA |
| Collector power dissipation | $P_C$ | 150 | mW |
| Junction temperature | $T_j$ | 150 | ˚C |
| Storage temperature | $T_{stg}$ | –55 ~ +150 | ˚C |

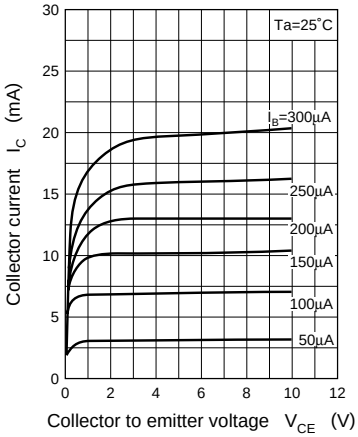
### Electrical Characteristics (Ta=25˚C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$ = 10V, $I_E$ = 0 | | | 100 | µA |
| Emitter cutoff current | $I_{EBO}$ | $V_{EB}$ = 2V, $I_C$ = 0 | | | 1 | µA |
| Forward current transfer ratio | $h_{FE}$ | $V_{CE}$ = 10V, $I_C$ = 10mA | 40 | | | |
| Transition frequency | $f_T$ | $V_{CE}$ = 10V, $I_C$ = 10mA, f = 800MHz | | 4.5 | | GHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = 10V, $I_E$ = 0, f = 1MHz | | | 1.2 | pF |
| Foward transfer gain | $\|S_{21e}\|^2$ | $V_{CE}$ = 10V, $I_C$ = 20mA, f = 800MHz | 9 | 12 | | dB |
| Maximum unilateral power gain | GUM | $V_{CE}$ = 10V, $I_C$ = 20mA, f = 800MHz | 12 | 14 | | dB |
| Noise figure | NF | $V_{CE}$ = 10V, $I_C$ = 5mA, f = 800MHz | | 1.3 | 2.5 | dB |

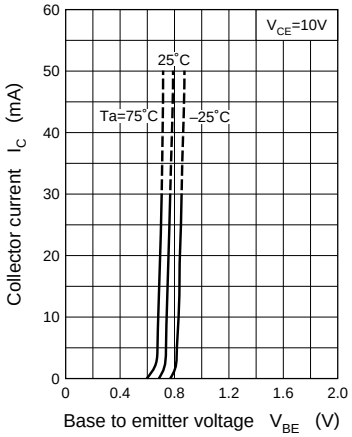
$P_C$ — Ta



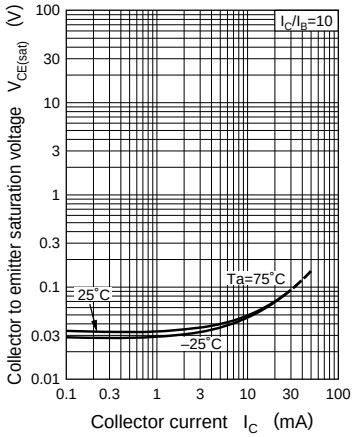

$I_C$ — $V_{CE}$



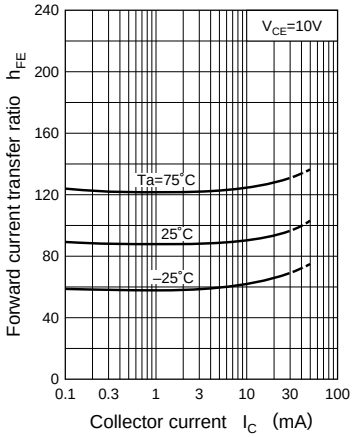

$I_C$ — $V_{BE}$



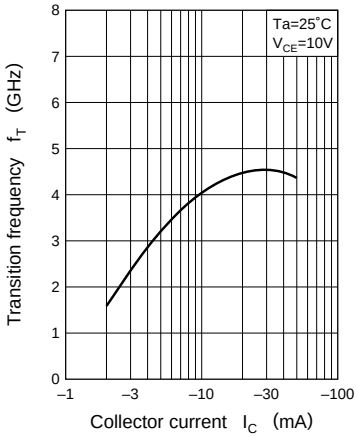

$V_{CE(sat)}$ — $I_C$



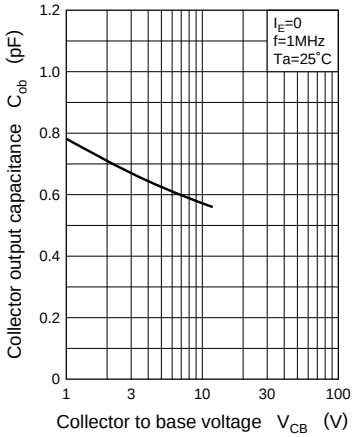

$h_{FE}$ — $I_C$



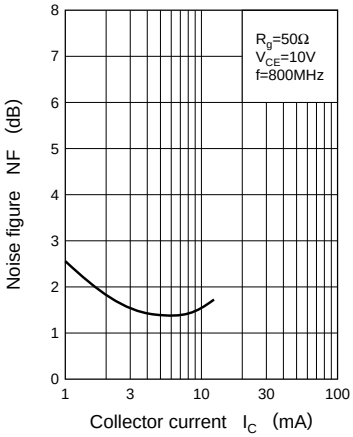

$f_T$ — $I_C$



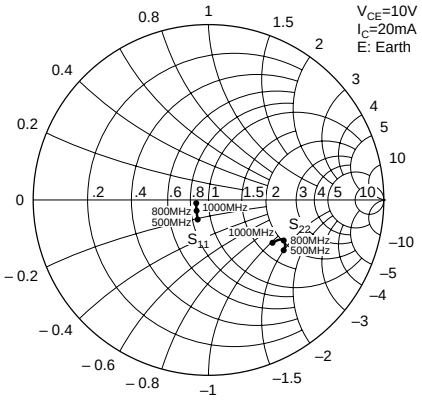

$C_{ob}$ — $V_{CB}$



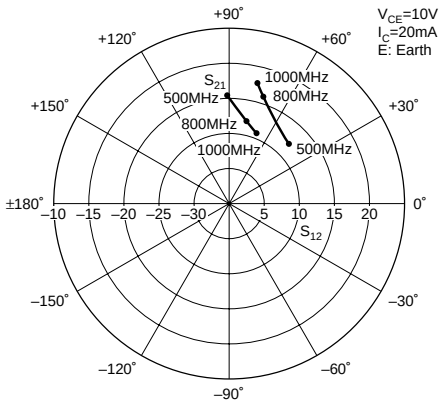

NF — $I_C$




$S_{11}$, $S_{22}$



$S_{12}$, $S_{21}$


+90°
+120°
+60°
+150°
+30°
±180°
0°
–150°
–30°
–120°
–60°
–90°
$V_{CE}$=10V
$I_C$=20mA
E: Earth
$S_{21}$
1000MHz
800MHz
500MHz
800MHz
1000MHz
500MHz
–10 –15 –20 –25 –30 5 10 15 20
$S_{12}$

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