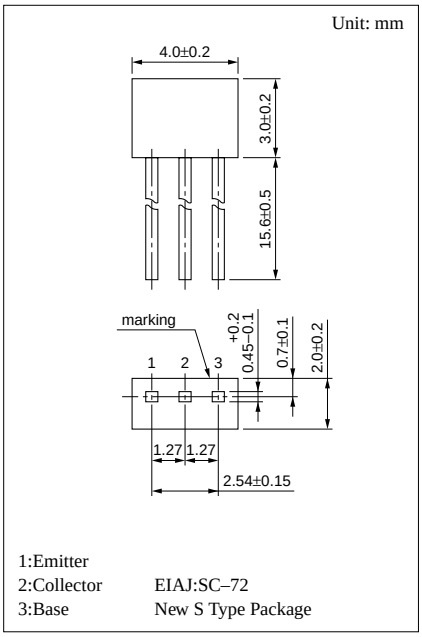
# 2SA1309A

## Silicon PNP epitaxial planer type

For low-frequency amplification
Complementary to 2SC3311A




### Features

- High foward current transfer ratio $h_{FE}$.
- Allowing supply with the radial taping.
- Optimum for high-density mounting.

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

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | –60 | V |
| Collector to emitter voltage | $V_{CEO}$ | –50 | V |
| Emitter to base voltage | $V_{EBO}$ | –7 | V |
| Peak collector current | $I_{CP}$ | –200 | mA |
| Collector current | $I_C$ | –100 | mA |
| Collector power dissipation | $P_C$ | 300 | mW |
| Junction temperature | $T_j$ | 150 | ˚C |
| Storage temperature | $T_{stg}$ | –55 ~ +150 | ˚C |

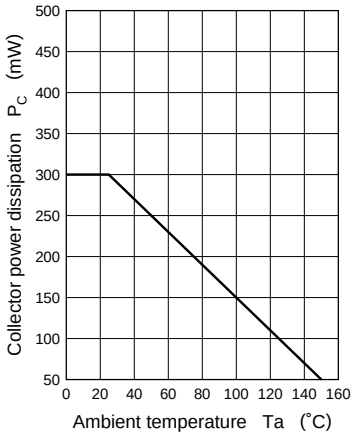
### Electrical Characteristics (Ta=25˚C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$ = –10V, $I_E$ = 0 | | | –100 | nA |
| | $I_{CEO}$ | $V_{CE}$ = –10V, $I_B$ = 0 | | | –1 | µA |
| Collector to base voltage | $V_{CBO}$ | $I_C$ = –10µA, $I_E$ = 0 | –60 | | | V |
| Collector to emitter voltage | $V_{CEO}$ | $I_C$ = –2mA, $I_B$ = 0 | –50 | | | V |
| Emitter to base voltage | $V_{EBO}$ | $I_E$ = –10µA, $I_C$ = 0 | –7 | | | V |
| Forward current transfer ratio | $h_{FE}$* | $V_{CE}$ = –10V, $I_C$ = –2mA | 160 | | 460 | |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ = –50mA, $I_B$ = –5mA | | | – 0.3 | V |
| Transition frequency | $f_T$ | $V_{CB}$ = –10V, $I_E$ = 1mA, f = 200MHz | | 80 | | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = –10V, $I_E$ = 0, f = 1MHz | | 3.5 | | pF |

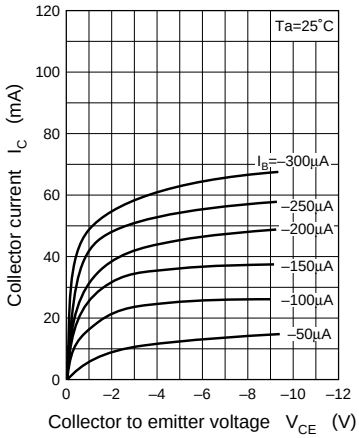
*$h_{FE}$ Rank classification

| Rank | Q | R | S |
|---|---|---|---|
| $h_{FE}$ | 160 ~ 260 | 210 ~ 340 | 290 ~ 460 |

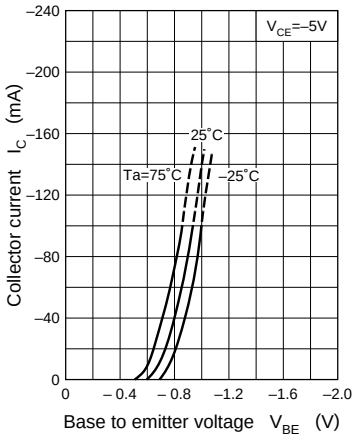
$P_C$ — Ta



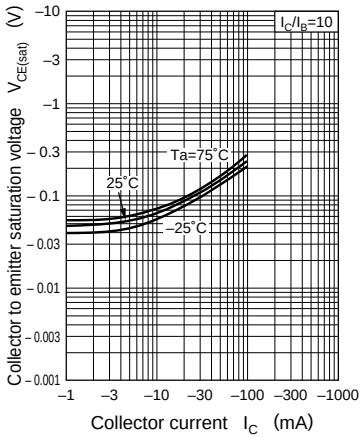

$I_C$ — $V_{CE}$



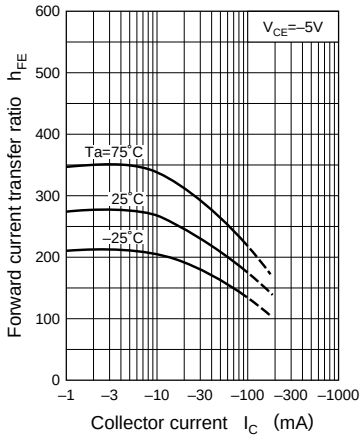

$I_C$ — $V_{BE}$



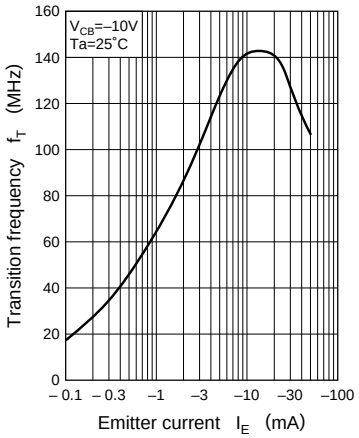

$V_{CE(sat)}$ — $I_C$




$h_{FE}$ — $I_C$




$f_T$ — $I_E$




$C_{ob}$ — $V_{CB}$