

# 2SA1309A

## Silicon PNP epitaxial planer type

For low-frequency amplification

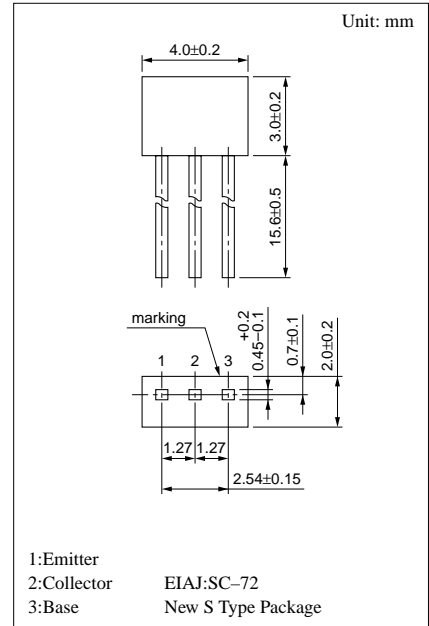
Complementary to 2SC3311A

### Features

- High forward 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   |



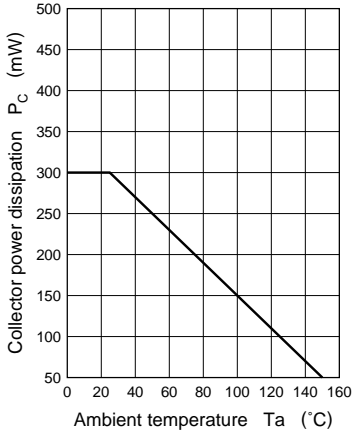
### Electrical Characteristics (Ta=25°C)

| 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               | $V_{CBO}$     | $I_C = -10\mu A, I_E = 0$              | -60 |     |      | V    |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = -2mA, I_B = 0$                  | -50 |     |      | V    |
| Emitter to base voltage                 | $V_{EBO}$     | $I_E = -10\mu A, I_C = 0$              | -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   |

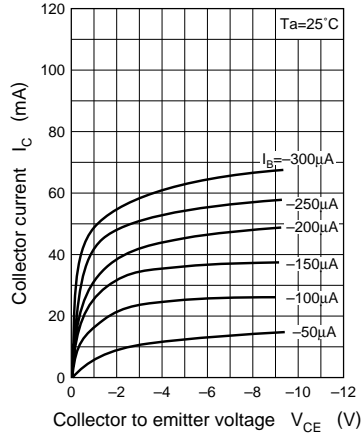
\* $h_{FE}$  Rank classification

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

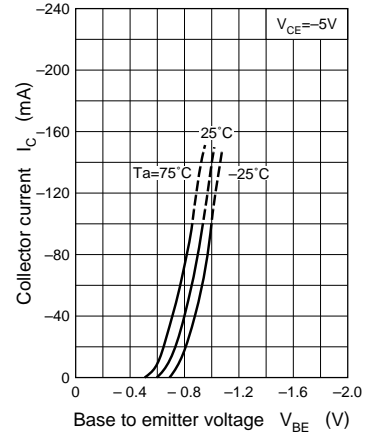
$P_C - T_a$



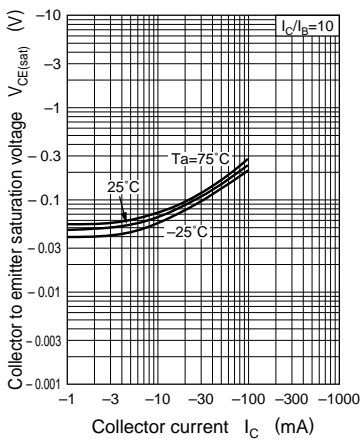
$I_C - V_{CE}$



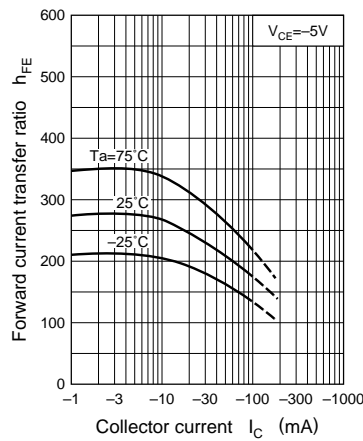
$I_C - V_{BE}$



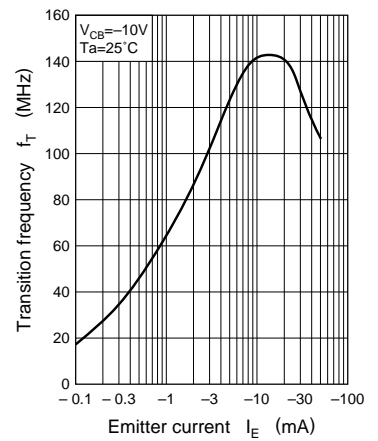
$V_{CE(sat)} - I_C$



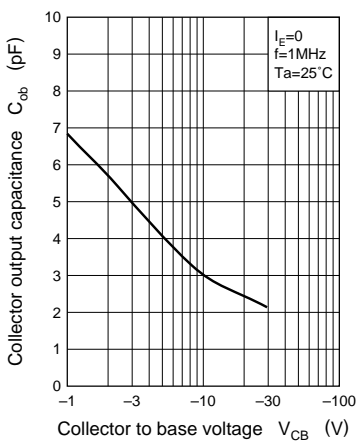
$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$



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