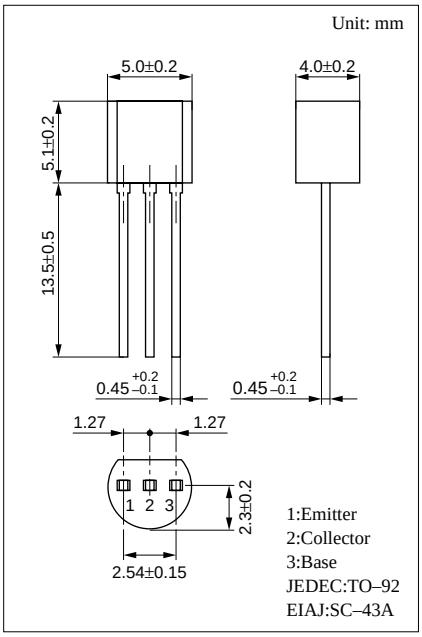
# 2SA838

## Silicon PNP epitaxial planer type

For high-frequency amplification
Complementary to 2SC1359




### Features

- High transition frequency $f_T$.

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

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | –30 | V |
| Collector to emitter voltage | $V_{CEO}$ | –20 | V |
| Emitter to base voltage | $V_{EBO}$ | –5 | V |
| Collector current | $I_C$ | –30 | mA |
| Collector power dissipation | $P_C$ | 250 | mW |
| Junction temperature | $T_j$ | 150 | ˚C |
| Storage temperature | $T_{stg}$ | –55 ~ +150 | ˚C |

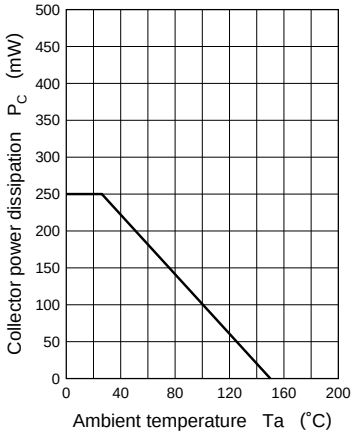
### Electrical Characteristics (Ta=25˚C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$ = –10V, $I_E$ = 0 | | | – 0.1 | µA |
| | $I_{CEO}$ | $V_{CE}$ = –20V, $I_B$ = 0 | | | –100 | |
| Emitter cutoff current | $I_{EBO}$ | $V_{EB}$ = –5V, $I_C$ = 0 | | | –10 | µA |
| Forward current transfer ratio | $h_{FE}$* | $V_{CE}$ = –10V, $I_C$ = –1mA | 70 | | 220 | |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ = –10mA, $I_B$ = –1mA | | – 0.1 | | V |
| Base to emitter voltage | $V_{BE}$ | $V_{CE}$ = –10V, $I_C$ = –1mA | | – 0.7 | | V |
| Transition frequency | $f_T$ | $V_{CB}$ = –10V, $I_E$ = 1mA, f = 200MHz | 150 | 300 | | MHz |
| Noise figure | NF | $V_{CB}$ = –10V, $I_E$ = 1mA, f = 5MHz | | 2.8 | 4.0 | dB |
| Reverse transfer impedance | $Z_{rb}$ | $V_{CE}$ = –10V, $I_C$ = –1mA, f = 2MHz | | 22 | 50 | Ω |
| Common emitter reverse transfer capacitance | $C_{re}$ | $V_{CE}$ = –10V, $I_C$ = –1mA, f = 10.7MHz | | 1.2 | 2.0 | pF |

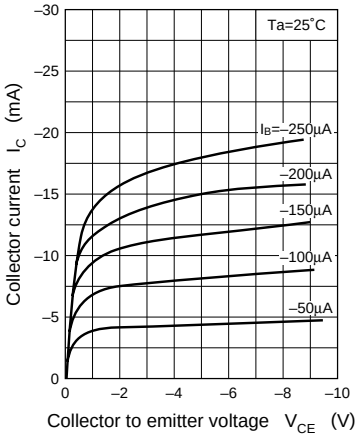
*$h_{FE}$ Rank classification

| Rank | B | C |
|---|---|---|
| $h_{FE}$ | 70 ~ 140 | 110 ~ 220 |

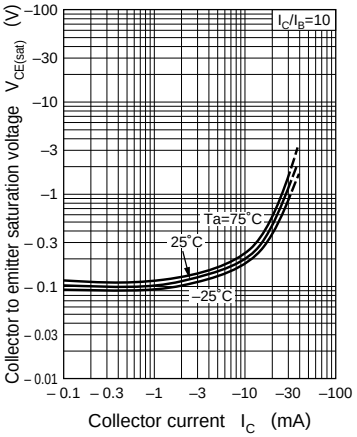
$P_C$ — Ta



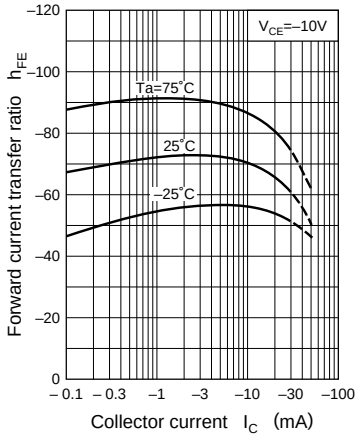

$I_C$ — $V_{CE}$



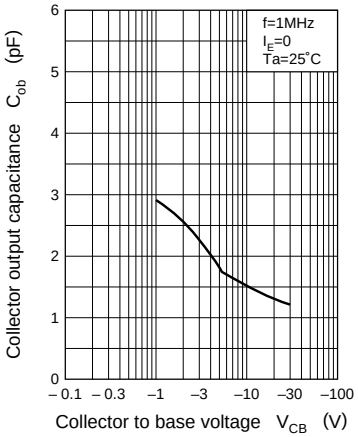

$V_{CE(sat)}$ — $I_C$



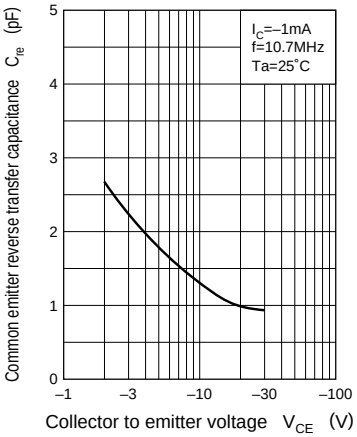

$h_{FE}$ — $I_C$



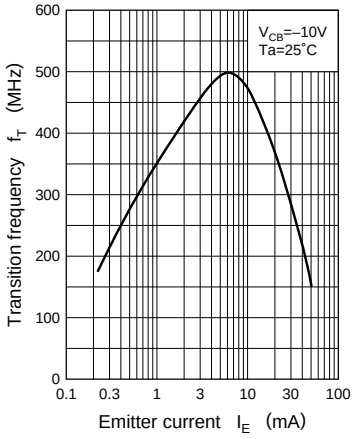

$C_{ob}$ — $V_{CB}$



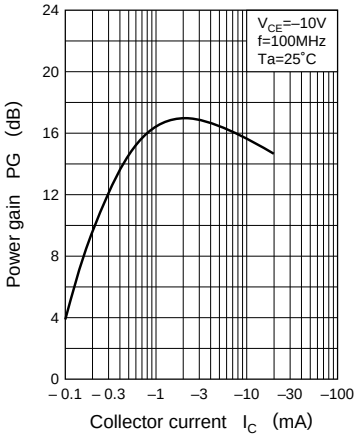

$C_{re}$ — $V_{CE}$




$f_T$ — $I_E$




PG — $I_C$




NF — $I_E$