

# 2SC1688

Silicon NPN epitaxial planer type

For high-frequency amplification

## Features

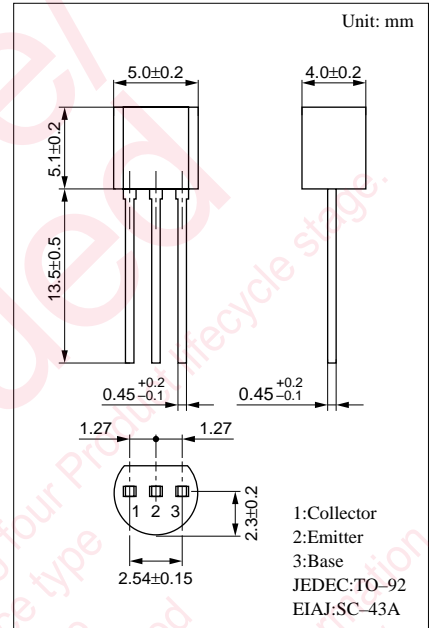
- Small common emitter reverse transfer capacitance  $C_{re}$ .
- High transition frequency  $f_T$ .
- Center at the emitter pin.

## Absolute Maximum Ratings (Ta=25°C)

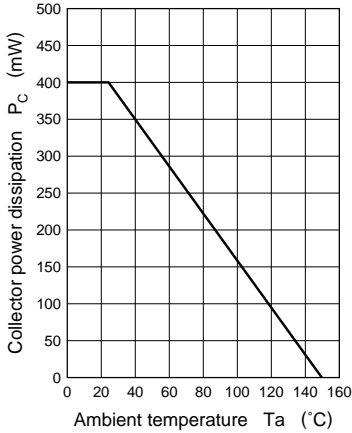
| Parameter                    | Symbol    | Ratings    | Unit |
|------------------------------|-----------|------------|------|
| Collector to base voltage    | $V_{CBO}$ | 50         | V    |
| Collector to emitter voltage | $V_{CEO}$ | 40         | V    |
| Emitter to base voltage      | $V_{EBO}$ | 4          | V    |
| Collector current            | $I_C$     | 30         | mA   |
| Collector power dissipation  | $P_C$     | 400        | mW   |
| Junction temperature         | $T_j$     | 150        | °C   |
| Storage temperature          | $T_{stg}$ | -55 ~ +150 | °C   |

## Electrical Characteristics (Ta=25°C)

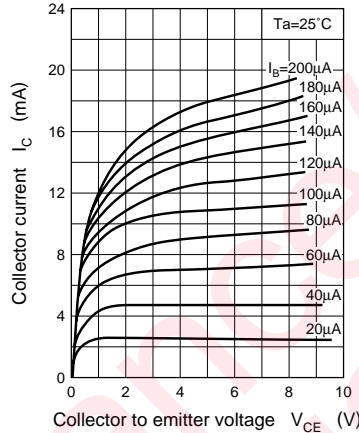
| Parameter                                   | Symbol        | Conditions                             | min | typ  | max  | Unit    |
|---|---------------|--|-----|------|------|---------|
| Collector cutoff current                    | $I_{CBO}$     | $V_{CB} = 40V, I_E = 0$                |     |      | 10   | $\mu A$ |
| Emitter cutoff current                      | $I_{EBO}$     | $V_{EB} = 4V, I_C = 0$                 |     |      | 10   | $\mu A$ |
| Forward current transfer ratio              | $h_{FE}$      | $V_{CE} = 10V, I_C = 7mA$              | 38  |      |      |         |
| Collector to emitter saturation voltage     | $V_{CE(sat)}$ | $I_C = 10mA, I_B = 1mA$                |     |      | 0.8  | V       |
| Transition frequency                        | $f_T$         | $V_{CB} = 10V, I_E = -5mA, f = 100MHz$ | 360 | 550  | 820  | MHz     |
| Common emitter reverse transfer capacitance | $C_{re}$      | $V_{CE} = 10V, I_C = 1mA, f = 10.7MHz$ |     | 0.37 | 0.50 | pF      |
| Forward transfer admittance                 | $y_{fe}$      | $V_{CB} = 5V, I_E = -7mA, f = 35MHz$   | 110 | 140  |      | mS      |
| Power gain                                  | PG            | $V_{CC} = 6V, I_C = 7mA, f = 58MHz$    | 21  | 25   |      | dB      |



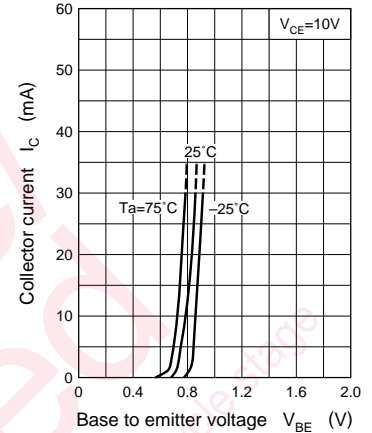
$P_C - T_a$



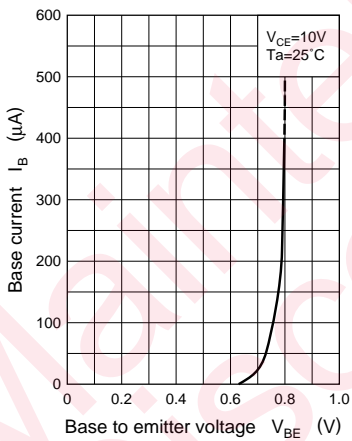
$I_C - V_{CE}$



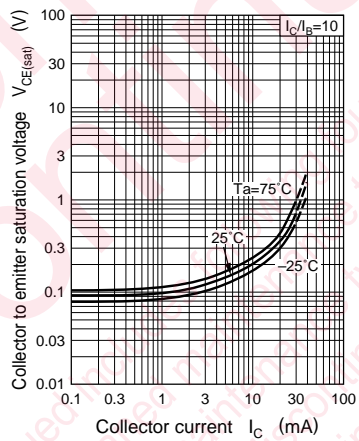
$I_C - V_{BE}$



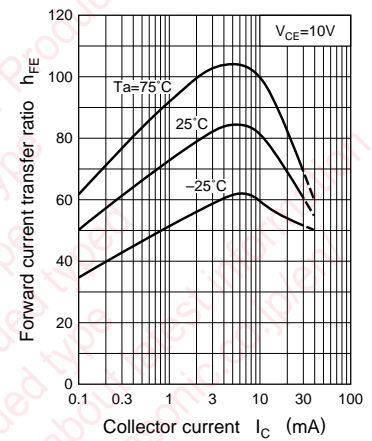
$I_B - V_{BE}$



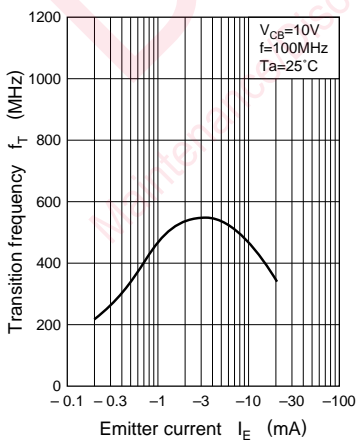
$V_{CE(sat)} - I_C$



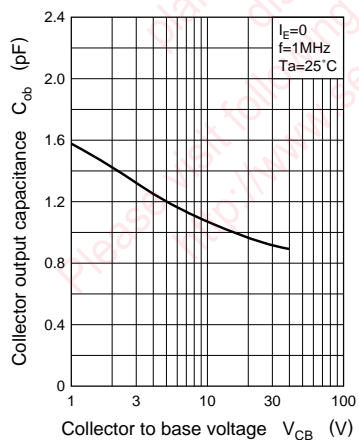
$h_{FE} - I_C$



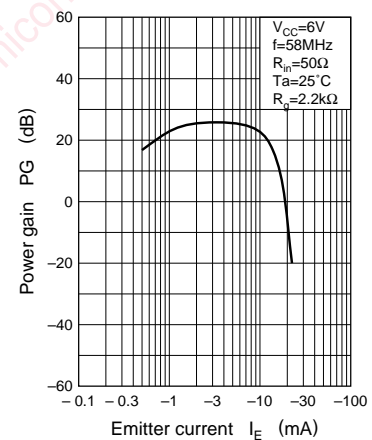
$f_T - I_E$

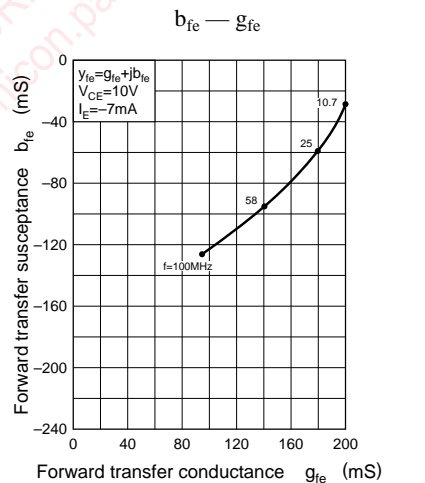
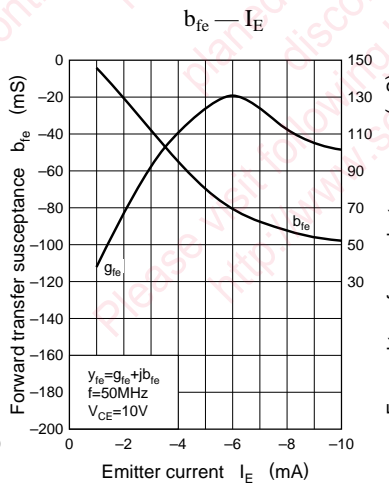
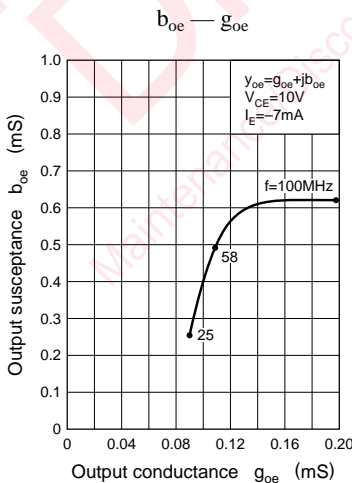
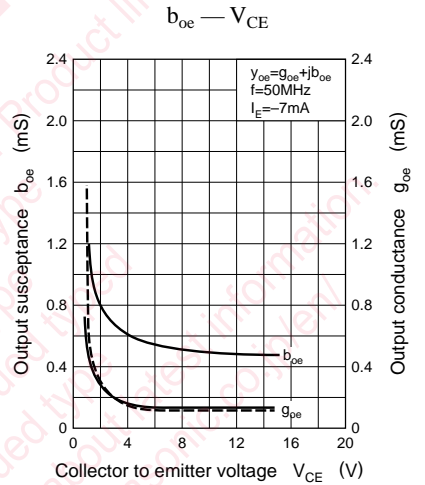
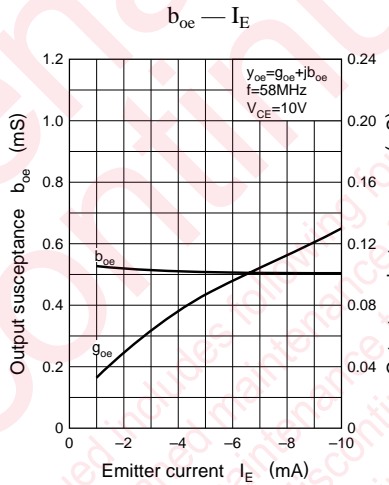
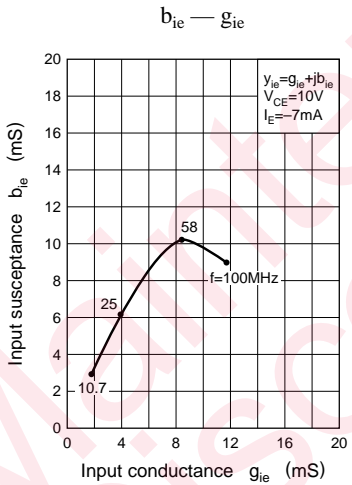
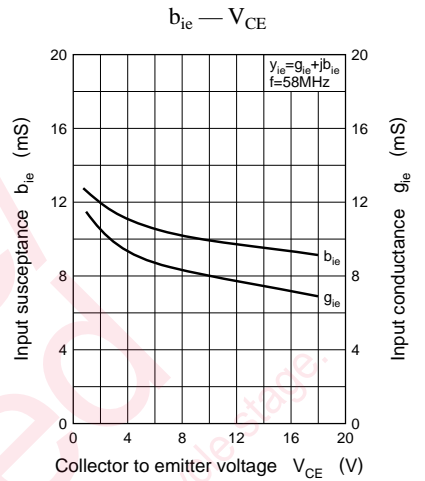
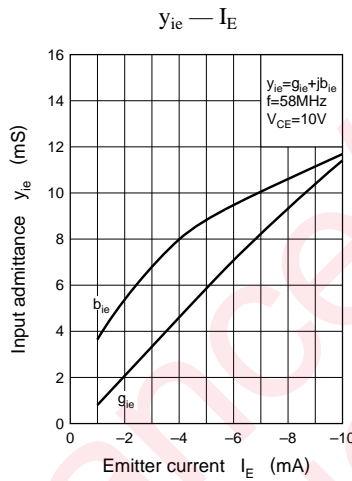
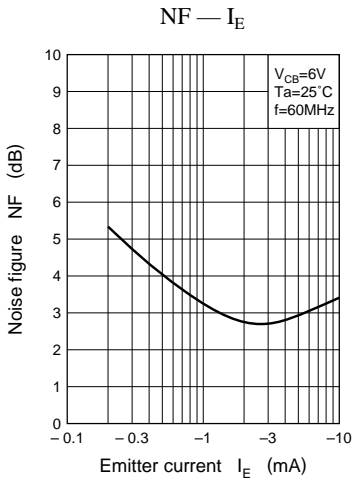


$C_{ob} - V_{CB}$



$PG - I_E$





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