

2SD1010

Silicon NPN epitaxial planer type

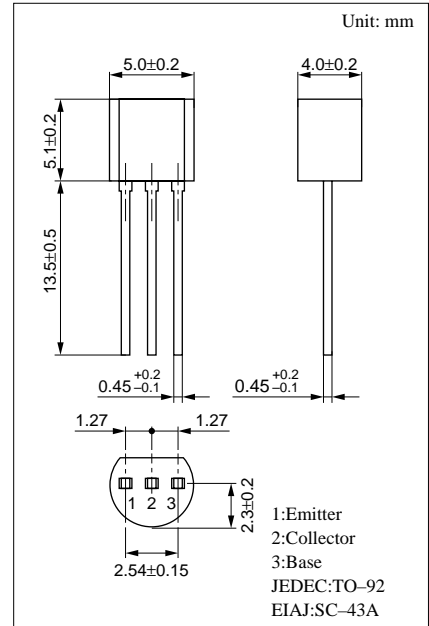
For low-frequency amplification

Features

- High forward current transfer ratio h_{FE} .
- Low collector to emitter saturation voltage $V_{CE(sat)}$.
- High emitter to base voltage V_{EBO} .
- Low noise voltage NV.

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} | 15 | V |
| Peak collector current | I_{CP} | 100 | mA |
| Collector current | I_C | 50 | mA |
| Collector power dissipation | P_C | 300 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 ~ +150 | °C |



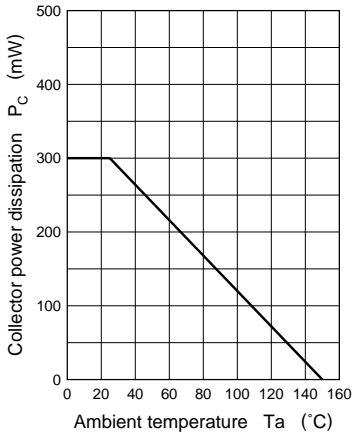
Electrical Characteristics (Ta=25°C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---------------|--|-----|------|------|------|
| Collector cutoff current | I_{CBO} | $V_{CB} = 20V, I_E = 0$ | | | 100 | nA |
| | I_{CEO} | $V_{CE} = 20V, I_B = 0$ | | | 1 | μA |
| Collector to base voltage | V_{CBO} | $I_C = 10\mu A, I_E = 0$ | 50 | | | V |
| Collector to emitter voltage | V_{CEO} | $I_C = 1mA, I_B = 0$ | 40 | | | V |
| Emitter to base voltage | V_{EBO} | $I_E = 10\mu A, I_C = 0$ | 15 | | | V |
| Forward current transfer ratio | h_{FE}^* | $V_{CE} = 10V, I_C = 2mA$ | 400 | 1000 | 2000 | |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 10mA, I_B = 1mA$ | | 0.05 | 0.2 | V |
| Transition frequency | f_T | $V_{CB} = 10V, I_E = -2mA, f = 200MHz$ | | 200 | | MHz |
| Noise voltage | NV | $V_{CE} = 10V, I_C = 1mA, G_V = 80dB$ $R_g = 100k\Omega, \text{Function} = \text{FLAT}$ | | 80 | | mV |

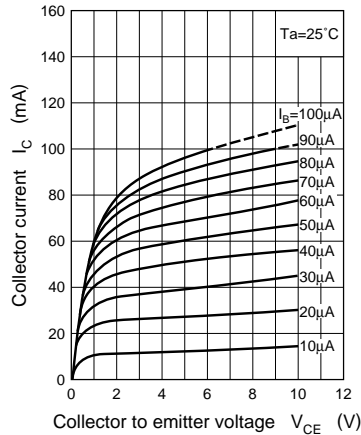
* h_{FE} Rank classification

| Rank | R | S | T |
|----------|-----------|------------|-------------|
| h_{FE} | 400 ~ 800 | 600 ~ 1200 | 1000 ~ 2000 |

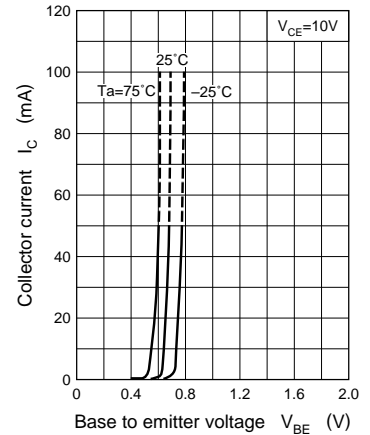
$P_C - T_a$



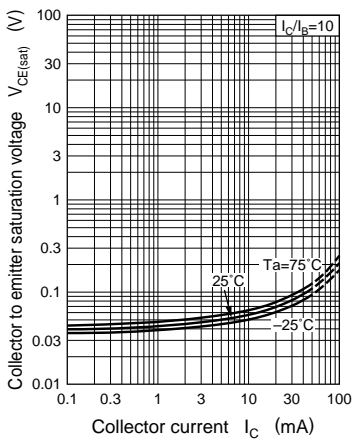
$I_C - V_{CE}$



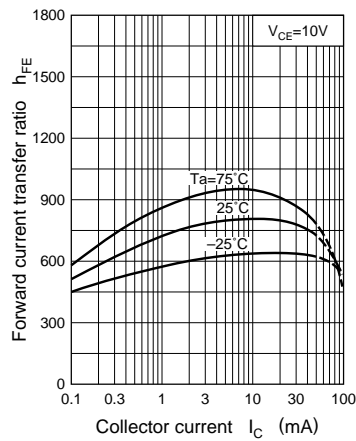
$I_C - V_{BE}$



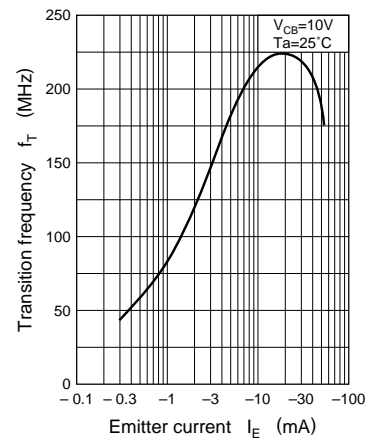
$V_{CE(sat)} - I_C$



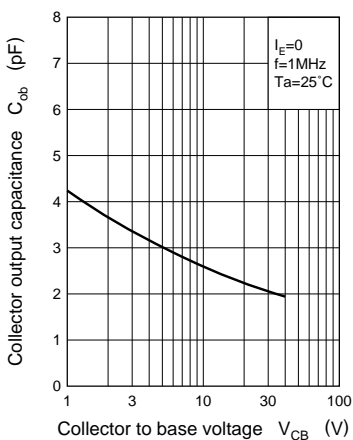
$h_{FE} - I_C$



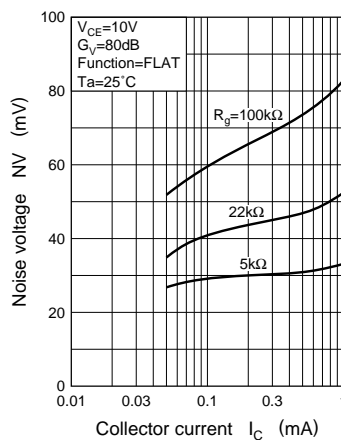
$f_T - I_E$



$C_{ob} - V_{CB}$



$NV - I_C$



$NV - V_{CE}$

