

# 2SD1010

Silicon NPN epitaxial planer type

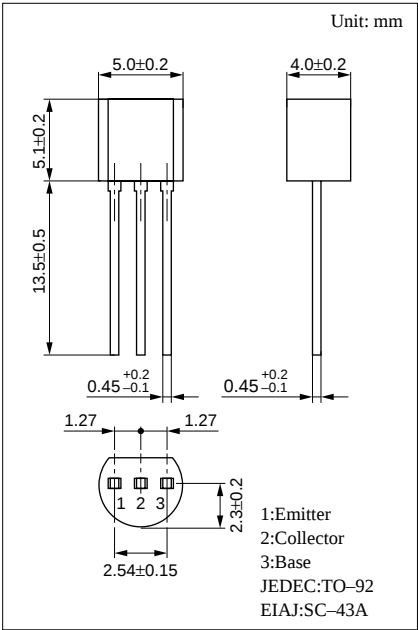
For low-frequency amplification

## Features

- High foward 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   |

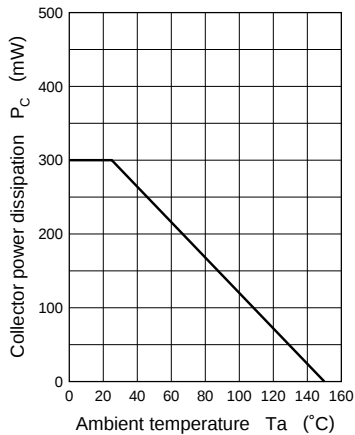
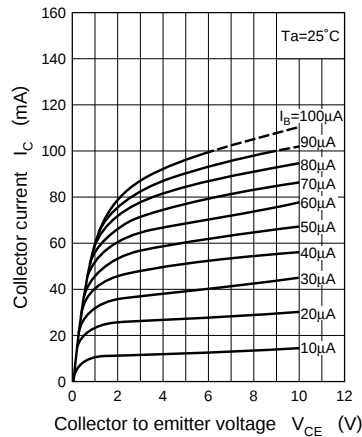
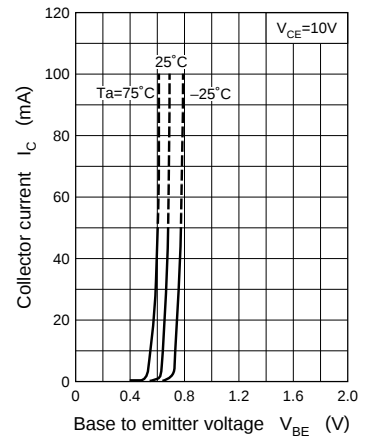
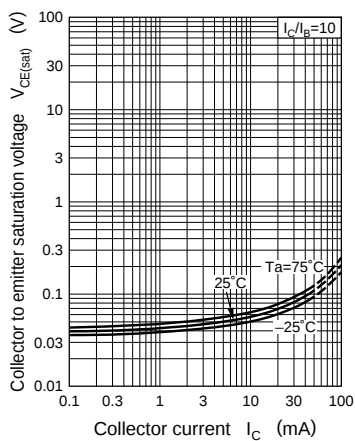
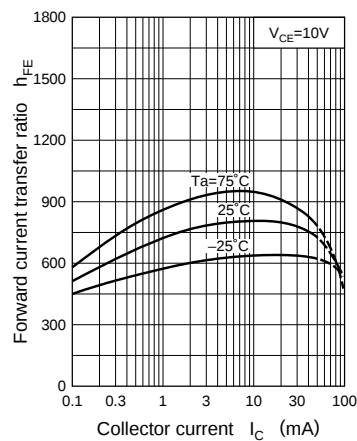
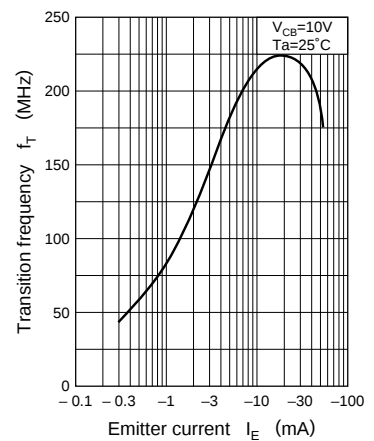
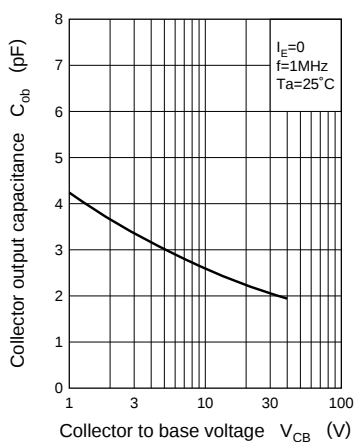
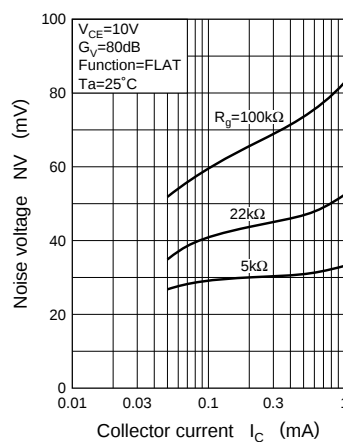


## Electrical Characteristics (Ta=25°C)

| 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            | $V_{CE} = 10V, I_C = 1mA, G_v = 80dB$<br>$R_g = 100k\Omega, \text{Function} = \text{FLAT}$ |     | 80   |      | mV   |

\* $h_{FE}$  Rank classification

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

$P_C - T_a$  $I_C - V_{CE}$  $I_C - V_{BE}$  $V_{CE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_E$  $C_{ob} - V_{CB}$  $NV - I_C$  $NV - V_{CE}$ 