# 2SB1194

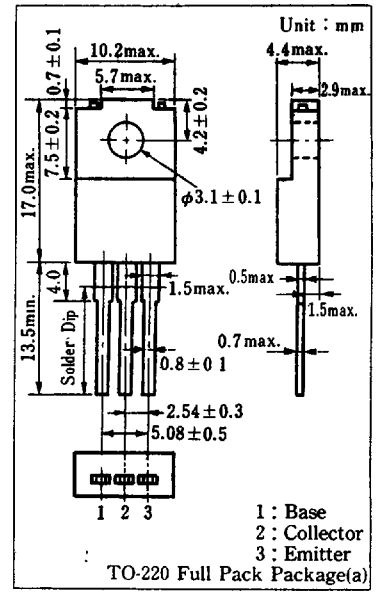
## Silicon PNP Epitaxial Planar Darlington Type

Power Switching
Complementary Pair with 2SD1633

### ■ Features

- High speed switching
- Good linearity of DC current gain ($h_{FE}$)
- High collector current ($I_C$)
- "Full Pack" package for simplified mounting on a heat sink with one screw

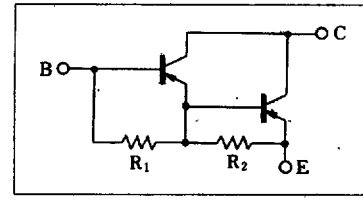
### ■ Package Dimensions




### ■ Absolute Maximum Ratings (Tc=25°C)

| Item | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | −100 | V |
| Collector-emitter voltage | | $V_{CEO}$ | −100 | V |
| Emitter-base voltage | | $V_{EBO}$ | −7 | V |
| Peak collector current | | $I_{CP}$ | −8 | A |
| Collector current | | $I_C$ | −5 | A |
| Base current | | $I_B$ | −0.5 | A |
| Collector power dissipation | Tc=25℃ | $P_C$ | 30 | W |
| | Ta=25℃ | | 2 | |
| Junction temperature | | $T_j$ | 150 | ℃ |
| Storage temperature | | $T_{stg}$ | −55~+150 | ℃ |

### ■ Inner Circuit



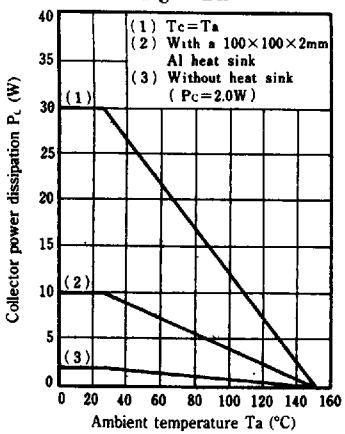

### ■ Electrical Characteristics (Tc=25°C)

| Item | Symbol | Condition | min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}=-100$ V, $I_E=0$ | | | −100 | μA |
| | $I_{CEO}$ | $V_{CE}=-100$ V, $I_B=0$ | | | −100 | μA |
| Emitter cutoff current | $I_{EBO}$ | $V_{EB}=-7$ V, $I_C=0$ | | | −5 | mA |
| Collector-emitter voltage | $V_{CEO(sus)}$ | $I_C=-0.2$ A | −100 | | | V |
| DC current gain | $h_{FE}$* | $V_{CE}=-3$ V, $I_C=-3$ A | 1500 | | 10000 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=-3$ A, $I_B=-3$ mA | | | −1.5 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=-3$ A, $I_B=-3$ mA | | | −2 | V |
| Transition frequency | $f_T$ | $V_{CE}=-10$V, $I_C=-1$A, f=10MHz | | 30 | | MHz |
| Turn-on time | $t_{on}$ | $I_C=-3$A, $I_{B1}=-3$mA, $I_{B2}=3$mA, $V_{CC}=-50$ V | | | 3 | μs |
| Storage time | $t_{stg}$ | | | | 5 | μs |
| Collector current fall time | $t_f$ | | | | 3 | μs |

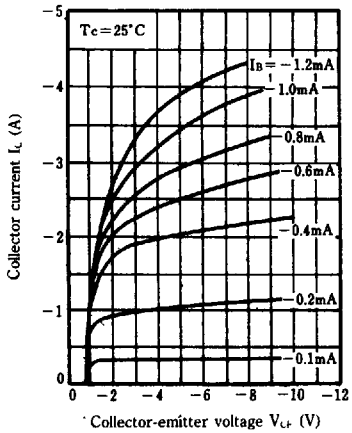
*$h_{FE}$ Classifications

| Class | Q | P |
|---|---|---|
| $h_{FE}$ | 1500~6000 | 4000~10000 |

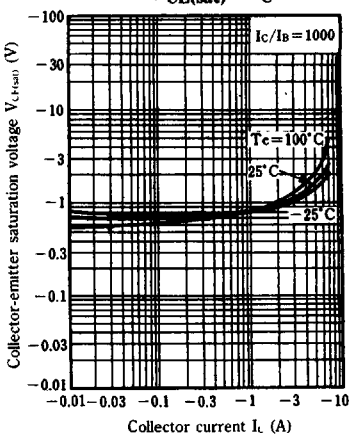
## $P_C - T_a$



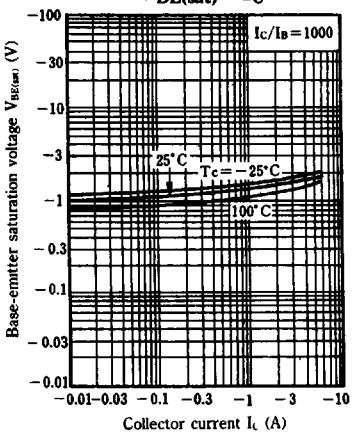

## $I_C - V_{CE}$



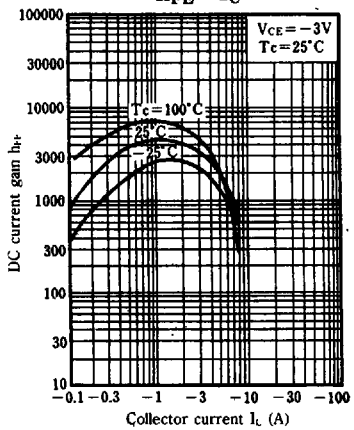

## $V_{CE(sat)} - I_C$



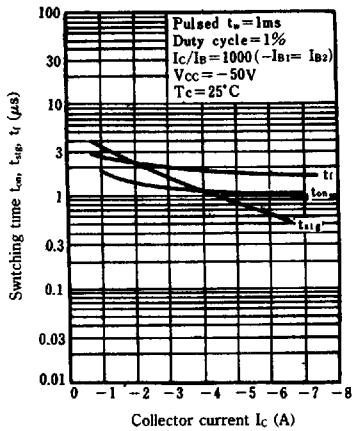

## $V_{BE(sat)} - I_C$



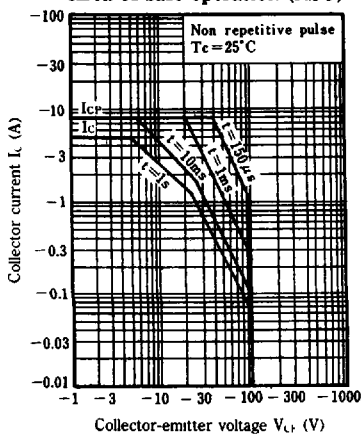

## $h_{FE} - I_C$

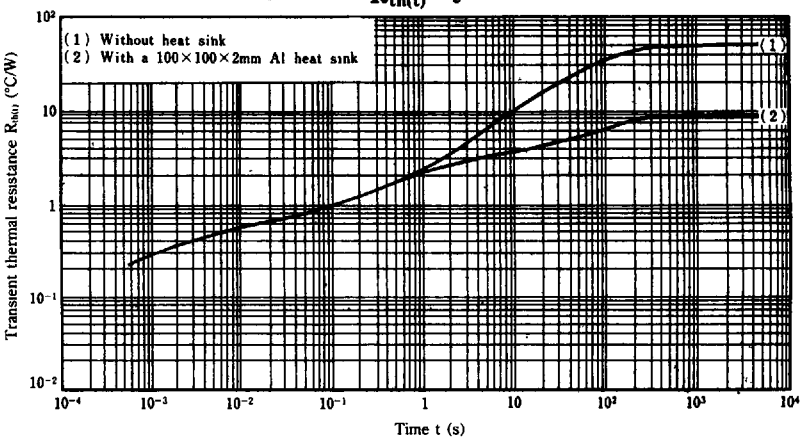



## $t_{on}, t_{stg}, t_f - I_C$




## Area of safe operation (ASO)




## $R_{th(t)} - t$