

# 2SB951, 2SB951A

### Silicon PNP epitaxial planar type Darlington

For midium-speed switching

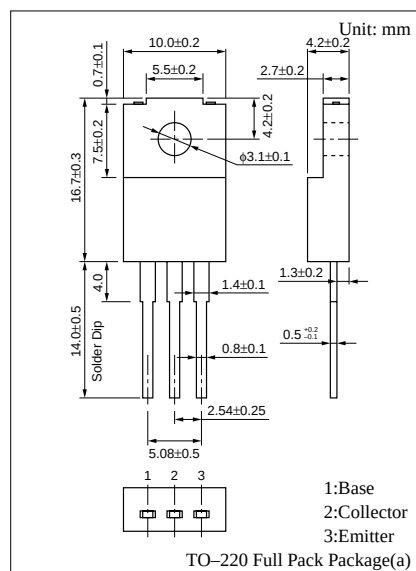
Complementary to 2SD1277 and 2SD1277A

## ■ Features

- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

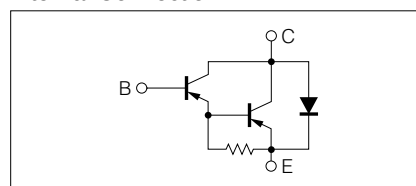
■ Absolute Maximum Ratings (T<sub>C</sub>=25°C)

| Parameter                       |                   | Symbol    | Ratings     | Unit        |
|---------------------------------|-------------------|-----------|-------------|-------------|
| Collector to<br>base voltage    | 2SB951            | $V_{CBO}$ | -60         | V           |
|                                 | 2SB951A           |           | -80         |             |
| Collector to<br>emitter voltage | 2SB951            | $V_{CEO}$ | -60         | V           |
|                                 | 2SB951A           |           | -80         |             |
| Emitter to base voltage         |                   | $V_{EBO}$ | -7          | V           |
| Peak collector current          |                   | $I_{CP}$  | -12         | A           |
| Collector current               |                   | $I_C$     | -8          | A           |
| Collector power<br>dissipation  | $T_C=25^{\circ}C$ | $P_C$     | 45          | W           |
|                                 | $T_a=25^{\circ}C$ |           | 2           |             |
| Junction temperature            |                   | $T_j$     | 150         | $^{\circ}C$ |
| Storage temperature             |                   | $T_{stg}$ | -55 to +150 | $^{\circ}C$ |



TO-220 Full Pack Package(a)

## Internal Connection

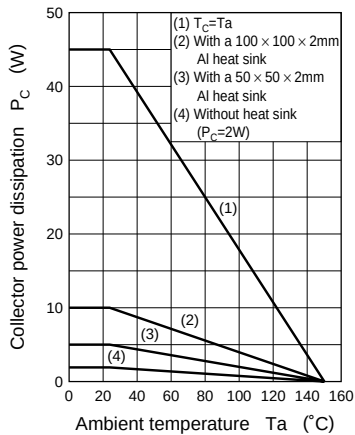
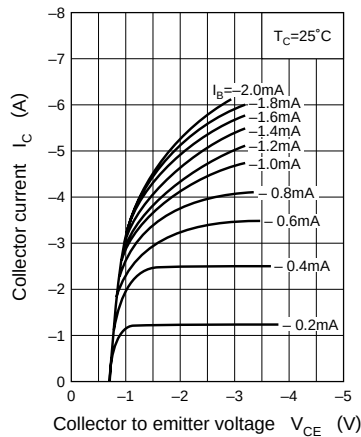
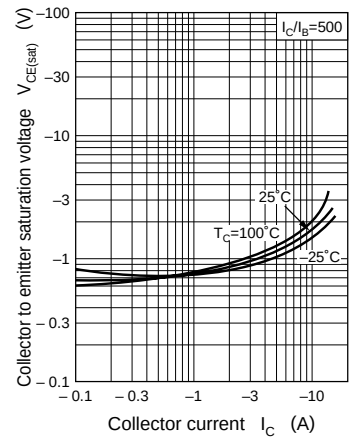
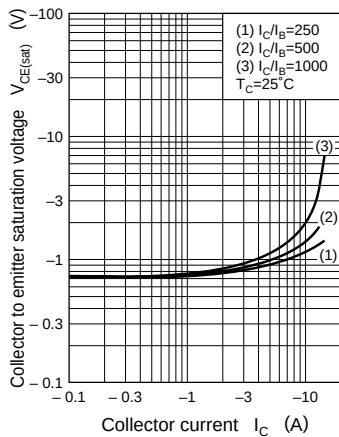
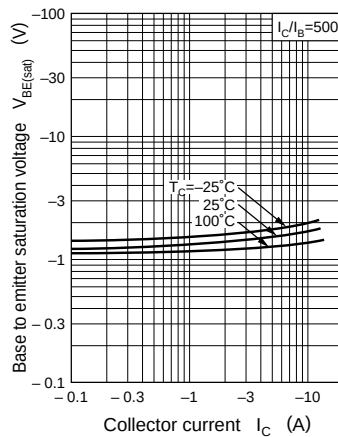
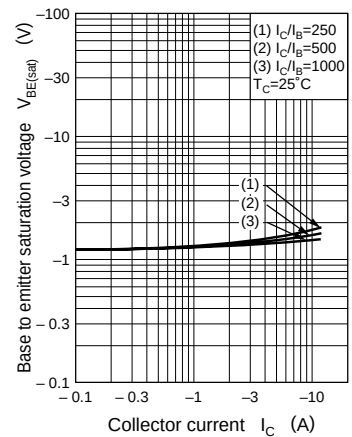
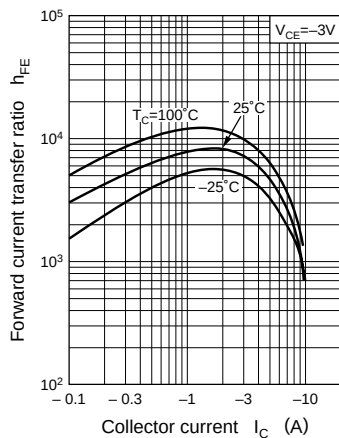
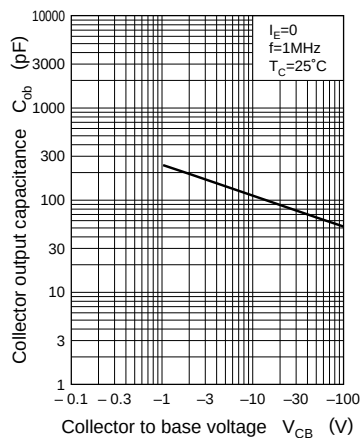


### ■ Electrical Characteristics (T<sub>C</sub>=25°C)

| Parameter                               |         | Symbol        | Conditions                                              | min  | typ | max   | Unit    |
|-----------------------------------------|---------|---------------|---------------------------------------------------------|------|-----|-------|---------|
| Collector cutoff current                | 2SB951  | $I_{CBO}$     | $V_{CB} = -60V, I_E = 0$                                |      |     | -100  | $\mu A$ |
|                                         | 2SB951A |               | $V_{CB} = -80V, I_E = 0$                                |      |     | -100  |         |
| Emitter cutoff current                  |         | $I_{EBO}$     | $V_{EB} = -7V, I_C = 0$                                 |      |     | -2    | mA      |
| Collector to emitter voltage            | 2SB951  | $V_{CEO}$     | $I_C = -30mA, I_B = 0$                                  | -60  |     |       | V       |
|                                         | 2SB951A |               |                                                         | -80  |     |       |         |
| Forward current transfer ratio          |         | $h_{FE1}^*$   | $V_{CE} = -3V, I_C = -4A$                               | 2000 |     | 10000 |         |
|                                         |         | $h_{FE2}$     | $V_{CE} = -3V, I_C = -8A$                               | 500  |     |       |         |
| Collector to emitter saturation voltage |         | $V_{CE(sat)}$ | $I_C = -4A, I_B = -8mA$                                 |      |     | -1.5  | V       |
| Base to emitter saturation voltage      |         | $V_{BE(sat)}$ | $I_C = -4A, I_B = -8mA$                                 |      |     | -2    | V       |
| Transition frequency                    |         | $f_T$         | $V_{CE} = -10V, I_C = -1A, f = 1MHz$                    |      | 20  |       | MHz     |
| Turn-on time                            |         | $t_{on}$      | $I_C = -4A, I_{B1} = -8mA, I_{B2} = 8mA, V_{CC} = -50V$ |      | 0.5 |       | $\mu s$ |
| Storage time                            |         | $t_{stg}$     |                                                         |      | 2   |       | $\mu s$ |
| Fall time                               |         | $t_f$         |                                                         |      | 1   |       | $\mu s$ |

### \*h<sub>FE1</sub> Rank classification

| Rank             | Q            | P             |
|------------------|--------------|---------------|
| h <sub>FE1</sub> | 2000 to 5000 | 4000 to 10000 |

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

Area of safe operation (ASO)

