

# 2SB0946 (2SB946)

## Silicon PNP epitaxial planar type

For power switching

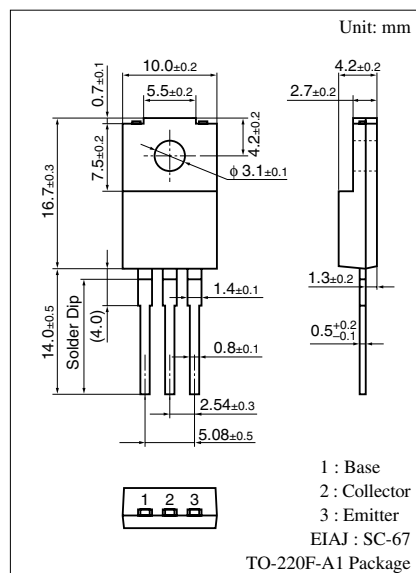
Complementary to 2SD1271

### ■ Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector current  $I_C$
- Full-pack package which can be installed to the heat sink with one screw

### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

| Parameter                    | Symbol   | Rating      | Unit             |
|------------------------------|--|-------------|------------------|
| Collector to base voltage    | $V_{CBO}$  | -130        | V                |
| Collector to emitter voltage | $V_{CEO}$  | -80         | V                |
| Emitter to base voltage      | $V_{EBO}$  | -7          | V                |
| Peak collector current       | $I_{CP}$   | -15         | A                |
| Collector current            | $I_C$  | -7          | A                |
| Collector power dissipation  | $T_C = 25^\circ\text{C}$<br>$T_a = 25^\circ\text{C}$ | $P_C$       | W                |
|                              |  | 40<br>2     |                  |
| Junction temperature         | $T_j$  | 150         | $^\circ\text{C}$ |
| Storage temperature          | $T_{stg}$  | -55 to +150 | $^\circ\text{C}$ |



### ■ Electrical Characteristics $T_C = 25^\circ\text{C}$

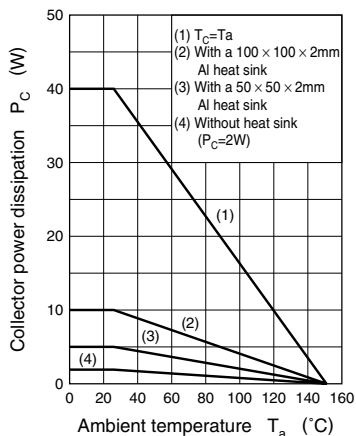
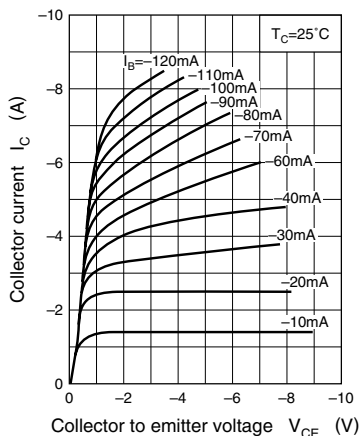
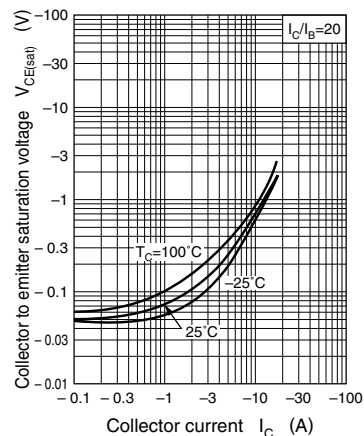
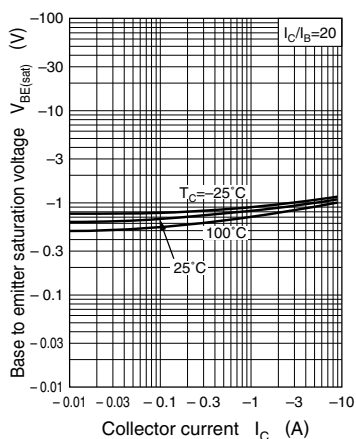
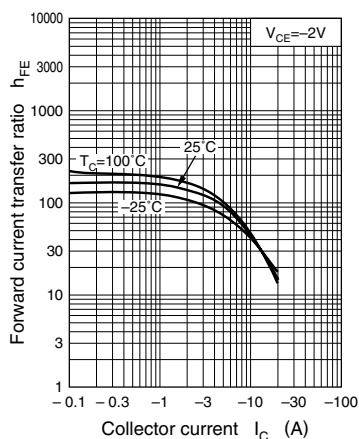
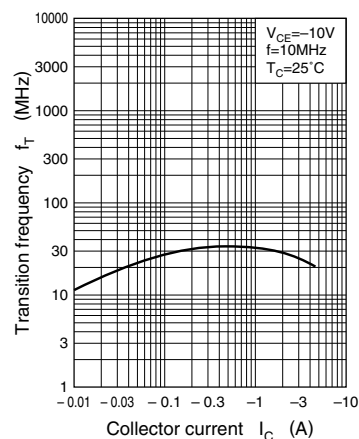
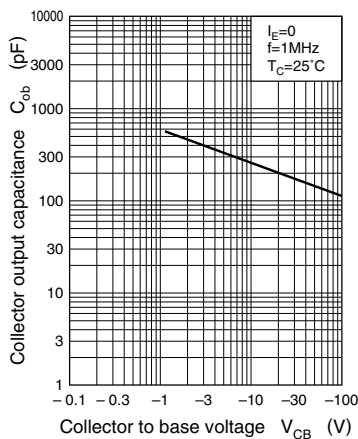
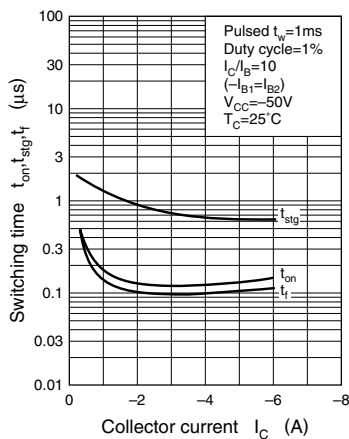
| Parameter                               | Symbol        | Conditions   | Min | Typ | Max  | Unit          |
|---|---------------|--|-----|-----|------|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = -100\text{ V}, I_E = 0$                                  |     |     | -10  | $\mu\text{A}$ |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = -5\text{ V}, I_C = 0$                                    |     |     | -50  | $\mu\text{A}$ |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = -10\text{ mA}, I_B = 0$                                     | -80 |     |      | V             |
| Forward current transfer ratio          | $h_{FE1}$     | $V_{CE} = -2\text{ V}, I_C = -0.1\text{ A}$                        | 45  |     |      |               |
|   | $h_{FE2}^*$   | $V_{CE} = -2\text{ V}, I_C = -3\text{ A}$                          | 90  |     | 260  |               |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -5\text{ A}, I_B = -0.25\text{ A}$                          |     |     | -0.5 | V             |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -5\text{ A}, I_B = -0.25\text{ A}$                          |     |     | -1.5 | V             |
| Transition frequency                    | $f_T$         | $V_{CE} = -10\text{ V}, I_C = -0.5\text{ A}, f = 10\text{ MHz}$    |     | 30  |      | MHz           |
| Turn-on time                            | $t_{on}$      | $I_C = -3\text{ A}, I_{B1} = -0.3\text{ A}, I_{B2} = 0.3\text{ A}$ |     | 0.5 |      | $\mu\text{s}$ |
| Storage time                            | $t_{stg}$     |  |     | 1.5 |      | $\mu\text{s}$ |
| Fall time                               | $t_f$         |  |     | 0.1 |      | $\mu\text{s}$ |

Note) \*: Rank classification

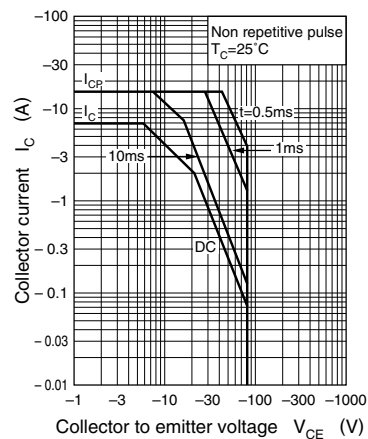
| Rank      | Q         | P          |
|-----------|-----------|------------|
| $h_{FE2}$ | 90 to 180 | 130 to 260 |

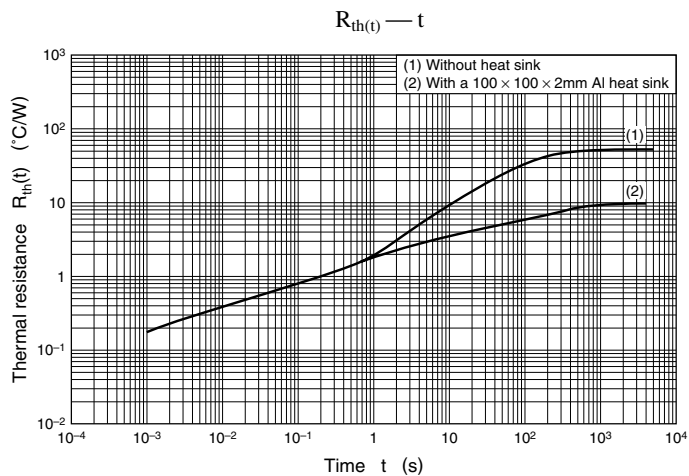
Ordering can be made by the common rank (PQ rank  $h_{FE2} = 90$  to 260) in the rank classification.

Note.) The Part number in the Parenthesis shows conventional part number.

$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_C$  $C_{ob} - I_C$  $t_{on}, t_{stg}, t_f - I_C$ 

Area of safe operation (ASO)





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