

**2SB0947 (2SB947), 2SB0947A (2SB947A)**

## Silicon PNP epitaxial planar type

For low-voltage switching

## ■ Features

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- High-speed switching
- 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-base voltage<br>(Emitter open) | 2SB0947                  | $V_{CBO}$   | -40              | V |
|  | 2SB0947A                 |             | -50              |   |
| Collector-emitter voltage<br>(Base open) | 2SB0947                  | $V_{CEO}$   | -20              | V |
|  | 2SB0947A                 |             | -40              |   |
| Emitter-base voltage (Collector open)    | $V_{EBO}$                | -5          | V                |   |
| Collector current                        | $I_C$                    | -10         | A                |   |
| Peak collector current                   | $I_{CP}$                 | -15         | A                |   |
| Collector power                          | $P_C$                    | 35          | W                |   |
| dissipation                              | $T_a = 25^\circ\text{C}$ | 2           |                  |   |
| Junction temperature                     | $T_j$                    | 150         | $^\circ\text{C}$ |   |
| Storage temperature                      | $T_{stg}$                | -55 to +150 | $^\circ\text{C}$ |   |

■ Electrical Characteristics  $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$ 

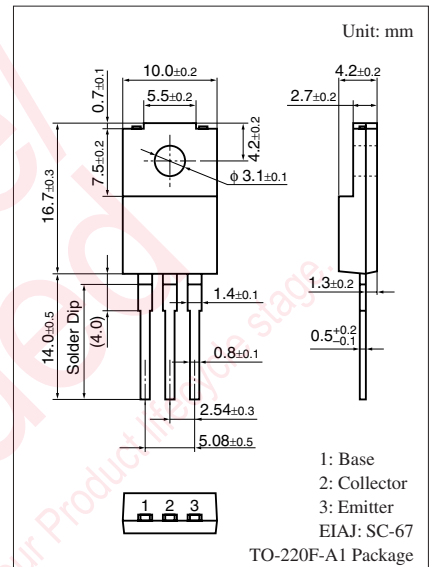
| Parameter   | Symbol        | Conditions   | Min | Typ | Max  | Unit          |
|---|---------------|--|-----|-----|------|---------------|
| Collector-emitter voltage<br>(Base open)                            | 2SB0947       | $I_C = -10\text{ mA}, I_B = 0$                                     | -20 |     |      | V             |
|   | 2SB0947A      |  | -40 |     |      |               |
| Collector-base cutoff<br>current (Emitter open)                     | 2SB0947       | $V_{CB} = -40\text{ V}, I_E = 0$                                   |     |     | -50  | $\mu\text{A}$ |
|   | 2SB0947A      | $V_{CB} = -50\text{ V}, I_E = 0$                                   |     |     | -50  |               |
| Emitter-base cutoff current (Collector open)                        | $I_{EBO}$     | $V_{EB} = -5\text{ V}, I_C = 0$                                    |     |     | -50  | $\mu\text{A}$ |
| Forward current transfer ratio                                      | $h_{FE1}$     | $V_{CE} = -2\text{ V}, I_C = -0.1\text{ A}$                        | 45  |     |      | —             |
|   | $h_{FE2}^*$   | $V_{CE} = -2\text{ V}, I_C = -2\text{ A}$                          | 60  | 260 |      |               |
| Collector-emitter saturation voltage                                | $V_{CE(sat)}$ | $I_C = -7\text{ A}, I_B = -0.23\text{ A}$                          |     |     | -0.6 | V             |
| Base-emitter saturation voltage                                     | $V_{BE(sat)}$ | $I_C = -7\text{ A}, I_B = -0.23\text{ A}$                          |     |     | -1.5 | V             |
| Transition frequency  | $f_T$         | $V_{CE} = -10\text{ V}, I_C = -0.5\text{ A}, f = 10\text{ MHz}$    |     | 150 |      | MHz           |
| Collector output capacitance<br>(Common base, input open circuited) | $C_{ob}$      | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$                 |     | 200 |      | pF            |
| Turn-on time  | $t_{on}$      | $I_C = -2\text{ A}, I_{B1} = -66\text{ mA}, I_{B2} = 66\text{ mA}$ |     | 0.1 |      | $\mu\text{s}$ |
| Storage time  | $t_{stg}$     | $V_{CC} = -20\text{ V}$  |     | 0.5 |      | $\mu\text{s}$ |
| Fall time   | $t_f$         |  |     | 0.1 |      | $\mu\text{s}$ |

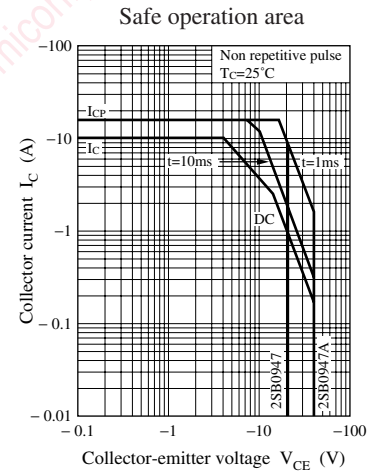
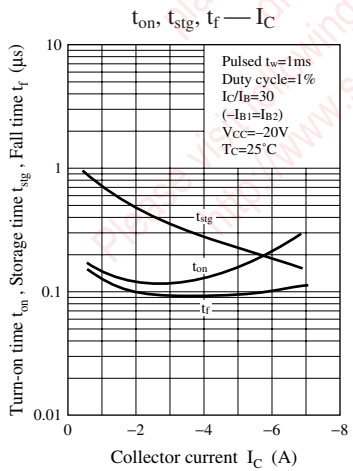
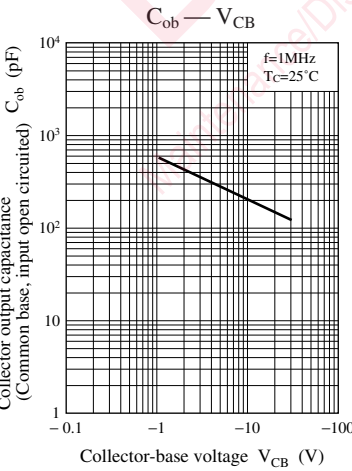
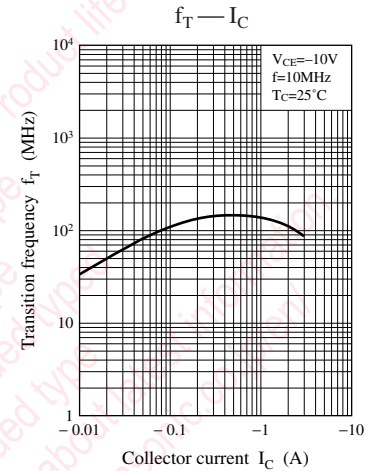
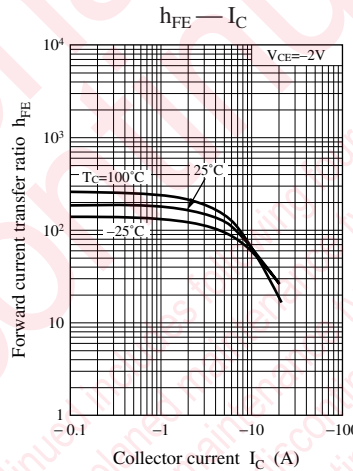
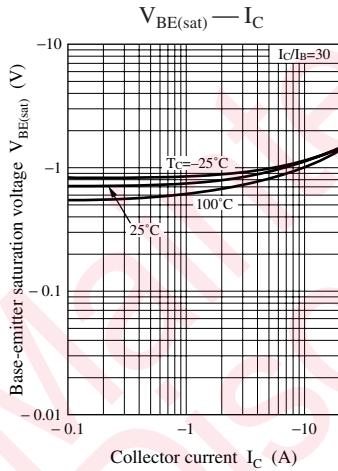
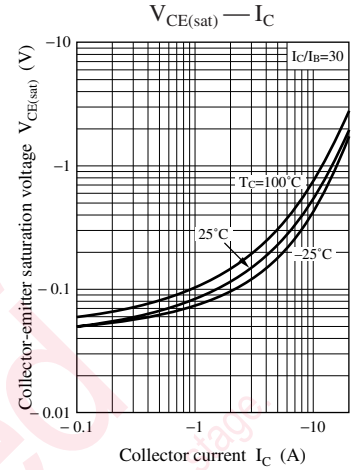
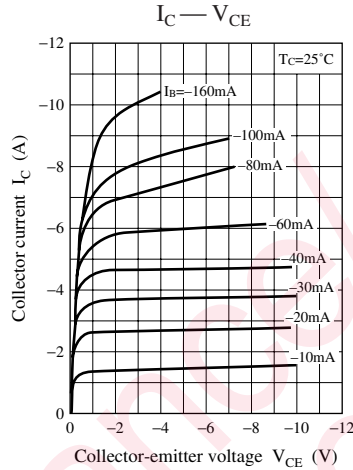
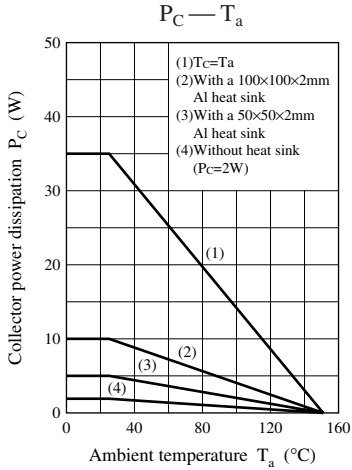
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

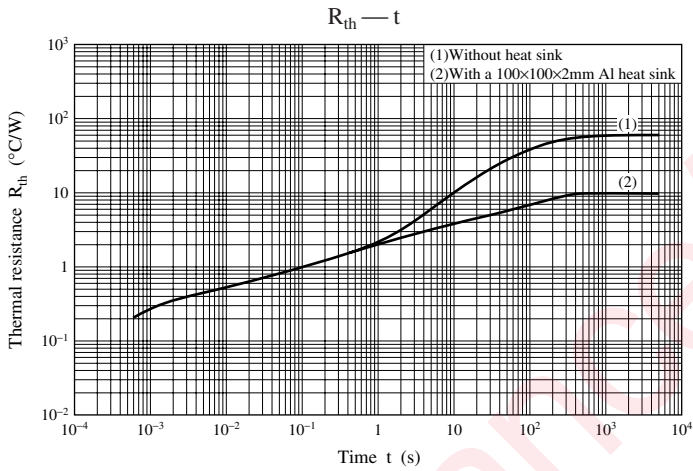
2. \*: Rank classification

| Rank      | R         | Q         | P          |
|-----------|-----------|-----------|------------|
| $h_{FE2}$ | 60 to 120 | 90 to 180 | 130 to 260 |

Note) The part numbers in the parenthesis show conventional part number.







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maintenance type  
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