

# 2SB1148, 2SB1148A

Silicon PNP epitaxial planar type

For low-voltage switching

Complementary to 2SD1752 and 2SD1752A

### Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- High-speed switching
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

| Parameter                    | Symbol    | Ratings                   | Unit             |
|------------------------------|-----------|---------------------------|------------------|
| Collector to base voltage    | $V_{CBO}$ | 2SB1148 -40               | V                |
| 2SB1148A -50                 |           |                           |                  |
| Collector to emitter voltage | $V_{CEO}$ | 2SB1148 -20               | V                |
| 2SB1148A -40                 |           |                           |                  |
| Emitter to base voltage      | $V_{EBO}$ | -7                        | V                |
| Peak collector current       | $I_{CP}$  | -20                       | A                |
| Collector current            | $I_C$     | -10                       | A                |
| Collector power dissipation  | $P_C$     | $T_C=25^\circ\text{C}$ 15 | W                |
| $T_a=25^\circ\text{C}$ 1.3   |           |                           |                  |
| 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                 | $I_{CBO}$     | 2SB1148 $V_{CB} = -40\text{V}, I_E = 0$   |     |               | -50  | $\mu\text{A}$ |
| 2SB1148A $V_{CB} = -50\text{V}, I_E = 0$ |               |   |     | -50           |      |               |
| Emitter cutoff current                   | $I_{EBO}$     | $V_{EB} = -5\text{V}, I_C = 0$  |     |               | -50  | $\mu\text{A}$ |
| Collector to emitter voltage             | $V_{CEO}$     | 2SB1148 $I_C = -10\text{mA}, I_B = 0$   | -20 |               |      | V             |
| 2SB1148A                                 |               |   | -40 |               |      |               |
| 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  | $V_{CE(sat)}$ | $I_C = -10\text{A}, I_B = -0.33\text{A}$  |     |               | -0.6 | V             |
| Base to emitter saturation voltage       | $V_{BE(sat)}$ | $I_C = -10\text{A}, I_B = -0.33\text{A}$  |     |               | -1.5 | V             |
| Transition frequency                     | $f_T$         | $V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 10\text{MHz}$                          |     | 100           |      | MHz           |
| Collector output capacitance             | $C_{ob}$      | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$                                      |     | 400           |      | pF            |
| Turn-on time                             | $t_{on}$      | $I_C = -3\text{A}, I_{B1} = -0.1\text{A}, I_{B2} = 0.1\text{A}, V_{CC} = -20\text{V}$ |     | 0.1           |      | $\mu\text{s}$ |
| Storage time                             | $t_{stg}$     |   | 0.5 | $\mu\text{s}$ |      |               |
| Fall time                                | $t_f$         |   | 0.1 | $\mu\text{s}$ |      |               |





