

# 2SB1174

## Silicon PNP Epitaxial Planar Type

### Power Switching

Complementary Pair with 2SD1744

#### ■ Features

- Low collector-emitter saturation voltage ( $V_{CE(sat)}$ )
- Good linearity of DC current gain ( $h_{FE}$ )
- High collector current ( $I_C$ )
- "I Type" package configuration with a cooling fin for direct soldering on PC board of a small-size electronic equipment

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

| Item                        | Symbol                   | Value      | Unit             |
|-----------------------------|--------------------------|------------|------------------|
| Collector-base voltage      | $V_{CBO}$                | -130       | V                |
| Collector-emitter voltage   | $V_{CEO}$                | -80        | V                |
| Emitter-base voltage        | $V_{EBO}$                | -7         | V                |
| Peak collector current      | $I_{CP}$                 | -6         | A                |
| Collector current           | $I_C$                    | -3         | A                |
| Collector power dissipation | $T_c = 25^\circ\text{C}$ | 15         | W                |
|                             | $T_a = 25^\circ\text{C}$ | 1.3        |                  |
| Junction temperature        | $T_j$                    | 150        | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$                | -55 ~ +150 | $^\circ\text{C}$ |

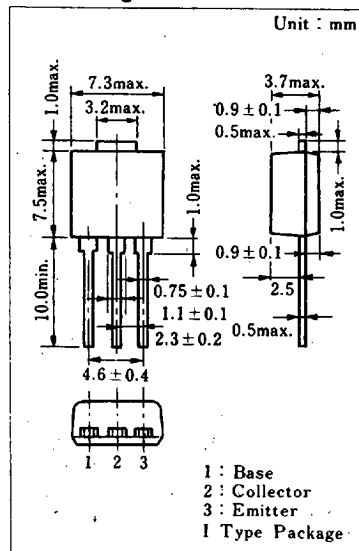
#### ■ Electrical Characteristics ( $T_c=25^\circ\text{C}$ )

| Item                                 | Symbol        | Condition                                                       | 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  |               |
| Collector-emitter voltage            | $V_{CEO}$     | $I_C = -10\text{ mA}, I_B = 0$                                  | -80  |      |      | V             |
| DC current gain                      | $h_{FE1}$     | $V_{CE} = -2\text{ V}, I_C = -0.1\text{ A}$                     | 45   |      |      |               |
|                                      | $h_{FE2}^*$   | $V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$                     | 60   |      | 260  |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -2\text{ A}, I_B = -0.1\text{ A}$                        |      |      | -0.5 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = -2\text{ A}, I_B = -0.1\text{ A}$                        |      |      | -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                         | $t_{on}$      | $I_C = -0.5\text{ A},$                                          |      | 0.3  |      | $\mu\text{s}$ |
| Storage time                         | $t_{stg}$     | $I_{B1} = -50\text{ mA}, I_{B2} = 50\text{ mA},$                |      | 1.1  |      | $\mu\text{s}$ |
| Collector current fall time          | $t_f$         | $V_{CC} = -50\text{ V}$                                         |      | 0.3  |      | $\mu\text{s}$ |

#### \* $h_{FE2}$ Classifications

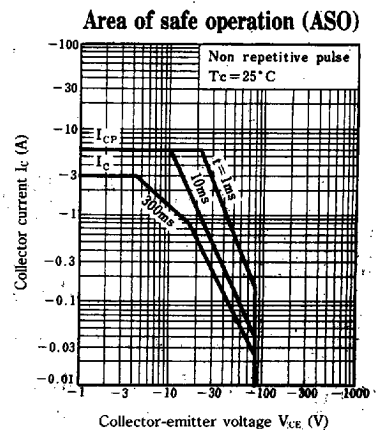
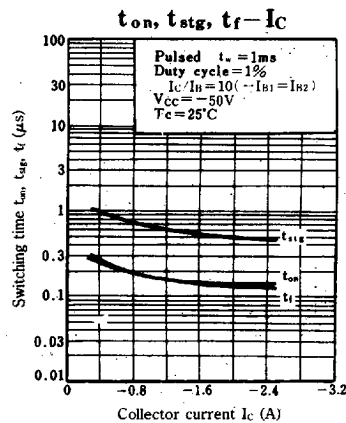
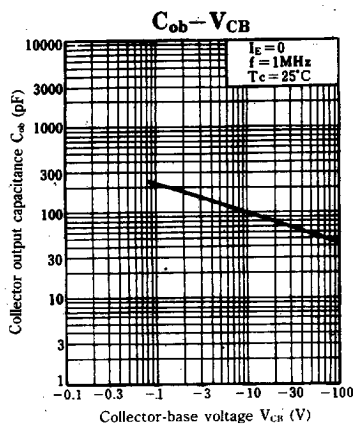
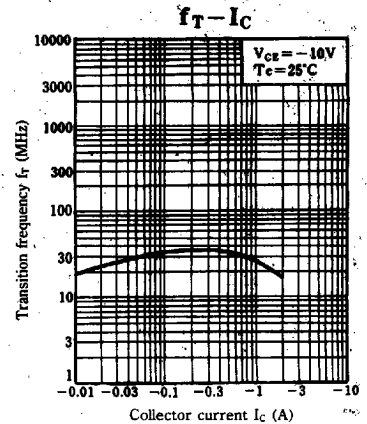
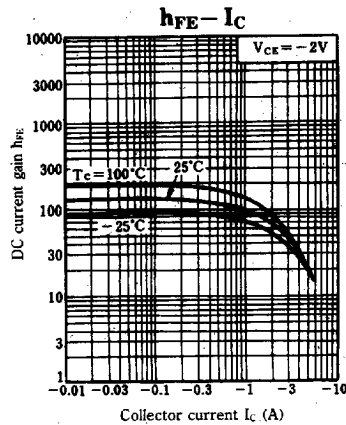
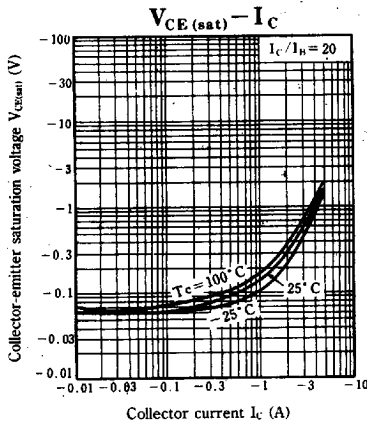
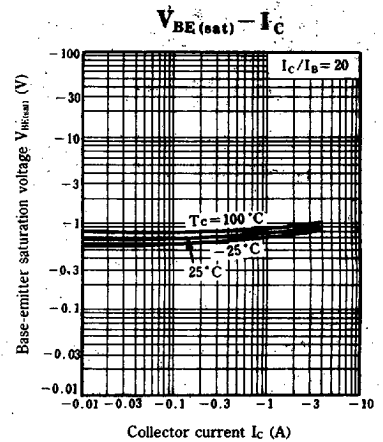
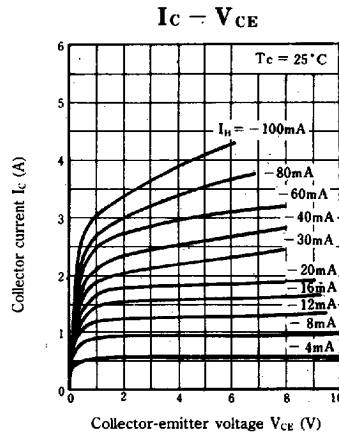
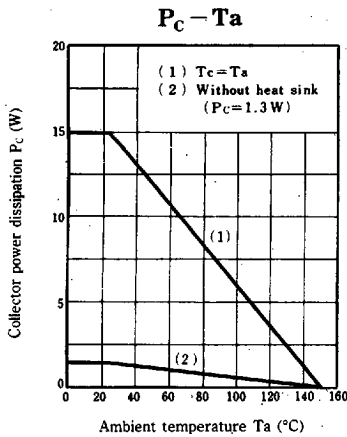
| Class     | R        | Q        | P         |
|-----------|----------|----------|-----------|
| $h_{FE2}$ | 60 ~ 120 | 90 ~ 180 | 130 ~ 260 |

#### ■ Package Dimensions



\*Surface-mount type is also available.  
(Refer to p.81.)

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Note) Refer to P.236 (on 2SB1172/A) for  $R_{th(j-c)} - t$  characteristics.