

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# 2SB1001

Silicon PNP Epitaxial

**RENESAS**

ADE-208-1034 (Z)

1st. Edition

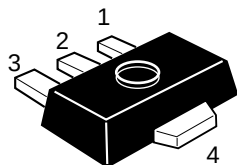
Mar. 2001

## Application

- Low frequency power amplifier
- Complementary pair with 2SD1367

## Outline

UPAK



1. Base
2. Collector
3. Emitter
4. Collector (Flange)

## Absolute Maximum Ratings (Ta = 25°C)

| Item                         | Symbol             | Ratings     | Unit |
|------------------------------|--------------------|-------------|------|
| Collector to base voltage    | $V_{CBO}$          | -20         | V    |
| Collector to emitter voltage | $V_{CEO}$          | -16         | V    |
| Emitter to base voltage      | $V_{EBO}$          | -6          | V    |
| Collector current            | $I_C$              | -2          | A    |
| Collector peak current       | $i_{C(peak)}^{*1}$ | -3          | A    |
| Collector power dissipation  | $P_C^{*2}$         | 1           | W    |
| Junction temperature         | Tj                 | 150         | °C   |
| Storage temperature          | Tstg               | -55 to +150 | °C   |

Notes: 1.  $PW \leq 10$  ms, Duty cycle  $\leq 20\%$

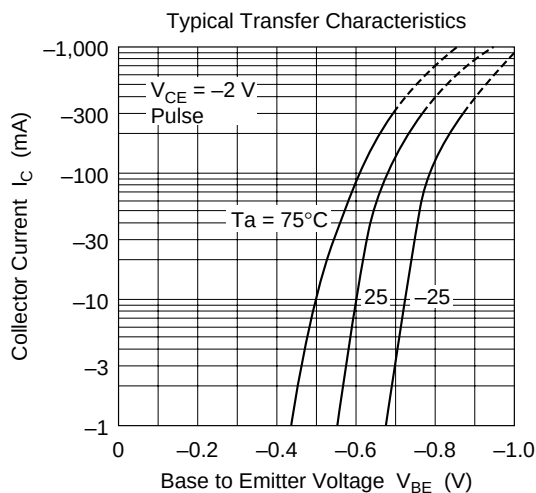
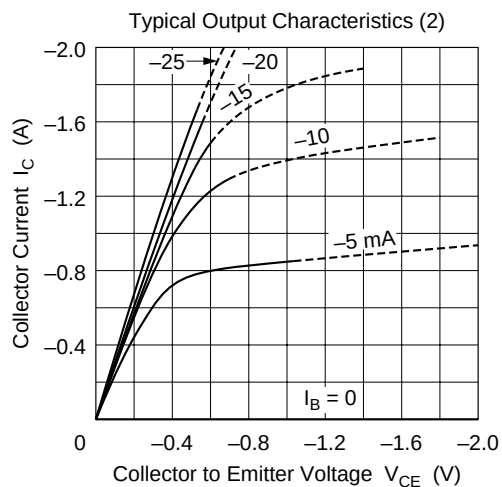
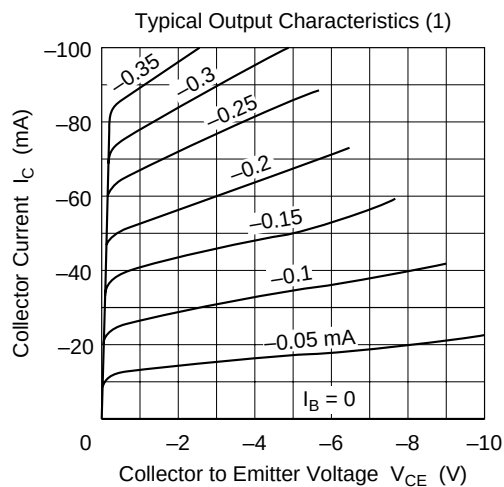
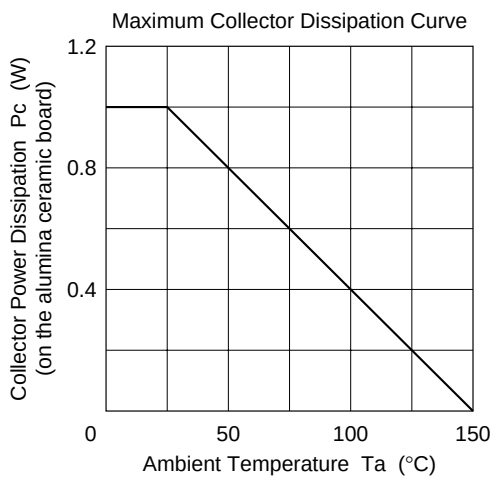
2. Value on the alumina ceramic board ( $12.5 \times 20 \times 0.7$  mm)

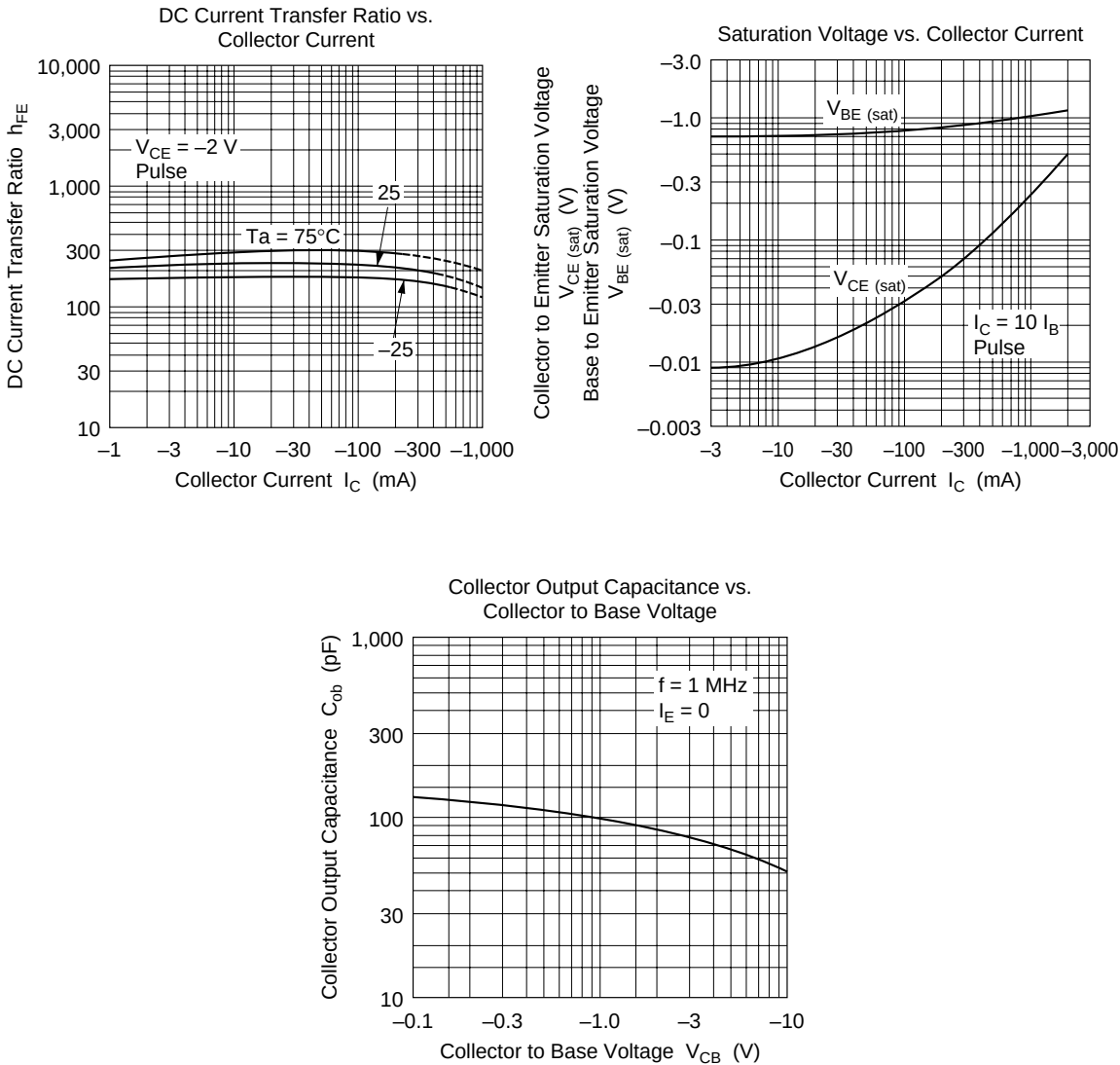
## Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol        | Min | Typ   | Max  | Unit    | Test conditions                                 |
|-----------------------------------------|---------------|-----|-------|------|---------|-------------------------------------------------|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$ | -20 | —     | —    | V       | $I_C = -10 \mu A$ , $I_E = 0$                   |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$ | -16 | —     | —    | V       | $I_C = -1$ mA, $R_{BE} = \infty$                |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$ | -6  | —     | —    | V       | $I_E = -10 \mu A$ , $I_C = 0$                   |
| Collector cutoff current                | $I_{CBO}$     | —   | —     | -0.1 | $\mu A$ | $V_{CB} = -16$ V, $I_E = 0$                     |
| Emitter cutoff current                  | $I_{EBO}$     | —   | —     | -0.1 | $\mu A$ | $V_{EB} = -5$ V, $I_C = 0$                      |
| DC current transfer ratio               | $h_{FE}^{*1}$ | 100 | —     | 320  |         | $V_{CE} = -2$ V,<br>$I_C = -0.1$ A (Pulse test) |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | -0.15 | -0.3 | V       | $I_C = -1$ A,<br>$I_B = -0.1$ A (Pulse test)    |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | —   | -1.0  | -1.2 | V       | $I_C = -1$ A,<br>$I_B = -0.1$ A (Pulse test)    |
| Gain bandwidth product                  | $f_T$         | —   | 150   | —    | MHz     | $V_{CE} = -2$ V,<br>$I_C = -10$ mA              |
| Collector output capacitance            | Cob           | —   | 50    | —    | pF      | $V_{CB} = -10$ V, $I_E = 0$ ,<br>$f = 1$ MHz    |

Note: 1. The 2SB1001 is grouped by  $h_{FE}$  as follows.

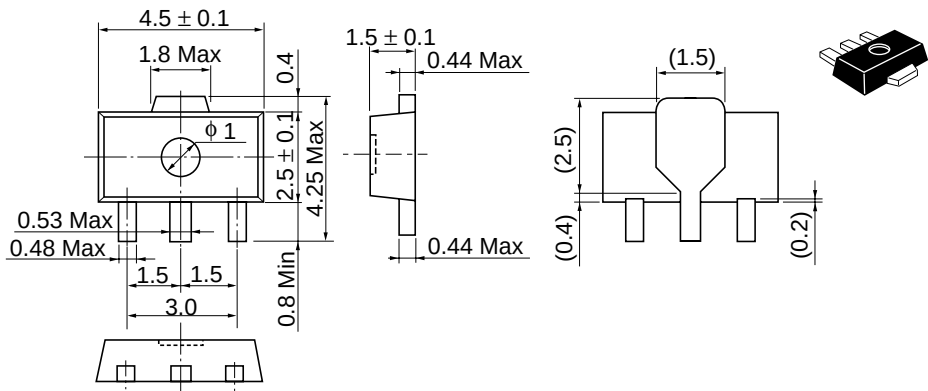
| Mark     | BH         | BJ         |
|----------|------------|------------|
| $h_{FE}$ | 100 to 200 | 160 to 320 |





Package Dimensions

As of January, 2001  
Unit: mm



|                        |          |
|------------------------|----------|
| Hitachi Code           | UPAK     |
| JEDEC                  | —        |
| EIAJ                   | Conforms |
| Mass (reference value) | 0.050 g  |

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