

To all our customers

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

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Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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# 2SB561

Silicon PNP Epitaxial

**RENESAS**

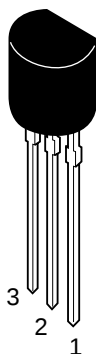
ADE-208-1023 (Z)  
1st. Edition  
Mar. 2001

## Application

- Low frequency power amplifier
- Complementary pair with 2SD467

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

| Item                         | Symbol        | Ratings     | Unit |
|------------------------------|---------------|-------------|------|
| Collector to base voltage    | $V_{CBO}$     | -25         | V    |
| Collector to emitter voltage | $V_{CEO}$     | -20         | V    |
| Emitter to base voltage      | $V_{EBO}$     | -5          | V    |
| Collector current            | $I_C$         | -0.7        | A    |
| Collector peak current       | $i_{C(peak)}$ | -1.0        | A    |
| Collector power dissipation  | $P_C$         | 0.5         | W    |
| Junction temperature         | $T_j$         | 150         | °C   |
| Storage temperature          | $T_{stg}$     | -55 to +150 | °C   |

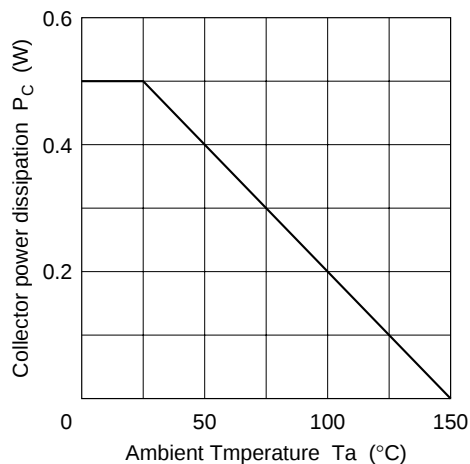
Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol        | Min | Typ   | Max  | Unit          | Test conditions                                                 |
|-----------------------------------------|---------------|-----|-------|------|---------------|-----------------------------------------------------------------|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$ | -25 | —     | —    | V             | $I_C = -10\text{ }\mu\text{A}$ , $I_E = 0$                      |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$ | -20 | —     | —    | V             | $I_C = -1\text{ mA}$ , $R_{BE} = \infty$                        |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$ | -5  | —     | —    | V             | $I_E = -10\text{ }\mu\text{A}$ , $I_C = 0$                      |
| Collector cutoff current                | $I_{CBO}$     | —   | —     | -1.0 | $\mu\text{A}$ | $V_{CB} = -20\text{ V}$ , $I_E = 0$                             |
| DC current transfer ratio               | $h_{FE}^{*1}$ | 85  | —     | 240  |               | $V_{CE} = -1\text{ V}$ ,<br>$I_C = -0.15\text{ A}$ (Pulse test) |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | -0.2  | -0.5 | V             | $I_C = -0.5\text{ A}$ , $I_B = -0.05\text{ A}$                  |
| Base to emitter voltage                 | $V_{BE}$      | —   | -0.75 | -1.0 | V             | $V_{CE} = -1\text{ V}$ , $I_C = -0.15\text{ A}$                 |
| Gain bandwidth product                  | $f_T$         | —   | 350   | —    | MHz           | $V_{CE} = -1\text{ V}$ , $I_C = -0.15\text{ A}$                 |
| Collector output capacitance            | $C_{ob}$      | —   | 20    | —    | pF            | $V_{CB} = -10\text{ V}$ , $I_E = 0$<br>$f = 1\text{ MHz}$       |

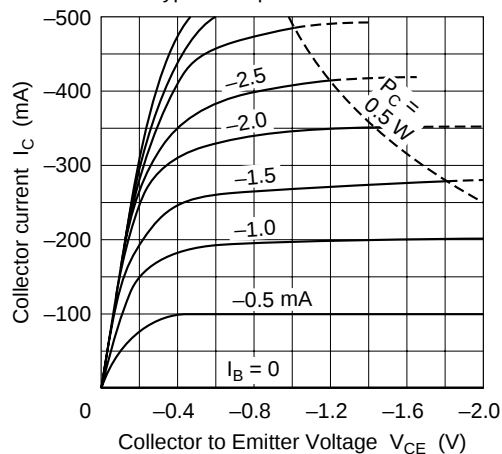
Note: 1. The 2SB561 is grouped by  $h_{FE}$  as follows.

| B         | C          |
|-----------|------------|
| 85 to 170 | 120 to 240 |

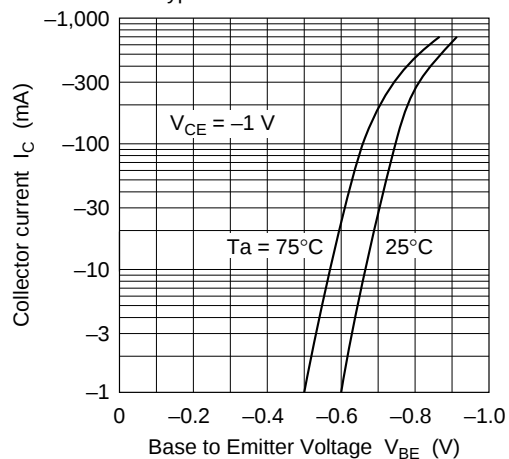
Maximum Collector Dissipation Curve



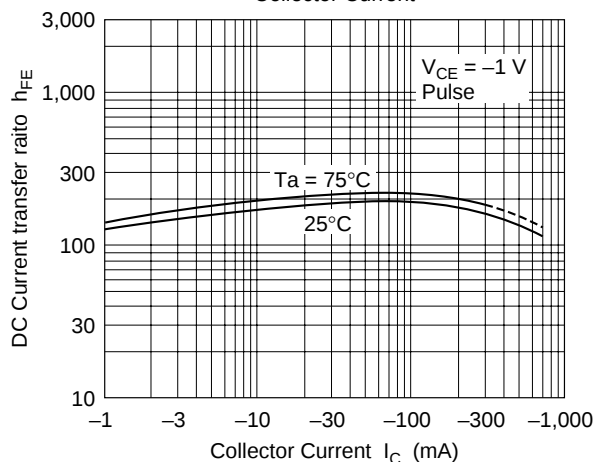
Typical Output Characteristics

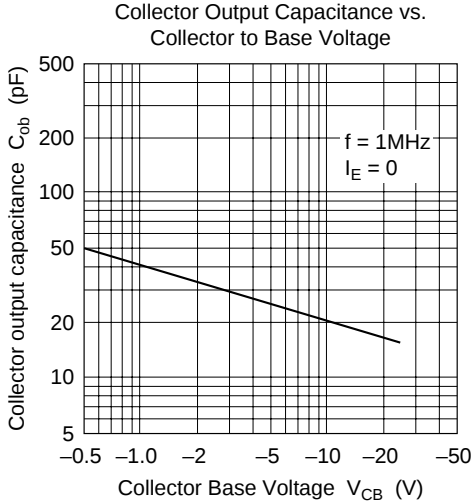
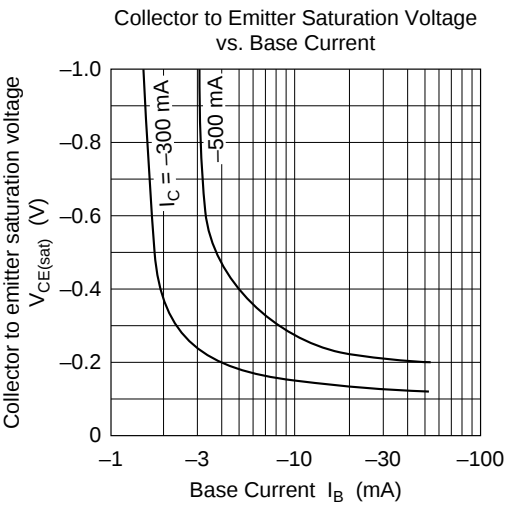
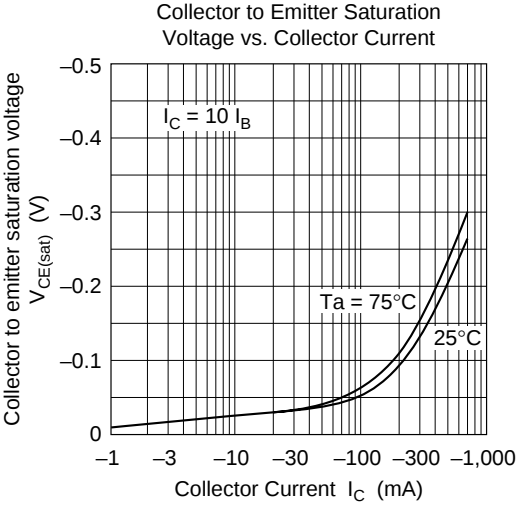


Typical Transfer Characteristics



DC Current Transfer Ratio vs. Collector Current

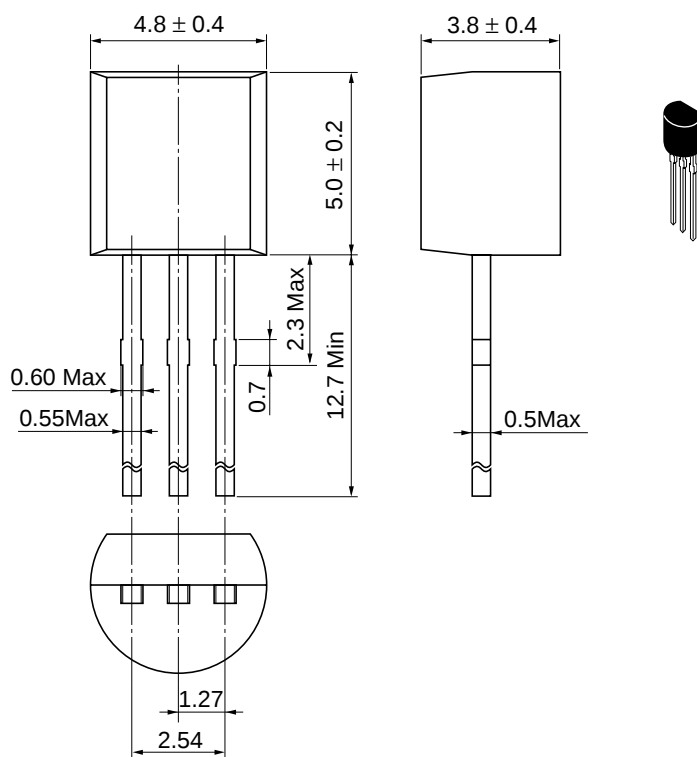




# Package Dimensions

As of January, 2001

Unit: mm



|                        |           |
|------------------------|-----------|
| Hitachi Code           | TO-92 (1) |
| JEDEC                  | Conforms  |
| EIAJ                   | Conforms  |
| Mass (reference value) | 0.25 g    |

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