

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!

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# 2SD667, 2SD667A

Silicon NPN Epitaxial

**RENESAS**

ADE-208-1137 (Z)

1st. Edition

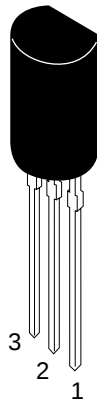
Mar. 2001

## Application

- Low frequency power amplifier
- Complementary pair with 2SB647/A

## Outline

TO-92MOD



1. Emitter
2. Collector
3. Base

2SD667, 2SD667A

Absolute Maximum Ratings (Ta = 25°C)

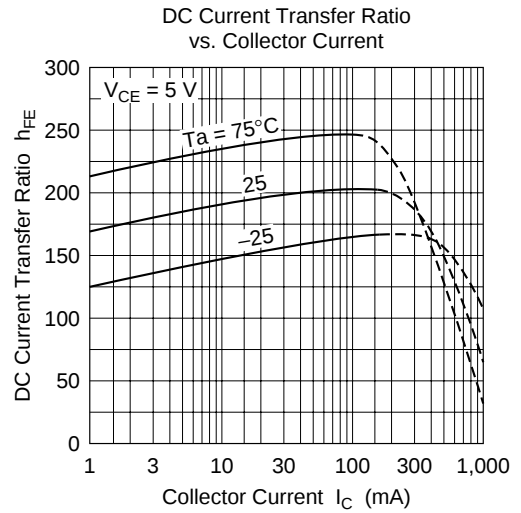
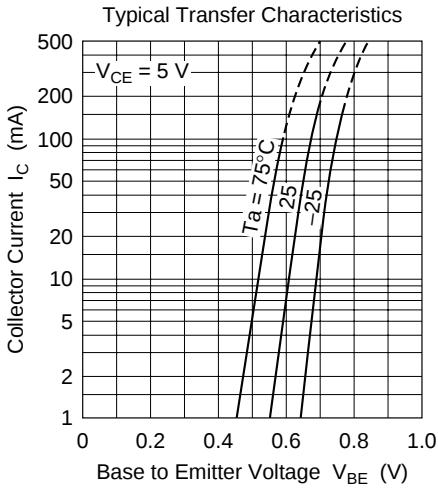
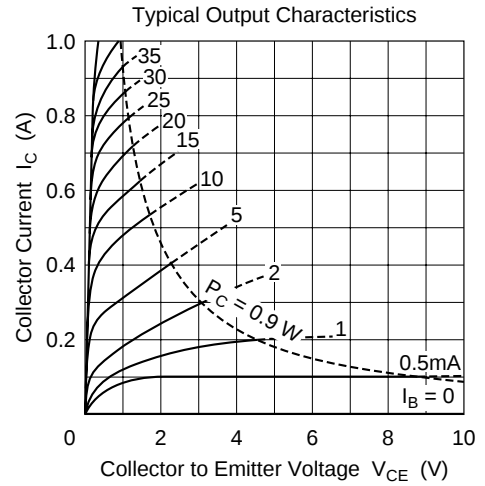
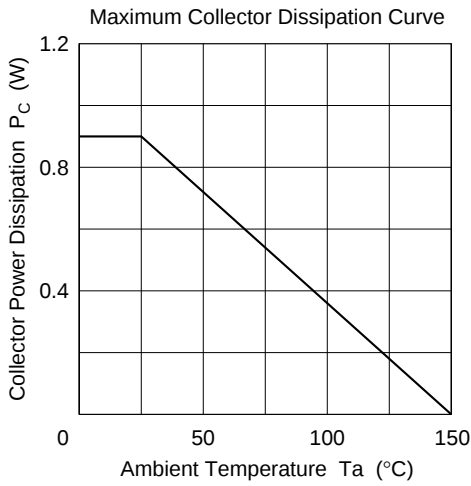
| Item                         | Symbol               | 2SD667      | 2SD667A     | Unit |
|------------------------------|----------------------|-------------|-------------|------|
| Collector to base voltage    | V <sub>CBO</sub>     | 120         | 120         | V    |
| Collector to emitter voltage | V <sub>CEO</sub>     | 80          | 100         | V    |
| Emitter to base voltage      | V <sub>EBO</sub>     | 5           | 5           | V    |
| Collector current            | I <sub>C</sub>       | 1           | 1           | A    |
| Collector peak current       | i <sub>C(peak)</sub> | 2           | 2           | A    |
| Collector power dissipation  | P <sub>C</sub>       | 0.9         | 0.9         | W    |
| Junction temperature         | T <sub>j</sub>       | 150         | 150         | °C   |
| Storage temperature          | T <sub>stg</sub>     | −55 to +150 | −50 to +150 | °C   |

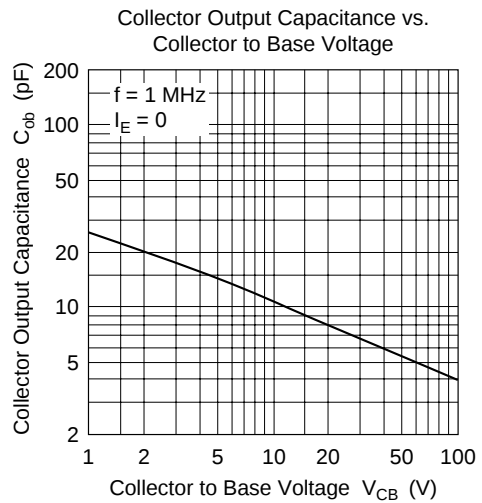
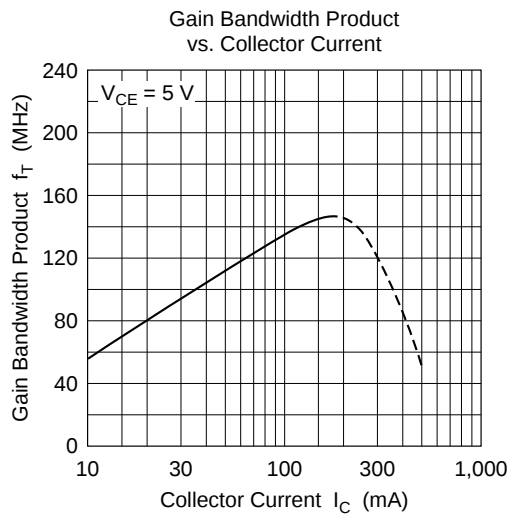
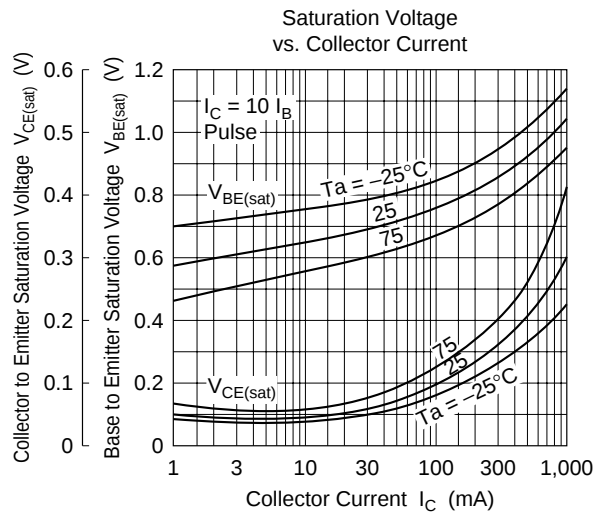
Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol                         | 2SD667 |     |     | 2SD667A |     |     | Unit | Test conditions                                                  |
|-----------------------------------------|--------------------------------|--------|-----|-----|---------|-----|-----|------|------------------------------------------------------------------|
|                                         |                                | Min    | Typ | Max | Min     | Typ | Max |      |                                                                  |
| Collector to base breakdown voltage     | V <sub>(BR)CBO</sub>           | 120    | —   | —   | 120     | —   | —   | V    | I <sub>C</sub> = 10 μA, I <sub>E</sub> = 0                       |
| Collector to emitter breakdown voltage  | V <sub>(BR)CEO</sub>           | 80     | —   | —   | 100     | —   | —   | V    | I <sub>C</sub> = 1 mA, R <sub>BE</sub> = ∞                       |
| Emitter to base breakdown voltage       | V <sub>(BR)EBO</sub>           | 5      | —   | —   | 5       | —   | —   | V    | I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0                       |
| Collector cutoff current                | I <sub>CBO</sub>               | —      | —   | 10  | —       | —   | 10  | μA   | V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0                      |
| DC current transfer ratio               | h <sub>FE1</sub> <sup>*1</sup> | 60     | —   | 320 | 60      | —   | 200 |      | V <sub>CE</sub> = 5 V,<br>I <sub>C</sub> = 150 mA <sup>*2</sup>  |
|                                         | h <sub>FE2</sub>               | 30     | —   | —   | 30      | —   | —   |      | V <sub>CE</sub> = 5 V,<br>I <sub>C</sub> = 500 mA <sup>*2</sup>  |
| Collector to emitter saturation voltage | V <sub>CE(sat)</sub>           | —      | —   | 1   | —       | —   | 1   | V    | I <sub>C</sub> = 500 mA,<br>I <sub>B</sub> = 50 mA <sup>*2</sup> |
| Base to emitter voltage                 | V <sub>BE</sub>                | —      | —   | 1.5 | —       | —   | 1.5 | V    | V <sub>CE</sub> = 5 V,<br>I <sub>C</sub> = 150 mA <sup>*2</sup>  |
| Gain bandwidth product                  | f <sub>T</sub>                 | —      | 140 | —   | —       | 140 | —   | MHz  | V <sub>CE</sub> = 5 V,<br>I <sub>C</sub> = 150 mA <sup>*2</sup>  |
| Collector output capacitance            | Cob                            | —      | 12  | —   | —       | 12  | —   | pF   | V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0,<br>f = 1 MHz         |

Notes: 1. The 2SD667 and 2SD667A are grouped by h<sub>FE1</sub> as follows.  
2. Pulse test

|         | B         | C          | D          |
|---------|-----------|------------|------------|
| 2SD667  | 60 to 120 | 100 to 200 | 160 to 320 |
| 2SD667A | 60 to 120 | 100 to 200 |            |

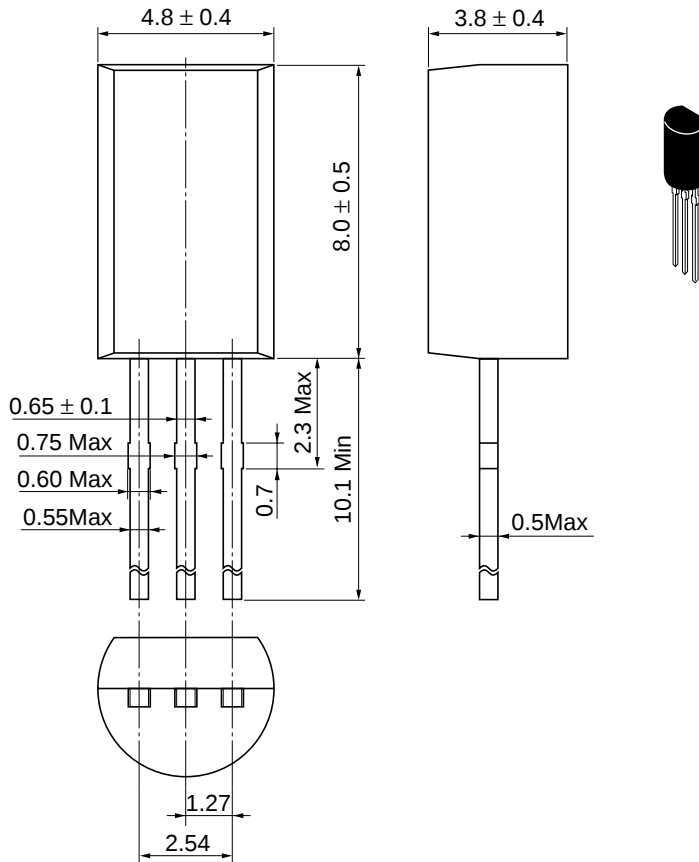




# Package Dimensions

As of January, 2001

Unit: mm



|                        |           |
|------------------------|-----------|
| Hitachi Code           | TO-92 Mod |
| JEDEC                  | —         |
| EIAJ                   | Conforms  |
| Mass (reference value) | 0.35 g    |

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