

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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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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# 2SD2101

Silicon NPN Triple Diffused

RENESAS

ADE-208-920 (Z)

1st. Edition

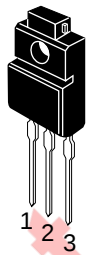
September 2000

## Application

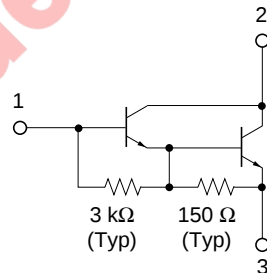
Low frequency power amplifier

## Outline

TO-220FM



- 1. Base
- 2. Collector
- 3. Emitter



Absolute Maximum Ratings (Ta = 25°C)

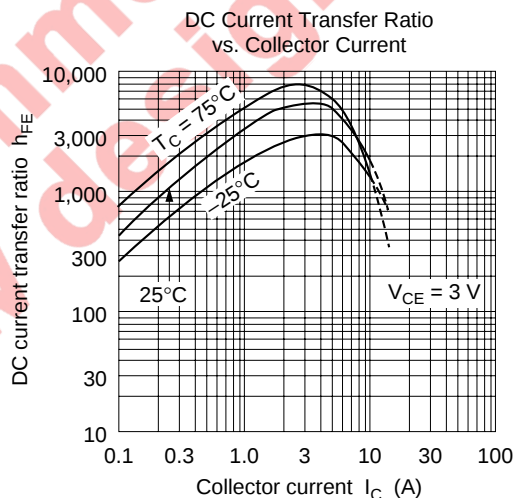
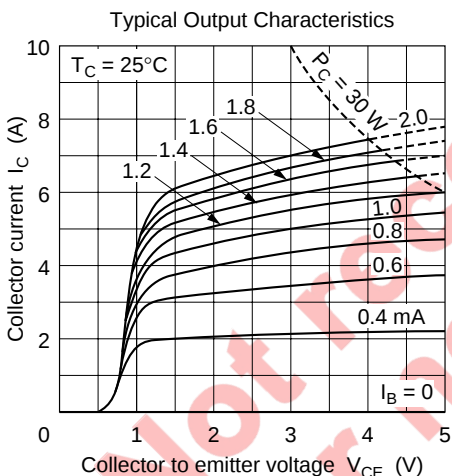
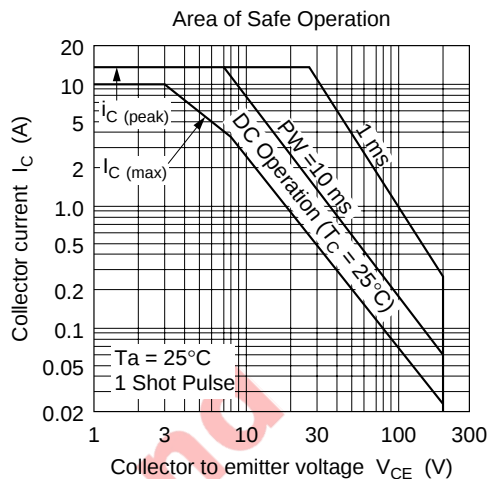
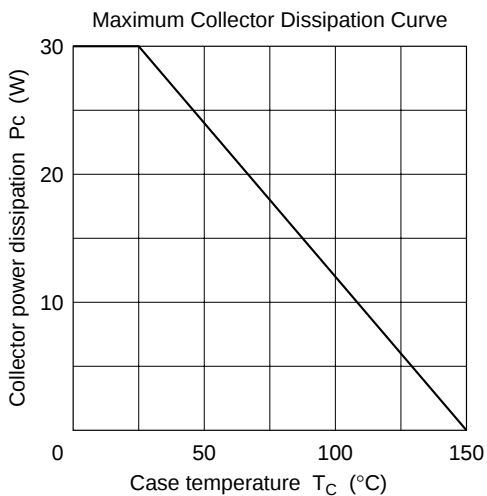
| Item                         | Symbol        | Rating      | Unit |
|------------------------------|---------------|-------------|------|
| Collector to base voltage    | $V_{CBO}$     | 200         | V    |
| Collector to emitter voltage | $V_{CEO}$     | 200         | V    |
| Emitter to base voltage      | $V_{EBO}$     | 7           | V    |
| Collector current            | $I_C$         | 10          | A    |
| Collector peak current       | $I_{C(peak)}$ | 15          | A    |
| Collector power dissipation  | $P_C$         | 2           | W    |
|                              | $P_C^{*1}$    | 30          |      |
| Junction temperature         | $T_j$         | 150         | °C   |
| Storage temperature          | $T_{stg}$     | −55 to +150 | °C   |

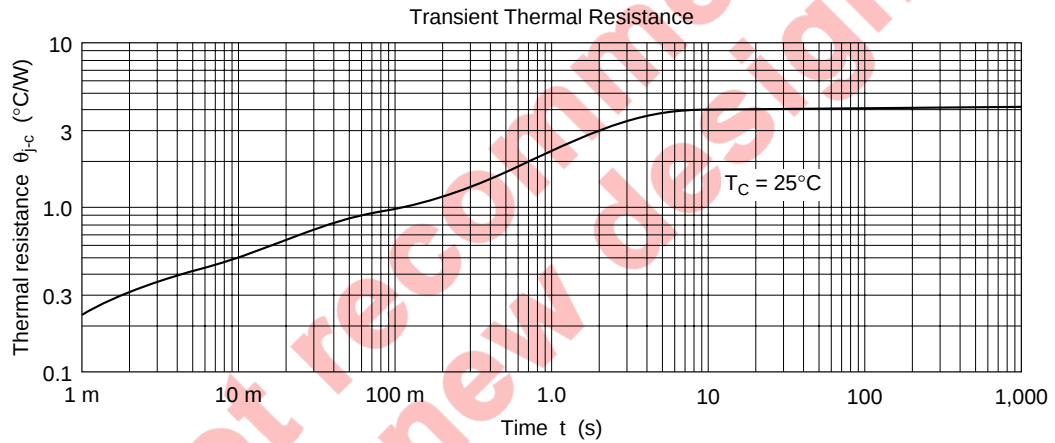
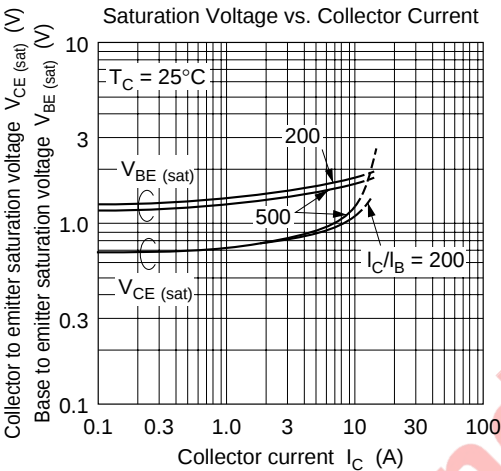
Note: 1. Value at  $T_C = 25^{\circ}\text{C}$ .

Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol         | Min  | Typ | Max | Unit          | Test conditions                                  |
|-----------------------------------------|----------------|------|-----|-----|---------------|--------------------------------------------------|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$  | 200  | —   | —   | V             | $I_C = 0.1\text{ mA}$ , $I_E = 0$                |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$  | 200  | —   | —   | V             | $I_C = 25\text{ mA}$ , $R_{BE} = \infty$         |
| Collector to emitter sustain voltage    | $V_{CEO(SUS)}$ | 170  | —   | —   | V             | $I_C = 5\text{ A}$ , $L = 5\text{ mH}$           |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$  | 7    | —   | —   | V             | $I_E = 50\text{ mA}$ , $I_C = 0$                 |
| Collector cutoff current                | $I_{CBO}$      | —    | —   | 10  | $\mu\text{A}$ | $V_{CB} = 180\text{ V}$ , $I_E = 0$              |
|                                         | $I_{CEO}$      | —    | —   | 50  |               | $V_{CE} = 180\text{ V}$ , $R_{BE} = \infty$      |
| DC current transfer ratio               | $h_{FE}$       | 1500 | —   | —   |               | $V_{CE} = 3\text{ V}$ , $I_C = 5\text{ A}^{*1}$  |
| Collector to emitter saturation voltage | $V_{CE(sat)1}$ | —    | —   | 1.5 | V             | $I_C = 5\text{ A}$ , $I_B = 10\text{ mA}^{*1}$   |
|                                         | $V_{CE(sat)2}$ | —    | —   | 3.0 |               | $I_C = 10\text{ A}$ , $I_B = 100\text{ mA}^{*1}$ |
| Base to emitter saturation voltage      | $V_{BE(sat)1}$ | —    | —   | 2.0 | V             | $I_C = 5\text{ A}$ , $I_B = 10\text{ mA}^{*1}$   |
|                                         | $V_{BE(sat)2}$ | —    | —   | 3.5 |               | $I_C = 10\text{ A}$ , $I_B = 100\text{ mA}^{*1}$ |

Note: 1. Pulse test.





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