

To all our customers

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

Cautions

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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2SC2979

Silicon NPN Triple Diffused

RENESAS

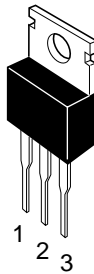
ADE-208-890 (Z)
1st. Edition
September 2000

Application

High voltage, high speed and high power switching

Outline

TO-220AB



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

Absolute Maximum Ratings (T_a = 25°C)

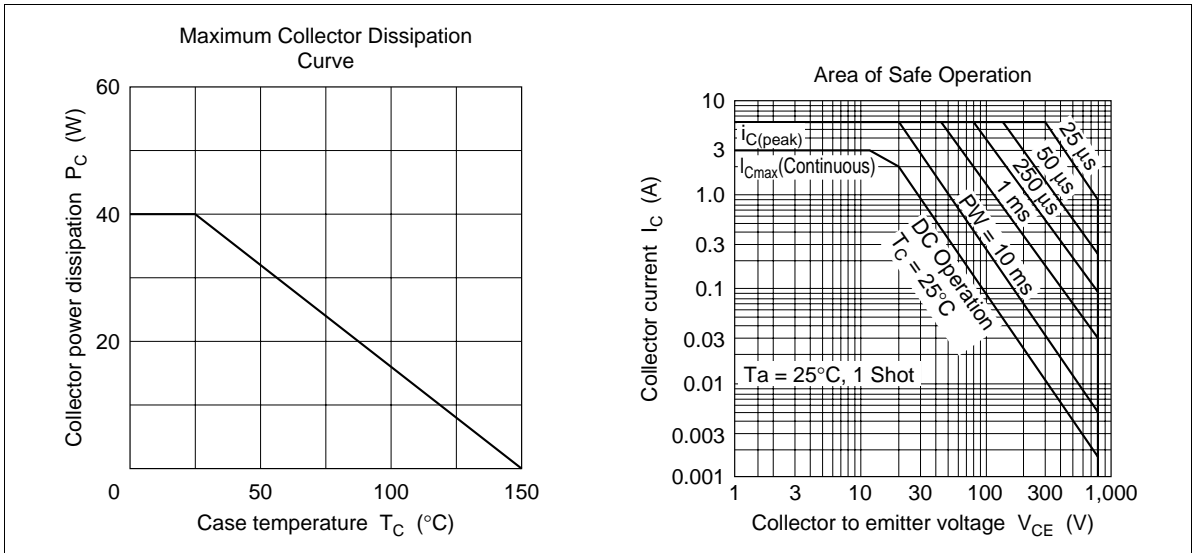
| Item | Symbol | Ratings | Unit |
|------------------------------|----------------------|-------------|------|
| Collector to base voltage | V _{CBO} | 900 | V |
| Collector to emitter voltage | V _{CEO} | 800 | V |
| Emitter to base voltage | V _{EBO} | 7 | V |
| Collector current | I _C | 3 | A |
| Collector peak current | I _{C(peak)} | 6 | A |
| Base current | I _B | 1.5 | A |
| Collector power dissipation | P _C *1 | 40 | W |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

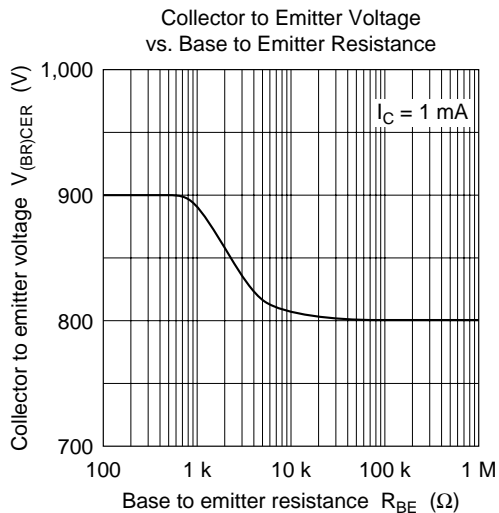
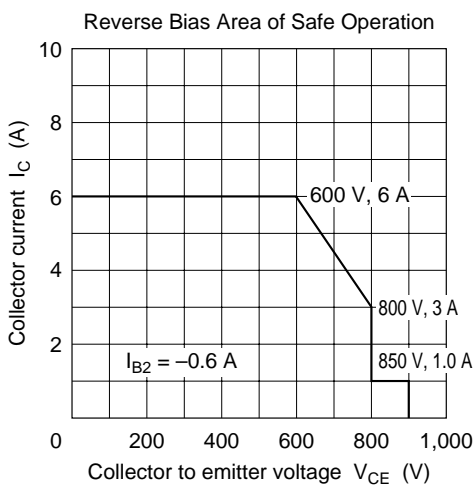
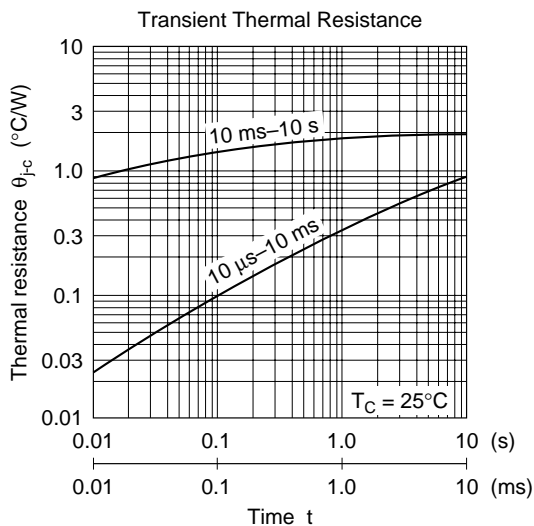
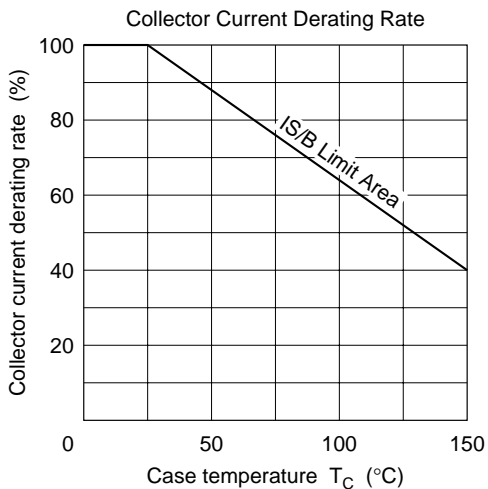
Note: 1. Value at T_C = 25°C.

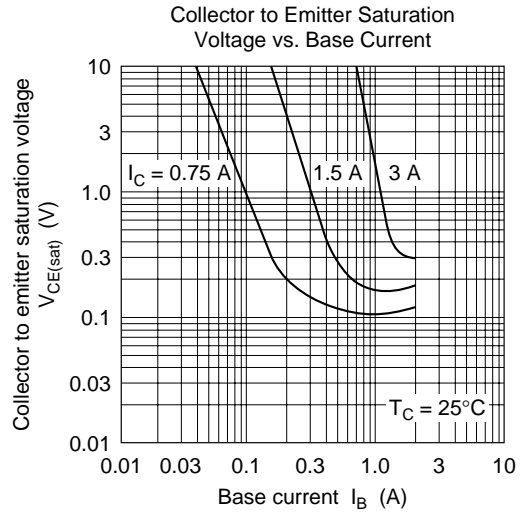
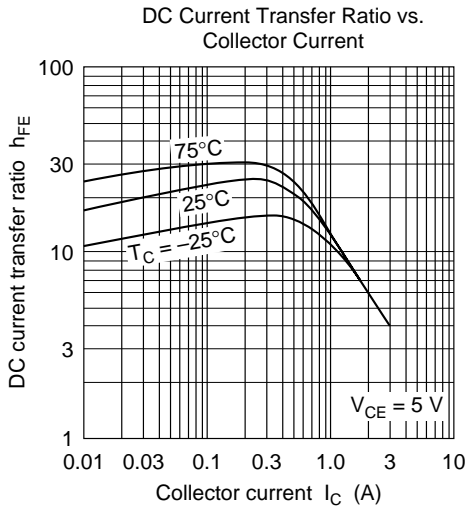
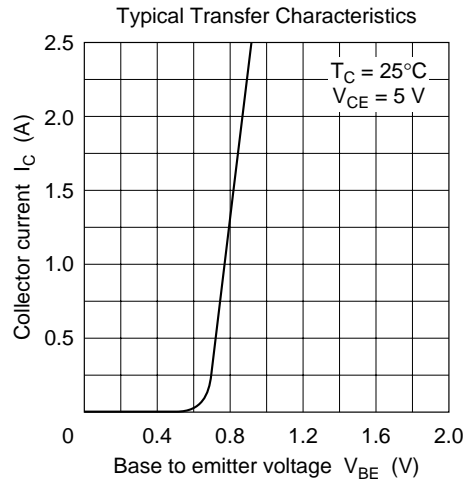
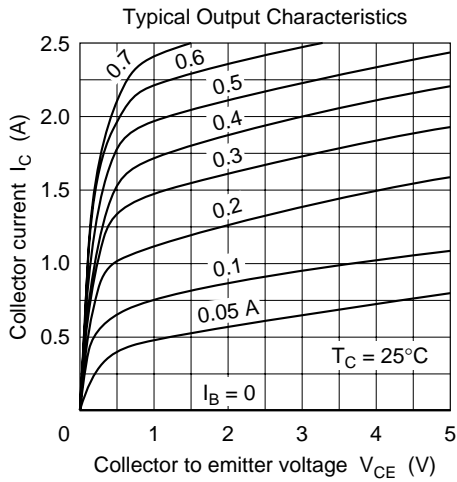
Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|----------------|-----|-----|-----|---------------|---|
| Collector to emitter sustain voltage | $V_{CEO(sus)}$ | 800 | — | — | V | $I_C = 0.2\text{ A}$, $R_{BE} = \infty$, $L = 100\text{ mH}$ |
| | $V_{CEX(sus)}$ | 800 | — | — | V | $I_C = 3\text{ A}$, $I_{B1} = 0.9\text{ A}$, $I_{B2} = -0.6\text{ A}$, $V_{BE} = -5.0\text{ V}$, $L = 180\text{ }\mu\text{H}$, Clamped |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | 7 | — | — | V | $I_E = 10\text{ mA}$, $I_C = 0$ |
| Collector cutoff current | I_{CBO} | — | — | 100 | μA | $V_{CB} = 750\text{ V}$, $I_E = 0$ |
| | I_{CEO} | — | — | 100 | μA | $V_{CE} = 650\text{ V}$, $R_{BE} = \infty$ |
| DC current transfer ratio | h_{FE1} | 15 | — | — | | $V_{CE} = 5\text{ V}$, $I_C = 0.3\text{ A}^{*1}$ |
| | h_{FE2} | 7 | — | — | | $V_{CE} = 5\text{ V}$, $I_C = 1.5\text{ A}^{*1}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | — | 1.0 | V | $I_C = 0.75\text{ A}$, $I_B = 0.15\text{ A}^{*1}$ |
| Base to emitter saturation voltage | $V_{BE(sat)}$ | — | — | 1.5 | V | |
| Turn on time | t_{on} | — | — | 1.0 | μs | $I_C = 1.5\text{ A}$, $I_{B1} = 0.3\text{ A}$, |
| Storage time | t_{stg} | — | — | 3.0 | μs | $I_{B2} = -0.75\text{ A}$, $V_{CC} \cong 250\text{ V}$ |
| Fall time | t_f | — | — | 1.0 | μs | |

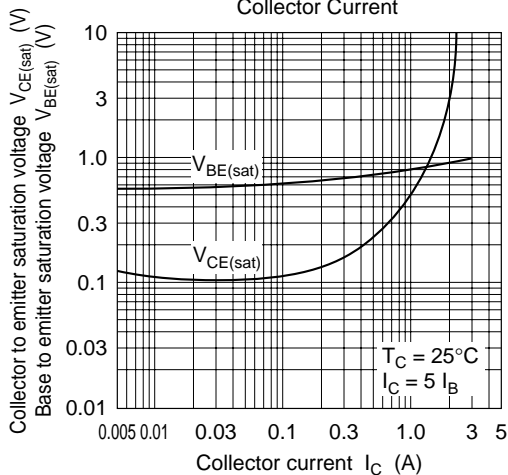
Note: 1. Pulse test



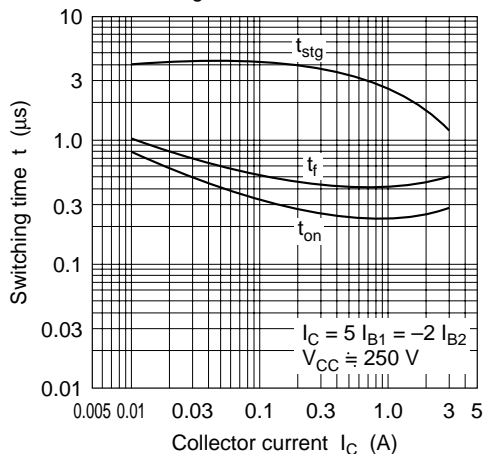




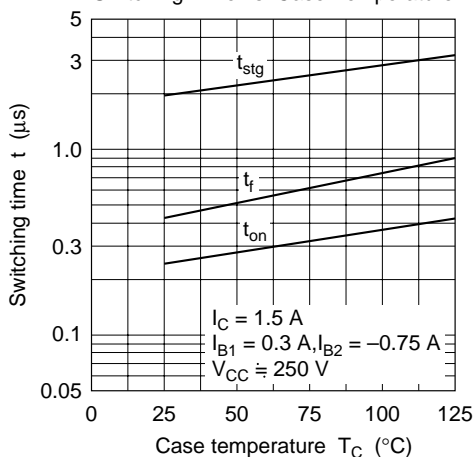
Saturation Voltage vs. Collector Current



Switching Time vs. Collector Current



Switching Time vs. Case Temperature



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