

PNP SILICON TRIPLE DIFFUSED TRANSISTOR  
FOR HIGH-SPEED HIGH-VOLTAGE SWITCHING

The 2SA1871 is a transistor developed for high-speed high-voltage switching and is ideal for use in switching elements such as switching regulators and DC/DC converters.

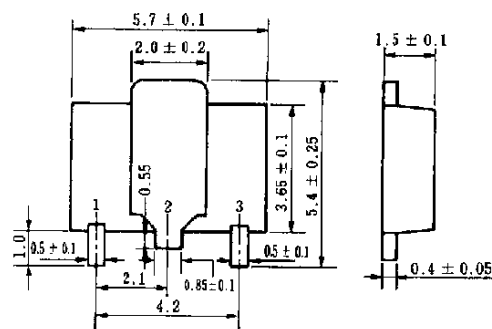
FEATURES

- New package with dimensions in between those of small signal and power signal package
- High voltage
- Fast switching speed
- Complementary transistor with 2SC4942

QUALITY GRADES

- Standard
- Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

PACKAGE DRAWING (UNIT: mm)



Electrode connection  
1: Emitter  
2: Collector  
3: Base

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Parameter                    | Symbol         | Conditions                                      | Ratings     | Unit |
|------------------------------|----------------|---|-------------|------|
| Collector to base voltage    | $V_{CBO}$      |   | -600        | V    |
| Collector to emitter voltage | $V_{CEO}$      |   | -600        | V    |
| Emitter to base voltage      | $V_{EBO}$      |   | -7.0        | V    |
| Collector current (DC)       | $I_{C(DC)}$    |   | -1.0        | A    |
| Collector current (pulse)    | $I_{C(pulse)}$ | PW ≤ 10 ms, duty cycle ≤ 50 %                   | -2.0        | A    |
| Total power dissipation      | $P_T$          | 7.5 cm <sup>2</sup> × 0.7 mm ceramic board used | 2.0         | W    |
| Junction temperature         | $T_j$          |   | 150         | °C   |
| Storage temperature          | $T_{stg}$      |   | -55 to +150 | °C   |

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

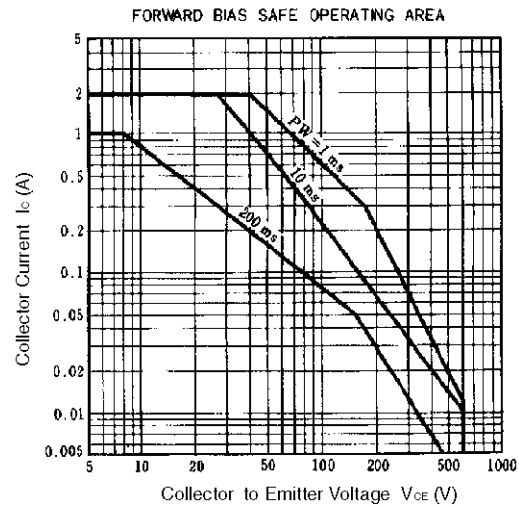
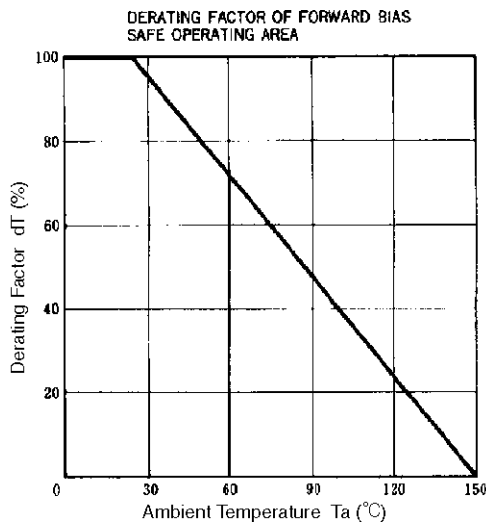
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

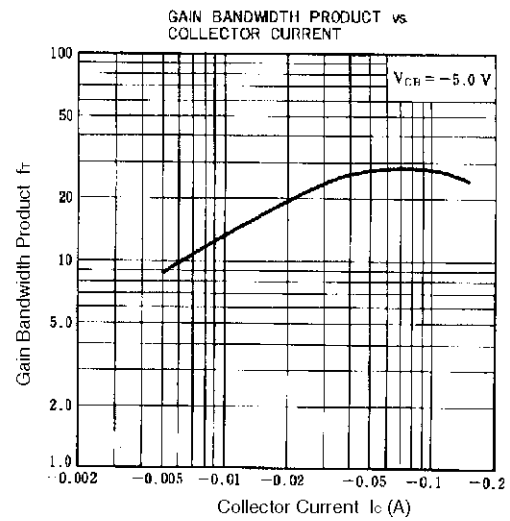
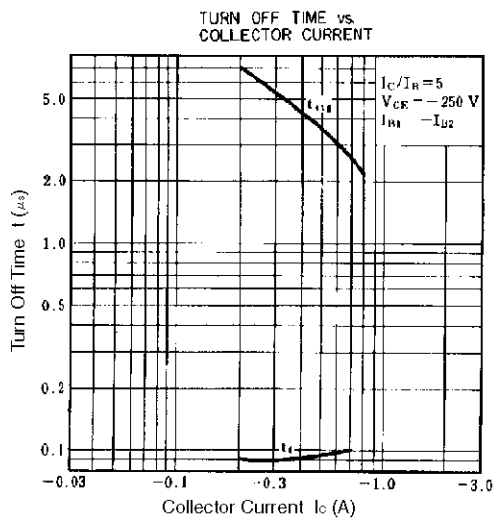
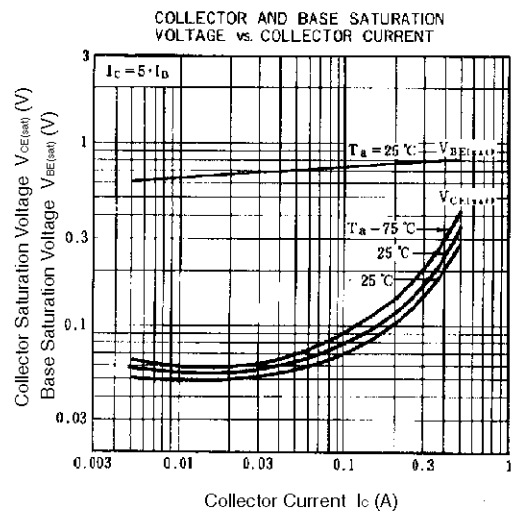
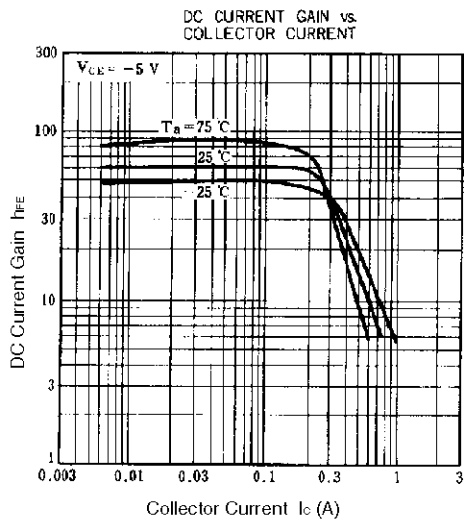
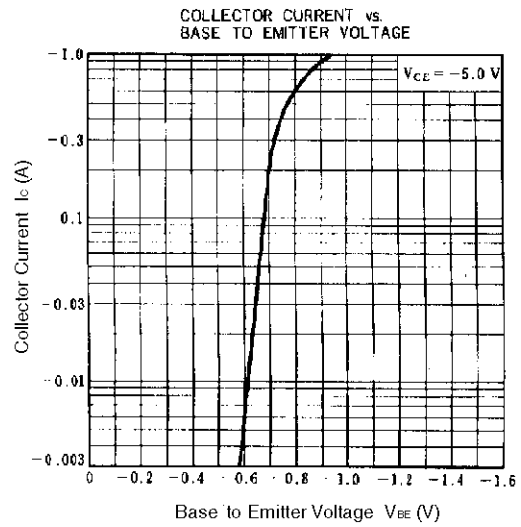
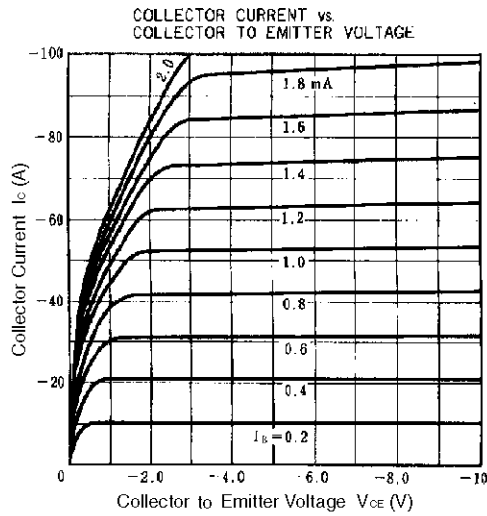
| Parameter                    | Symbol        | Conditions  | MIN. | TYP.  | MAX. | Unit          |
|------------------------------|---------------|---|------|-------|------|---------------|
| Collector cutoff current     | $I_{CBO}$     | $V_{CB} = -600\text{ V}, I_E = 0$                           |      |       | -10  | $\mu\text{A}$ |
| Emitter cutoff current       | $I_{EBO}$     | $V_{EB} = -7.0\text{ V}, I_C = 0$                           |      |       | -10  | $\mu\text{A}$ |
| DC current gain              | $h_{FE1}$     | $V_{CE} = -5.0\text{ V}, I_C = -0.1\text{ A}$               | 30   | 60    | 120  | -             |
| DC current gain              | $h_{FE2}$     | $V_{CE} = -5.0\text{ V}, I_C = -0.5\text{ A}$               | 5    | 20    |      | -             |
| Collector saturation voltage | $V_{CE(sat)}$ | $I_C = -300\text{ mA}, I_B = -60\text{ mA}$                 |      | -0.3  | -1.0 | V             |
| Base saturation voltage      | $V_{BE(sat)}$ | $I_C = -300\text{ mA}, I_B = -60\text{ mA}$                 |      | -0.85 | -1.2 | V             |
| Gain bandwidth product       | $f_T$         | $V_{CE} = -10\text{ V}, I_E = 50\text{ mA}$                 |      | 30    |      | MHz           |
| Output capacitance           | $C_{ob}$      | $V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$        |      | 40    |      | pF            |
| Turn-on time                 | $t_{on}$      | $I_C = -0.5\text{ A}, V_{CC} = -250\text{ V}$               |      | 0.1   | 0.5  | $\mu\text{s}$ |
| Storage time                 | $t_{stg}$     | $I_{B1} = -I_{B2} = -0.1\text{ A},$<br>$R_L = 500\ \Omega,$ |      | 3.5   | 5.0  | $\mu\text{s}$ |
| Fall time                    | $t_f$         |   |      | 0.1   | 0.5  | $\mu\text{s}$ |

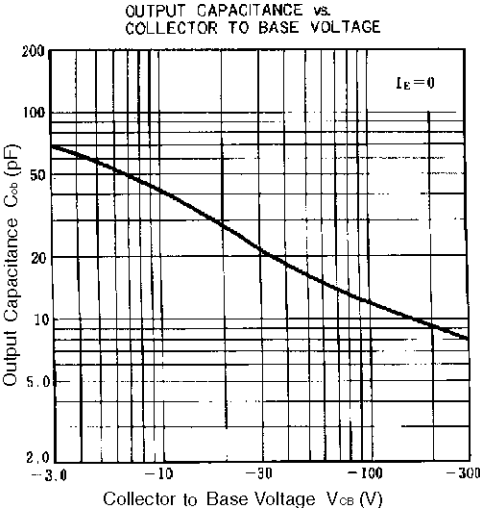
**hFE CLASSIFICATION**

| Marking   | GA1      | GA2      | GA3       |
|-----------|----------|----------|-----------|
| $h_{FE1}$ | 30 to 60 | 40 to 80 | 60 to 120 |

**TYPICAL CHARACTERISTICS (Ta = 25°C)**







[MEMO]

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