

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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## 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

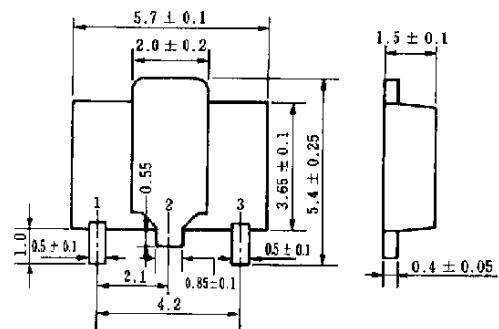
- New package with dimensions in between those of small signal and power signal package
- High voltage
- Fast switching speed
- Complementary transistor with 2SC4942

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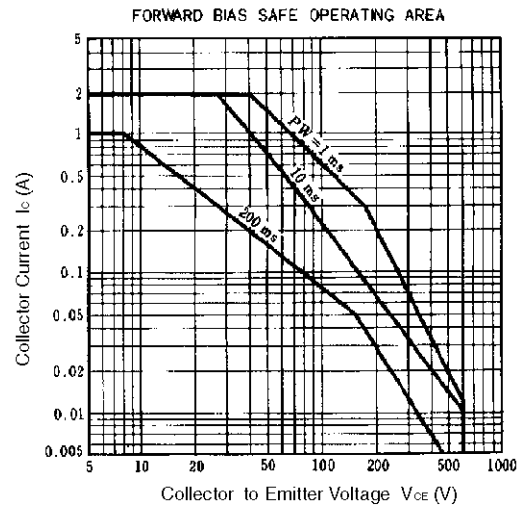
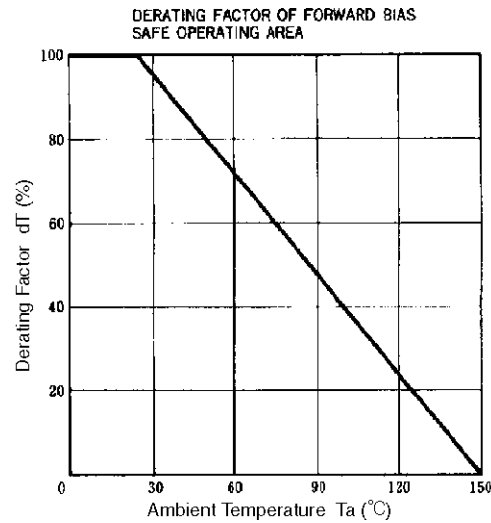
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

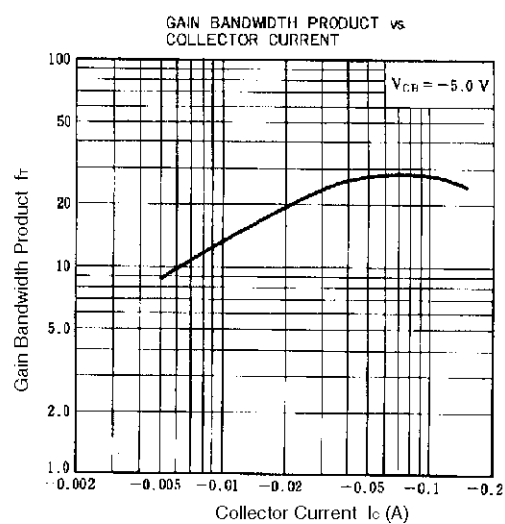
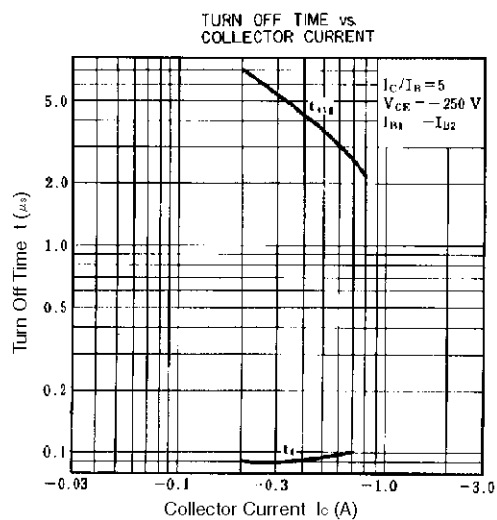
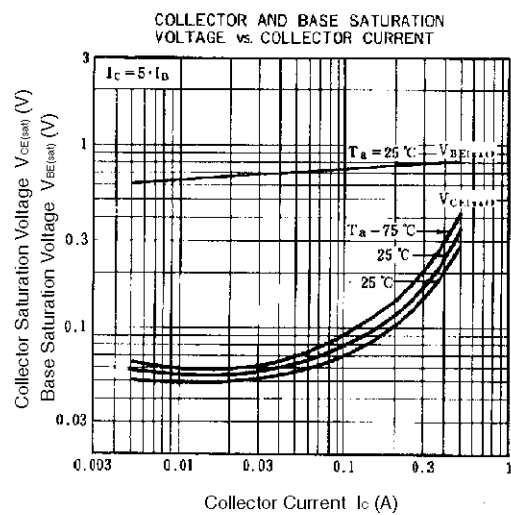
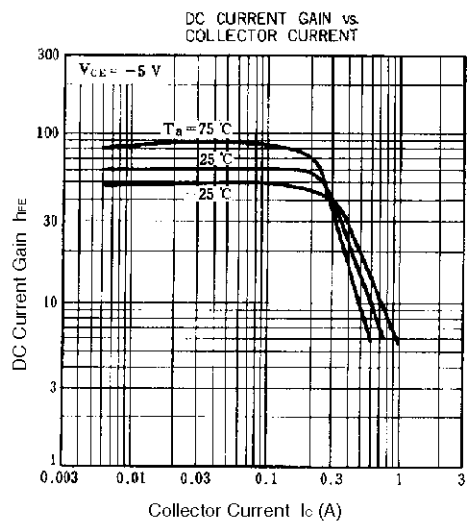
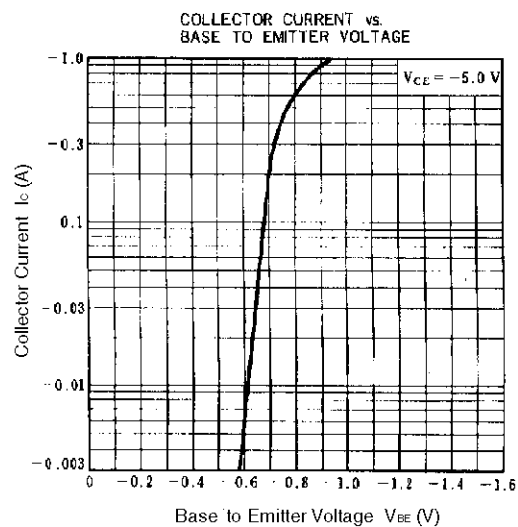
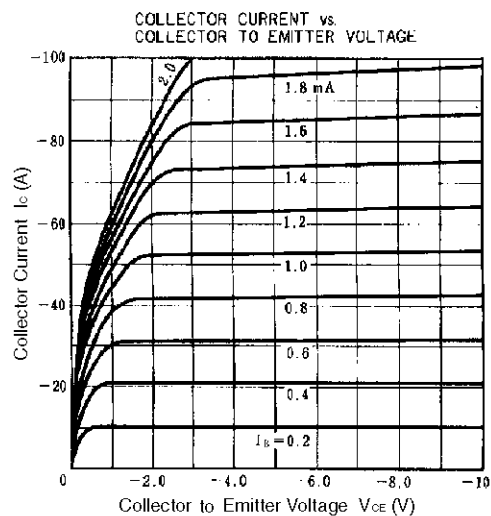
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -600 \text{ V}, I_E = 0$			-10	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -7.0 \text{ V}, I_C = 0$			-10	$\mu\text{A}$
DC current gain	$h_{FE1}$	$V_{CE} = -5.0 \text{ V}, I_C = -0.1 \text{ A}$	30	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	$t_{on}$	$I_C = -0.5 \text{ A}, V_{CC} = -250 \text{ V}$ $I_{B1} = -I_{B2} = -0.1 \text{ A},$ $R_L = 500 \Omega,$		0.1	0.5	$\mu\text{s}$
Storage time	$t_{stg}$			3.5	5.0	$\mu\text{s}$
Fall time	$t_f$			0.1	0.5	$\mu\text{s}$

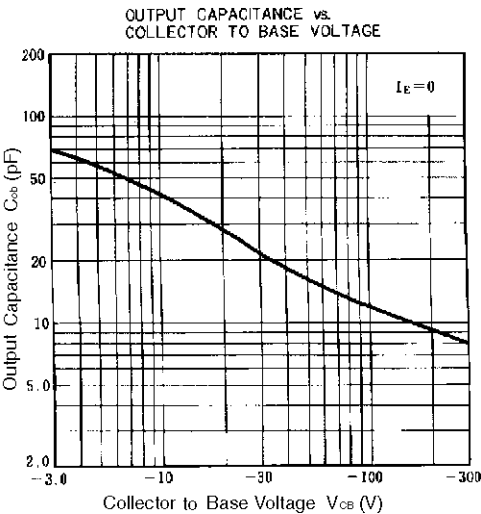
$h_{FE}$  CLASSIFICATION

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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