

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

The 2SC4942 is a transistor developed for high-speed high-voltage switching. This transistor is ideal for use in switching devices 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 the 2SA1871

QUALITY GRADES

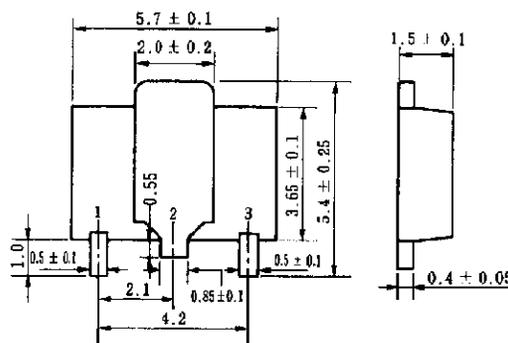
- Standard

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.

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V <sub>CBO</sub>		600	V
Collector to emitter voltage	V <sub>CEO</sub>		600	V
Emitter to base voltage	V <sub>EBO</sub>		7.0	V
Collector current (DC)	I <sub>D(DC)</sub>		1.0	A
Collector current (pulse)	I <sub>D(pulse)</sub>	PW ≤ 10 ms, duty cycle ≤ 50 %	2.0	A
Total power dissipation	P <sub>T</sub>	7.5 cm <sup>2</sup> × 0.7 mm ceramic board mounted	2.0	W
Junction temperature	T <sub>j</sub>		150	°C
Storage temperature	T <sub>stg</sub>		-55 to +150	°C

PACKAGE DRAWING (UNIT: mm)



Electrode connection

1. Emitter
2. Collector
3. Base

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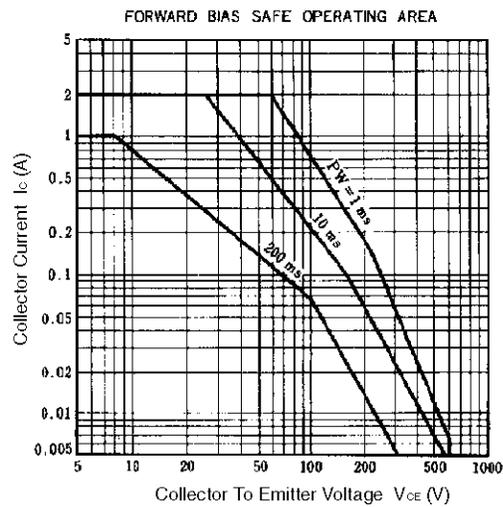
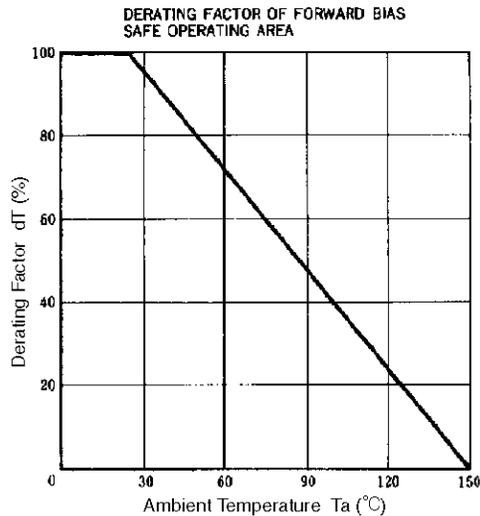
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

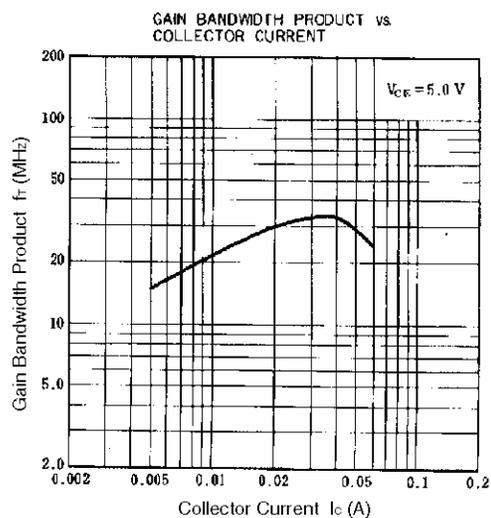
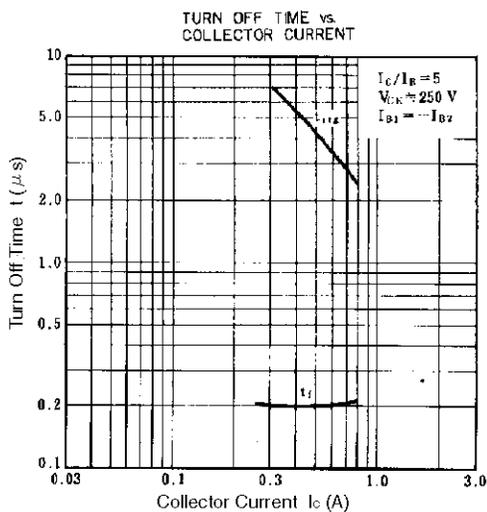
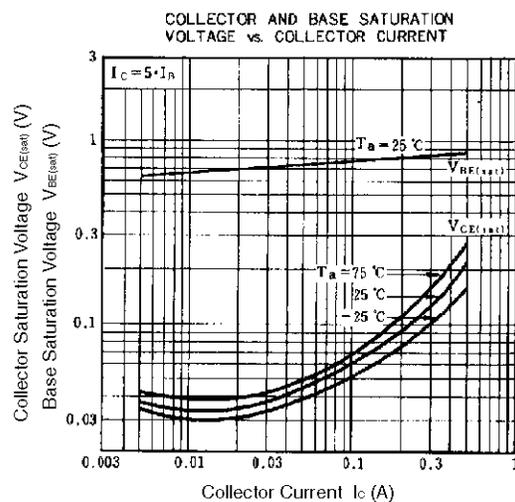
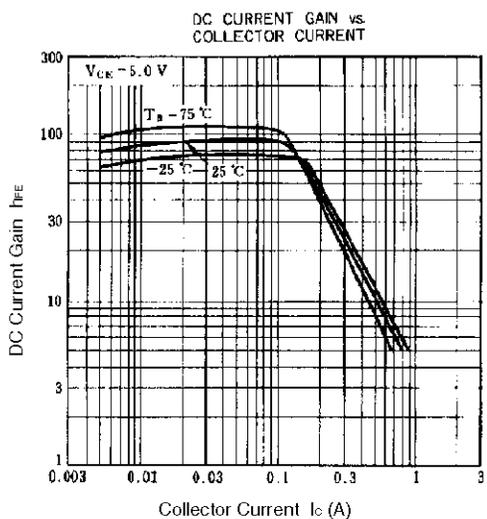
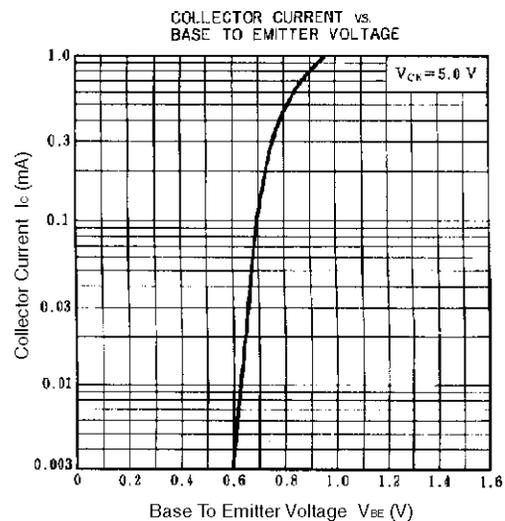
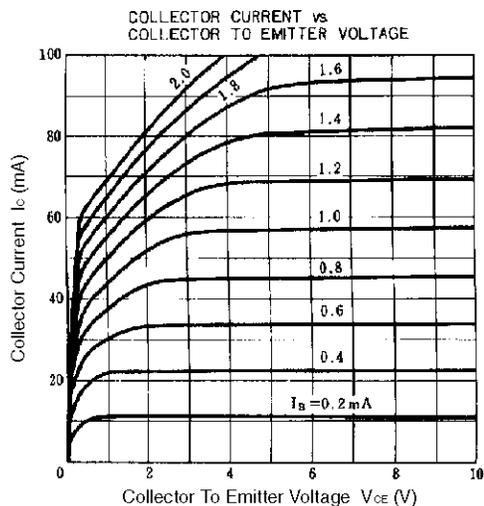
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 600\text{ V}, I_E = 0$			10	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 7.0\text{ V}, I_C = 0$			10	$\mu\text{A}$
DC current gain	$h_{FE1}$	$V_{CE} = 5.0\text{ V}, I_C = 0.1\text{ A}$	30	55	120	–
DC current gain	$h_{FE2}$	$V_{CE} = 5.0\text{ V}, I_C = 0.5\text{ A}$	5	10		–
Collector saturation voltage	$V_{CE(sat)}$	$I_C = 400\text{ mV}, I_B = 80\text{ mA}$		0.35	1.0	V
Base saturation voltage	$V_{BE(sat)}$	$I_C = 400\text{ mV}, I_B = 80\text{ mA}$		0.9	1.2	V
Gain bandwidth product	$f_T$	$V_{CE} = 5.0\text{ V}, I_E = -50\text{ mA}$		30		MHz
Output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$		15		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	$t_{stg}$			4.0	5.0	$\mu\text{s}$
Fall time	$t_f$			0.2	0.5	$\mu\text{s}$

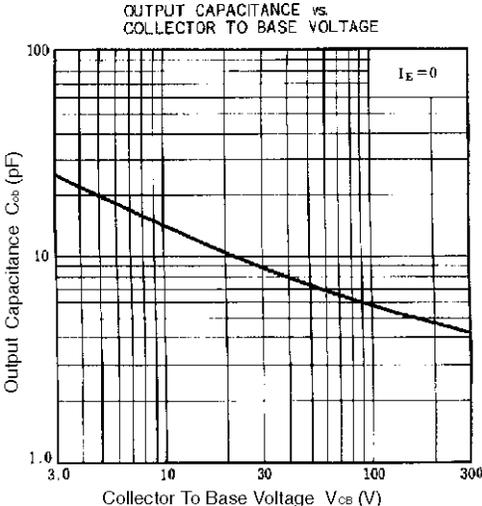
**$h_{FE}$  CLASSIFICATION**

Marking	AA1	AA2	AA3
$h_{FE1}$	30 to 60	40 to 80	60 to 120

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







[MEMO]

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