

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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

April 1st, 2010
Renesas Electronics Corporation

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

Send any inquiries to <http://www.renesas.com/inquiry>.

Not recommended
for new design

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Renesas Technology Home Page: <http://www.renesas.com>

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

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2SA1031, 2SA1032

Silicon PNP Epitaxial

RENESAS

Application

- Low frequency low noise amplifier
- Complementary pair with 2SC458 (LG) and 2SC2310

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

2SA1031, 2SA1032

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	2SA1031	2SA1032	Unit
Collector to base voltage	V_{CBO}	-30	-55	V
Collector to emitter voltage	V_{CEO}	-30	-50	V
Emitter to base voltage	V_{EBO}	-5	-5	V
Collector current	I_{C}	-100	-100	mA
Emitter current	I_{E}	100	100	mA
Collector power dissipation	P_{C}	300	300	mW
Junction temperature	T_{j}	150	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	-55 to +150	$^\circ\text{C}$

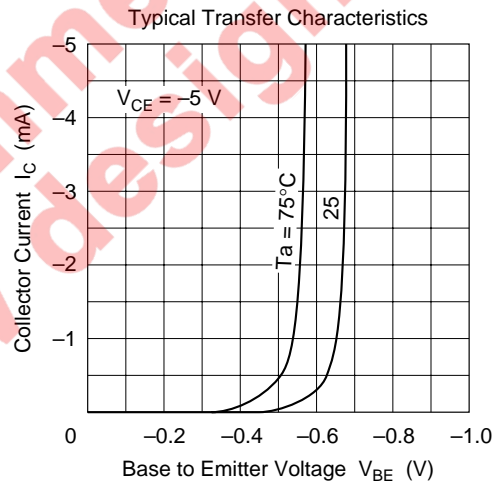
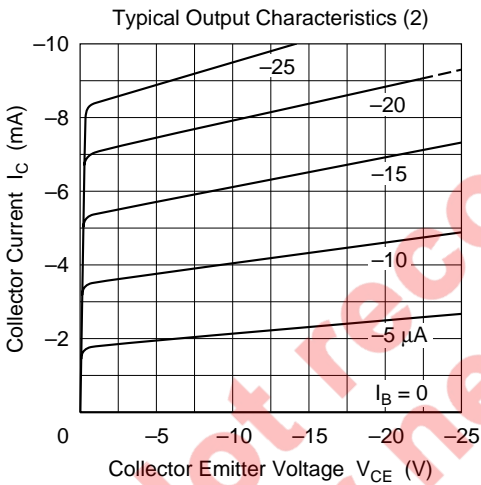
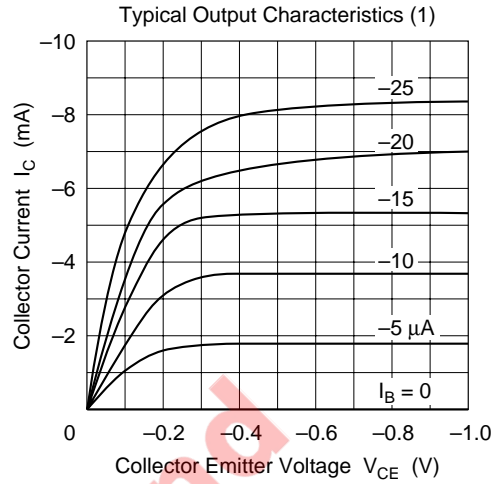
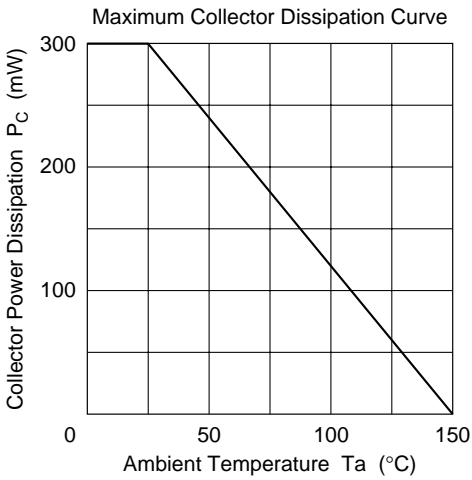
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Electrical Characteristics (Ta = 25°C)

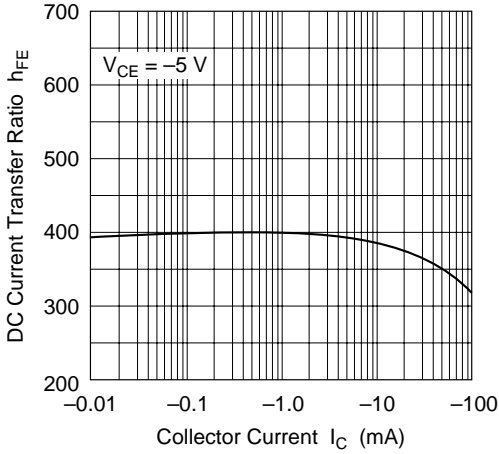
Item	Symbol	2SA1031			2SA1032			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	-30	—	—	-55	—	—	V	$I_C = -10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-30	—	—	-50	—	—	V	$I_C = -1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	-5	—	—	-5	—	—	V	$I_E = -10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	-0.5	—	—	-0.5	μA	$V_{CB} = -18 \text{ V}, I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	-0.5	—	—	-0.5	μA	$V_{EB} = -2 \text{ V}, I_C = 0$
DC current transfer ratio	h_{FE}^{*1}	100	—	500	100	—	320		$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$
Base to emitter voltage	V_{BE}	—	—	-0.8	—	—	-0.8	V	$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.2	—	—	-0.2	V	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$
Gain bandwidth product	f_T	200	280	—	200	280	—	MHz	$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$
Collector output capacitance	Cob	—	3.3	4.0	—	3.3	4.0	pF	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise figure	NF	—	—	5	—	—	5	dB	$V_{CE} = -6 \text{ V}, I_C = -0.1 \text{ mA}, R_g = 500 \Omega, f = 120 \text{ Hz}$

Note: 1. The 2SA1031 and 2SA1032 are grouped by h_{FE} as follows.

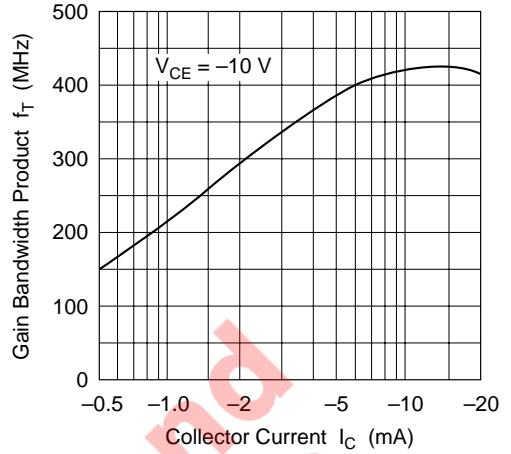
	B	C	D
2SA1031	100 to 200	160 to 320	250 to 500
2SA1032	100 to 200	160 to 320	—



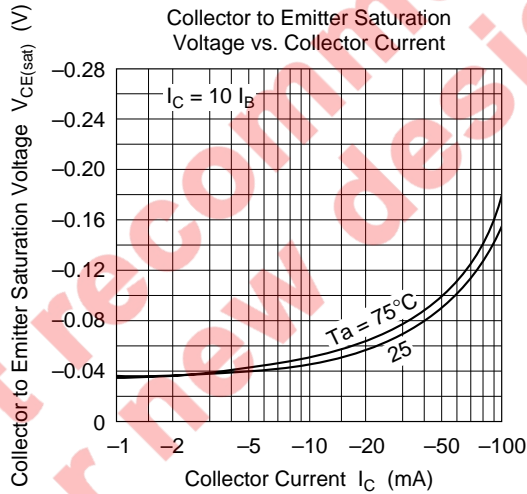
DC Current Transfer Ratio vs. Collector Current



Gain Bandwidth Product vs. Collector Current



Collector to Emitter Saturation Voltage vs. Collector Current



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