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

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Keep safety first in your circuit designs!

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2SA1031, 2SA1032

Silicon PNP Epitaxial

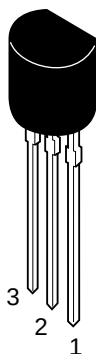
RENESAS

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 (Ta = 25°C)

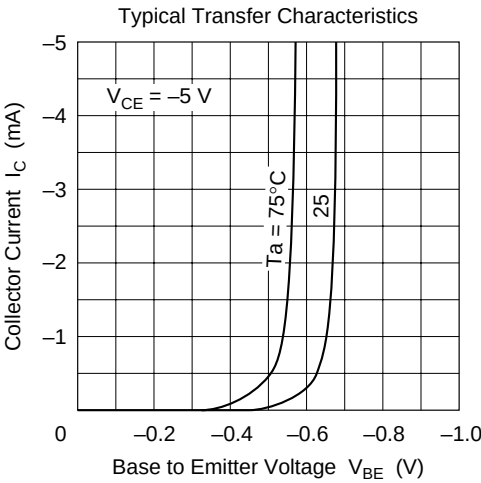
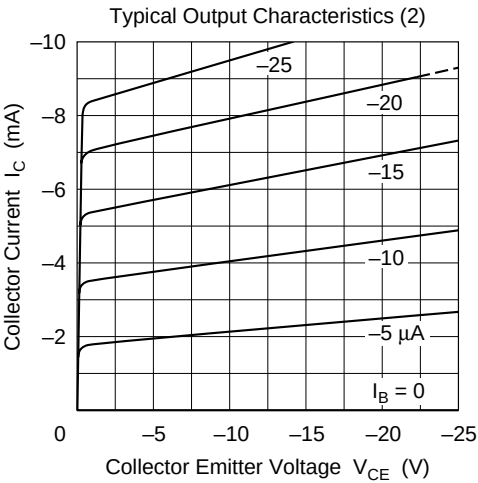
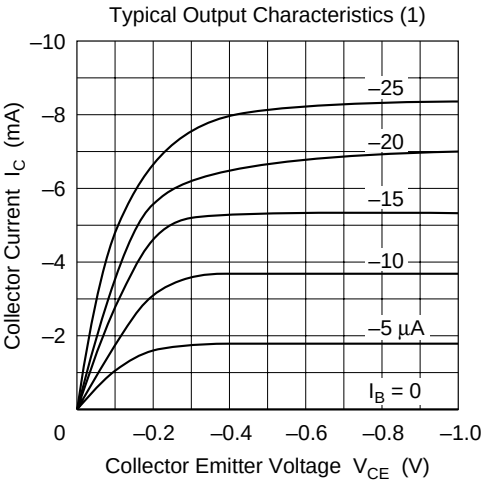
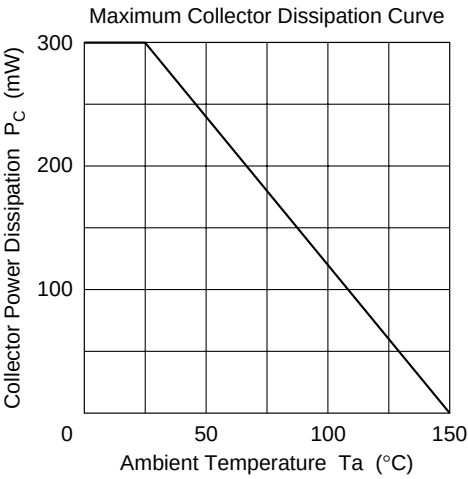
Item	Symbol	2SA1031	2SA1032	Unit
Collector to base voltage	V _{CBO}	−30	−55	V
Collector to emitter voltage	V _{CEO}	−30	−50	V
Emitter to base voltage	V _{EBO}	−5	−5	V
Collector current	I _C	−100	−100	mA
Emitter current	I _E	100	100	mA
Collector power dissipation	P _C	300	300	mW
Junction temperature	T _j	150	150	°C
Storage temperature	T _{stg}	−55 to +150	−55 to +150	°C

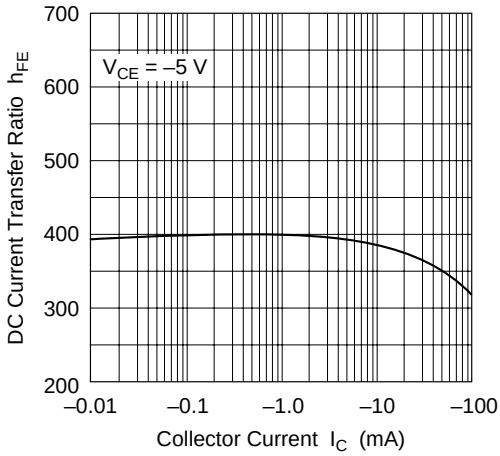
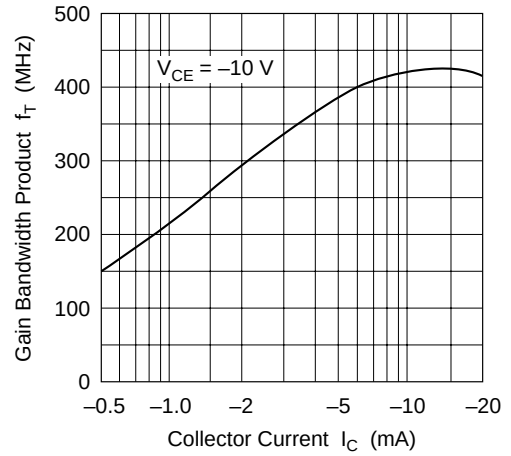
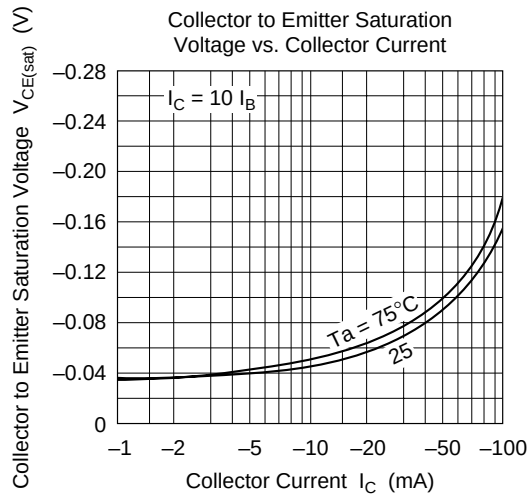
Electrical Characteristics (Ta = 25°C)

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	$I_C = -1\ mA, R_{BE} = \infty$
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	$V_{CB} = -18\ V, I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	-0.5	—	—	-0.5	μA	$V_{EB} = -2\ V, I_C = 0$
DC current transfer ratio	h_{FE}^{*1}	100	—	500	100	—	320		$V_{CE} = -12\ V,$ $I_C = -2\ mA$
Base to emitter voltage	V_{BE}	—	—	-0.8	—	—	-0.8	V	$V_{CE} = -12\ V,$ $I_C = -2\ mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.2	—	—	-0.2	V	$I_C = -10\ mA,$ $I_B = -1\ mA$
Gain bandwidth product	f_T	200	280	—	200	280	—	MHz	$V_{CE} = -12\ V,$ $I_C = -2\ mA$
Collector output capacitance	Cob	—	3.3	4.0	—	3.3	4.0	pF	$V_{CB} = -10\ V, I_E = 0,$ $f = 1\ MHz$
Noise figure	NF	—	—	5	—	—	5	dB	$V_{CE} = -6\ V,$ $I_C = -0.1\ mA,$ $R_g = 500\ \Omega,$ $f = 120\ Hz$

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 CurrentGain Bandwidth Product vs.
Collector CurrentCollector to Emitter Saturation
Voltage vs. Collector Current

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