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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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2SA1083, 2SA1084, 2SA1085

Silicon PNP Epitaxial

RENESAS

Application

- Low frequency low noise amplifier
- Complementary pair with 2SC2545, 2SC2546 and 2SC2547

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

2SA1083, 2SA1084, 2SA1085

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	2SA1083	2SA1084	2SA1085	Unit
Collector to base voltage	V _{CBO}	−60	−90	−120	V
Collector to emitter voltage	V _{CEO}	−60	−90	−120	V
Emitter to base voltage	V _{EBO}	−5	−5	−5	V
Collector current	I _C	−100	−100	−100	mA
Emitter current	I _E	100	100	100	mA
Collector power dissipation	P _C	400	400	400	mW
Junction temperature	T _j	150	150	150	°C
Storage temperature	T _{stg}	−55 to +150	−55 to +150	−55 to +150	°C

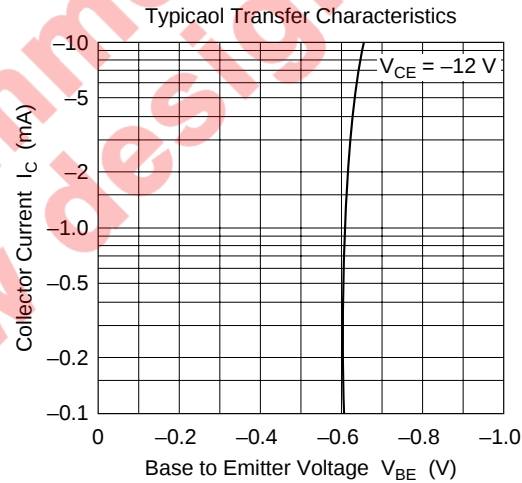
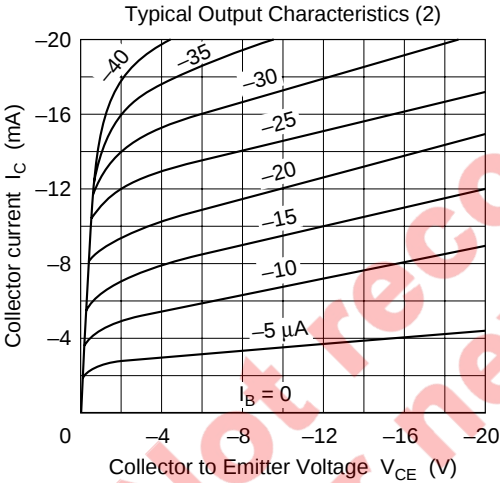
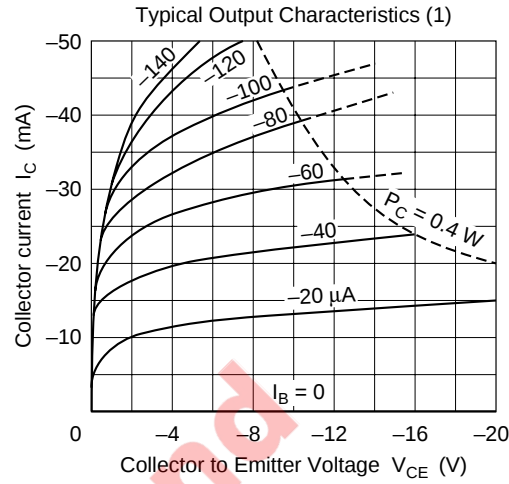
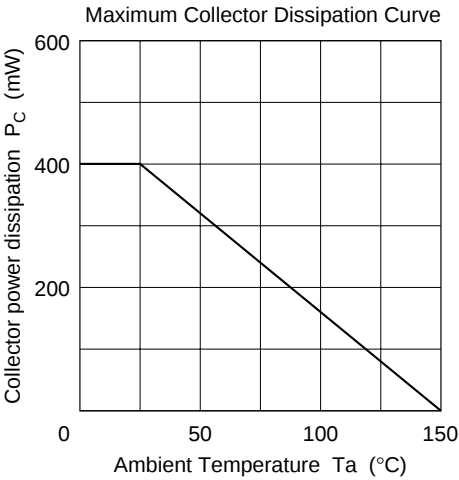
Not recommended
for new design

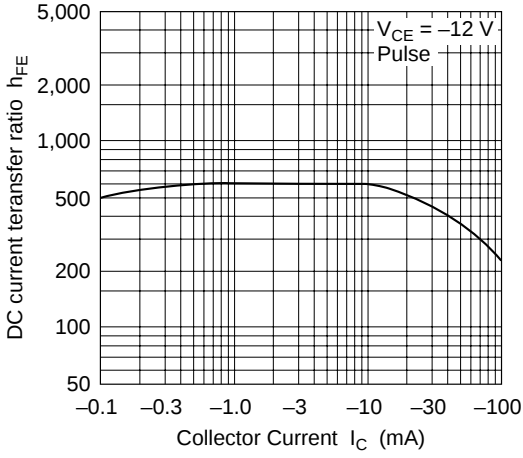
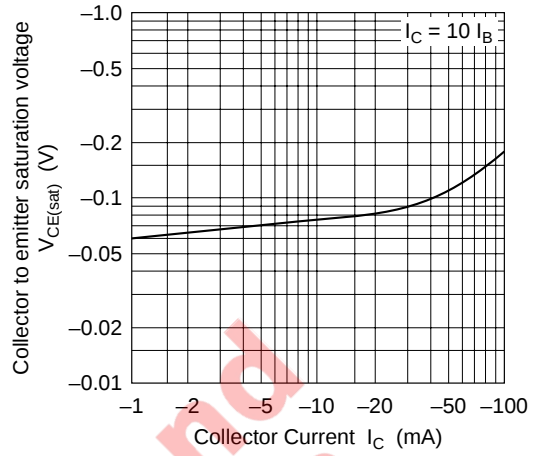
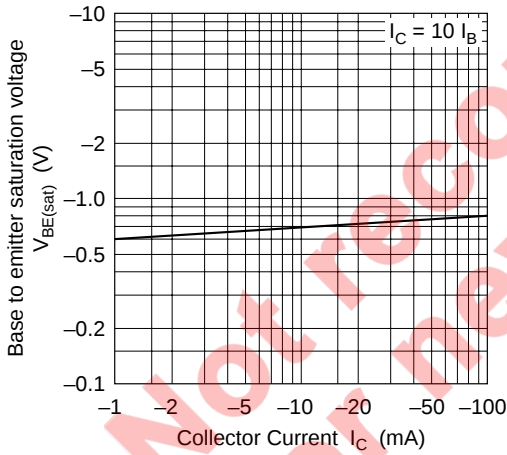
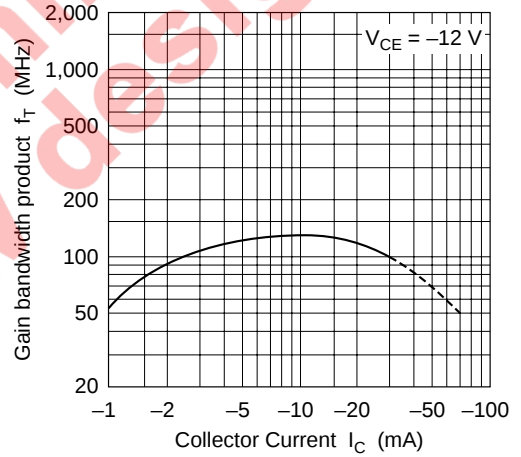
Electrical Characteristics (Ta = 25°C)

Item	Symbol	2SA1083			2SA1084			2SA1085			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	-60	—	—	-90	—	—	-120	—	—	V	$I_C = -10\text{ }\mu\text{A}$, $I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-60	—	—	-90	—	—	-120	—	—	V	$I_C = -1\text{ mA}$, $R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	-5	—	—	-5	—	—	-5	—	—	V	$I_E = -10\text{ }\mu\text{A}$, $I_C = 0$
Collector cutoff current	I_{CBO}	—	—	-0.1	—	—	-0.1	—	—	-0.1	μA	$V_{CB} = -50\text{ V}$, $I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	-0.1	—	—	-0.1	—	—	-0.1	μA	$V_{EB} = -2\text{ V}$, $I_C = 0$
DC current transfer ratio	h_{FE}^{*1}	250	—	800	250	—	800	250	—	800		$V_{CE} = -12\text{ V}$, $I_C = -2\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.2	—	—	-0.2	—	—	-0.2	V	$I_C = -10\text{ mA}$, $I_B = -1\text{ mA}$
Base to emitter voltage	V_{BE}	—	-0.6	—	—	-0.6	—	—	-0.6	—	V	$V_{CE} = -12\text{ V}$, $I_C = -2\text{ mA}$
Gain bandwidth product	f_T	—	90	—	—	90	—	—	90	—	MHz	$V_{CE} = -12\text{ V}$, $I_C = -2\text{ mA}$
Collector output capacitance	C_{ob}	—	3.5	—	—	3.5	—	—	3.5	—	pF	$V_{CB} = -10\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$
Noise voltage referred to input	e_n	—	0.5	—	—	0.5	—	—	0.5	—	nV/ $\sqrt{\text{Hz}}$	$V_{CE} = -6\text{ V}$, $I_C = -10\text{ mA}$, $f = 1\text{ kHz}$, $R_g = 0$, $\Delta f = 1\text{ Hz}$

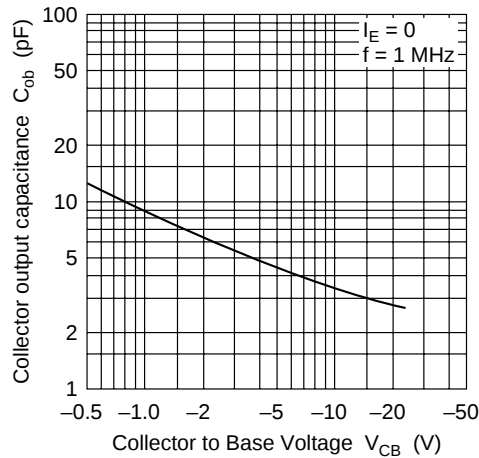
Note: 1. The 2SA1083, 2SA1084 and 2SA1085 are grouped by h_{FE} as follows.

D	E
250 to 500	400 to 800

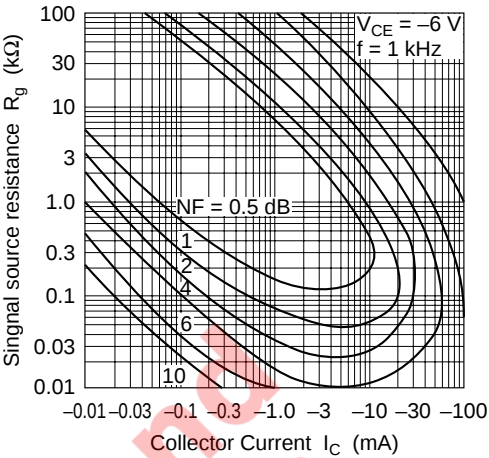


DC Current Transfer Ratio vs.
Collector CurrentCollector to Emitter Saturation
Voltage vs. Collector CurrentBase to Emitter Saturation Voltage
vs. Collector CurrentGain Bandwidth Product vs.
Collector Current

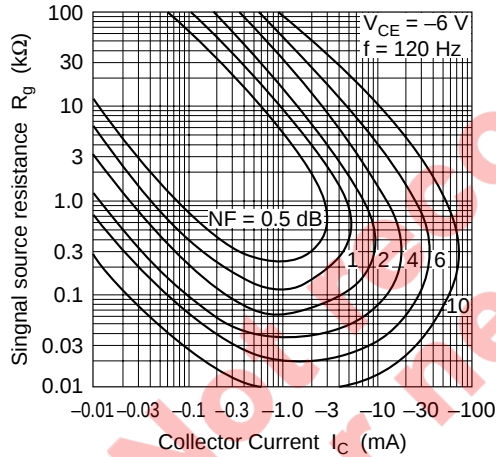
Collector Output Capacitance vs.
Collector to Base Voltage



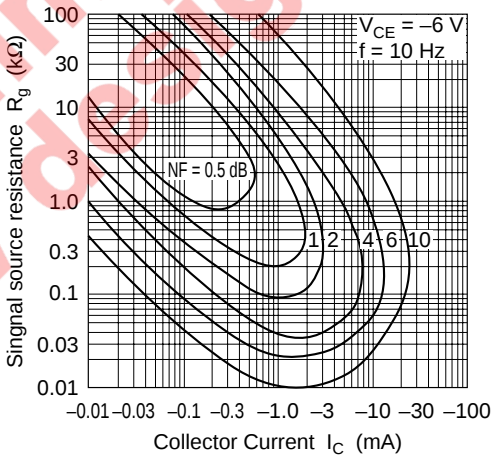
Contours of Constant Noise Figure (1)



Contours of Constant Noise Figure (2)



Contours of Constant Noise Figure (3)



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