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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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   Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SC1344, 2SC1345

Silicon NPN Epitaxial

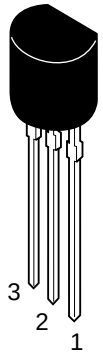
ADE-208-1052A (Z)
2nd. Edition
Mar. 2001

Application

Low frequency low noise amplifier

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	2SC1344	2SC1345	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
Collector power dissipation	P_C	200	200	mW
Junction temperature	Tj	150	150	°C
Storage temperature	Tstg	–55 to +150	–55 to +150	°C

Electrical Characteristics (Ta = 25°C)

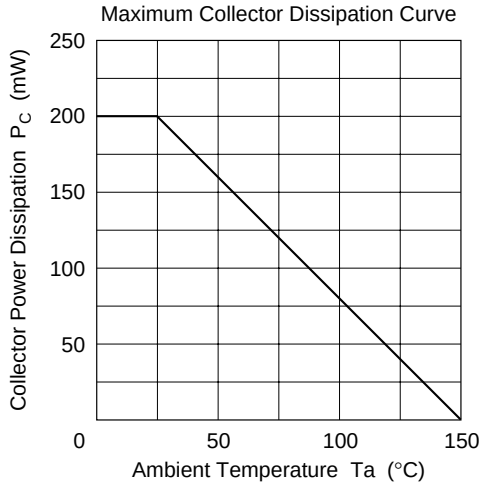
		2SC1344			2SC1345				
Item	Symbol	Min	Typ	Max	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	55	—	—	V	I_C = –10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	50	—	—	V	I_C = 1 mA, R_{BE} =
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	I_E = 10 µA, 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]	250	—	1200	250	—	1200		V_{CE} = 12 V, I_C = 2 mA
Base to emitter voltage	V_{BE}	—	—	0.75	—	—	0.75	V	V_{CE} = 12 V, I_C = 2 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.5	—	—	0.5	V	I_C = 10 mA, I_B = 1 mA
Gain bandwidth product	f_T	—	230	—	—	230	—	MHz	V_{CE} = 12 V, I_C = 2 mA
Collector output capacitance	Cob	—	—	3.5	—	—	3.5	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz
Noise figure	NF	—	—	8	—	—	8	dB	V_{CE} = 6 V, I_C = 0.1 mA, f = 10 Hz, R_g = 10 kΩ
		—	—	1	—	—	1	dB	V_{CE} = 6 V, I_C = 0.1 mA, f = 1 kHz, R_g = 10 kΩ

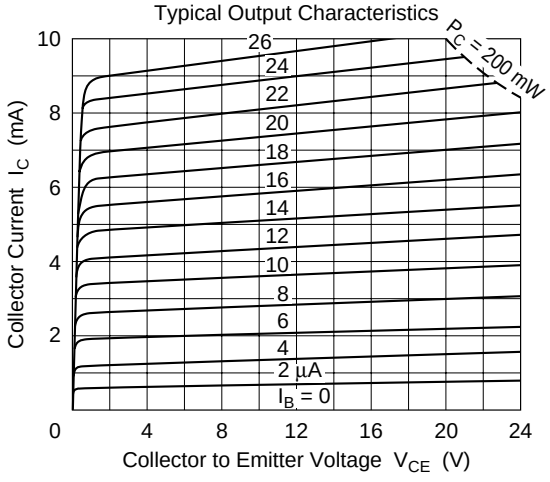
Note: 1. The 2SC1344 and 2SC1345 are grouped by h_{FE} as follows.

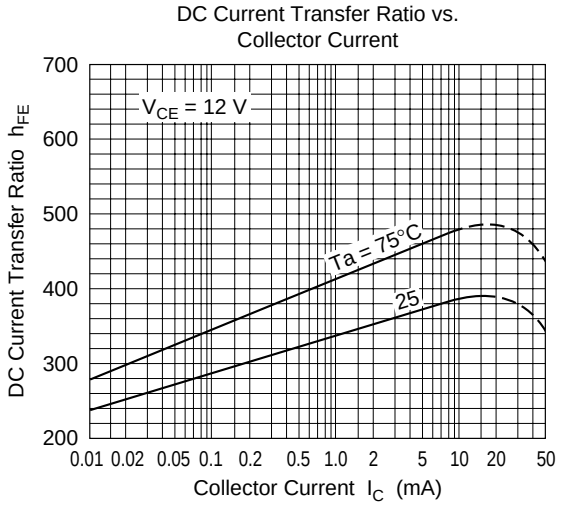
D	E	F
250 to 500	400 to 800	600 to 1200

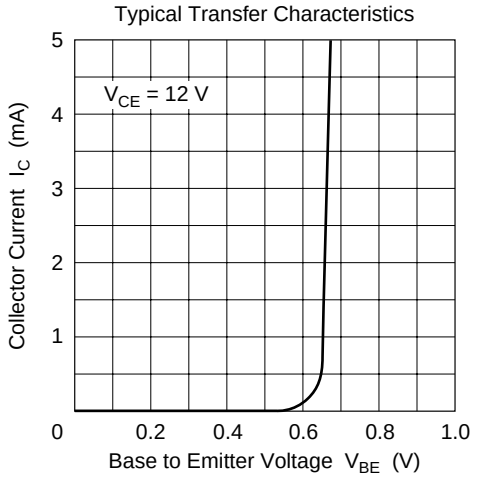
Small Signal h Parameters (V_{CE} = 5V, I_C = 0.1 mA, f = 270 Hz, Ta = 25°C, Emitter common)

Item	Symbol	D	E	F	Unit
Input impedance	hie	110	170	240	kΩ
Voltage feedback ratio	hre	9.5	14.5	16	$\times 10^{-4}$
Current transfer ratio	hfe	340	540	825	
Output admittance	hoe	12.0	12.5	13.5	µS

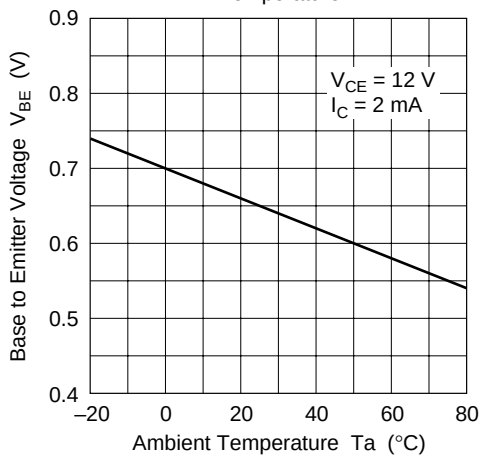




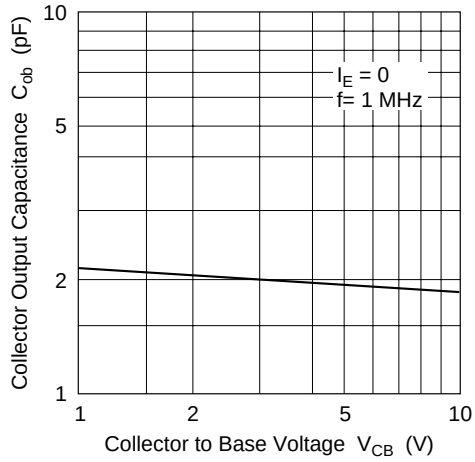




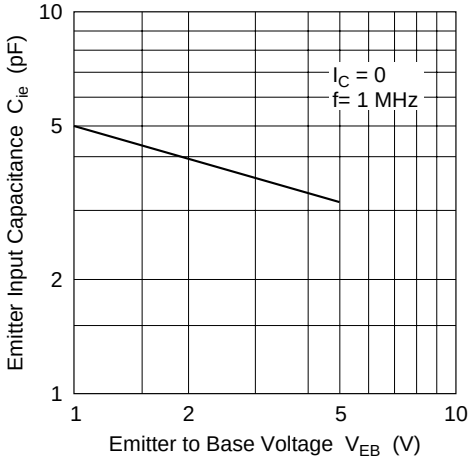
Base to Emitter Voltage vs. Ambient Temperature



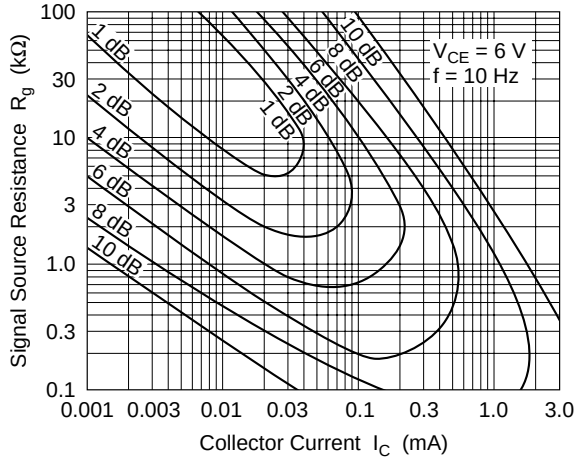
Collector Output Capacitance vs. Collector to Base Voltage



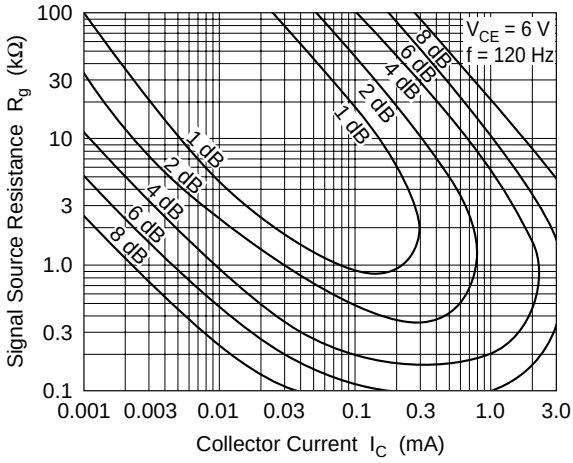
Emitter Input Capacitance vs. Emitter to Base Voltage



Contours of Constant Noise Figure



Contours of Constant Noise Figure



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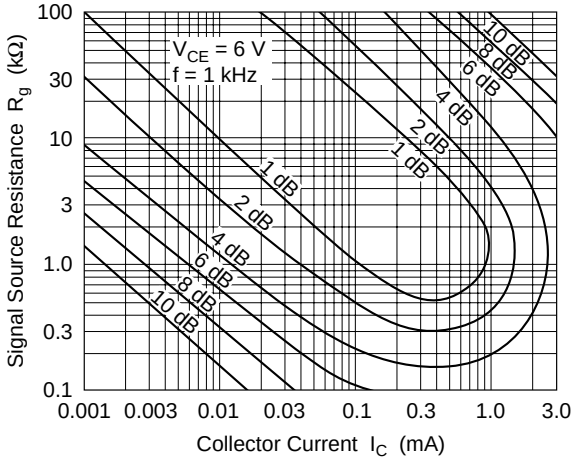
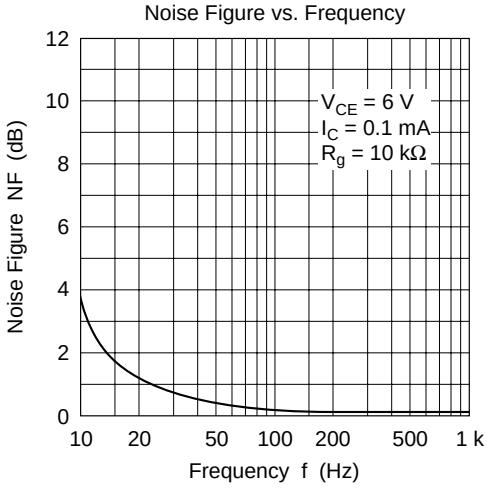
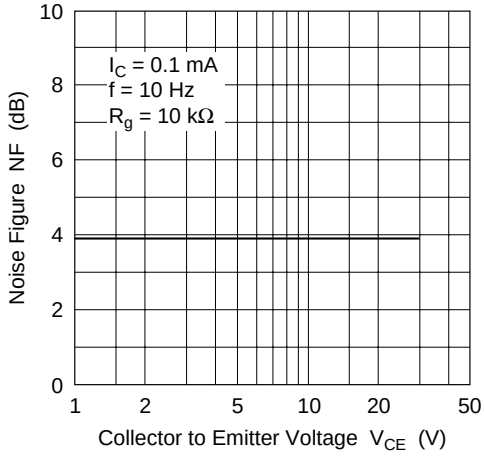


Noise Figure vs. Frequency



Noise Figure vs. Collector to Emitter Voltage



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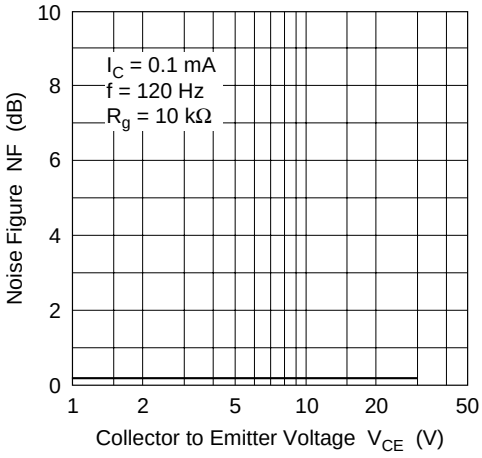
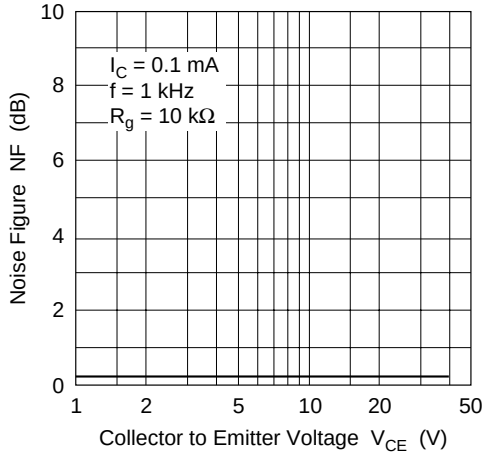


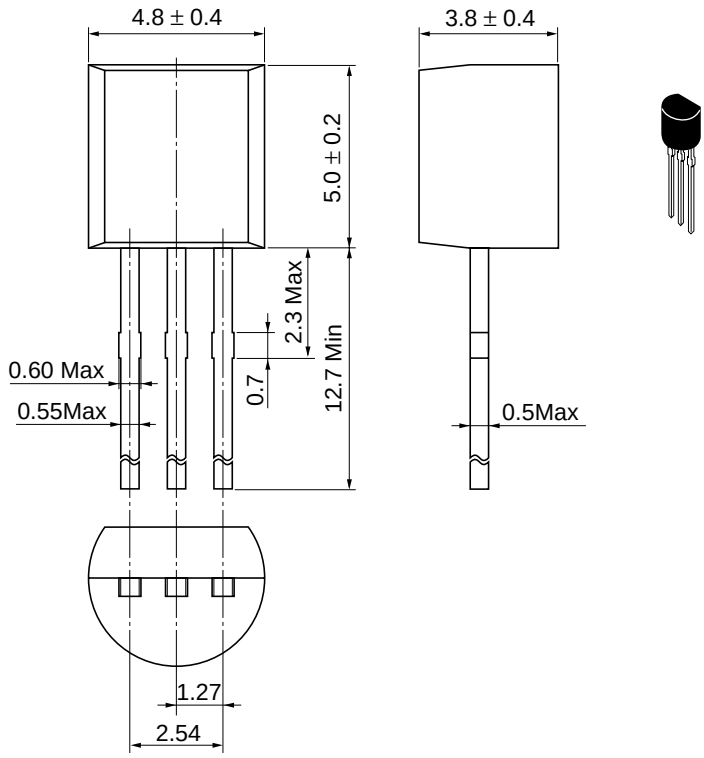
Noise Figure vs. Collector to Emitter Voltage



Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

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