

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

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Not recommended  
for new design

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To all our customers

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

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# 2SC1345(K)

Silicon NPN Epitaxial

**RENESAS**

ADE-208-1053 (Z)

1st. Edition

Mar. 2001

## Application

Low frequency low noise amplifier

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

## 2SC1345 (K)

### Absolute Maximum Ratings (Ta = 25°C)

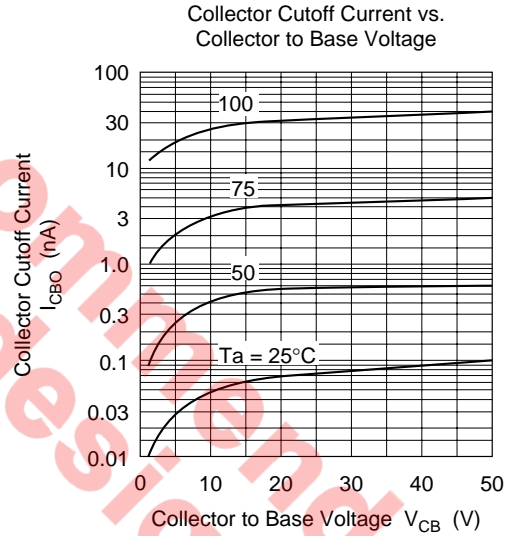
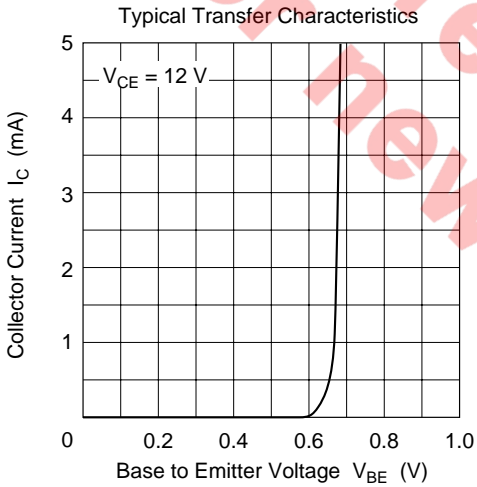
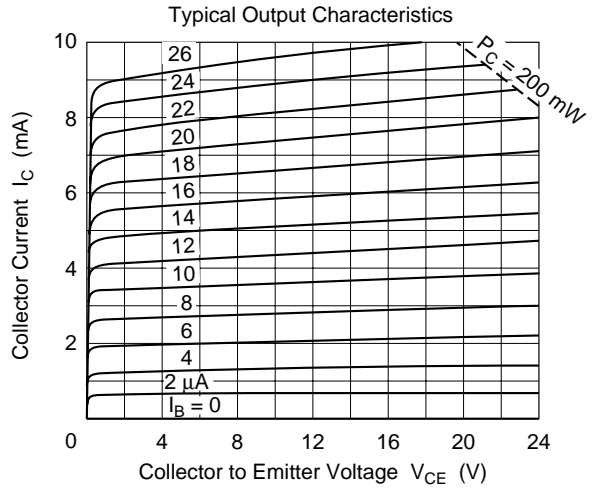
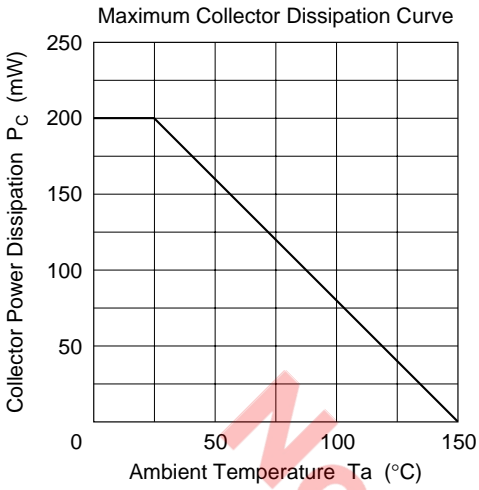
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	55	V
Collector to emitter voltage	$V_{CEO}$	50	V
Emitter to base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	100	mA
Collector power dissipation	$P_C$	200	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

### Electrical Characteristics (Ta = 25°C)

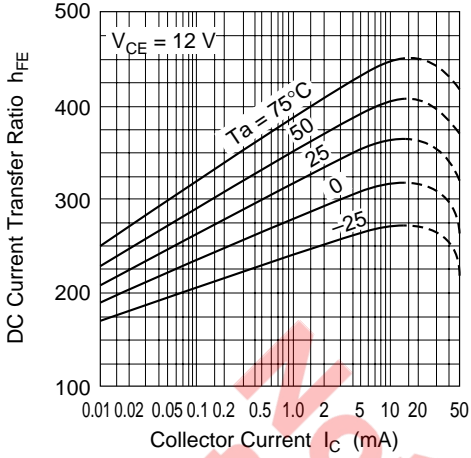
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	55	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	50	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB} = 18 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	$\mu A$	$V_{EB} = 2 \text{ V}, I_C = 0$
DC current transfer ratio	$h_{FE}^{*1}$	250	—	1200		$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	—	0.75	V	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.5	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	2.3	3.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Gain bandwidth product	$f_T$	—	230	—	MHz	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Noise figure	NF	—	—	8	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA},$ $f = 10 \text{ Hz}, R_g = 10 \text{ k}\Omega$
				1	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA},$ $f = 1 \text{ kHz}, R_g = 10 \text{ k}\Omega$

Note: 1. The 2SC1345(K) is grouped by  $h_{FE}$  as follows.

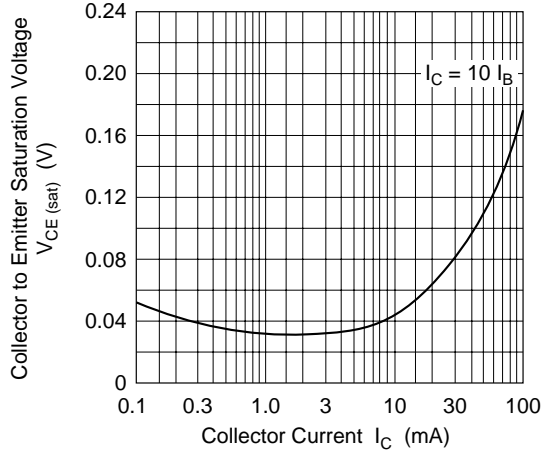
D	E	F
250 to 500	400 to 800	600 to 1200



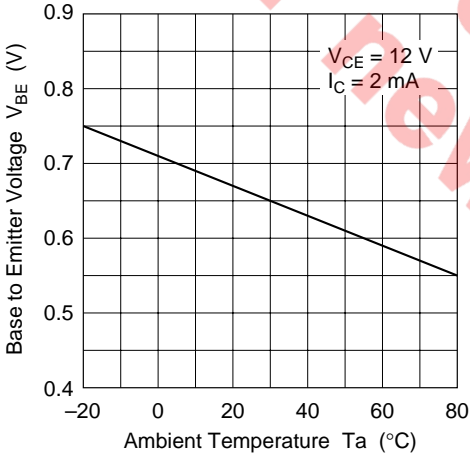
DC Current Transfer Ratio vs. Collector Current



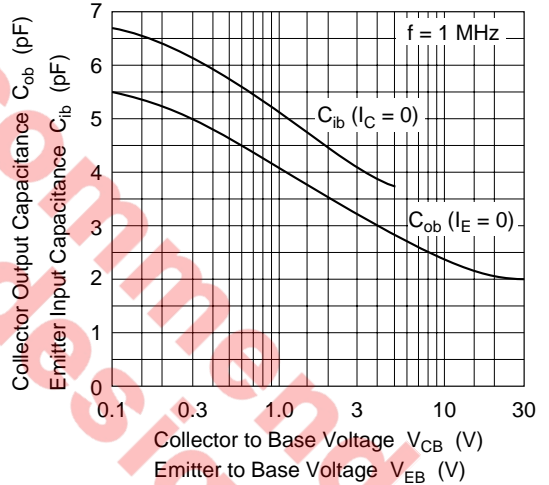
Collector to Emitter Saturation Voltage vs. Collector Current



Base to Emitter Voltage vs. Ambient Temperature

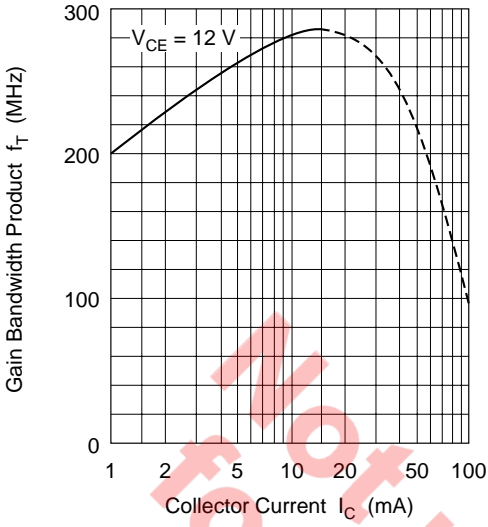


Input and Output Capacitance vs. Voltage

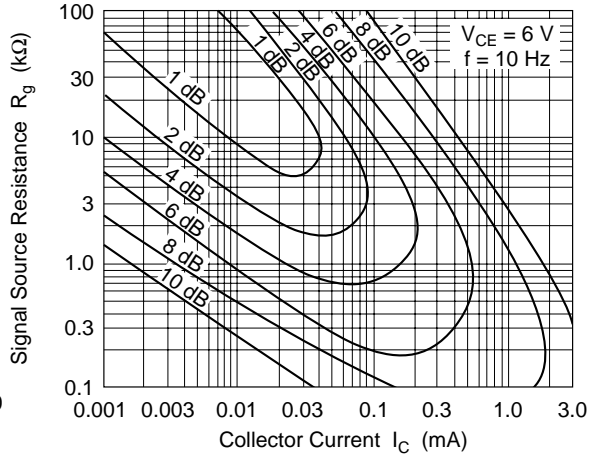




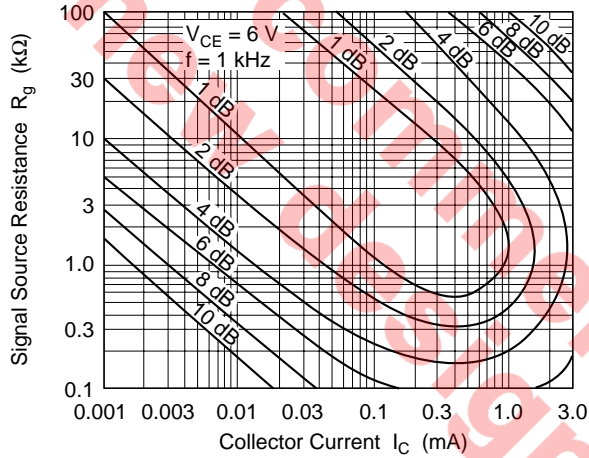
Gain Bandwidth Product vs. Collector Current

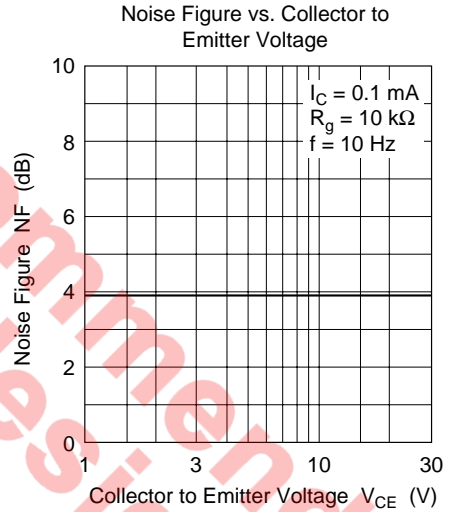
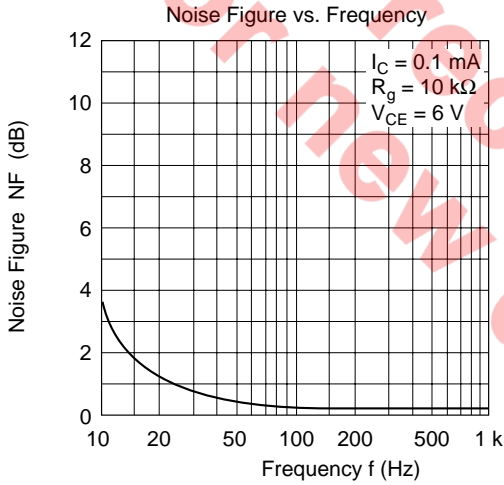
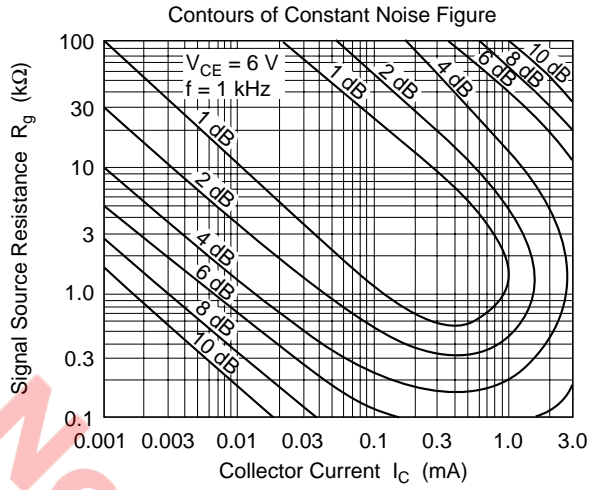


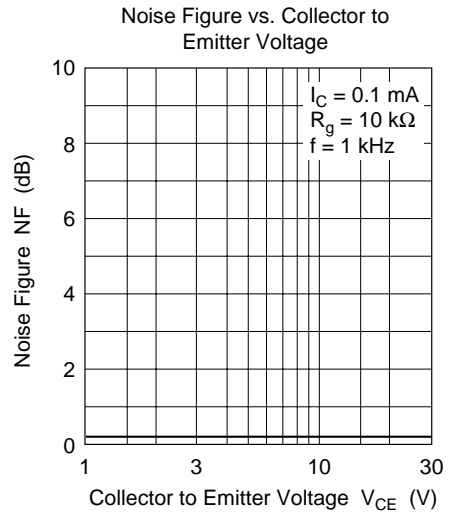
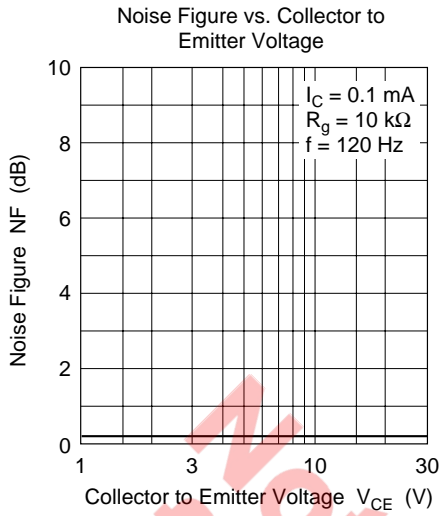
Contours of Constant Noise Figure



Contours of Constant Noise Figure





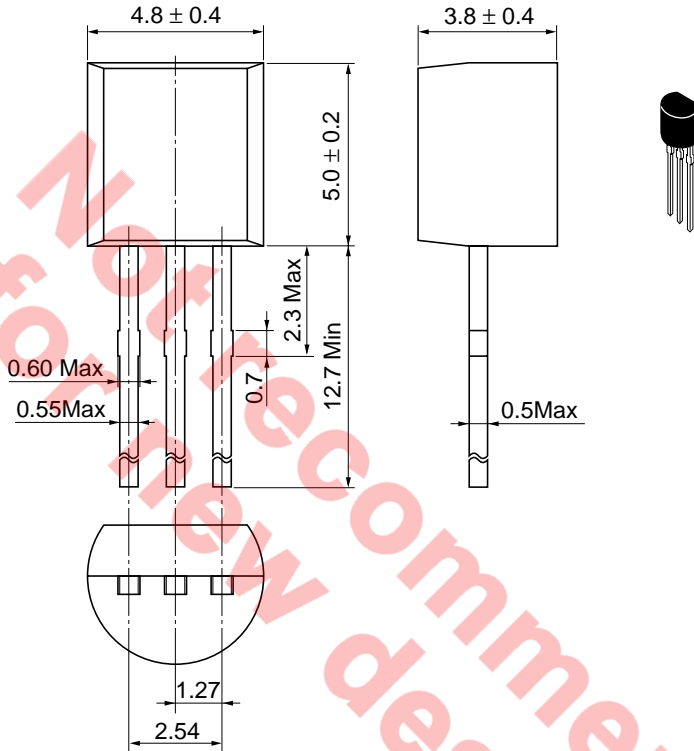


Not recommend  
for new design

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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