

To all our customers

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

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Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

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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# 2SD2030, 2SD2031

Silicon NPN Epitaxial

**RENESAS**

ADE-208-1163 (Z)

1st. Edition

Mar. 2001

## Application

Low frequency high voltage amplifier

## Outline

TO-92 (1)



- 1. Emitter
- 2. Collector
- 3. Base

# 2SD2030, 2SD2031

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

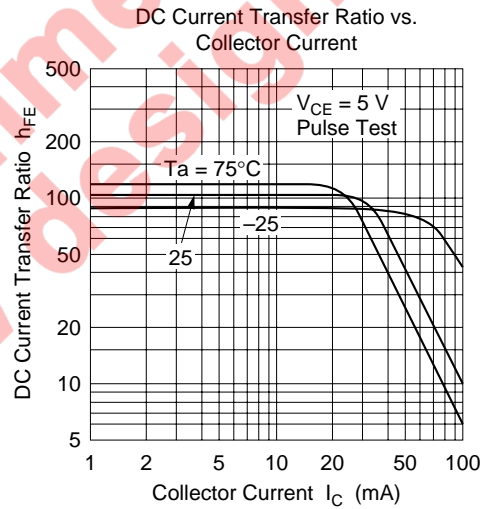
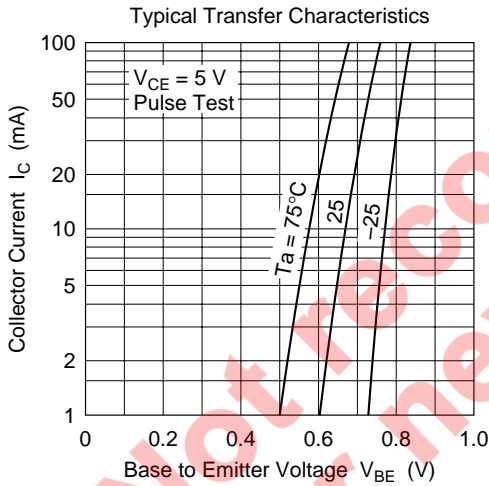
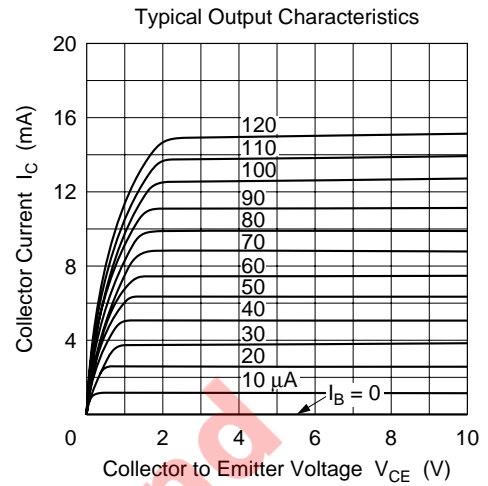
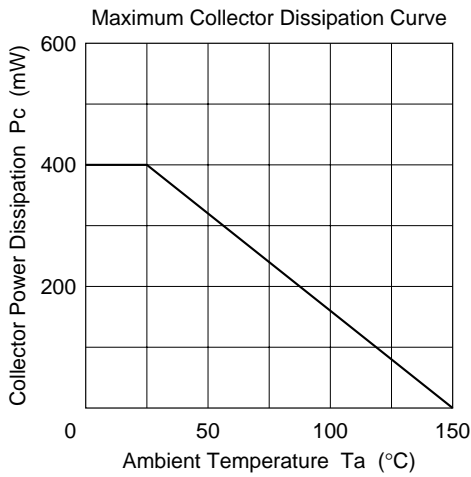
Item	Symbol	2SD2030	2SD2031	Unit
Collector to base voltage	$V_{CBO}$	160	200	V
Collector to emitter voltage	$V_{CEO}$	160	200	V
Emitter to base voltage	$V_{EBO}$	5	5	V
Collector current	$I_C$	100	100	mA
Collector power dissipation	$P_C$	400	400	mW
Junction temperature	$T_j$	150	150	°C
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	°C

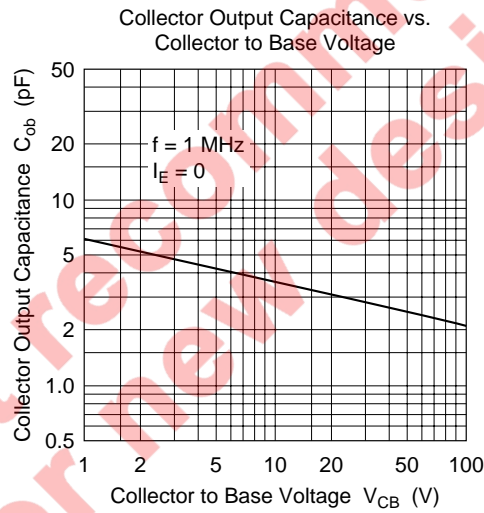
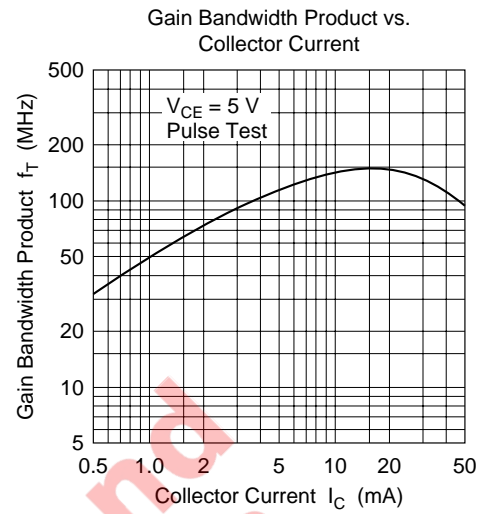
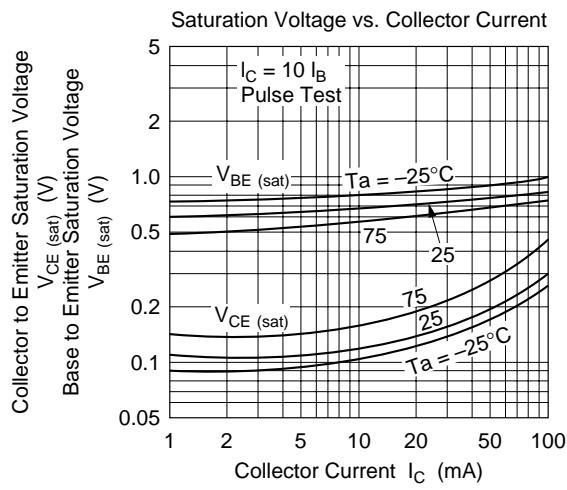
## Electrical Characteristics (Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	2SD2030	$V_{(BR)CBO}$	160	—	—	V	$I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$
	2SD2031		200				
Collector to emitter breakdown voltage	2SD2030	$V_{(BR)CEO}$	160	—	—	V	$I_C = 1\text{ mA}$ , $R_{BE} = \infty$
	2SD2031		200				
Emitter to base breakdown voltage		$V_{(BR)EBO}$	5	—	—	V	$I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$
Collector cutoff current	2SD2030	$I_{CBO}$	—	—	10	$\mu\text{A}$	$V_{CB} = 140\text{ V}$ , $I_E = 0$
	2SD2031						$V_{CB} = 160\text{ V}$ , $I_E = 0$
DC current transfer ratio		$h_{FE1}^{*1}$	60	—	200		$V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$
		$h_{FE2}$	30	—	—		$V_{CE} = 5\text{ V}$ , $I_C = 1\text{ mA}$
Base to emitter voltage		$V_{BE}$	—	—	1.5	V	$V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$
Collector to emitter saturation voltage		$V_{CE(sat)}$	—	—	0.5	V	$I_C = 30\text{ mA}$ , $I_B = 3\text{ mA}$
Gain bandwidth product		$f_T$	—	140	—	MHz	$V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$
Collector output capacitance		$C_{ob}$	—	3.8	—	pF	$V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$

Note: 1. The 2SD2030 and 2SD2031 are grouped by  $h_{FE1}$  as follows.

Grade	B	C
$h_{FE1}$	60 to 120	100 to 200

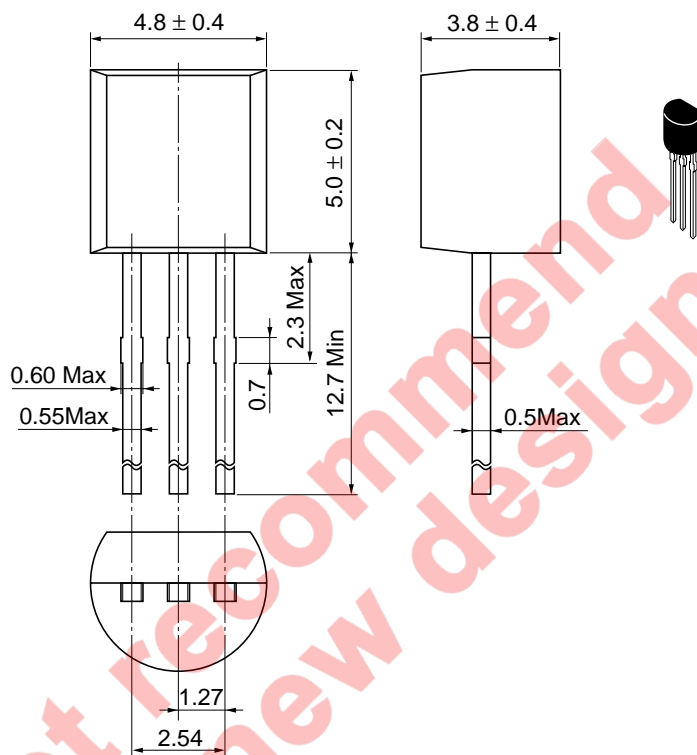




## Package Dimensions

As of January, 2001

Unit: mm



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

## Cautions

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