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

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2SD2030, 2SD2031

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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

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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	Tj	150	150	°C
Storage temperature	Tstg	–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 µA, I_E = 0
	2SD2031		200				
Collector to emitter breakdown voltage	2SD2030	$V_{(BR)CEO}$	160	—	—	V	I_C = 1 mA, R_{BE} = ∞
	2SD2031		200				
Emitter to base breakdown voltage		$V_{(BR)EBO}$	5	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	2SD2030	I_{CBO}	—	—	10	µA	V_{CB} = 140 V, I_E = 0
	2SD2031						V_{CB} = 160 V, I_E = 0
DC current transfer ratio		h_{FE1}*1	60	—	200		V_{CE} = 5 V, I_C = 10 mA
		h_{FE2}	30	—	—		V_{CE} = 5 V, I_C = 1 mA
Base to emitter voltage		V_{BE}	—	—	1.5	V	V_{CE} = 5 V, I_C = 10 mA
Collector to emitter saturation voltage		$V_{CE(sat)}$	—	—	0.5	V	I_C = 30 mA, I_B = 3 mA
Gain bandwidth product		f_T	—	140	—	MHz	V_{CE} = 5 V, I_C = 10 mA
Collector output capacitance		C_{ob}	—	3.8	—	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz

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

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

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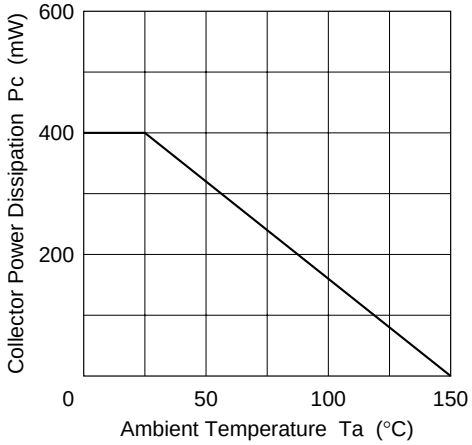
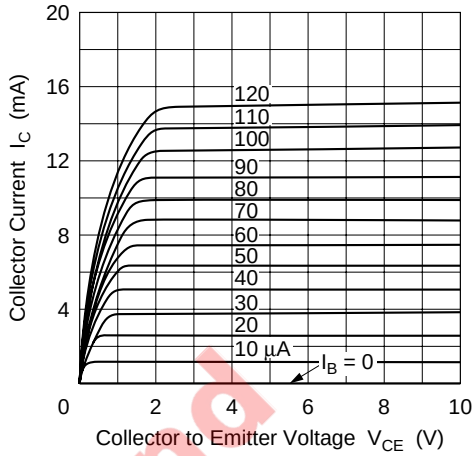
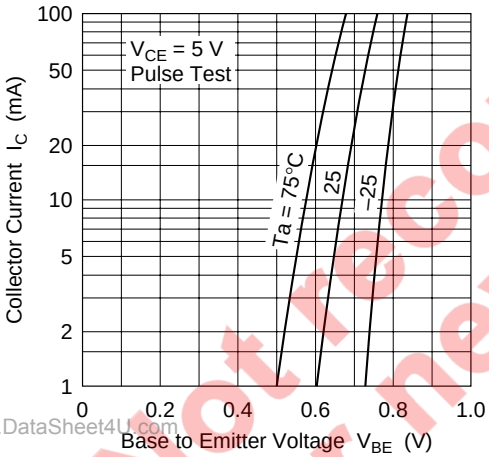
Maximum Collector Dissipation Curve



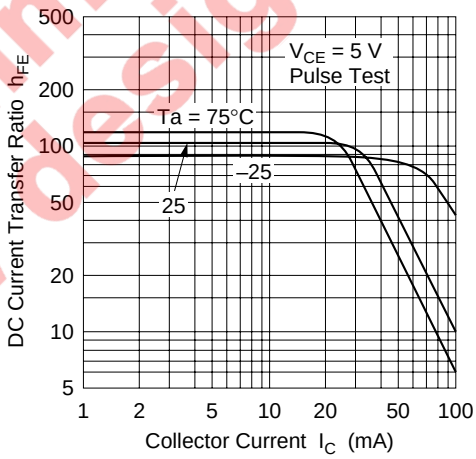
Typical Output Characteristics



Typical Transfer Characteristics



DC Current Transfer Ratio vs. Collector Current



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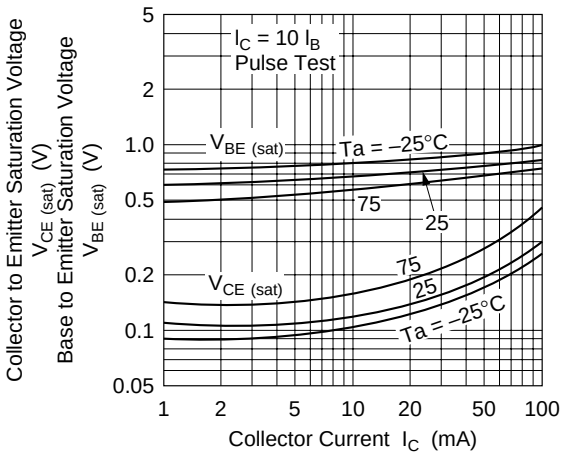
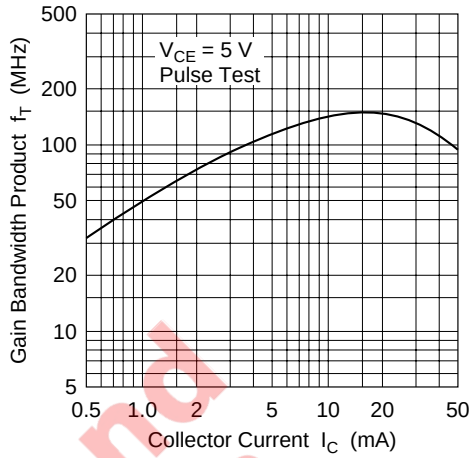
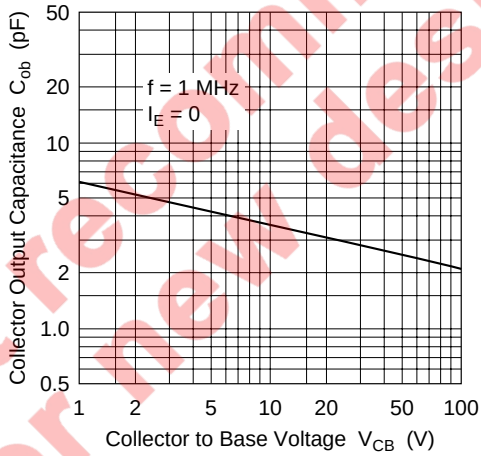
Saturation Voltage vs. Collector Current



Gain Bandwidth Product vs. Collector Current



Collector Output Capacitance vs. Collector to Base Voltage



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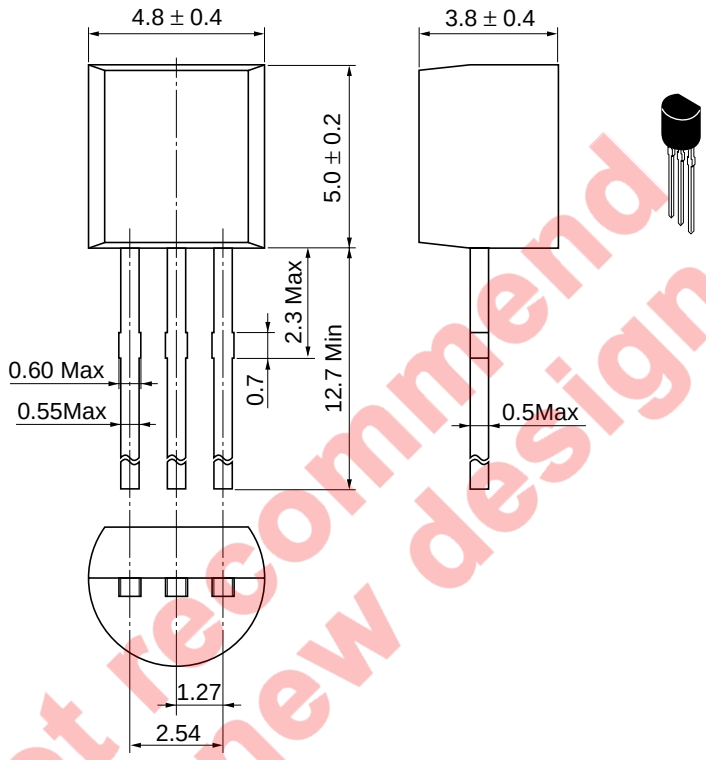
Package Dimensions

As of January, 2001

Unit: mm



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

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