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# 2SD2030, 2SD2031

Silicon NPN Epitaxial

# HITACHI

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## Application

Low frequency high voltage amplifier

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

## 2SD2030, 2SD2031

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

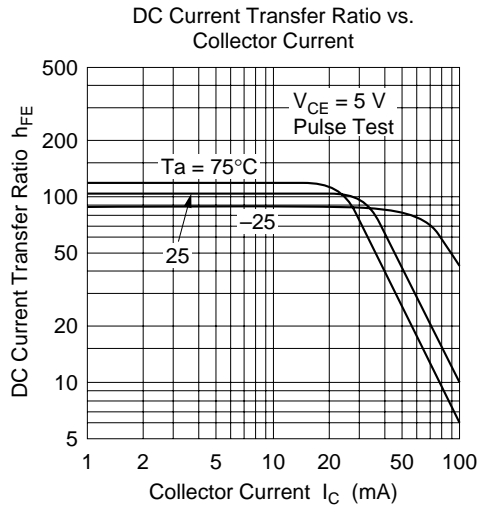
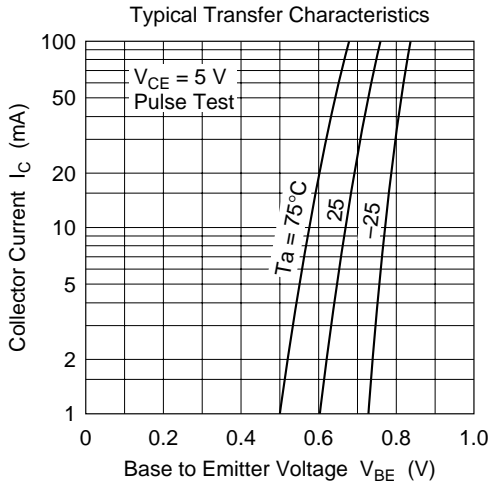
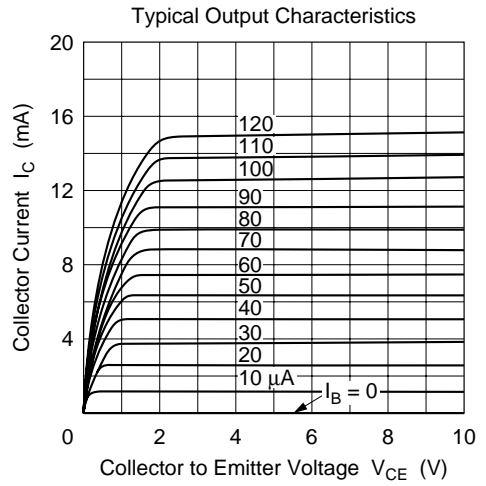
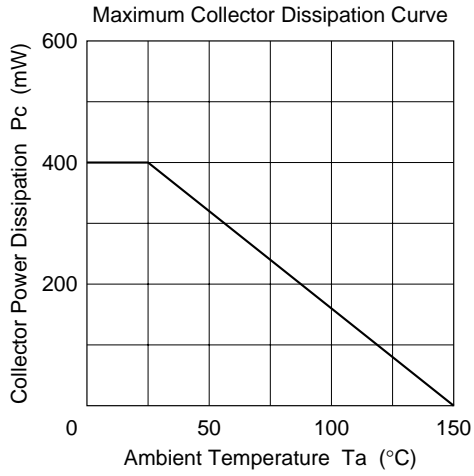
Item	Symbol	2SD2030	2SD2031	Unit
Collector to base voltage	$V_{CBO}$	160	200	V
Collector to emitter voltage	$V_{CEO}$	160	200	V
Emitter to base voltage	$V_{EBO}$	5	5	V
Collector current	$I_C$	100	100	mA
Collector power dissipation	$P_C$	400	400	mW
Junction temperature	$T_j$	150	150	°C
Storage temperature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

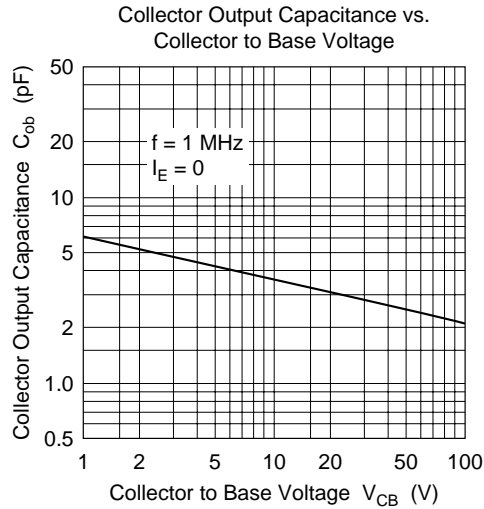
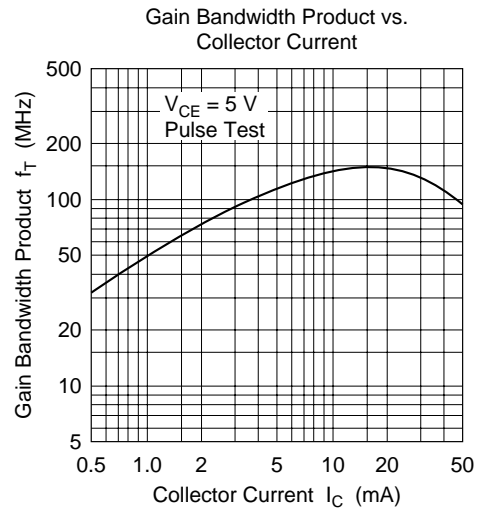
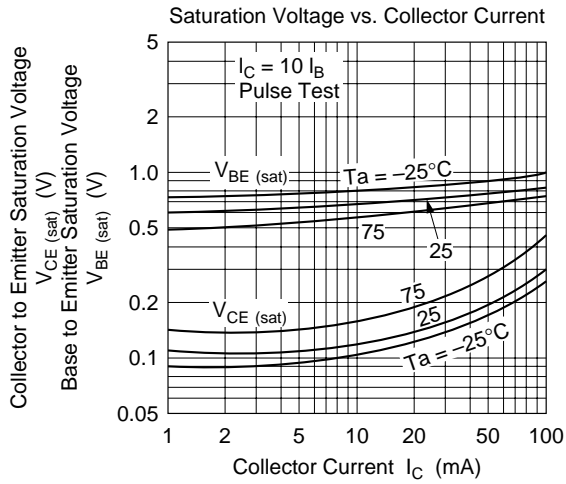
### Electrical Characteristics (Ta = 25°C)

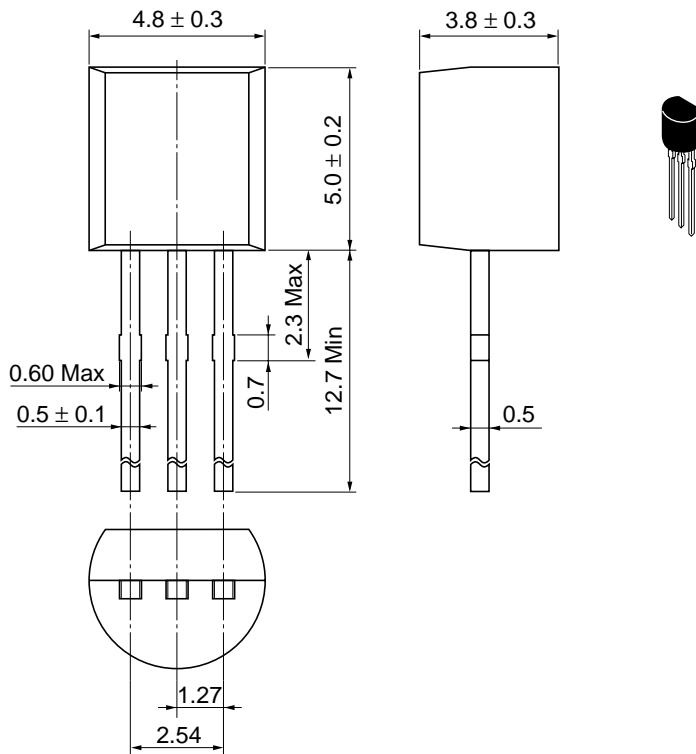
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	2SD2030 $V_{(BR)CBO}$	160	—	—	V	$I_C = 10 \mu A, I_E = 0$
	2SD2031	200				
Collector to emitter breakdown voltage	2SD2030 $V_{(BR)CEO}$	160	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
	2SD2031	200				
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	2SD2030 $I_{CBO}$	—	—	10	$\mu A$	$V_{CB} = 140 \text{ V}, I_E = 0$
	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







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

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