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# 2SC2309

Silicon NPN Epitaxial

# HITACHI

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## Application

Low frequency amplifier

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	55	V
Collector to emitter voltage	$V_{\text{CEO}}$	50	V
Emitter to base voltage	$V_{\text{EBO}}$	5	V
Collector current	$I_{\text{C}}$	100	mA
Collector power dissipation	$P_{\text{C}}$	200	mW
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

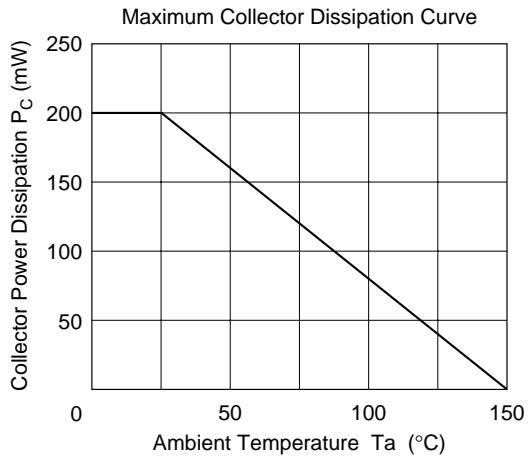
**Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

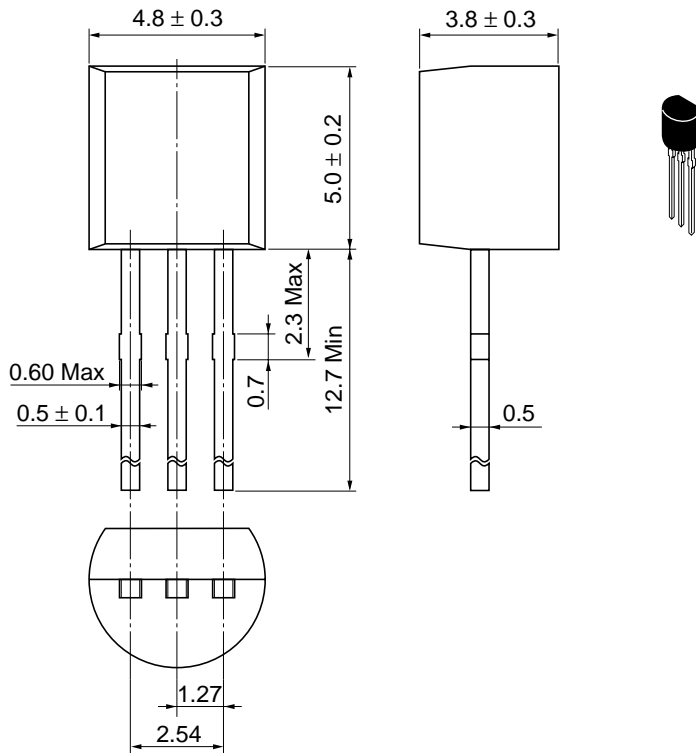
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	55	—	—	V	$I_{\text{C}} = 10 \mu\text{A}$ , $I_{\text{E}} = 0$
Collector to emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	50	—	—	V	$I_{\text{C}} = 1 \text{ mA}$ , $R_{\text{BE}} = \infty$
Emitter to base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	5	—	—	V	$I_{\text{E}} = 10 \mu\text{A}$ , $I_{\text{C}} = 0$
Collector cutoff current	$I_{\text{CBO}}$	—	—	0.5	$\mu\text{A}$	$V_{\text{CB}} = 18 \text{ V}$ , $I_{\text{E}} = 0$
Emitter cutoff current	$I_{\text{EBO}}$	—	—	0.5	$\mu\text{A}$	$V_{\text{EB}} = 2 \text{ V}$ , $I_{\text{C}} = 0$
DC current transfer ratio	$h_{\text{FE}}^{*1}$	250	—	1200		$V_{\text{CE}} = 12 \text{ V}$ , $I_{\text{C}} = 2 \text{ mA}$
Base to emitter voltage	$V_{\text{BE}}$	—	—	0.75	V	$V_{\text{CE}} = 12 \text{ V}$ , $I_{\text{C}} = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{\text{CE}(\text{sat})}$	—	—	0.2	V	$I_{\text{C}} = 10 \text{ mA}$ , $I_{\text{B}} = 1 \text{ mA}$
Gain bandwidth product	$f_{\text{T}}$	—	230	—	MHz	$V_{\text{CE}} = 12 \text{ V}$ , $I_{\text{C}} = 2 \text{ mA}$
Collector output capacitance	$C_{\text{ob}}$	—	1.8	3.5	pF	$V_{\text{CB}} = 10 \text{ V}$ , $I_{\text{E}} = 0$ , $f = 1 \text{ MHz}$

Note: 1. The 2SC2309 is grouped by  $h_{\text{FE}}$  as follows.

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

See characteristic curves of 2SC1345.





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

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