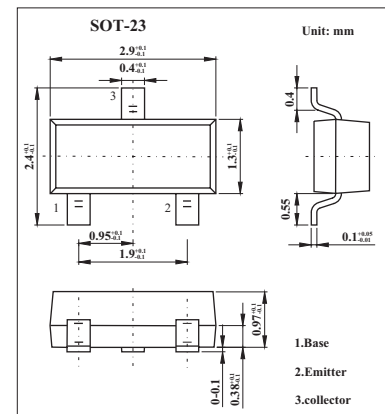


## PNP Epitaxial Planar Silicon Transistors

## 2SA1331

## ■ Features

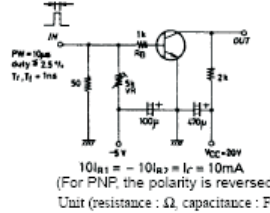
- Fast switching speed.
- High breakdown voltage.

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	-60	V
Collector-emitter voltage	$V_{CE0}$	-50	V
Emitter-base voltage	$V_{EB0}$	-5	V
Collector current	$I_C$	-150	mA
Collector current (pulse)	$I_{CP}$	-400	mA
Base current	$I_B$	-40	mA
Collector dissipation	$P_C$	150	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$

## 2SA1331

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector cutoff current	$I_{cBO}$	$V_{CB} = -40V, I_E = 0$			-0.1	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -4V, I_C = 0$			-0.1	$\mu\text{A}$
DC current Gain	$h_{FE}$	$V_{CE} = -6V, I_C = -1\text{mA}$	90		400	
Gain bandwidth product	$f_T$	$V_{CE} = -6V, I_C = -1\text{mA}$		100		MHz
Common base output capacitance	$C_{ob}$	$V_{CB} = -6V, f = 1\text{MHz}$		3.5		pF
Collector-to-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10\text{mA}, I_B = -1\text{mA}$		-0.1	-0.4	V
Base-to-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -10\text{mA}, I_B = -1\text{mA}$		-0.75	-1.1	V
Collector-to-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0$	-60			V
Collector-to-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, R_{BE} = \infty$	-50			V
Emitter-to-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}, I_C = 0$	-5			V
Delay time	$t_d$	 <p> <math>10I_{B1} = -10I_{B2} = I_C = 10\text{mA}</math>            (For PNP, the polarity is reversed)            Unit (resistance : <math>\Omega</math>, capacitance : F)         </p>		40	ns	
Rise time	$t_r$			120	ns	
Storage time	$t_{stg}$			190	ns	
Fall time	$t_f$			200	ns	

## ■ hFE Classification

Marking	O		
Rank	4	5	6
hFE	90~180	135~270	200~400