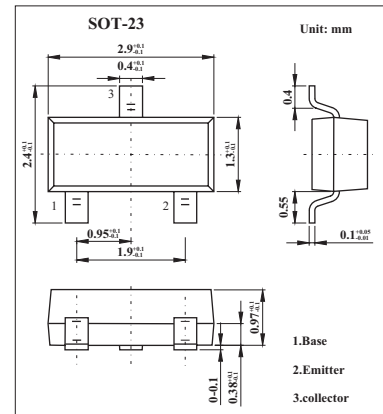


PNP Eitaxial Silicon Transistor

2SA1978

■ Features

- High f_T ($f_T=5.5\text{GHz}$ TYP).
- High gain $|S_{21e}|^2=10.0\text{dB}$ TYP.@ $f=1.0\text{GHz}$, $V_{ce}=-10\text{V}$, $I_c=-15\text{mA}$
- High-speed switching characteristics

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

Parameter	Symbol	Rating	Unit
Collector-base voltage	V_{CB0}	-20	V
Collector-emitter voltage	V_{CEO}	-12	V
Emitter-base voltage	V_{EB0}	-3.0	V
Collector current	I_c	-50	mA
Total power dissipation	P_T	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -10\text{V}$			-10	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = -2\text{V}$			-10	μA
DC current gain	h_{FE}	$V_{CE} = -10\text{V}$, $I_c = -15\text{mA}$	20	40	100	
Gain bandwidth product	f_T	$V_{CE} = -10\text{V}$, $I_c = -15\text{mA}$	4.0	5.5		GHz
Collector capacitance	C_{re}^*	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$		0.5	1	pF
Insertion Power Gain	$ S_{21e} ^2$	$V_{ce} = -10\text{V}$, $I_c = -15\text{mA}$, $f = 1.0\text{GHz}$	8.0	10.0		dB
Noise Figure	NF	$V_{ce} = -10\text{V}$, $I_c = -3\text{mA}$, $f = 1\text{GHz}$		2.0	3	dB

*.Measured by a 3-terminal bridge. Emitter and Case should be connected to the guard terminal.

■ hFE Classification

Marking	T93
Rank	FB
hFE	20~100