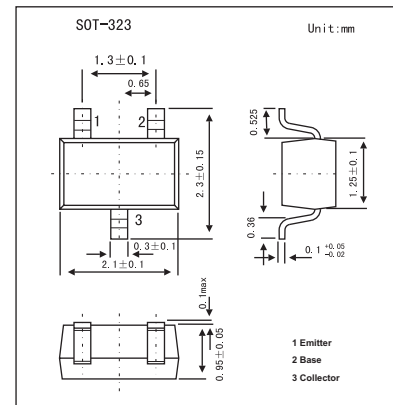


## NPN Silicon Epitaxia

## 2SC4178

## ■ Features

- Micro package.
- High gain bandwidth product.
- Low output capacitance.

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

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	30	V
Collector-emitter voltage	$V_{CEO}$	20	V
Emitter-base voltage	$V_{EB0}$	4	V
Collector current	$I_C$	20	mA
Total power dissipation	$P_T$	150	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 30V, I_E = 0$			100	nA
DC current gain *	$h_{FE}$	$V_{CE} = 6V, I_C = 1.0mA$	40	90	180	
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1.0mA$		0.1	0.3	V
Gain bandwidth product	$f_T$	$V_{CE} = 6V, I_E = -1.0mA$	400	600		MHz
Output capacitance	$C_{ob}$	$V_{CE} = 6V, I_E = 0, f = 1MHz$		1.0		pF
Collector to base time constant	$C_c'rb'b'$	$V_{CE} = 6V, I_E = -1.0mA, f = 31.9MHz$		12		ps
Noise figure	NF	$V_{CE} = 6V, I_E = -1.0mA, R_g = 50\Omega, f = 100MHz$		3		dB

## ■ hFE Classification

Marking	F12	F13	F14
hFE	40~80	60~120	90~180