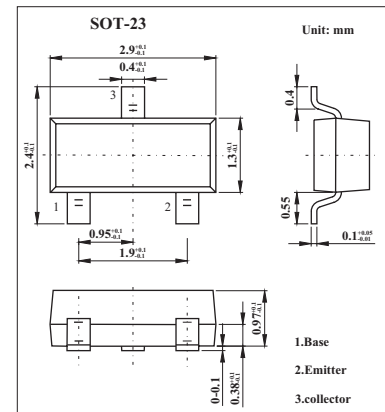


## Silicon PNP Epitaxia

## 2SA1411

## ■ Features

- Very high DC current gain:  $h_{FE}=500$  to  $1600$ .
- High  $V_{EBO}$  Voltage:  $V_{EBO}=-10V$

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

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-25	V
Collector-emitter voltage	$V_{CEO}$	-25	V
Emitter-base voltage	$V_{EBO}$	-10	V
Collector current	$I_C$	-150	mA
Total power dissipation at $25^\circ\text{C}$ ambient temperature	$P_T$	200	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	Test conditions	Min	Typ	Max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -25\text{ V}, I_E = 0$			-100	nA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -7\text{ V}, I_C = 0$			-100	nA
DC current gain *	$h_{FE}$	$V_{CE} = -5\text{ V}, I_C = -1\text{ mA}$	500	1000	1600	
Base-emitter voltage *	$V_{BE}$	$V_{CE} = -5\text{ V}, I_C = -1\text{ mA}$		-580		mV
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_C = -50\text{ mA}, I_B = -5\text{ mA}$		-0.15	-0.3	V
Base-emitter saturation voltage *	$V_{BE(sat)}$	$I_C = -50\text{ mA}, I_B = -5\text{ mA}$		-0.8	-1.2	V
Gain bandwidth product	$f_T$	$V_{CE} = -5\text{ V}, I_E = 10\text{ mA}$		200		MHz
Output capacitance	$C_{ob}$	$V_{CB} = -5\text{ V}, I_E = 0, f = 1.0\text{ MHz}$		4.6		pF
Turn-on time	$t_{on}$	$V_{CC} = -10\text{ V}, V_{BE(off)} = 2.7\text{ V},$		0.12		ns
Storage time	$t_{stg}$	$I_C = -50\text{ mA},$		0.58		ns
Turn-off time	$t_{off}$	$I_{B1} = -I_{B2} = -1\text{ mA}$		0.75		ns

\*  $PW \leq 350\mu\text{s}$ , duty cycle  $\leq 2\%$

■  $h_{FE}$  Classification

Marking	M15	M16
$h_{FE}$	500~1000	800~1600