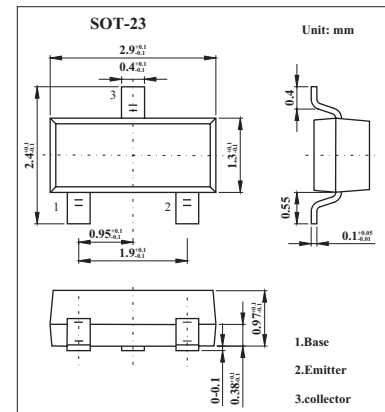


Silicon PNP Epitaxia

2SA1411

■ Features

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

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

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 $25^\circ C$ ambient temperature	P_T	200	mW
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

■ Electrical Characteristics $T_a = 25^\circ C$

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

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

■ h_{FE} Classification

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