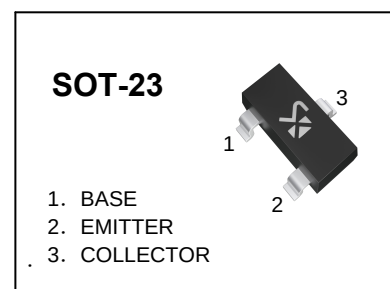


NPN Silicon Epitaxial Planar Transistor

Features

- Complementary to S9012
- Power dissipation of 300mW
- High stability and high reliability



MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	500	mA
P_C	Collector Power Dissipation	300	mW
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55-150	$^{\circ}\text{C}$
$R\theta_{JA}$	Thermal resistance From junction to ambient	416	$^{\circ}\text{C}/\text{W}$

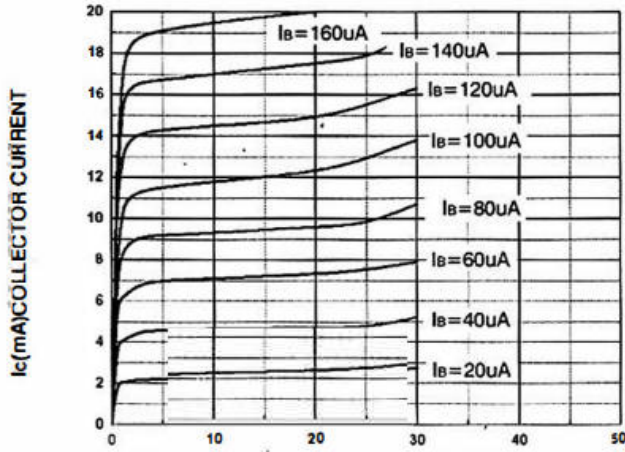
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=0.1\text{mA}, I_B=0$	25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	5			V
Collector cut-off current	I_{CBO}	$V_{CB}=40\text{V}, I_E=0$			100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$			100	nA
Collector cut-off current	I_{CEO}	$V_{CE}=20\text{V}, I_B=0$			100	nA
DC current gain	h_{FE}	$V_{CE}=1\text{V}, I_C=50\text{mA}$ $V_{CE}=1\text{V}, I_C=500\text{mA}$	120 40		350	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			1.2	V
Transition frequency	f_T	$V_{CE}=6\text{V}, I_C=20\text{mA}$ $f=30\text{MHz}$	150			MHz
Collector output capacitance	C_{OB}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$			5	pF

Classification of h_{FE}

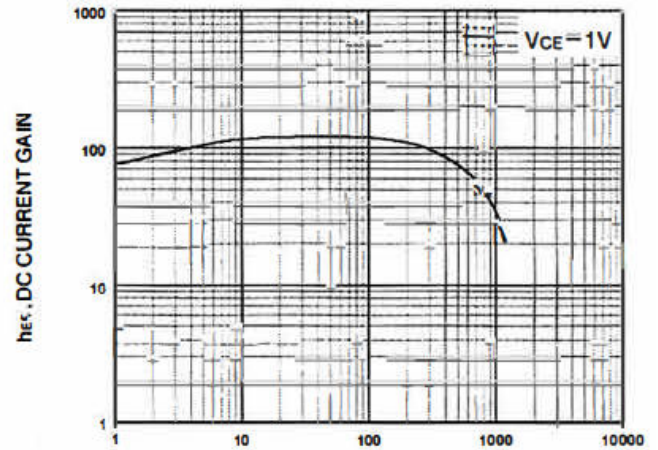
Rank	L	H
Range	120~200	200~350

Typical Characteristic



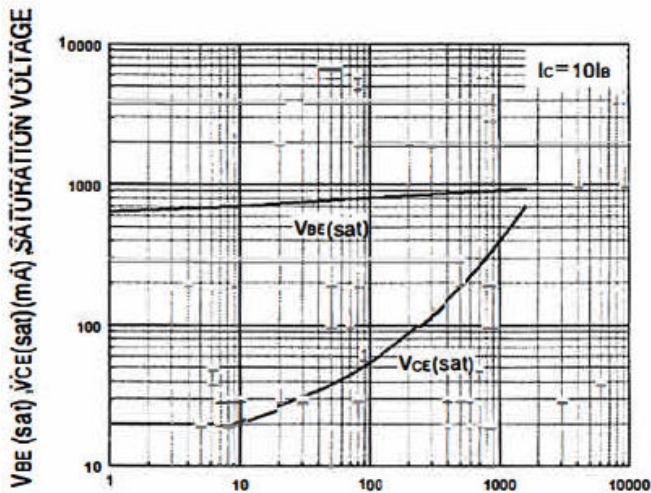
V_{CE} (V), COLLECTOR-EMITTER VOLTAGE

Static Characteristic



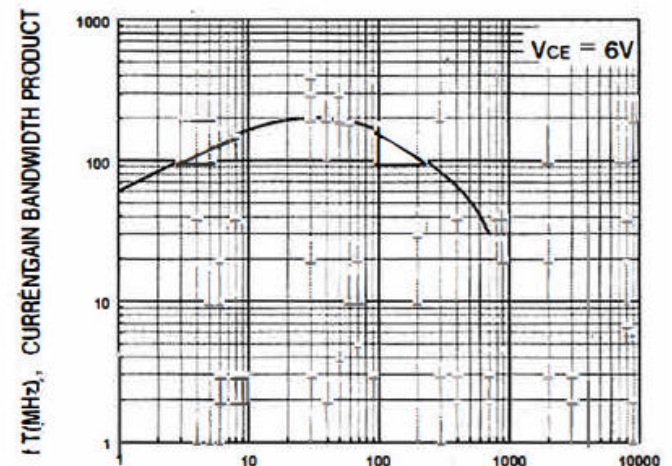
I_C (mA), COLLECTOR CURRENT

DC current Gain



I_C (mA), COLLECTOR CURRENT

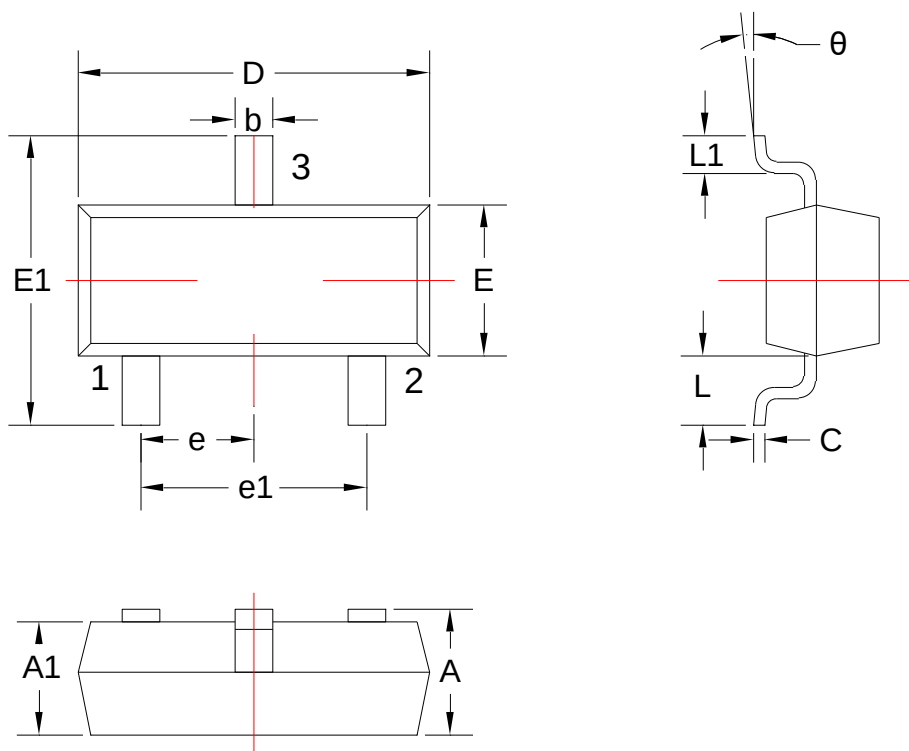
Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage



I_C (mA), COLLECTOR CURRENT

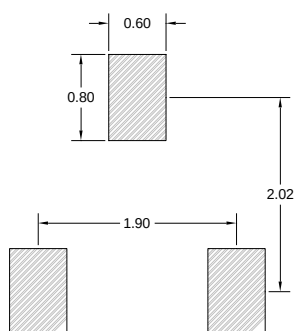
Current Gain Bandwidth Product

Dimension and Patterns (SOT-23)



Units: mm

Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	0.900	1.150	E1	2.250	2.550
A1	0.900	1.050	e	0.950TYP	
b	0.300	0.500	e1	1.800	2.000
c	0.080	0.150	L	0.550REF	
D	2.800	3.00	L1	0.300	0.500
E	1.200	1.400	θ	0°	8°



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm