

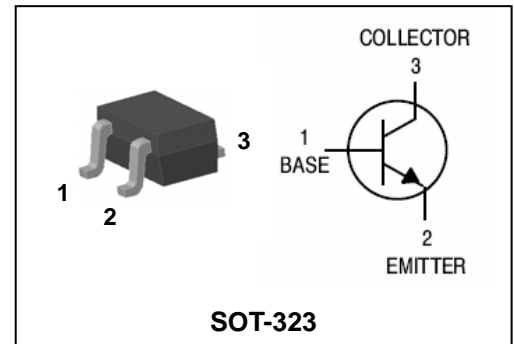
Descriptions

- Small signal application
- Switching application

Features

- Low $V_{CE(SAT)}$: 0.3V max @ $I_C=50\text{ mA}$
- High speed switching : $t_f=50\text{ ns}$ max @ $I_C=10\text{ mA}$
- Complementary pair with SBT3906U

PIN Connection



Ordering Information

Type NO.	Marking	Package Code
SBT3904U	1A □ ① ②	SOT-323

① Device Code ② Year&Week Code

Absolute maximum ratings

$T_a=25^\circ\text{C}$

Characteristic	Symbol	Rating	Unit
Collector-Base voltage	V_{CBO}	60	V
Collector-Emitter voltage	V_{CEO}	40	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	200	mA
Collector Power dissipation	P_C^*	350	mW
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 ~ 150	$^\circ\text{C}$

* : Device mounted on 99.5% alumina 10×8×0.6mm

Electrical Characteristics

$T_a=25^\circ\text{C}$

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base breakdown voltage	BV_{CBO}	$I_C=10\mu\text{A}$, $I_E=0$	60	-	-	V
Collector-Emitter breakdown voltage	BV_{CEO}	$I_C=1\text{mA}$, $I_B=0$	40	-	-	V
Emitter-Base breakdown voltage	BV_{EBO}	$I_E=10\mu\text{A}$, $I_C=0$	6	-	-	V
Collector cut-off current	I_{CEX}	$V_{CE}=30\text{V}$, $V_{BE}=-3\text{V}$	-	-	50	nA
DC current gain	h_{FE}	$V_{CE}=1\text{V}$, $I_C=10\text{mA}$	100	-	300	-
Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{mA}$, $I_B=5\text{mA}$	-	-	0.3	V
Transition frequency	f_T	$V_{CE}=20\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	300	-	-	MHz
Collector output capacitance	C_{ob}	$V_{CB}=5\text{V}$, $I_E=0$, $f=1\text{MHz}$	-	-	4	pF
Turn on delay time	t_d	$V_{CC}=3\text{V}$, $V_{BE(off)}=0.5\text{V}$ $I_C=10\text{mA}$, $I_{B1}=1\text{mA}$	-	-	35	ns
Rise time	t_r		-	-	35	ns
Storage time	t_s	$V_{CC}=3\text{V}$, $I_C=10\text{mA}$, $I_{B1}=-I_{B2}=1\text{mA}$	-	-	200	ns
Fall Time	t_f		-	-	50	ns

Electrical Characteristic Curves

Fig. 1 P_C - T_a

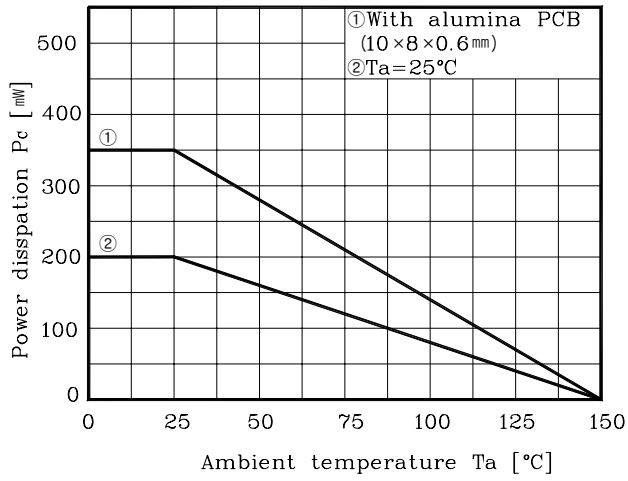


Fig. 2 h_{FE} - I_C

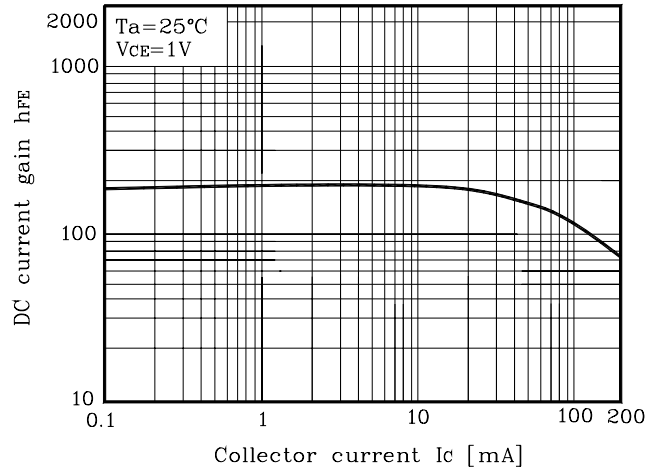
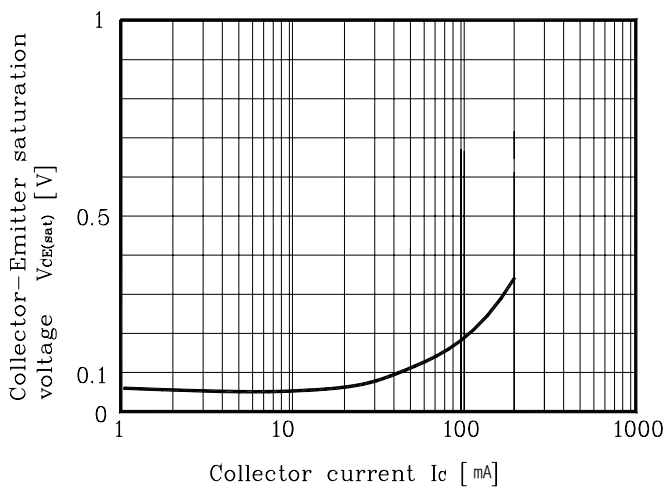
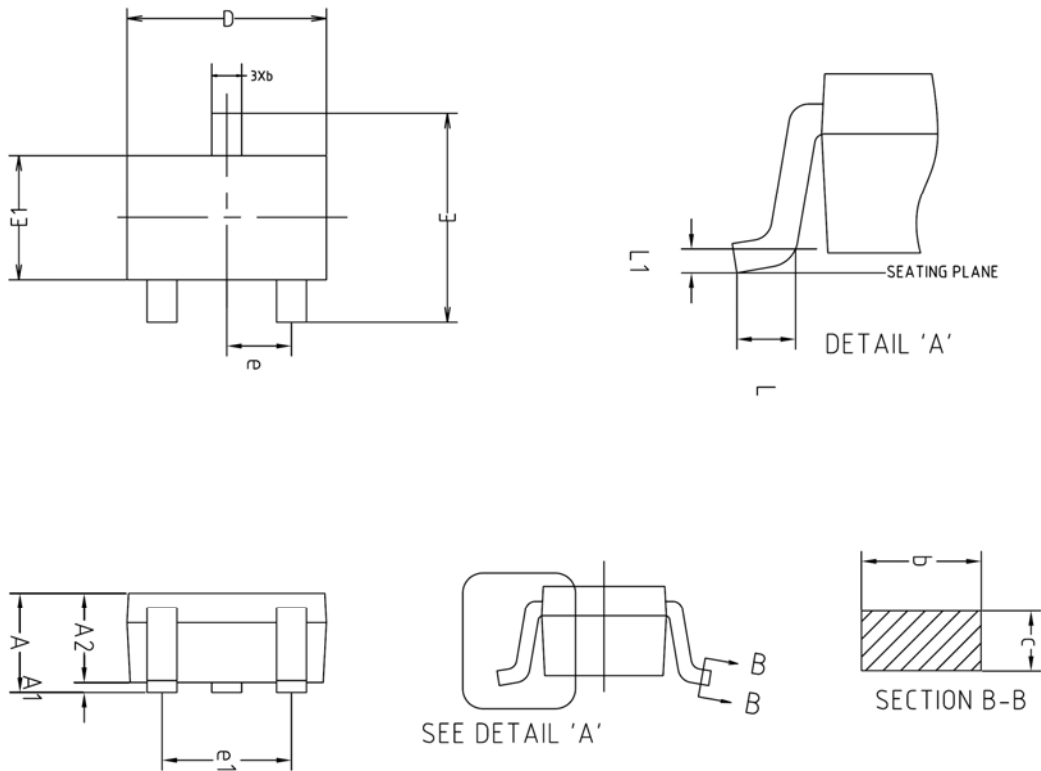


Fig. 3 $V_{CE(sat)}$ - I_C

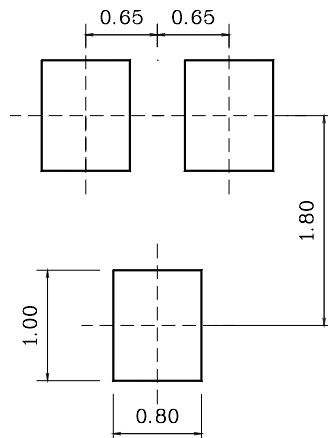


Outline Dimension



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	0.90	-	1.25	
A1	0.00	-	0.10	
A2	0.85	0.90	0.95	
b	0.30	-	0.40	
c	0.10	-	0.25	
D	1.90	2.00	2.10	
E	1.95	2.10	2.25	
E1	1.15	1.25	1.35	
e	0.65BSC			
e1	1.20	-	1.40	
L	0.10	-	-	
L1	0.12BSC			

※Recommend PCB solder land [Unit: mm]



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