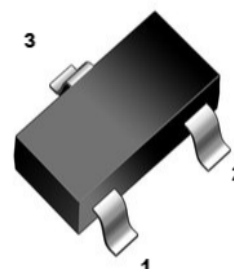




1. Features

- PNP Silicon Epitaxial Planar Transistor

SOT-23



1 base
2 emitter
3 collector

2. Mechanical Data

- Case:Molded Plastic,SOT-23 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking:591A
- Mounting Position : Any.

3. Maximum Ratings

Electrical Characteristics Rating at 25°C ambient temperature unless otherwise specified.

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-1	A
Peak Pulse Current	I_{CM}	-2	A
Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	-55~+150	°C
Storage Temperature	T_{stg}	-55~+150	°C

4. Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Characteristics	Symbol	Condition	Min	TYP	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB}=-30\text{V}, I_E=0$	-	-	-100	nA
Collector cut-off current	I_{CEO}	$V_{CE}=-30\text{V}, I_E=0$	-	-	-100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0$	-	-	-100	nA
DC current gain	h_{FE}	$V_{CE}=-5\text{V}, I_C=-1\text{mA}$	300	-	-	-
		$V_{CE}=-5\text{V}, I_C=-100\text{mA}$	300	-	800	-
		$V_{CE}=-5\text{V}, I_C=-500\text{mA}$	250	-	-	-
		$V_{CE}=-5\text{V}, I_C=-1\text{A}$	160	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-100\text{mA}, I_B=-1\text{mA}$	-	-	-200	mV
		$I_C=-500\text{mA}, I_B=-20\text{mA}$	-	-	-350	mV
		$I_C=-1\text{A}, I_B=-100\text{mA}$	-	-	-500	mV
Base -emitter saturation voltage	$V_{BE(sat)}$	$I_C=-1\text{A}, I_B=-50\text{mA}$	-	-	-1.1	V
Base Emitter Voltage	V_{BE}	$I_C=-1\text{A}, V_{CE}=-5\text{V}$	-	-	-1	V
Collector Capacitance	C_C	$V_{CE}=-10\text{V}, f=1\text{MHz}$	-	-	12	pF
Transition frequency	f_T	$V_{CE}=-10\text{V}, I_C=-50\text{mA}, f=100\text{MHz}$	150	-	-	MHz



5. Rating And Characteristic Curves

Fig.1 $V_{CE(sat)}$ vs. I_C

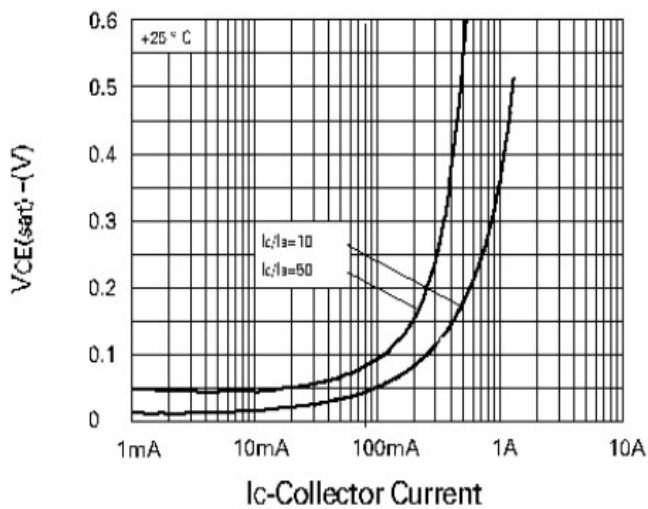


Fig.2 $V_{CE(sat)}$ vs. I_C

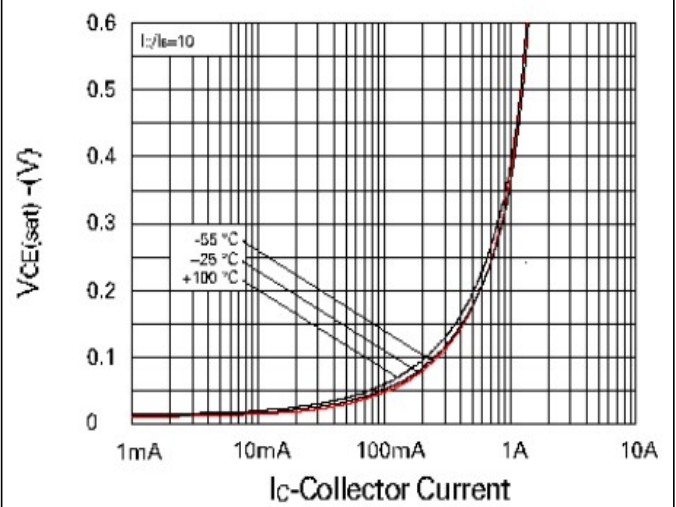


Fig.3 h_{FE} vs. I_C

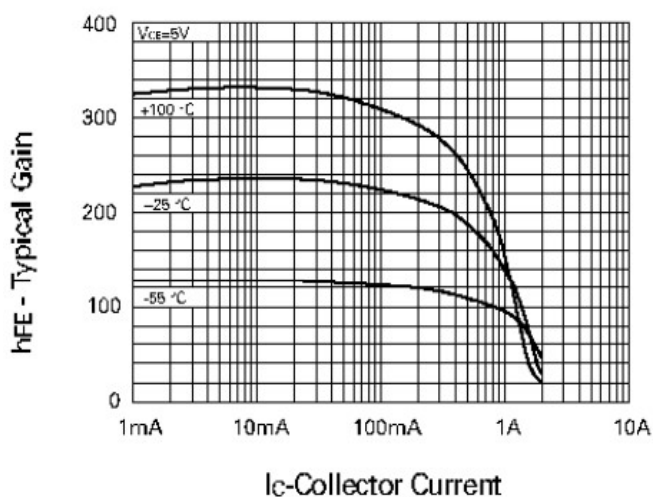


Fig.4 $V_{BE(sat)}$ vs. I_C

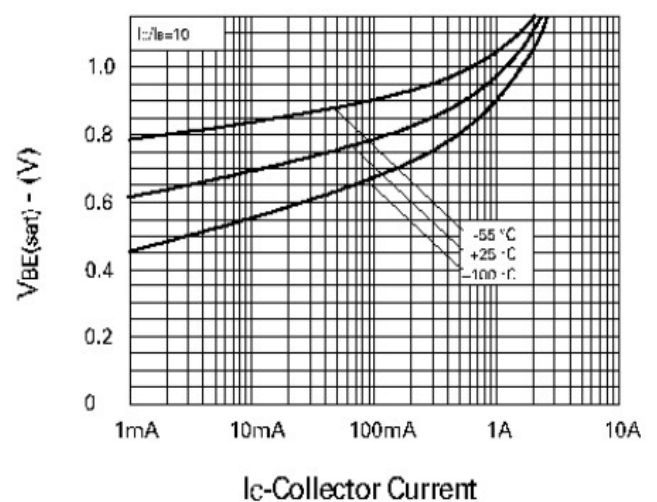


Fig.5 $V_{BE(on)}$ vs. I_C

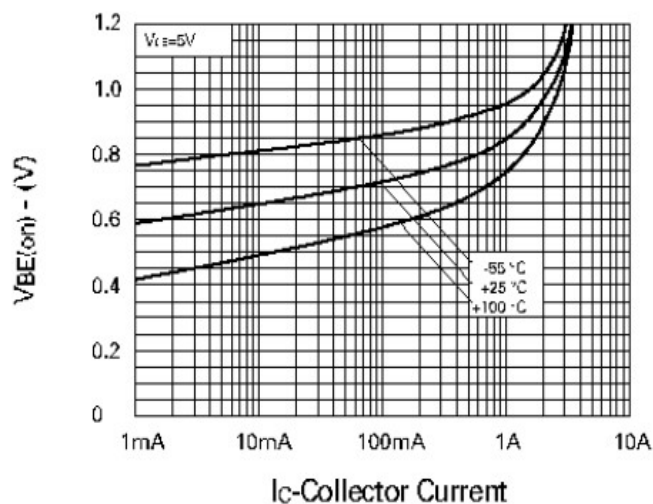
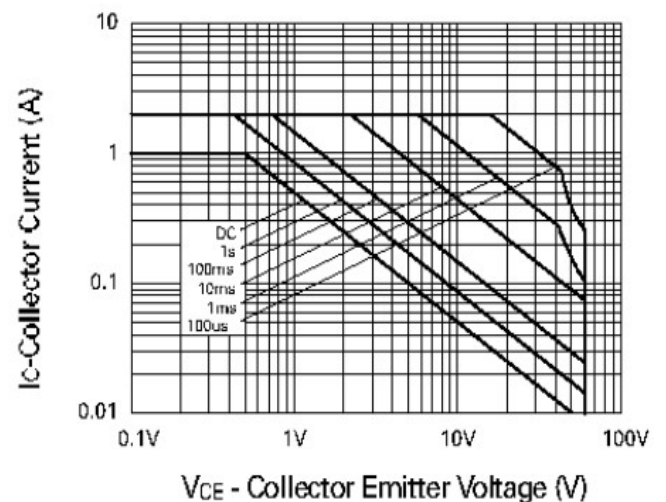
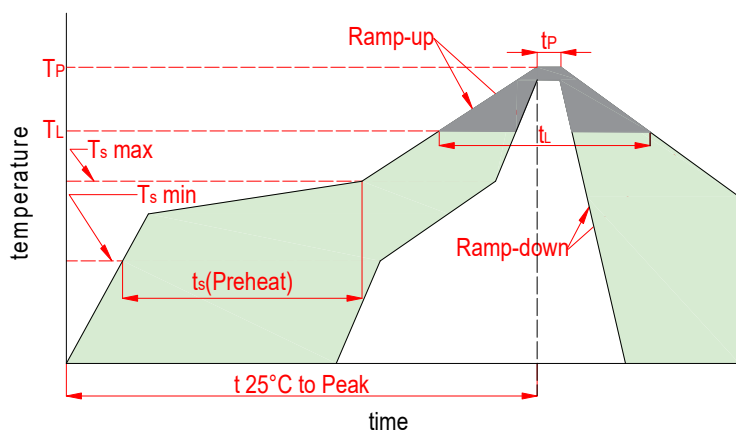


Fig.6 Safe Operating Area



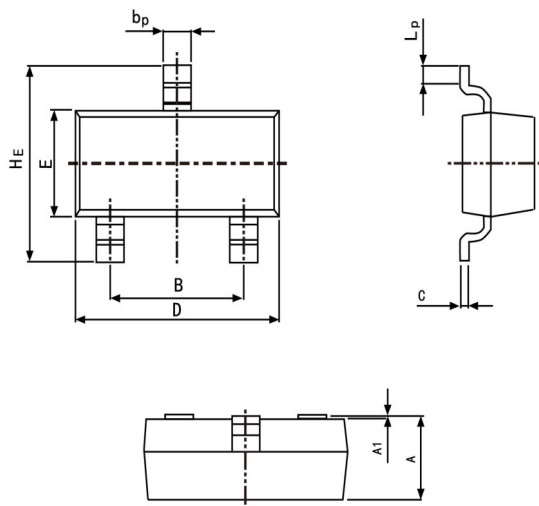


6. Soldering Parameters



Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150°C
	Temp. max(T_s (min))	200°C
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3°C/s max
T_s (max) to T_L -Ramp-up Rate		3°C/s max
Reflow	Temp.(T_L)(Liquidus)	217°C
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} °C
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6°C/s max
Time 25°C to peak Tempe.(T_p)		8 minutes max
Do not exceed		260°C

7. Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
b _p	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50



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