SHANGHAI SINO-IC
MICROELECTRONCS CO., LTD.

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SEBT3906U
PNP switching transistor

Features
- Low current (max. 100 mA).
- Low voltage (max. 40 V).

Applications
- Telephony and professional communication equipment.

DESCRIPTION
- PNP switching transistor in a SOT323 plastic package
- NPN complement: SEBT3904U.

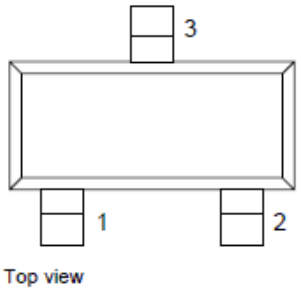


Fig.1 Simplified outline (SOT323) and symbol.

Absolute maximum ratings (Ta=25℃)

Parameter	Symbol	CONDITIONS	MIN.	MAX.	Unit
collector-base voltage	V_{CBO}	open emitter	–	-60	V
collector-emitter voltage	V_{CEO}	open base	–	-40	V
emitter-base voltage	V_{EBO}	open collector	–	-6	V
collector current DC	I_C		–	-200	mA
peak collector current	I_{CM}		–	-200	mA
peak base current	I_{BM}		–	-100	mA
total power dissipation	P_{tot}	Tamb £ 25 ° C; note 1	–	250	mW
storage temperature	T_{stg}		–65	+150	°C
junction temperature	T_j		–	150	°C
operating ambient temperature	T_{amb}		–65	+150	°C

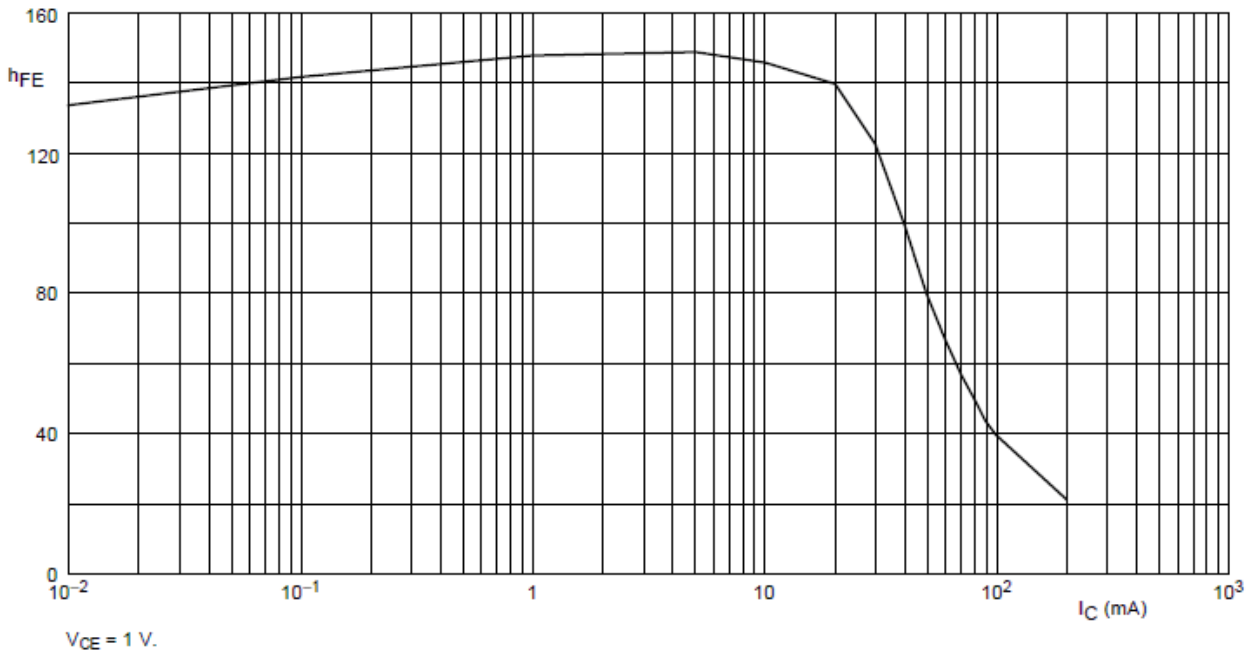
Electrical characteristics (Ta=25℃)

Parameter	Symbol	CONDITIONS	Min.	Max.	Unit
collector cut-off current	I_{CBO}	I_E = 0; V_{CB} =-30V	-	-50	nA
emitter cut-off current	I_{EBO}	I_C = 0; V_{EB} =-6V	-	-50	nA

DC current gain	h_{FE}	V_{CE} = 1 V; note 1; Fig.2 I_C =-0.1 mA I_C =-1 mA I_C =-10 mA I_C =-50 mA I_C =-100 mA	 60 80 100 60 30	 - - 300 - -	
collector-emitter saturationvoltage	V_{CEsat}	I_C =-10 mA; I_B =-1 mA	-	-200	mV
		I_C =-50 mA; I_B =-5 mA	-	-200	mV
base-emitter saturation voltage	V_{BEsat}	I_C =-10 mA; I_B =-1 mA	-650	-850	mV
		I_C =-50 mA; I_B =-5 mA	-	-950	mV
collector capacitance	C_c	I_E = ie = 0; V_{CB} = 5 V; f = 1 MHz	-	4	pF
emitter capacitance	C_e	I_C = ic = 0; V_{BE} = 500 mV; f = 1 MHz	-	8	pF
transition frequency	f_T	I_C = 10 mA; V_{CE} = 20 V; f = 100 MHz	300	-	MHz
noise figure	F	I_C = 100 mA; V_{CE} = 5 V; R_S = 1 kW; f = 10 Hz to 15.7 kHz	-	5	dB

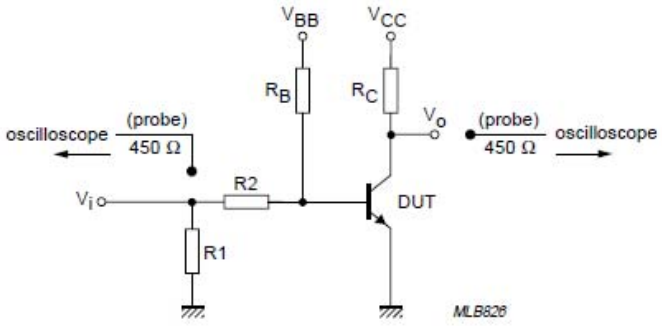
Switching times (between 10% and 90% levels); (see Fig.3)

ton	turn-on time	I_{Con} = 10 mA; I_{Bon} = 1 mA; I_{Boff} = -1 mA	-	65	ns
td	delay time		-	35	ns
tr	rise time		-	35	ns
toff	turn-off time		-	240	ns
ts	storage time		-	200	ns
tf	fall time		-	50	ns



V_{CE} = 1 V.

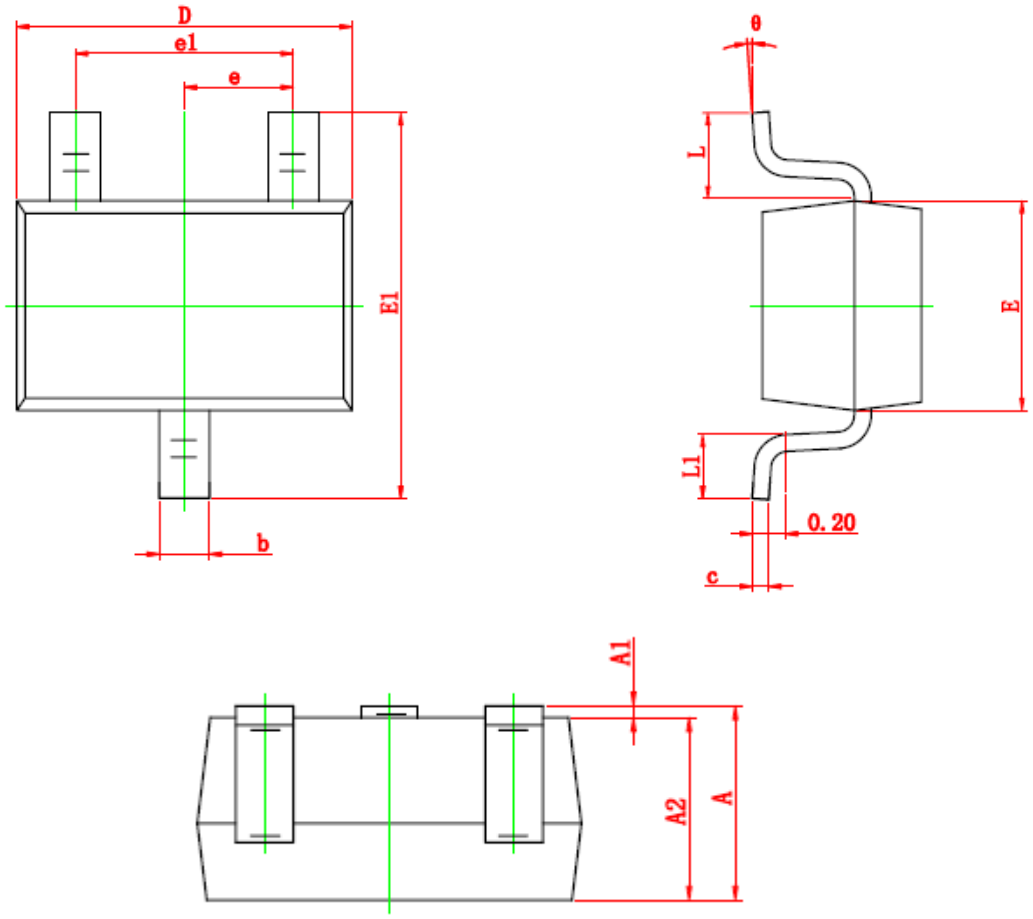
Fig.2 DC current gain; typical values.



V_i = 5 V; T = 500 µs; t_p = 10 µs; $t_r = t_f \leq 3$ ns.
R1 = 56 Ω; R2 = 2.5 kΩ; R_B = 3.9 kΩ; R_C = 270 Ω.
V_{BB} = −1.9 V; V_{CC} = 3 V.
Oscilloscope: input impedance Z_i = 50 Ω.

Fig.3 Test circuit for switching times.

SOT-323 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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