

SEBT3906U
PNP switching transistor

Features

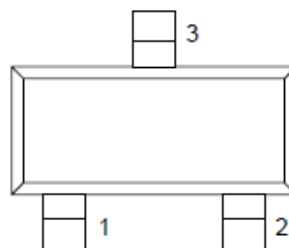
- Low current (max. 100 mA).
- Low voltage (max. 40 V).

Applications

- Telephony and professional communication equipment.

DESCRIPTION

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



Top view

Fig.1 Simplified outline (SOT323) and symbol.

Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	CONDITIO NS	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}	$T_{amb} \leq 25$ $^{\circ}C$; note 1	-	250	mW
storage temperature	T_{stg}		-65	+150	$^{\circ}C$
junction temperature	T_j		-	150	$^{\circ}C$
operating ambient temperature	T_{amb}		-65	+150	$^{\circ}C$

Electrical characteristics (Ta=25°C)

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

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

ton	turn-on time	$I_{Con} = 10\text{ mA}$; $I_{Bon} = 1\text{ mA}$; $I_{Boff} = -1\text{ mA}$	-	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

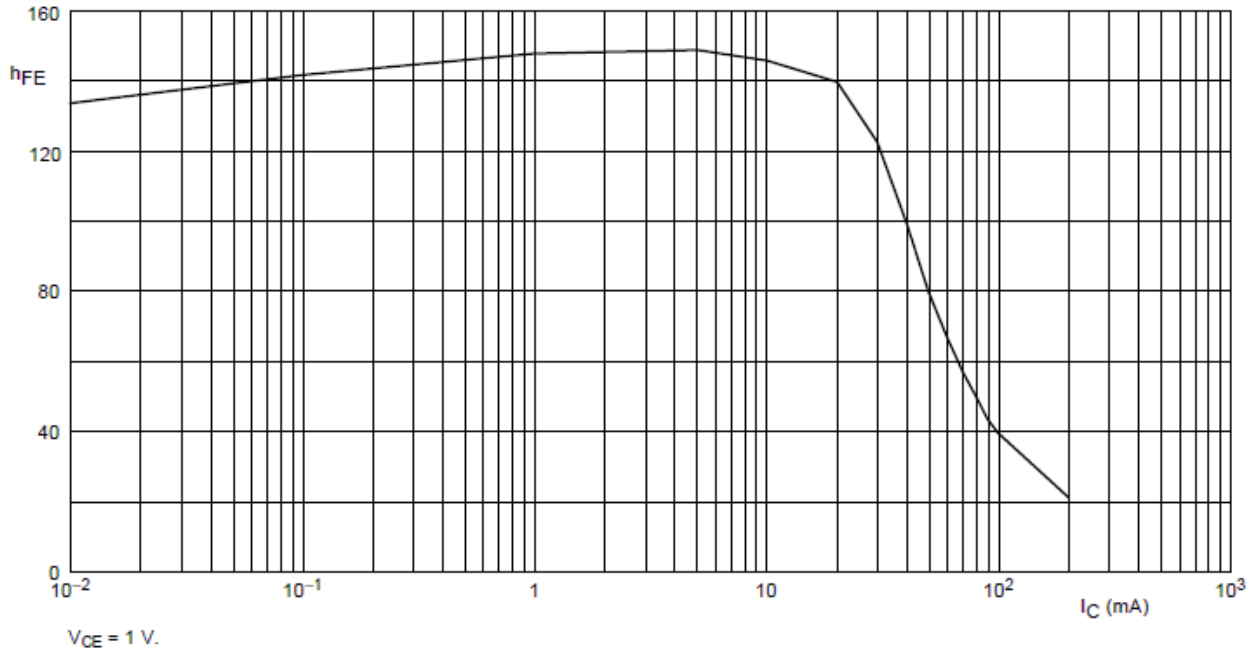
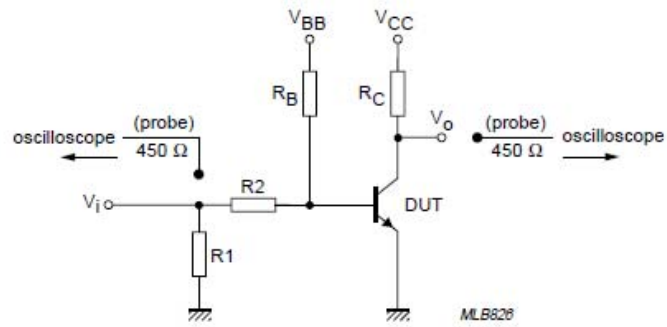


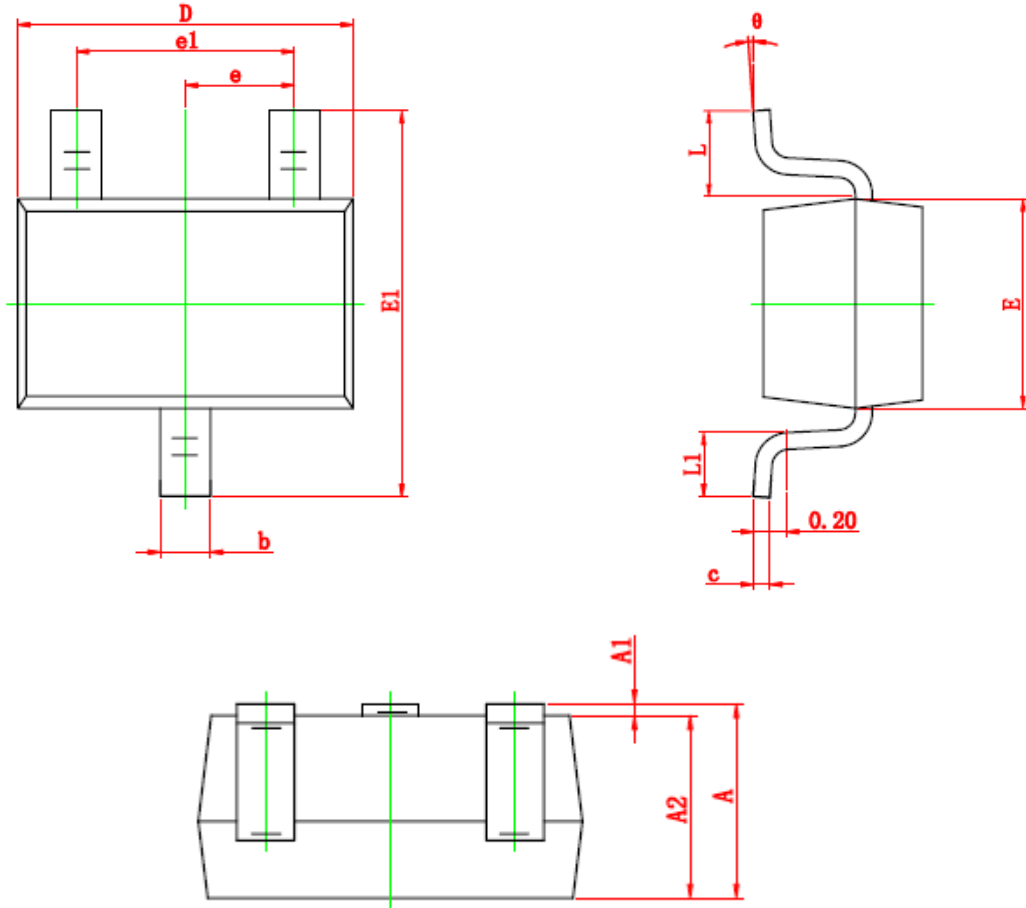
Fig.2 DC current gain; typical values.



$V_i = 5$ V; $T = 500$ μ s; $t_p = 10$ μ s; $t_r = t_f \leq 3$ ns.
 $R_1 = 56$ Ω ; $R_2 = 2.5$ k Ω ; $R_B = 3.9$ k Ω ; $R_C = 270$ 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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