

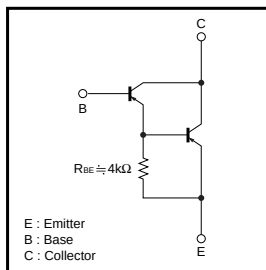
High-gain Amplifier Transistor (−32V, −0.3A)

2SB852K / 2SA830S

●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in 4kΩ resistor between base and emitter.
- 3) Complements the 2SD1383K / 2SD1645S.

●Circuit diagram



●Packaging specifications

Type	2SB852K	2SA830S
Package	SMT3	SPT
hFE	B	B
Marking	U*	—
Code	T146	TP
Basic ordering unit (pieces)	3000	5000

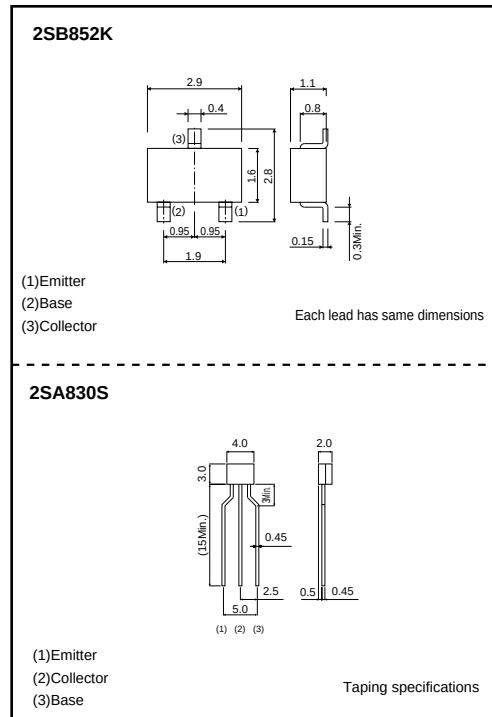
* Denotes hFE

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CB0}	−40	V
Collector-emitter voltage	V _{CES}	−32	V *
Emitter-base voltage	V _{EBO}	−6	V
Collector current	I _C	−0.3	A
Collector power dissipation	P _C	0.2	W
		0.3	
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

* R_{BE}=0Ω

●External dimensions (Unit : mm)



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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-40	—	—	V	$I_C = -100\mu A$
Collector-emitter breakdown voltage	BV_{CES}	-32	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EBO}	-6	—	—	V	$I_E = -100\mu A$
Collector cutoff current	I_{CBO}	—	—	-1	μA	$V_{CB} = -24V$
Emitter cutoff current	I_{EBO}	—	—	-1	μA	$V_{EB} = -4.5V$
DC current transfer ratio	h_{FE}	5000	—	—	—	$V_{CE} = -5V, I_C = -0.1A$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-1.5	V	$I_C = -200mA, I_B = -0.4mA$ *1
Transition frequency	f_T	—	200	—	MHz	$V_{CE} = -5V, I_E = 10mA, f = 100MHz$ *2
Output capacitance	C_{ob}	—	3	—	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$

*1 Measured using pulse current.

*2 Transition frequency of the device.

●Electrical characteristic curves

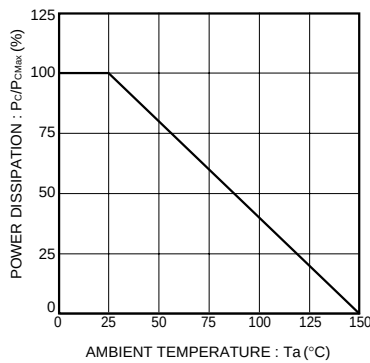


Fig.1 Power dissipation curves

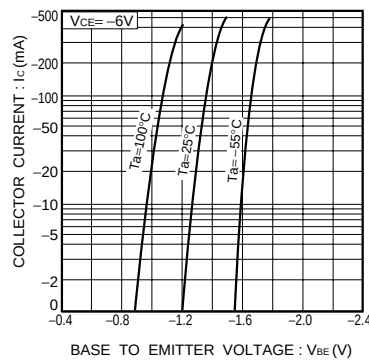


Fig.2 Ground emitter propagation characteristic

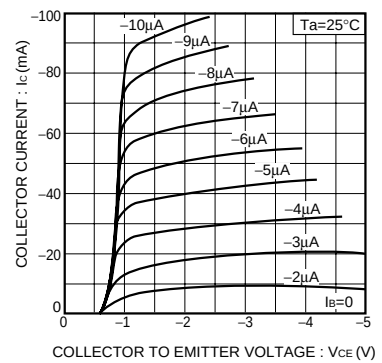


Fig.3 Ground emitter output characteristics

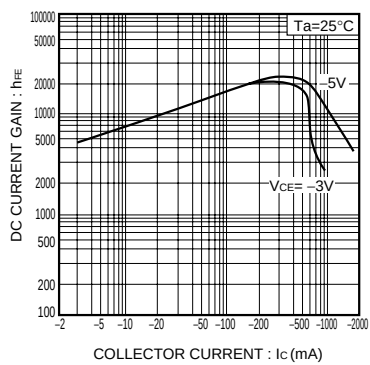


Fig.4 DC current gain vs. collector current (I)

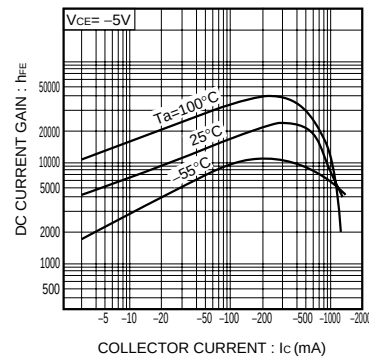


Fig.5 DC current gain vs. collector current (II)

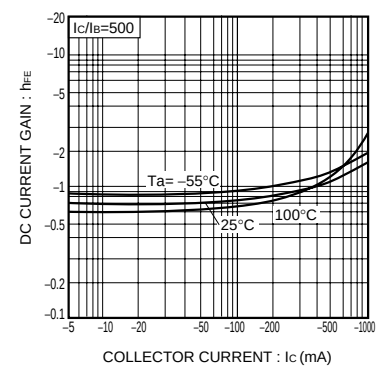


Fig.6 Collector-emitter saturation voltage vs. collector current

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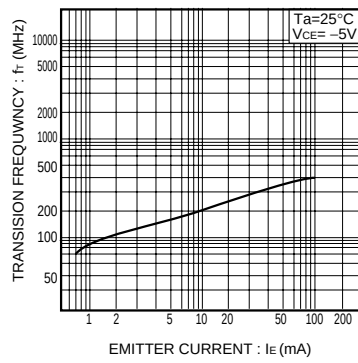
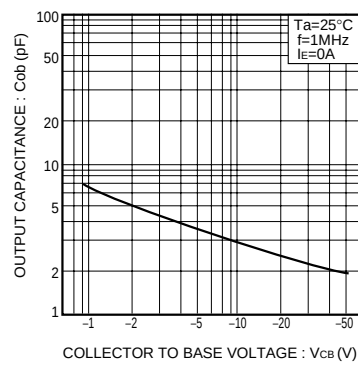
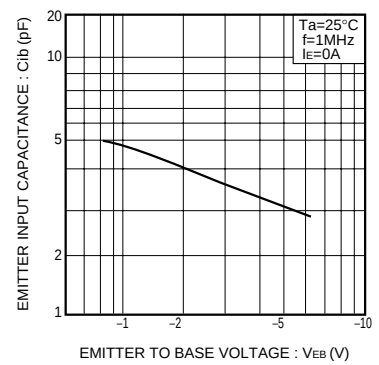


Fig.7 Gain bandwidth product vs. emitter current

Fig.8 Collector output capacitance
vs. collector-base voltageFig.9 Emitter input capacitance
vs. emitter-base voltage

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