

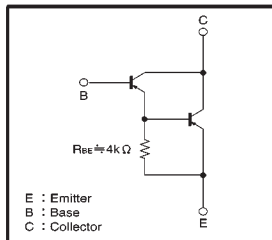
High-gain Amplifier Transistor (−32V, −0.3A)

2SB852K / 2SA830S

●Features

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

●Circuit diagram



●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	$I_C = -1 mA, R_{BE} = 0$
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	—	—	—	$V_{CE}/I_C = -5V/-0.1A$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	−1.5	V	$I_C/I_E = -200mA/-0.4mA$ *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.

(96-118-B20)

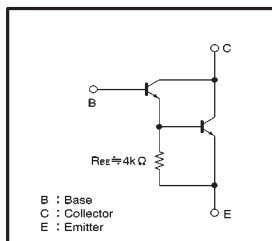
High-gain Amplifier Transistor (32V, 0.3A)

2SD1383K / 2SC1645S

●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in 4 kΩ resistor between base and emitter.
- 3) Complements the 2SD852K / 2SA830S.

●Circuit diagram



●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	$I_C = -1 mA, R_{BE} = 0 \Omega$
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	—	—	—	$V_{CE}/I_C = 5V/0.1A$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	1.5	V	$I_C/I_E = 200mA/0.4mA$ *1
Transition frequency	f_T	—	250	—	MHz	$V_{CE} = 5V, I_E = -10mA, f = 100MHz$ *2
Output capacitance	C_{ob}	—	5	—	pF	$V_{CB} = 10V, I_E = 0A, f = 1MHz$

*1 Measured using pulse current.

*2 Transition frequency of the device.

(96-205-D20)

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−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	2SB852K	0.2	W
	2SA830S	0.3	
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	−55~+150	°C

* $R_{BE} = 0 \Omega$

●Packaging specifications and hfe

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

* Denotes h_{FE}

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CES}	32	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	0.3	A (DC)
		1.5	A (Pulse) *1
Collector power dissipation	P_C	0.2	W
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	−55~+150	°C

*1 Single pulse $P_w = 10ms$ *2 $R_{BE} = 0 \Omega$

●Packaging specifications and hfe

Type	2SD1383K	2SC1645S
Package	SMT3	SPT
h_{FE}	B	B
Marking	W*	—
Code	T146	TP
Basic ordering unit (pieces)	3000	5000

* Denotes h_{FE}