

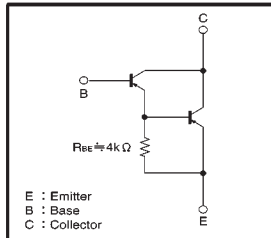
# High-gain Amplifier Transistor (−32V, −0.3A)

## 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	$\mu A$	$V_{CB} = -24V$
Emitter cutoff current	$I_{EBO}$	—	—	1	$\mu A$	$V_{EB} = -4.5V$
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)

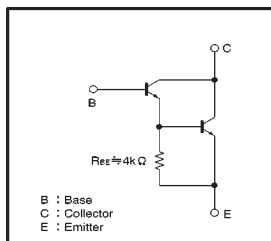
# High-gain Amplifier Transistor (32V, 0.3A)

## 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	$\mu A$	$V_{CB} = 24V$
Emitter cutoff current	$I_{EBO}$	—	—	1	$\mu A$	$V_{EB} = 4.5V$
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  $h_{FE}$

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