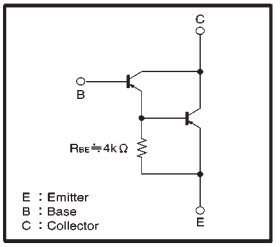
High-gain Amplifier Transistor (−32V, −0.3A)

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**



●**Absolute maximum ratings** (Ta=25℃)

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	P_C	0.2	W	
	2SA830S		0.3		
Junction temperature		Tj	150	℃	
Storage temperature		Tstg	−55～+150	℃	

✻ R_{BE}=0Ω

●**Packaging specifications and h_{FE}**

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

✻ Denotes h_{FE}

●**Electrical characteristics** (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−40	—	—	V	I_C=−100 μA
Collector-emitter breakdown voltage	BV_{CES}	−32	—	—	V	I_C=−1mA , R_{BE}=0
Emitter-base breakdown voltage	BV_{EBO}	−6	—	—	V	I_E=−100 μA
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_B=−200mA/−0.4mA ✻1
Transition frequency	f_T	—	200	—	MHz	V_{CE}=−5V , I_E=−10mA , f=100MHz ✻2
Output capacitance	Cob	—	3	—	pF	V_{CB}=−10V , I_E=0A , f=1MHz

✻1 Measured using pulse current. ✻2 Transition frequency of the device.

(96-118-B20)

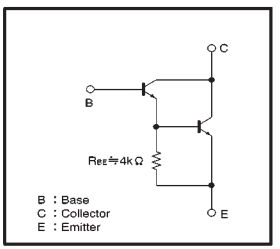
High-gain Amplifier Transistor (32V, 0.3A)

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**



●**Absolute maximum ratings** (Ta=25℃)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	V_{CBO}	40	V	
Collector-emitter voltage	V_{CES}	32	V	✻2
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	Tj	150	℃	
Storage temperature	Tstg	−55～+150	℃	

✻1 Single pulse Pw=10ms ✻2 R_{BE}=0Ω

●**Packaging specifications and h_{FE}**

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

✻ Denotes h_{FE}

●**Electrical characteristics** (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	40	—	—	V	I_C=100 μA
Collector-emitter breakdown voltage	BV_{CES}	32	—	—	V	I_C=−1mA , R_{BE}=0Ω
Emitter-base breakdown voltage	BV_{EBO}	6	—	—	V	I_E=100 μA
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_B=200mA/0.4mA ✻1
Transition frequency	f_T	—	250	—	MHz	V_{CE}=5V , I_E=−10mA , f=100MHz ✻2
Output capacitance	Cob	—	5	—	pF	V_{CB}=10V , I_E=0A , f=1MHz

✻1 Measured using pulse current. ✻2 Transition frequency of the device.

(96-205-D20)