

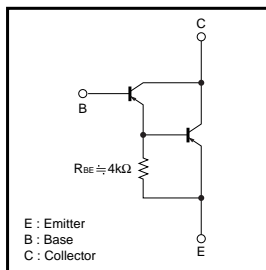
# High-gain Amplifier Transistor (32V , 0.3A)

## 2SD1383K / 2SC1645S

### ●Features

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

### ●Circuit diagram



### ●Packaging specifications

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

\* Denotes hFE

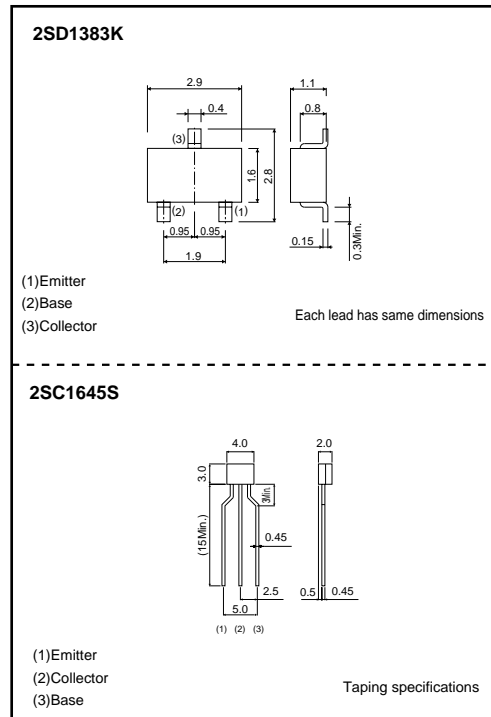
### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	40	V
Collector-emitter voltage	V <sub>CE0</sub>	32	V *1
Emitter-base voltage	V <sub>EBO</sub>	6	V
Collector current	I <sub>c</sub>	0.3	A (DC)
		1.5	A (Pulse) *2
Collector power dissipation	P <sub>c</sub>	0.2	W
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 R<sub>BE</sub>=0Ω

\*2 Single pulse P<sub>w</sub>=10ms

### ●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	$BV_{CEO}$	32	-	-	V	$I_C=-1mA, R_{BE}=0\Omega$
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	-	-	-	$V_{CE}=5V, I_C=0.1A$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	1.5	V	$I_C=200mA, I_B=0.4mA$ *1
Transition frequency	$f_T$	-	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.

●Electrical characteristic curves

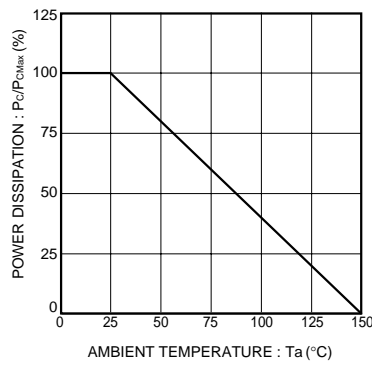


Fig.1 Power dissipation curves

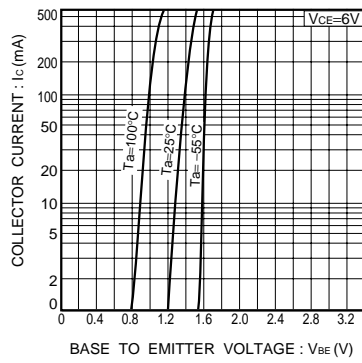


Fig.2 Ground emitter propagation characteristic

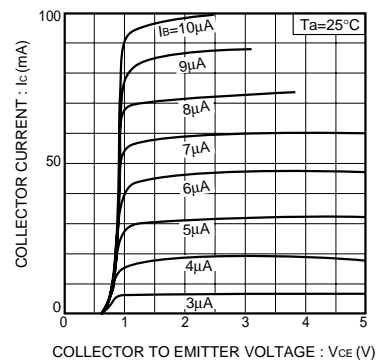


Fig.3 Ground emitter output characteristics

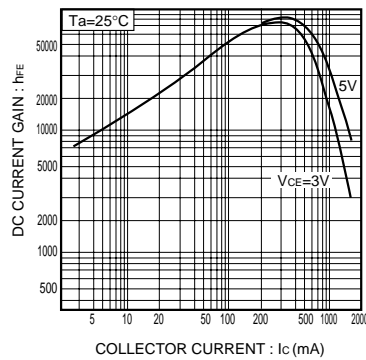


Fig.4 DC current gain vs. collector current ( I )

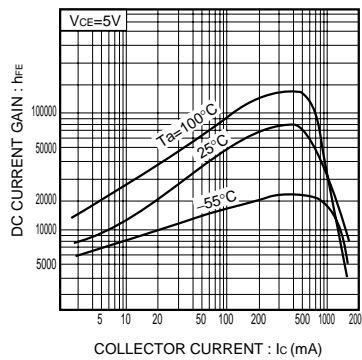


Fig.5 DC current gain vs. collector current ( II )

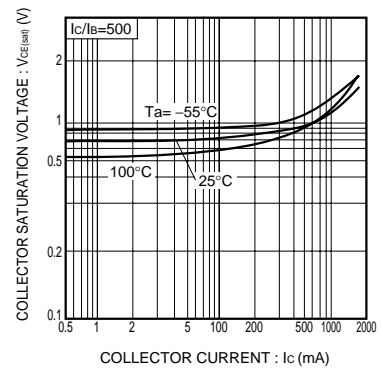


Fig.6 Collector-emitter saturation voltage vs. collector current

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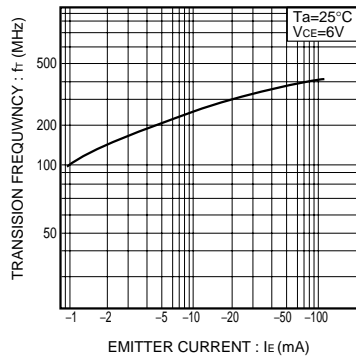


Fig.7 Gain bandwidth product vs. emitter current

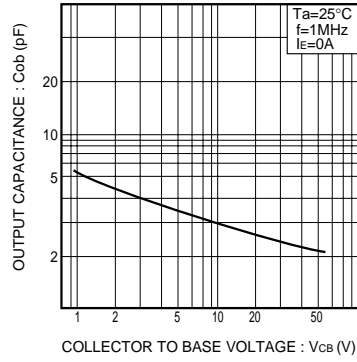


Fig.8 Collector output capacitance vs. collector-base voltage

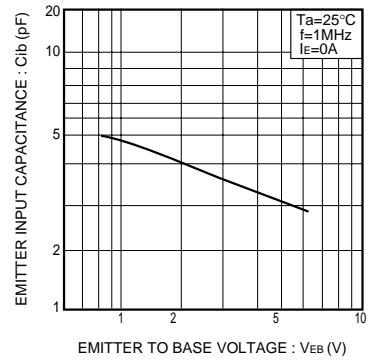


Fig.9 Emitter input capacitance vs. emitter-base voltage

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