

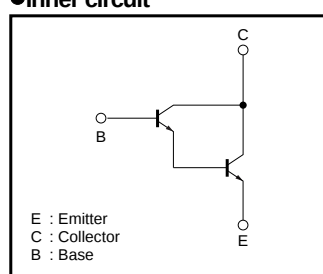
High-gain Amplifier Transistor (30V, 0.3A)

2SD2142K

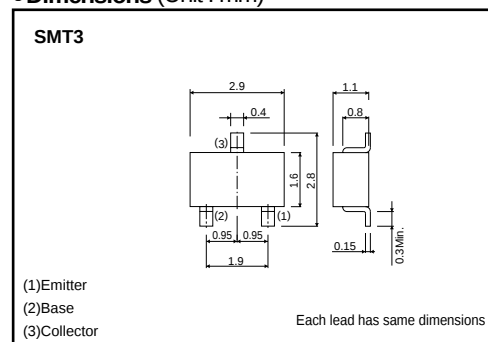
●Features

- 1) Darlington connection for a high h_{FE} .
(DC current gain = 5000 (Min.) at $V_{CE} = 3V$, $I_C = 10mA$)
- 2) High input impedance.

●Inner circuit



●Dimensions (Unit : mm)



●Absolute maximum ratings ($T_a=25^\circ C$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CE}	30	V
Emitter-base voltage	V_{EBO}	10	V
Collector current	I_C	0.3	A
Collector power dissipation	P_C	0.2	W
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

●Electrical characteristics ($T_a=25^\circ C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	—	—	V	$I_C=10\mu A$
Collector-emitter breakdown voltage	BV_{CES}	30	—	—	V	$I_C=100mA$
Emitter-base breakdown voltage	BV_{EBO}	10	—	—	V	$I_E=10\mu A$
Collector cutoff current	I_{CBO}	—	—	0.1	μA	$V_{CB}=30V$
Emitter cutoff current	I_{EBO}	—	—	0.1	μA	$V_{EB}=10V$
DC current transfer ratio	h_{FE1}	5000	—	—	—	$V_{CE}/I_C=5V/10mA$
	h_{FE2}	10000	—	—	—	$V_{CE}/I_C=5V/100mA$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	1.5	V	$I_C/I_B=100mA/0.1mA$
Base-emitter voltage	$V_{BE(on)}$	—	—	2	V	$V_{CE}/I_C=5V/100mA$
Transition frequency	f_T	—	200	—	MHz	$V_{CE}=5V, I_E=-10mA, f=100MHz$ *
Output capacitance	C_{ob}	—	5.4	—	pF	$V_{CB}=10V, I_E=0A, f=1MHz$

* Transition frequency of the device.

●Packaging specifications and h_{FE}

Type	2SD2142K
Package	SMT3
h_{FE}	5k~
Code	T146
Basic ordering unit (pieces)	3000

Transistors

●Electrical characteristics curves

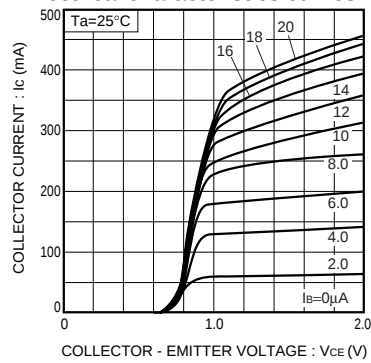


Fig.1 Typical output characteristics (I)

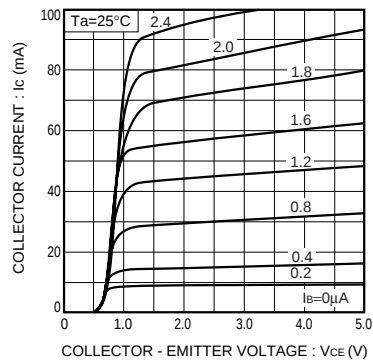


Fig.2 Typical output characteristics (II)

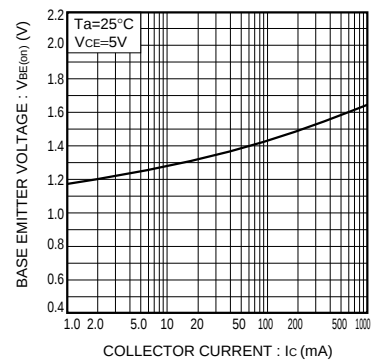


Fig.3 Base emitter 'ON' voltage vs. collector current

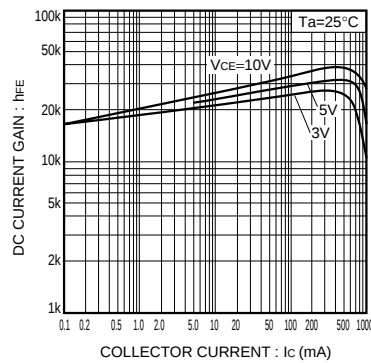


Fig.4 DC current gain vs. collector current (I)

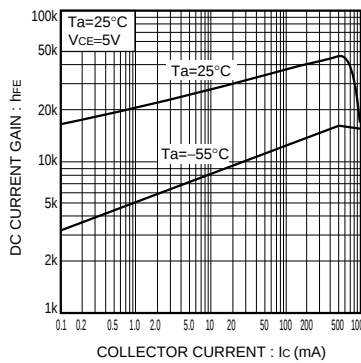


Fig.5 DC current gain vs. collector current (II)

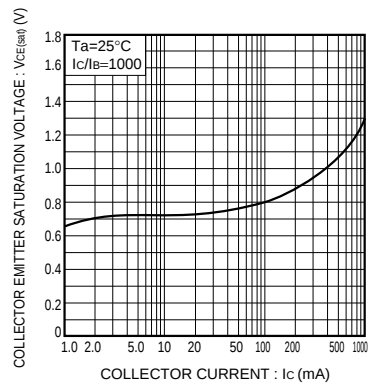


Fig.6 Collector emitter saturation voltage vs. collector current

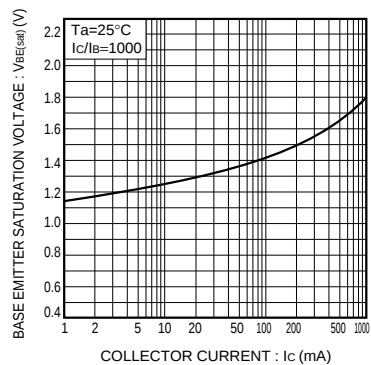


Fig.7 Base emitter saturation voltage vs. collector current

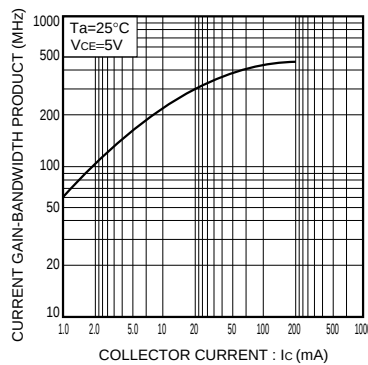


Fig.8 Current gain-bandwidth product vs. collector current

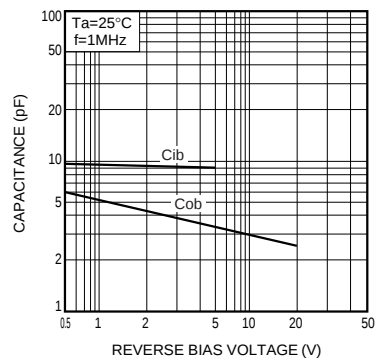


Fig.9 Capacitance vs. reverse bias voltage

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