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

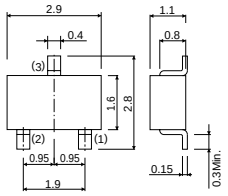
2SD2142K

●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.

●Dimensions (Unit : mm)

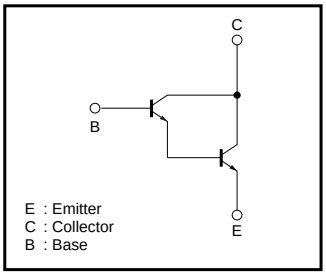
SMT3



(1)Emitter
(2)Base
(3)Collector

Each lead has same dimensions

●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CER}	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	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	30	–	–	V	I_C=10μA
Collector-emitter breakdown voltage	BV_{CES}	30	–	–	V	I_C=100mA
Emitter-base breakdown voltage	BV_{EBO}	10	–	–	V	I_E=10μA
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	Cob	–	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

●**Electrical characteristics curves**

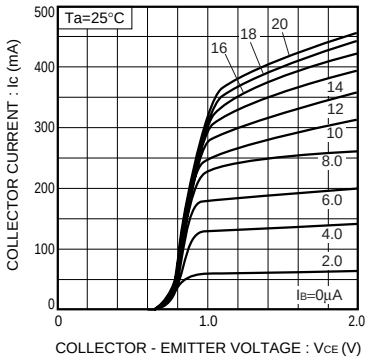


Fig.1 Typical output characteristics (I)

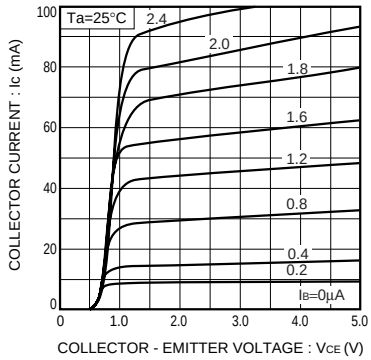


Fig.2 Typical output characteristics (II)

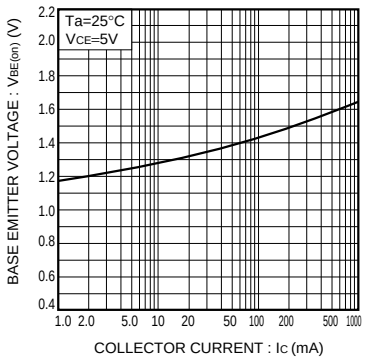


Fig.3 Base emitter 'ON' voltage vs. collector current

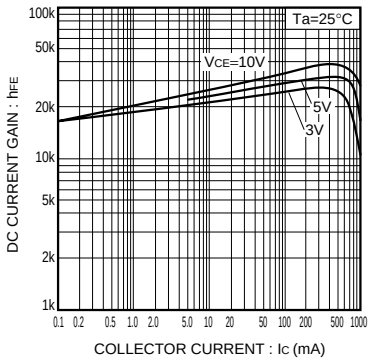


Fig.4 DC current gain vs. collector current (I)

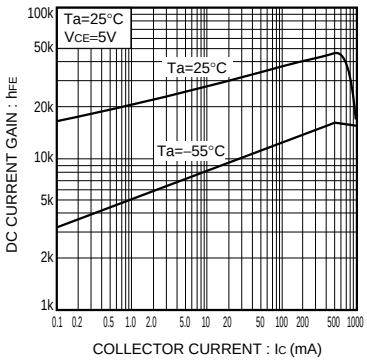


Fig.5 DC current gain vs. collector current (II)

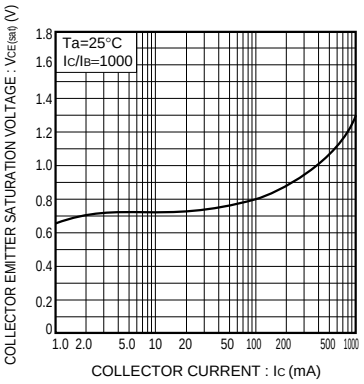


Fig.6 Collector emitter saturation voltage vs. collector current

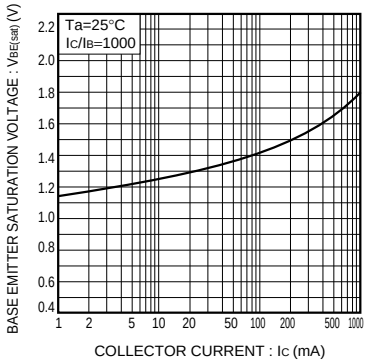


Fig.7 Base emitter saturation voltage vs. collector current

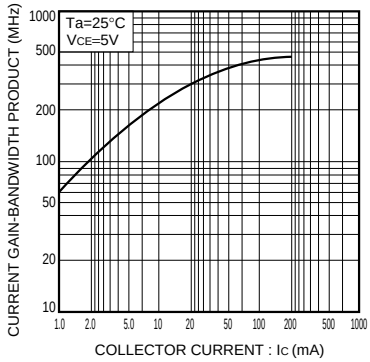


Fig.8 Current gain-bandwidth product vs. collector current

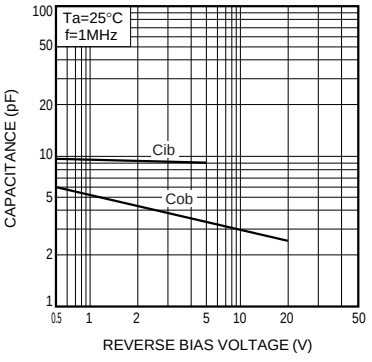


Fig.9 Capacitance vs. reverse bias voltage

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