2SD2142K

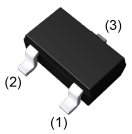
High-gain Amplifier Transistor (30V, 300mA)

Datasheet

Parameter	Value
V_{CES}	30V
I_C	300mA

●Outline

SMT3

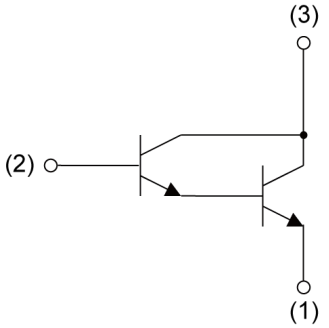


2SD2142K
SOT-346

●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



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

●Application

High gain amplifier

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SD2142K	SMT3	2928	T146	180	8	3000	R1M

●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CES}	30	V
Emitter-base voltage	V_{EBO}	10	V
Collector current	I_C	300	mA
Power dissipation	P_D	200	mW
Junction temperature	T_j	150	℃
Range of storage temperature	T_{stg}	-55 to +150	℃

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = 10μA	30	-	-	V
Collector-emitter breakdown voltage	BV_{CES}	I_C = 100μA	30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 10μA	10	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 30V	-	-	100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 10V	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 100mA, I_B = 0.1mA	-	-	1.5	V
Base-emitter turn on voltage	$V_{BE(on)}$*1	V_{CE} = 5V, I_C = 100mA	-	-	2	V
DC current gain	$h_{FE}1$	V_{CE} = 5V, I_C = 10mA	5k	-	-	-
	$h_{FE}2$*1	V_{CE} = 5V, I_C = 100mA	10k	-	-	
Transition frequency	f_T*2	V_{CE} = 5V, I_E = -10mA, f = 100MHz	125	-	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A, f = 100kHz	-	5.4	-	pF

*1 Pulse test

*2 Characteristics of built-in transistor

●Electrical characteristic curves(T_a = 25°C)

Fig.1 Typical output characteristics (I)

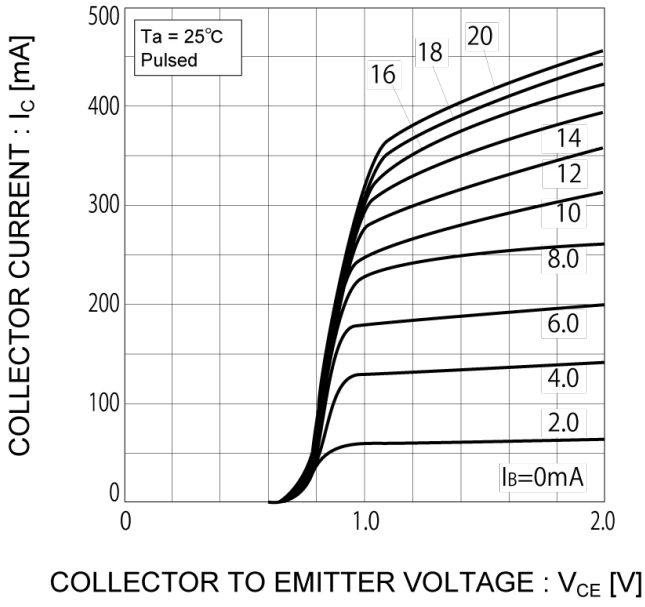


Fig.2 Typical output characteristics (II)

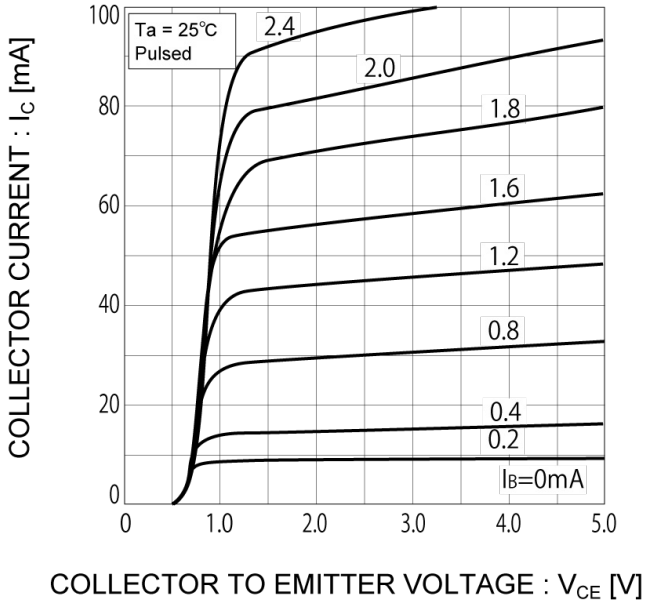


Fig.3 Base emitter 'ON' voltage vs. collector current

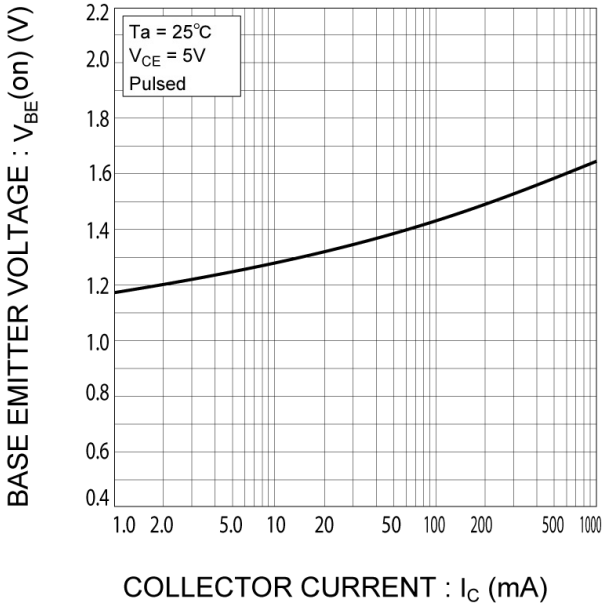
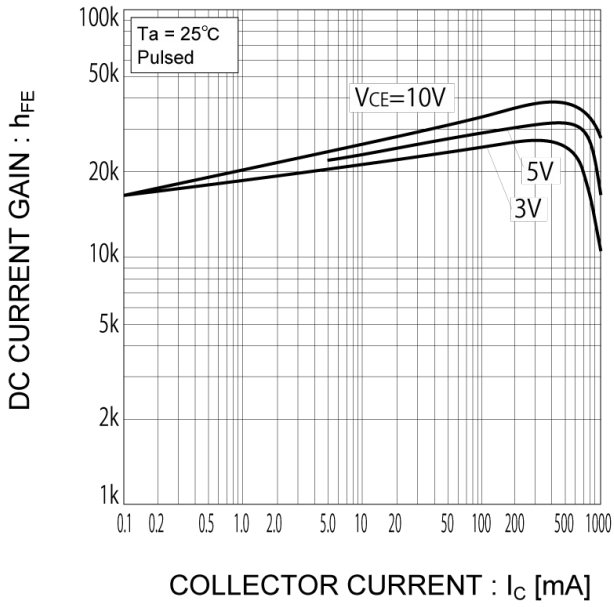


Fig.4 DC current gain vs. collector current (I)



●Electrical characteristic curves(T_a = 25°C)

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

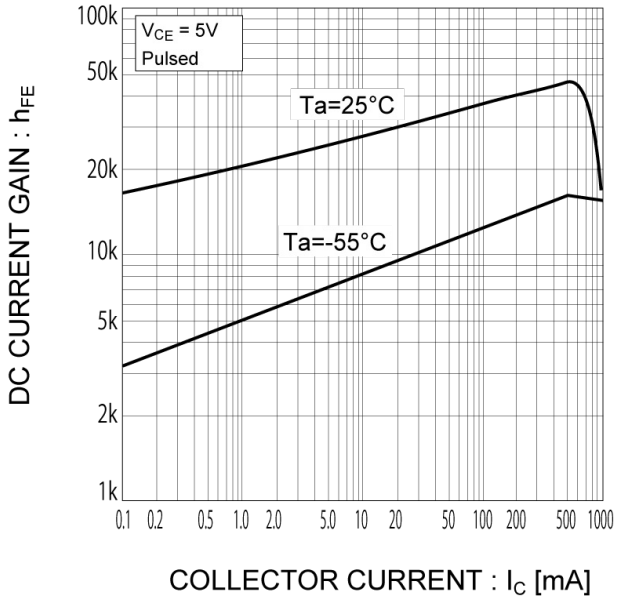


Fig.6 Collector emitter saturation voltage vs. collector current

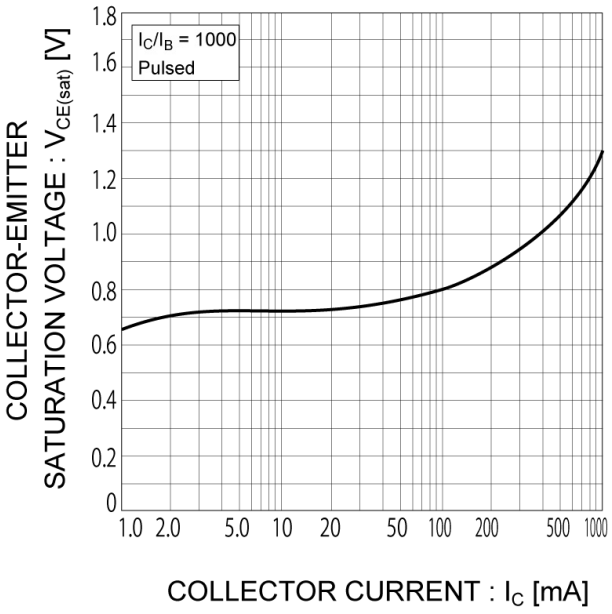


Fig.7 Base emitter saturation voltage vs. collector current

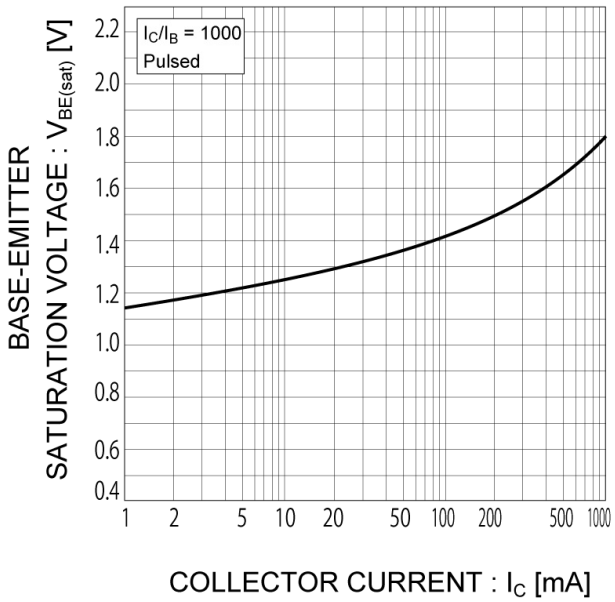
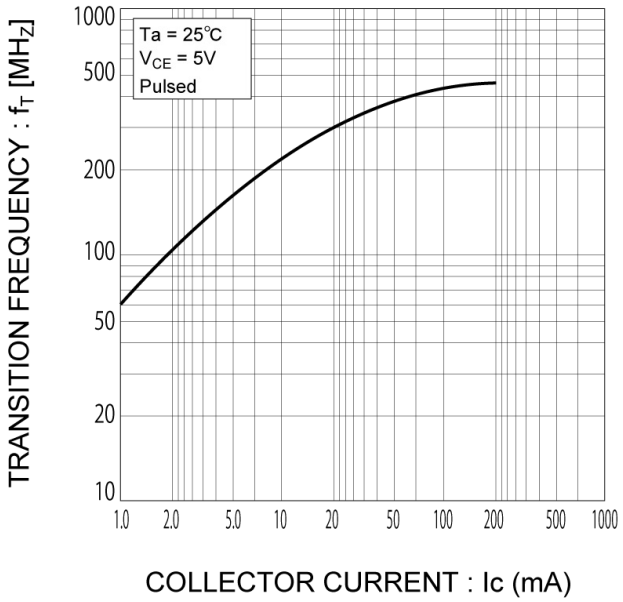


Fig.8 Current gain-bandwidth product vs. collector current



●Electrical characteristic curves(T_a = 25°C)

Fig.9 Capacitance vs. reverse bias voltage

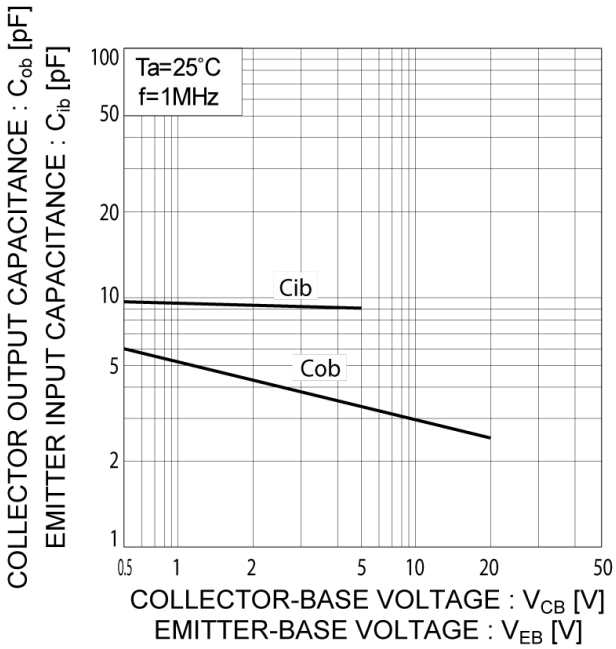
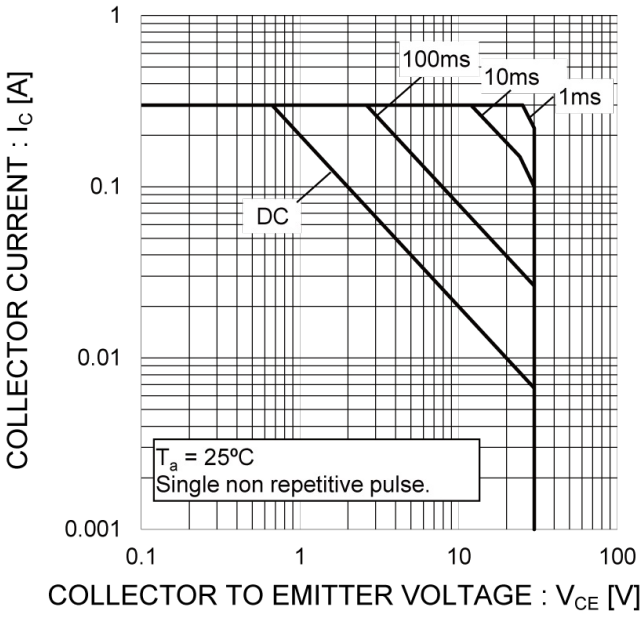
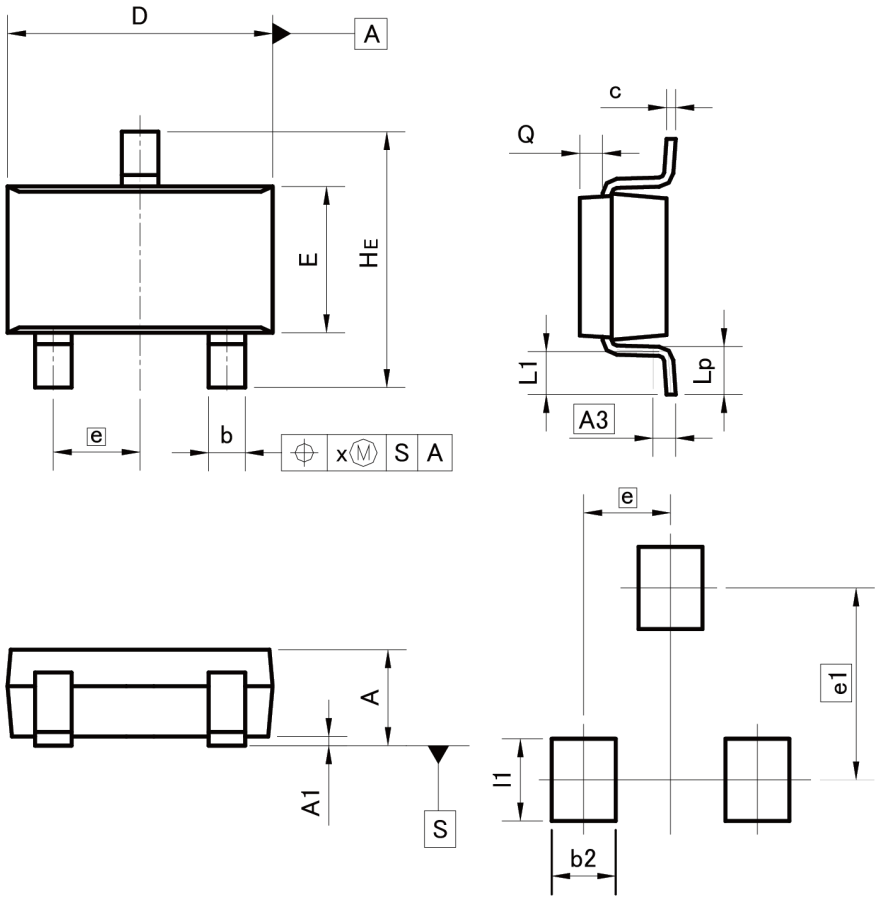


Fig.10 Safe Operating Area



●Dimensions

SMT3



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.09	0.25	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	–	0.10	–	0.004
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.60	–	0.024
e1	2.10		0.083	
l1	–	0.90	–	0.035

Dimension in mm/inches

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