2SD2142K

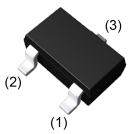
High-gain Amplifier Transistor (30V, 300mA)

Datasheet

Parameter	Value
V_{CES}	30V
I_C	300mA

●Outline

SMT3

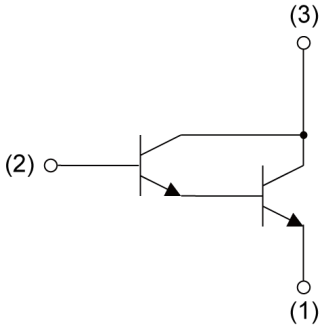


2SD2142K
SOT-346

●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

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●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

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●Electrical characteristic curves(T_a = 25°C)

Fig.1 Typical output characteristics (I)

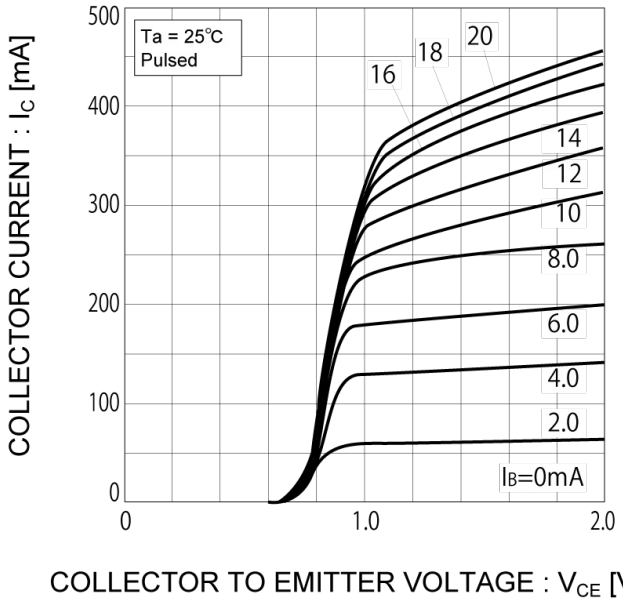


Fig.2 Typical output characteristics (II)

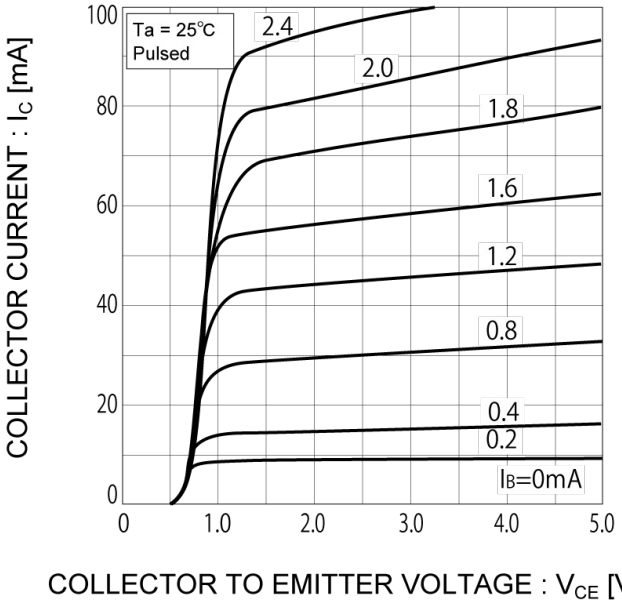


Fig.3 Base emitter 'ON' voltage vs. collector current

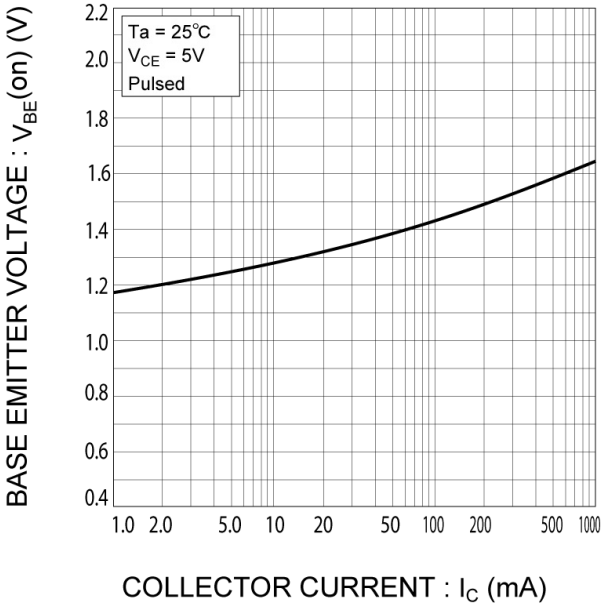
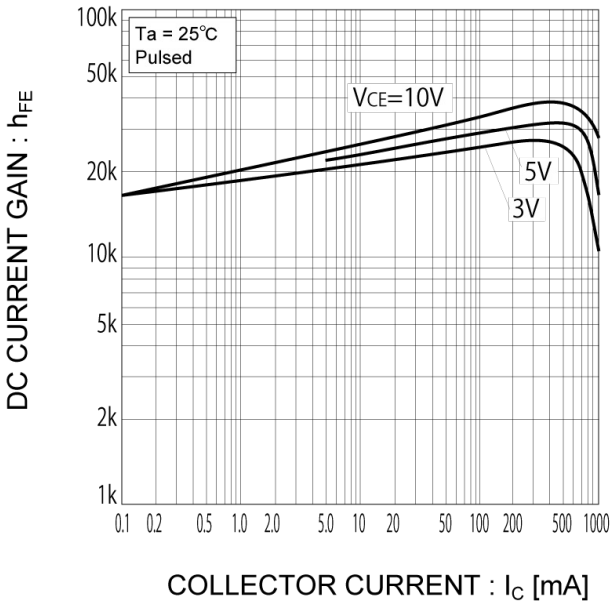


Fig.4 DC current gain vs. collector current (I)



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●Electrical characteristic curves(T_a = 25°C)

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

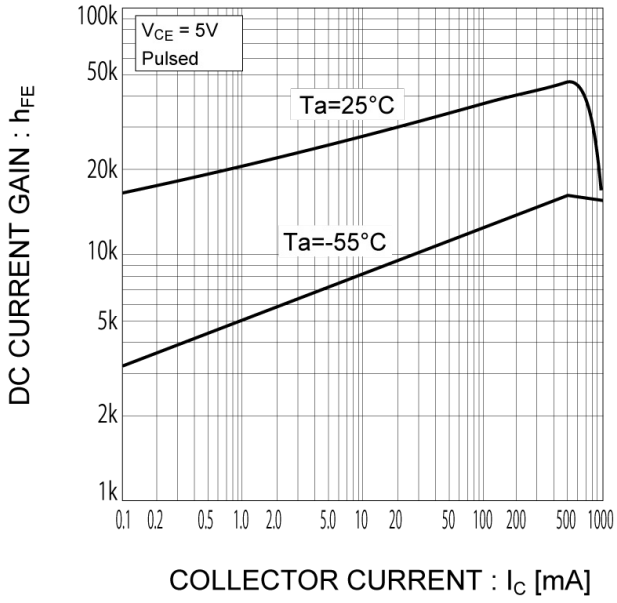


Fig.6 Collector emitter saturation voltage vs. collector current

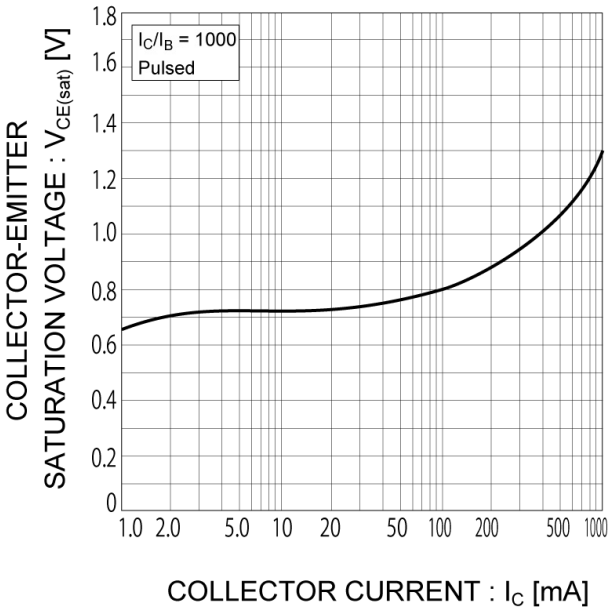


Fig.7 Base emitter saturation voltage vs. collector current

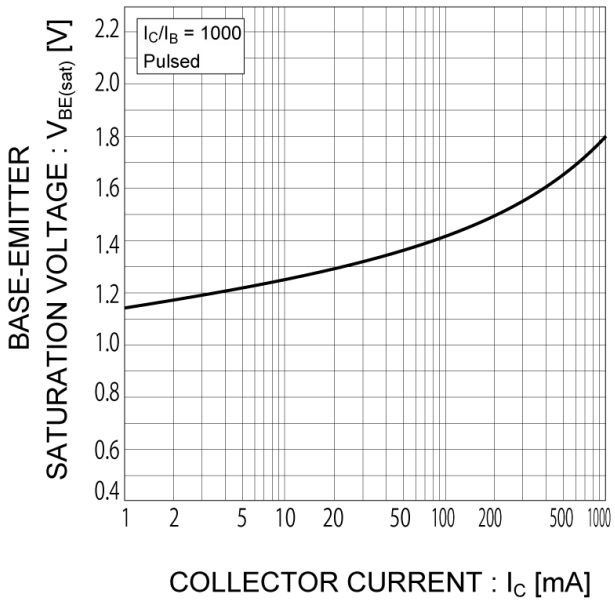
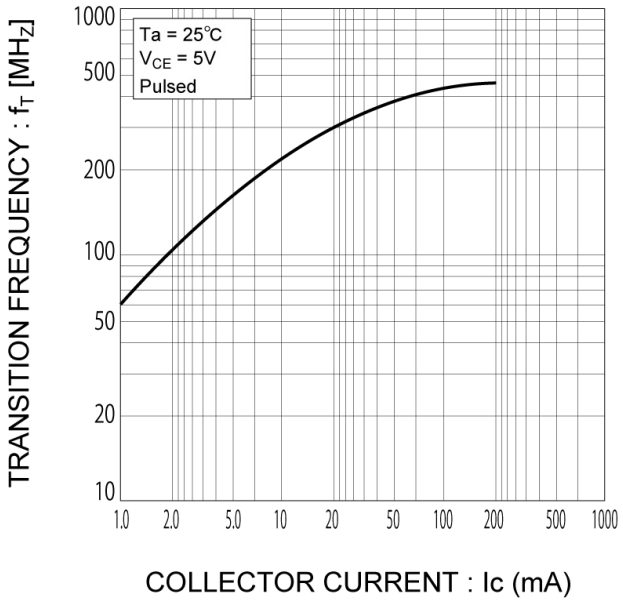


Fig.8 Current gain-bandwidth product vs. collector current



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●Electrical characteristic curves(T_a = 25°C)

Fig.9 Capacitance vs. reverse bias voltage

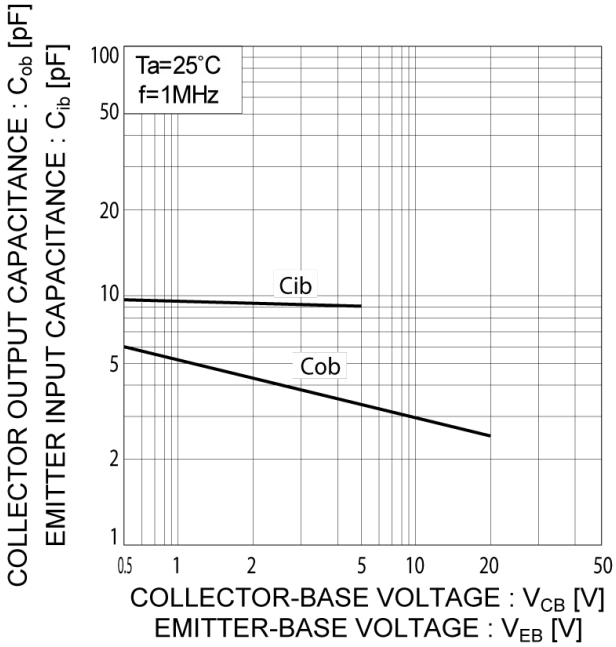
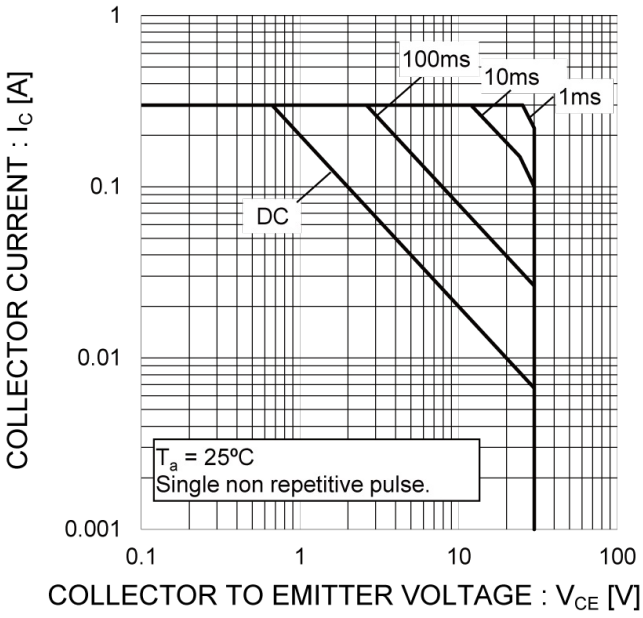


Fig.10 Safe Operating Area

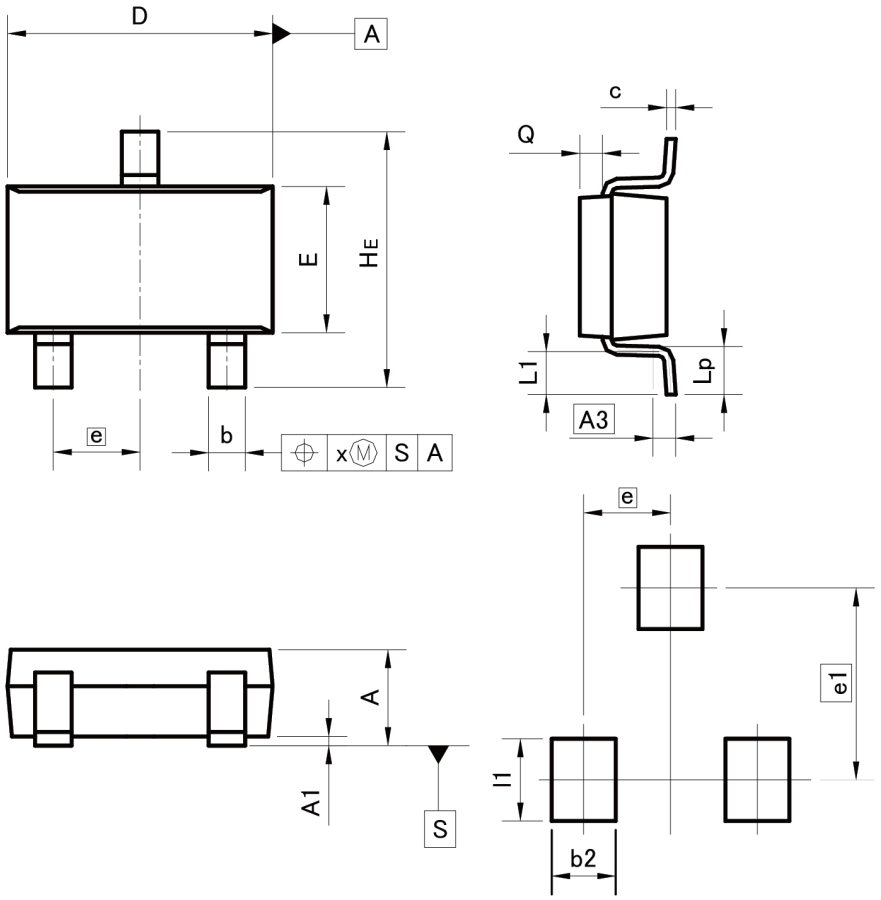


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●Dimensions

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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Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

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2SD2142K - Web Page

Part Number	2SD2142K
Package	SMT3
Unit Quantity	3000
Minimum Package Quantity	3000
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes

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