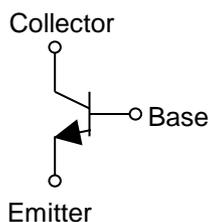


Parameter	Value
V_{CEO}	20V
I_C	500mA

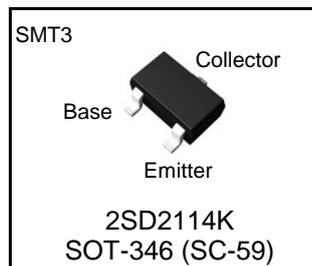
●Features

- 1) High DC current gain.
 $h_{FE} = 2700$ (Max.)
- 2) High emitter-base voltage.
 V_{EBO} is Min. 12V
- 3) Low $V_{CE(sat)}$
 $V_{CE(sat)} = 0.18V$ (Typ.)
($I_C/I_B = 500mA/20mA$)
- 4) Lead Free/RoHS Compliant.

●Inner circuit



●Outline



●Applications

Muting circuit

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SD2114K	SMT3	2928	T146	180	8	3,000	BBx ^{*1}

*1 x : h_{FE} rank

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	25	V
Collector-emitter voltage	V_{CEO}	20	V
Emitter-base voltage	V_{EBO}	12	V
Collector current	I_C	500	mA
	I_{CP}^{*1}	1.0	A
Power dissipation	P_D^{*2}	200	mW
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1\text{mA}$	20	-	-	V
Collector-base breakdown voltage	BV_{CBO}	$I_C = 10\mu\text{A}$	25	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 10\mu\text{A}$	12	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = 20\text{V}$	-	-	500	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 10\text{V}$	-	-	500	nA
Collector-emitter saturation voltage	$V_{CE(sat)}^{*3}$	$I_C = 500\text{mA}, I_B = 20\text{mA}$	-	180	400	mV
DC current gain	h_{FE}	$V_{CE} = 3\text{V}, I_C = 10\text{mA}$	820	-	2700	-
Transition frequency	f_T^{*3}	$V_{CE} = 10\text{V}, I_E = -50\text{mA}$ $f = 100\text{MHz}$	-	350	-	MHz
Output capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0\text{mA}$ $f = 1\text{MHz}$	-	8.0	-	pF
Output ON resistance	R_{on}^{*4}	$I_B = 1\text{mA}, f = 1\text{kHz}$ $V_i = 100\text{mV}_{rms}$	-	0.8	-	Ω

*1 $P_W = 10\text{ms}$ Single pulse.

*2 Each terminal mounted on a reference footprint

*3 Pulsed

*4 See "Ron measurement circuit"

● h_{FE} rank categories

Rank	V	W
h_{FE}	820 to 1800	1200 to 2700

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

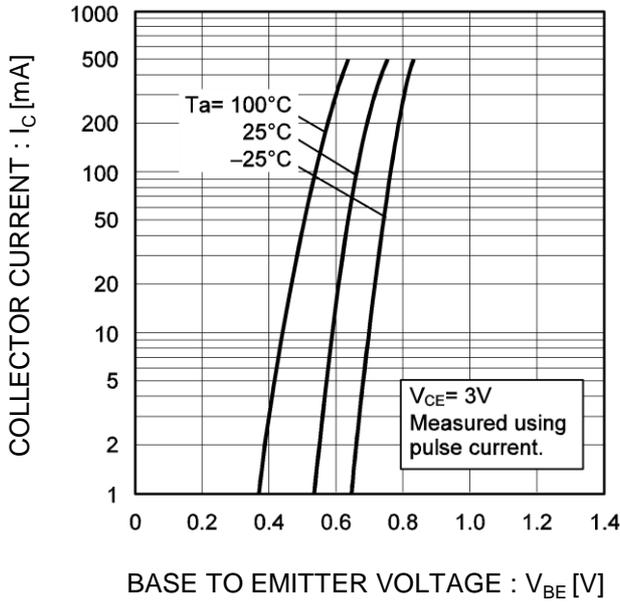


Fig.2 Typical Output Characteristics

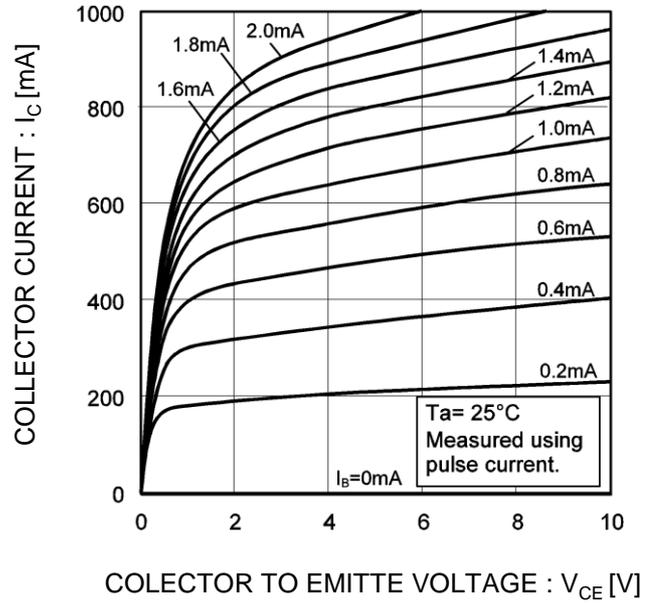


Fig.3 DC Current Gain vs. Collector Current(I)

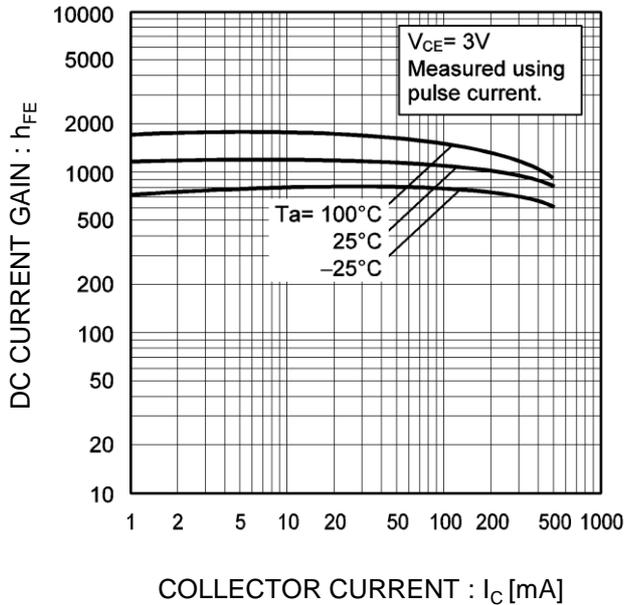
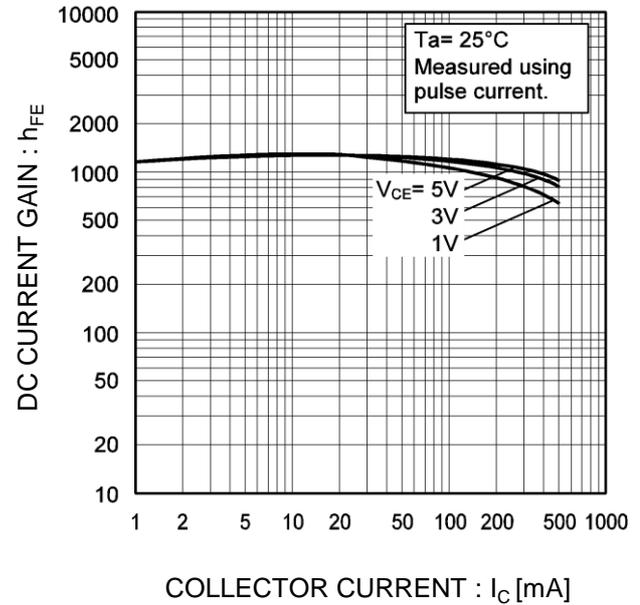


Fig.4 DC current gain vs. output current (II)



●Electrical characteristic curves(Ta = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

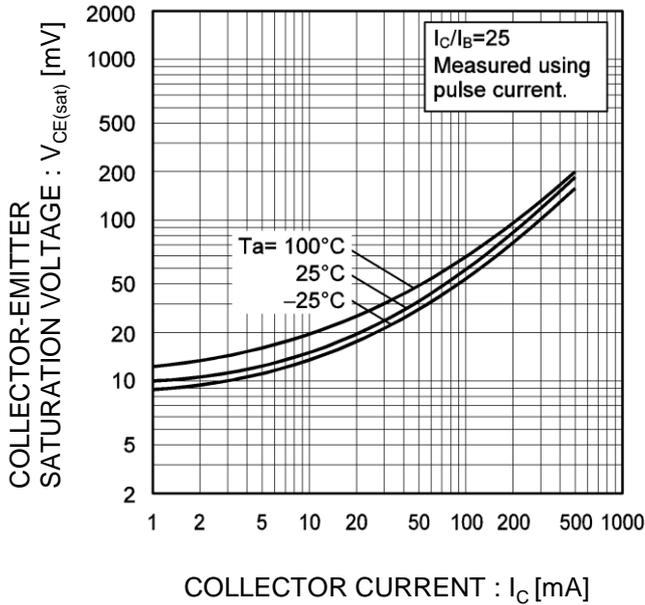


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

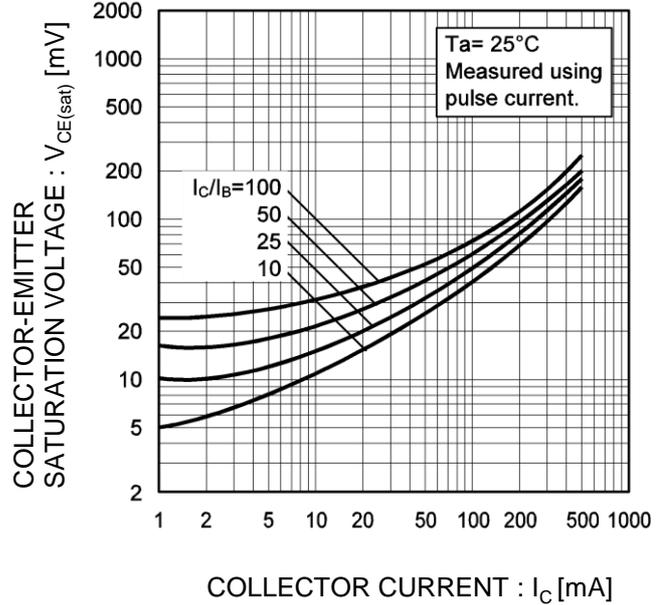


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

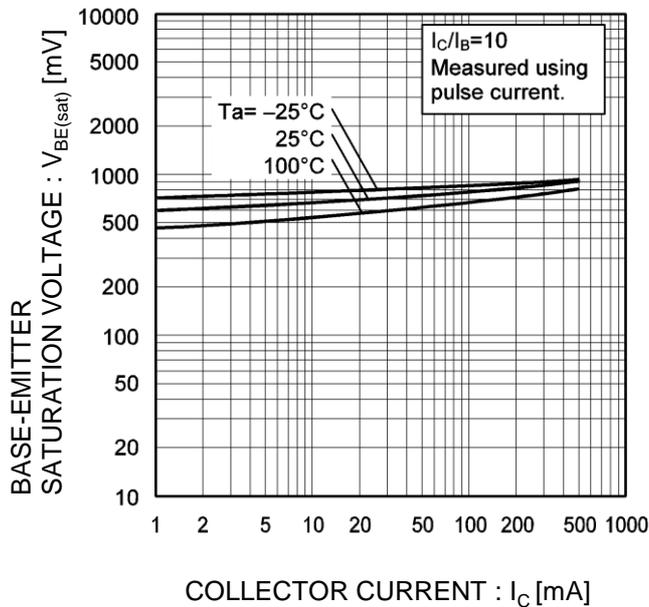
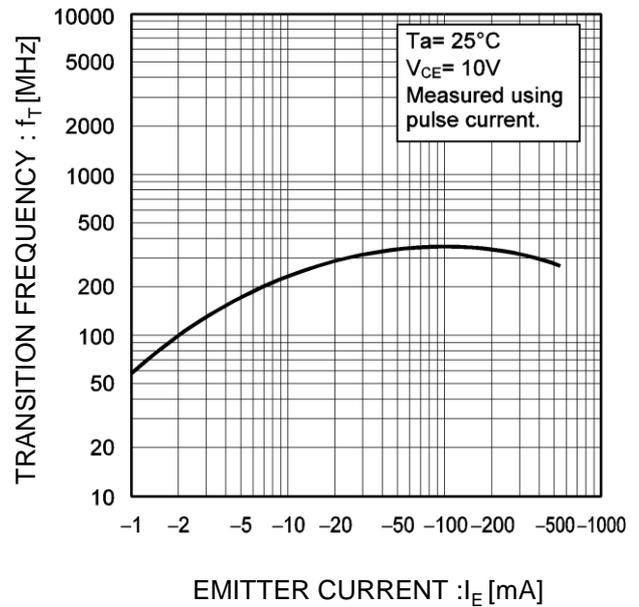


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

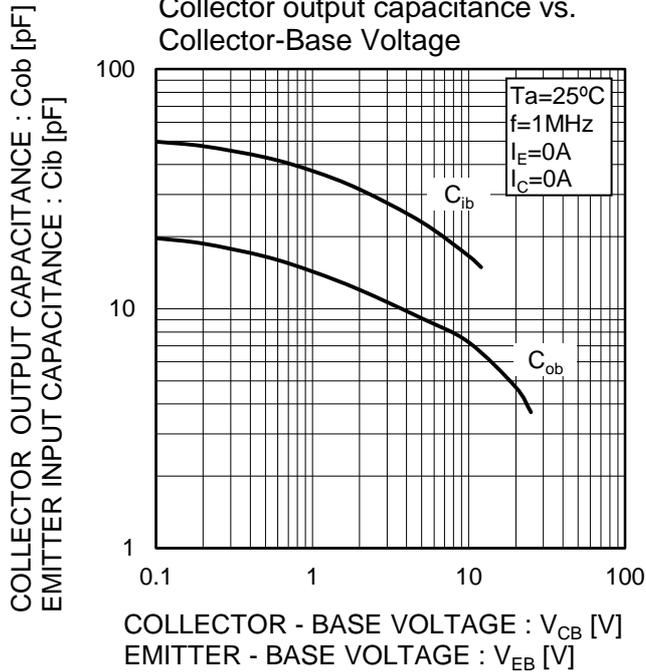


Fig.10 ON-state resistance vs. base current characteristics

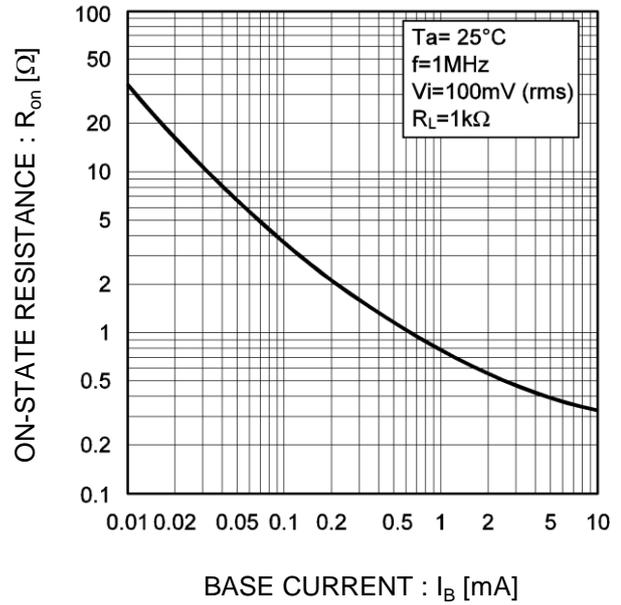


Fig.11 Safe Operating Area

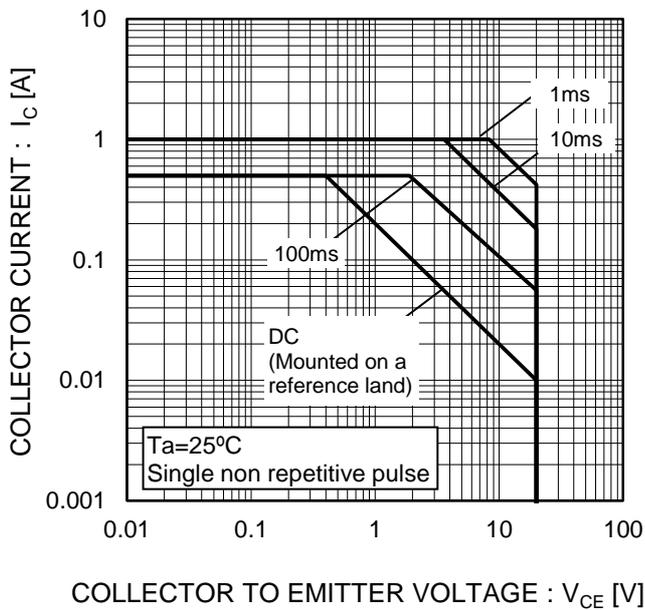
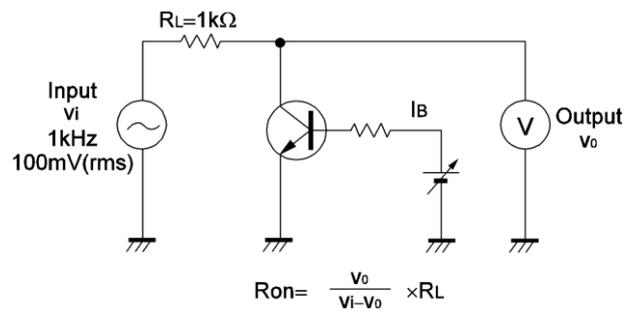
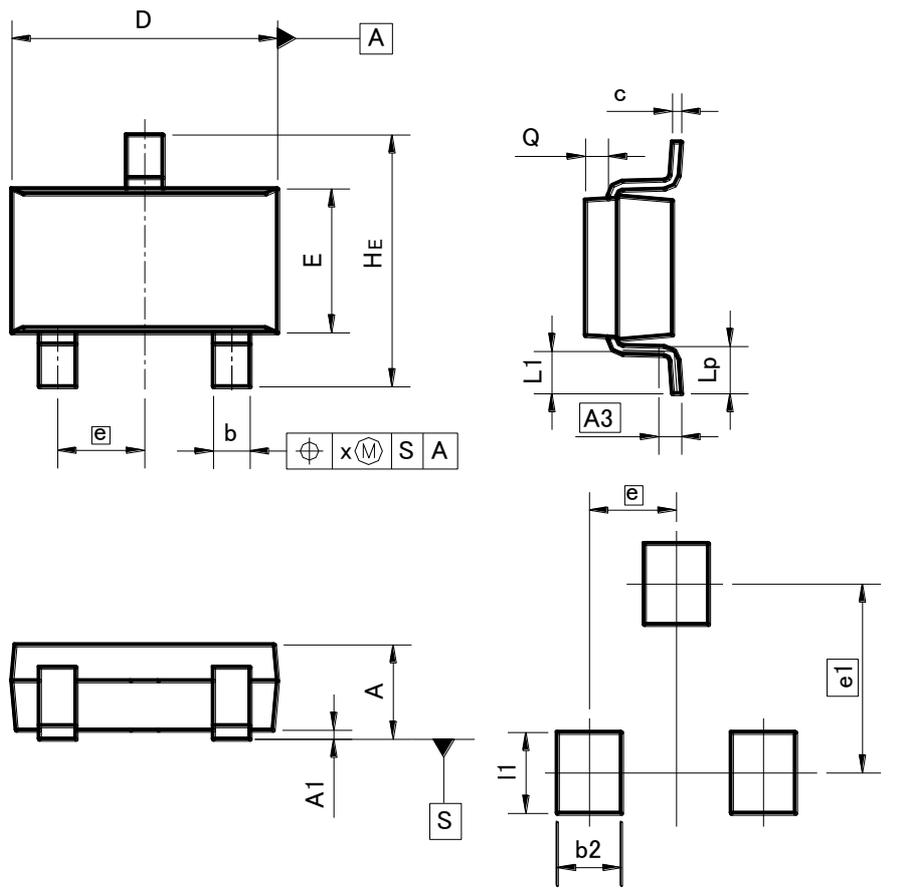


Fig.12 Ron measurement circuit.



●Dimensions (Unit : mm)

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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