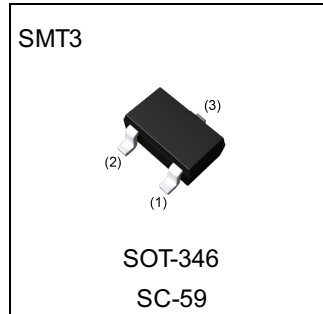


Parameter	Value
$V_{CEO}$	20V
$I_C$	0.5A

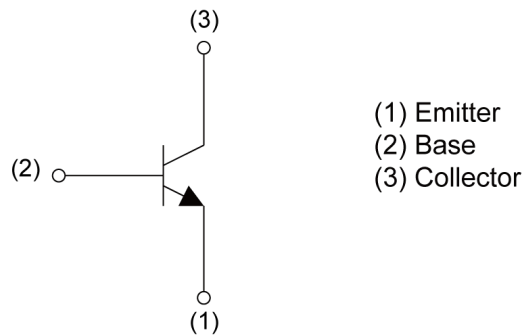
●Outline



●Features

- 1)High DC current gain
- 2)High emitter-base voltage.  
 $V_{EBO}=12V$
- 3)Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)}=180mV(Typ.)$   
 $(I_C/I_B=500mA/20mA)$

●Inner circuit



●Application

LOW FREQUENCY AMPLIFIER, MUTING, DC-DC CONVERTER

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SD2114K	SMT3	2928	T146	180	8	3000	BB

● **Absolute maximum ratings** ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Values	Unit
Collector-base voltage	$V_{\text{CBO}}$	25	V
Collector-emitter voltage	$V_{\text{CEO}}$	20	V
Emitter-base voltage	$V_{\text{EBO}}$	12	V
Collector current	$I_{\text{C}}$	0.5	A
	$I_{\text{CP}}^{*1}$	1.0	A
Power dissipation	$P_{\text{D}}^{*2}$	200	mW
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Range of storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

● **Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	$BV_{\text{CBO}}$	$I_{\text{C}} = 10\mu\text{A}$	25	-	-	V
Collector-emitter breakdown voltage	$BV_{\text{CEO}}$	$I_{\text{C}} = 1\text{mA}$	20	-	-	V
Emitter-base breakdown voltage	$BV_{\text{EBO}}$	$I_{\text{E}} = 10\mu\text{A}$	12	-	-	V
Collector cut-off current	$I_{\text{CBO}}$	$V_{\text{CB}} = 20\text{V}$	-	-	500	nA
Emitter cut-off current	$I_{\text{EBO}}$	$V_{\text{EB}} = 10\text{V}$	-	-	500	nA
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 20\text{mA}$	-	180	400	mV
DC current gain	$h_{\text{FE}}$	$V_{\text{CE}} = 3\text{V}, I_{\text{C}} = 10\text{mA}$	820	-	2700	-
Transition frequency	$f_{\text{T}}$	$V_{\text{CE}} = 10\text{V}, I_{\text{E}} = -50\text{mA}, f = 100\text{MHz}$	-	350	-	MHz
Output capacitance	$C_{\text{ob}}$	$V_{\text{CB}} = 10\text{V}, I_{\text{E}} = 0\text{A}, f = 1\text{MHz}$	-	8.0	-	pF
On resistance	$R_{\text{on}}$	$V_{\text{i}} = 100\text{mVrms}, I_{\text{B}} = 1\text{mA}, f = 1\text{kHz}$ (See test circuit)	-	0.8	-	$\Omega$

$h_{\text{FE}}$  values are classified as follows :

rank	V	W	-	-	-
$h_{\text{FE}}$	820-1800	1200-2700	-	-	-

\*1  $P_{\text{w}}=10\text{ms}$  Single Pulse

\*2 Each terminal mounted on a reference land.

● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

Fig.1 Ground Emitter Propagation Characteristics

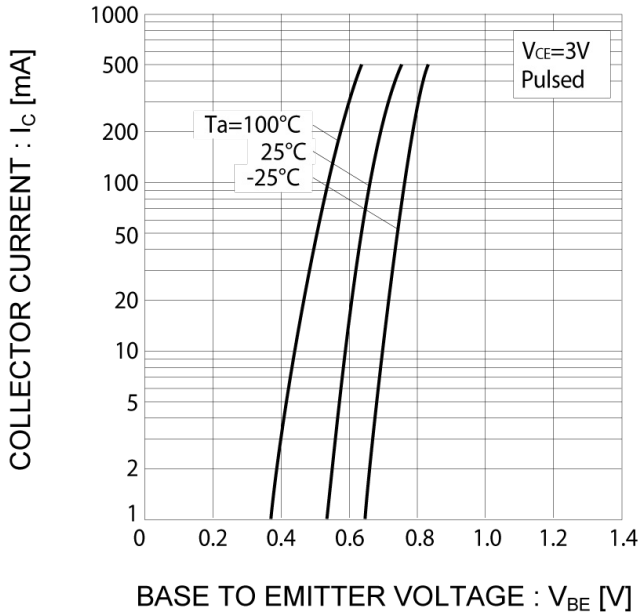


Fig.2 Typical Output Characteristics

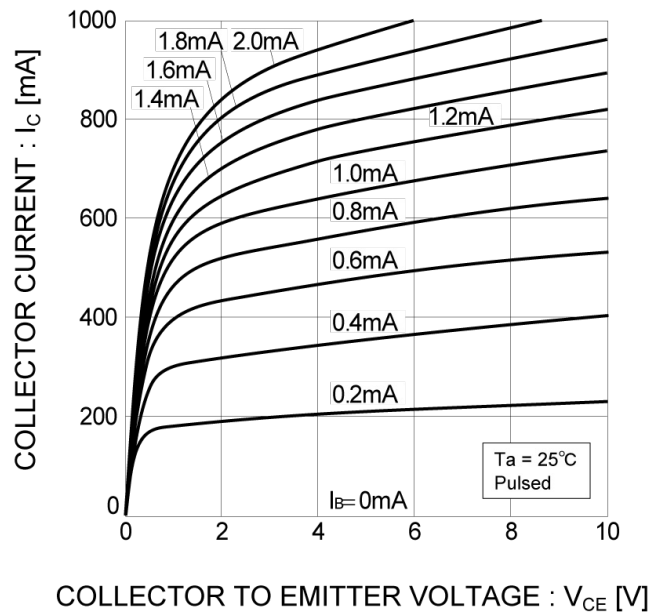


Fig.3 DC Current Gain vs. Collector Current (I)

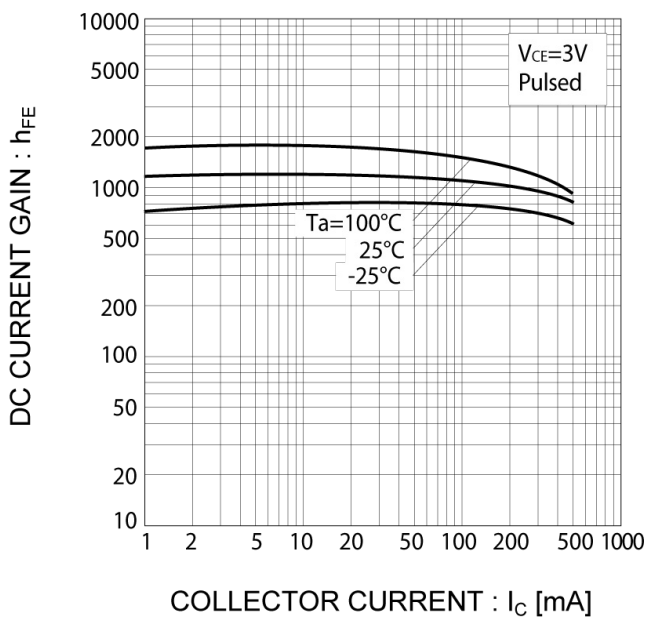
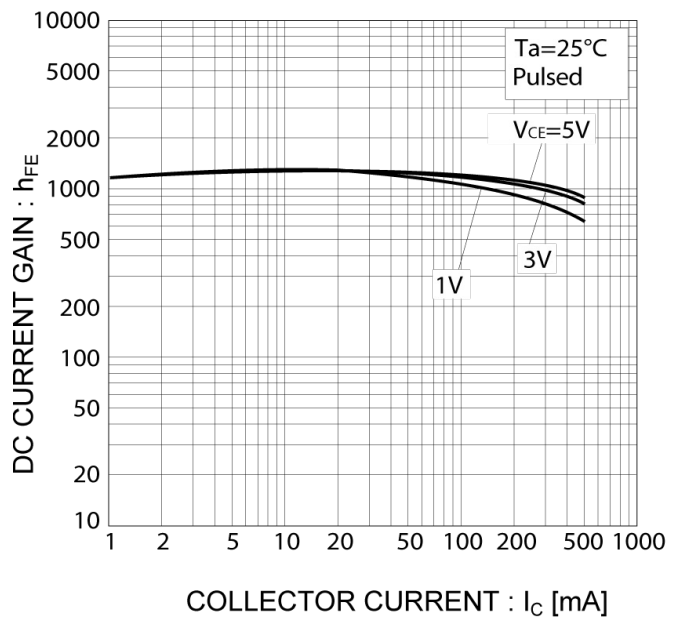


Fig.4 DC Current Gain vs. Collector Current (II)



● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

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

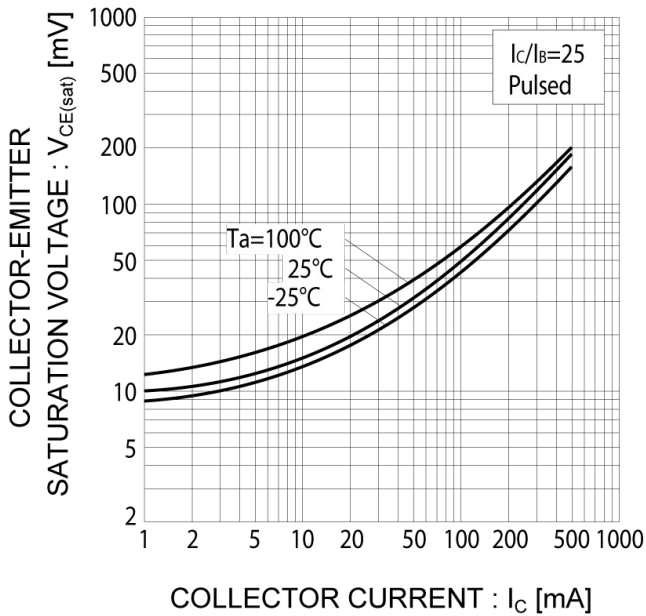


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

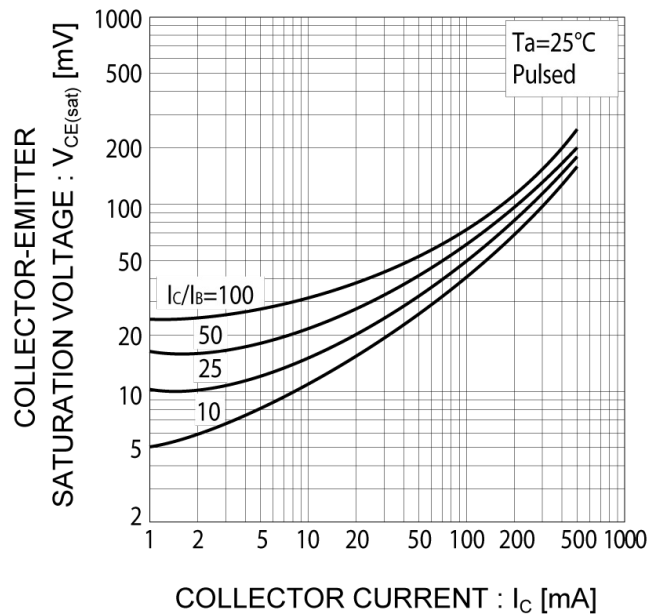


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

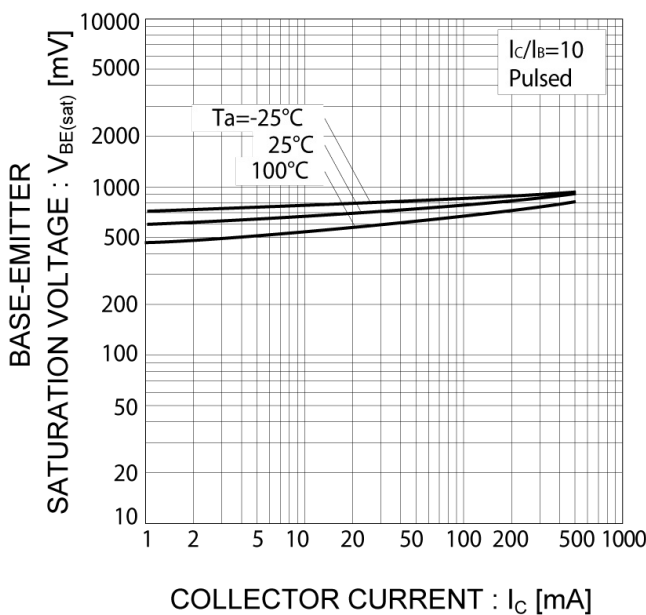
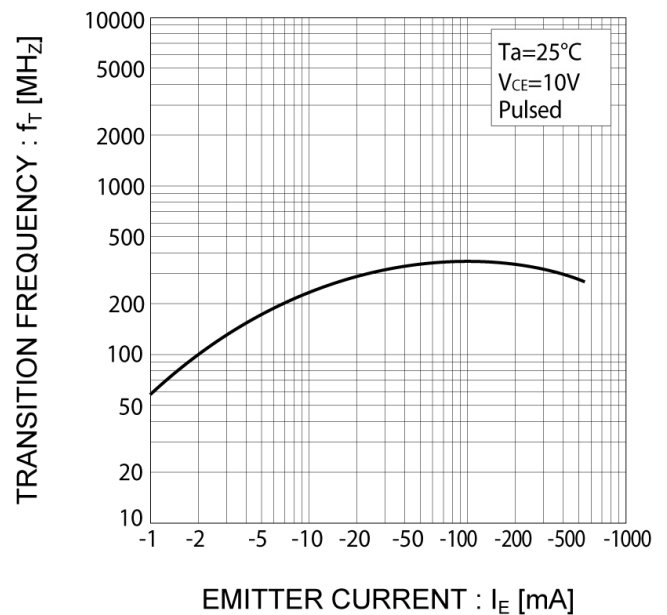


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(T<sub>a</sub> = 25°C)

Fig.9 Emitter Input Capacitance vs. Emitter-Base Voltage  
Collector Output Capacitance vs. Collector-Base Voltage

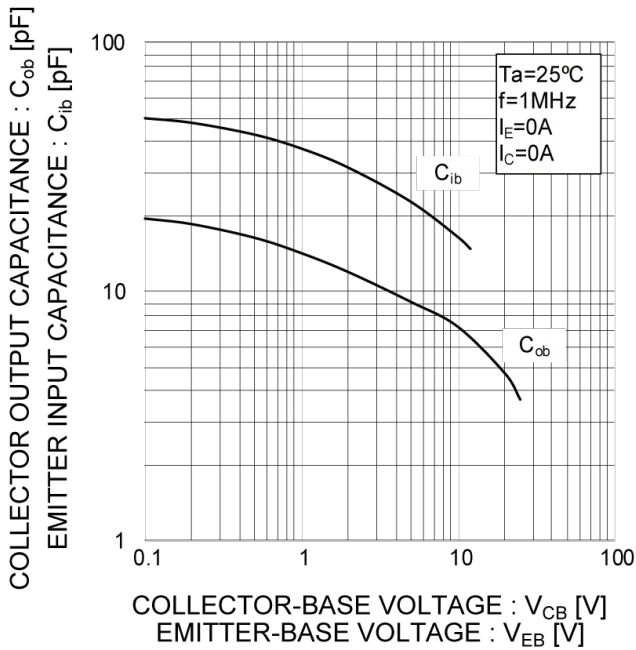
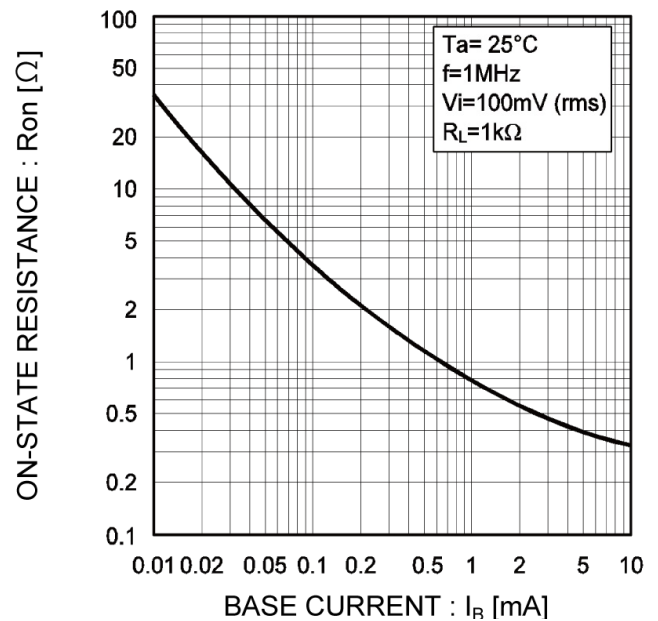
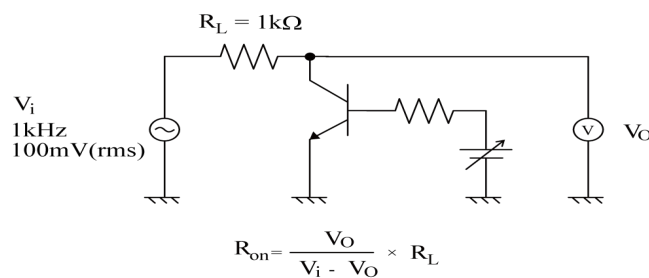


Fig.10 'ON' Resistance vs. Base Current

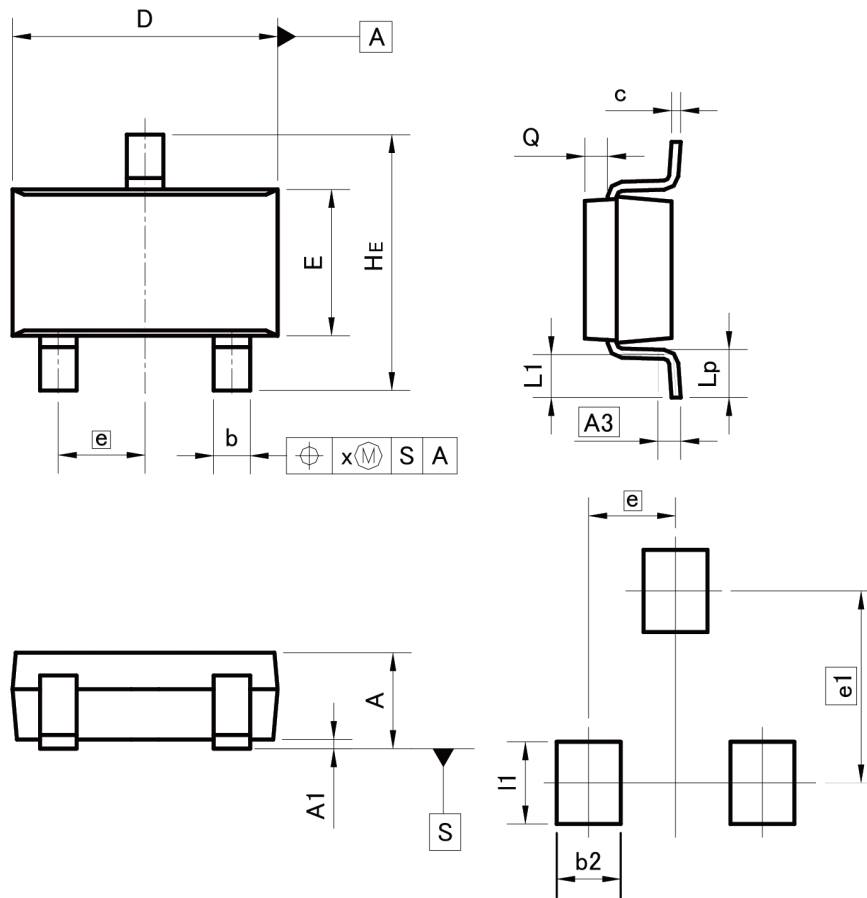


R<sub>on</sub> MEASUREMENT CIRCUIT



●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	
I1	-	0.90	-	0.035

Dimension in mm/inches

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