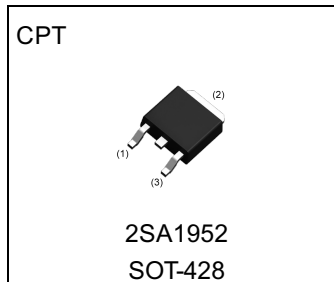


Parameter	Value
V_{CEO}	-60V
I_C	-5A

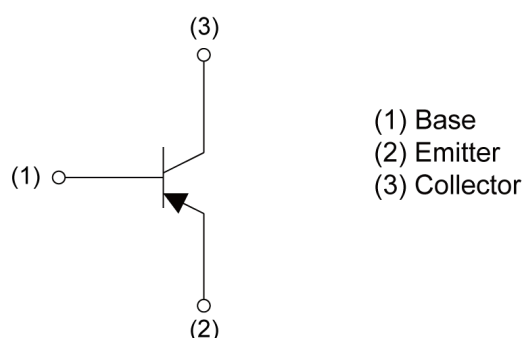
●Features

- 1)High speed switching.
- 2)Low $V_{CE(sat)}$
(Max. -0.3V at $I_C/I_B=-3/-0.15A$)
- 3)Wide SOA. (safe operating area)
- 4)Complements the 2SC5103.

●Outline



●Inner circuit



●Application

HIGH SPEED SWITCHING

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SA1952	CPT	6595	TL	330	16	2500	A1952

●Absolute maximum ratings ($T_a = 25^\circ C$)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	-100	V
Collector-emitter voltage	V_{CEO}	-60	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current	I_C	-5	A
	I_{CP}^{*1}	-10	A
Power dissipation	P_D^{*2}	1	W
	P_D^{*3}	10	W
Junction temperature	T_j	150	$^\circ C$
Range of storage temperature	T_{stg}	-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-emitter voltage	$V_{CEQ(SUS)}$	$I_C = -3A, I_B = -300mA$ $L = 1mH$	-60	-	-	V
Collector-base breakdown voltage	BV_{CBO}	$I_C = -50\mu A$	-100	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = -1mA$	-60	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -50\mu A$	-5	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -100V$	-	-	-10	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -5V$	-	-	-10	μA
Collector-emitter saturation voltage	$V_{CE(sat)}^1$	$I_C = -3A, I_B = -150mA$	-	-	-300	mV
	$V_{CE(sat)}^{2*4}$	$I_C = -4A, I_B = -200mA$	-	-	-500	mV
Base-emitter saturation voltage	$V_{BE(sat)}^{1*4}$	$I_C = -3A, I_B = -150mA$	-	-	-1.2	V
	$V_{BE(sat)}^{2*4}$	$I_C = -4A, I_B = -200mA$	-	-	-1.5	V
DC current gain	h_{FE1}^{*4}	$V_{CE} = -2V, I_C = -1A$	82	150	270	-
	h_{FE2}^{*4}	$V_{CE} = -2V, I_C = -3A$	40	-	-	
Transition frequency	f_T^{*4}	$V_{CE} = -10V, I_E = 0.5A,$ $f = 30MHz$	-	80	-	MHz
Output capacitance	C_{ob}	$V_{CB} = -10V, I_E = 0A,$ $f = 1MHz$	-	130	-	pF
Turn-on delay time	t_{on}	$I_C = -3A,$ $I_{B1} = -150mA,$ $I_{B2} = 150mA,$ $V_{CC} \approx -30V,$ $R_L = 10\Omega$ See test circuit	-	-	0.3	μs
Storage time	t_{stg}		-	-	1.5	μs
Fall time	t_f		-	-	0.3	μs

h_{FE} values are classified as follows :

rank	P	Q	-	-	-
h_{FE1}	82-180	120-270	-	-	-

*1 $t = 100ms$

*2 $T_a = 25^\circ\text{C}$

*3 $T_c = 25^\circ\text{C}$

*4 Pulsed

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

Fig.1 Ground Emitter Propagation Characteristics

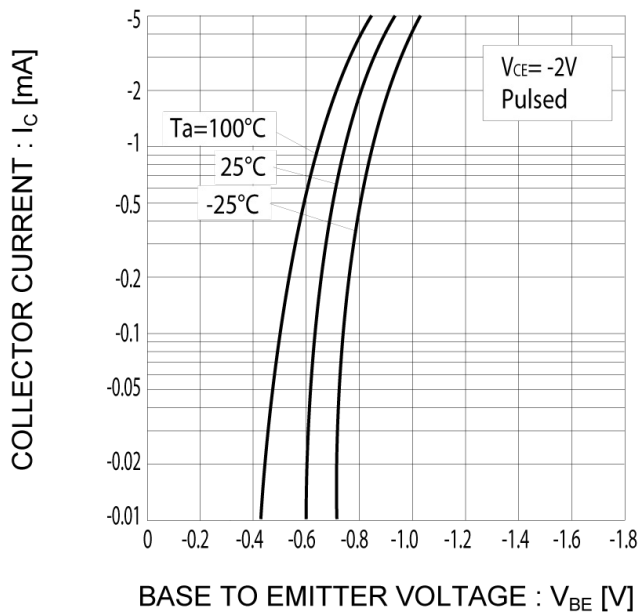


Fig.2 Typical Output Characteristics

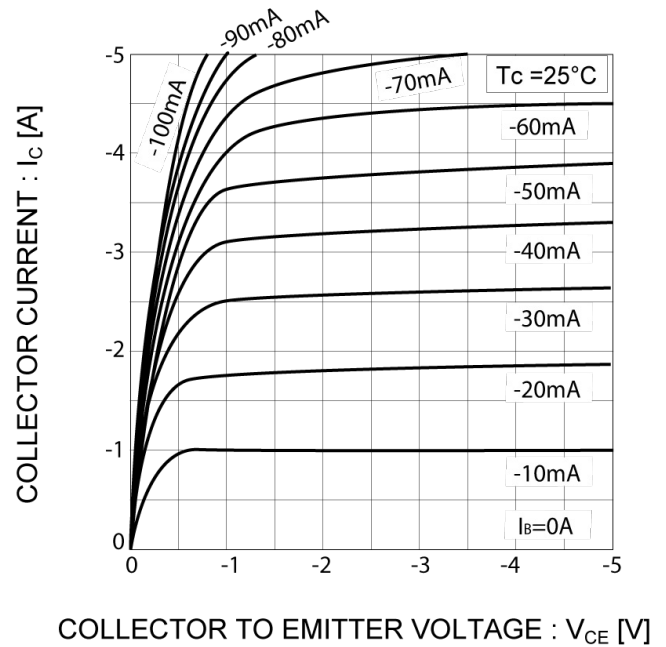


Fig.3 DC Current Gain vs. Collector Current (I)

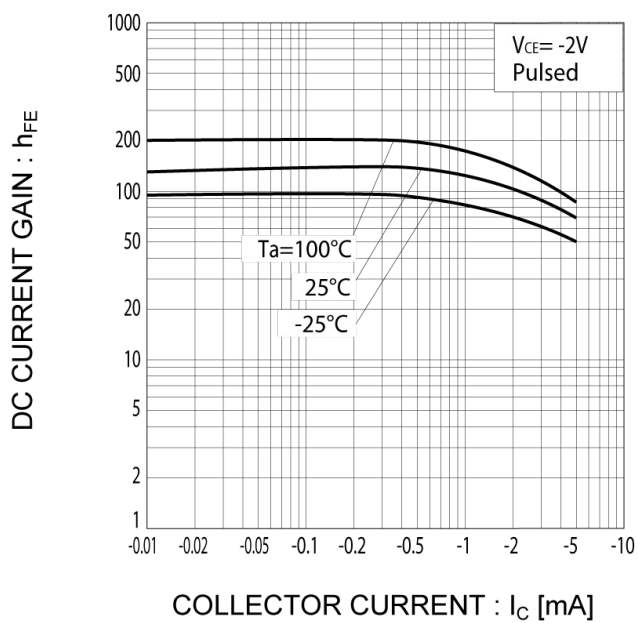
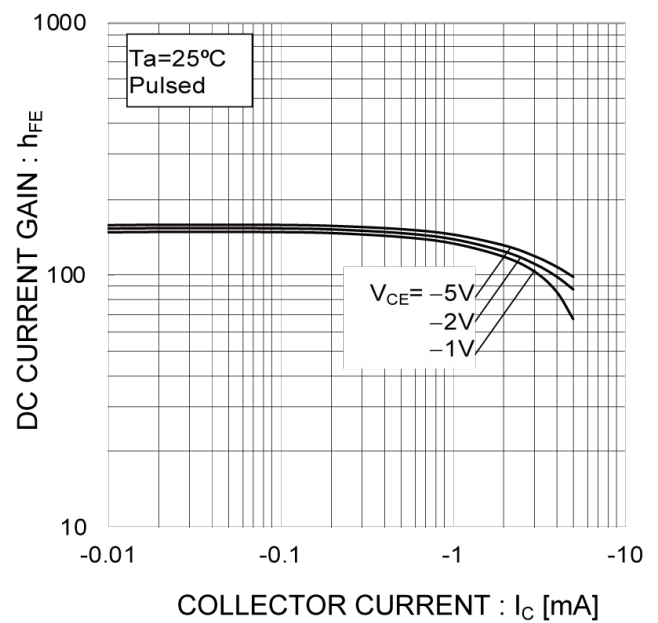


Fig.4 DC Current Gain vs. Collector Current (II)



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

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

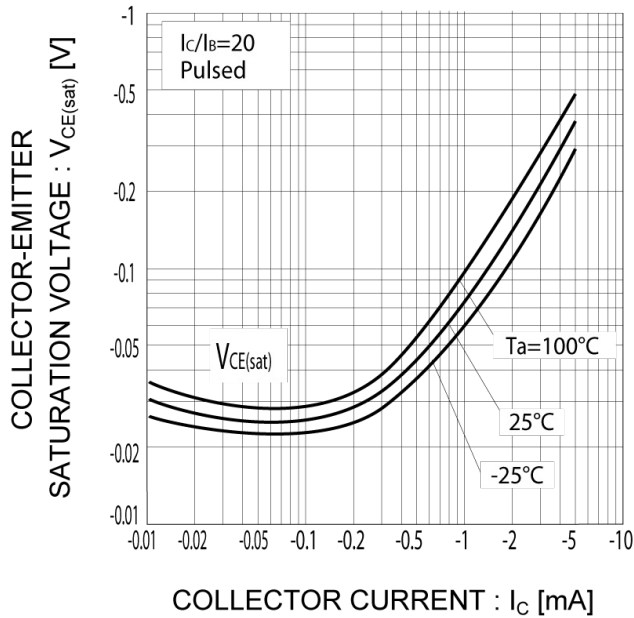


Fig.6 Collector-Emitter Saturation
Voltage vs. Collector Current (II)

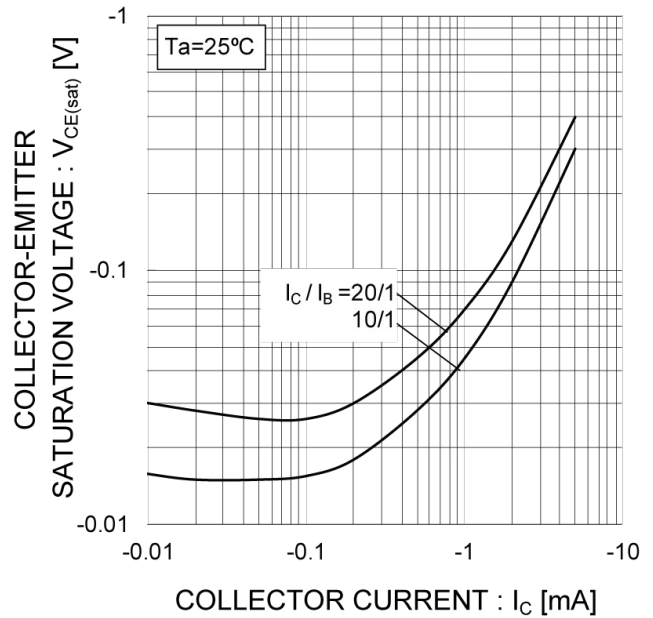


Fig.7 Base-Emitter Saturation Voltage
vs. Collector Current

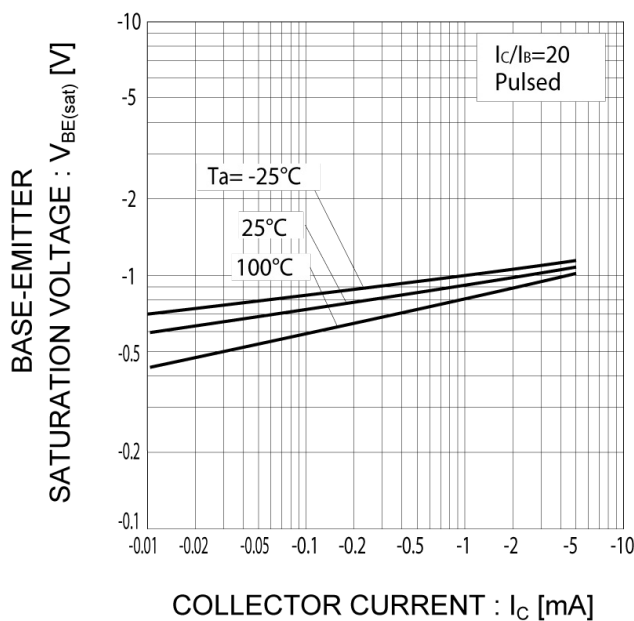
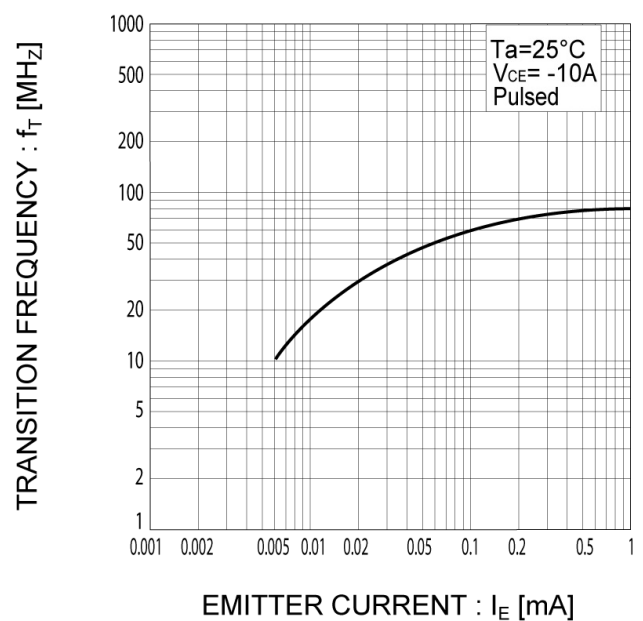


Fig.8 Gain Bandwidth Product vs.
Emitter Current



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

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

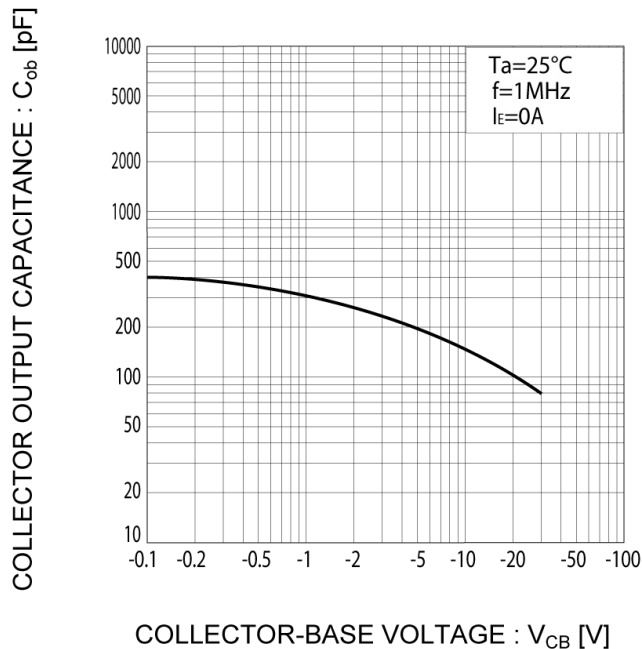
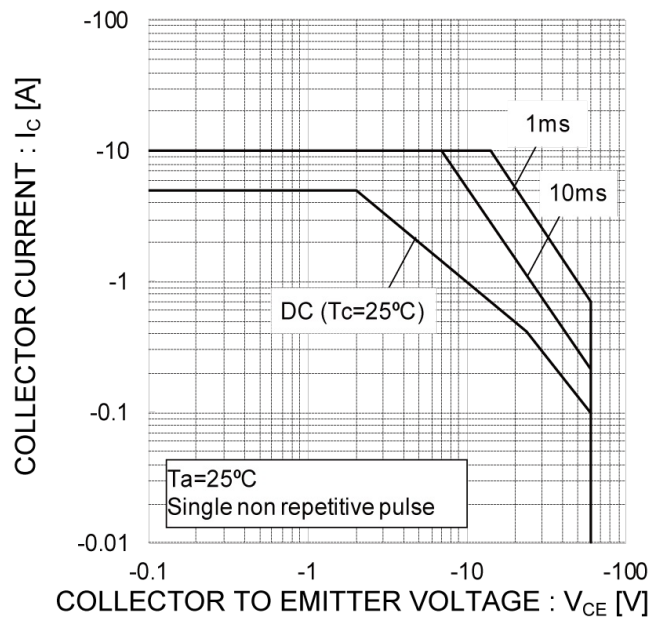
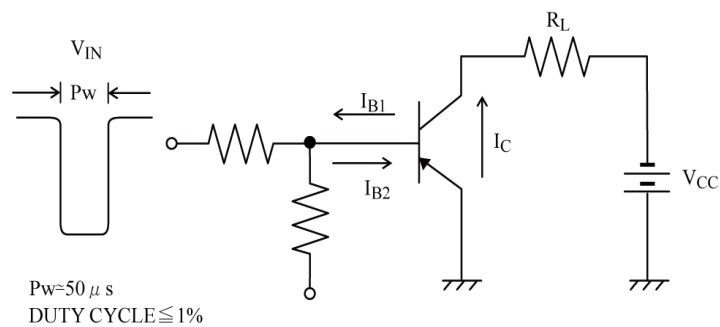
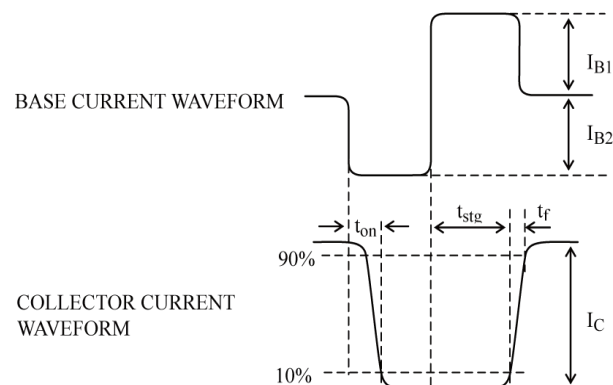


Fig.10 Safe Operating Area

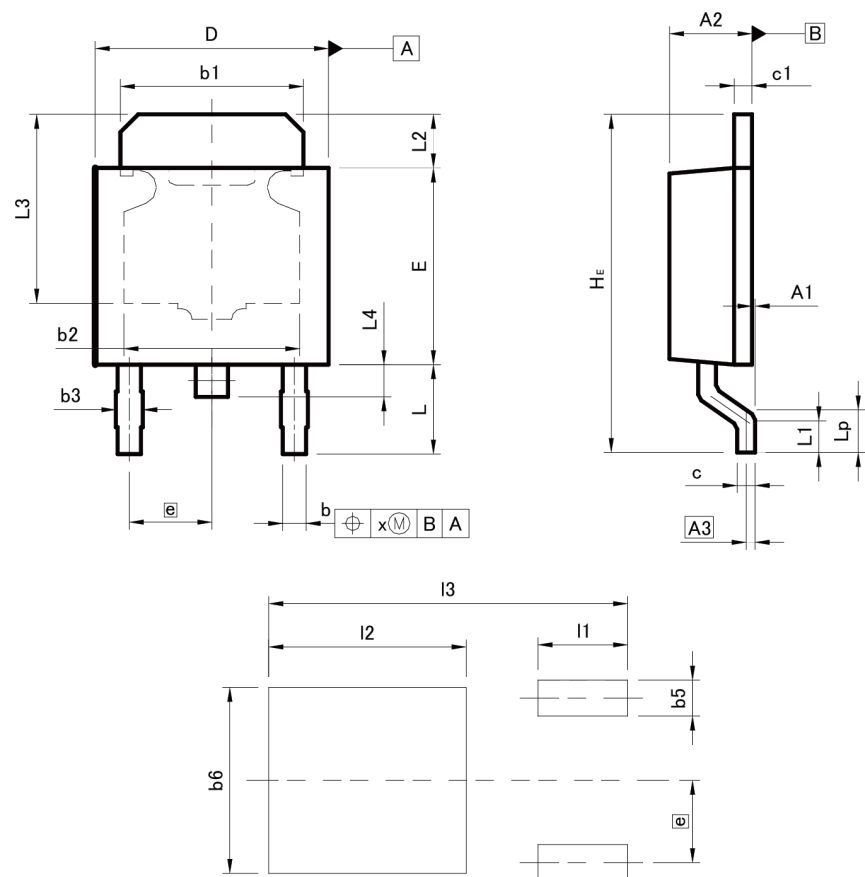


SWITCHING TIME TEST CIRCUIT



●Dimensions

CPT



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A1	0.00	0.15	0.000	0.006
A2	2.20	2.50	0.087	0.098
A3	0.25		0.010	
b	0.55	0.75	0.022	0.030
b1	5.00	5.30	0.197	0.209
b2	5.00		0.197	
b3	0.75		0.030	
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.30	6.70	0.248	0.264
E	5.40	5.80	0.213	0.228
e	2.30		0.091	
H _E	9.00	10.00	0.354	0.394
L	2.20	2.80	0.087	0.110
L1	0.80	1.40	0.031	0.055
L2	1.20	1.80	0.047	0.071
L3	5.30		0.209	
L4	0.90		0.035	
Lp	1.00	1.60	0.039	0.063
x	-	0.25	-	0.010

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b5	-	1.00	-	0.04
b6	-	5.20	-	0.205
I1	-	2.50	-	0.098
I2	-	5.50	-	0.217
I3	-	10.00	-	0.394

Dimension in mm/inches

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