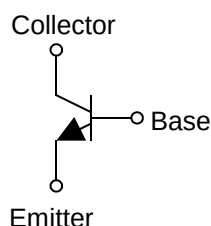


Parameter	Value
V_{CEO}	60V
I_C	5A

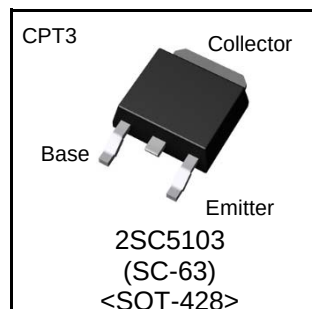
●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary PNP Types : 2SA1952
- 3) Low $V_{CE(sat)}$
 $V_{CE(sat)}=0.3V(\text{Max.}) (I_C/I_B=3A/0.15A)$
 $V_{CE(sat)}=0.5V(\text{Max.}) (I_C/I_B=4A/0.2A)$
- 4) Lead Free/RoHS Compliant.

●Inner circuit



●Outline



●Applications

Motor driver , LED driver
Power supply

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SC5103	CPT3	6595	TL	330	16	2,500	C5103

●Absolute maximum ratings (Ta = 25°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	DC	I_C	5
	Pulsed	I_{CP}^{*1}	10
Power dissipation	P_D^{*2}	1	W
	P_D^{*3}	10	W
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

*1 Pw=100ms , single pulse

*2 Mounted on a substrate

*3 Tc=25°C

●Electrical characteristics (Ta = 25°C)

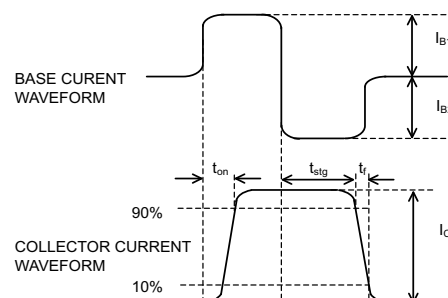
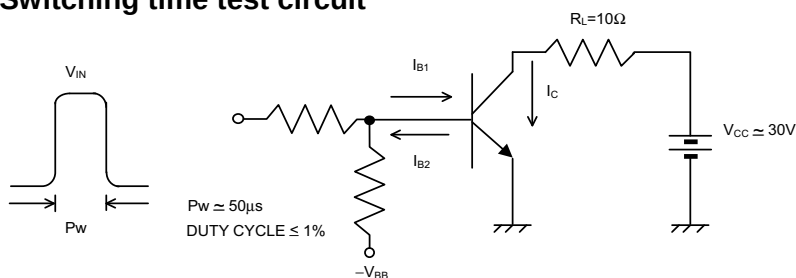
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1\text{mA}$	60	-	-	V
Collector-base breakdown voltage	BV_{CBO}	$I_C = 50\mu\text{A}$	100	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 50\mu\text{A}$	5	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = 100\text{V}$	-	-	10	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5\text{V}$	-	-	10	μA
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	$I_C = 3\text{A}, I_B = 0.15\text{A}$	-	0.15	0.3	V
		$I_C = 4\text{A}, I_B = 0.2\text{A}$	-	-	0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}^{*1}$	$I_C = 3\text{A}, I_B = 0.15\text{A}$	-	-	1.2	V
		$I_C = 4\text{A}, I_B = 0.2\text{A}$	-	-	1.5	V
DC current gain	$h_{FE\ 1}$	$V_{CE} = 2\text{V}, I_C = 1\text{A}$	120	-	270	-
	$h_{FE\ 2}$	$V_{CE} = 2\text{V}, I_C = 3\text{A}$	40	-	-	-
Transition frequency	f_T^{*1}	$V_{CE} = 10\text{V}, I_E = -0.5\text{A}$ $f = 30\text{MHz}$	-	120	-	MHz
Output capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0\text{A}$ $f = 1\text{MHz}$	-	80	-	pF
Turn-on time	t_{on}^{*2}	$I_C = 3\text{A}$ $I_{B1} = 0.15\text{A}$ $I_{B2} = -0.15\text{A}$ $V_{CC} \approx 30\text{V}$	-	-	0.3	μS
Storage time	t_{stg}^{*2}		-	-	1.5	μS
Fall time	t_f^{*2}		-	0.1	0.3	μS

*1 Pulsed

*2 See switching time test circuit

● h_{FE} rank categories

Rank	Q
h_{FE}	120 to 270

●Switching time test circuit


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

Fig.1 Ground Emitter Propagation Characteristics

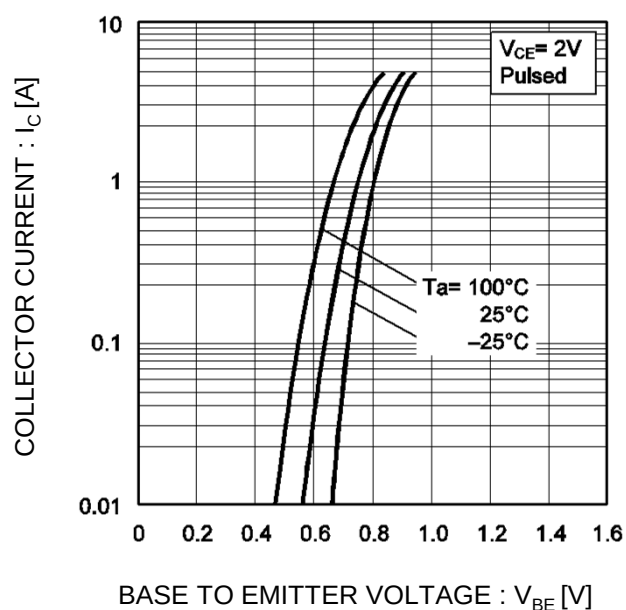


Fig.2 Typical Output Characteristics

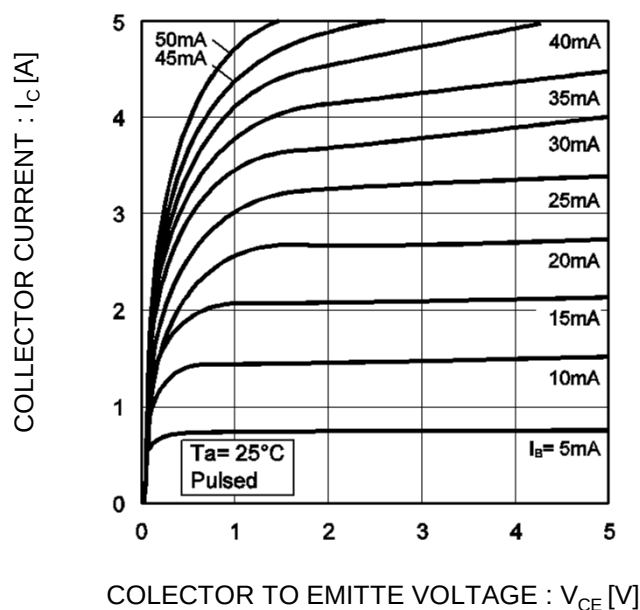


Fig.3 DC Current Gain vs. Collector Current (I)

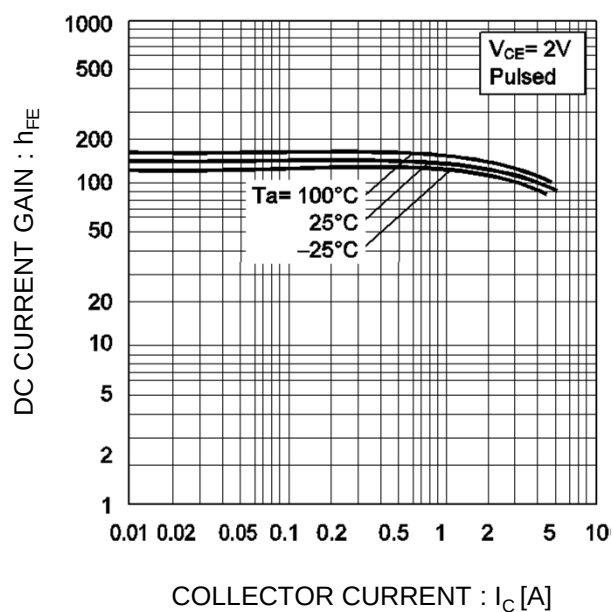
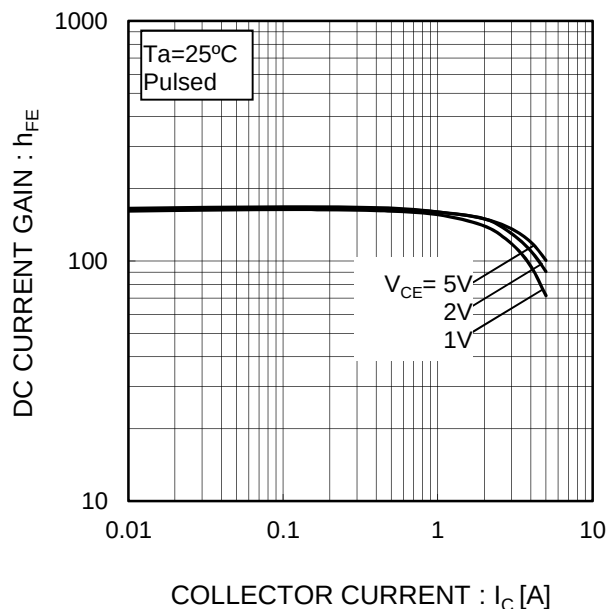


Fig.4 DC Current Gain vs. Collector Current (II)



●Electrical characteristic curves(Ta = 25°C)

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

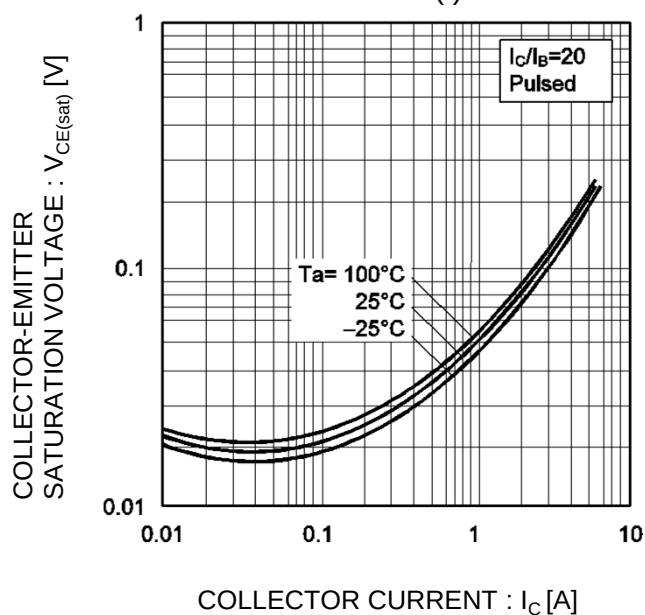


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

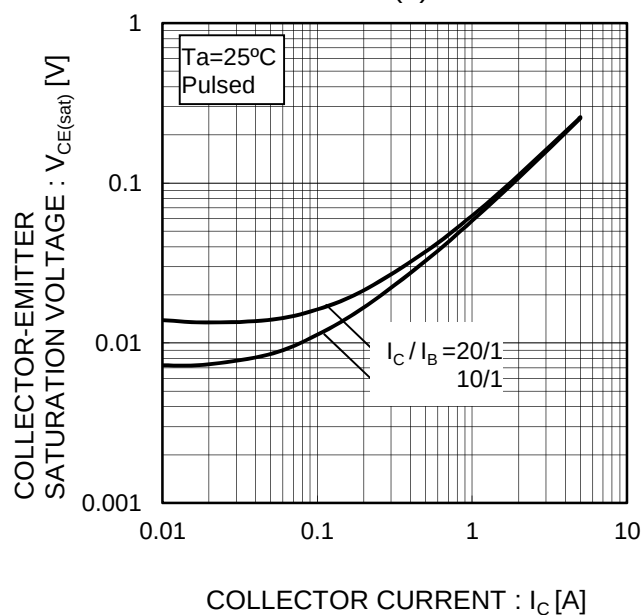


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

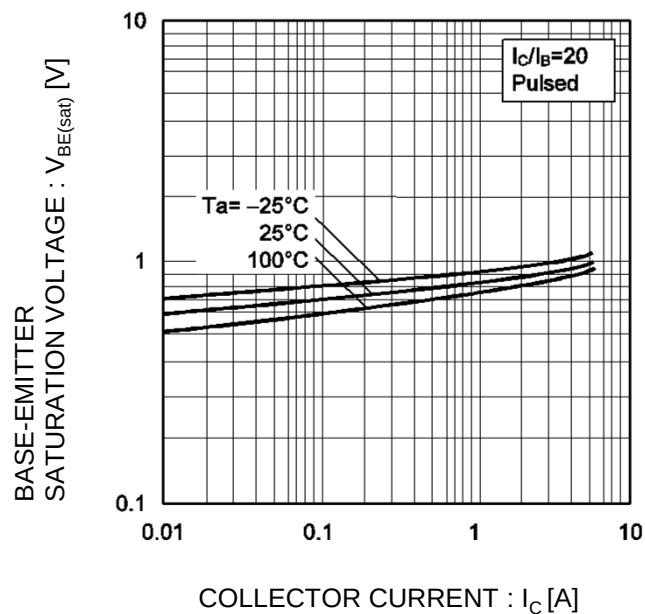
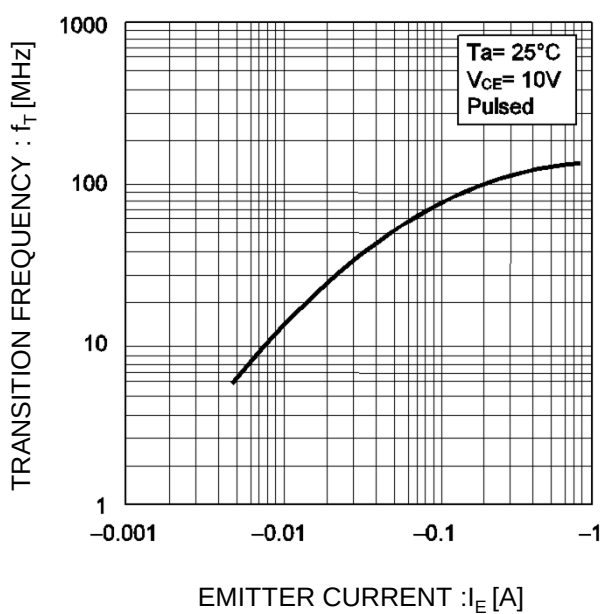


Fig.8 Gain Bandwidth Product vs. Emitter Current



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

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

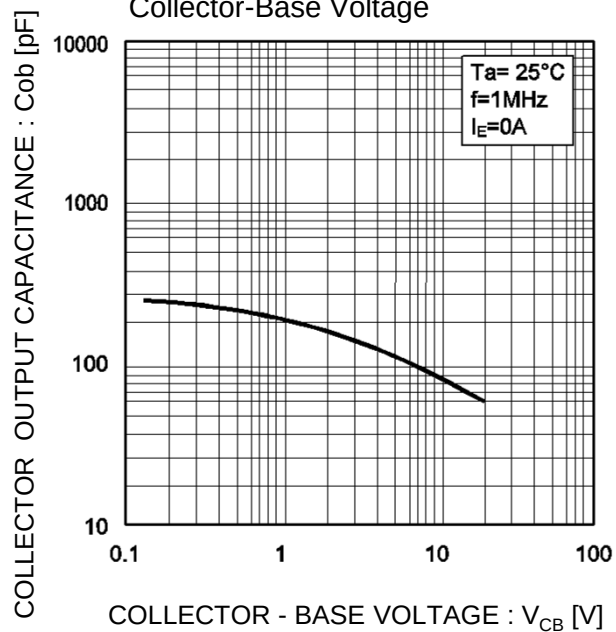
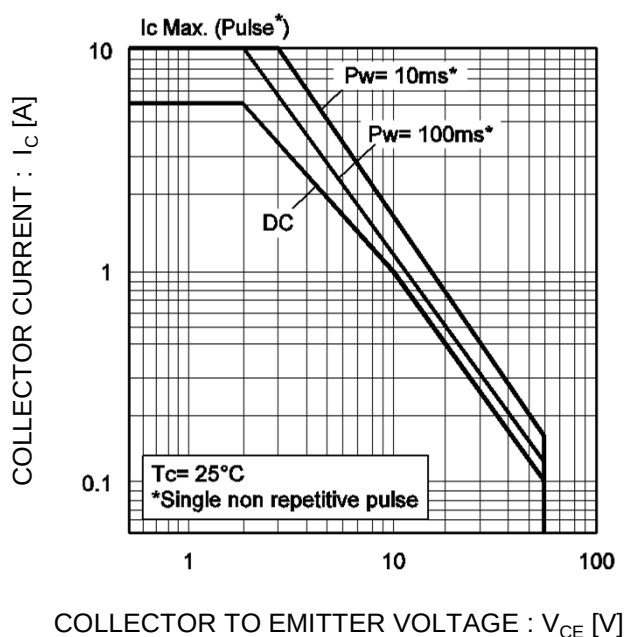
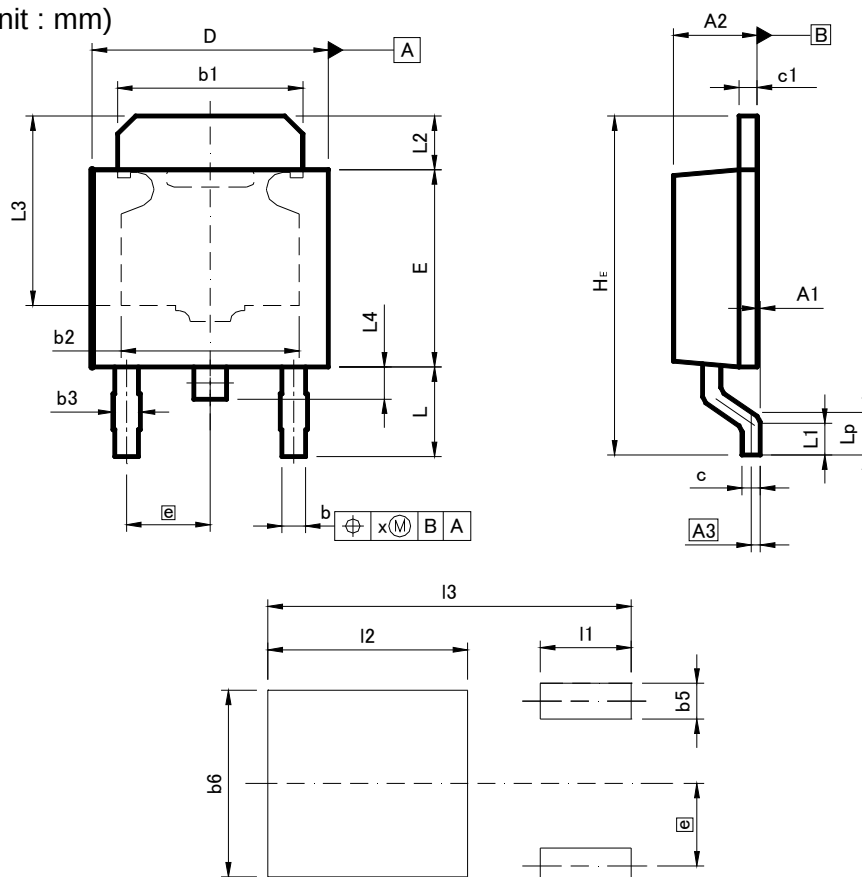


Fig.10 Safe Operating Area



●Dimensions (Unit : mm)

CPT3



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	
HE	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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