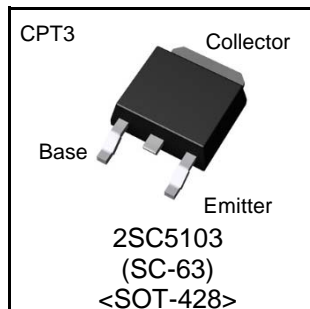


Parameter	Value
V_{CEO}	60V
I_C	5A

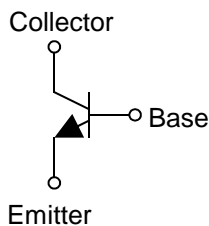
●Features

- 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.

●Outline



●Inner circuit



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

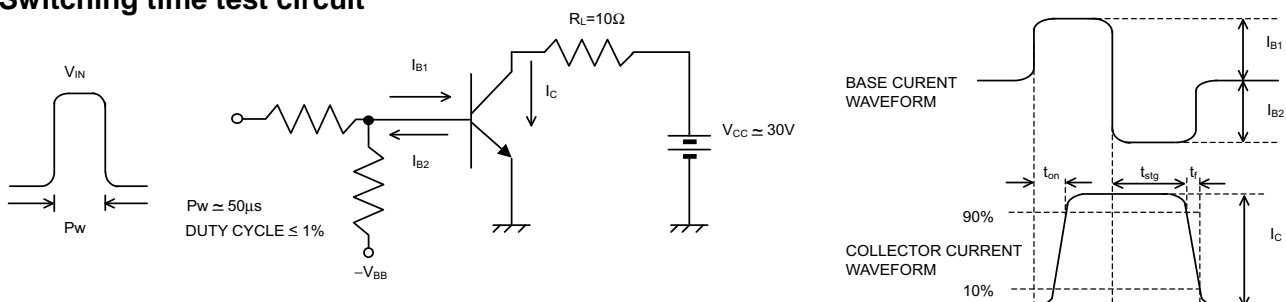
*1 Pulsed

*2 See switching time test circuit

● h_{FE} rank categories

Rank	Q
h_{FE}	120 to 270

●Switching time test circuit



●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

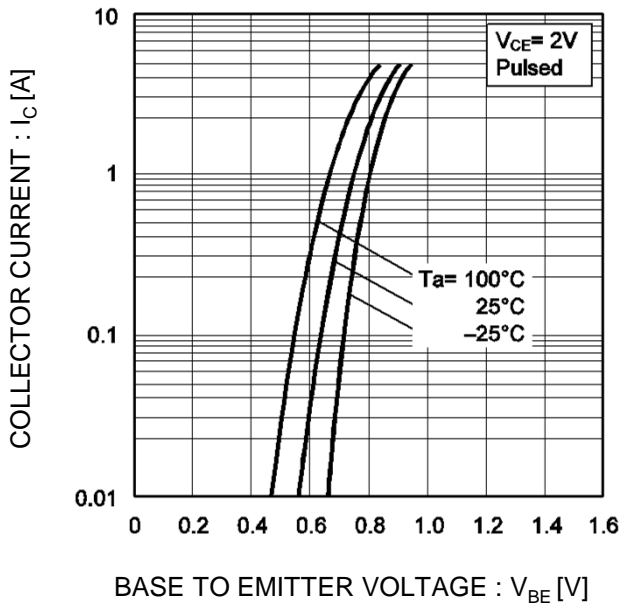


Fig.2 Typical Output Characteristics

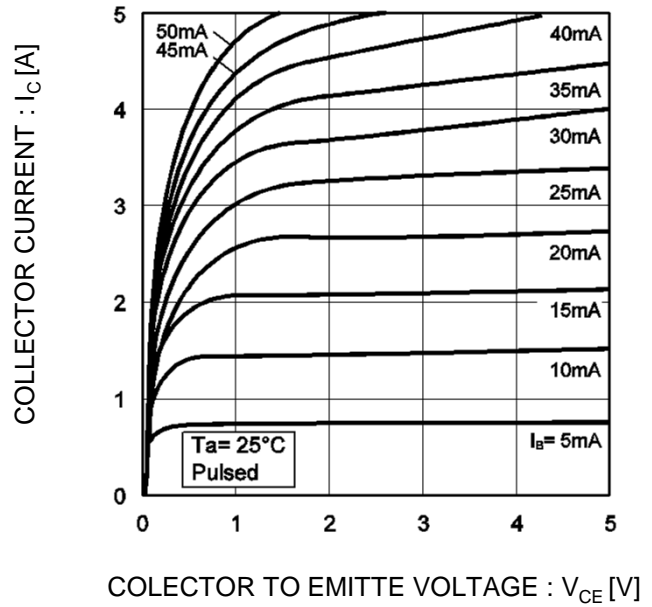


Fig.3 DC Current Gain vs. Collector Current (I)

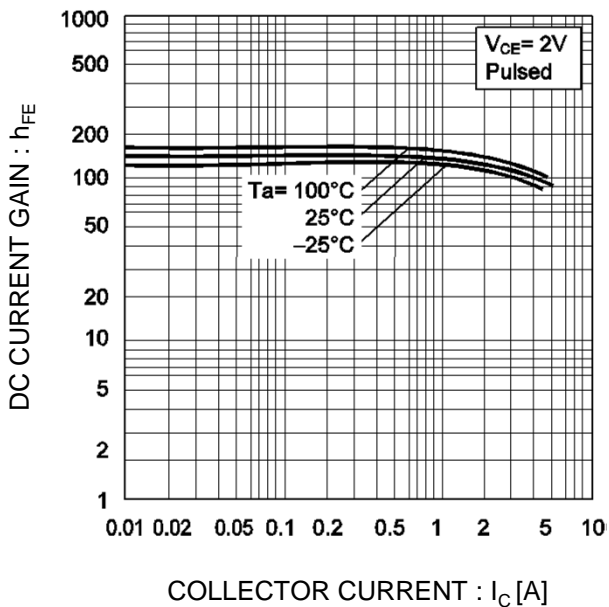
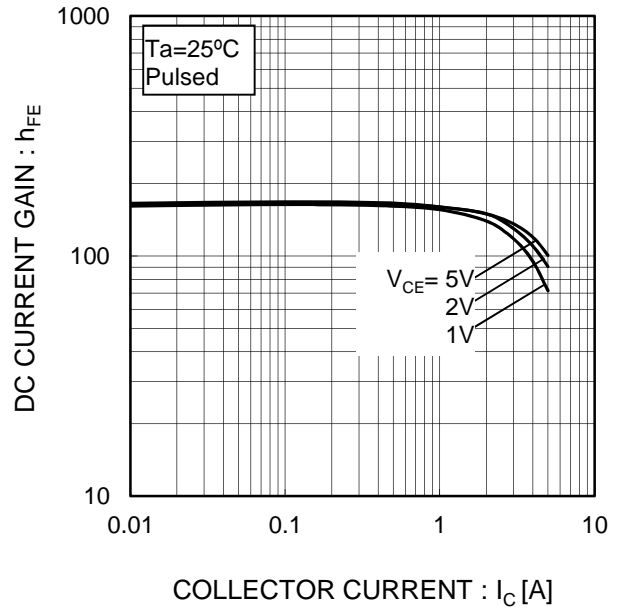


Fig.4 DC Current Gain vs. Collector Current (II)



●Electrical characteristic curves(Ta = 25°C)

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

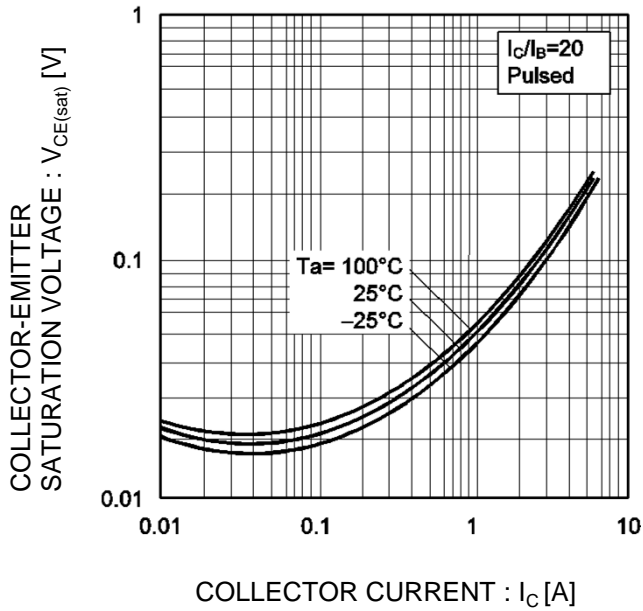


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

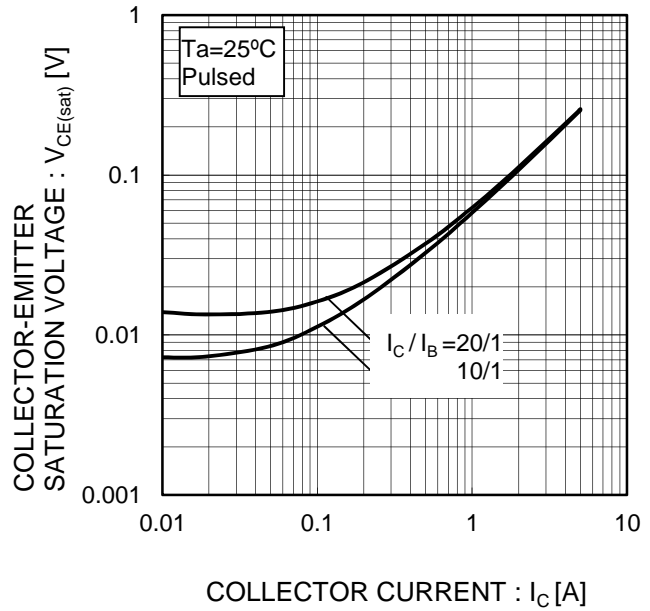


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

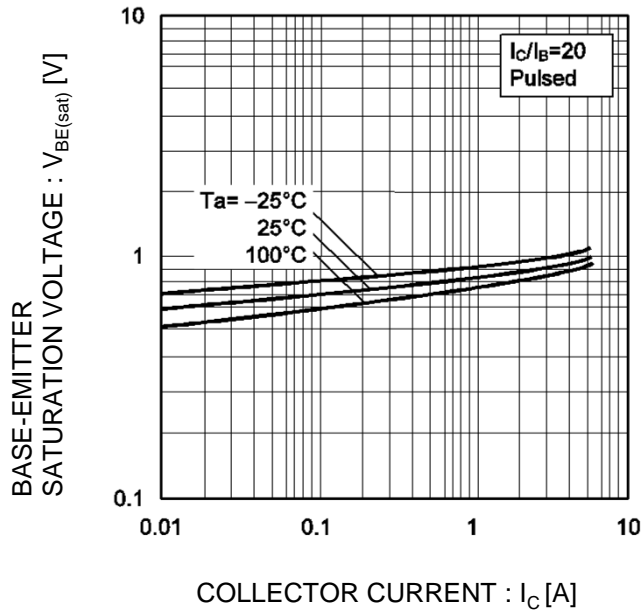
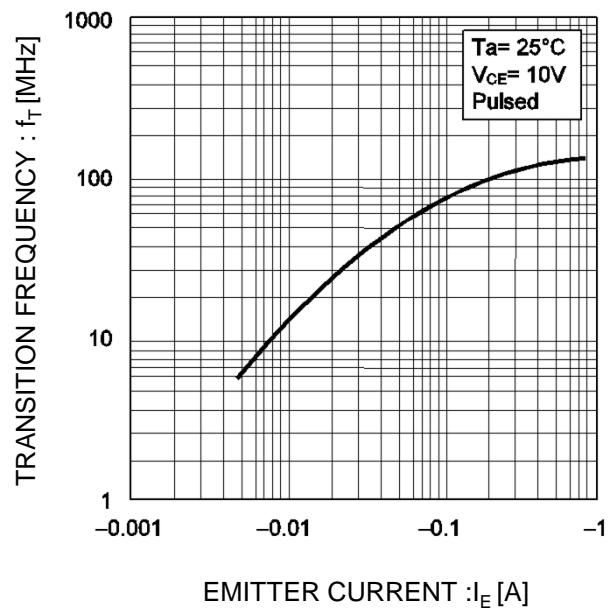


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

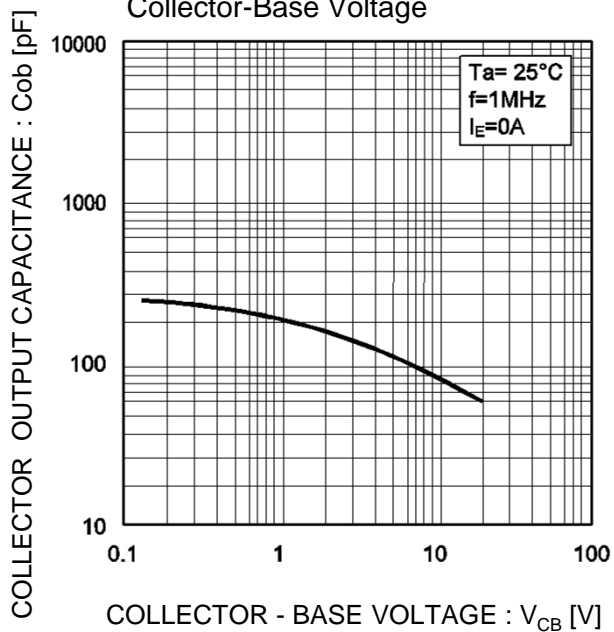
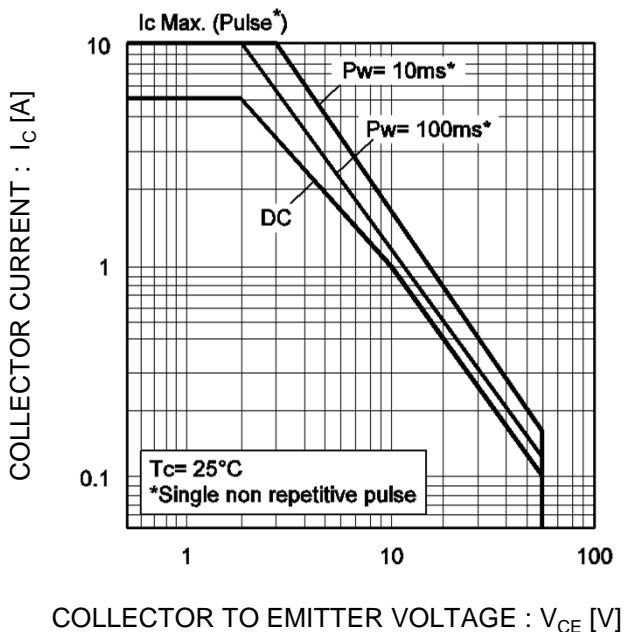
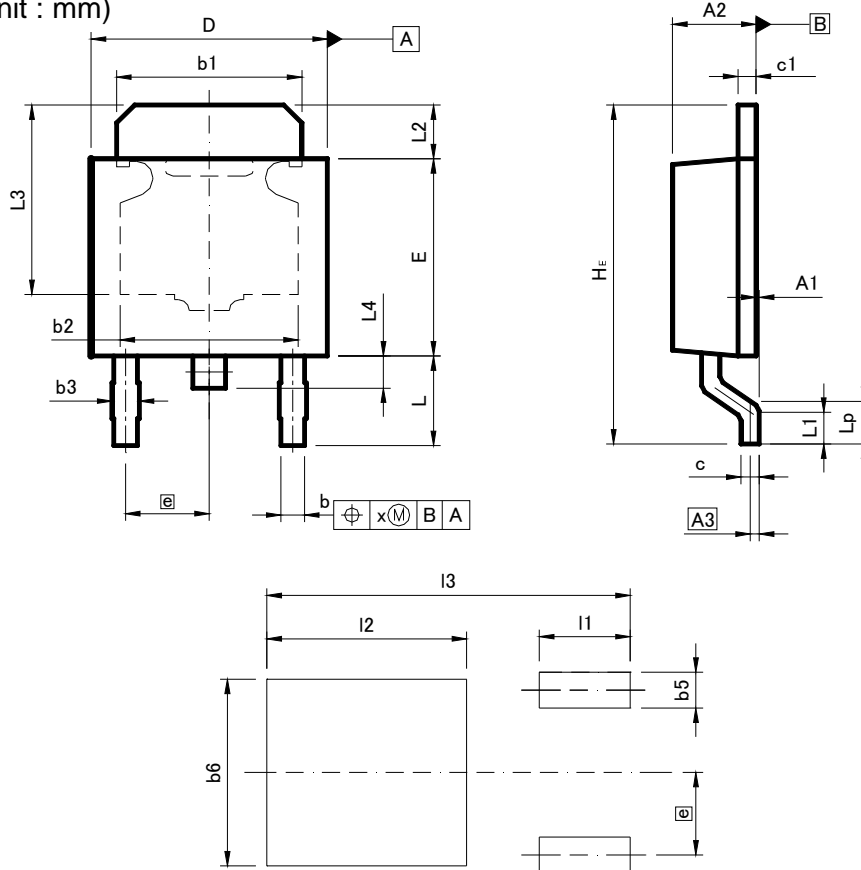


Fig.10 Safe Operating Area



●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
l1	-	2.50	-	0.098
l2	-	5.50	-	0.217
l3	-	10.00	-	0.394

Dimension in mm / inches

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