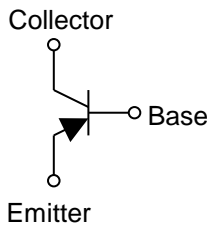


Parameter	Value
V_{CEO}	-50V
I_C	-4.0A

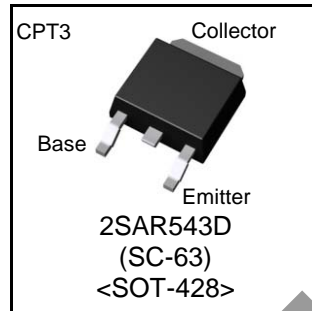
●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary NPN Types : 2SCR543D
- 3) Low $V_{CE(sat)}$
 $V_{CE(sat)} = -0.4V(\text{Max.})$
 $(I_C/I_B = -2A / -100mA)$
- 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
2SAR543D	CPT3	6595	TL	330	16	2,500	AR543

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Values	Unit	
Collector-base voltage	V_{CBO}	-50	V	
Collector-emitter voltage	V_{CEO}	-50	V	
Emitter-base voltage	V_{EBO}	-6	V	
Collector current	DC	I_C	-4.0	A
	Pulsed	I_{CP}^{*1}	-8.0	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=10ms , single pulse

*2 Mounted on a substrate

*3 Tc=25°C

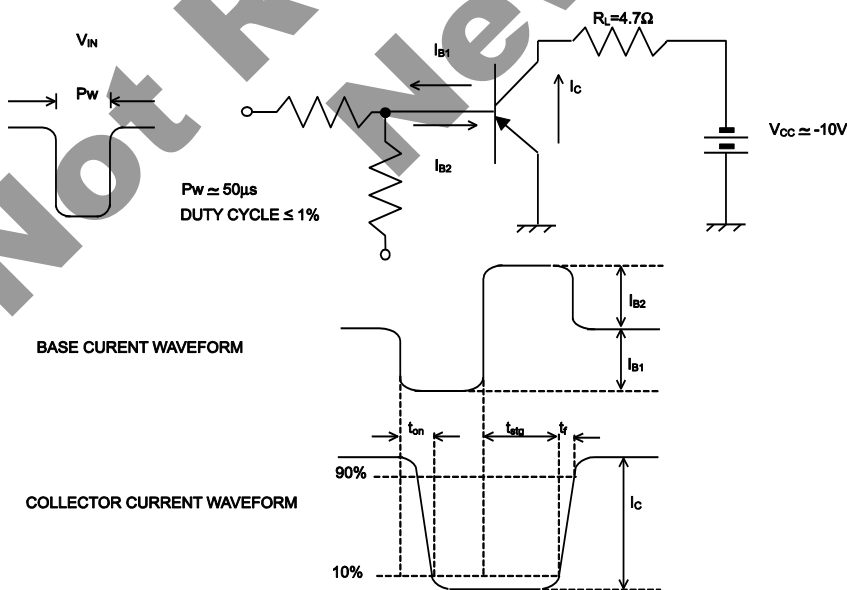
●Electrical characteristics(Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = -1mA$	-50	-	-	V
Collector-base breakdown voltage	BV_{CBO}	$I_C = -100\mu A$	-50	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -100\mu A$	-6	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -50V$	-	-	-1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4V$	-	-	-1	μA
Collector-emitter saturation voltage	$V_{CE(sat)}^{*1}$	$I_C = -2A, I_B = -100mA$	-	-0.20	-0.40	V
DC current gain	h_{FE}	$V_{CE} = -3V, I_C = -100mA$	180	-	450	-
Transition frequency	f_T	$V_{CE} = -10V, I_E = 300mA$ $f = 100MHz$	-	300	-	MHz
Output capacitance	C_{ob}	$V_{CB} = -10V, I_E = 0A,$ $f = 1MHz$	-	35	-	pF
Turn-on time	t_{on}^{*2}	$I_C = -2A$	-	45	-	ns
Storage time	t_{stg}^{*2}	$I_{B1} = -200mA$ $I_{B2} = 200mA$	-	250	-	ns
Fall time	t_f^{*2}	$V_{CC} \approx -10V$	-	40	-	ns

*1 Pulsed

*2 See switching time test circuit

●Switching time test circuit



●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

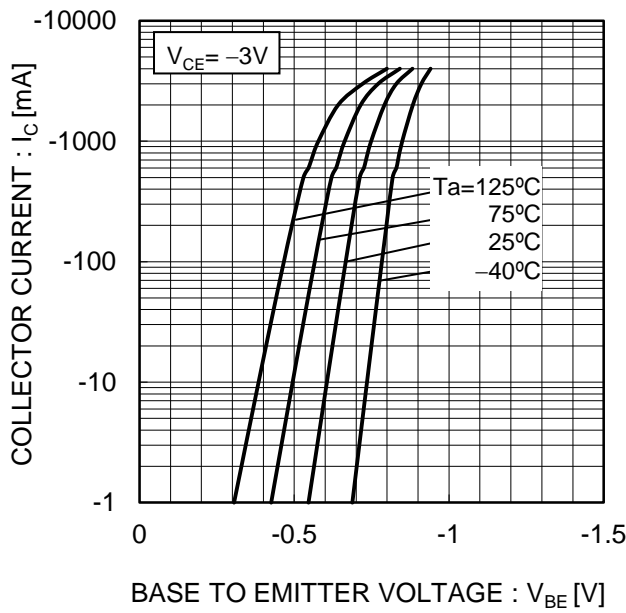


Fig.2 Typical Output Characteristics

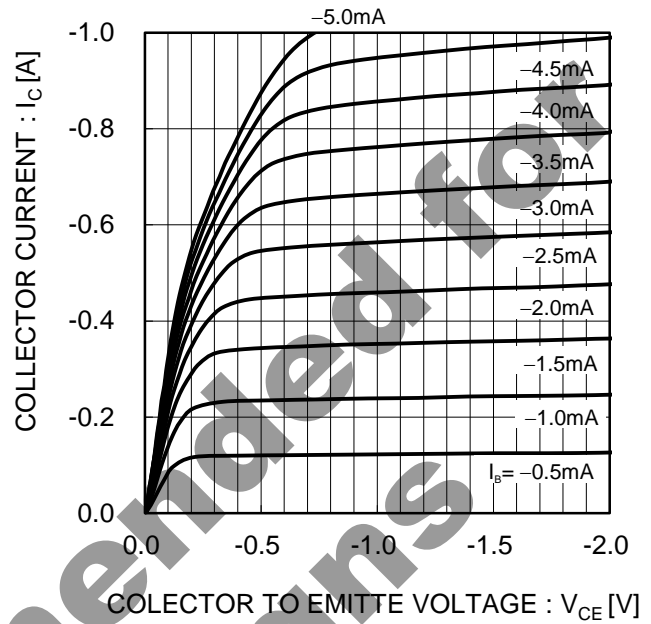


Fig.3 DC Current Gain vs. Collector Current(I)

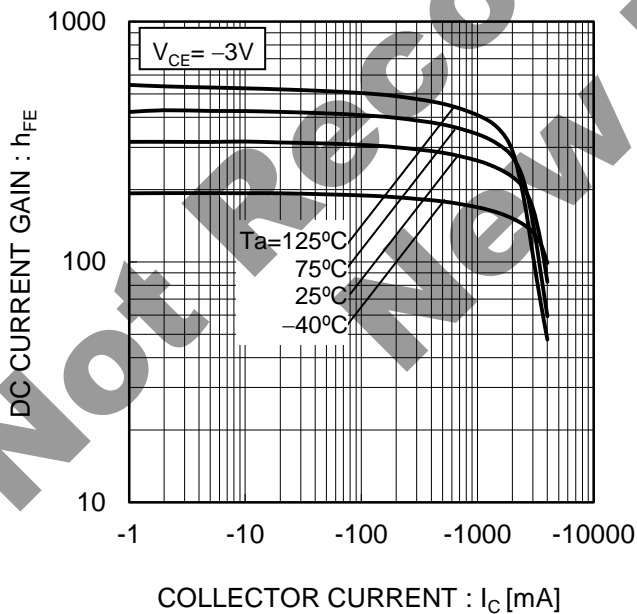
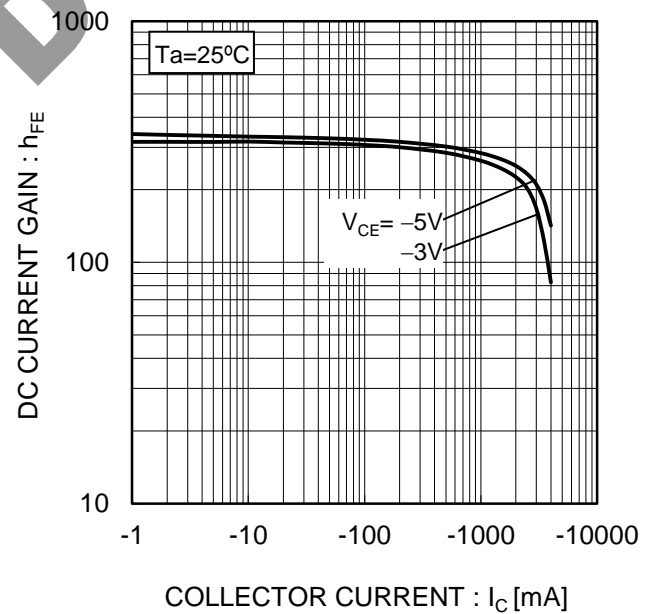


Fig.4 DC current gain vs. output current (II)



●Electrical characteristic curves(Ta = 25°C)

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

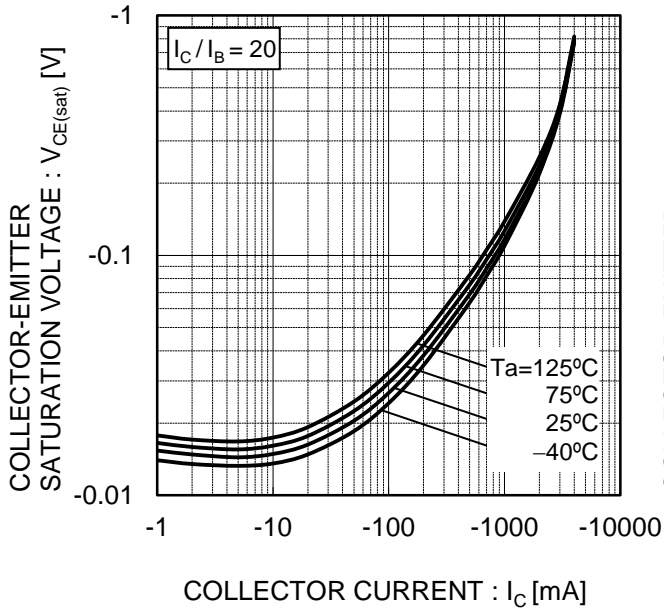


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

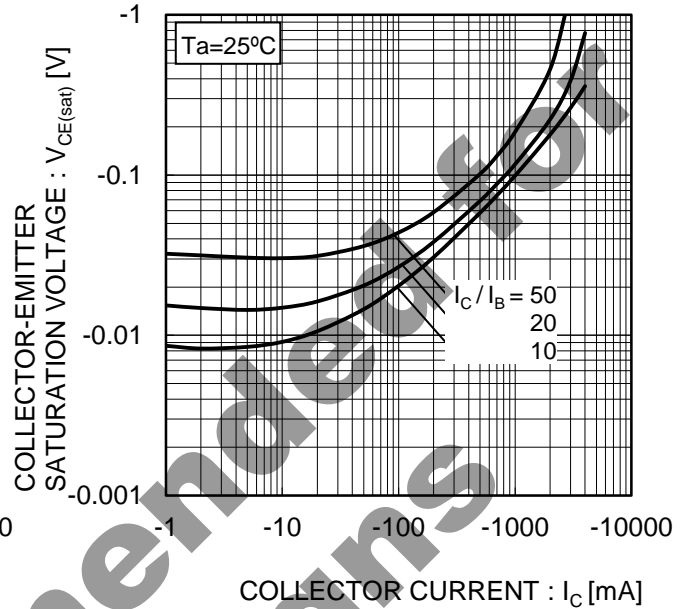


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

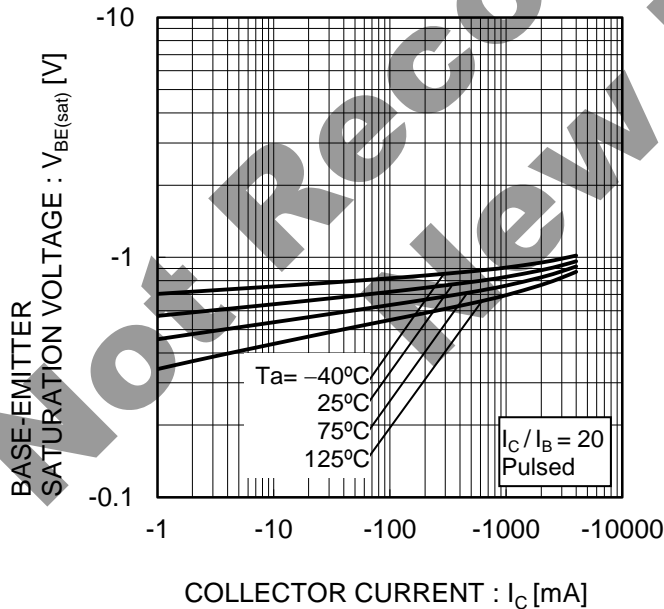
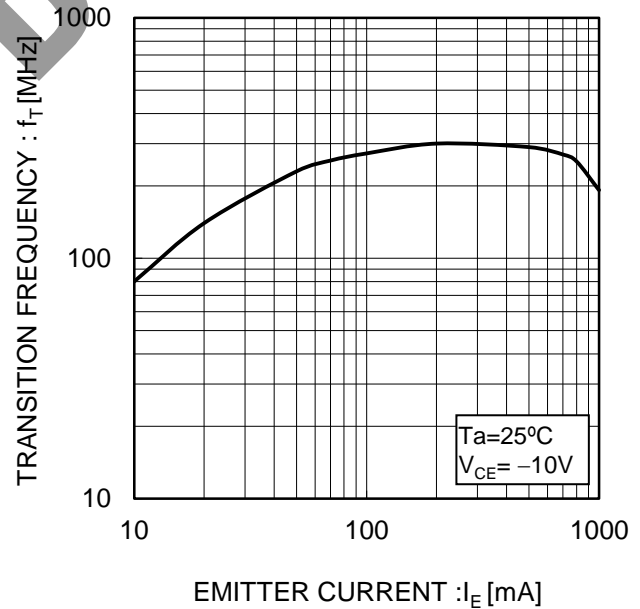


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

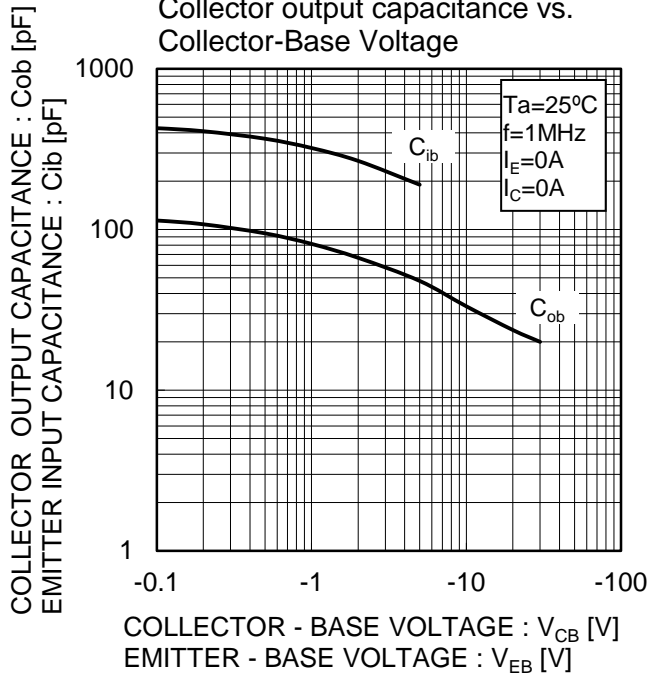
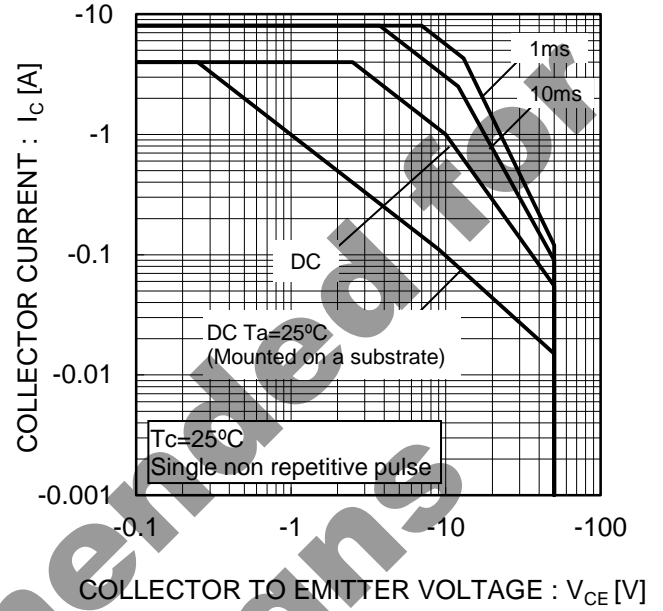


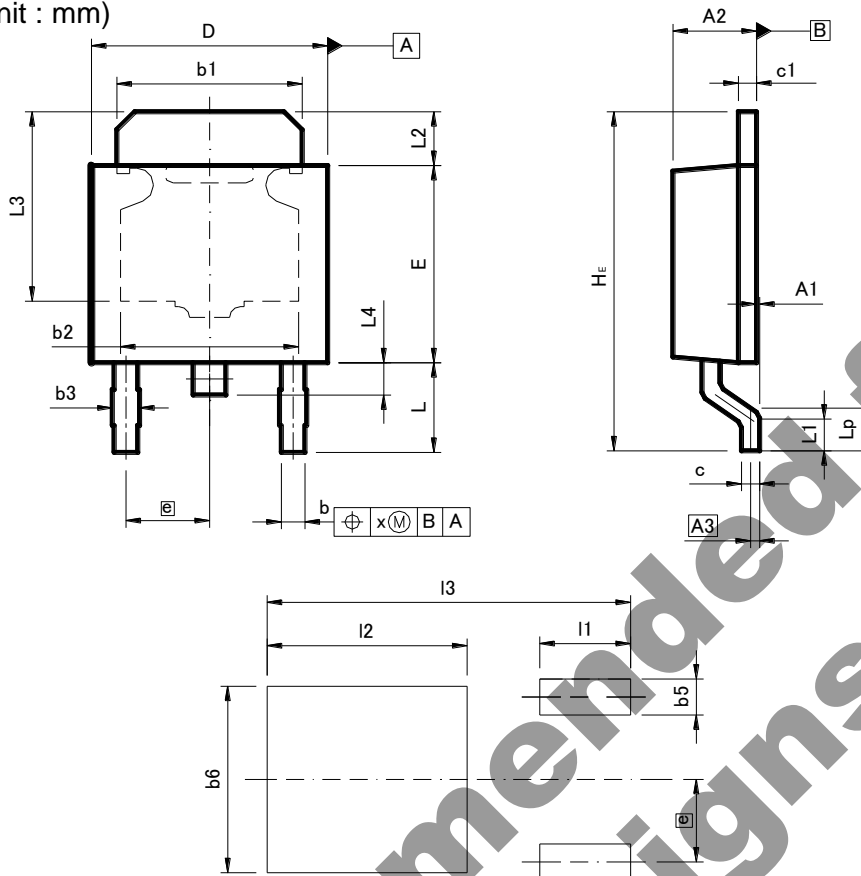
Fig.10 Safe Operating Area



Not Recommended for New Designs

●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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