

Power transistor (60V, 5A)

2SC5881

●Features

- 1) High speed switching.
(T_f : Typ. : 25ns at $I_c = 5A$)
- 2) Low saturation voltage, typically
(Typ. : 200mV at $I_c = 3.0A$, $I_B = 300mA$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2096

●Applications

Low frequency amplifier
High speed switching

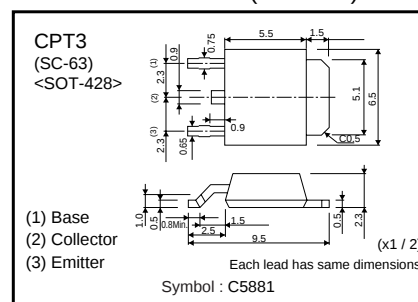
●Structure

NPN Silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	2500
2SC5881		○

●External dimensions (Unit : mm)



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

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CB0}	100	V
Collector-emitter voltage		V_{CES}	100	V
		V_{CE0}	60	V
Emitter-base voltage		V_{EBO}	6.5	V
Collector current	DC	I_c	5.0	A
	Pulsed	I_{CP}	10.0	A *1
Power dissipation		P_c	1.0	W *2
			10.0	W *3
Junction temperature		T_j	150	$^\circ\text{C}$
Range of storage temperature		T_{stg}	-55 to 150	$^\circ\text{C}$

*1 $P_W=10\text{ms}$, non repetitive pulse

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

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

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV _{CEO}	60	—	—	V	I _C =1mA
	BV _{CES}	100	—	—	V	I _C =100μA
Collector-base breakdown voltage	BV _{CBO}	100	—	—	V	I _C =100μA
Emitter-base breakdown voltage	BV _{EBO}	6.5	—	—	V	I _E =100μA
Collector cut-off current	I _{CBO}	—	—	1.0	μA	V _{CB} =40V
Emitter cut-off current	I _{EBO}	—	—	1.0	μA	V _{EB} =4V
Collector-emitter saturation voltage	V _{CE(sat)}	—	200	400	mV	I _C =3.0A I _B =300mA
DC current gain	h _{FE}	120	—	390	—	V _{CE} =2V I _C =100mA
Transition frequency	f _r	—	160	—	MHz	V _{CE} =10V I _E =-100mA f=10MHz
Collector output capacitance	C _{ob}	—	30	—	pF	V _{CB} =10V I _E =0mA f=1MHz
Turn-on time	T _{on}	—	70	—	ns	I _C =5A I _{B1} =500mA I _{B2} =-500mA
Storage time	T _{stg}	—	150	—	ns	V _{CE} =25V
Fall time	T _f	—	25	—	ns	

*1 Non repetitive pulse

*2 See Switching characteristics measurement circuits

●h_{FE} RANK

Q	R
120~270	180~390

●Electrical characteristic curves

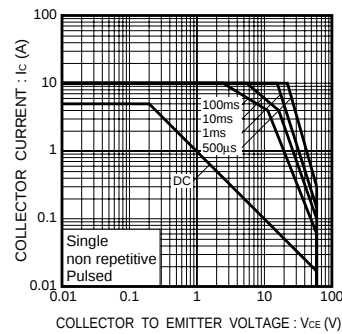


Fig.1 Safe Operating Area

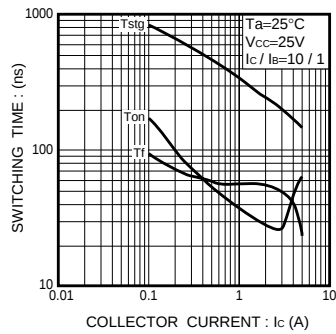


Fig.2 Switching Time

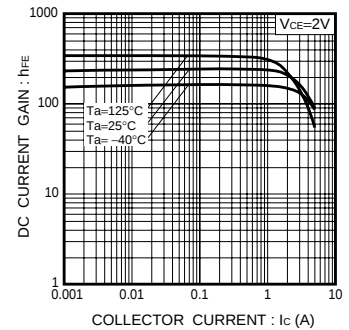


Fig.3 DC Current Gain vs. Collector Current (I)

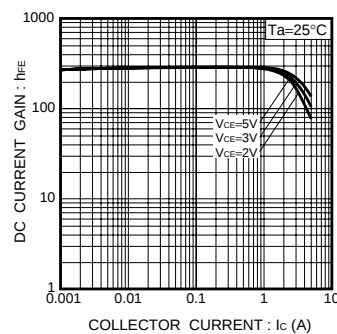


Fig.4 DC Current Gain vs. Collector Current (II)

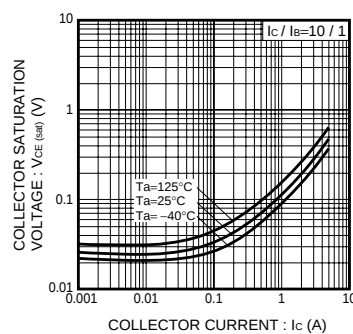


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

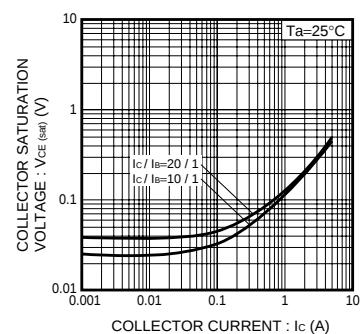


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

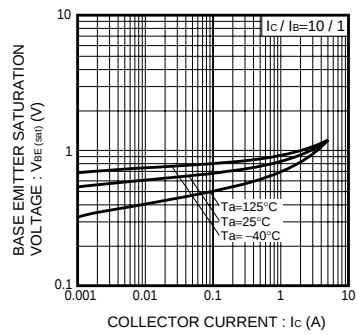


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

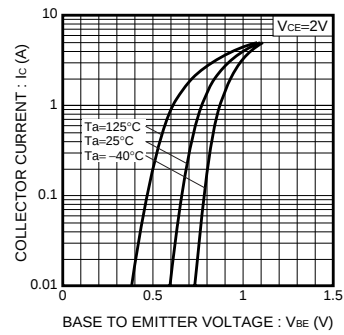


Fig.8 Grounded Emitter Propagation Characteristics

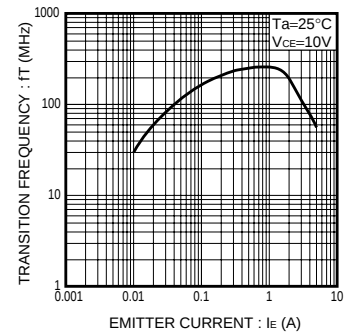


Fig.9 Transition Frequency

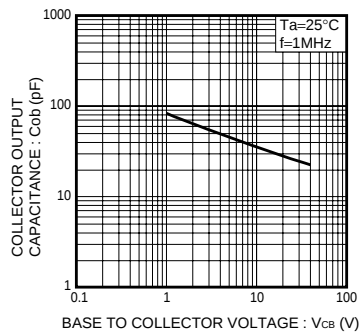
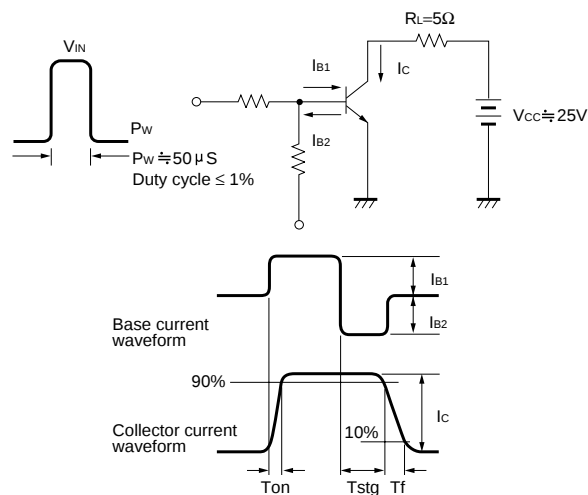


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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