

Power transistor (60V, 5A)

2SC5881

●Features

- 1) High speed switching.
(Tf : Typ. : 25ns at Ic = 5A)
- 2) Low saturation voltage, typically
(Typ. : 200mV at Ic = 3.0A, Ib = 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		○

●Absolute maximum ratings (Ta=25°C)

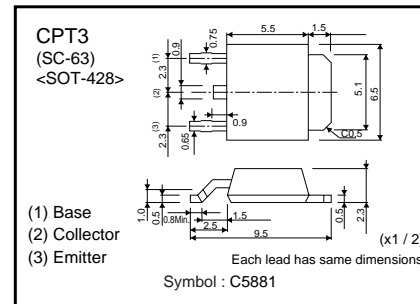
Parameter		Symbol	Limits	Unit
Collector-base voltage		V _{CB0}	100	V
Collector-emitter voltage		V _{CES}	100	V
		V _{CEO}	60	V
Emitter-base voltage		V _{EBO}	6.5	V
Collector current	DC	I _c	5.0	A
	Pulsed	I _{cP}	10.0	A *1
Power dissipation		P _c	1.0	W *2
			10.0	W *3
Junction temperature		T _j	150	°C
Range of storage temperature		T _{stg}	-55 to 150	°C

*1 P_w=10ms, non repetitive pulse

*2 Ta=25°C

*3 Tc=25°C

●External dimensions (Unit : mm)



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 V _{CC} =25V
Storage time	T _{stg}	–	150	–	ns	
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

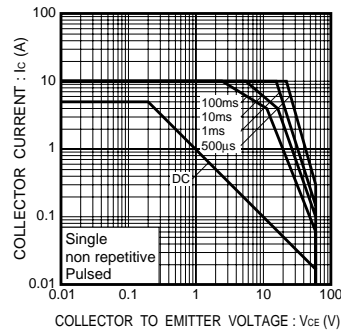


Fig.1 Safe Operating Area

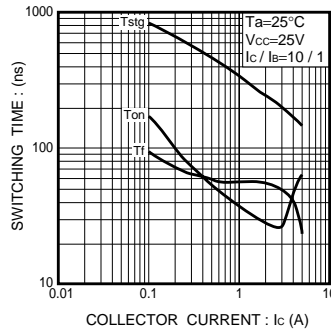


Fig.2 Switching Time

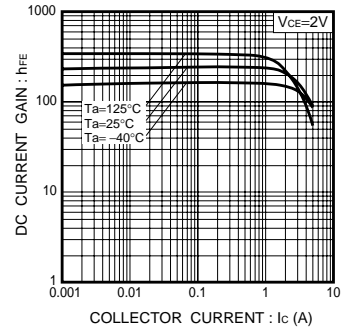


Fig.3 DC Current Gain vs. Collector Current (I)

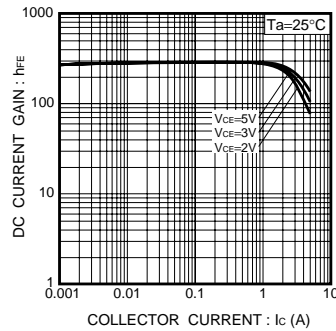


Fig.4 DC Current Gain vs. Collector Current (II)

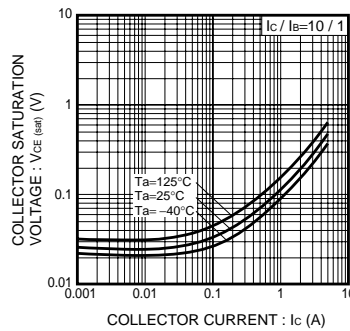


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

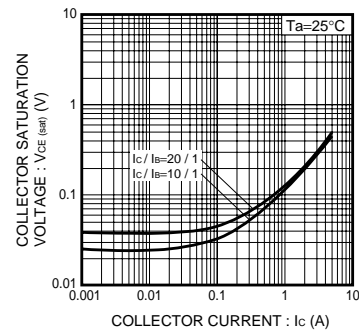


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

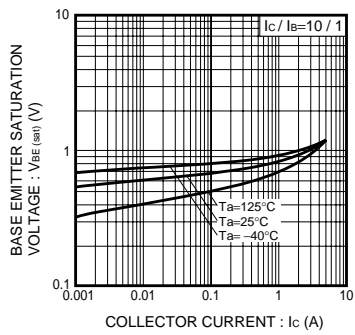


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

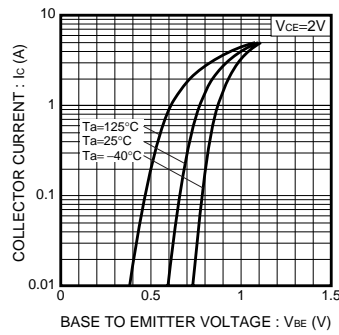


Fig.8 Grounded Emitter Propagation Characteristics

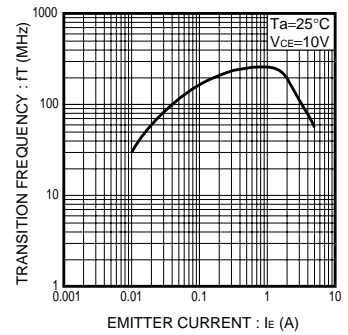


Fig.9 Transition Frequency

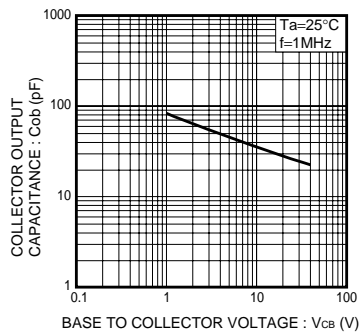
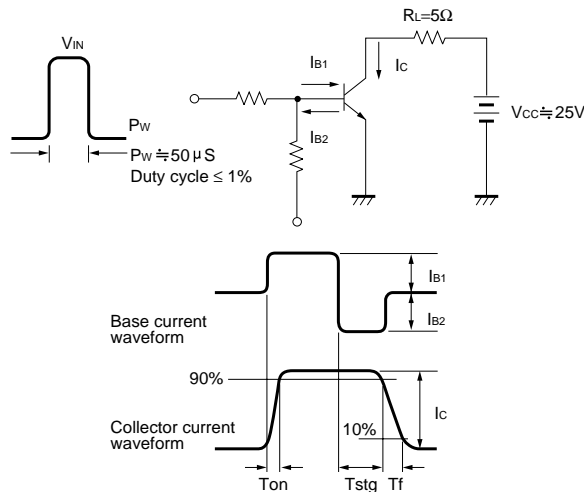


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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