

# 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)

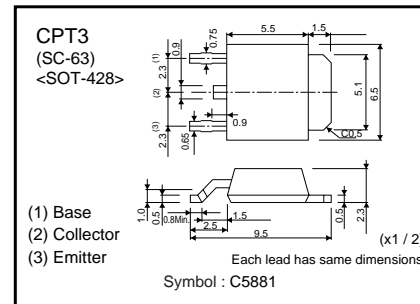
Parameter		Symbol	Limits	Unit
Collector-base voltage		V <sub>CB0</sub>	100	V
Collector-emitter voltage		V <sub>CES</sub>	100	V
		V <sub>CEO</sub>	60	V
Emitter-base voltage		V <sub>EBO</sub>	6.5	V
Collector current	DC	I <sub>c</sub>	5.0	A
	Pulsed	I <sub>cP</sub>	10.0	A *1
Power dissipation		P <sub>c</sub>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

\*1 P<sub>w</sub>=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 <sub>CEO</sub>	60	–	–	V	I <sub>c</sub> =1mA
	BV <sub>CES</sub>	100	–	–	V	I <sub>c</sub> =100μA
Collector-base breakdown voltage	BV <sub>CBO</sub>	100	–	–	V	I <sub>c</sub> =100μA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	6.5	–	–	V	I <sub>E</sub> =100μA
Collector cut-off current	I <sub>cBO</sub>	–	–	1.0	μA	V <sub>CB</sub> =40V
Emitter cut-off current	I <sub>EBO</sub>	–	–	1.0	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	200	400	mV	I <sub>c</sub> =3.0A I <sub>B</sub> =300mA
DC current gain	h <sub>FE</sub>	120	–	390	–	V <sub>CE</sub> =2V I <sub>c</sub> =100mA
Transition frequency	f <sub>r</sub>	–	160	–	MHz	V <sub>CE</sub> =10V I <sub>E</sub> =–100mA f=10MHz
Collector output capacitance	C <sub>ob</sub>	–	30	–	pF	V <sub>CB</sub> =10V I <sub>E</sub> =0mA f=1MHz
Turn-on time	T <sub>on</sub>	–	70	–	ns	I <sub>c</sub> =5A I <sub>B1</sub> =500mA I <sub>B2</sub> =–500mA V <sub>CC</sub> ≒25V
Storage time	T <sub>stg</sub>	–	150	–	ns	
Fall time	T <sub>f</sub>	–	25	–	ns	

\*1 Non repetitive pulse

\*2 See Switching characteristics measurement circuits

●h<sub>FE</sub> RANK

Q	R
120–270	180–390

●Electrical characteristic curves

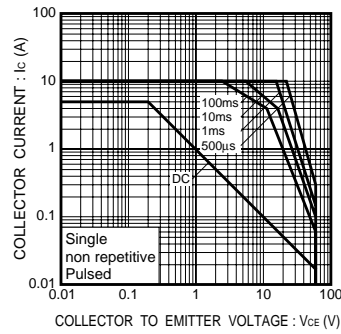


Fig.1 Safe Operating Area

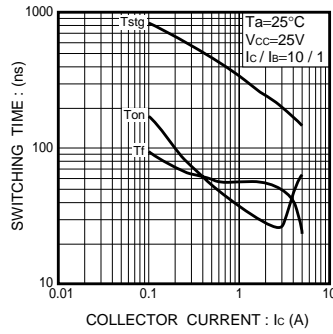


Fig.2 Switching Time

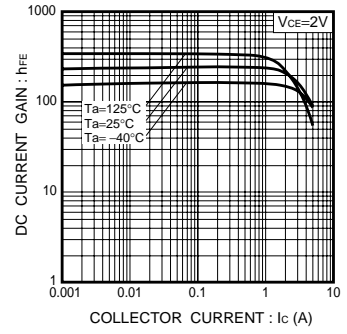


Fig.3 DC Current Gain vs. Collector Current (I)

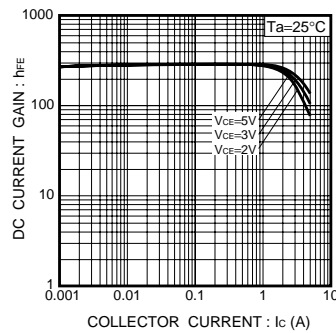


Fig.4 DC Current Gain vs. Collector Current (II)

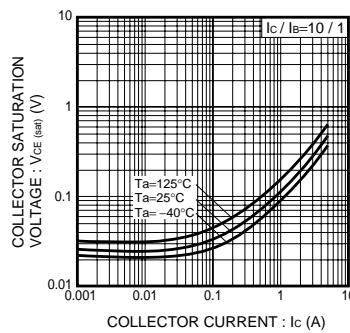


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

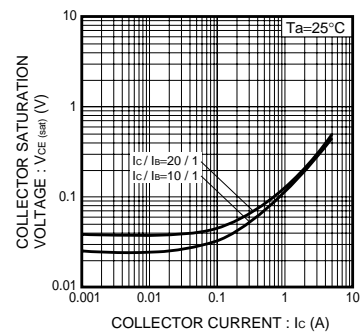


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

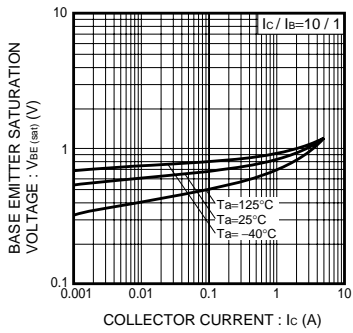


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

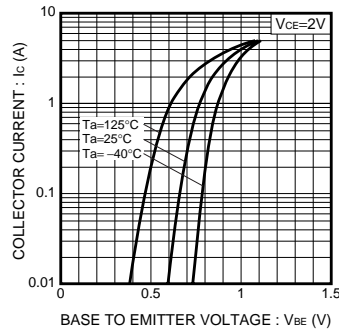


Fig.8 Grounded Emitter Propagation Characteristics

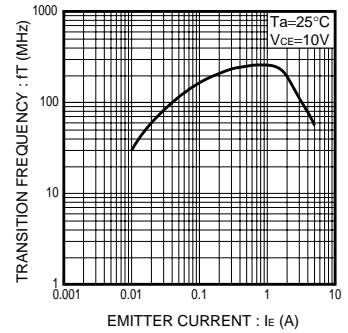


Fig.9 Transition Frequency

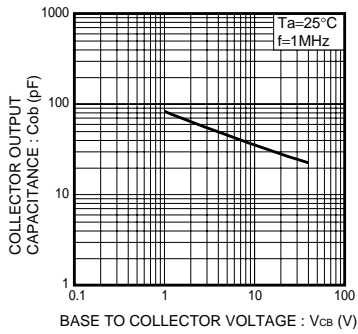
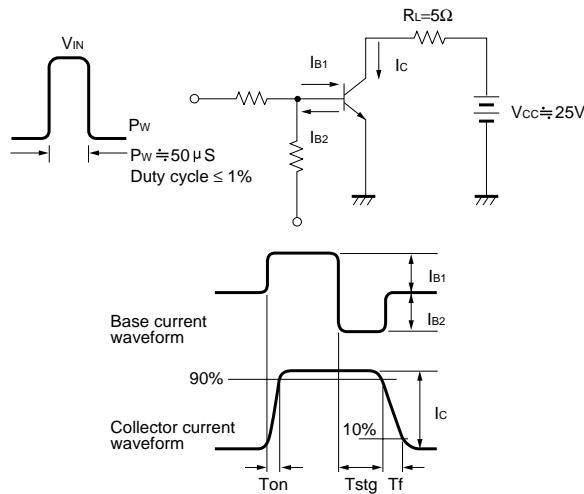


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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