

Medium power transistor (30V, 0.5A)

2SC5873S

●Features

- 1) High speed switching.
(Tf : Typ. : 50ns at Ic = 500mA)
- 2) Low saturation voltage, typically
(Typ. : 150mV at Ic = 100mA, Ib = 10mA)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2085S

●Applications

Small signal low frequency amplifier
High speed switching

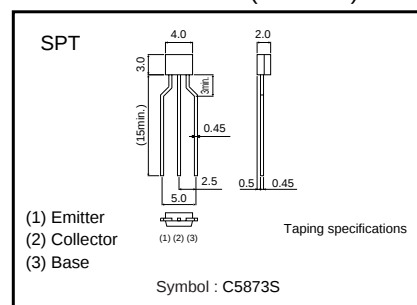
●Structure

NPN Silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	TP
	Basic ordering unit (pieces)	5000
2SC5873S		○

●External dimensions (Unit : mm)



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V _{CB0}	30	V
Collector-emitter voltage		V _{CE0}	30	V
Emitter-base voltage		V _{EB0}	6	V
Collector current	DC	I _c	0.5	A
	Pulsed	I _{cP}	1.0	A *
Power dissipation		P _c	300	mW
Junction temperature		T _j	150	°C
Range of storage temperature		T _{stg}	-55 to 150	°C

*Pw=10ms

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV_{CEO}	30	—	—	V	$I_C=1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	30	—	—	V	$I_C=100\mu\text{A}$
Emitter-base breakdown voltage	BV_{EBO}	6	—	—	V	$I_E=100\mu\text{A}$
Collector cut-off current	I_{CBO}	—	—	1.0	μA	$V_{CB}=20\text{V}$
Emitter cut-off current	I_{EBO}	—	—	1.0	μA	$V_{EB}=4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	150	300	mV	$I_C=100\text{mA}$ $I_B=10\text{mA}$
DC current gain	h_{FE}	120	—	390	—	$V_{CE}=2\text{V}$ $I_C=50\text{mA}$
Transition frequency	f_T	—	300	—	MHz	$V_{CE}=10\text{V}$ $I_E=-100\text{mA}$ $f=10\text{MHz}$
Collector output capacitance	C_{ob}	—	5	—	pF	$V_{CB}=10\text{V}$ $I_E=0\text{mA}$ $f=1\text{MHz}$
Turn-on time	T_{on}	—	40	—	ns	$I_C=500\text{mA}$ $I_{B1}=50\text{mA}$ $I_{B2}=-50\text{mA}$ $V_{CC}=25\text{V}$
Storage time	T_{stg}	—	120	—	ns	
Fall time	T_f	—	50	—	ns	

*Non repetitive pulse

● h_{FE} RANK

Q	R
120–270	180–390

●Electrical characteristic curves

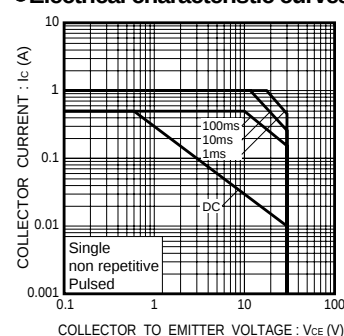


Fig.1 Safe Operating Area

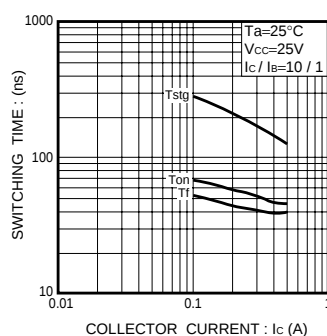


Fig.2 Switching Time

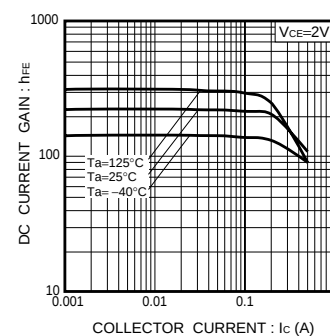


Fig.3 DC Current Gain vs. Collector Current (I)

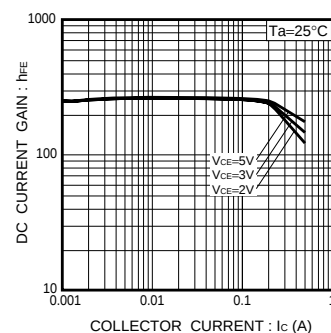


Fig.4 DC Current Gain vs. Collector Current (II)

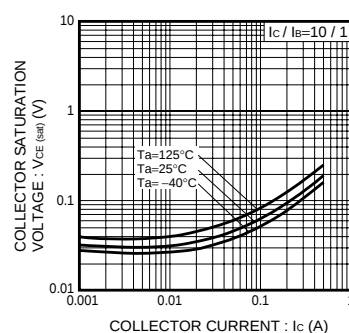


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

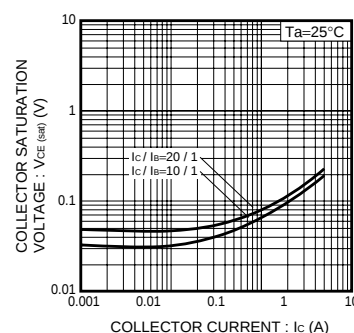


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

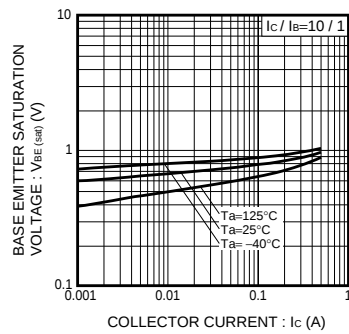


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

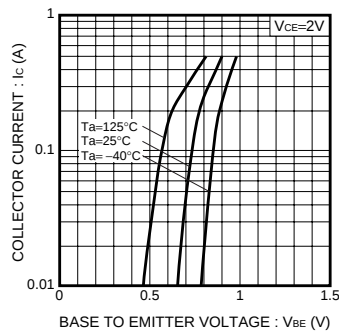


Fig.8 Grounded Emitter Propagation Characteristics

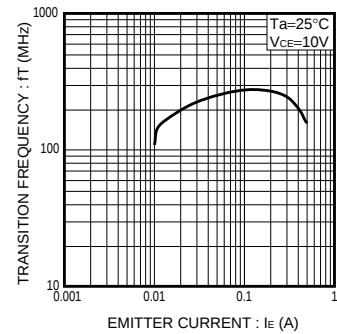


Fig.9 Transition Frequency

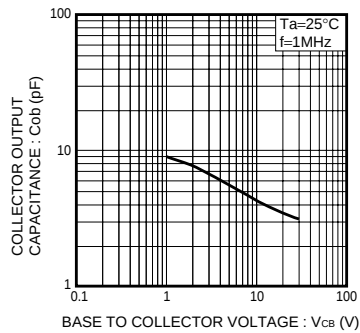
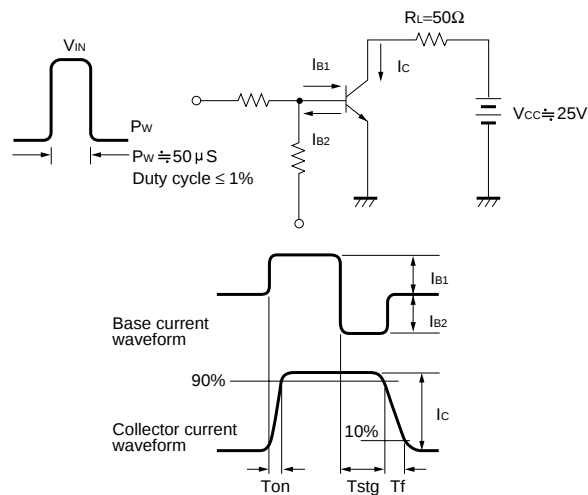


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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