

Medium power transistor (30V, 1.0A)

2SC5874S

●Features

- 1) High speed switching.
(Tf: Typ. : 35ns at $I_c = 1.0A$)
- 2) Low saturation voltage, typically
(Typ. : 150mV at $I_c = 1.0A, I_B = 100mA$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2086S

●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
2SC5874S		○

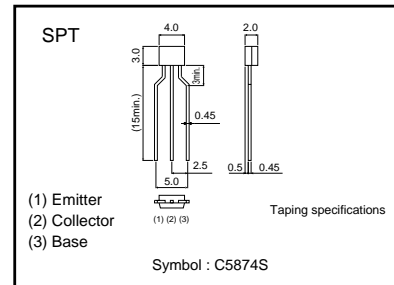
●Absolute maximum ratings (Ta=25°C)

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	1.0 A
	Pulsed	I_{CP}	2.0 A *1
Power dissipation	P_C	300	mW *2
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to 150	°C

*1 $P_w=10ms$

*2 Each terminal mounted on a recommended land

●External dimensions (Unit : mm)



Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV _{CEO}	30	–	–	V	I _C =1mA
Collector-base breakdown voltage	BV _{CBO}	30	–	–	V	I _C =100μA
Emitter-base breakdown voltage	BV _{EBO}	6	–	–	V	I _E =100μA
Collector cut-off current	I _{CBO}	–	–	1.0	μA	V _{CB} =20V
Emitter cut-off current	I _{EBO}	–	–	1.0	μA	V _{EB} =4V
Collector-emitter saturation voltage	V _{CE(sat)}	–	150	300	mV	I _C =500mA I _B =50mA
DC current gain	h _{FE}	120	–	390	–	V _{CE} =2V I _C =100mA
Transition frequency	f _r	–	250	–	MHz	V _{CE} =10V I _E = –100mA f=10MHz
Corrector output capacitance	C _{ob}	–	10	–	pF	V _{CB} =10V I _E =0mA f=1MHz
Turn-on time	T _{on}	–	30	–	ns	I _C =1.0A I _{B1} =100mA I _{B2} = –100mA V _{CC} =25V
Storage time	T _{stg}	–	120	–	ns	
Fall time	T _f	–	35	–	ns	

*1 Non repetitive pulse

*2 See Switching characteristics measurement circuits

●h_{FE} RANK

Q	R
120–270	180–390

●Electrical characteristic curves

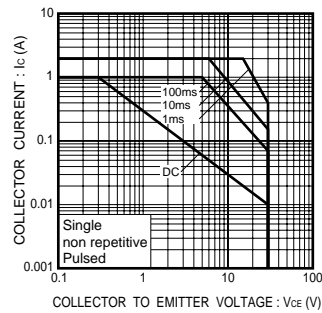


Fig.1 Safe Operating Area

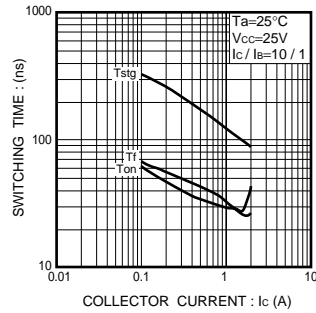


Fig.2 Switching Time

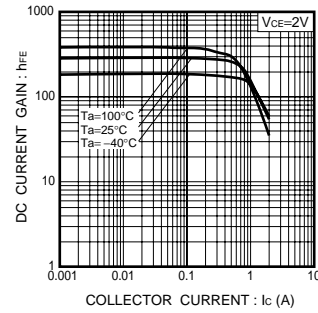


Fig.3 DC Current Gain vs. Collector Current (I)

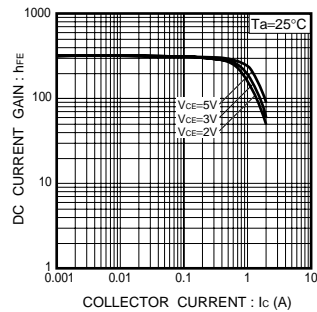


Fig.4 DC Current Gain vs. Collector Current (II)

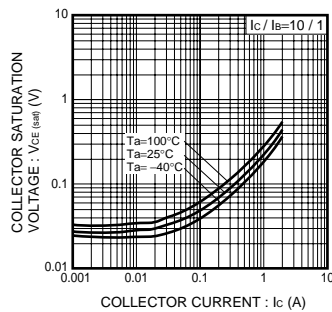


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

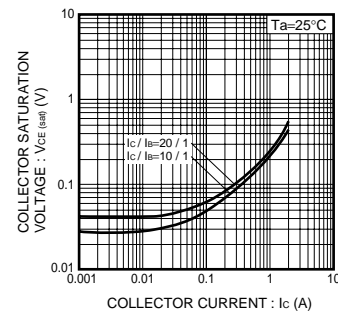


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

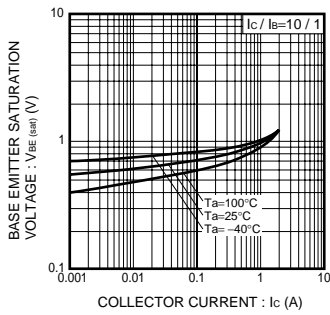


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

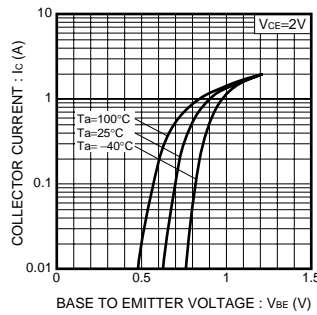


Fig.8 Grounded Emitter Propagation Characteristics

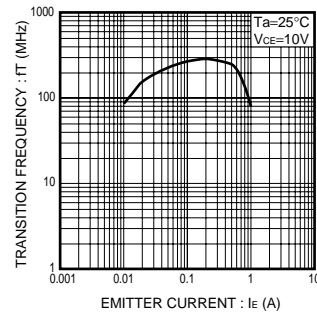


Fig.9 Transition Frequency : fT

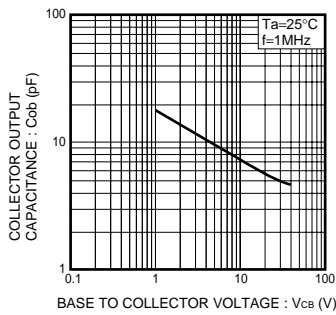
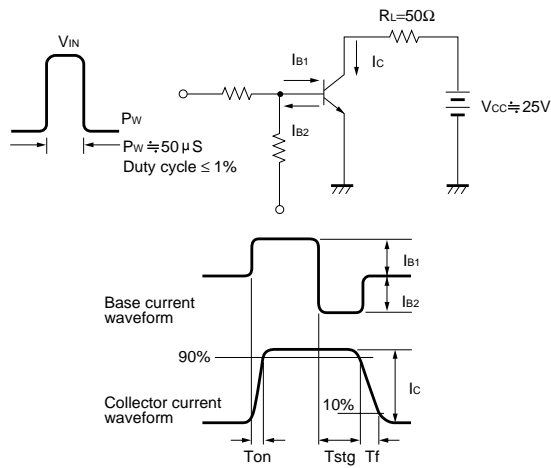


Fig.10 Collector Output Capacitance : Cob

●Switching characteristics measurement circuits



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