

# Medium power transistor (30V, 1.0A)

## 2SC5874S

### ●Features

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

### ●Applications

Small signal low frequency amplifier  
High speed switching

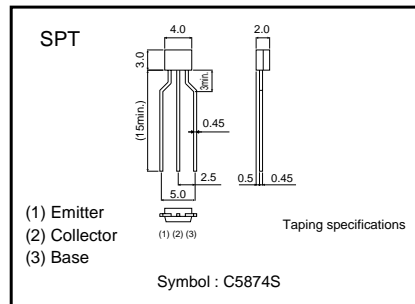
### ●Structure

NPN Silicon epitaxial planar transistor

### ●Packaging specifications

Type	Package	Taping
	Code	TP
	Basic ordering unit (pieces)	5000
2SC5874S		○

### ●External dimensions (Unit : mm)



### ●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V <sub>CB0</sub>	30	V
Collector-emitter voltage		V <sub>CE0</sub>	30	V
Emitter-base voltage		V <sub>EB0</sub>	6	V
Collector current	DC	I <sub>c</sub>	1.0	A
	Pulsed	I <sub>cP</sub>	2.0	A *1
Power dissipation		P <sub>c</sub>	300	mW *2
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

\*2 Each terminal mounted on a recommended land

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	$I_C=100\mu A$
Emitter-base breakdown voltage	$BV_{EBO}$	6	–	–	V	$I_E=100\mu A$
Collector cut-off current	$I_{CBO}$	–	–	1.0	$\mu A$	$V_{CB}=20V$
Emitter cut-off current	$I_{EBO}$	–	–	1.0	$\mu A$	$V_{EB}=4V$
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	$f_T$	–	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	$I_C=1.0A$ $I_{B1}=100mA$
Storage time	$T_{stg}$	–	120	–	ns	$I_{B2}=-100mA$
Fall time	$T_f$	–	35	–	ns	$V_{CC}=25V$

\*1 Non repetitive pulse

\*2 See Switching characteristics measurement circuits

●hFE RANK

Q	R
120–270	180–390

●Electrical characteristic curves

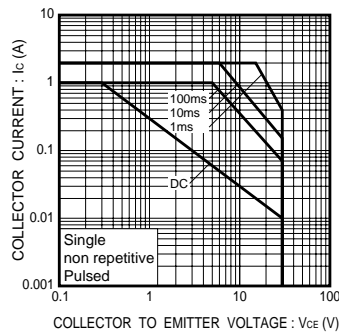


Fig.1 Safe Operating Area

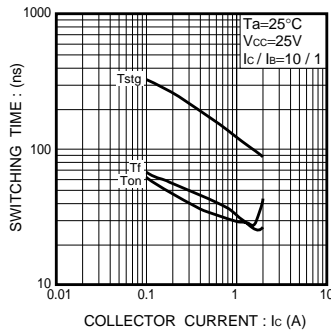


Fig.2 Switching Time

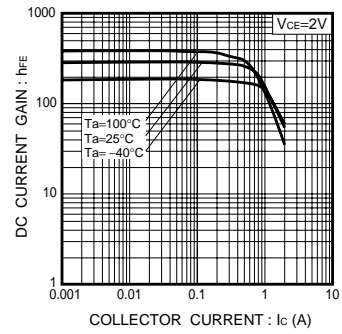


Fig.3 DC Current Gain vs. Collector Current (I)

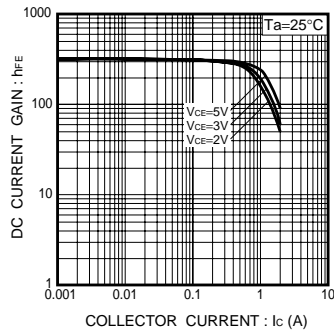


Fig.4 DC Current Gain vs. Collector Current (II)

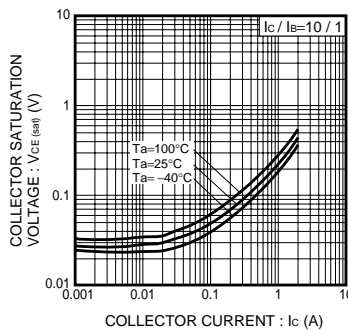


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

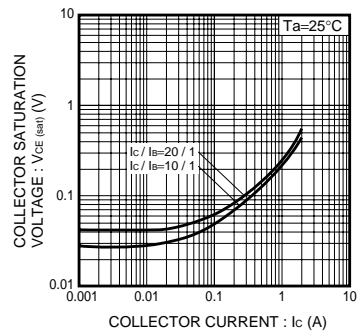


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

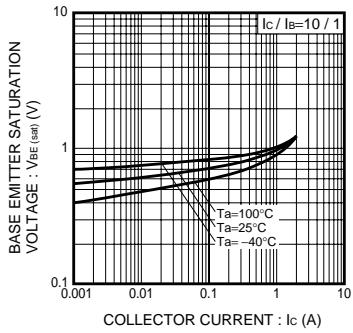


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

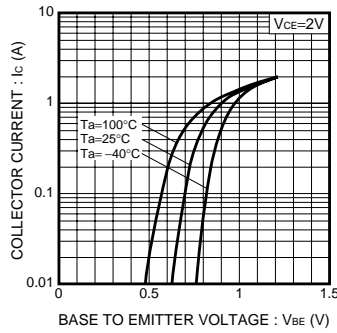


Fig.8 Grounded Emitter Propagation Characteristics

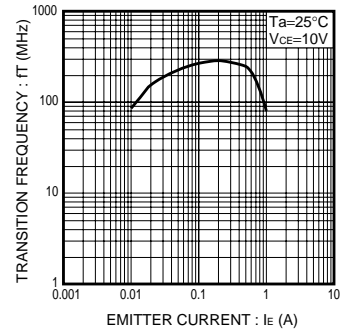


Fig.9 Transition Frequency :  $f_T$

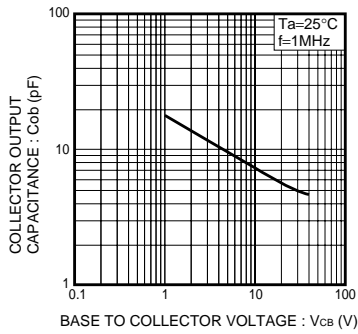
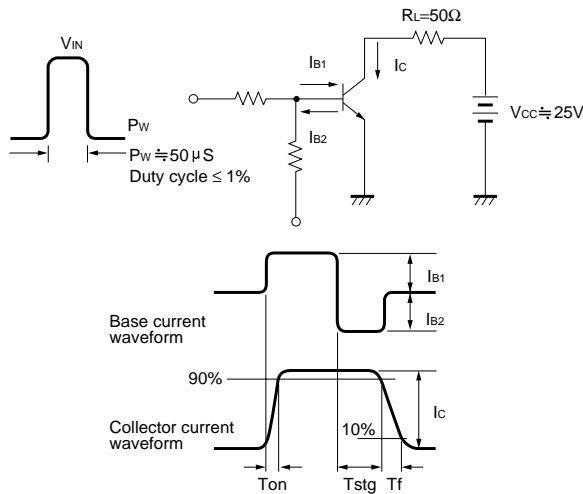


Fig.10 Collector Output Capacitance :  $C_{ob}$

●Switching characteristics measurement circuits



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