

# Medium power transistor (–30V, –1A)

## 2SA2086S

### ●Features

- 1) High speed switching. ( $T_f$ : Typ.: 20ns at  $I_c = -1A$ )
- 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 2SC5874S

### ●Applications

Small signal low frequency amplifier  
High speed switching

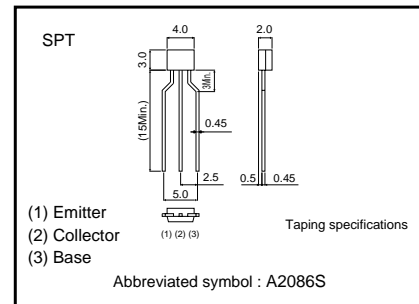
### ●Structure

PNP Silicon epitaxial planar transistor

### ●Packaging specifications

Type	Package	Taping
	Code	TP
	Basic ordering unit (pieces)	5000
2SA2086S		○

### ●External dimensions (Unit : mm)



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

Parameter	Symbol	Limits	Unit	
Collector-base voltage	$V_{CBO}$	–30	V	
Collector-emitter voltage	$V_{CEO}$	–30	V	
Emitter-base voltage	$V_{EBO}$	–6	V	
Collector current	DC	$I_c$	–1	A
	Pulsed	$I_{CP}$	–2	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 <sub>CEO</sub>	-30	-	-	V	I <sub>C</sub> = -1mA
Collector-base breakdown voltage	BV <sub>CBO</sub>	-30	-	-	V	I <sub>C</sub> = -100μA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	-6	-	-	V	I <sub>E</sub> = -100μA
Collector cut-off current	I <sub>CBO</sub>	-	-	-1.0	μA	V <sub>CB</sub> = -20V
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>	120	-150	-300	mV	I <sub>C</sub> = -1.0A I <sub>B</sub> = -100mA
DC current gain	h <sub>FE</sub>	-	-	390	-	V <sub>CE</sub> = -2V I <sub>C</sub> = -100mA
Transition frequency	f <sub>r</sub>	-	350	-	MHz	V <sub>CE</sub> = -10V I <sub>E</sub> = 100mA f= 10MHz
Corrector output capacitance	C <sub>ob</sub>	-	10	-	pF	V <sub>CB</sub> = -10V I <sub>E</sub> = 0mA f= 1MHz
Turn-on time	T <sub>on</sub>	-	30	-	ns	I <sub>C</sub> = -1A I <sub>B1</sub> = -100mA I <sub>B2</sub> = 100mA
Storage time	T <sub>stg</sub>	-	100	-	ns	V <sub>CC</sub> = -25V
Fall time	T <sub>f</sub>	-	20	-	ns	

\*Non repetitive pulse

●h<sub>FE</sub> RANK

Q	R
120-270	180-390

●Electrical characteristic curves

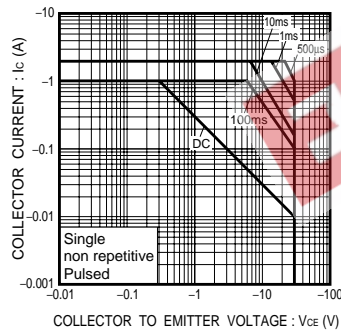


Fig.1 Safe Operating Area

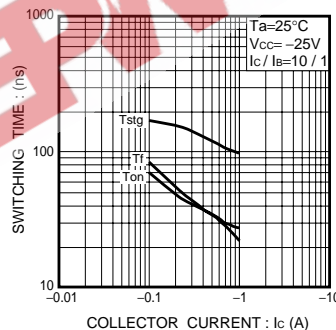


Fig.2 Switching Time

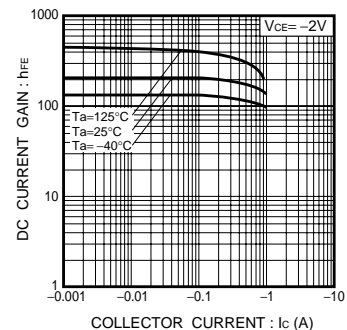


Fig.3 DC Current Gain vs. Collector Current (I)

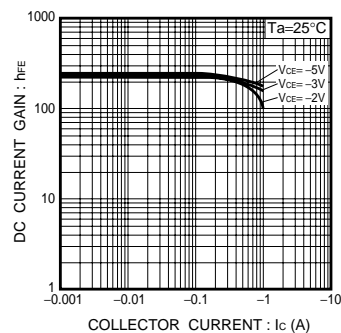


Fig.4 DC Current Gain vs. Collector Current (II)

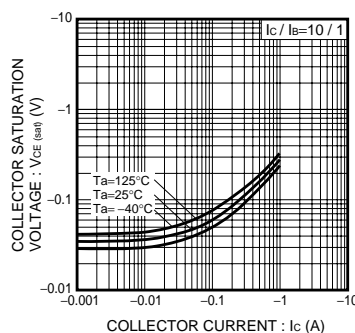


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

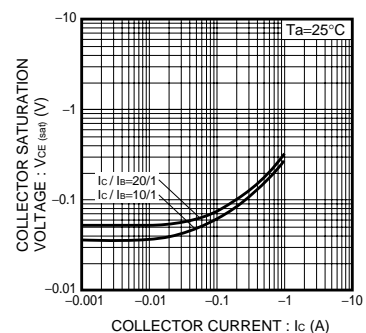


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

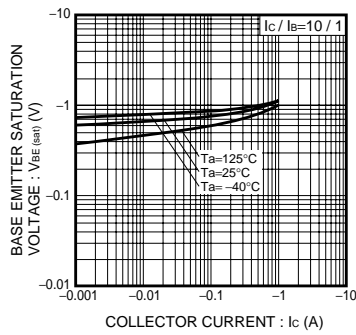


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

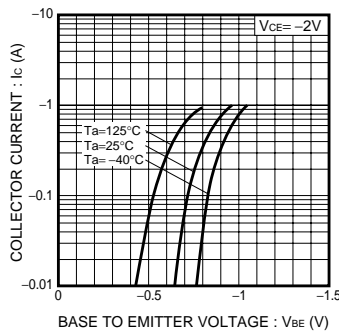


Fig.8 Grounded Emitter Propagation Characteristics

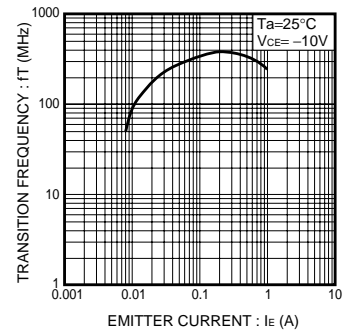


Fig.9 Transition Frequency

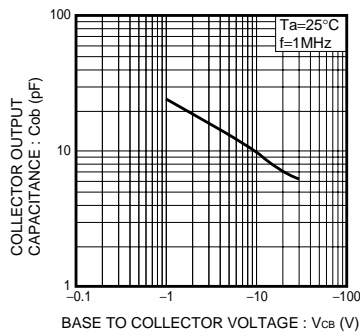
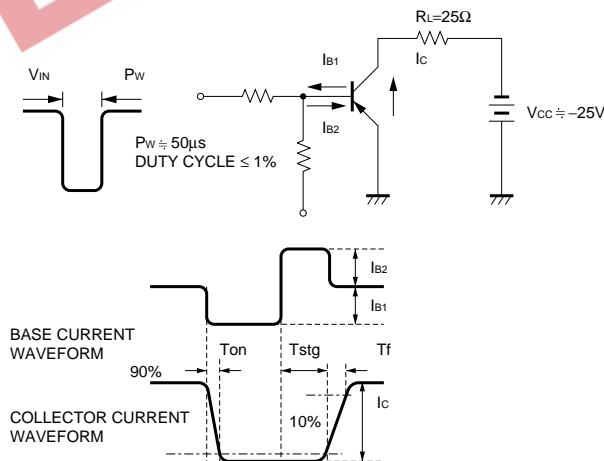


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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