

Medium power transistor (–60V, –0.5A)

2SA2089S

●Features

- 1) High speed switching.
(Tf: Typ. : 60ns at $I_c = -500\text{mA}$)
- 2) Low saturation voltage, typically
(Typ. : -150mV at $I_c = -100\text{mA}$, $I_B = -10\text{mA}$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SC5877S

●Applications

Small signal low frequency amplifier
High speed switching

●Structure

PNP Silicon epitaxial planar transistor

●Packaging specifications

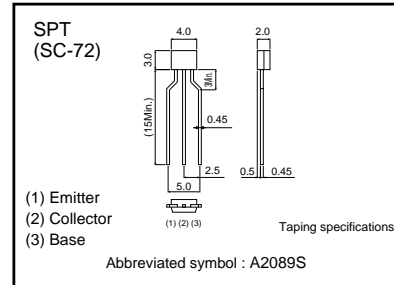
Type	Package	Taping
	Code	TP
	Basic ordering unit (pieces)	5000
2SA2089S		○

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	V_{CB0}	–60	V	
Collector-emitter voltage	V_{CE0}	–60	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

●External dimensions (Unit : mm)



Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV _{CEO}	-60	-	-	V	I _C =-1mA
Collector-base breakdown voltage	BV _{CBO}	-60	-	-	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} =-40V
Emitter cut-off current	I _{EBO}	-	-	-1.0	μA	V _{EB} =-4V
Collector-emitter saturation voltage	V _{CE(sat)}	-	-150	-300	mV	I _C =-100mA I _B =-10mA
DC current gain	h _{FE}	120	-	270	-	V _{CE} =-2V I _C =-50mA
Transition frequency	f _r	-	400	-	MHz	V _{CE} =-10V I _E =100mA f=10MHz
Collector output capacitance	C _{ob}	-	10	-	pF	V _{CB} =-10V I _E =0mA f=1MHz
Turn-on time	T _{on}	-	35	-	ns	I _C =-500mA I _{B1} =-50mA I _{B2} =50mA V _{CC} =-25V
Storage time	T _{stg}	-	100	-	ns	
Fall time	T _f	-	60	-	ns	

*1 Non repetitive pulse

*2 See Switching characteristics measurement circuits

●h_{FE} RANK

Q
120-270

●Electrical characteristic curves

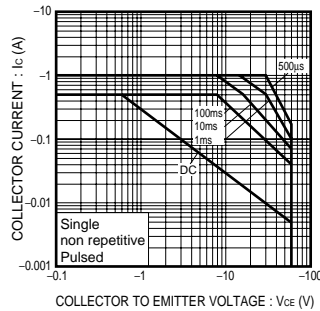


Fig.1 Safe Operating Area

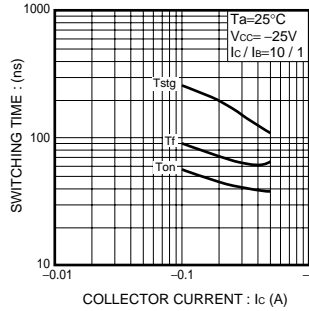


Fig.2 Switching Time

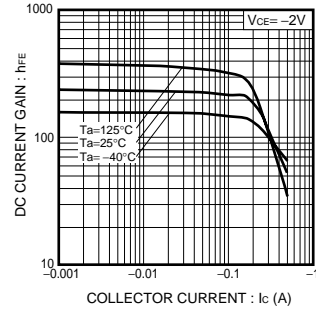


Fig.3 DC Current Gain vs. Collector Current (I)

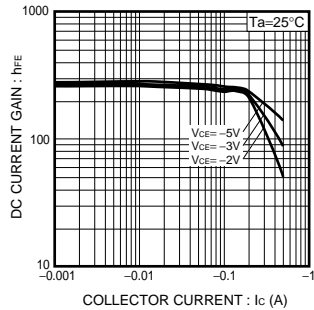


Fig.4 DC Current Gain vs. Collector Current (II)

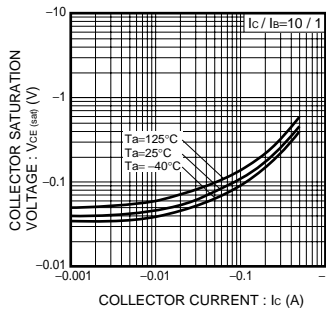


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

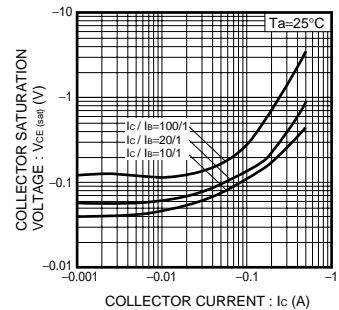


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

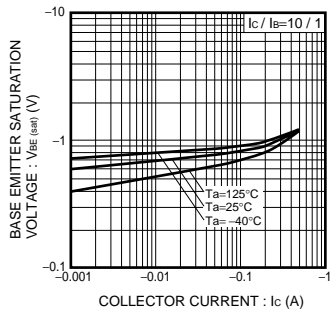


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

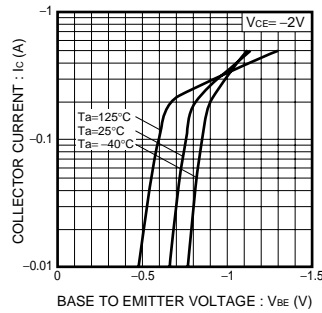


Fig.8 Grounded Emitter Propagation Characteristics

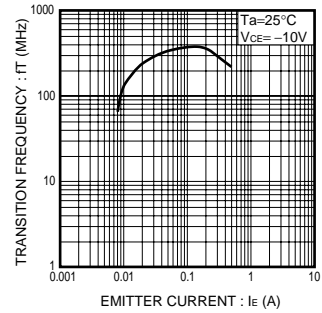


Fig.9 Transition Frequency

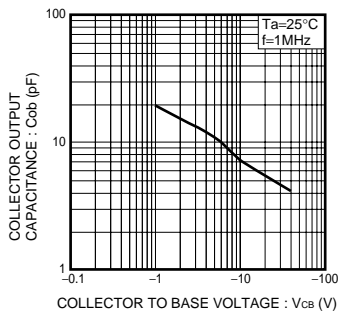
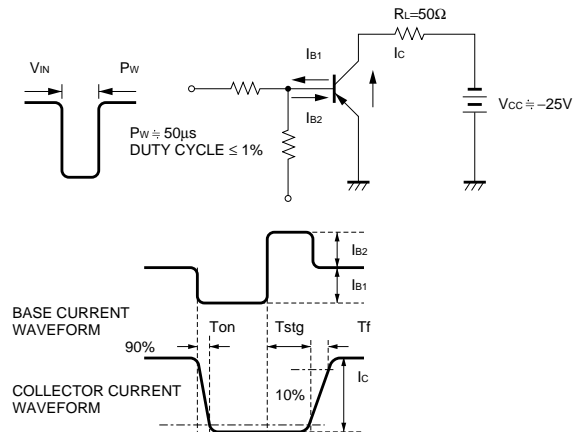


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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