

Power transistor (−30V, −2A)

2SA2087

●Features

- 1) High speed switching. (T_f : Typ. : 20ns at $I_c = -2A$)
- 2) Low saturation voltage, typically
(Typ. : $-200mV$ at $I_c = -1.0A$, $I_B = -100mA$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SC5875

●Applications

Low frequency amplifier
High speed switching

●Structure

PNP Silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	TV2
	Basic ordering unit (pieces)	2500
2SA2087		○

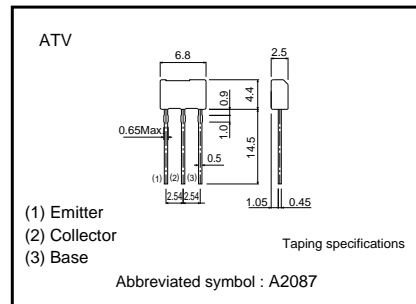
●Absolute maximum ratings ($T_a=25^{\circ}C$)

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	−2	A
	Pulsed	I_{CP}	−4	A *1
Power dissipation	P_c	1.0	W *2	
Junction temperature	T_j	150	$^{\circ}C$	
Range of storage temperature	T_{stg}	−55 to 150	$^{\circ}C$	

*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	$I_C = -1\text{mA}$
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	$V_{CE(sat)}$	-	-200	-500	mV	$I_C = -1.0\text{A}$ $I_B = -100\text{mA}$
DC current gain	h_{FE}	120	-	390	-	$V_{CE} = -2\text{V}$ $I_C = -100\text{mA}$
Transition frequency	f_T	-	350	-	MHz	$V_{CE} = -10\text{V}$ $I_E = 100\text{mA}$ $f = 10\text{MHz}$
Corrector output capacitance	C_{ob}	-	25	-	pF	$V_{CB} = -10\text{V}$ $I_E = 0\text{mA}$ $f = 1\text{MHz}$
Turn-on time	T_{on}	-	25	-	ns	$I_C = -2\text{A}$ $I_{B1} = -200\text{mA}$
Storage time	T_{stg}	-	100	-	ns	$I_{B2} = 200\text{mA}$
Fall time	T_f	-	20	-	ns	$V_{CC} = -25\text{V}$

*Non repetitive pulse

● h_{FE} RANK

Q	R
120-270	180-390

●Electrical characteristic curves

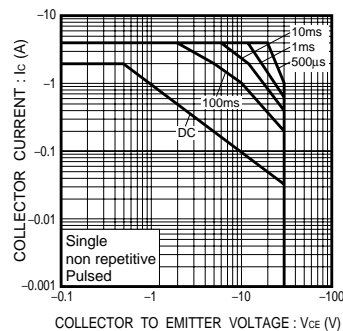


Fig.1 Safe Operating Area

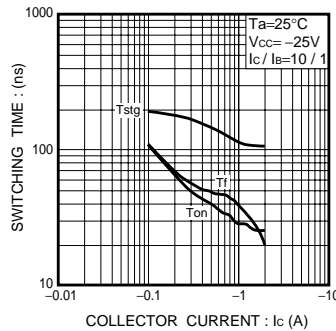


Fig.2 Switching Time

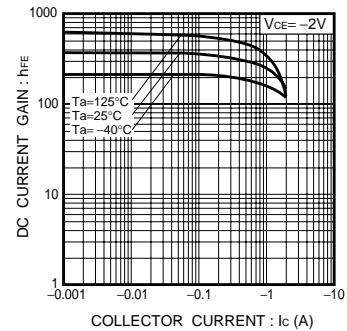


Fig.3 DC Current Gain vs. Collector Current (I)

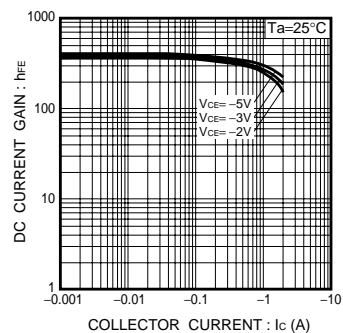


Fig.4 DC Current Gain vs. Collector Current (II)

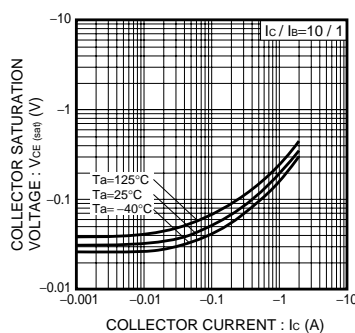


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

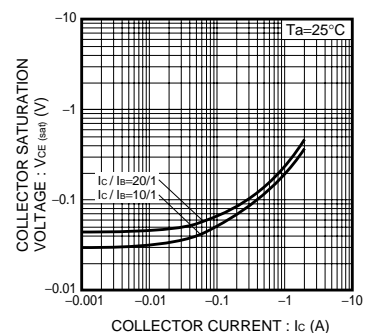


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

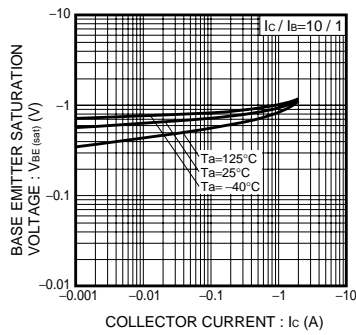


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

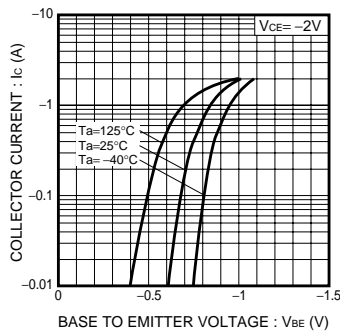


Fig.8 Grounded Emitter Propagation Characteristics

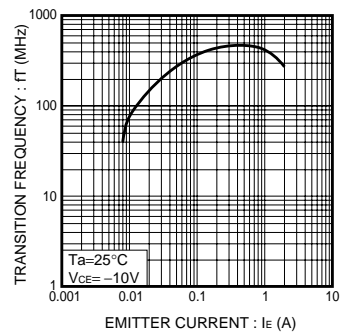


Fig.9 Transition Frequency

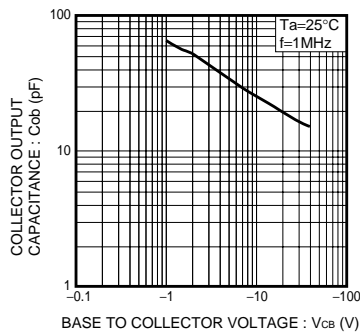
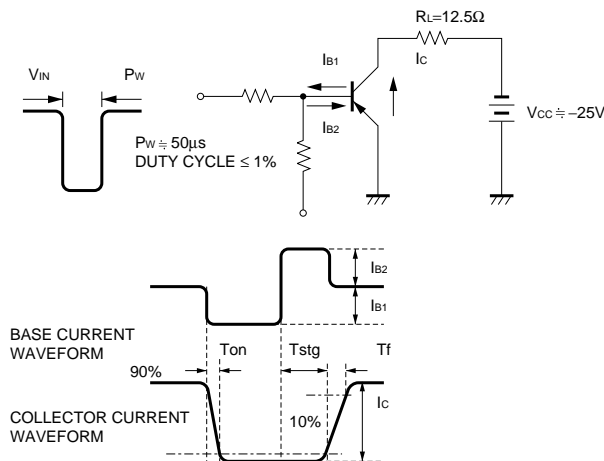


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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