

Medium power transistor (–60V, –0.5A)

2SA2090

●Features

- 1) High speed switching. (T_f : Typ. : 35ns 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 2SC5868.

●Applications

High speed switching, Low noise

●Structure

PNP Silicon epitaxial planar

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
2SA2090		○

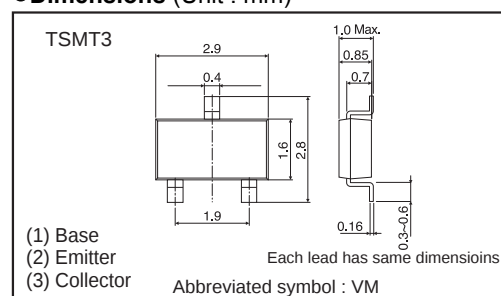
●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

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	I_c	–0.5	A
	I_{CP}	–1.0	A ^{*1}
Power dissipation	P_C	500	mW ^{*2}
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	–55 to +150	$^\circ\text{C}$

^{*1} $P_w=10\text{ms}$

^{*2} Each terminal mounted on a recommended land.

●Dimensions (Unit : mm)



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	-60	-	-	V	$I_C = -1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	-60	-	-	V	$I_C = -100\text{mA}$
Emitter-base breakdown voltage	BV_{EBO}	-6	-	-	V	$I_E = -100\mu\text{A}$
Collector cut-off current	I_{CBO}	-	-	-1.0	μA	$V_{CB} = -60\text{V}$
Emitter cut-off current	I_{EBO}	-	-	-1.0	μA	$V_{EB} = -4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-150	-300	mV	$I_C = -100\text{mA}$, $I_B = -10\text{mA}$
DC current gain	h_{FE}	120	-	270	-	$V_{CE} = -2\text{V}$, $I_C = -50\text{mA}$
Transition frequency	f_T	-	400	-	MHz	$V_{CE} = -10\text{V}$, $I_E = 100\text{mA}$, $f = 10\text{MHz}$ *1
Collector output capacitance	C_{ob}	-	10	-	pF	$V_{CB} = -10\text{V}$, $I_E = 0\text{mA}$, $f = 1\text{MHz}$
Turn-on time	T_{on}	-	35	-	ns	$I_C = -500\text{mA}$, $I_{B1} = -50\text{mA}$ $I_{B2} = 50\text{mA}$ $V_{CC} = -25\text{V}$
Storage time	T_{stg}	-	100	-	ns	
Fall time	T_f	-	60	-	ns	

*1 Measured using pulse current

●h_{FE} RANK

Q

120-270

●Electrical characteristic curves

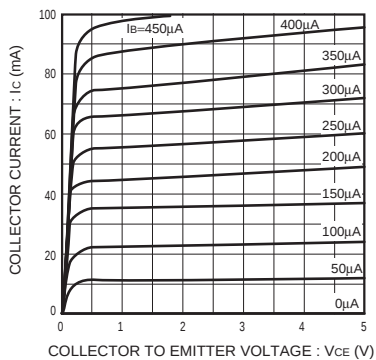


Fig.1 Typical output characteristics

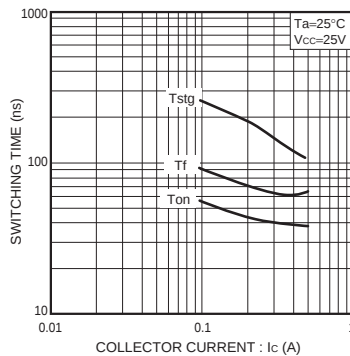


Fig.2 Switching Time

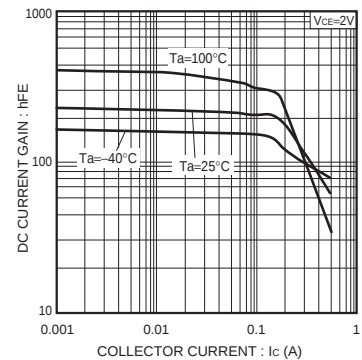


Fig.3 DC current gain vs. collector current (I)

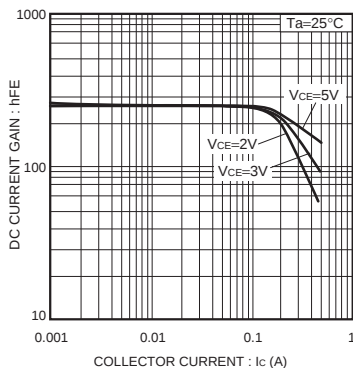


Fig.4 DC current gain vs. collector current (II)

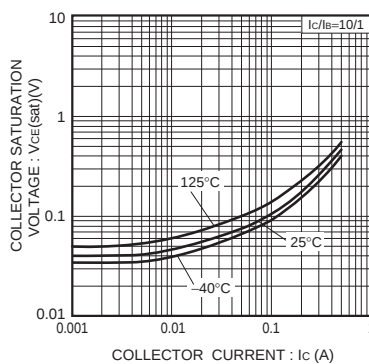


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

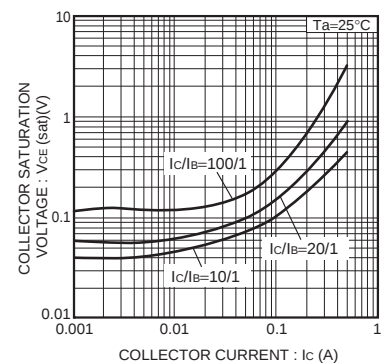


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

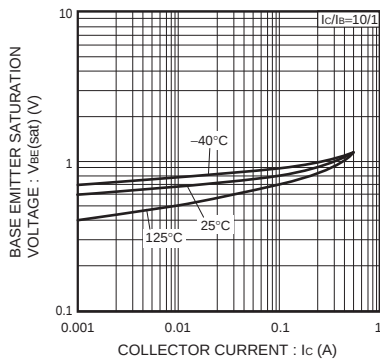


Fig.7 Base-emitter saturation voltage vs. collector current

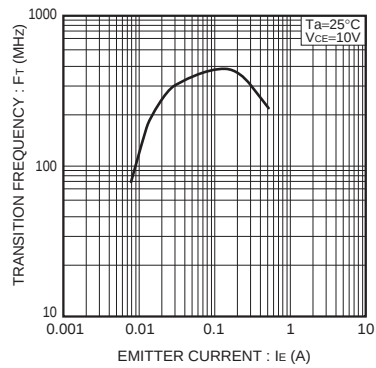


Fig.8 Transition frequency

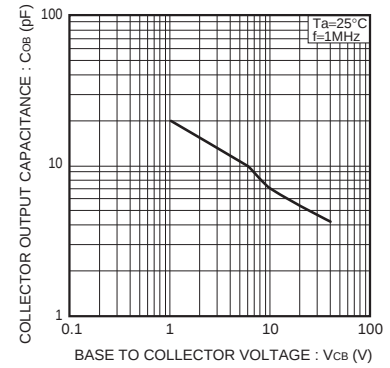


Fig.9 Collector output capacitance

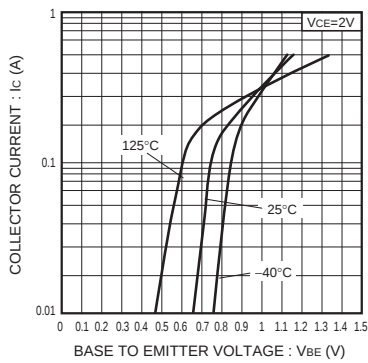
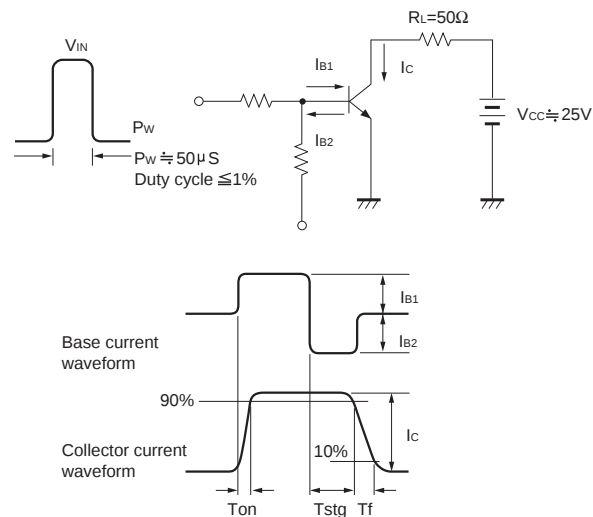


Fig.10 Ground emitter propagation characteristics

●Switching characteristics measurement circuits



Notes

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