–1A / –60V Bipolar transistor

2SA2092

●Features

1) High speed switching. (tf : Typ. : 30ns at I_C = –1A)
2) Low saturation voltage.
   (Typ. : –200mV at I_C = –500mA, I_B = –50mA)
3) Strong discharge resistance for inductive load and capacitance load.
4) Low switching noise.

●Applications

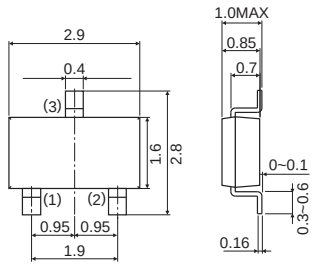
High-speed switching, low frequency amplification

●Structure

PNP epitaxial planar silicon transistor

●Dimensions (Unit : mm)

TSMT3



(1) Base
(2) Emitter
(3) Collector

Each lead has same dimensions

Abbreviated symbol : VN

●Packaging specifications

Part No.	Package	TSMT3
	Packaging type	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
2SA2092		◯

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	–60	V
Collector-emitter voltage		V_{CEO}	–60	V
Emitter-base voltage		V_{EBO}	–6	V
Collector current	DC	I_C	–1	A
	PULSE	I_{CP} *1	–2	A
Power dissipation		P_C *2	500	mW
Junction temperature		Tj	150	°C
Range of storage temperature		Tstg	–55 to +150	°C

*1 Pw=10ms
*2 Each terminal mounted on a recommended land

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
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	$V_{CE(sat)}$	–	–200	–500	mV	I_C= –500mA, I_B= –50mA
DC current gain	h_{FE} *3	120	–	270	–	V_{CE}= –2V, I_C= –100mA
Transition frequency	f_T *1	–	300	–	MHz	V_{CE}= –10V, I_E=100mA, f=10MHz
Collector output capacitance	Cob	–	15	–	pF	V_{CB}= –10V, I_E=0, f=1MHz
Turn-on time	ton	–	30	–	ns	I_C= –1A, I_{B1}= –100mA I_{B2}=100mA V_{CC} ≃ –25V
Storage time	tstg	–	100	–	ns	
Fall time	tf *2	–	30	–	ns	

*1 Pulse measurement
*2 See switching test circuit
*3 h_{FE} rank

●h_{FE} RANK

Q
120-270

●Electrical characteristic curves

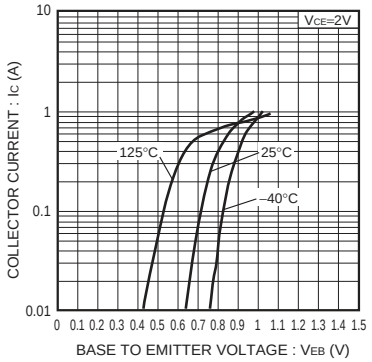


Fig.1 Grounded emitter propagation characteristics

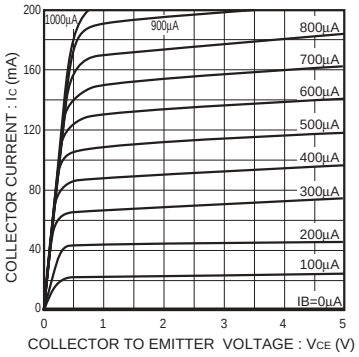


Fig.2 Typical output characteristics

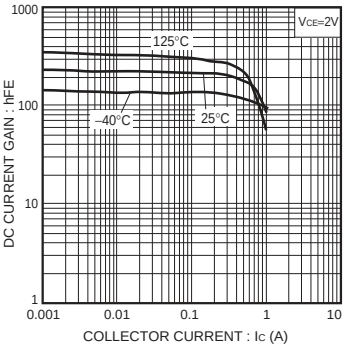


Fig.3 DC current gain vs. collector current (I)

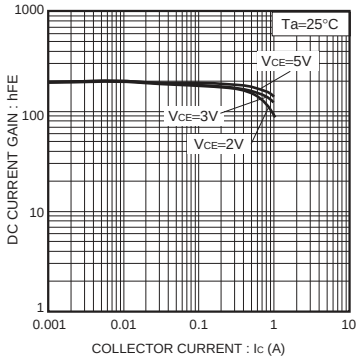


Fig.4 DC current gain vs. collector current (II)

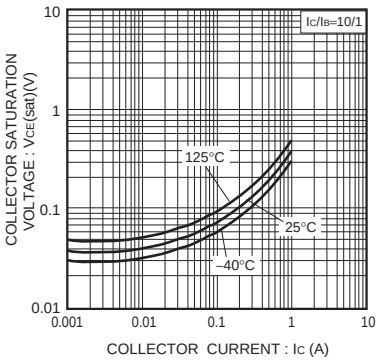


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

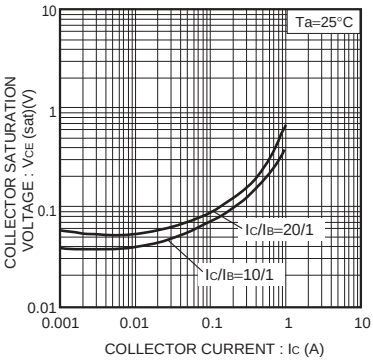


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

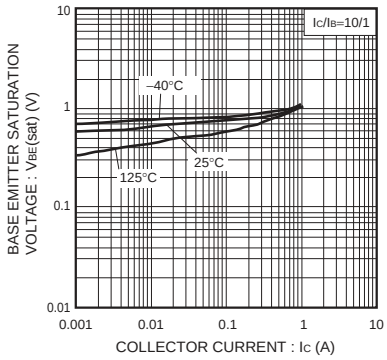


Fig.7 Base-emitter saturation voltage vs. collector current

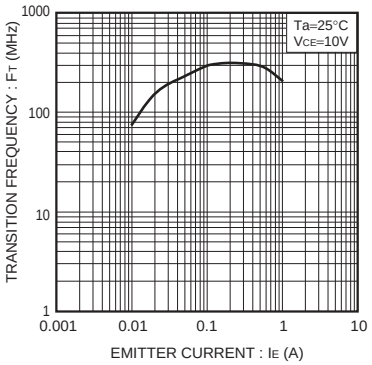


Fig.8 Transition frequency

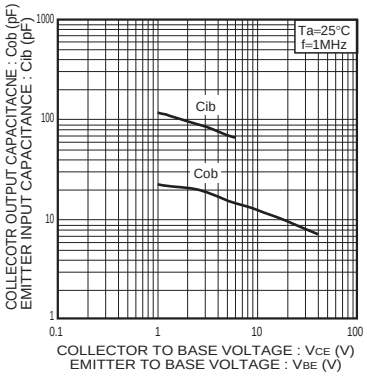


Fig.9 Collector output capacitance
Emitter input capacitance

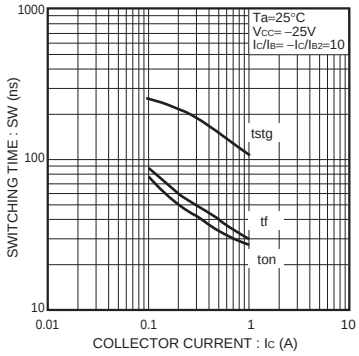
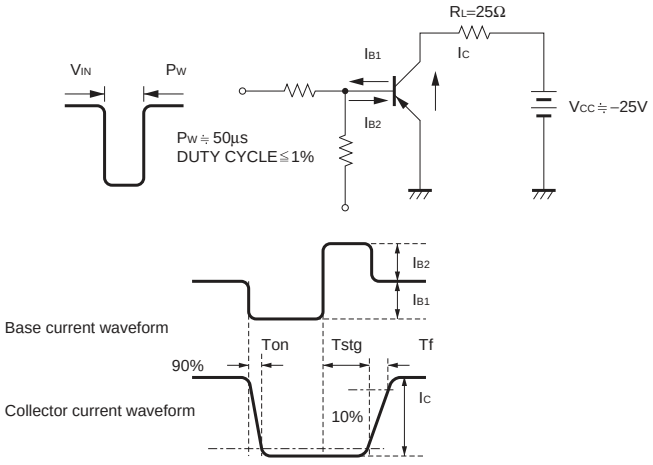


Fig.10 Switching Time

●Switching characteristics measurement circuits



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