

-1A / -60V Bipolar transistor

2SA2092

●Applications

High-speed switching, low frequency amplification

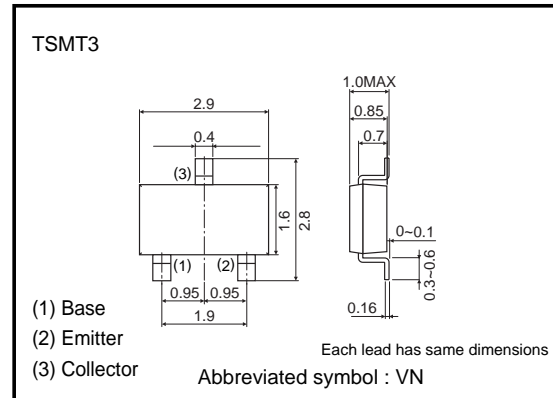
●Feature

- 1) High speed switching. (t_f : 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.

●Structure

PNP epitaxial planar silicon transistor

●External dimensions (Unit : mm)



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

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	-1	A
	PULSE	I_{CP}^{*1}	-2	A
Power dissipation	P_C	500	mW	
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

●Packaging specifications

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

●hFE rank

Q
120-270

●Electrical characteristics ($T_a=25^\circ C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CE0}	-60	-	-	V	$I_c = -1mA$
Collector-base breakdown voltage	BV_{CB0}	-60	-	-	V	$I_c = -100\mu A$
Emitter-base breakdown voltage	BV_{EB0}	-6	-	-	V	$I_E = -100\mu A$
Collector cut-off current	I_{CB0}	-	-	-1.0	μA	$V_{CB} = -40V$
Emitter cut-off current	I_{EB0}	-	-	-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	C_{ob}	-	15	-	pF	$V_{CB} = -10V$, $I_E = 0$, $f = 1MHz$
Turn-on time	t_{on}	-	30	-	ns	$I_c = -1A$, $I_{B1} = -100mA$ $I_{B2} = 100mA$
Storage time	t_{stg}	-	100	-	ns	
Fall time	t_f^{*2}	-	30	-	ns	$V_{CC} = -25V$

*1 Pulse measurement

*2 See switching test circuit

*3 h_{FE} rank

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● Electrical characteristics curve

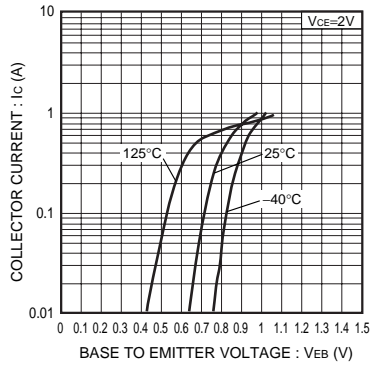


Fig.1 Grounded emitter propagation characteristics

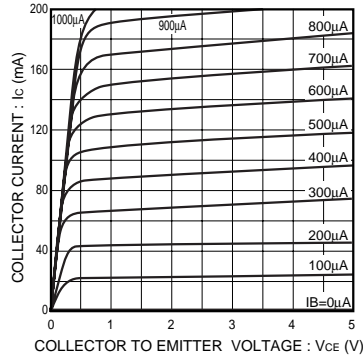


Fig.2 Typical output characteristics

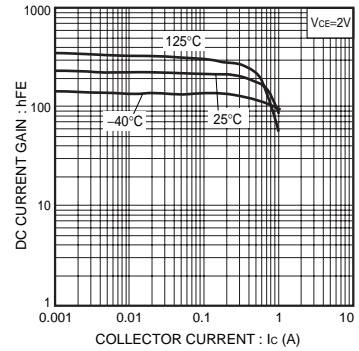


Fig.3 DC current gain vs. collector current (I)

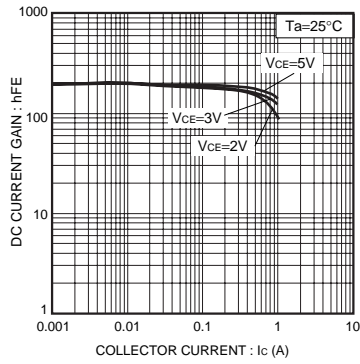


Fig.4 DC current gain vs. collector current (II)

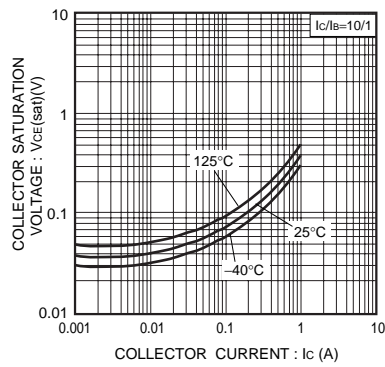


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

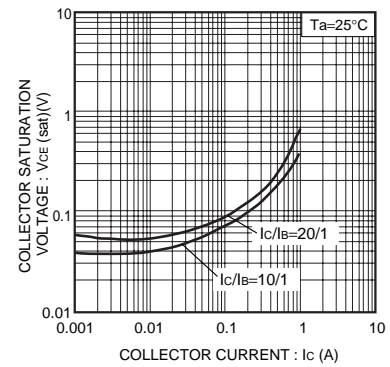


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

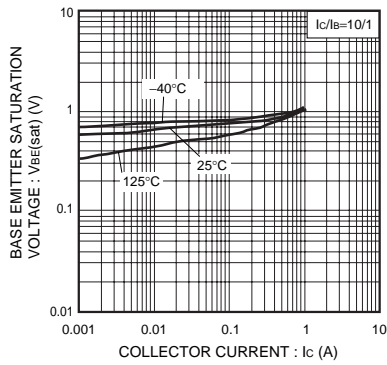


Fig.7 Base-emitter saturation voltage vs. collector current

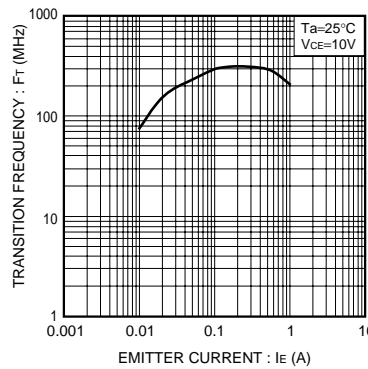


Fig.8 Transition frequency

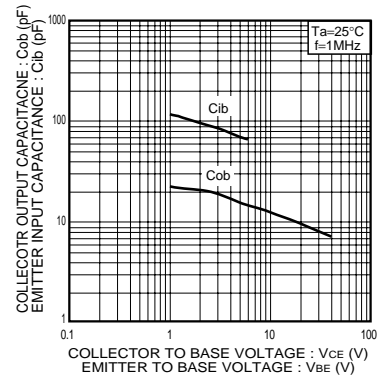
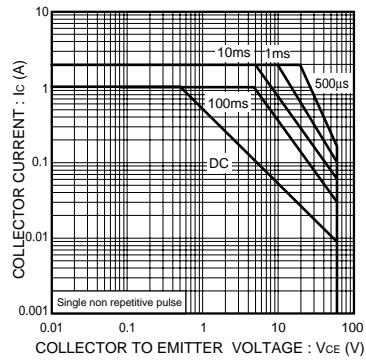
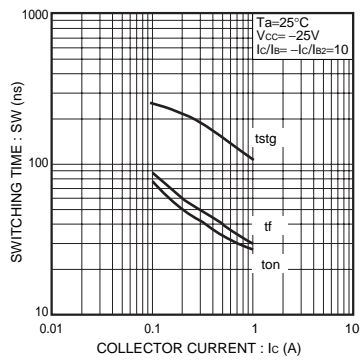
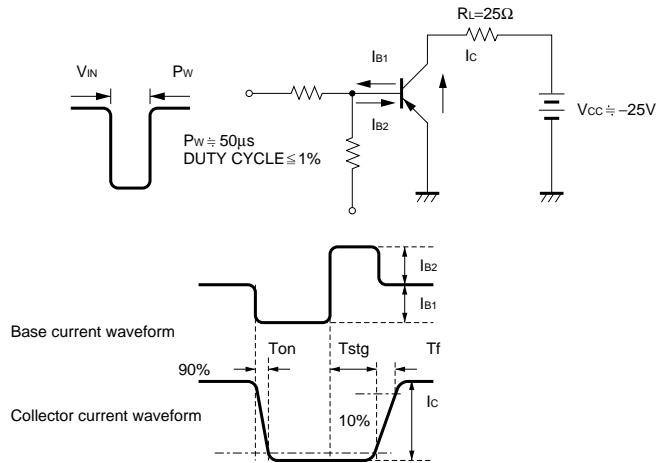


Fig.9 Collector output capacitance Emitter input capacitance

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●Switching test circuit



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