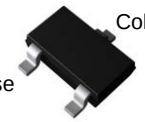
2SA2094

PNP -2A -60V Middle Power Transistor Datasheet

Parameter	Value
V_{CEO}	−60V
I_C	−2A

●Outline

TSMT3

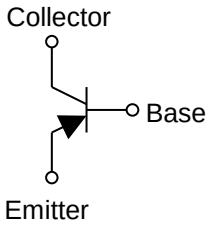


2SA2094
(SC-96)

●Features

1) Suitable for Middle Power Driver
2) Complementary NPN Types : 2SC5866
3) Low $V_{CE(sat)}$
$V_{CE(sat)}$= −0.50V(Max.)
(I_C/I_B= −1A / −0.1A)
4) Lead Free/RoHS Compliant.

●Inner circuit



●Applications

Motor driver , LED driver
Power supply

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SA2094	TSMT3	2928	TL	180	8	3,000	VP

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	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	−2.0	A
	Pulsed	I_{CP} *1	−4.0	A
Power dissipation		P_D *2	0.5	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

*1 Pw=10ms , single pulse
*2 Each terminal mounted on a reference land

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	I_C = −1mA	−60	-	-	V
Collector-base breakdown voltage	BV_{CBO}	I_C = −100μA	−60	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = −100μA	−6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = −40V	-	-	−1.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = −4V	-	-	−1.0	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = −1A, I_B = −0.1A	-	−200	−500	mV
DC current gain	h_{FE}	V_{CE} = −2V, I_C = −100mA	120	-	270	-
Transition frequency	f_T *1	V_{CE} = −10V, I_E = 100mA f=10MHz	-	300	-	MHz
Output capacitance	C_{ob}	V_{CB} = −10V, I_E = 0A f = 1MHz	-	25	-	pF
Turn-on time	t_{on} *2	I_C= −2A I_{B1}= −200mA I_{B2}=200mA $V_{CC}\simeq$ −25V	-	25	-	ns
Storage time	t_{stg} *2		-	100	-	ns
Fall time	t_f *2		-	30	-	ns

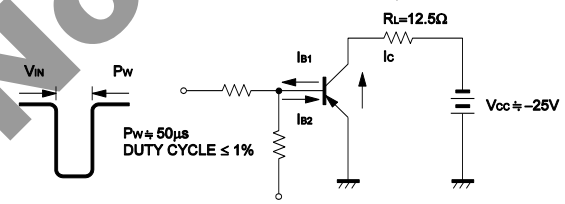
*1 Pulsed

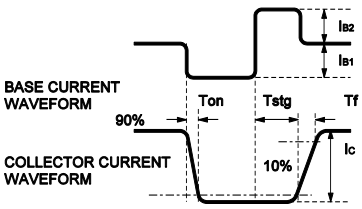
*2 See switching time test circuit

●h_{FE} rank categories

Rank	Q
h_{FE}	120 to 270

●Switching time test circuit





●**Electrical characteristic curves**(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

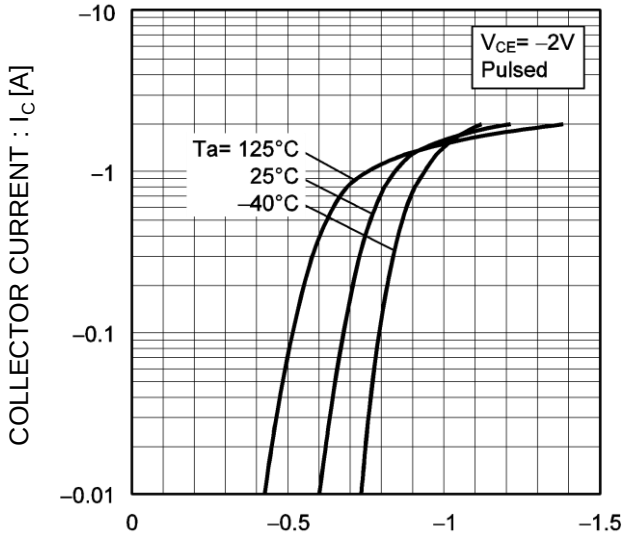


Fig.2 Typical Output Characteristics

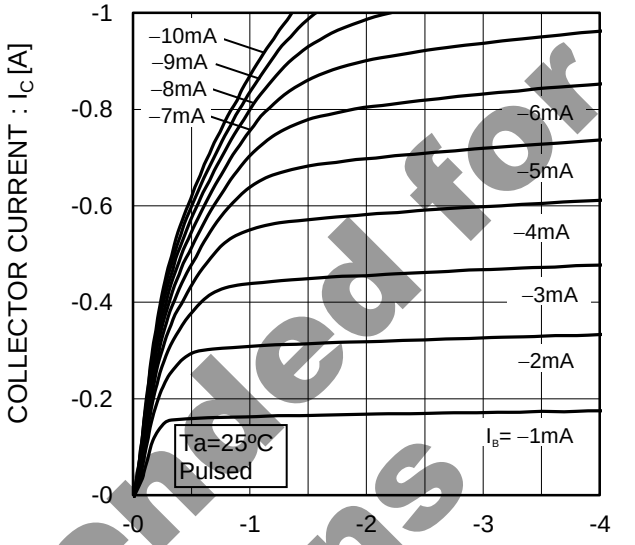


Fig.3 DC Current Gain vs. Collector Current (I)

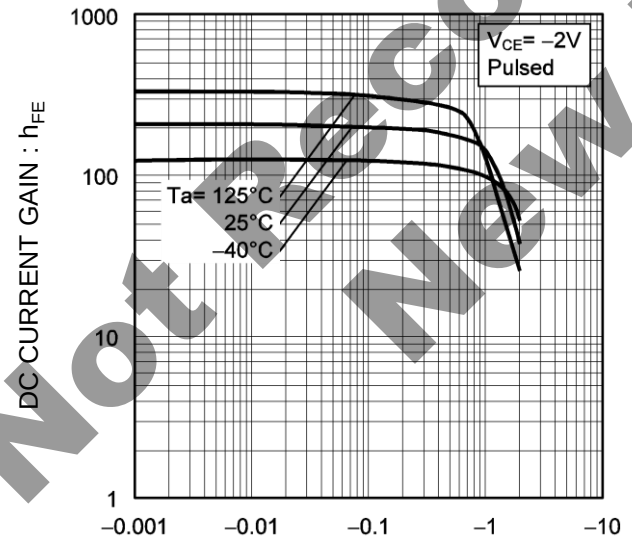
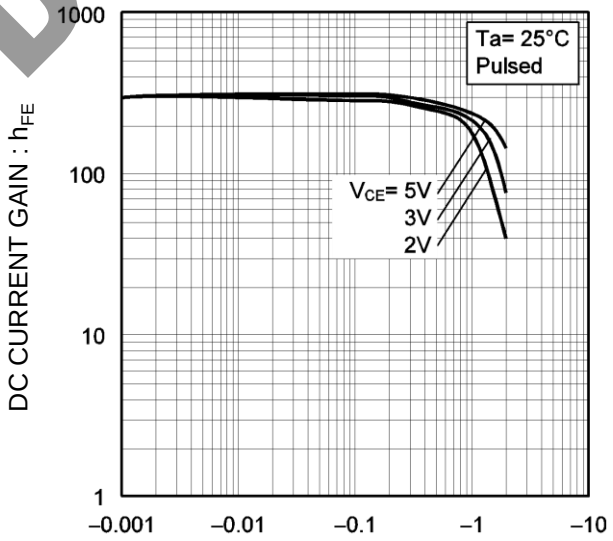


Fig.4 DC Current Gain vs. Collector Current (II)



●**Electrical characteristic curves**(Ta = 25°C)

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

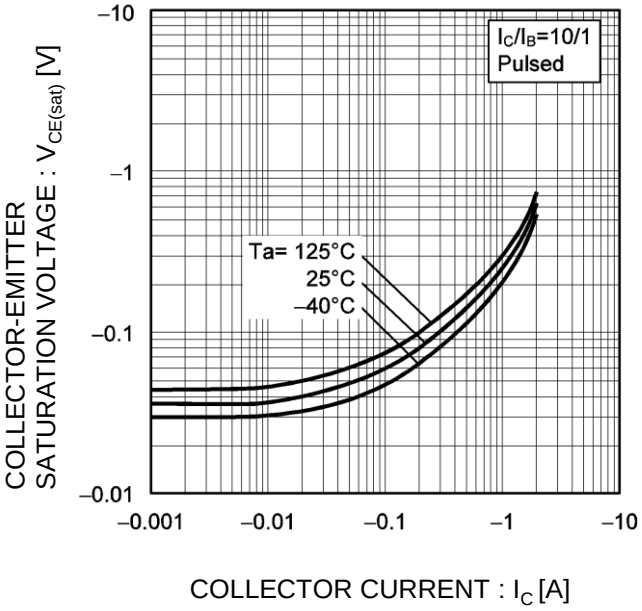


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

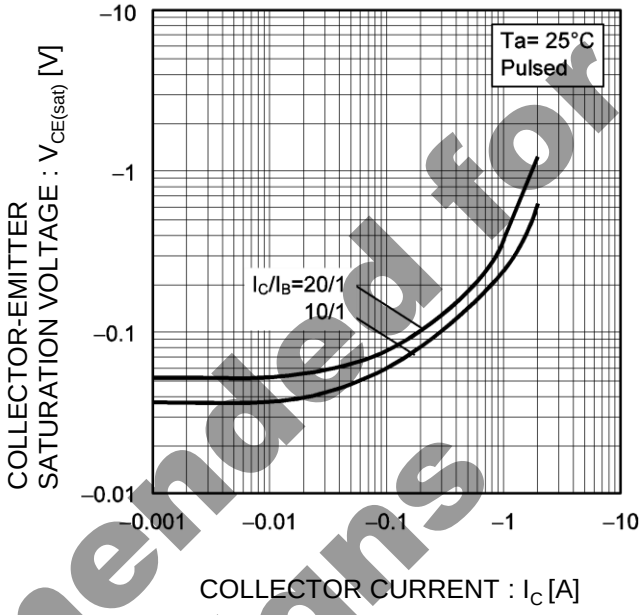


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

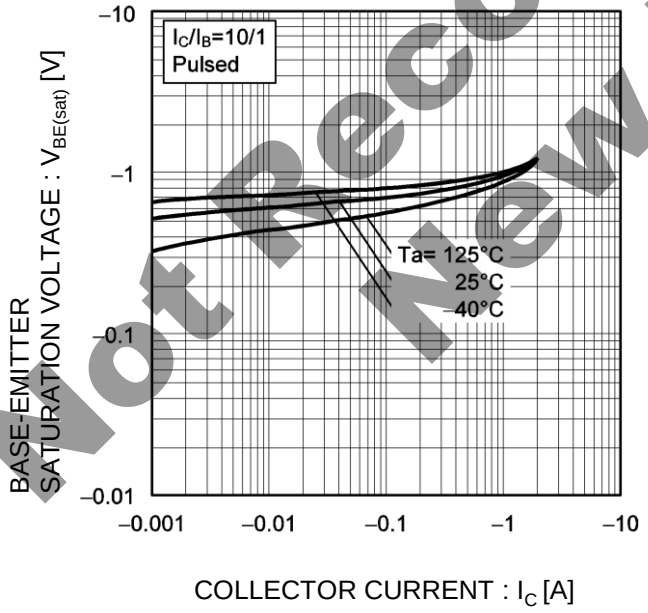
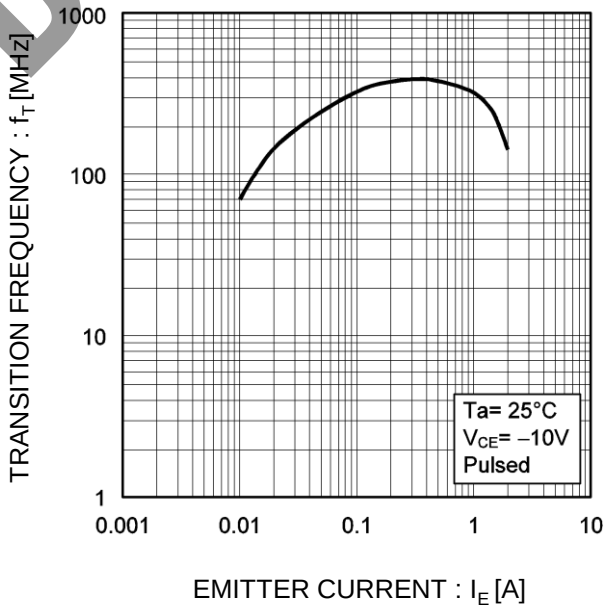


Fig.8 Gain Bandwidth Product vs. Emitter Current



●**Electrical characteristic curves**(Ta = 25°C)

Fig.9 Collector output capacitance vs. Collector-Base Voltage

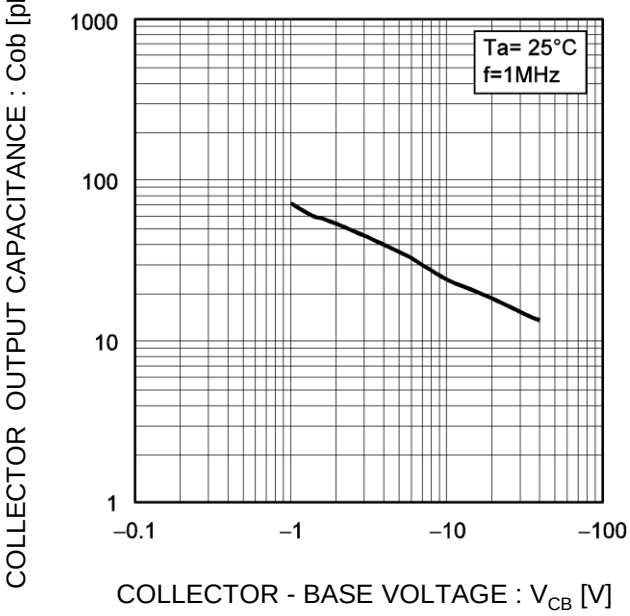
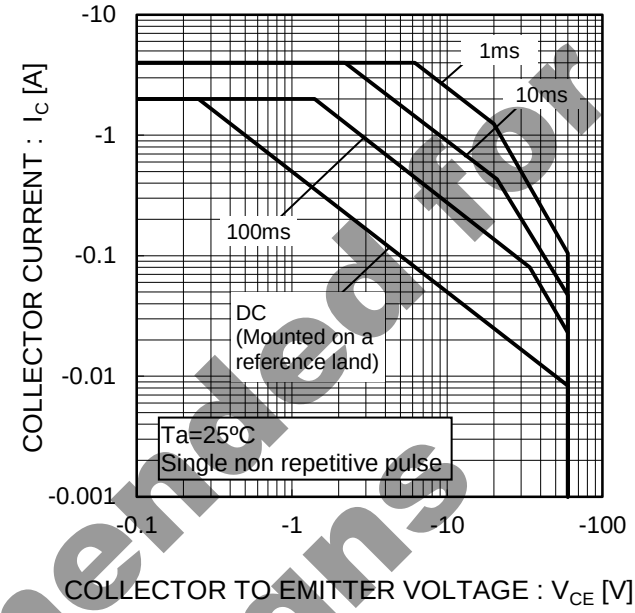
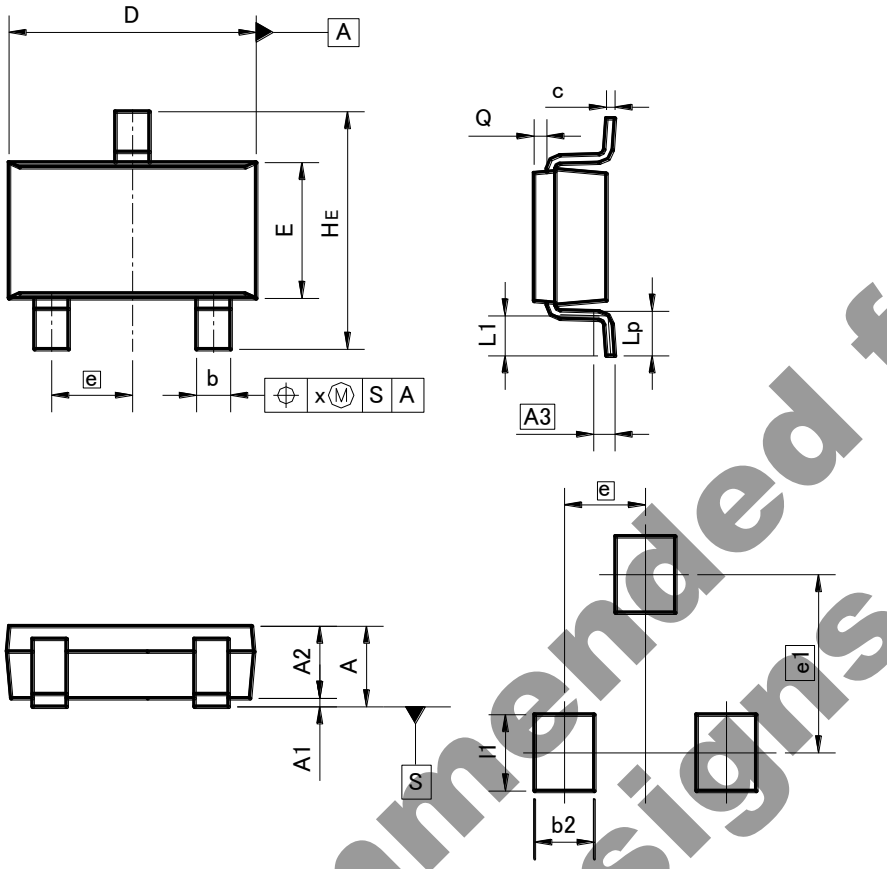


Fig.10 Safe Operating Area



●**Dimensions** (Unit : mm)

TSMT3



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	–	1.00	–	0.039
A1	0.00	0.10	0.000	0.004
A2	0.75	0.95	0.030	0.037
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.10	0.26	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.05	0.25	0.002	0.010
x	–	0.20	–	0.008

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2		0.70	–	0.028
e1	2.10		0.083	
l1	–	0.90	–	0.035

Dimension in mm / inches

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