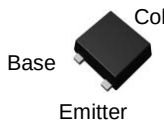
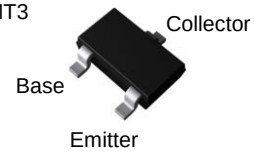
2SB1733 / 2SB1710

PNP -1.0A -30V Middle Power Transistor

Datasheet

Parameter	Value
V_{CEO}	−30V
I_C	−1.0A

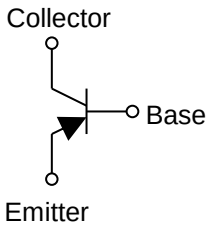
●Outline

TUMT3	TSMT3
	
2SB1733	2SB1710 (SC-96)

●Features

1) Suitable for Middle Power Driver
2) Complementary NPN Types : 2SD2703, 2SD2675
3) Low $V_{CE(sat)}$
   $V_{CE(sat)}$= −0.35V(Max.)
   (I_C/I_B= −500mA/ −25mA)
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
2SB1733	TUMT3	2021	TL	180	8	3,000	EW
2SB1710	TSMT3	2928	TL	180	8	3,000	EW

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	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	−1.0	A
	Pulsed	I_{CP} *1	−2.0	A
Power dissipation	2SB1733	P_D *2	0.4	W
	2SB1710	P_D *2	0.5	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

*1 Pw=1ms , 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_{CBO}	I_C = −10μA	−30	-	-	V
Collector-base breakdown voltage	BV_{CEO}	I_C = −1mA	−30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = −10μA	−6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = −30V	-	-	−100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = −6V	-	-	−100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = −500mA, I_B = −25mA	-	−150	−350	mV
DC current gain	h_{FE} *3	V_{CE} = −2V, I_C = −100mA	270	-	680	-
Transition frequency	f_T *3	V_{CE} = −2V, I_E = 100mA f=100MHz	-	400	-	MHz
Output capacitance	C_{ob}	V_{CB} = −10V, I_E = 0A f = 1MHz	-	7	-	pF

*3 Pulsed

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

Fig.1 Ground Emitter Propagation Characteristics

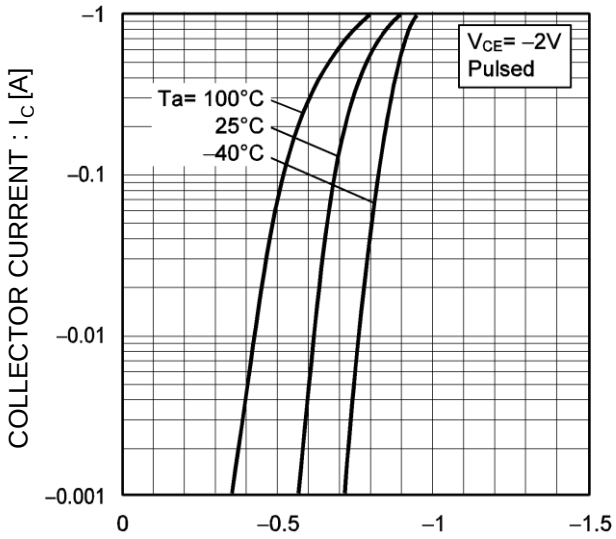


Fig.2 Typical Output Characteristics

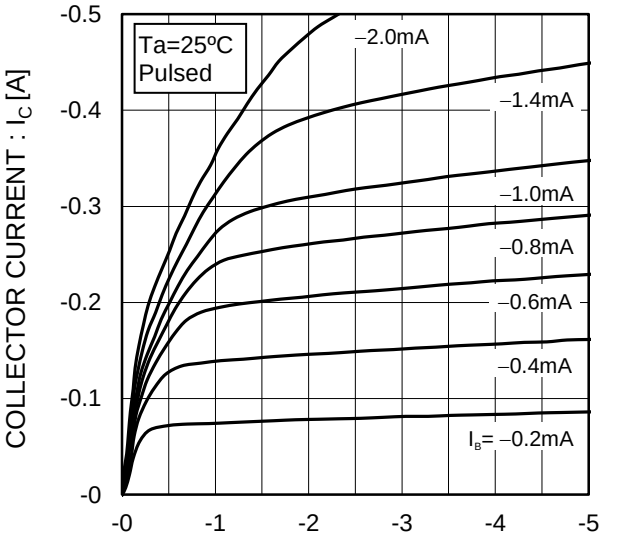


Fig.3 DC Current Gain vs. Collector Current(I)

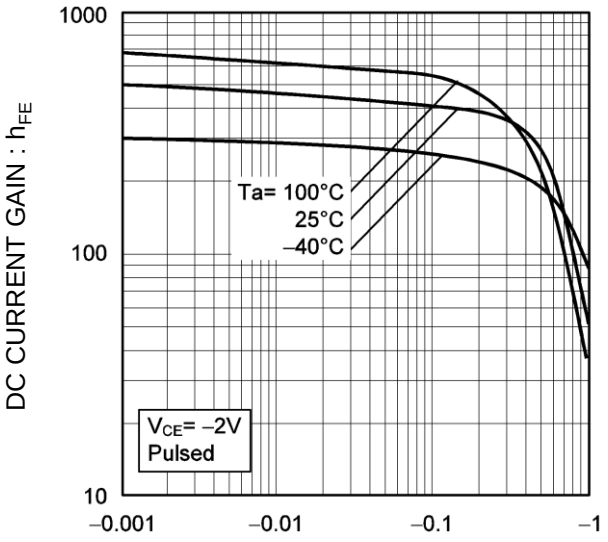
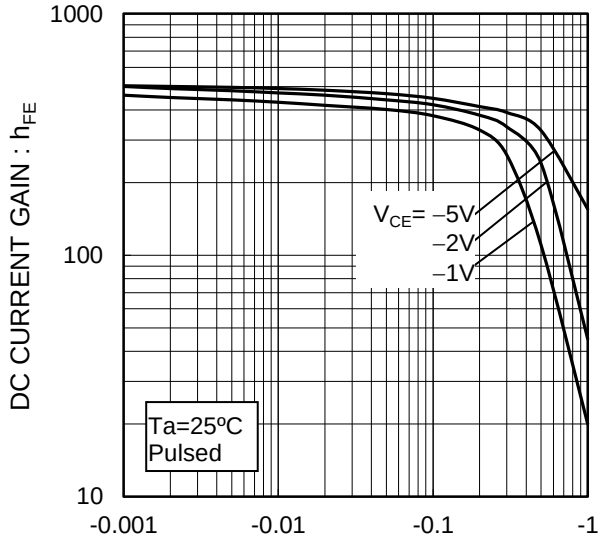


Fig.4 DC Current Gain vs. Collector Current(II)



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

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

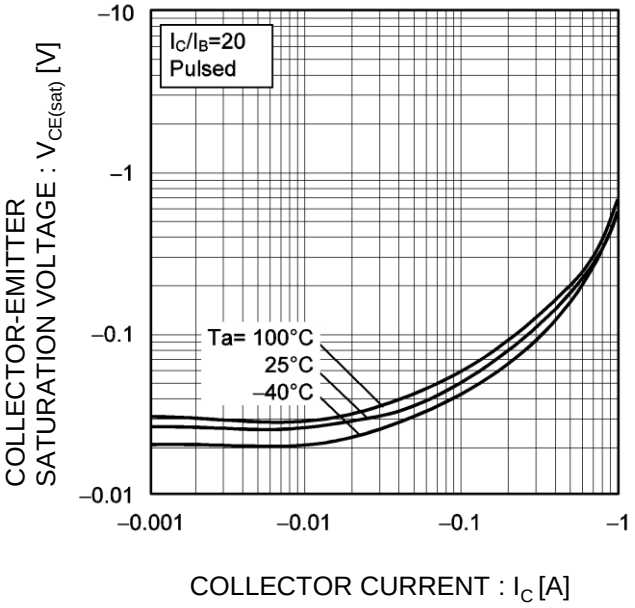


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

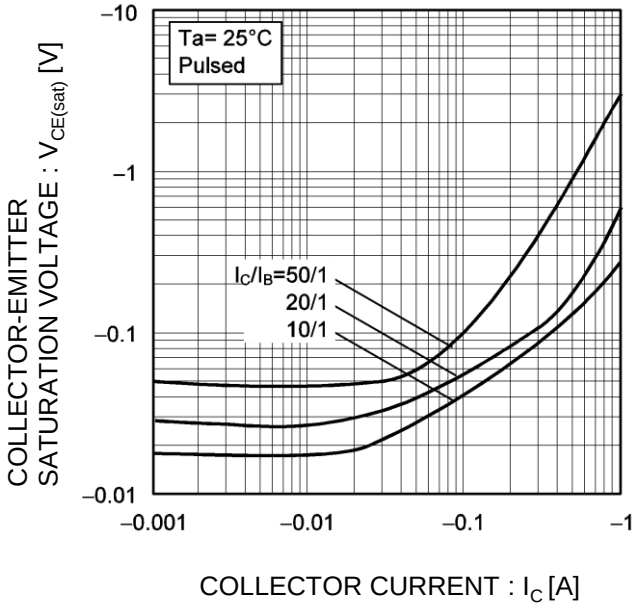


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

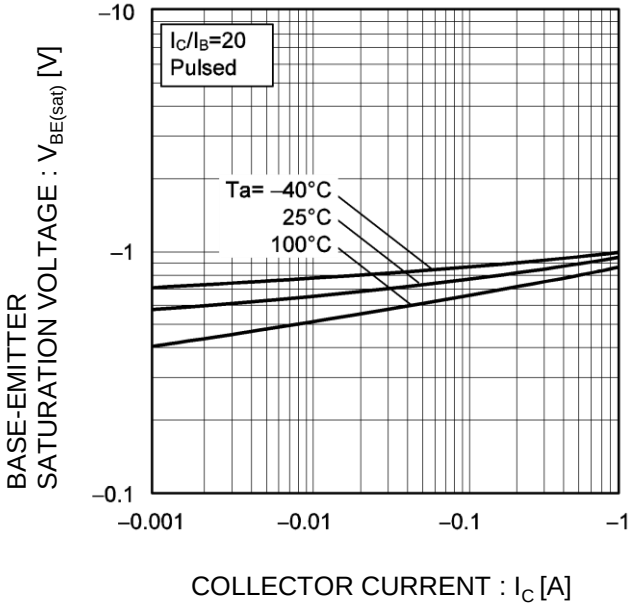
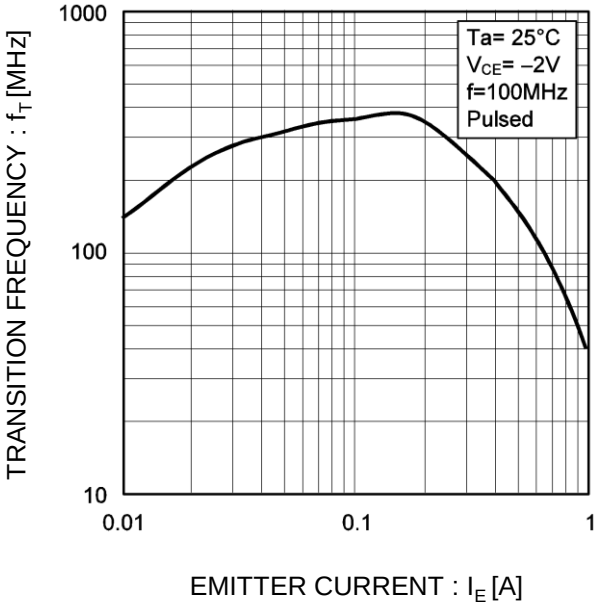


Fig.8 Gain Bandwidth Product vs. Emitter Current



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

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

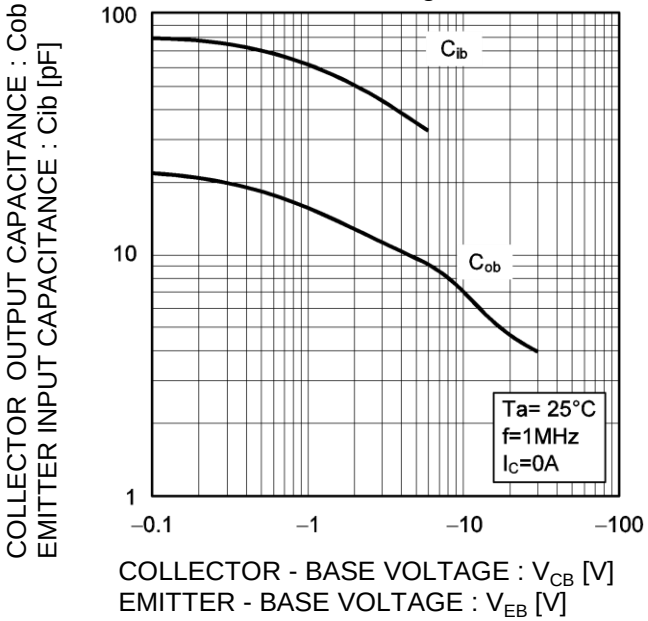


Fig.10 Safe Operating Area

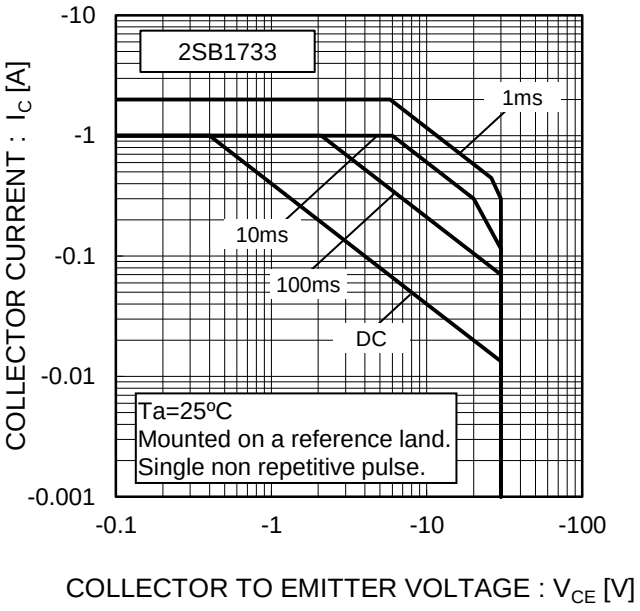
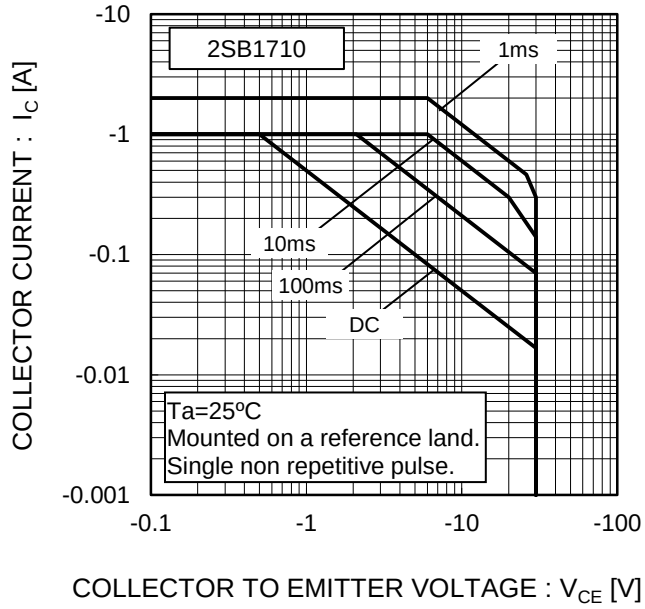
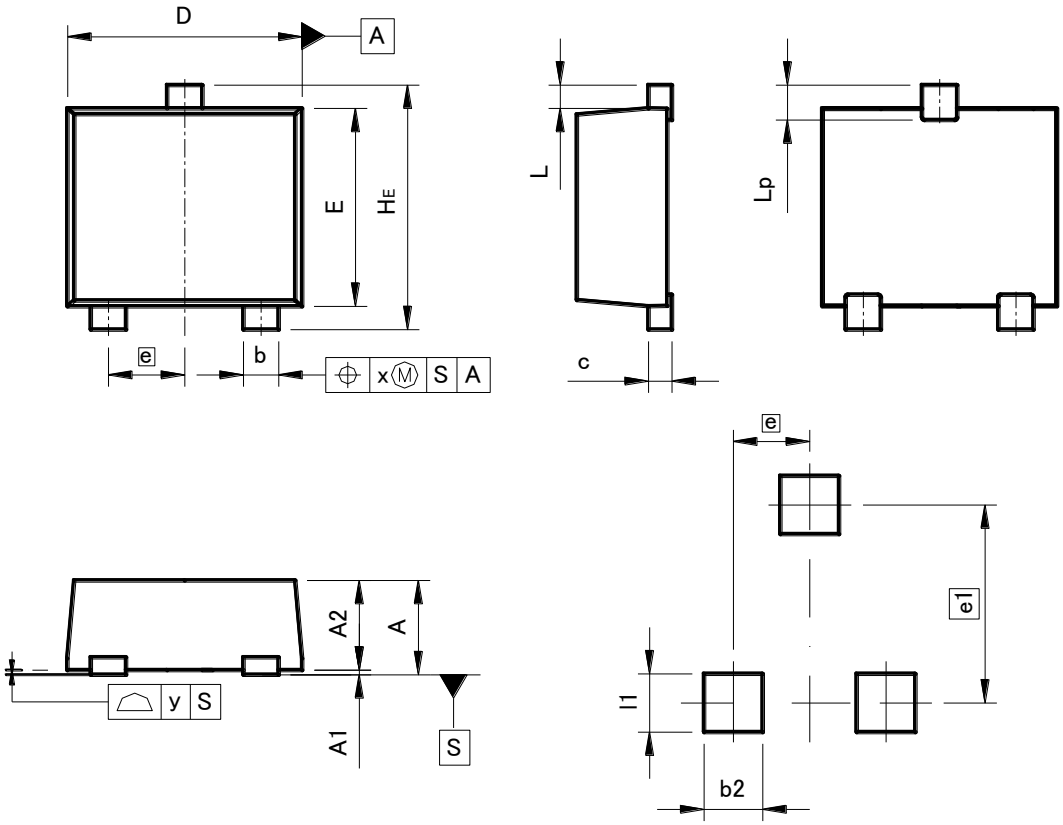


Fig.11 Safe Operating Area



●**Dimensions** (Unit : mm)

TUMT3



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

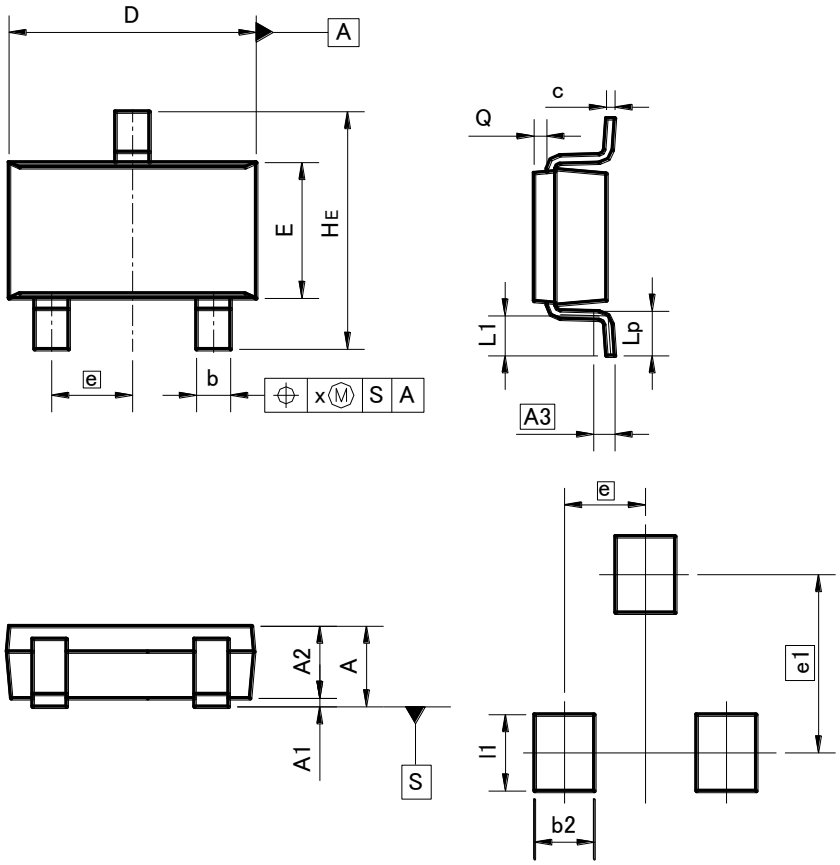
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	−	0.85	−	0.033
A1	0.00	0.10	0.000	0.004
A2	0.72	0.82	0.028	0.032
b	0.25	0.40	0.010	0.016
c	0.12	0.22	0.005	0.009
D	1.90	2.10	0.075	0.083
E	1.60	1.80	0.063	0.071
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L	0.20		0.008	
Lp	−	0.40	−	0.016
x	−	0.10	−	0.004
y	−	0.10	−	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	−	0.50	−	0.020
e1	1.70		0.067	
l1	−	0.50	−	0.020

Dimension in mm / inches

●**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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