



PNP -1.0A -30V Middle Power Transistor

Parameter	Value
V_{CEO}	-30V
I _C	-1.0A

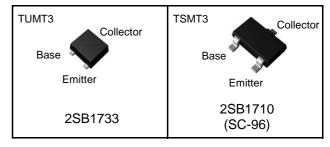
Features

- 1) Suitable for Middle Power Driver
- 2) Complementary NPN Types: 2SD2703, 2SD2675
- 3) Low V_{CE(sat)}

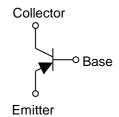
 $V_{CE(sat)} = -0.35V(Max.)$ ($I_C/I_B = -500mA/-25mA$)

4) Lead Free/RoHS Compliant.

Outline



•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	Α
Collector current	Pulsed	I _{CP} *1	-2.0	Α
2SB1733		P _D *2	0.4	W
Power dissipation	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

●Electrical characteristics (Ta = 25°C)

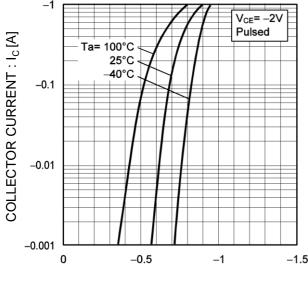
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Collector-emitter breakdown voltage	BV _{CBO}	$I_C = -10\mu A$	-30	-	-	V
Collector-base breakdown voltage	BV _{CEO}	$I_C = -1mA$	-30	ı	ı	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -10\mu A$	-6	ı	ı	V
Collector cut-off current	I _{CBO}	$V_{CB} = -30V$	-	ı	-100	nA
Emitter cut-off current	I _{EBO}	$V_{EB} = -6V$	-	-	-100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -500 \text{mA}, I_B = -25 \text{mA}$	-	-150	-350	mV
DC current gain	h _{FE} *3	$V_{CE} = -2V, I_{C} = -100 \text{mA}$	270	ı	680	-
Transition frequency	f _T *3	$V_{CE} = -2V$, $I_E = 100 \text{mA}$ $f=100 \text{MH}_Z$	-	400	ı	MHz
Output capacitance	C_ob	$V_{CB} = -10V$, $I_E = 0A$ f = 1MHz	-	7	-	pF

^{*3} Pulsed

^{*2} Each terminal mounted on a reference land

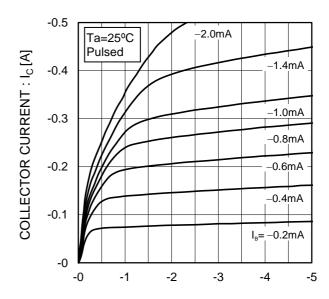
●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics



BASE TO EMITTER VOLTAGE : V_{BE}[V]

Fig.2 Typical Output Characteristics



COLECTOR TO EMITTE VOLTAGE: V_{CE}[V]

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

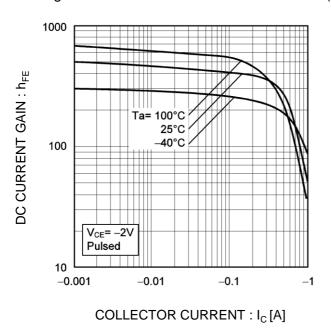
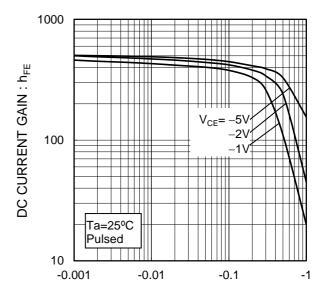


Fig.4 DC Current Gain vs. Collector Current(II)



COLLECTOR CURRENT: Ic [A]

-0.01

-0.001

●Electrical characteristic curves(Ta = 25°C)

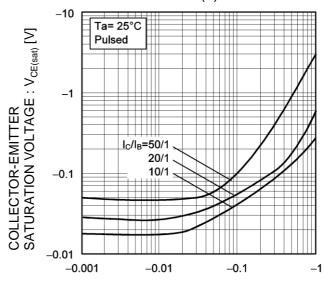
Fig.5 Collector-Emitter Saturation Voltage

vs. Collector Current (I) -10 I_C/I_B=20 COLLECTOR-EMITTER SATURATION VOLTAGE : V_{CE(sat)} [V] Pulsed -0.1 Ta= 100°C 25°C -40°C

COLLECTOR CURRENT : I_C[A]

-0.1

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



COLLECTOR CURRENT : I_C[A]

Ta= 25°C

Fig.7 Base-Emitter Saturation Voltage vs. Collector Current -10 I_C/I_B=20 Pulsed

-0.01

BASE-EMITTER SATURATION VOLTAGE : V_{BE(sat)} [V] -40°C 25°C 100°C -1 -0.1 -0.001 -0.01 -0.1

COLLECTOR CURRENT: Ic [A]

Fig.8 Gain Bandwidth Product vs. Emitter Current 1000

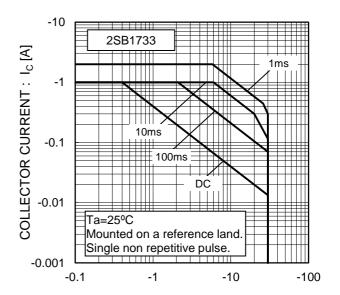
TRANSITION FREQUENCY: fT [MHz] V_{CE}= -2V f=100MHz Pulsed 100 10 0.01 0.1

EMITTER CURRENT : I_E [A]

●Electrical characteristic curves(Ta = 25°C)

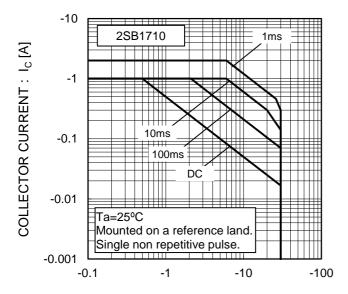
Fig.9 Emitter input capacitance vs. **Emitter-Base Voltage** Collector output capacitance vs. COLLECTOR OUTPUT CAPACITANCE: Cob [pF] Collector-Base Voltage 100 C_{ib} EMITTER INPUT CAPACITANCE: Cib [pF] 10 C_{ob} Ta= 25°C f=1MHz I_C=0A -0.1 -10 -100COLLECTOR - BASE VOLTAGE: VCB [V] EMITTER - BASE VOLTAGE : VER [V]

Fig.10 Safe Operating Area



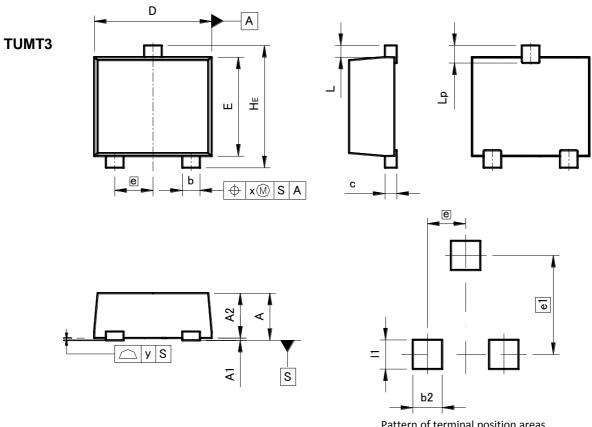
COLLECTOR TO EMITTER VOLTAGE: V_{CE} [V]

Fig.11 Safe Operating Area



COLLECTOR TO EMITTER VOLTAGE: V_{CE} [V]

●Dimensions (Unit : mm)



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

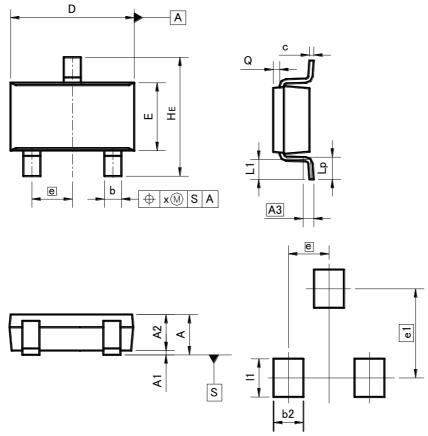
DIM	MILIM	ETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	_	0.85	-	0.033	
A1	0.00	0.10	0.000	0.004	
A2	0.72	0.82	0.028	0.032	
b	0.25	0.40	0.010	0.016	
С	0.12	0.22	0.005	0.009	
D	1.90	2.10	0.075	0.083	
E	1.60	1.80	0.063	0.071	
е	0.0	65	0.0	26	
HE	2.00	2.20	0.079	0.087	
L	0.5	20	0.0	08	
Lp	_	0.40	_	0.016	
x	_	0.10	_	0.004	
У	_	0.10	_	0.004	

DIM	MILIMETERS		INCHES	
DIM	MIN MAX		MIN	MAX
b2	_	0.50	ı	0.020
e1	1.70		0.0	67
l1	_	0.50	ı	0.020

Dimension in mm / inches

●Dimensions (Unit : mm)

TSMT3



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

DIM MILIM		ETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	_	1.00	_	0.039	
A1	0.00	0.10	0.000	0.004	
A2	0.75	0.95	0.030	0.037	
A3	0.5	25	0.0	.010	
b	0.35	0.50	0.014	0.020	
С	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	
е	0.9	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	
х	_	0.20	_	0.008	

DIM	MILIMETERS		INCHES	
DIM	MIN MAX		MIN	MAX
b2		0.70	_	0.028
e1	2.10		0.0	83
11	_	0.90	_	0.035

Dimension in mm / inches

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