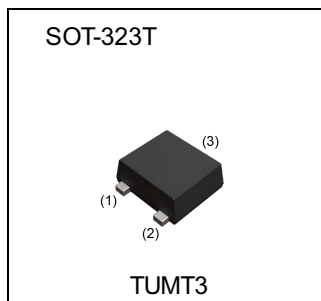


Parameter	Value
V_{CEO}	12V
I_C	1.5A

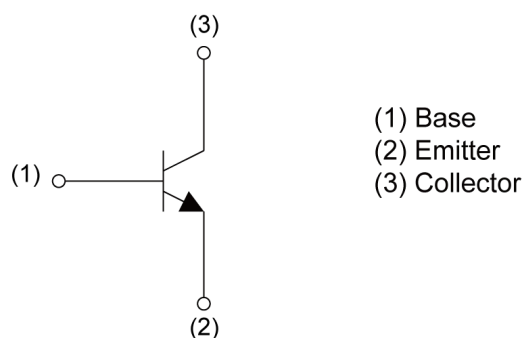
●Outline



●Features

- 1) A collector current is large.
- 2) Collector-Emitter saturation voltage is low.
 $V_{CE(sat)} \leq 200\text{mV}$
at $I_C=500\text{mA}/I_B=25\text{mA}$

●Inner circuit



●Application

LOW FREQUENCY AMPLIFIER

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SD2702	SOT-323T (TUMT3)	2021	TL	180	8	3000	ES

● **Absolute maximum ratings** ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	15	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_{C}	1.5	A
	I_{CP}^{*1}	3	A
Power dissipation	P_{D}^{*2}	400	mW
	P_{D}^{*3}	800	mW
Junction temperature	T_{j}	150	$^\circ\text{C}$
Range of storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

● **Electrical characteristics** ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	$I_{\text{C}} = 10\mu\text{A}$	15	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	$I_{\text{C}} = 1\text{mA}$	12	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_{\text{E}} = 10\mu\text{A}$	6	-	-	V
Collector cut-off current	I_{CBO}	$V_{\text{CB}} = 15\text{V}$	-	-	100	nA
Emitter cut-off current	I_{EBO}	$V_{\text{EB}} = 6\text{V}$	-	-	100	nA
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = 500\text{mA}$, $I_{\text{B}} = 25\text{mA}$	-	85	200	mV
DC current gain	h_{FE}	$V_{\text{CE}} = 2\text{V}$, $I_{\text{C}} = 200\text{mA}$	270	-	680	-
Transition frequency	f_{T}	$V_{\text{CE}} = 2\text{V}$, $I_{\text{E}} = -200\text{mA}$, $f = 100\text{MHz}$	-	400	-	MHz
Output capacitance	C_{ob}	$V_{\text{CB}} = 10\text{V}$, $I_{\text{E}} = 0\text{A}$, $f = 1\text{MHz}$	-	12	-	pF

*1 $P_{\text{w}}=1\text{ms}$, Single pulse

*2 Each terminal mounted on a reference land.

*3 Mounted on a ceramic board(25×25×0.8mm).

●Electrical characteristic curves($T_a = 25^\circ\text{C}$)

Fig.1 Grounded emitter propagation characteristics

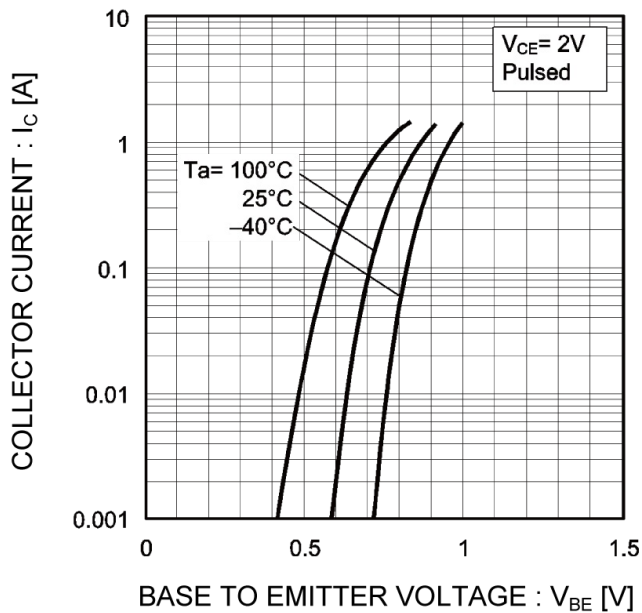


Fig.2 Typical output characteristics

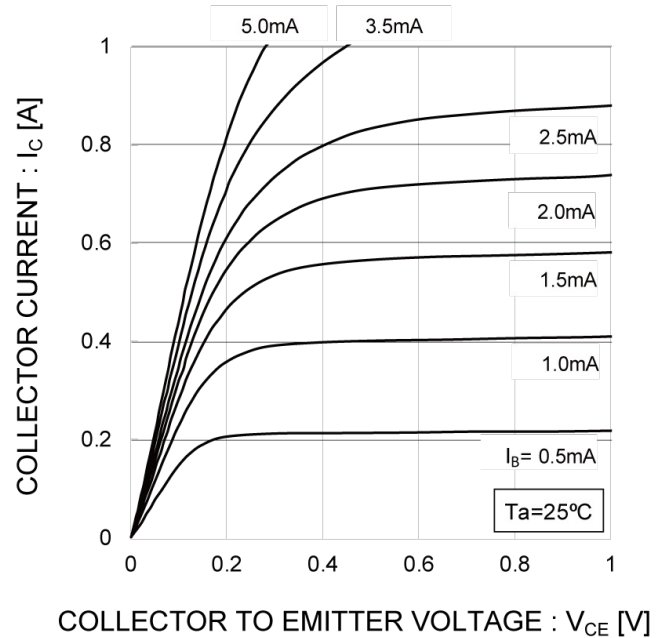


Fig.3 DC current gain vs. collector current (I)

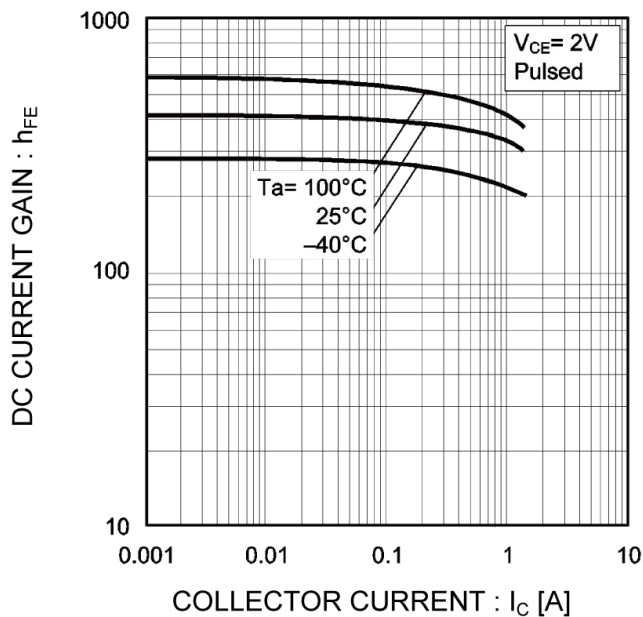
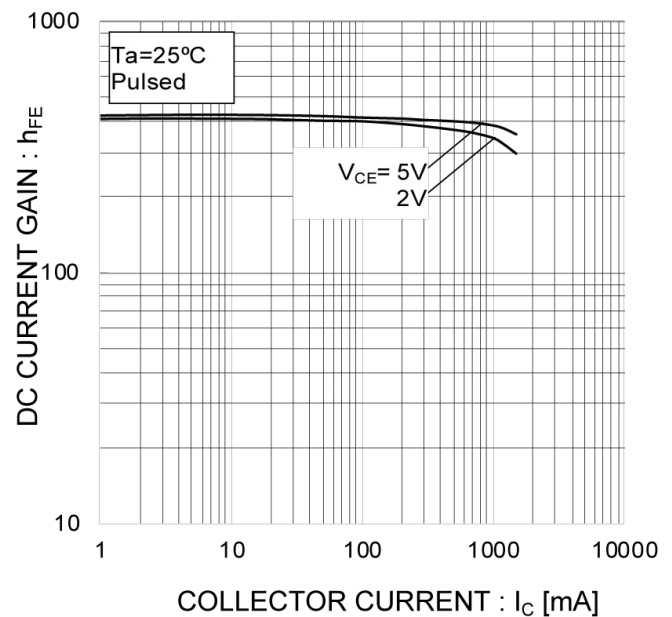


Fig.4 DC current gain vs. collector current (II)



●Electrical characteristic curves($T_a = 25^\circ\text{C}$)

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

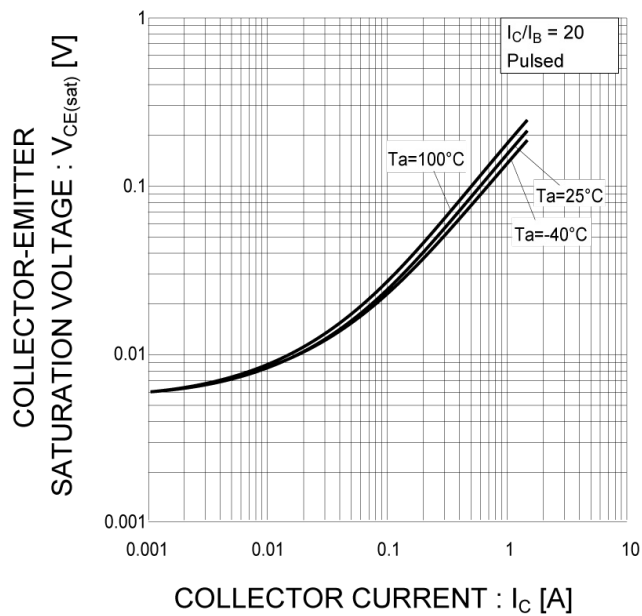


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

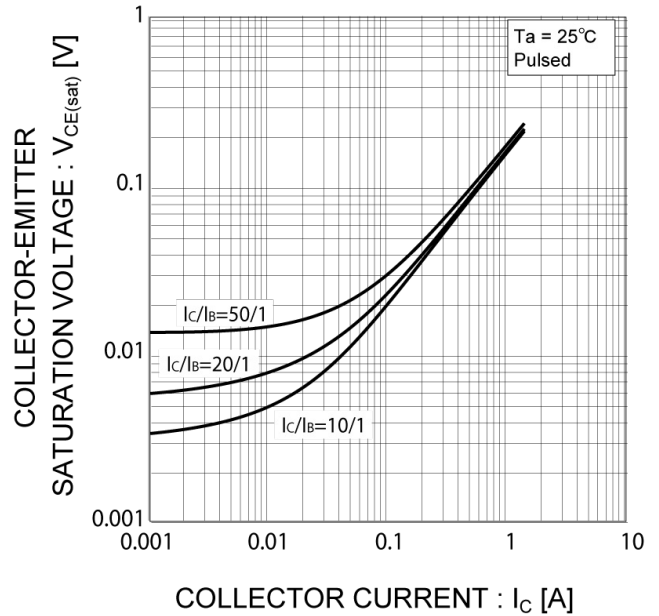


Fig.7 Base-emitter saturation voltage vs. collector current

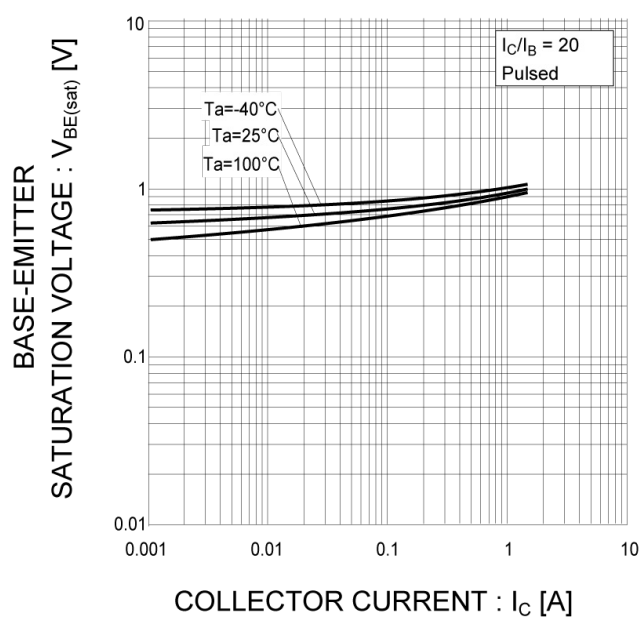
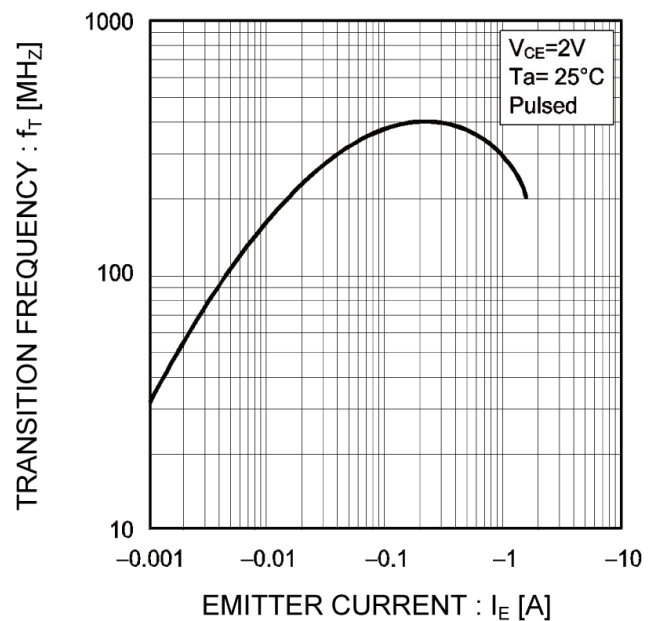


Fig.8 Gain bandwidth product vs. emitter current



●Electrical characteristic curves($T_a = 25^\circ\text{C}$)

Fig.9 Collector output capacitance
vs. collector-base voltage
Emitter input capacitance
vs. emitter-base voltage

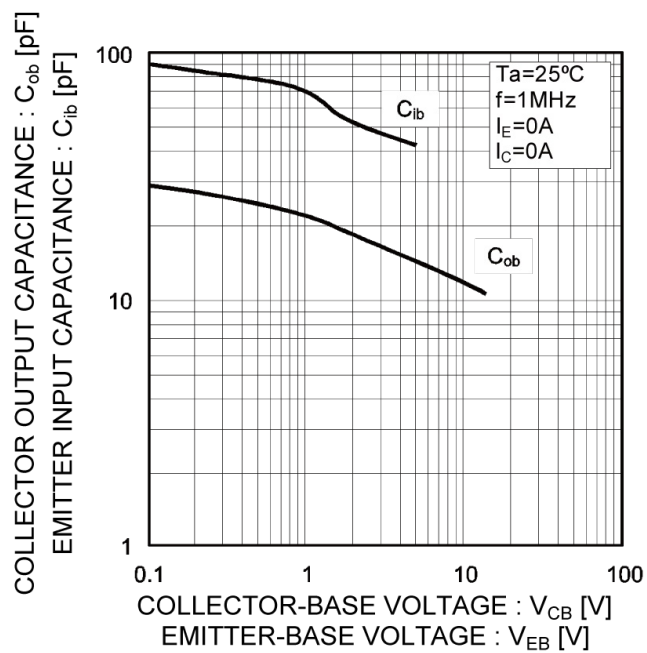
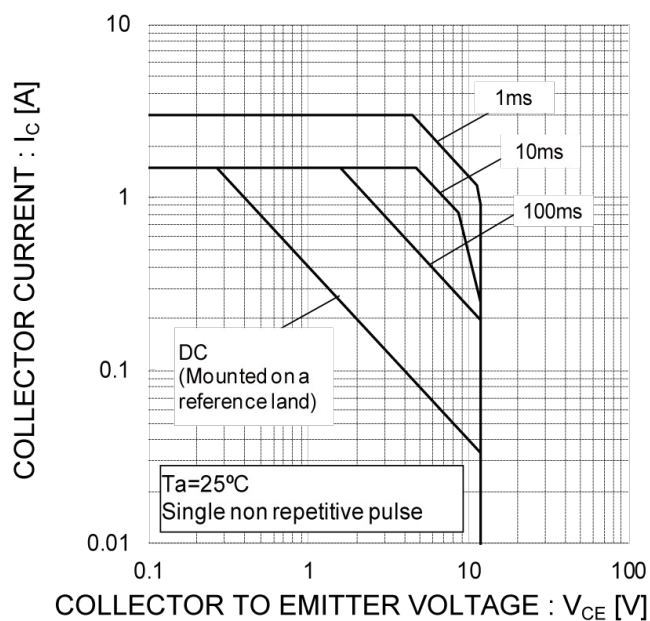
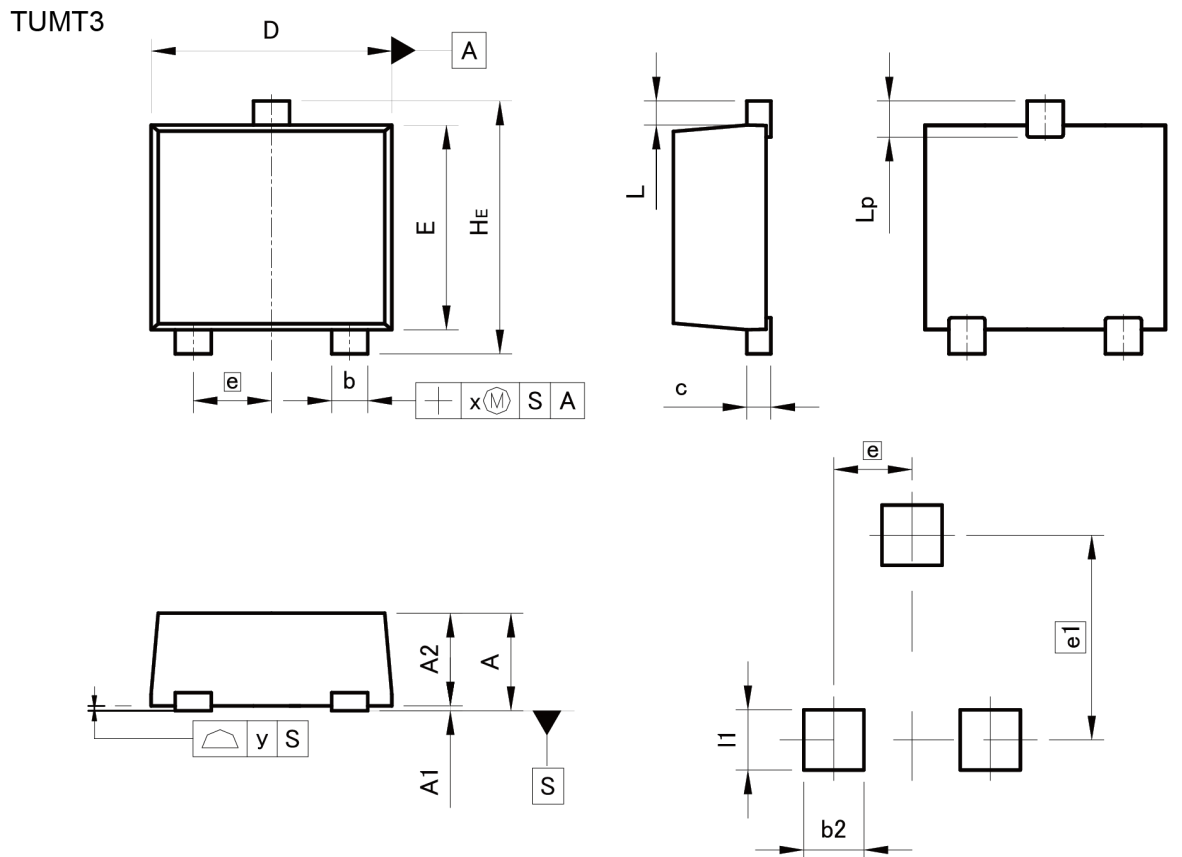


Fig.10 Safe operating area (I)



●Dimensions



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

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