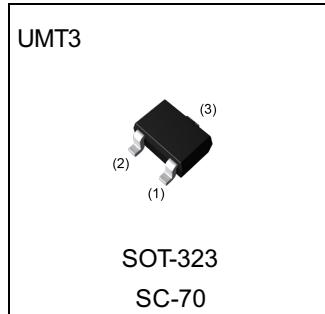


Parameter	Value
V_{CEO}	30V
I_C	1A

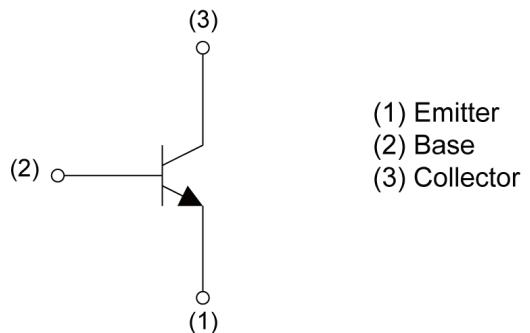
●Outline



●Features

- 1) A collector current is large
- 2) Collector-Emitter saturation voltage is low.
 $V_{CE(sat)} \leq 350\text{mV}$
 at $I_C=500\text{mA} / I_B=25\text{mA}$

●Inner circuit



●Application

LOW FREQUENCY AMPLIFIER, DRIVER

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SD2656	UMT3	2021	T106	180	8	3000	EU

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

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	I_C	1	A
	I_{CP}^{*1}	2	A
Power dissipation	P_D^{*2}	200	mW
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	$I_C = 10\mu\text{A}$	30	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1\text{mA}$	30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 10\mu\text{A}$	6	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = 30\text{V}$	-	-	100	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 6\text{V}$	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = 500\text{mA}, I_B = 25\text{mA}$	-	140	350	mV
DC current gain	h_{FE}^{*3}	$V_{CE} = 2\text{V}, I_C = 100\text{mA}$	270	-	680	-
Transition frequency	f_T^{*3}	$V_{CE} = 2\text{V}, I_E = -100\text{mA}, f = 100\text{MHz}$	-	400	-	MHz
Output capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$	-	5	-	pF

*1 $P_w=1\text{ms}$, Single Pulse.

*2 Each terminal mounted on a reference land.

*3 Measured using pulse current.

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

Fig.1 Ground Emitter Propagation Characteristics

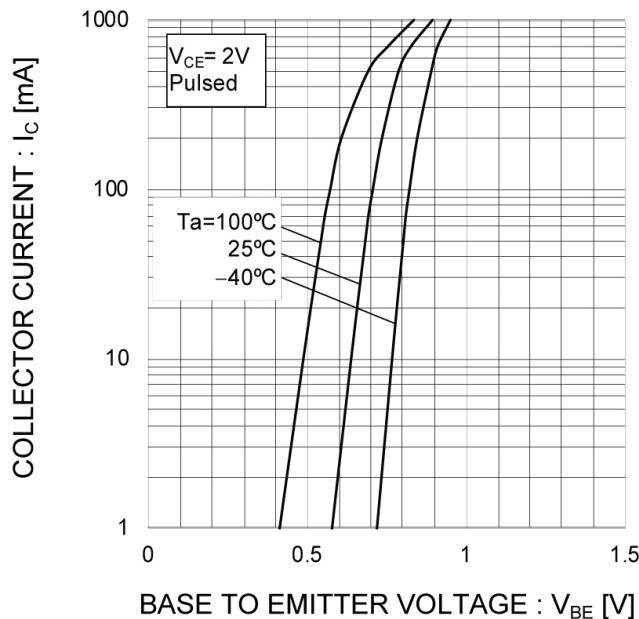


Fig.2 Typical Output Characteristics

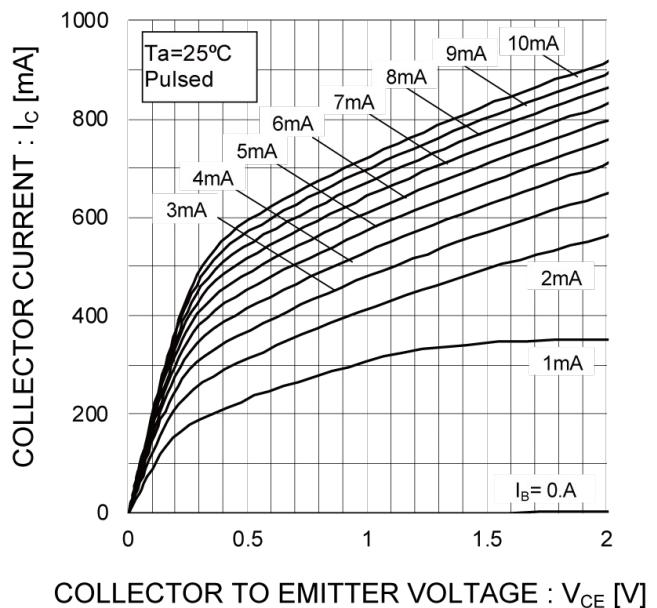


Fig.3 DC Current Gain vs. Collector Current (I)

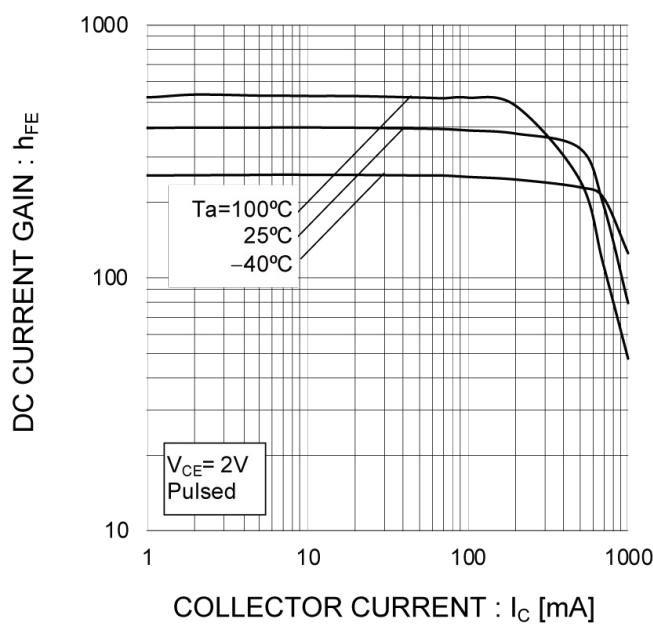
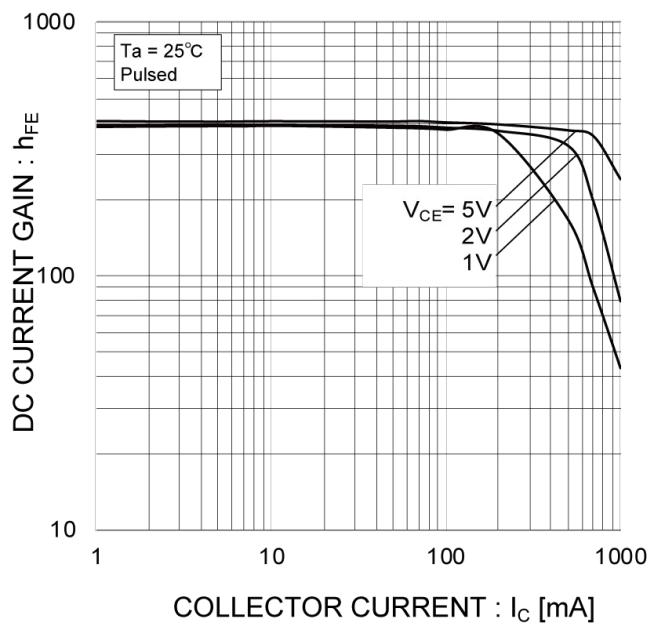


Fig.4 DC Current Gain vs. Collector Current (II)



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

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

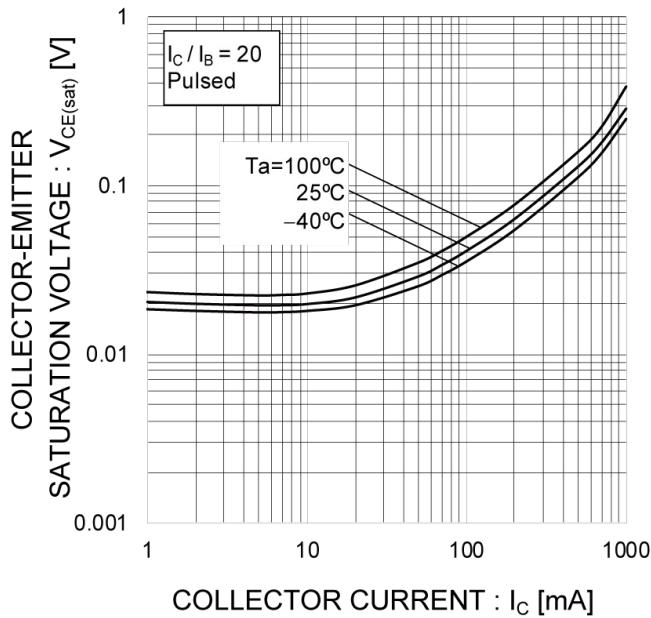


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

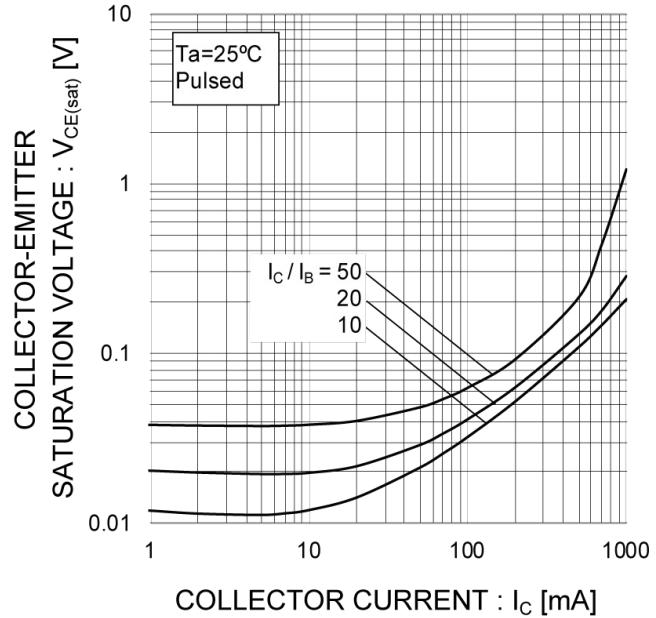


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

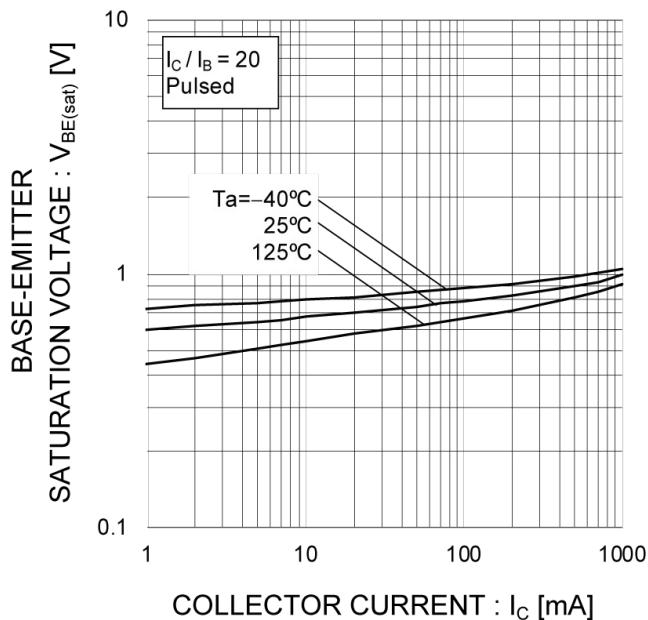
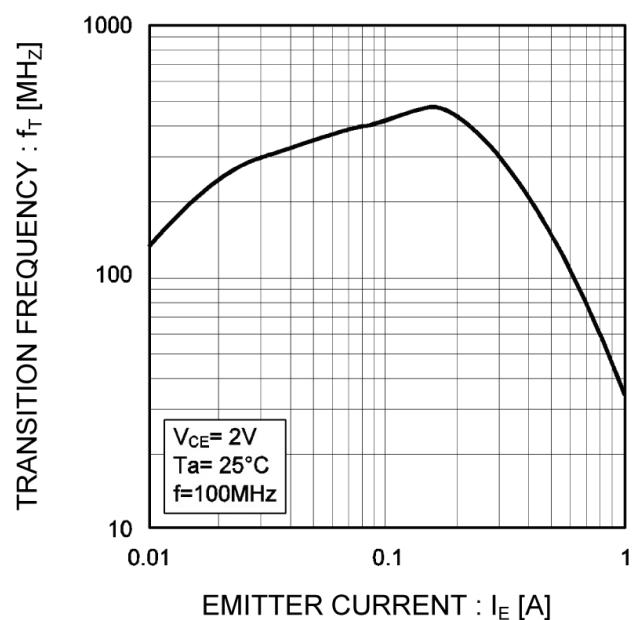


Fig.8 Gain Bandwidth Product vs. Emitter Current



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

Fig.9 Emitter Input Capacitance
vs. Emitter-Base Voltage
Collector Output Capacitance vs.
Collector-Base Voltage

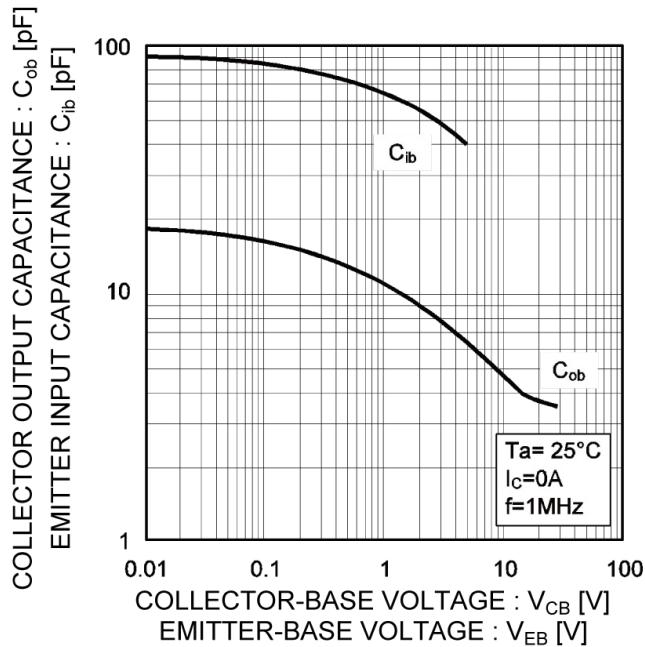
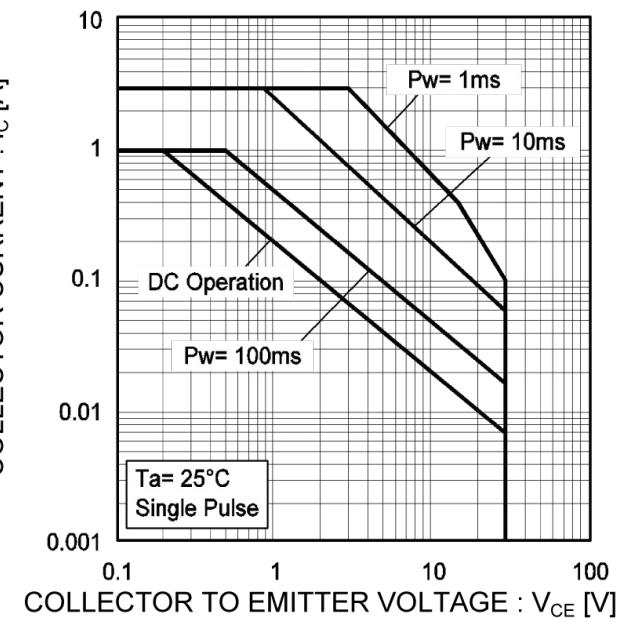
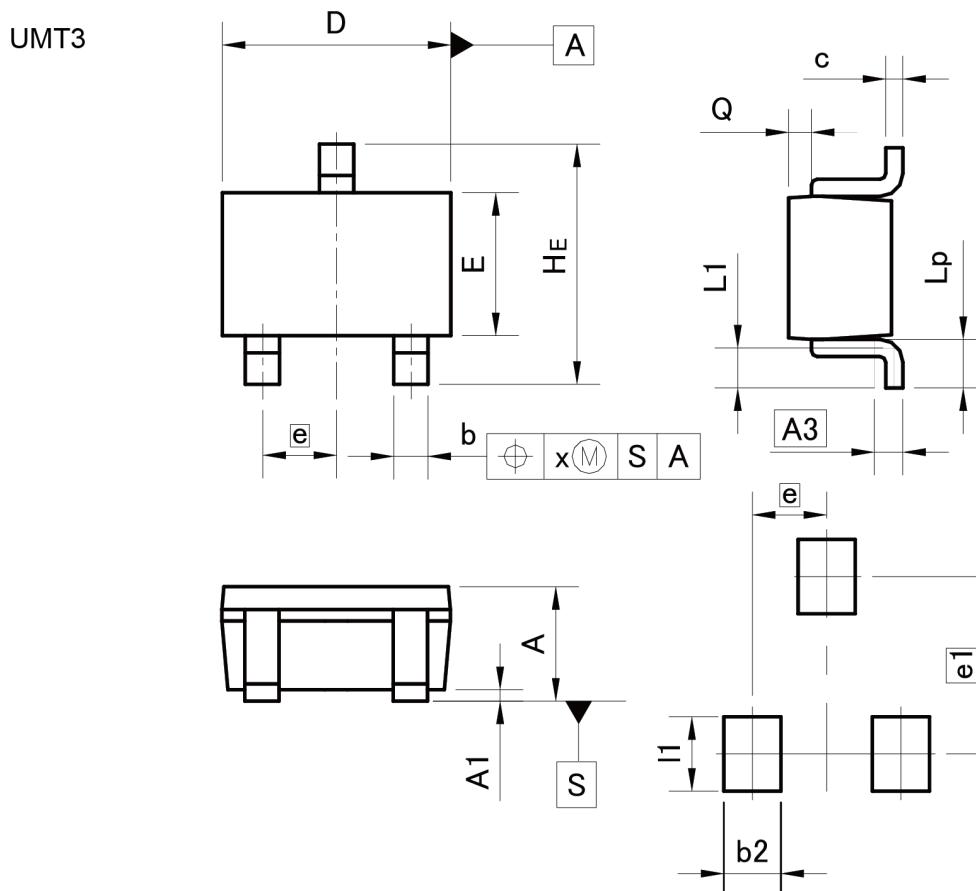


Fig.10 Safe Operating Area



●Dimensions



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.020
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30	0.004	0.012
x	—	0.10	—	0.004

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	—	0.50	—	0.020
e1	1.55		0.061	
l1	—	0.65	—	0.026

Dimension in mm/inches

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