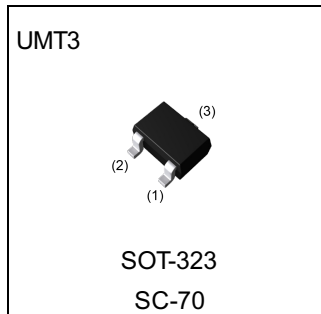


Parameter	Value
V_{CEO}	-32V
I_C	-500mA

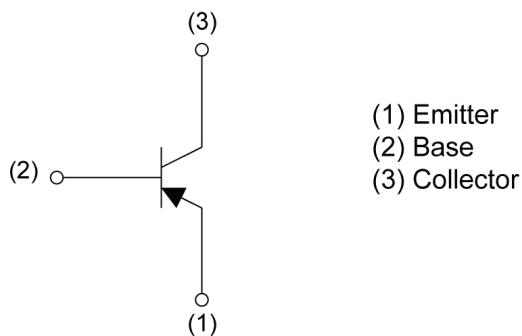
●Outline



●Features

- 1) Large I_C .
 $I_{CMAX} = -500mA$
- 2) Low $V_{CE(sat)}$. Ideal for low-voltage operation.
- 3) Complements the 2SC4097.

●Inner circuit



●Application

GENERAL PURPOSE SMALL SIGNAL AMPLIFIER

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SA1577	UMT3	2021	T106	180	8	3000	H

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

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	-40	V
Collector-emitter voltage	V_{CEO}	-32	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current	I_{C}	-500	mA
Power dissipation	P_{D}^{*1}	200	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}	$I_{\text{C}} = -100\mu\text{A}$	-40	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	$I_{\text{C}} = -1\text{mA}$	-32	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_{\text{E}} = -100\mu\text{A}$	-5	-	-	V
Collector cut-off current	I_{CBO}	$V_{\text{CB}} = -20\text{V}$	-	-	-1.0	μA
Emitter cut-off current	I_{EBO}	$V_{\text{EB}} = -4\text{V}$	-	-	-1.0	μA
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = -300\text{mA}, I_{\text{B}} = -30\text{mA}$	-	-	-600	mV
DC current gain	h_{FE}	$V_{\text{CE}} = -3\text{V}, I_{\text{C}} = -10\text{mA}$	120	-	390	-
Transition frequency	f_{T}	$V_{\text{CE}} = -5\text{V}, I_{\text{E}} = 20\text{mA}, f = 100\text{MHz}$	-	200	-	MHz
Output capacitance	C_{ob}	$V_{\text{CB}} = -10\text{V}, I_{\text{E}} = 0\text{A}, f = 1\text{MHz}$	-	7.0	-	pF

h_{FE} values are classified as follows :

rank	Q	R	-	-	-
h_{FE}	120-270	180-390	-	-	-

*1 Each terminal mounted on a reference land.

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

Fig.1 Grounded emitter propagation

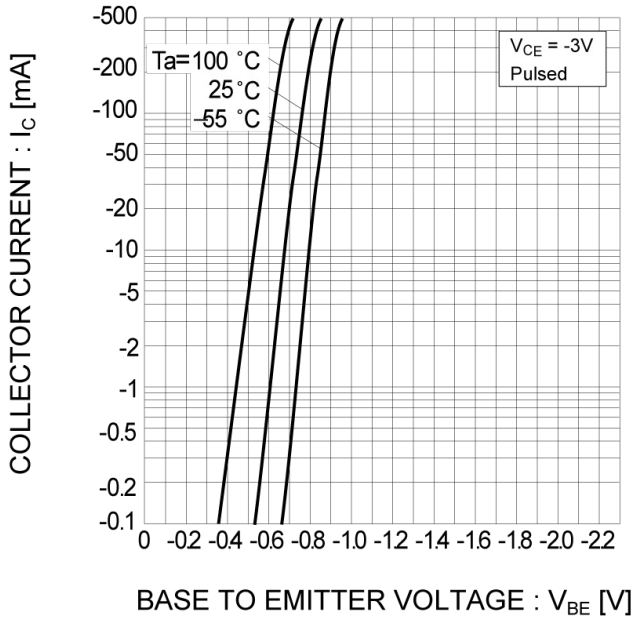


Fig.2 Grounded emitter output characteristics (I)

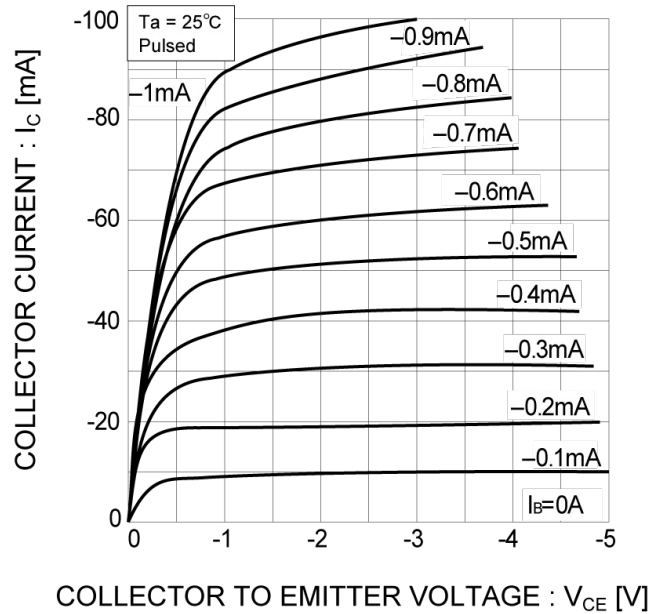


Fig.3 Grounded emitter output characteristics (II)

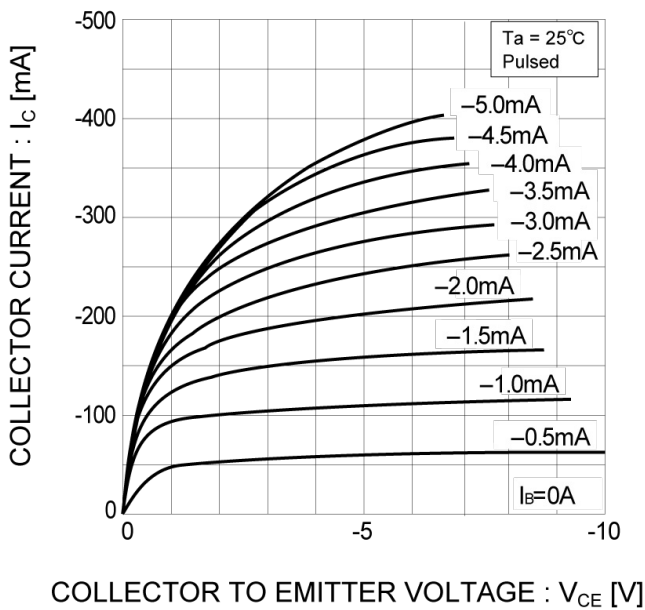
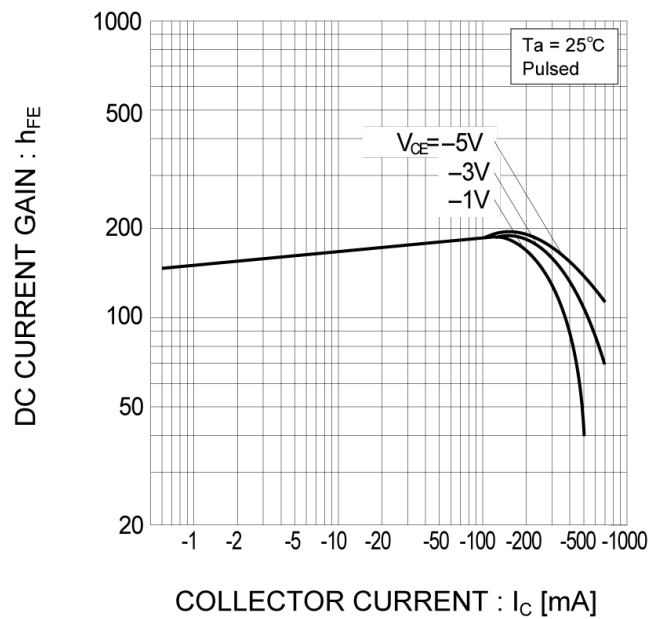


Fig.4 DC current gain vs. collector current (I)



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

Fig.5 DC current gain vs. collector current (II)

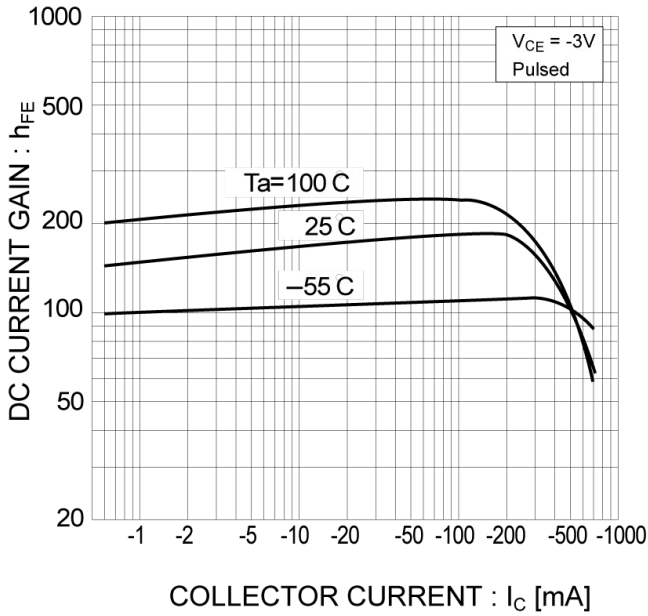


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

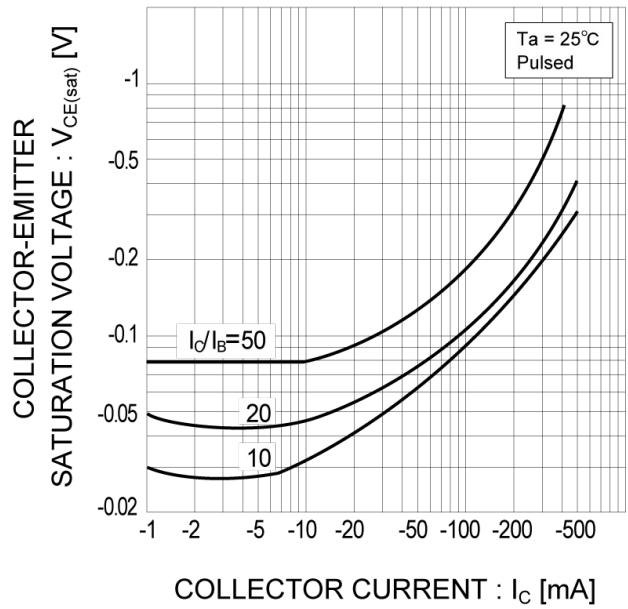


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

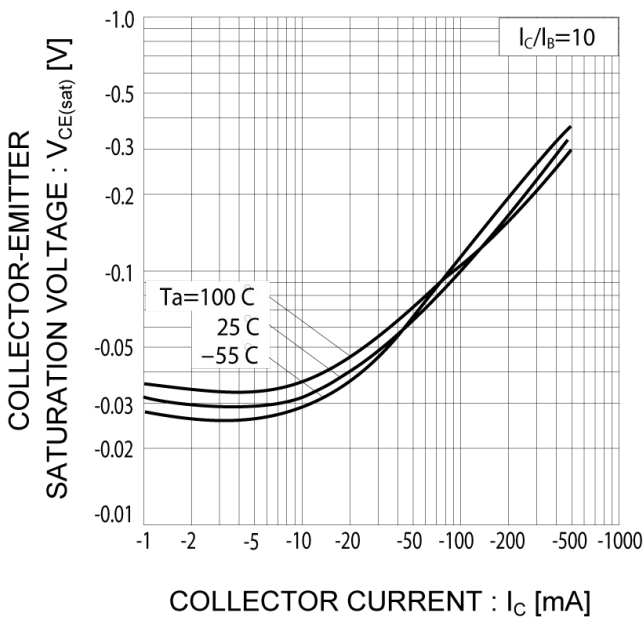
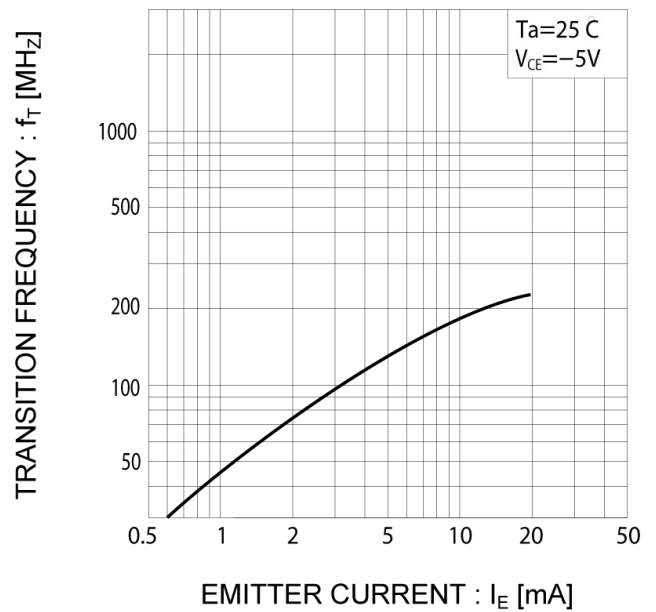


Fig.8 Gain bandwidth product vs. emitter current



●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

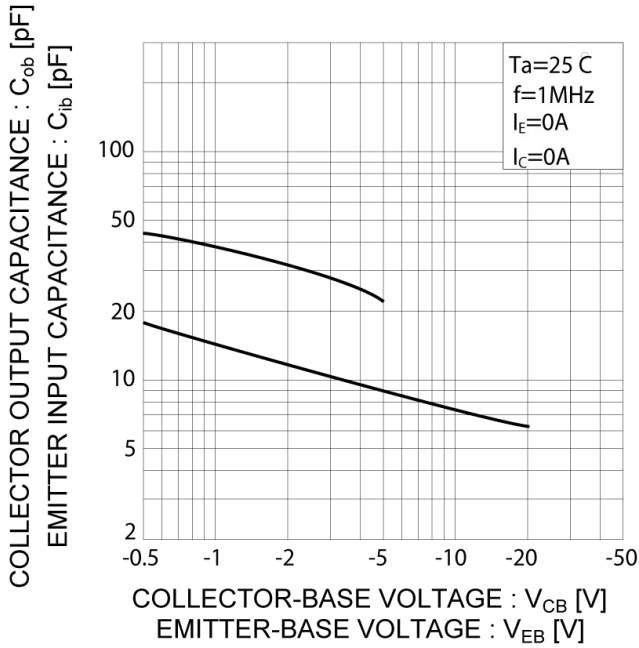
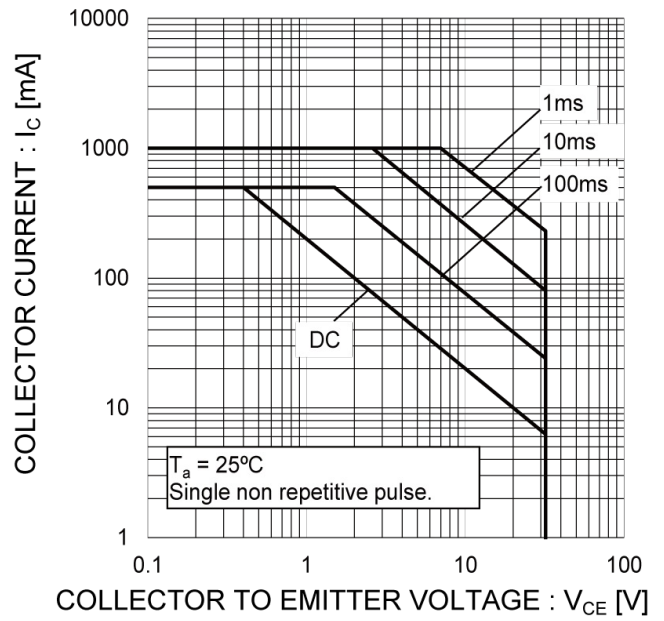
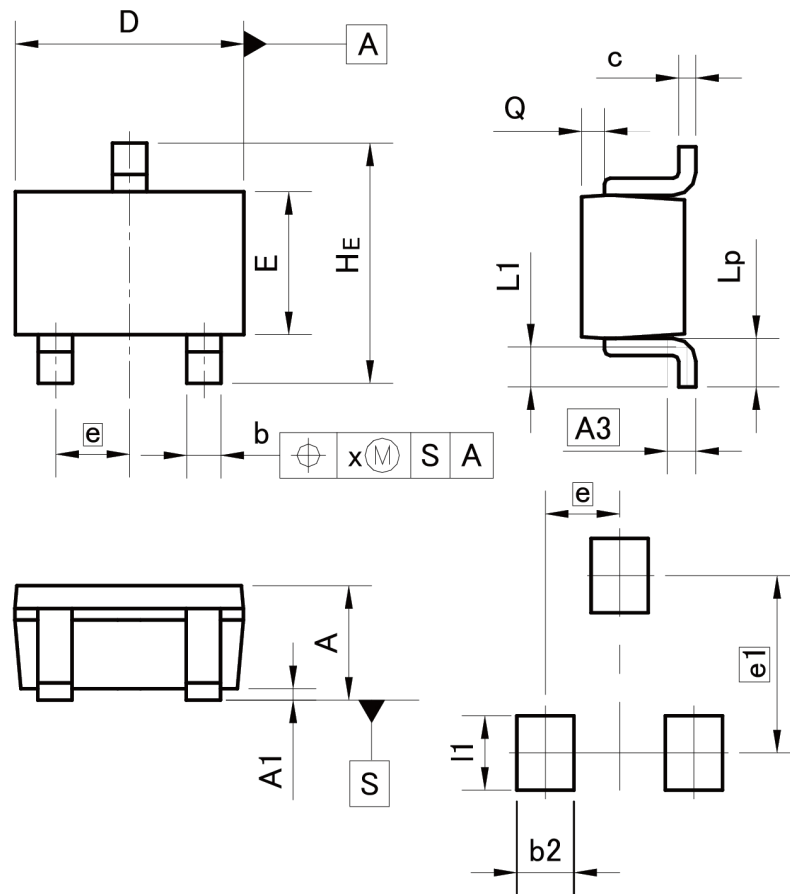


Fig.10 Safe Operating Area



●Dimensions

UMT3



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

DIM	MILIMETERS		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	MILIMETERS		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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