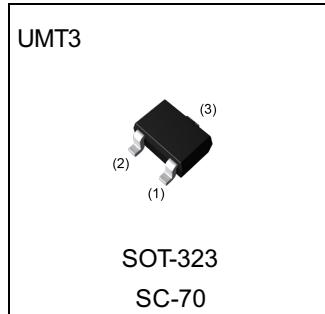


Parameter	Value
$V_{CEO}$	-60V
$I_C$	-0.5A

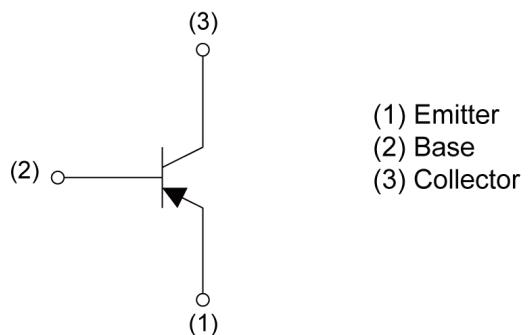
### ●Outline



### ●Features

- 1) High speed switching.  
( $T_f$ : Typ.: 60ns at  $I_C$ =-500mA)
- 2) Low saturation voltage, typically  
(Typ.: -150mV at  $I_C$ =-100mA,  $I_B$ =-10mA)
- 3) Strong discharge power for inductive load and  
capacitance load.
- 4) Complements the 2SC5876

### ●Inner circuit



### ●Application

SMALL SIGNAL LOW FREQUENCY AMPLIFIER, HIGH SPEED SWITCHING

### ●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SA2088	UMT3	2021	T106	180	8	3000	VM

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

Parameter	Symbol	Values	Unit
Collector-base voltage	$V_{CBO}$	-60	V
Collector-emitter voltage	$V_{CEO}$	-60	V
Emitter-base voltage	$V_{EBO}$	-6	V
Collector current	$I_C$	-0.5	A
	$I_{CP}^{*1}$	-1.0	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	$BV_{CBO}$	$I_C = -100\mu\text{A}$	-60	-	-	V
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = -1\text{mA}$	-60	-	-	V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E = -100\mu\text{A}$	-6	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -40\text{V}$	-	-	-1.0	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -4\text{V}$	-	-	-1.0	$\mu\text{A}$
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = -100\text{mA}, I_B = -10\text{mA}$	-	-150	-500	mV
DC current gain	$h_{FE}$	$V_{CE} = -2\text{V}, I_C = -50\text{mA}$	120	-	270	-
Transition frequency	$f_T^{*3}$	$V_{CE} = -10\text{V}, I_E = 100\text{mA}, f = 100\text{MHz}$	-	400	-	MHz
Output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0\text{mA}, f = 1\text{MHz}$	-	10	-	pF
Turn-On time	$t_{on}$	$I_C = -500\text{mA}, I_{B1} = -50\text{mA}, I_{B2} = 50\text{mA}, V_{CC} \approx -25\text{V}, R_L = 50\Omega$	-	35	-	ns
Storage time	$t_{stg}$	$I_C = -500\text{mA}, I_{B1} = -50\text{mA}, I_{B2} = 50\text{mA}, V_{CC} \approx -25\text{V}, R_L = 50\Omega$ See test circuit	-	100	-	ns
Fall time	$t_f$		-	60	-	ns

$h_{FE}$  values are classified as follows :

rank	Q	-	-	-	-
$h_{FE}$	120-270	-	-	-	-

\*1  $P_w=10\text{ms}$ , Single pulse

\*2 Each terminal mounted on a reference land.

\*3 Pulsed

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

Fig.1 Ground Emitter Propagation Characteristics

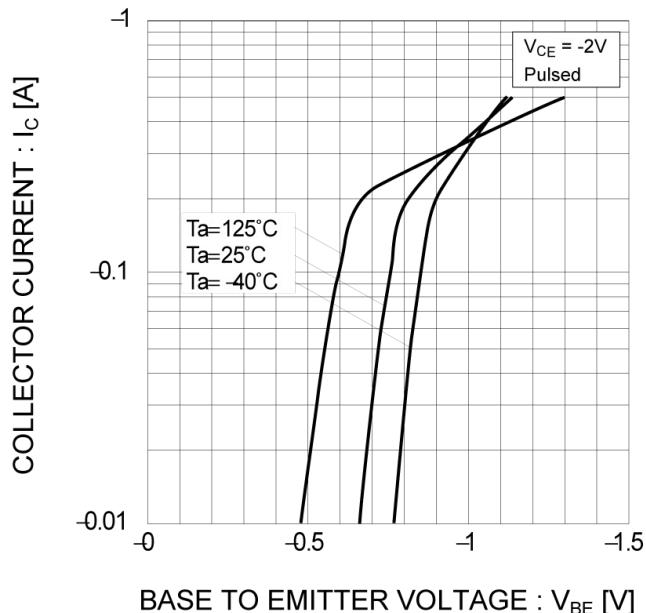


Fig.2 Typical Output Characteristics

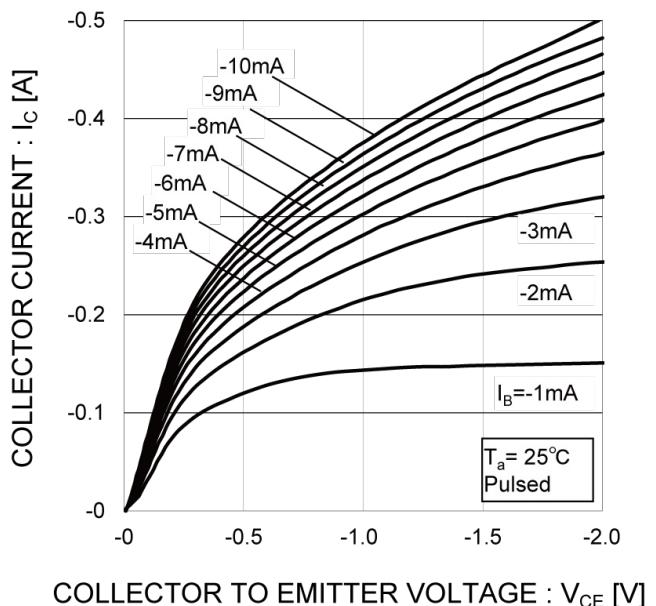


Fig.3 DC Current Gain vs. Collector Current (I)

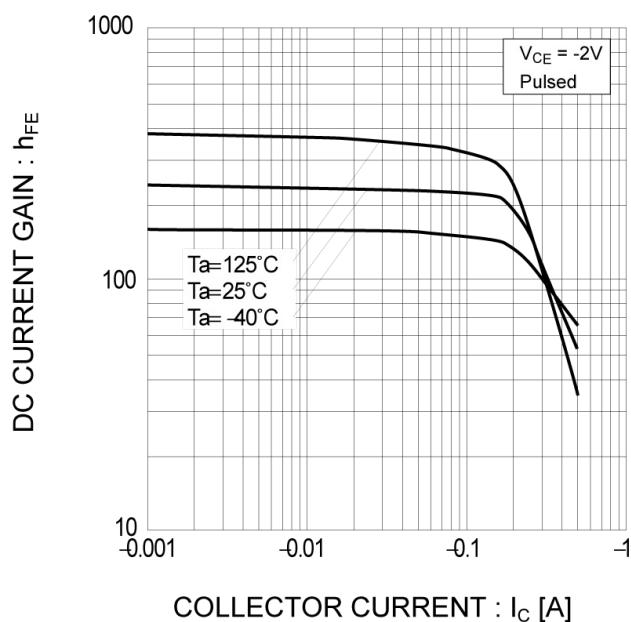
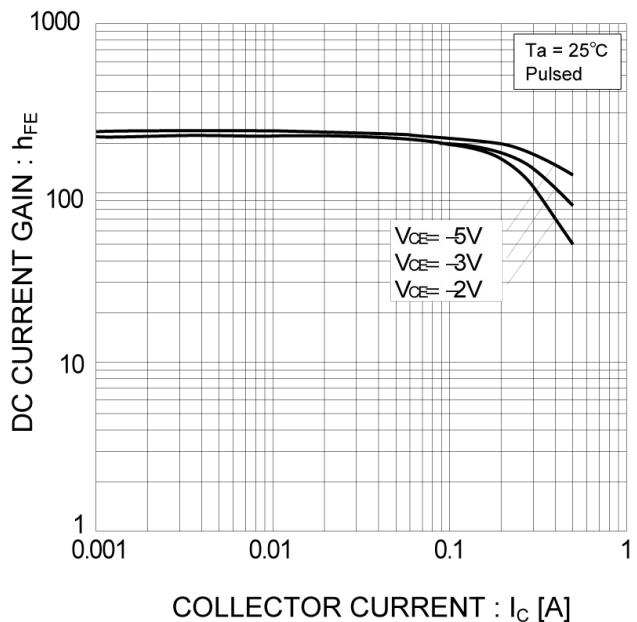
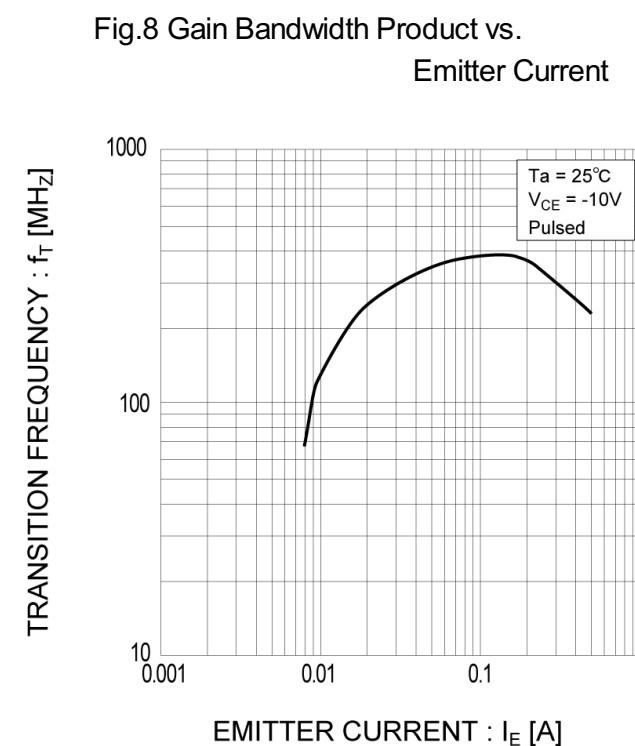
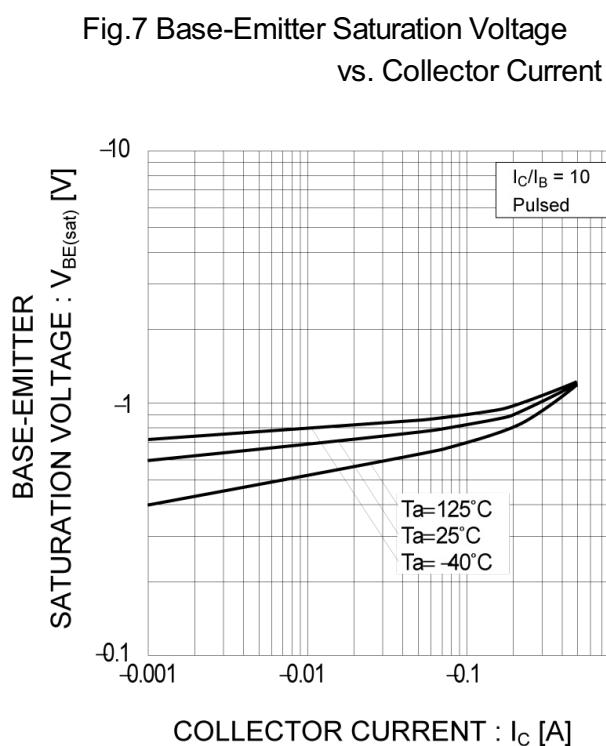
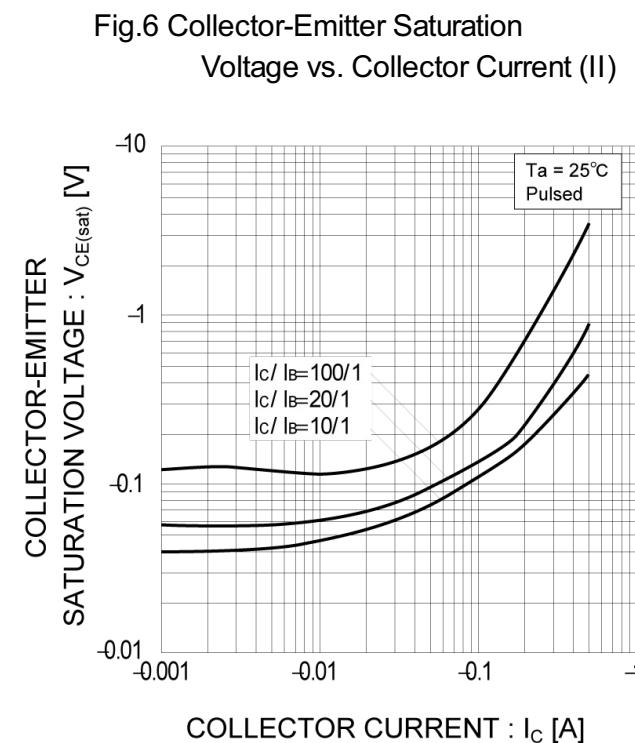
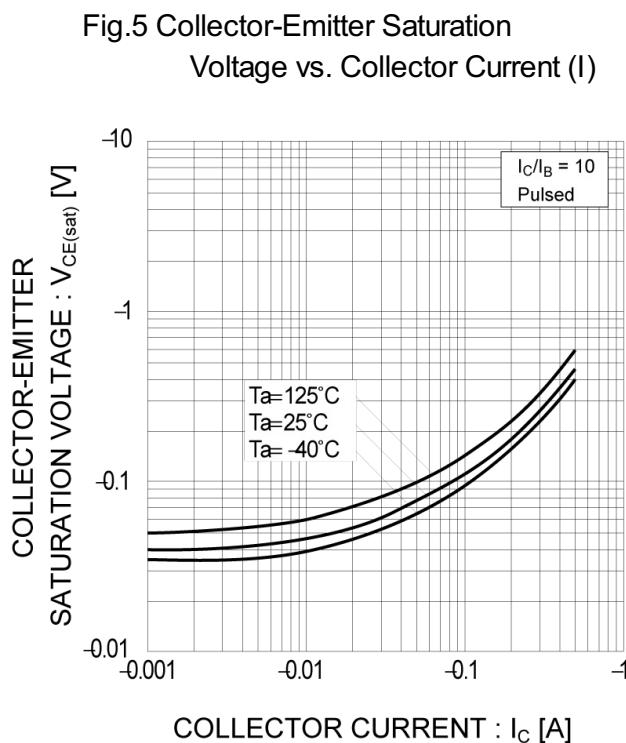


Fig.4 DC Current Gain vs. Collector Current (II)



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



● 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

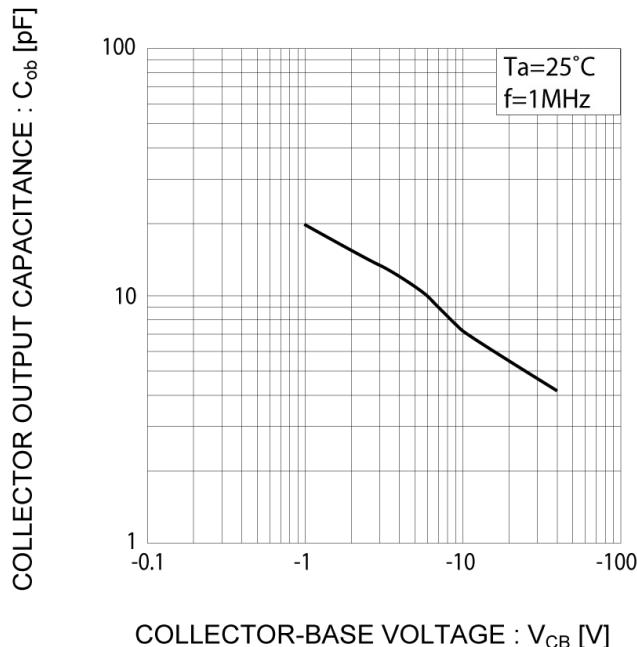
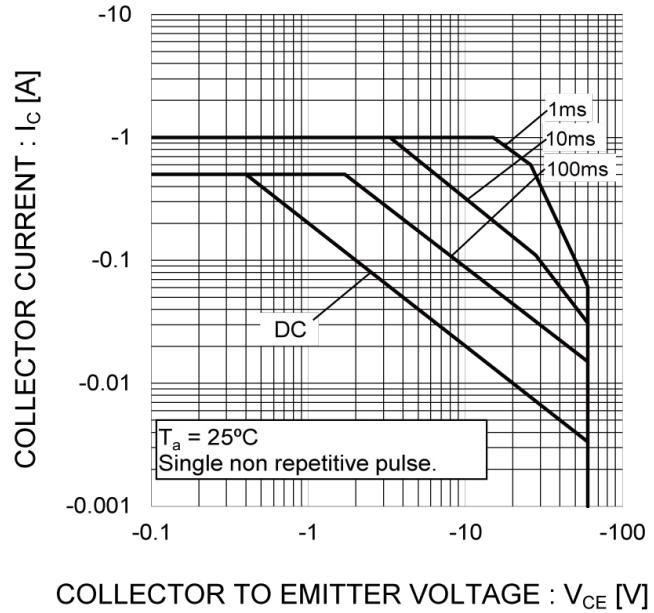
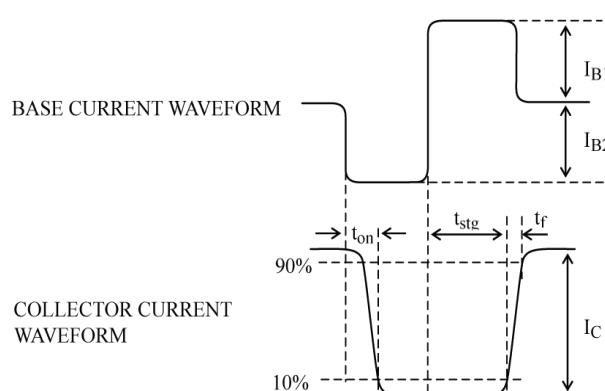
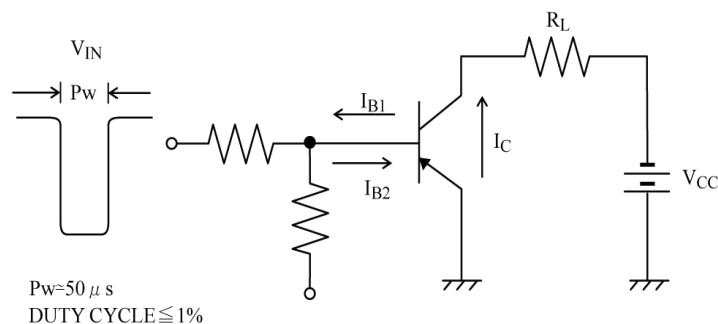


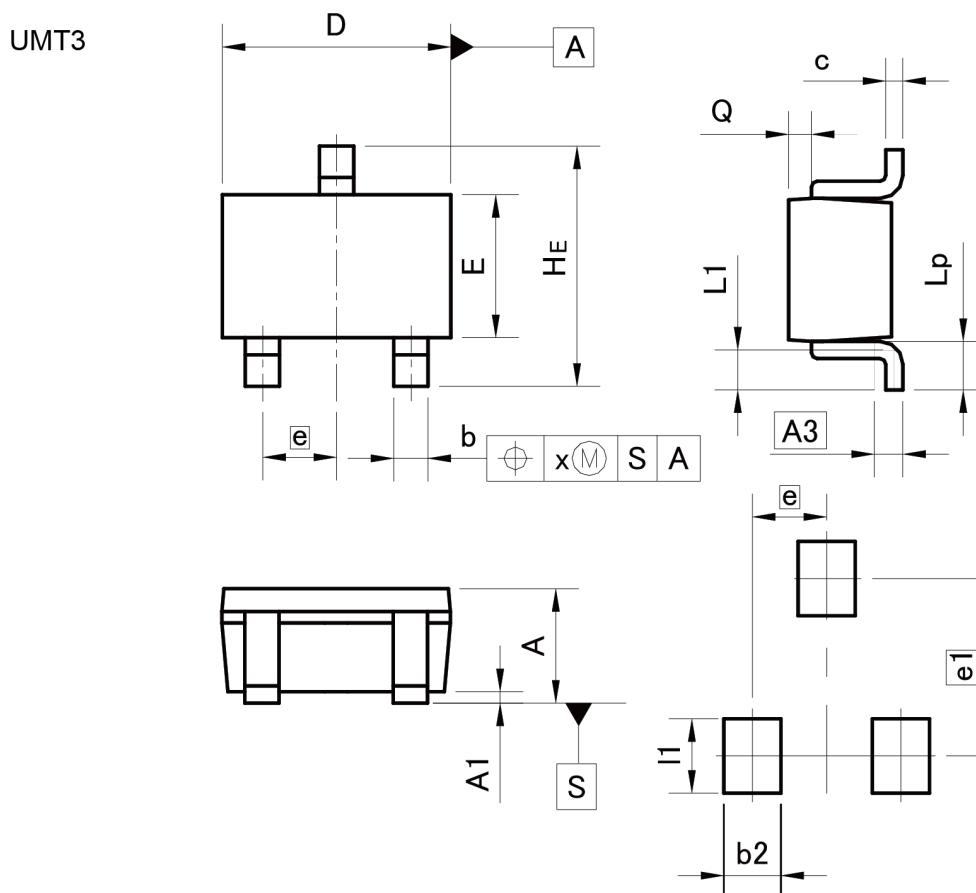
Fig.10 Safe Operating Area



SWITCHING TIME TEST CIRCUIT



## ●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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