2SC5876

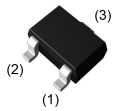
Medium power transistor (60V, 0.5A)

Datasheet

Parameter	Value
V_{CEO}	60V
I_C	500mA

●Outline

UMT3



2SC5876

SOT-323

●Features

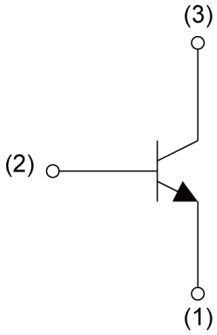
1)High speed switching.
(Tf:Typ.:80ns at I_C=500mA)

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 2SA2088.

●Inner circuit



(1) Emitter
(2) Base
(3) Collector

●Application

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
2SC5876	UMT3	2021	T106	180	8	3000	VS

●Absolute maximum ratings (T_a = 25°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	500	mA
	I_{CP} *1	1.0	A
Power dissipation	P_D *2	200	mW
Junction temperature	T_j	150	℃
Range of storage temperature	T_{stg}	-55 to +150	℃

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = 100μA	60	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA	60	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 100μA	6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 40V	-	-	1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V	-	-	1	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 100mA, I_B = 10mA	-	150	300	mV
DC current gain	h_{FE}	V_{CE} = 2V, I_C = 50mA	120	-	390	-
Transition frequency	f_T *3	V_{CE} = 10V, I_E = -100mA, f = 100MHz	-	300	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0mA, f = 1MHz	-	5	-	pF
Turn-On time	t_{on} *3	I_C = 500mA, I_{B1} = 50mA, I_{B2} = -50mA, V_{CC} ≃ 25V, R_L = 50Ω See test circuit	-	70	-	ns
Storage time	t_{stg} *3		-	130	-	ns
Fall time	t_f *3		-	80	-	ns

hFE values are calssified as follows :

rank	Q	R	-	-	-
hFE	120-270	180-390	-	-	-

*1 Pw=10ms

*2 Each terminal mounted on a reference land.

*3 Pulsed

●Electrical characteristic curves(T_a = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

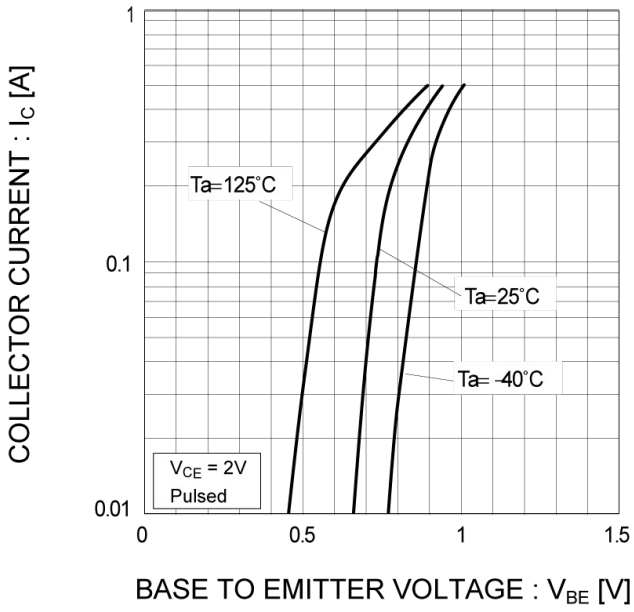


Fig.2 Typical Output Characteristics

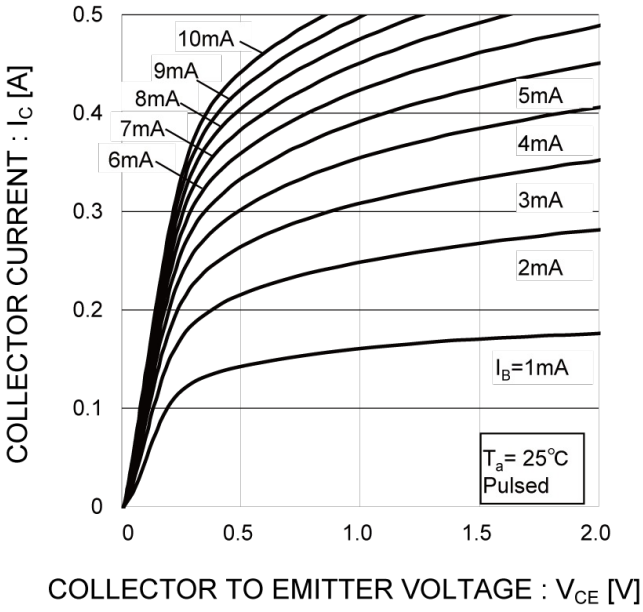


Fig.3 DC Current Gain vs. Collector Current (I)

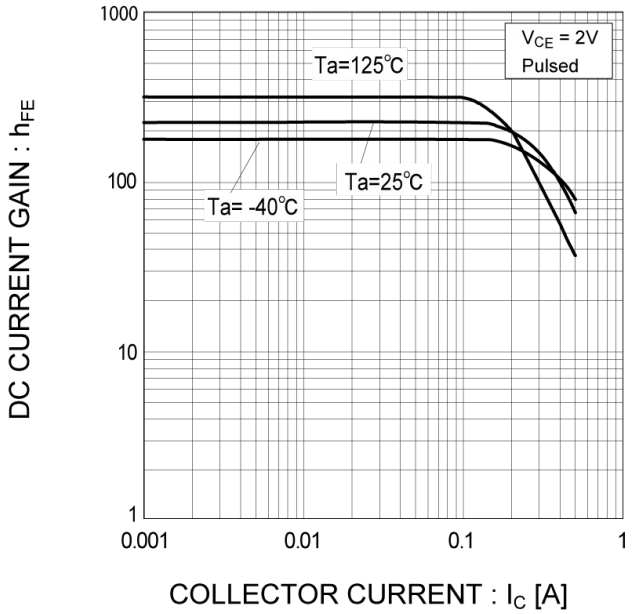
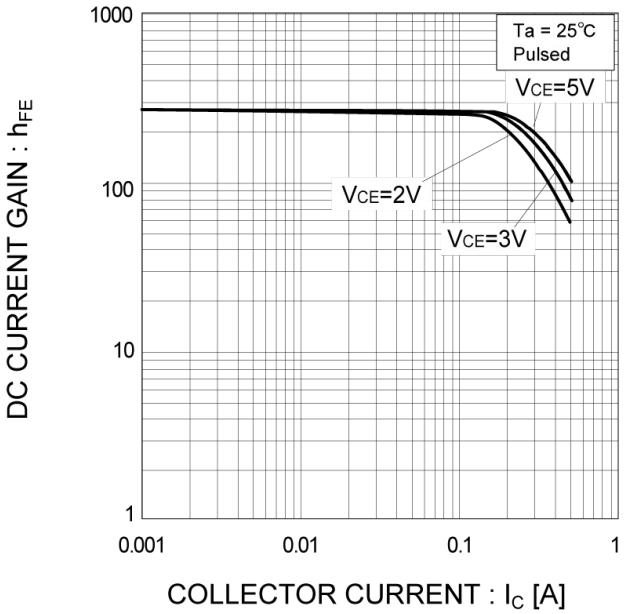


Fig.4 DC Current Gain vs. Collector Current (II)



●Electrical characteristic curves(T_a = 25°C)

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

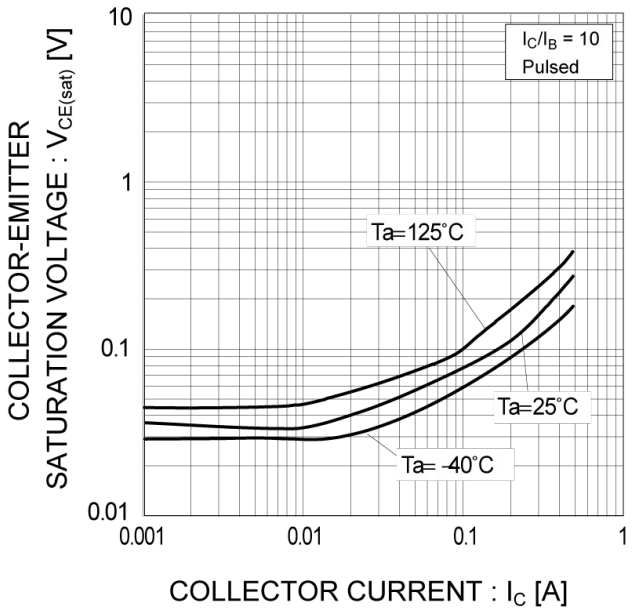


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

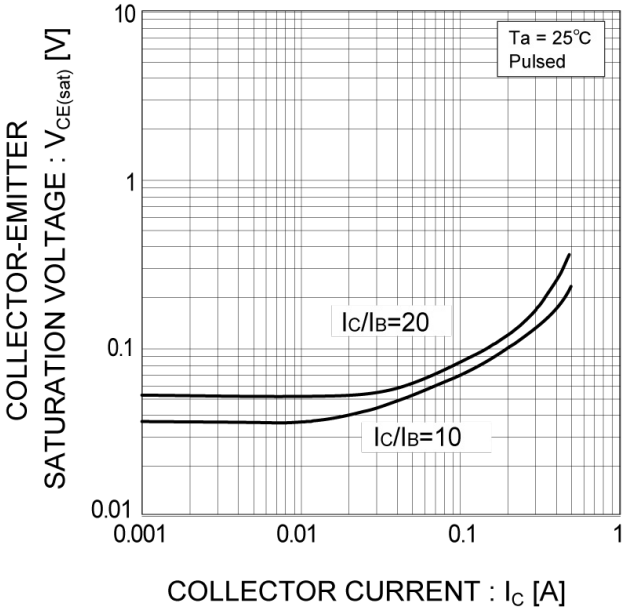


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

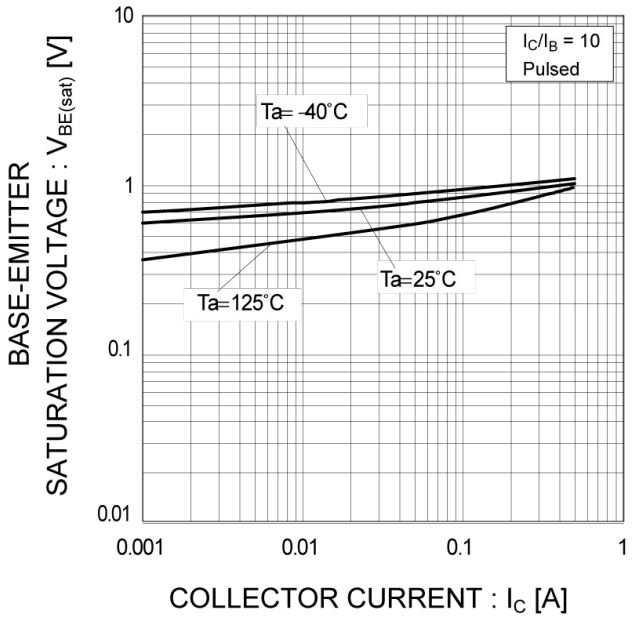
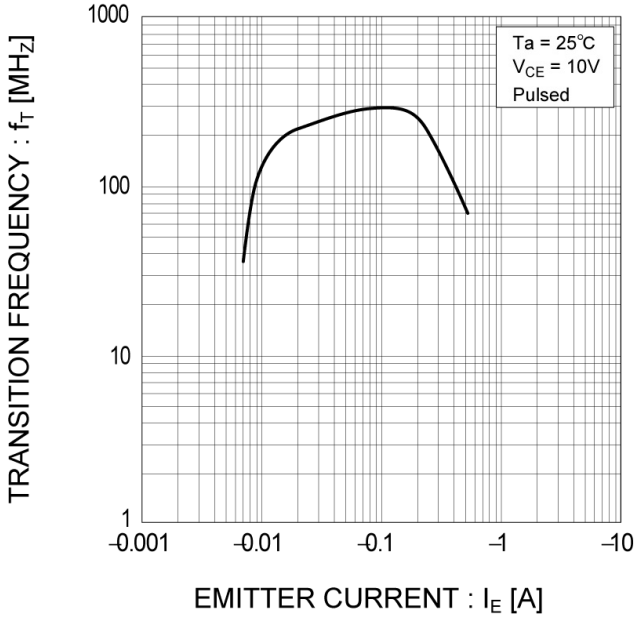


Fig.8 Transition Frequency



●Electrical characteristic curves(T_a = 25°C)

Fig.9 Collector output Capacitance

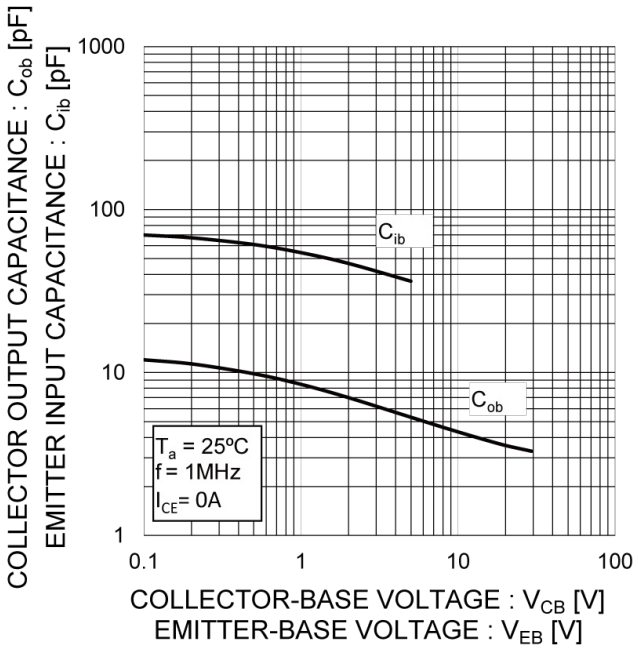
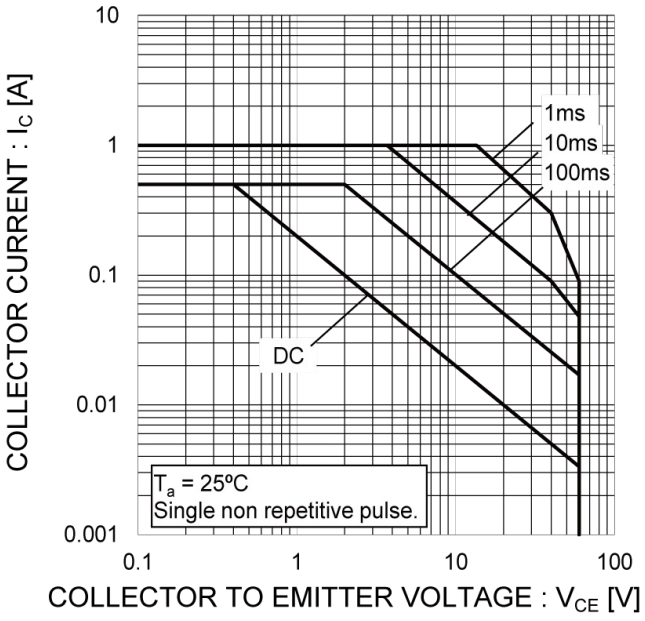
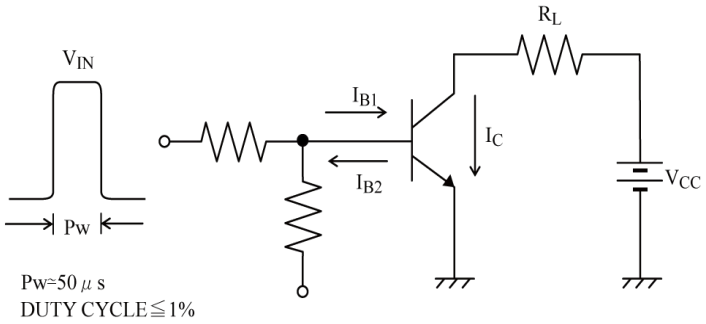
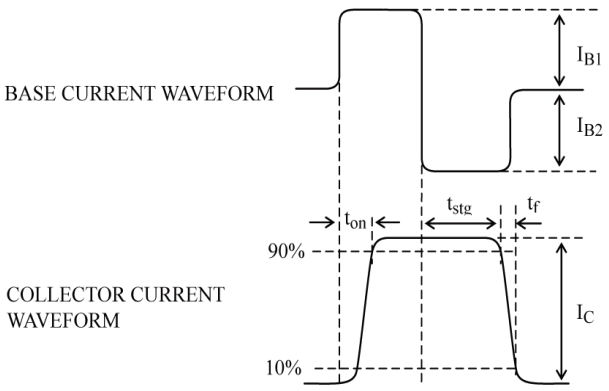


Fig.10 Safe Operating Area



SWITCHING TIME TEST CIRCUIT





●Dimensions

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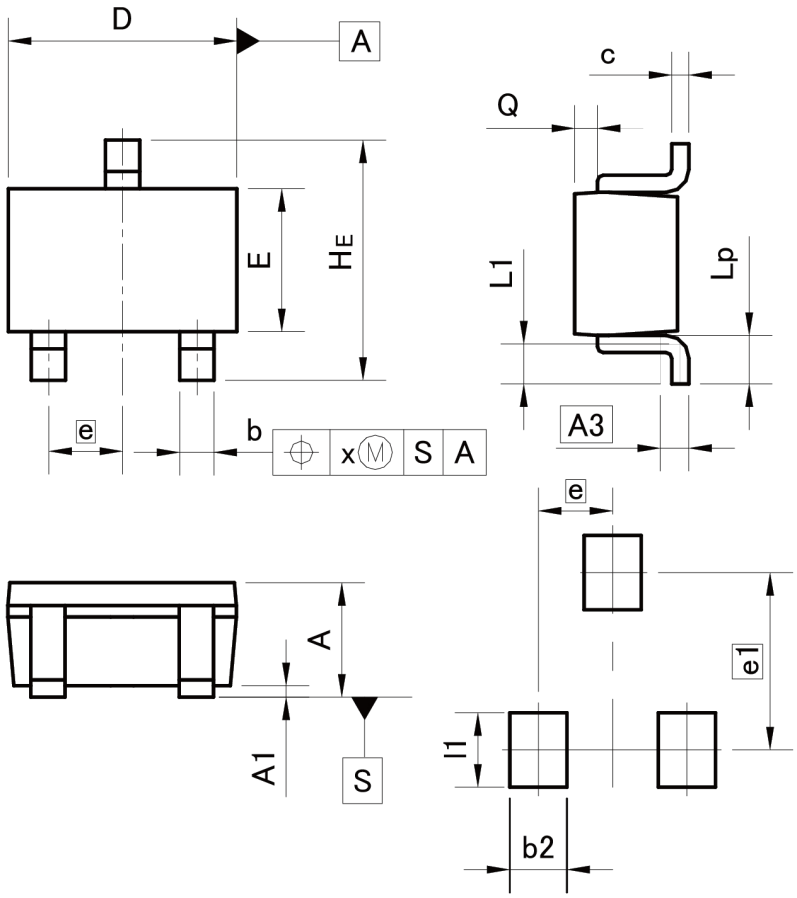

Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

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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