

High voltage discharge, High speed switching, Low Noise (60V, 1A)

2SC5865

●Features

- 1) High speed switching. (Tf : Typ. : 50ns at $I_C=1.0A$)
- 2) Low saturation voltage, typically.
(Typ. : 200mV at $I_C=500mA$, $I_B=50mA$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Low Noise.
- 5) Complements the 2SA2092.

●Applications

High speed switching, Low noise

●Structure

NPN silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
2SC5865		○

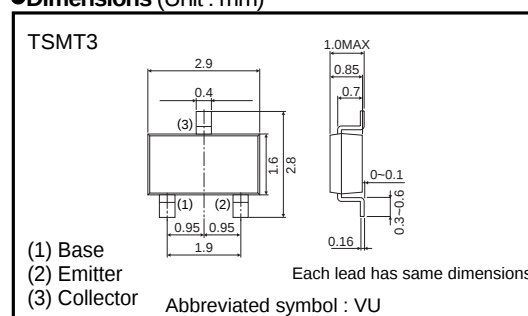
●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	60	V
Collector-emitter voltage	V_{CE0}	60	V
Emitter-base voltage	V_{EB0}	6	V
Collector current	I_C	1.0	A
	I_{CP}	2.0	A *1
Power dissipation	P_C	500	mW *2
Junction temperature	T_J	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

*1 $P_W=10ms$

*2 Each terminal mounted on a recommended land

●Dimensions (Unit : mm)



Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	60	–	–	V	$I_C=1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	60	–	–	V	$I_C=100\mu\text{A}$
Emitter-base breakdown voltage	BV_{EBO}	6	–	–	V	$I_E=100\mu\text{A}$
Collector cut-off current	I_{CBO}	–	–	1.0	μA	$V_{CB}=40\text{V}$
Emitter cut-off current	I_{EBO}	–	–	1.0	μA	$V_{EB}=4\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	200	500	mV	$I_C=500\text{mA}$, $I_B=50\text{mA}$
DC current gain	h_{FE}	120	–	390	–	$V_{CE}=2\text{V}$, $I_C=100\text{mA}$
Transistor frequency	f_T	–	250	–	MHz	$V_{CE}=10\text{V}$, $I_E=-100\text{mA}$, $f=10\text{MHz}$ *1
Collector output capacitance	C_{ob}	–	10	–	pF	$V_{CB}=10\text{V}$, $I_E=0\text{mA}$, $f=1\text{MHz}$
Turn-on time	t_{on}	–	50	–	ns	$I_C=1\text{A}$, $I_{B1}=100\text{mA}$ $I_{B2}=-100\text{mA}$ $V_{CC}\approx 25\text{V}$ *2
Storage time	t_{stg}	–	130	–	ns	
Fall time	t_f	–	50	–	ns	

*1 Non repetitive pulse

*2 See switching characteristics measurement circuits

● h_{FE} RANK

Q	R
120-270	180-390

Transistors

●Electrical characteristics curves

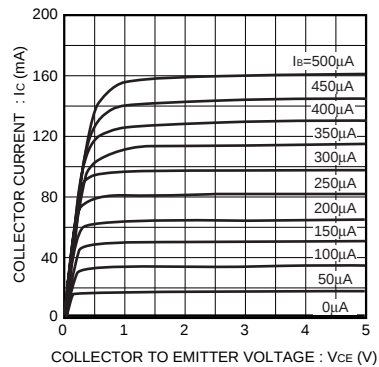


Fig.1 Typical output characteristics

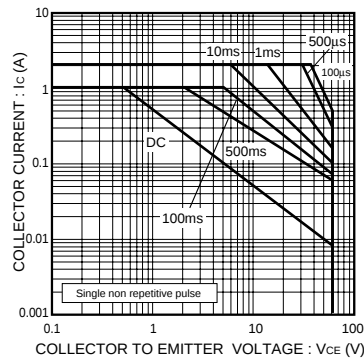


Fig.2 Safe operating area

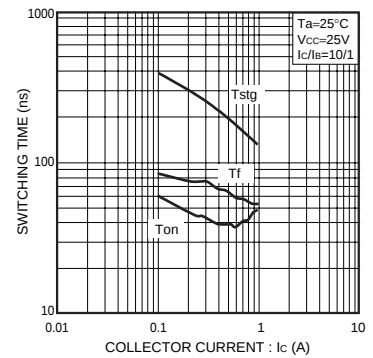


Fig.3 Switching Time

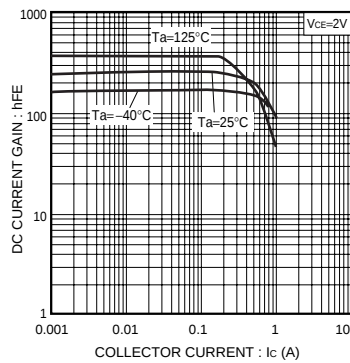
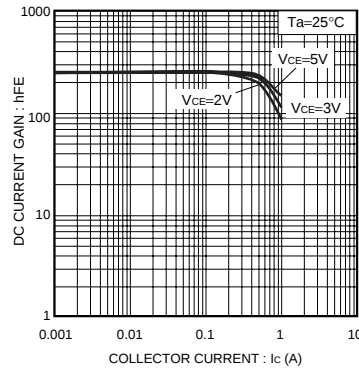
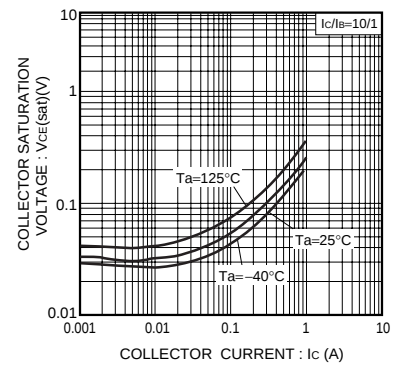
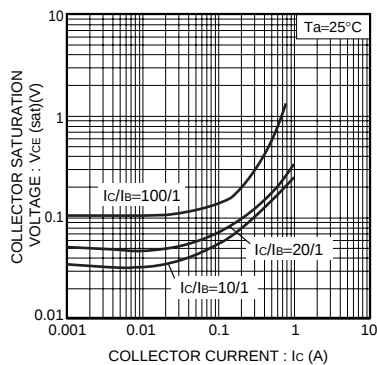
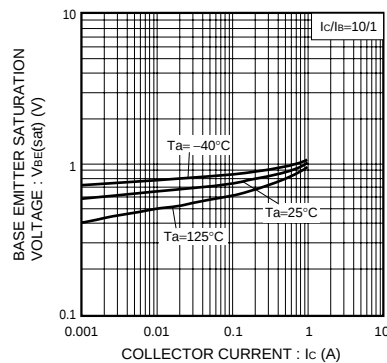
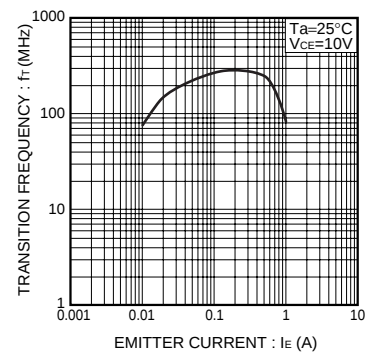
Fig.4 DC current gain
vs. collector current (I)Fig.5 DC current gain
vs. collector current (II)Fig.6 Collector-emitter saturation voltage
vs. collector current (I)Fig.7 Collector-emitter saturation voltage
vs. collector current (II)Fig.8 Base-emitter saturation voltage
vs. collector current

Fig.9 Transition frequency

Transistors

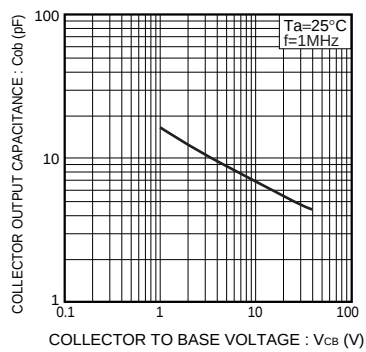


Fig.10 Collector output capacitance

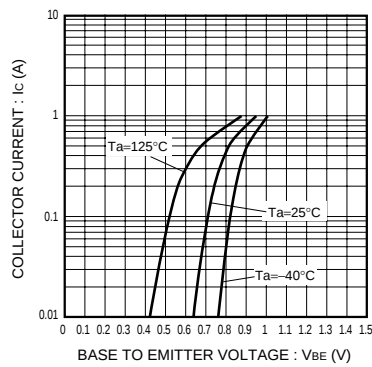
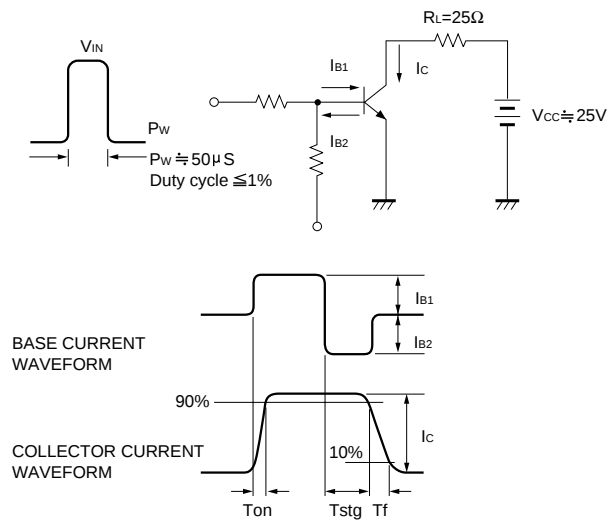


Fig.11 Ground emitter propagation characteristics

●Switching characteristics measurement circuits



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