

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

## 2SC5865

### ●Features

- 1) High speed switching. ( $T_f$ : 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		○

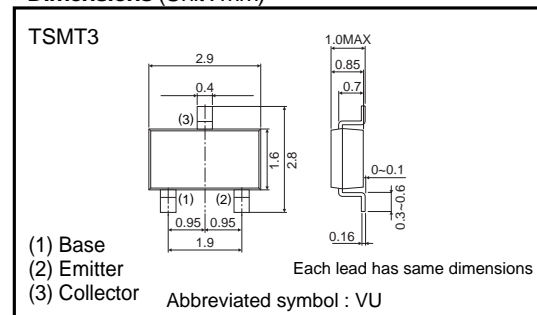
### ●Absolute maximum ratings ( $T_a=25^\circ C$ )

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	$^\circ C$
Range of storage temperature	$T_{stg}$	-55 to +150	$^\circ C$

\*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 <sub>CEO</sub>	60	–	–	V	I <sub>C</sub> =1mA
Collector-base breakdown voltage	BV <sub>CBO</sub>	60	–	–	V	I <sub>C</sub> =100μA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	6	–	–	V	I <sub>E</sub> =100μA
Collector cut-off current	I <sub>CBO</sub>	–	–	1.0	μA	V <sub>CB</sub> =40V
Emitter cut-off current	I <sub>EBO</sub>	–	–	1.0	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	200	500	mV	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA
DC current gain	h <sub>FE</sub>	120	–	390	–	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA
Transistor frequency	f <sub>T</sub>	–	250	–	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> = –100mA, f=10MHz*1
Collector output capacitance	C <sub>ob</sub>	–	10	–	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0mA, f=1MHz
Turn-on time	t <sub>on</sub>	–	50	–	ns	I <sub>C</sub> =1A, I <sub>B1</sub> =100mA
Storage time	t <sub>stg</sub>	–	130	–	ns	I <sub>B2</sub> = –100mA
Fall time	t <sub>f</sub>	–	50	–	ns	V <sub>CC</sub> ≈25V *2

\*1 Non repetitive pulse

\*2 See switching characteristics measurement circuits

●h<sub>FE</sub> RANK

Q	R
120-270	180-390

Transistors

●Electrical characteristics curves

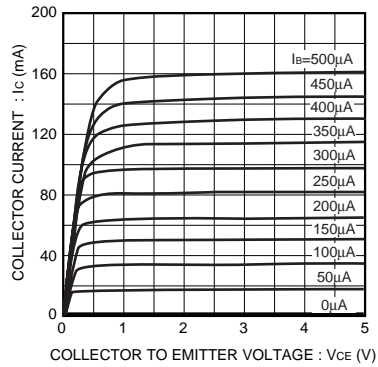


Fig.1 Typical output characteristics

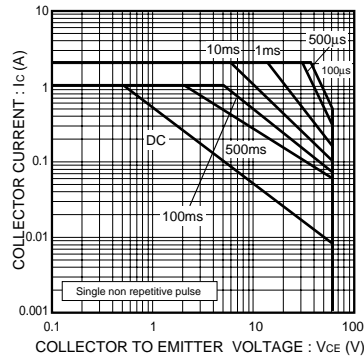


Fig.2 Safe operating area

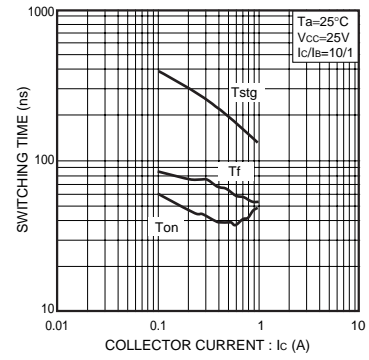


Fig.3 Switching Time

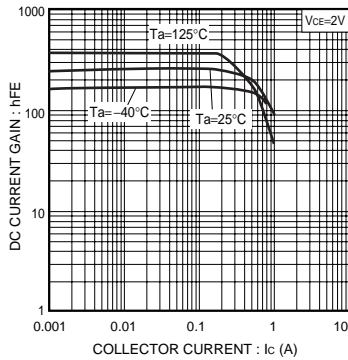


Fig.4 DC current gain vs. collector current ( I )

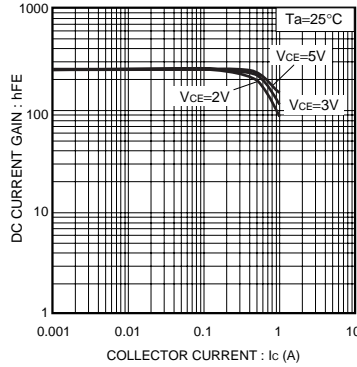


Fig.5 DC current gain vs. collector current ( II )

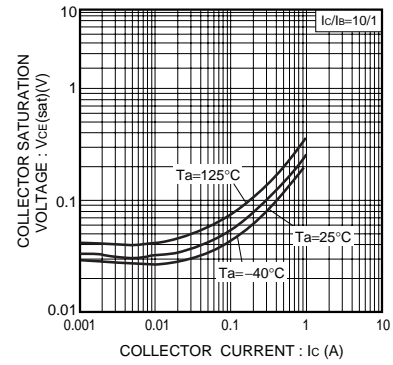


Fig.6 Collector-emitter saturation voltage vs. collector current ( I )

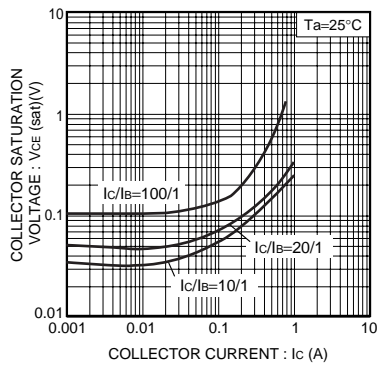


Fig.7 Collector-emitter saturation voltage vs. collector current ( II )

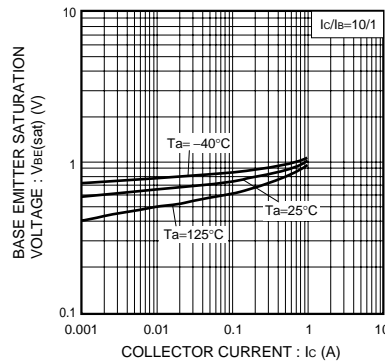


Fig.8 Base-emitter saturation voltage vs. collector current

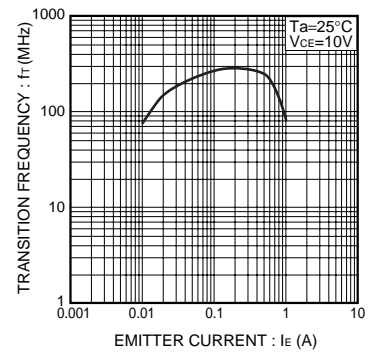


Fig.9 Transition frequency

Transistors

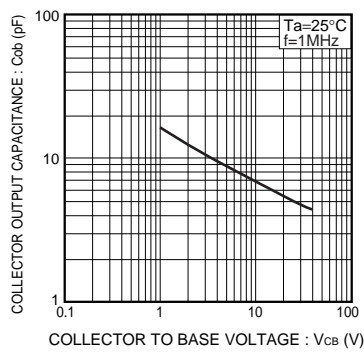


Fig.10 Collector output capacitance

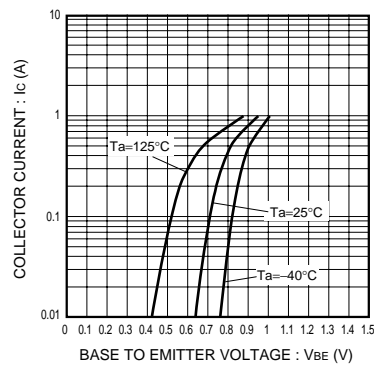
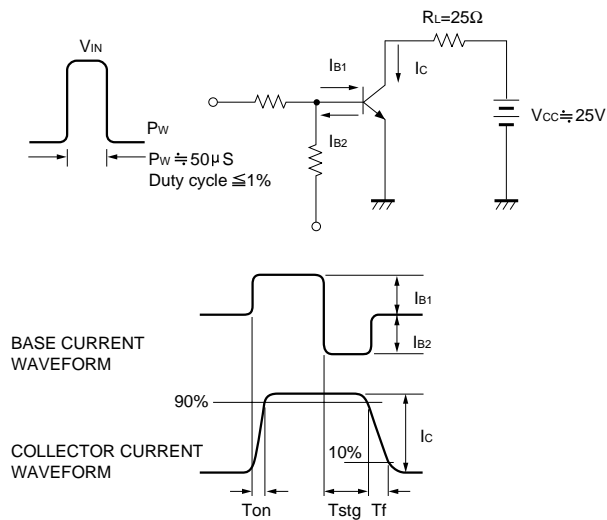


Fig.11 Ground emitter propagation characteristics

●Switching characteristics measurement circuits



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