

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

**2SC5865**

●Features

- 1) High speed switching. ( Tf : Typ. : 50ns at Ic=1.0A)
- 2) Low saturation voltage, typically.  
(Typ. : 200mV at Ic=500mA, Ib=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		○

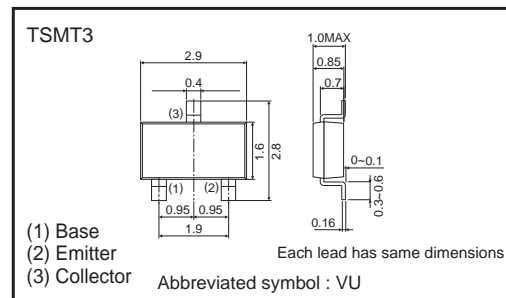
●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	60	V
Collector-emitter voltage	V <sub>CE0</sub>	60	V
Emitter-base voltage	V <sub>EB0</sub>	6	V
Collector current	I <sub>c</sub>	1.0	A
	I <sub>cP</sub>	2.0	A *1
Power dissipation	P <sub>c</sub>	500	mW *2
Junction temperature	T <sub>j</sub>	150	°C
Range of storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 Pw=10ms

\*2 Each terminal mounted on a recommended land

●Dimensions (Unit : mm)



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	$BV_{CE0}$	60	-	-	V	$I_c=1mA$
Collector-base breakdown voltage	$BV_{CB0}$	60	-	-	V	$I_c=100\mu A$
Emitter-base breakdown voltage	$BV_{EB0}$	6	-	-	V	$I_E=100\mu A$
Collector cut-off current	$I_{CBO}$	-	-	1.0	$\mu A$	$V_{CB}=40V$
Emitter cut-off current	$I_{EBO}$	-	-	1.0	$\mu A$	$V_{EB}=4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	200	500	mV	$I_c=500mA, I_b=50mA$
DC current gain	$h_{FE}$	120	-	390	-	$V_{CE}=2V, I_c=100mA$
Transistor frequency	$f_T$	-	250	-	MHz	$V_{CE}=10V, I_E=-100mA, f=10MHz^{*1}$
Collector output capacitance	$C_{ob}$	-	10	-	pF	$V_{CB}=10V, I_E=0mA, f=1MHz$
Turn-on time	$t_{on}$	-	50	-	ns	$I_c=1A,$ $I_{b1}=100mA$
Storage time	$t_{stg}$	-	130	-	ns	$I_{b2}=-100mA$
Fall time	$t_f$	-	50	-	ns	$V_{CC}\approx 25V^{*2}$

\*1 Non repetitive pulse

\*2 See switching characteristics measurement circuits

●hFE RANK

Q	R
120-270	180-390

●Electrical characteristic curves

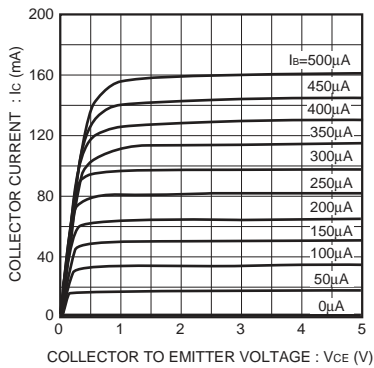


Fig.1 Typical output characteristics

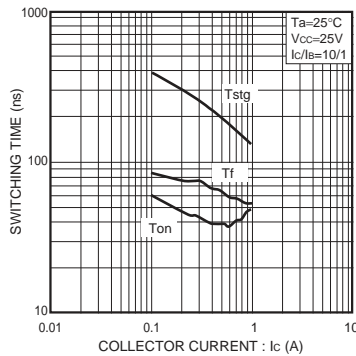


Fig.2 Switching Time

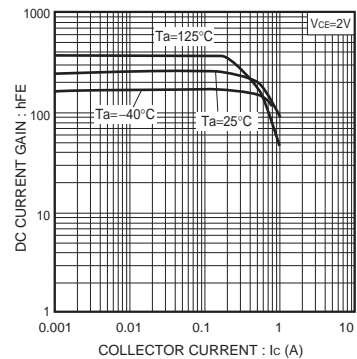


Fig.3 DC current gain vs. collector current ( I )

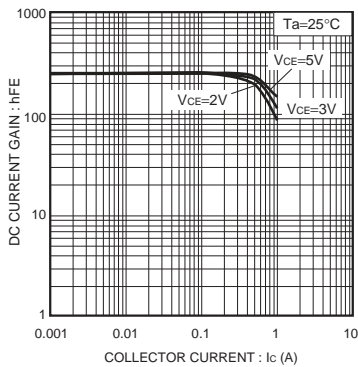


Fig.4 DC current gain vs. collector current ( II )

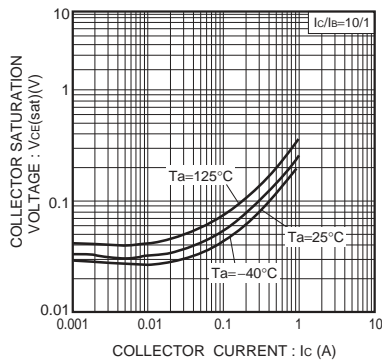


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

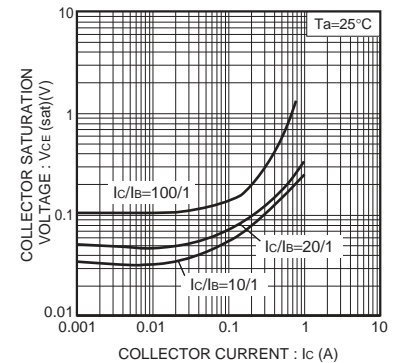


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

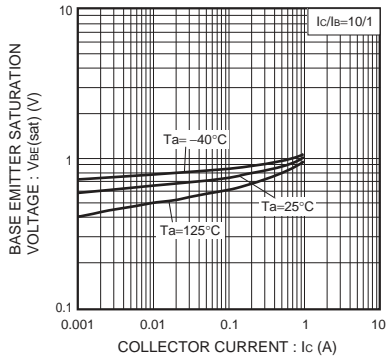


Fig.7 Base-emitter saturation voltage vs. collector current

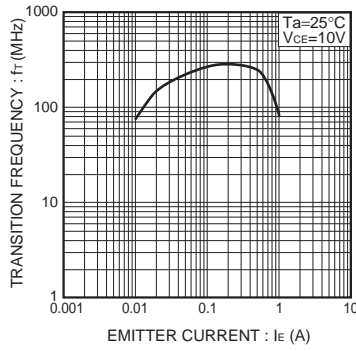


Fig.8 Transition frequency

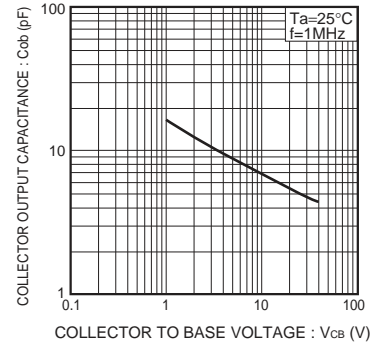


Fig.9 Collector output capacitance

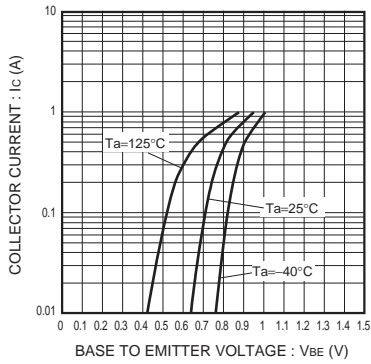
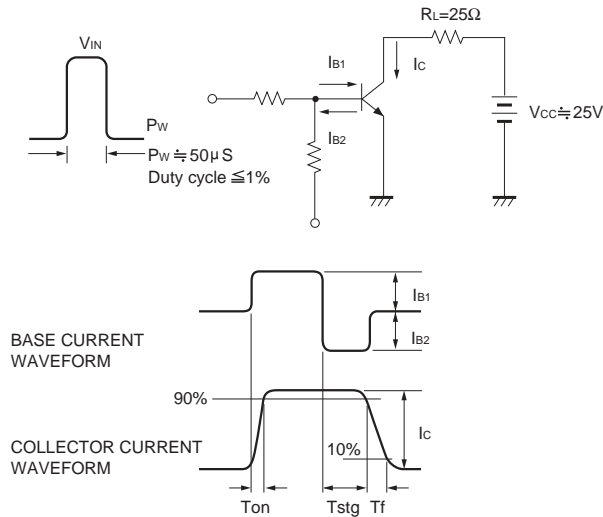


Fig.10 Ground emitter propagation characteristics

●Switching characteristics measurement circuits



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