

Medium power transistor (60V, 0.5A)

2SC5868

●Features

- 1) High speed switching.
(T_f : Typ. : 80ns at $I_c = 500\text{mA}$)
- 2) Low saturation voltage, typically
(Typ. : 75mV at $I_c = 100\text{mA}$, $I_B = 10\text{mA}$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2090

●Applications

Small signal low frequency amplifier
High speed switching

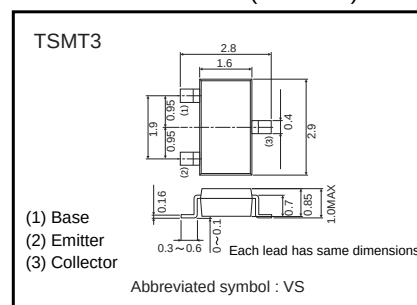
●Structure

NPN Silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
2SC5868		○

●External dimensions (Unit : mm)



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

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	DC	I_c	0.5	A
	Pulsed	I_{cP}	1.0	A *1
Power dissipation		P_c	500	mW *2
Junction temperature		T_j	150	$^\circ\text{C}$
Range of storage temperature		T_{stg}	-55 to 150	$^\circ\text{C}$

*1 $P_W = 10\text{ms}$

*2 Each terminal mounted on a recommended land

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV_{CEO}	60	—	—	V	$I_C=1mA$
Collector-base breakdown voltage	BV_{CBO}	60	—	—	V	$I_C=100\mu A$
Emitter-base breakdown voltage	BV_{EBO}	6	—	—	V	$I_E=100\mu A$
Collector cut-off current	I_{CBO}	—	—	1.0	μA	$V_{CB}=40V$
Emitter cut-off current	I_{EBO}	—	—	1.0	μA	$V_{EB}=4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	75	300	mV	$I_C=100mA$ $I_B=10mA$ *1
DC current gain	h_{FE}	120	—	390	—	$V_{CE}=2V$ $I_C=50mA$ *1
Transition frequency	f_T	—	300	—	MHz	$V_{CE}=10V$ $I_E=-100mA$ $f=10MHz$ *1
Corrector output capacitance	C_{ob}	—	5	—	pF	$V_{CB}=10V$ $I_E=0mA$ $f=1MHz$
Turn-on time	T_{on}	—	70	—	ns	$I_C=500mA$ $I_{B1}=50mA$ *2
Storage time	T_{stg}	—	130	—	ns	$I_{B2}=-50mA$
Fall time	T_f	—	80	—	ns	$V_{CC} \approx 25V$

*1 Non repetitive pulse

*2 See Switching characteristics measurement circuits

● h_{FE} RANK

Q	R
120–270	180–390

●Electrical characteristic curves

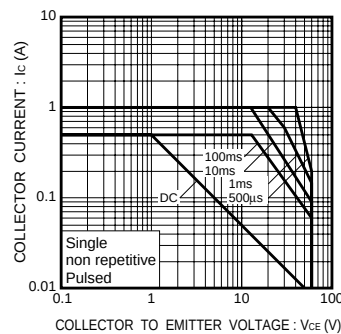


Fig.1 Safe Operating Area

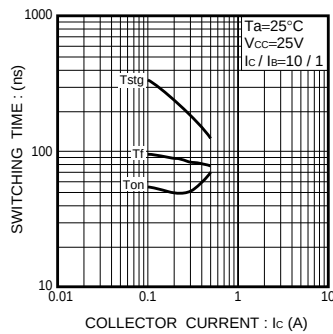


Fig.2 Switching Time

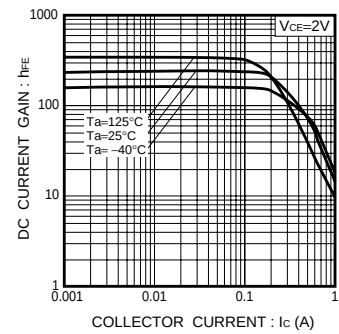


Fig.3 DC Current Gain vs. Collector Current (I)

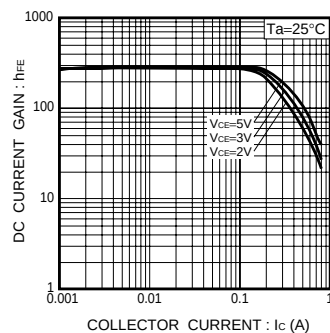


Fig.4 DC Current Gain vs. Collector Current (II)

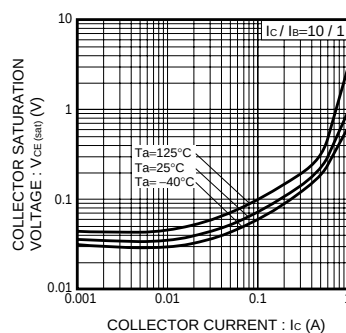


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

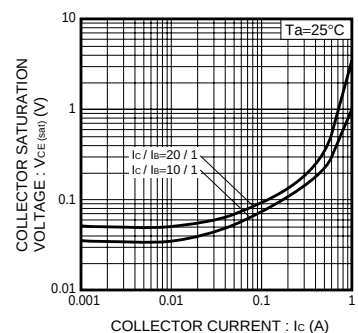


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

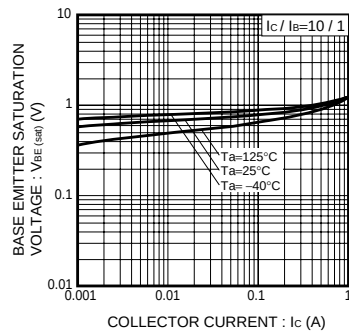


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

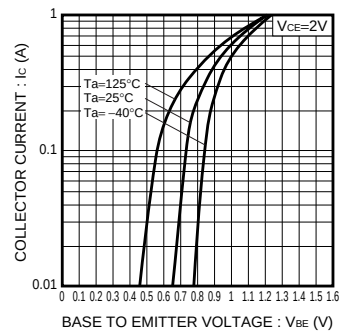


Fig.8 Grounded Emitter Propagation Characteristics

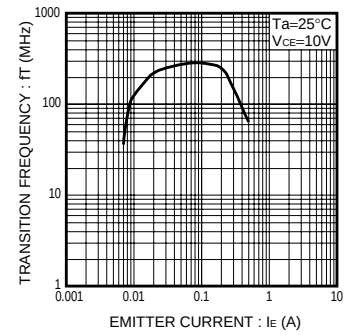


Fig.9 Transition Frequency

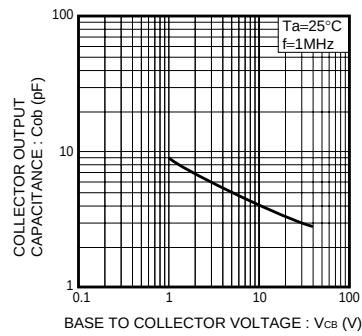
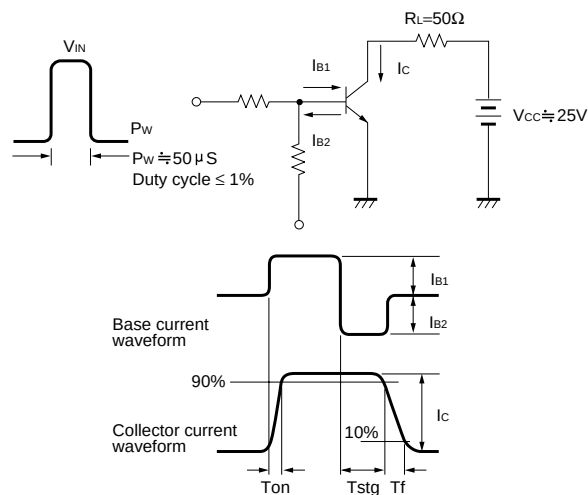


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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