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2SC5868

Transistors

# Medium power transistor (60V, 0.5A)

## 2SC5868

**●Features**

- 1) High speed switching.  
(Tf : Typ. : 80ns at Ic = 500mA)
- 2) Low saturation voltage, typically  
(Typ. : 75mV at Ic = 100mA, Ib = 10mA)
- 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		○

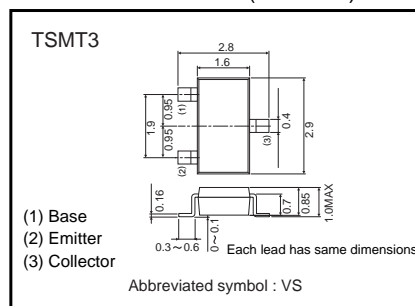
**●Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Collector-base voltage	Vcbo	60	V
Collector-emitter voltage	Vceo	60	V
Emitter-base voltage	Vebo	6	V
Collector current	DC	Ic	0.5 A
	Pulsed	IcP	1.0 A *1
Power dissipation	Pc	500	mW *2
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	-55 to 150	°C

\*1 Pw=10ms

\*2 Each terminal mounted on a recommended land

**●External dimensions (Unit : mm)**



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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
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>	–	75	300	mV	I <sub>C</sub> =100mA I <sub>B</sub> =10mA
DC current gain	h <sub>FE</sub>	120	–	390	–	V <sub>CE</sub> =2V I <sub>C</sub> =50mA
Transition frequency	f <sub>r</sub>	–	300	–	MHz	V <sub>CE</sub> =10V I <sub>E</sub> =–100mA f=10MHz
Corrector output capacitance	C <sub>ob</sub>	–	5	–	pF	V <sub>CB</sub> =10V I <sub>E</sub> =0mA f=1MHz
Turn-on time	T <sub>on</sub>	–	70	–	ns	I <sub>C</sub> =500mA I <sub>B1</sub> =50mA
Storage time	T <sub>stg</sub>	–	130	–	ns	I <sub>B2</sub> =–50mA
Fall time	T <sub>f</sub>	–	80	–	ns	V <sub>CC</sub> ≈25V

\*1 Non repetitive pulse

\*2 See Switching characteristics measurement circuits

●h<sub>FE</sub> RANK

Q	R
120–270	180–390

●Electrical characteristic curves

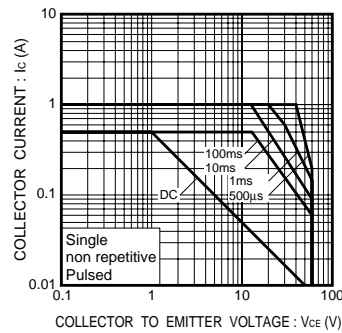


Fig.1 Safe Operating Area

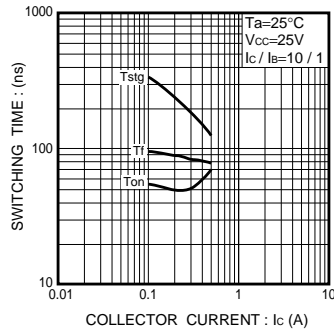


Fig.2 Switching Time

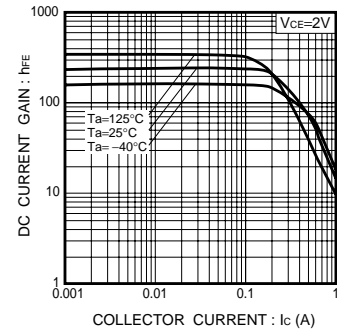


Fig.3 DC Current Gain vs. Collector Current (I)

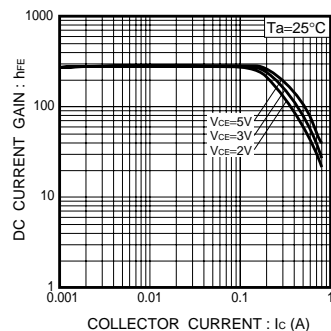


Fig.4 DC Current Gain vs. Collector Current (II)

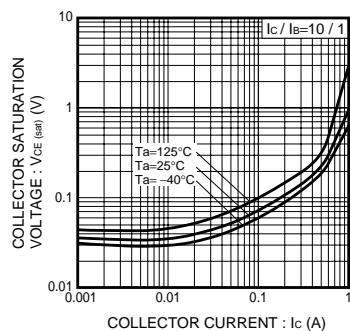


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

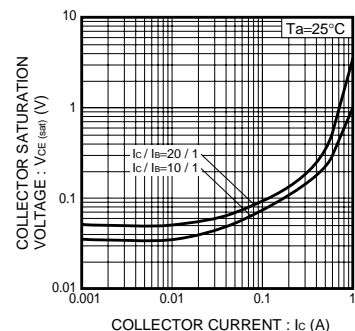


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

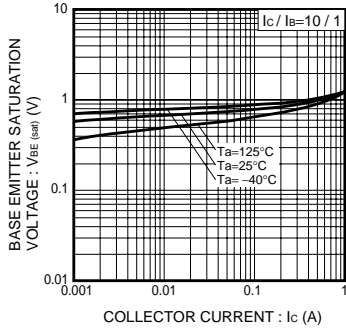


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

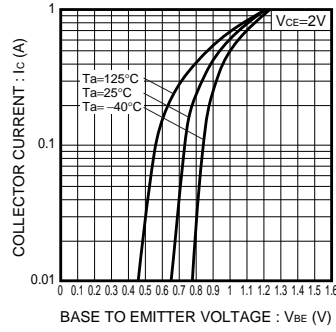


Fig.8 Grounded Emitter Propagation Characteristics

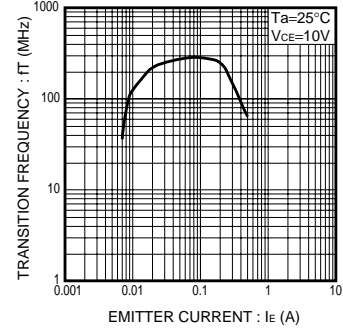


Fig.9 Transition Frequency

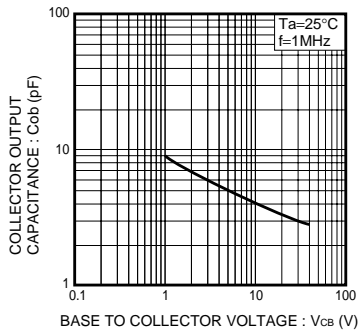


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits

