

Power transistor (30V, 2A)

2SC5875

●Features

- 1) High speed switching.
(Tf : Typ. : 20ns at $I_c = 2A$)
- 2) Low saturation voltage, typically
(Typ. : 200mV at $I_c = 1.0A$, $I_B = 0.1A$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2087

●Applications

Low frequency amplifier
High speed switching

●Structure

NPN Silicon epitaxial planar transistor

●Packaging specifications

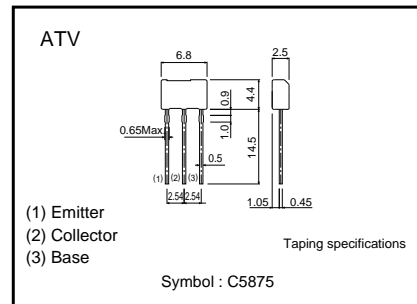
Type	Package	Taping
	Code	TV2
	Basic ordering unit (pieces)	2500
2SC5875		○

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	30	V
Collector-emitter voltage		V_{CEO}	30	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_c	2	A
	Pulsed	I_{cP}	4	A *
Power dissipation		P_c	1.0	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	-55 to 150	°C

*Pw=10ms

●External dimensions (Unit : mm)



Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-emitter breakdown voltage	BV_{CEO}	30	–	–	V	$I_C=1mA$
Collector-base breakdown voltage	BV_{CBO}	30	–	–	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	$V_{CB}=20V$
Emitter cut-off current	I_{EBO}	–	–	1.0	μA	$V_{EB}=4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	200	500	mV	$I_C=1.0A$ $I_B=100mA$
DC current gain	h_{FE}	120	–	390	–	$V_{CE}=2V$ $I_C=100mA$
Transition frequency	f_T	–	250	–	MHz	$V_{CE}=10V$ $I_E=-100mA$ $f=10MHz$
Corrector output capacitance	C_{ob}	–	15	–	pF	$V_{CB}=10V$ $I_E=0mA$ $f=1MHz$
Turn-on time	T_{on}	–	25	–	ns	$I_C=2A$ $I_{B1}=200mA$
Storage time	T_{stg}	–	100	–	ns	$I_{B2}=-200mA$
Fall time	T_f	–	20	–	ns	$V_{CC} \approx 25V$

*Non repetitive pulse

● h_{FE} RANK

Q	R
120–270	180–390

●Electrical characteristic curves

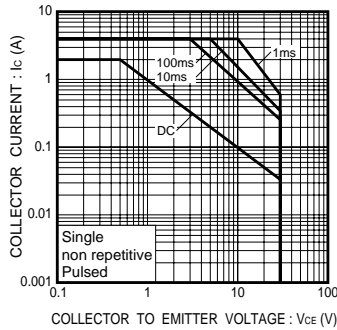


Fig.1 Safe Operating Area

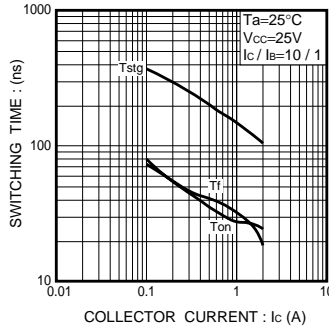


Fig.2 Switching Time

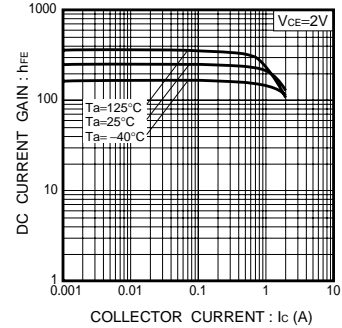


Fig.3 DC Current Gain vs. Collector Current (I)

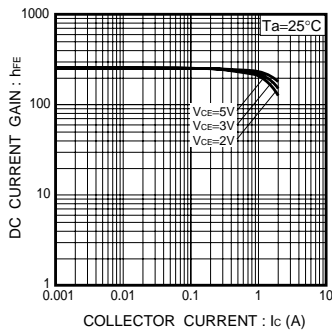


Fig.4 DC Current Gain vs. Collector Current (II)

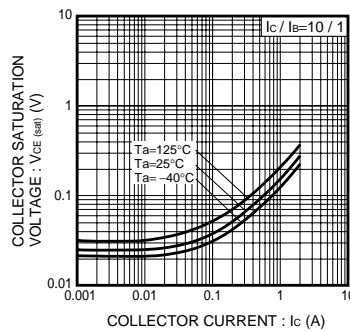


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

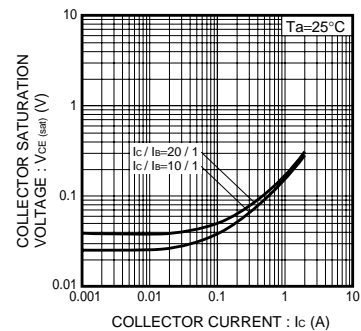


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistors

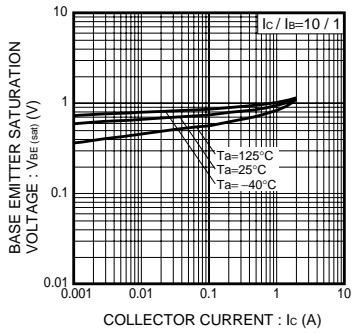


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

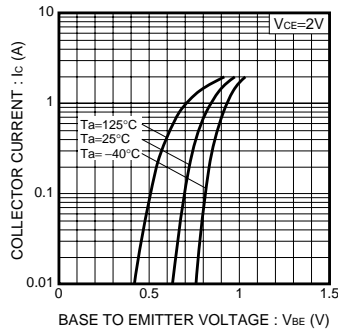


Fig.8 Grounded Emitter Propagation Characteristics

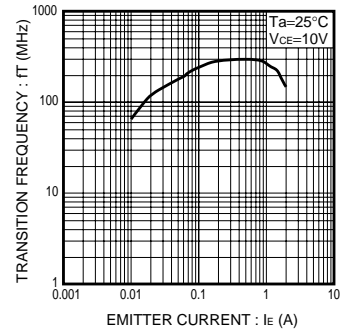


Fig.9 Transition Frequency

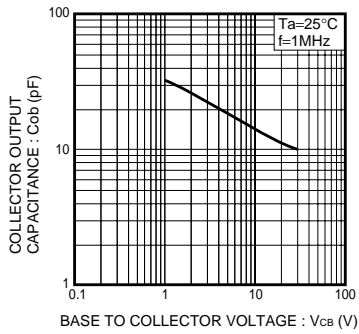
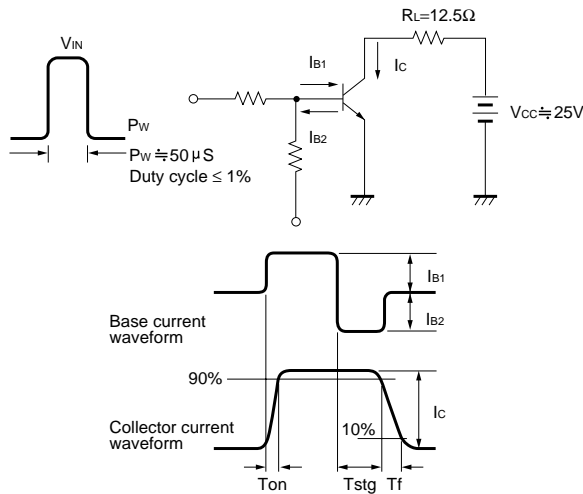


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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