

# Medium power transistor (60V, 0.5A)

**2SC5876FRA**

**●Features**

- 1) High speed switching. (Tf : Typ. : 80ns at Ic = 500mA)
- 2) Low saturation voltage, typically  
(Typ. : 150mV at Ic = 100mA, Ib = 10mA)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2088FRA

**●Applications**

Small signal low frequency amplifier  
High speed switching

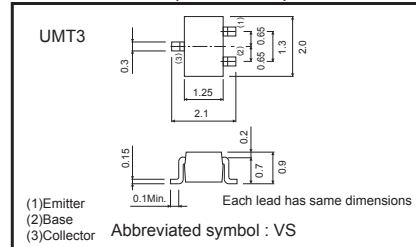
**●Structure**

NPN Silicon epitaxial planar transistor

**●Packaging specifications**

Type	Package	Taping
	Code	T106
	Basic ordering unit (pieces)	3000
2SC5876FRA		○

**●Dimensions (Unit : mm)**



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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	60	V
Collector-emitter voltage	V <sub>CEO</sub>	60	V
Emitter-base voltage	V <sub>EB0</sub>	6	V
Collector current	I <sub>c</sub>	0.5	A
	I <sub>CP</sub>	1.0	A <sup>*1</sup>
Power dissipation	P <sub>C</sub>	200	mW <sup>*2</sup>
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.

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	60	–	–	V	I <sub>C</sub> =100μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	60	–	–	V	I <sub>C</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	6	–	–	V	I <sub>E</sub> =100μA
Collector cut-off current	I <sub>CB0</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>	–	150	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>T</sub>	–	300	–	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> = –100mA, f=10MHz *1
Collector 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 I <sub>B2</sub> = –50mA V <sub>CC</sub> =25V *1
Storage time	t <sub>stg</sub>	–	130	–	ns	
Fall time	t <sub>f</sub>	–	80	–	ns	

\*1 Pulse measurement

●hFE RANK

Q	R
120-270	180-390

●Electrical characteristic curves

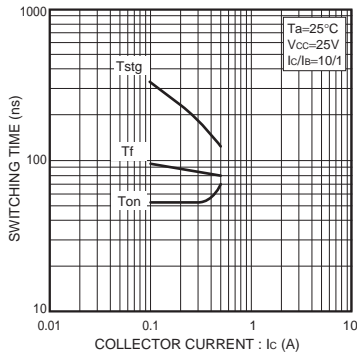


Fig.1 Switching Time

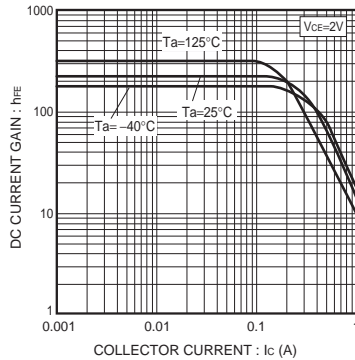


Fig.2 DC current gain vs. collector current

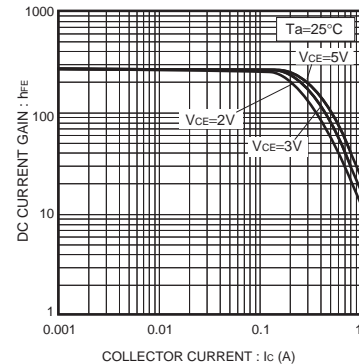


Fig.3 DC current gain vs. collector current

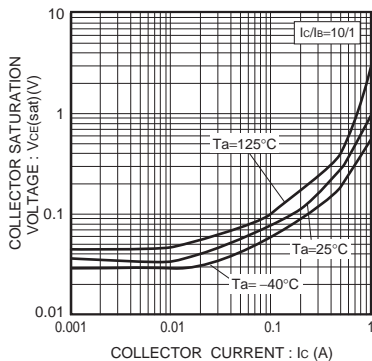


Fig.4 Collector-emitter saturation voltage vs. collector current

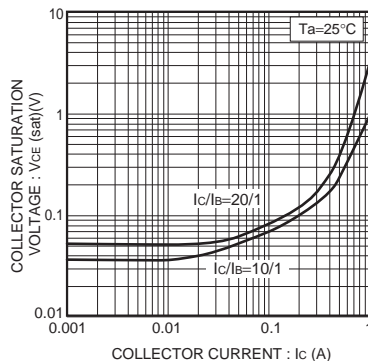


Fig.5 Collector-emitter saturation voltage vs. collector current

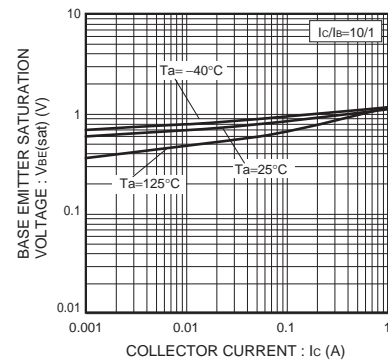


Fig.6 Base-emitter saturation voltage vs. collector current

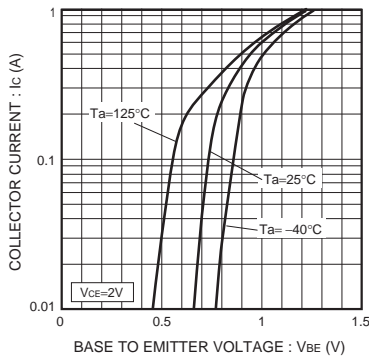


Fig.7 Ground emitter propagation characteristics

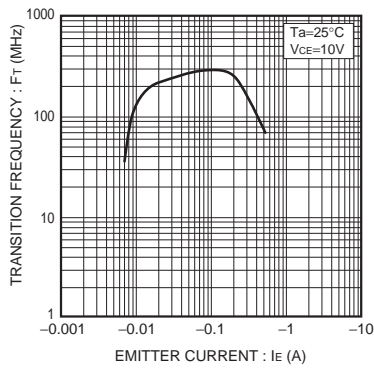


Fig.8 Transition frequency

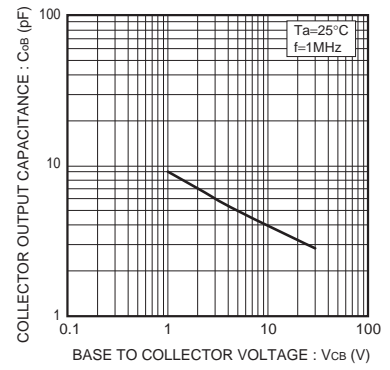
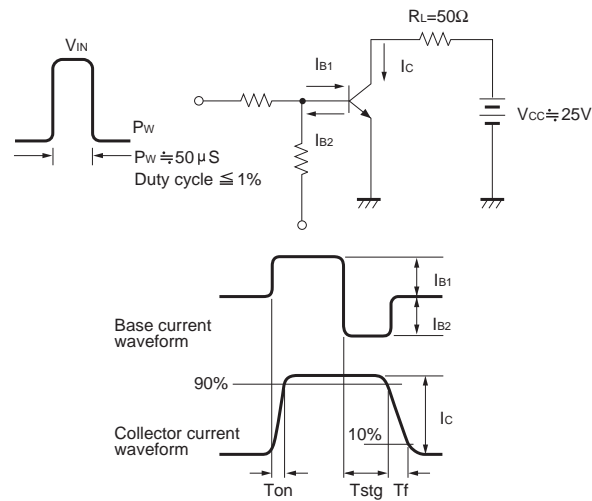


Fig.9 Collector output capacitance

●Switching characteristics measurement circuits



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