

# Power transistor (60V, 3A)

**2SC5824**
**●Features**

- 1) High speed switching. ( $T_f$  : Typ. : 30ns at  $I_c = 3A$ )
- 2) Low saturation voltage, typically  
(Typ. : 200mV at  $I_c = 2A$ ,  $I_B = 200mA$ )
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2071.

**●Applications**

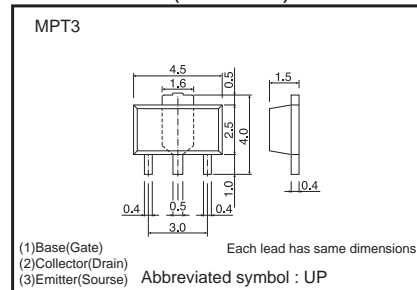
Low frequency amplifier  
 High speed switching

**●Structure**

NPN Silicon epitaxial planar transistor

**●Packaging specifications**

Type	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
2SC5824		○

**●Dimensions (Unit : mm)**

**●Absolute maximum ratings (Ta=25°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	$I_c$	3	A
	$I_{cP}$	6	A <sup>*1</sup>
Power dissipation	$P_c$	500	mW <sup>*2</sup>
	$P_c$	2.0	W <sup>*3</sup>
Junction temperature	$T_j$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

\*1  $P_w=100ms$

\*2 Each terminal mounted on a recommended land.

\*3 Mounted on a 40x40x0.7(mm) ceramic substrate

●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>	–	200	500	mV	I <sub>C</sub> =2A, I <sub>B</sub> =200mA *1
DC current gain	h <sub>FE</sub>	120	–	390	–	V <sub>CE</sub> =2V, I <sub>C</sub> =100mA
Transition frequency	f <sub>T</sub>	–	200	–	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> = –100mA, f=10MHz *1
Collector output capacitance	C <sub>ob</sub>	–	20	–	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0mA, f=1MHz
Turn-on time	t <sub>on</sub>	–	50	–	ns	I <sub>C</sub> =3A, I <sub>B1</sub> =300mA
Storage time	t <sub>stg</sub>	–	150	–	ns	I <sub>B2</sub> = –300mA
Fall time	t <sub>f</sub>	–	30	–	ns	V <sub>CC</sub> =25V *2

\*1 Non repetitive pulse

\*2 See switching characteristics measurement circuits

●h<sub>FE</sub> RANK

Q	R
120-270	180-390

●Electrical characteristic curves

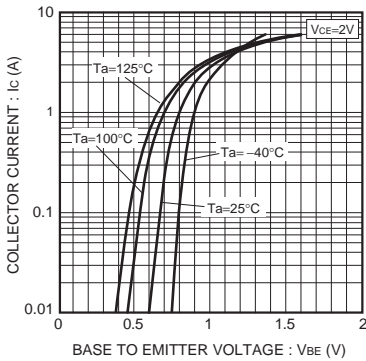


Fig.1 Ground emitter propagation characteristics

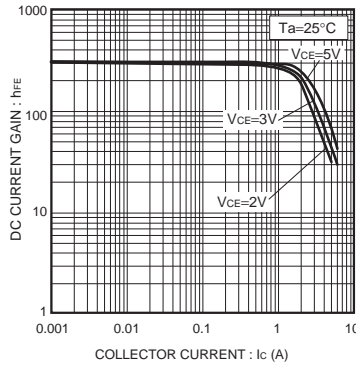


Fig.2 DC current gain vs. collector current

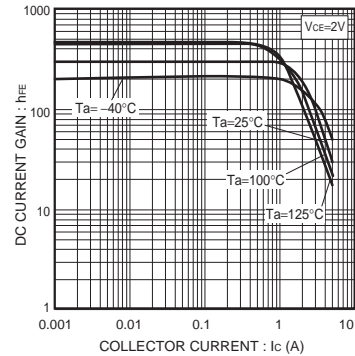


Fig.3 DC current gain vs. collector current

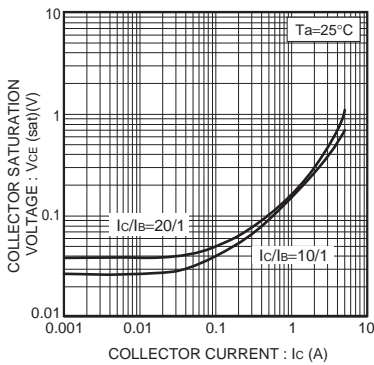


Fig.4 Collector-emitter saturation voltage vs. collector current

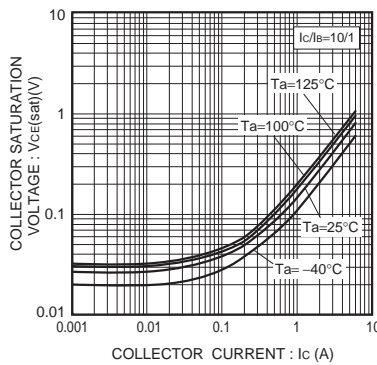


Fig.5 Collector-emitter saturation voltage vs. Collector Current

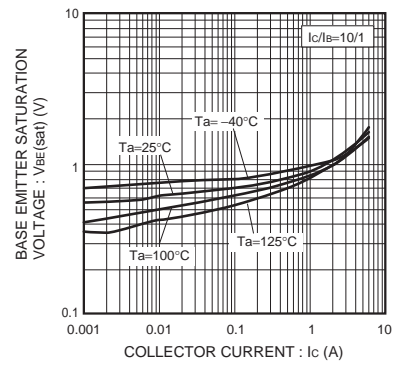


Fig.6 Base-emitter saturation voltage vs. collector current

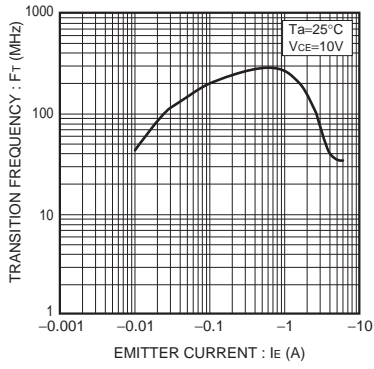


Fig.7 Transition frequency

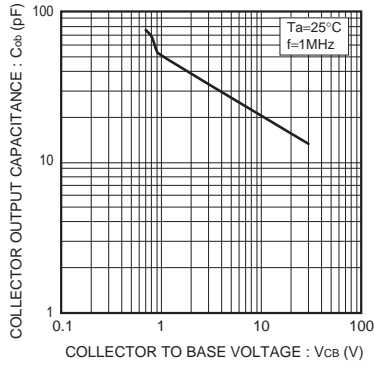


Fig.8 Collector output capacitance

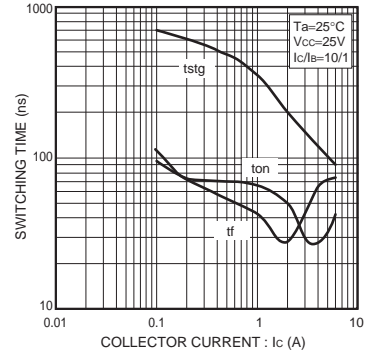
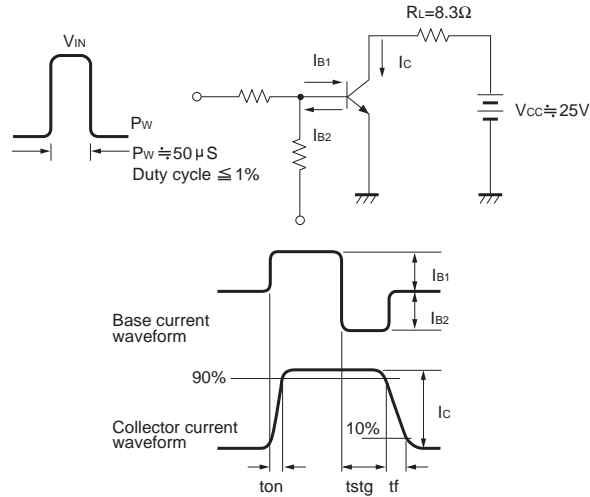


Fig.9 Switching Time

●Switching characteristics measurement circuits



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