

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

NPN Silicon epitaxial planar transistor

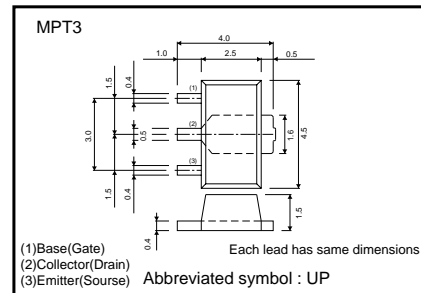
●Structure

Low frequency amplifier
High speed switching

●Packaging specifications

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

●External dimensions (Units : 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	I_c	3	A
	I_{cP}	6	A ^{*1}
Power dissipation	P_c	500	mW ^{*2}
	P_c	2.0	W ^{*3}
Junction temperature	T_j	150	$^\circ\text{C}$
Range of storage temperature	T_{stg}	-55~+150	$^\circ\text{C}$

*1 $P_w=100\text{ms}$

*2 Each terminal mounted on a recommended land.

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

Transistor

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	60	-	-	V	I _C =100μA
Collector-emitter breakdown voltage	BV _{CEO}	60	-	-	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EB0}	6	-	-	V	I _E =100μA
Collector cut-off current	I _{CB0}	-	-	1.0	μA	V _{CB} =40V
Emitter cut-off current	I _{EB0}	-	-	1.0	μA	V _{EB} =4V
Collector-emitter saturation voltage	V _{CE(sat)}	-	200	500	mV	I _C =2A, I _B =200mA *1
DC current gain	h _{FE}	120	-	390	-	V _{CE} =2V, I _C =100mA
Transition frequency	f _T	-	200	-	MHz	V _{CE} =10V, I _E =-100mA, f=10MHz *1
Collector output capacitance	C _{ob}	-	20	-	pF	V _{CB} =10V, I _E =0mA, f=1MHz
Turn-on time	T _{on}	-	50	-	ns	I _C =3A, I _{B1} =300mA I _{B2} =-300mA V _{CC} =25V *2
Storage time	T _{stg}	-	150	-	ns	
Fall time	T _f	-	30	-	ns	

*1 Non repetitive pulse

*2 See switching characteristics measurement circuits

●h_{FE} RANK

Q	R
120-270	180-390

●Electrical characteristic curves

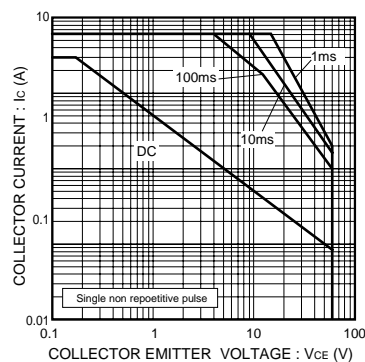


Fig.1 Safe operating area

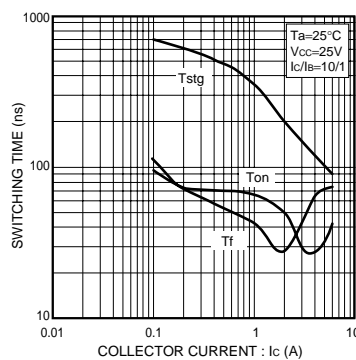


Fig.2 Switching Time

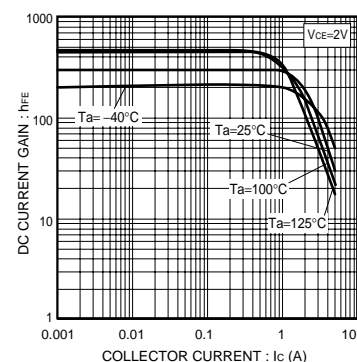


Fig.3 DC current gain vs. collector current

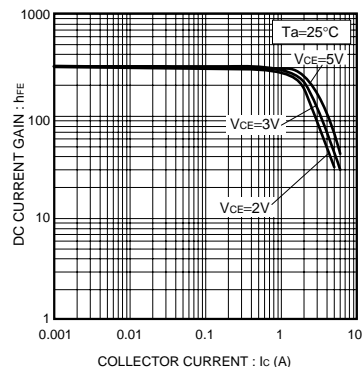


Fig.4 DC current gain vs. collector current

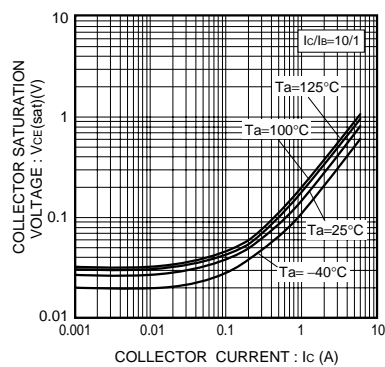


Fig.5 Collector-emitter saturation voltage vs. Collector Current

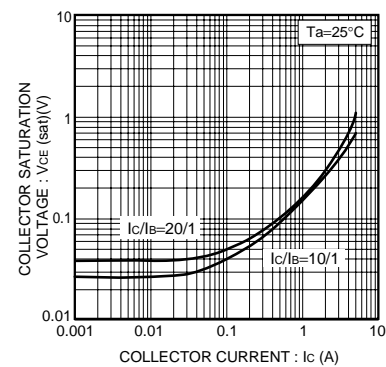


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistor

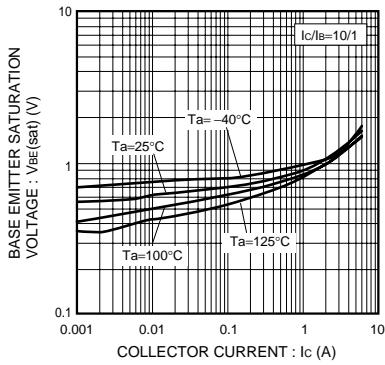


Fig.7 Base-emitter saturation voltage vs. collector current

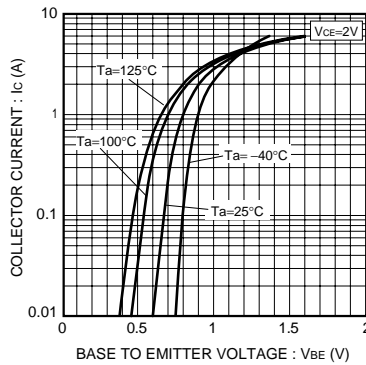


Fig.8 Ground emitter propagation characteristics

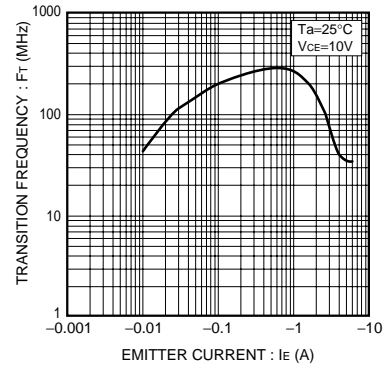


Fig.9 Transition frequency

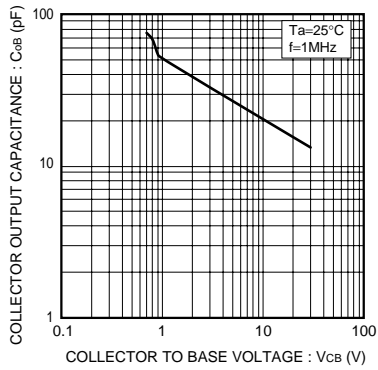
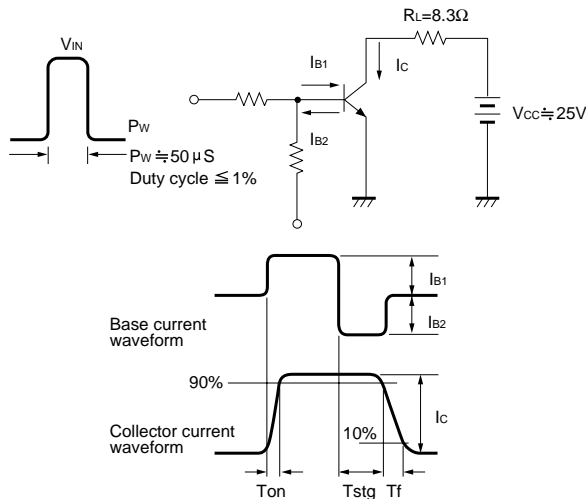


Fig.10 Collector output capacitance

●Switching characteristics measurement circuits





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