

Medium power transistor (30V, 0.5A)

2SC5729

●Features

- 1) High speed switching. (T_f : Typ. : 50ns at $I_c = 500\text{mA}$)
- 2) Low saturation voltage, typically
(Typ. : 150mV at $I_c = 100\text{mA}$, $I_B = 10\text{mA}$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SA2047

●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
2SC5729		○

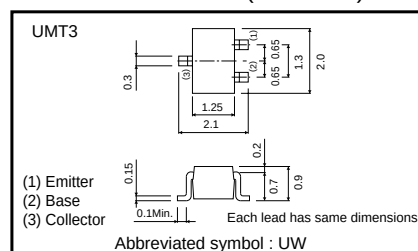
●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	30	V
Collector-emitter voltage	V_{CE0}	30	V
Emitter-base voltage	V_{EB0}	6	V
Collector current	I_c	0.5	A
	I_{CP}	1.0	A ^{*1}
Power dissipation	P_c	200	mW ^{*2}
Junction temperature	T_j	150	$^\circ\text{C}$
Range of storage temperature	T_{stg}	$-55\sim+150$	$^\circ\text{C}$

*1 $P_w=10\text{ms}$

*2 Each terminal mounted on a recommended land.

●External dimensions (Units : mm)



Transistor

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CEO}	30	—	—	V	$I_C=100\mu A$
Collector-emitter breakdown voltage	BV_{CBO}	30	—	—	V	$I_C=1mA$
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	$V_{CE(sat)}$	—	150	300	mV	$I_C=100mA, I_B=100mA$
DC current gain	h_{FE}	120	—	390	—	$V_{CE}=2V, I_C=50mA$
Transition frequency	f_T	—	300	—	MHz	$V_{CE}=10V, I_E=-100mA, f=1MHz$
Collector output capacitance	C_{ob}	—	5	—	pF	$V_{CB}=10V, I_E=0A, f=1MHz$
Turn-on time	T_{on}	—	40	—	ns	$I_C=500mA$ $I_{B1}=50mA$
Storage time	T_{stg}	—	120	—	ns	$I_{B2}=-50mA$
Fall time	T_f	—	50	—	ns	$V_{CC}\approx 25V$

● h_{FE} RANK

Q	R
120-270	180-390

●Electrical characteristic curves

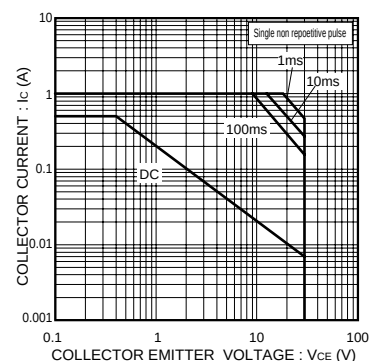


Fig.1 Safe operating area

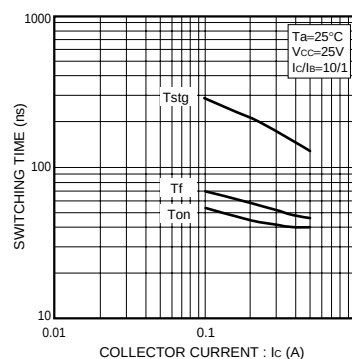


Fig.2 Switching Time

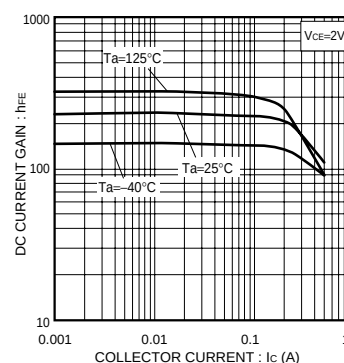


Fig.3 DC current gain vs. collector current

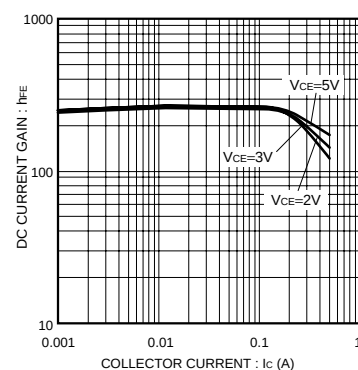


Fig.4 DC current gain vs. collector current

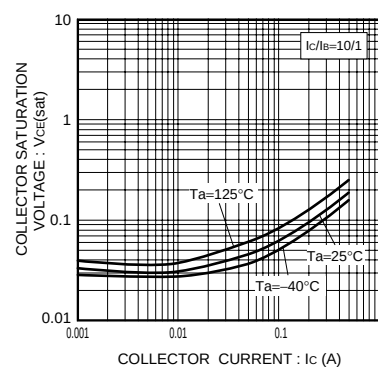


Fig.5 Collector-emitter saturation voltage vs. collector current

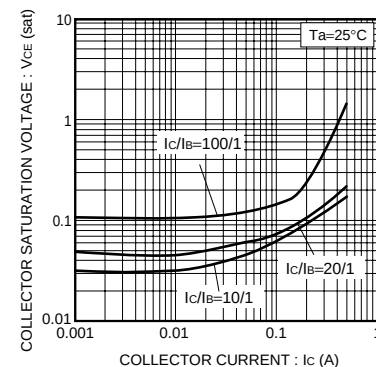


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistor

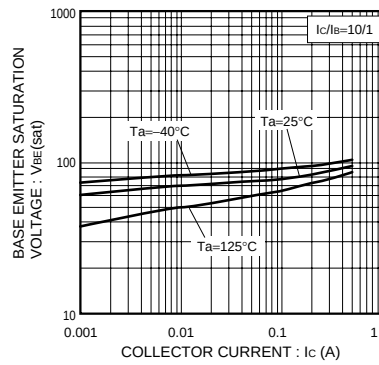


Fig.7 Base-emitter saturation voltage vs. collector current

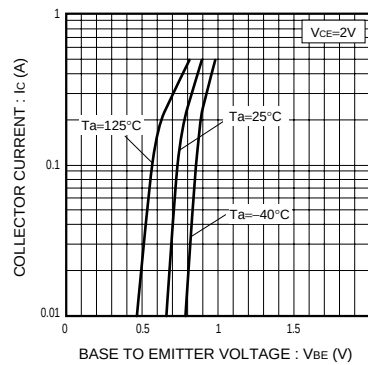


Fig.8 Ground emitter propagation characteristics

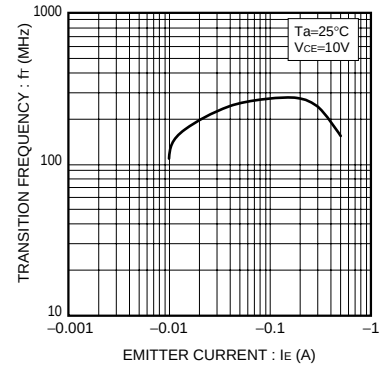


Fig.9 Transition frequency

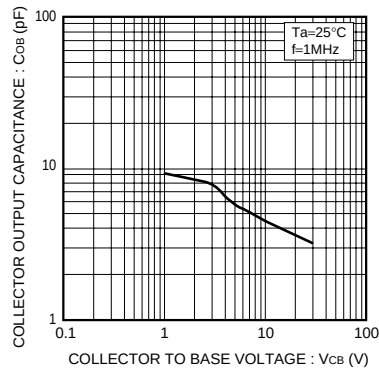


Fig.10 Collector output capacitance

●Switching characteristics measurement circuits

