

# 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		○

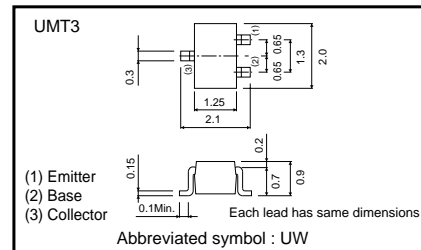
### ●Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

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~+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	$\mu A$	$V_{CB}=20V$
Emitter cut-off current	$I_{EBO}$	-	-	1.0	$\mu A$	$V_{EB}=4V$
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	$I_C=500mA$
Storage time	$T_{stg}$	-	120	-	ns	$I_{B1}=50mA$
Fall time	$T_f$	-	50	-	ns	$I_{B2}=-50mA$ $V_{CC}\approx 25V$

● $h_{FE}$  RANK

Q	R
120-270	180-390

●Electrical characteristic curves

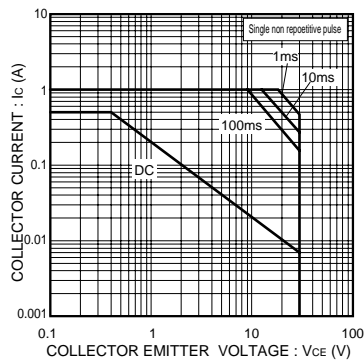


Fig.1 Safe operating area

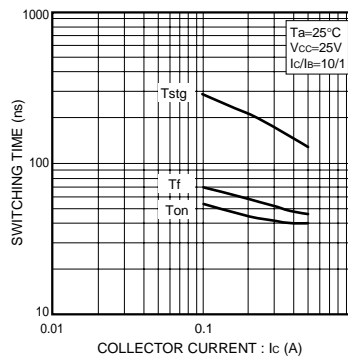


Fig.2 Switching Time

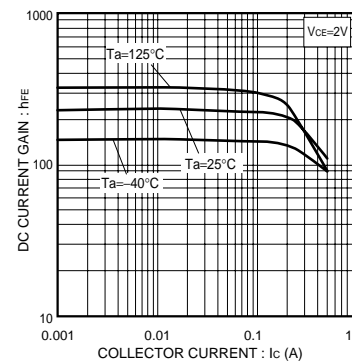


Fig.3 DC current gain vs. collector current

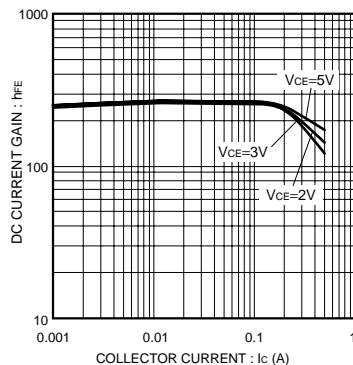


Fig.4 DC current gain vs. collector current

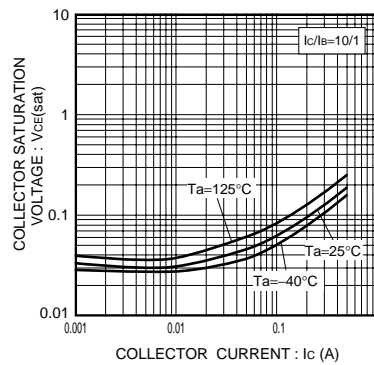


Fig.5 Collector-emitter saturation voltage vs. collector current

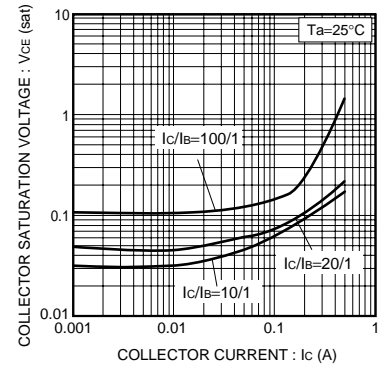


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistor

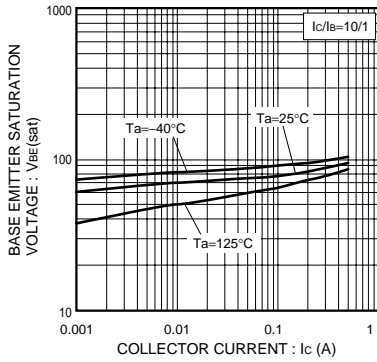


Fig.7 Base-emitter saturation voltage vs. collector current

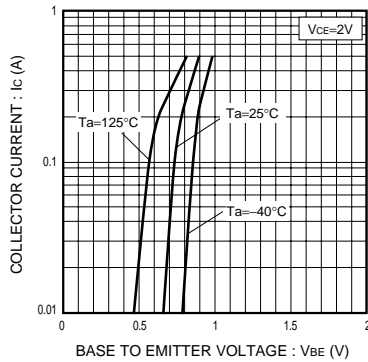


Fig.8 Ground emitter propagation characteristics

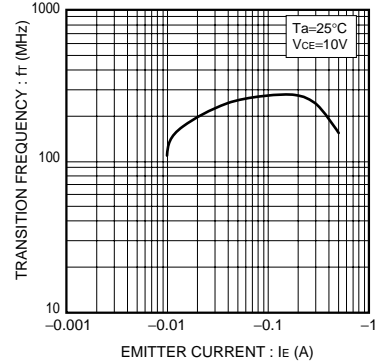


Fig.9 Transition frequency

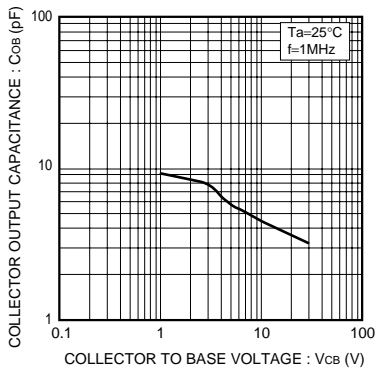
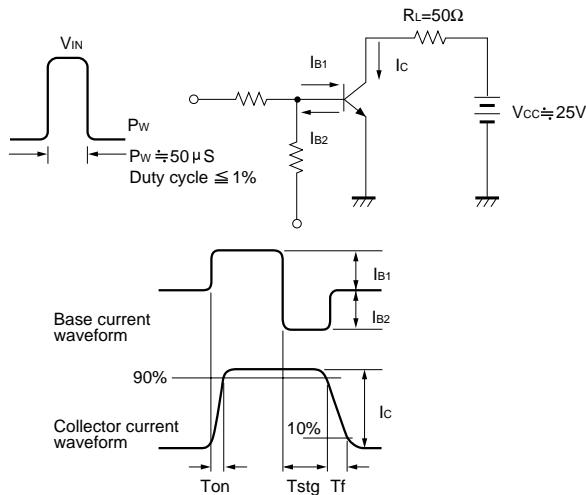


Fig.10 Collector output capacitance

●Switching characteristics measurement circuits





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