

Medium power transistor (−30V, −1.0A)

2SA2048K

●Features

- 1) High speed switching. (T_f : Typ. : 20ns at $I_c = -1.0A$)
- 2) Low saturation voltage, typically
(Typ. : $-150mV$ at $I_c = -500mA$, $I_B = -50mA$)
- 3) Strong discharge power for inductive load and capacitance load.
- 4) Complements the 2SC5730K

●Applications

Small signal low frequency amplifier
High speed switching

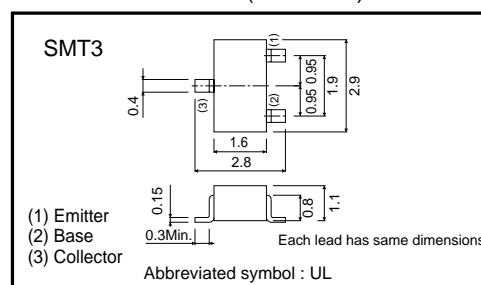
●Structure

PNP Silicon epitaxial planar transistor

●Packaging specifications

Type	Package	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
2SA2048K		○

●External dimensions (Units : mm)



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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−30	V
Collector-emitter voltage	V_{CEO}	−30	V
Emitter-base voltage	V_{EBO}	−6	V
Collector current	I_C	−1.0	A
	I_{CP}	−2.0	A *1
Power dissipation	P_C	200	mW *2
Junction temperature	T_j	150	$^\circ C$
Range of storage temperature	T_{stg}	−55~+150	$^\circ C$

*1 $P_w = 10ms$

*2 Each terminal mounted on a recommended land

Transistor

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-30	-	-	V	$I_C = -100\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	-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	$I_C = -500mA, I_B = -50mA$
DC current gain	h_{FE}	120	-	390	-	$V_{CE} = -2V, I_C = -100mA$
Transition frequency	f_r	-	350	-	MHz	$V_{CE} = -10V, I_E = 100mA, f = 10MHz$
Collector output capacitance	C_{ob}	-	10	-	pF	$V_{CB} = -10V, I_E = 0mA, f = 1MHz$
Turn-on time	T_{on}	-	30	-	ns	$I_C = -1.0A$ $I_{B1} = -100mA$
Storage time	T_{stg}	-	100	-	ns	$I_{B2} = 100mA$
Fall time	T_f	-	20	-	ns	$V_{CC} = -25V$

● h_{FE} RANK

Q	R
120-270	180-390

●Electrical characteristic curves

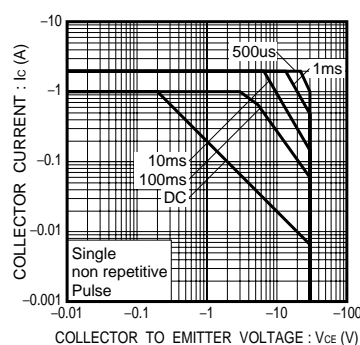


Fig.1 Safe Operating Area

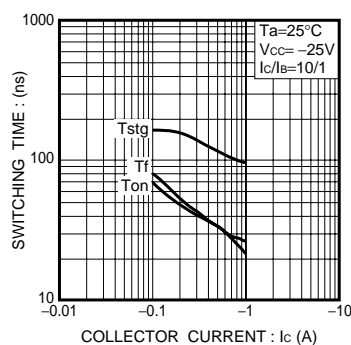


Fig.2 Switching Time

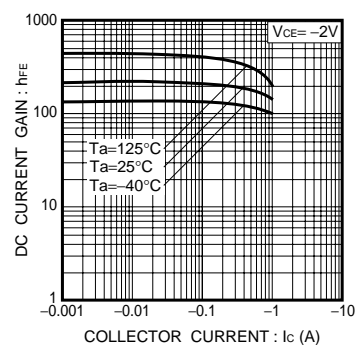


Fig.3 DC Current Gain vs. Collector Current (I)

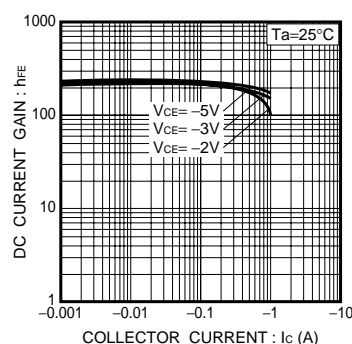


Fig.4 DC Current Gain vs. Collector Current (II)

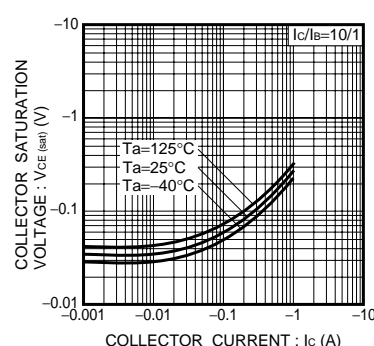


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

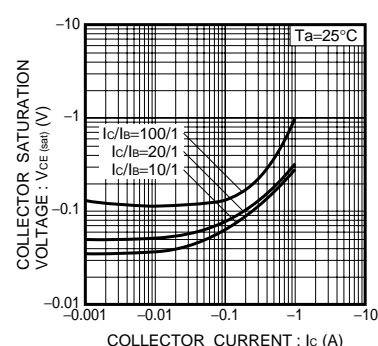


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

Transistor

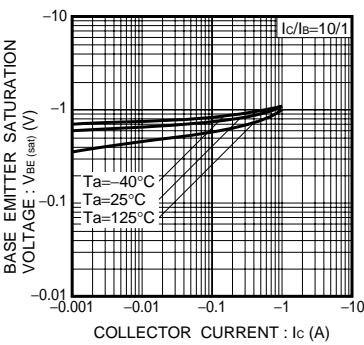


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

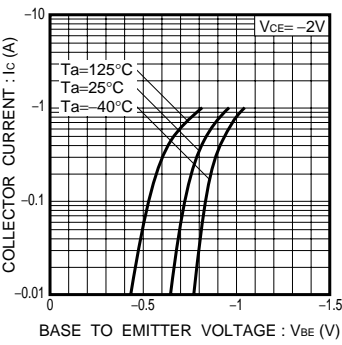


Fig.8 Grounded Emitter Propagation Characteristics

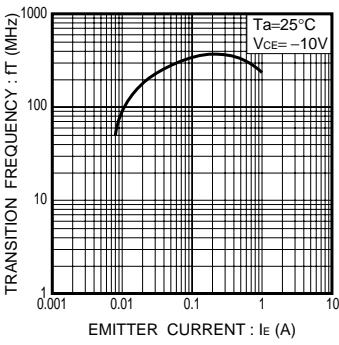


Fig.9 Transition Frequency

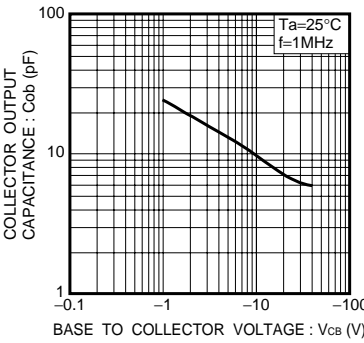
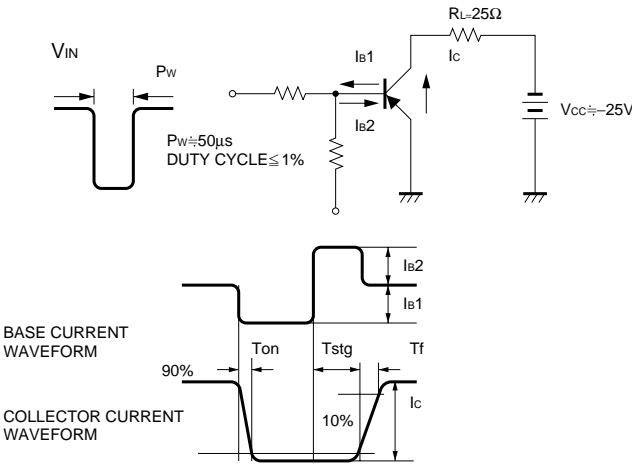


Fig.10 Collector Output Capacitance

●Switching characteristics measurement circuits



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