Transistor

Medium power transistor (−30V, −1.0A)

2SA2048K

●**Features**

1) High speed switching. (Tf : 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)

SMT3

(1) Emitter
(2) Base
(3) Collector

Each lead has same dimensions

Abbreviated symbol : UL

●**Absolute maximum ratings** (Ta=25°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	°C
Range of storage temperature	T_{stg}	−55~+150	°C

∗1 Pw=10ms
∗2 Each terminal mounted on a recommended land

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●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV$_{CBO}$	−30	–	–	V	I$_C$= −100μA
Collector-emitter breakdown voltage	BV$_{CEO}$	−30	–	–	V	I$_C$= −1mA
Emitter-base breakdown voltage	BV$_{EBO}$	−6	–	–	V	I$_E$= −100μA
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$_T$	–	350	–	MHz	V$_{CE}$= −10V, I$_E$=100mA, f=10MHz
Collector output capacitance	Cob	–	10	–	pF	V$_{CB}$= −10V, I$_E$=0mA, f=1MHz
Turn-on time	Ton	–	30	–	ns	I$_C$= −1.0A
Storage time	Tstg	–	100	–	ns	I$_{B1}$= −100mA, I$_{B2}$=100mA
Fall time	Tf	–	20	–	ns	V$_{CC}$= −25V

●**h$_{FE}$ RANK**

Q	R
120–270	180–390

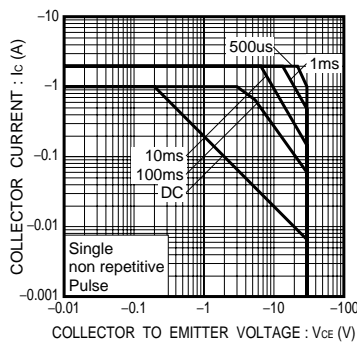●**Electrical characteristic curves**
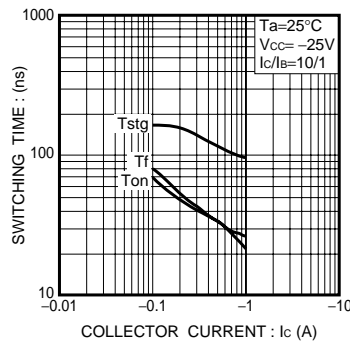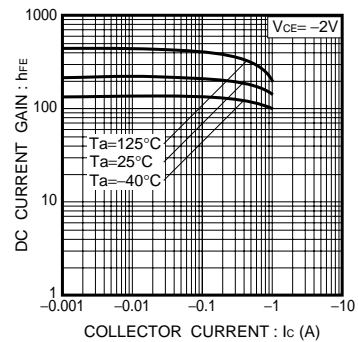

Fig.1 Safe Operating Area

Fig.2 Switching Time

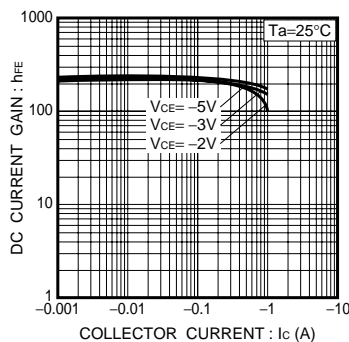Fig.3 DC Current Gain vs. Collector Current (I)
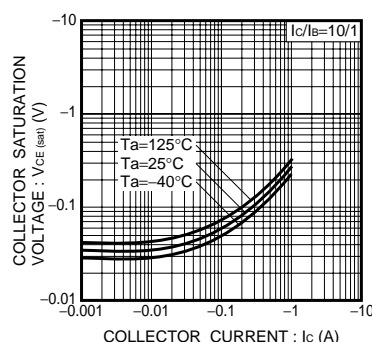
Fig.4 DC Current Gain vs. Collector Current (II)

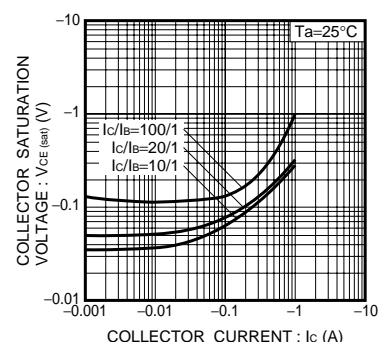Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)
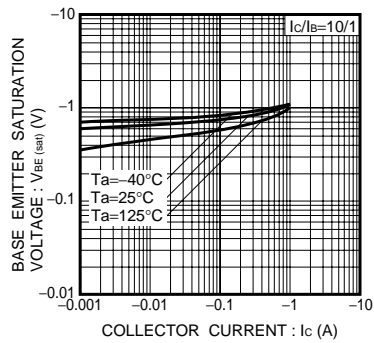
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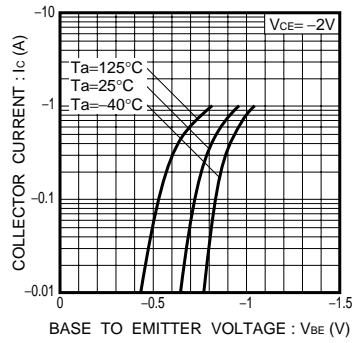Fig.7 Base-Emitter Saturation
Voltage vs. Collecter Current

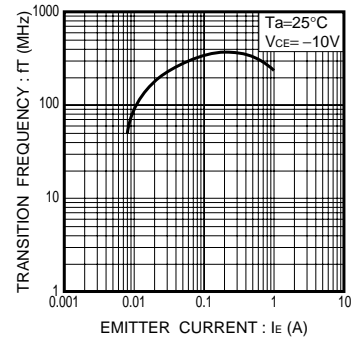Fig.8 Grounded Emitter
Propagation Characteristics

Fig.9 Transition Frequency

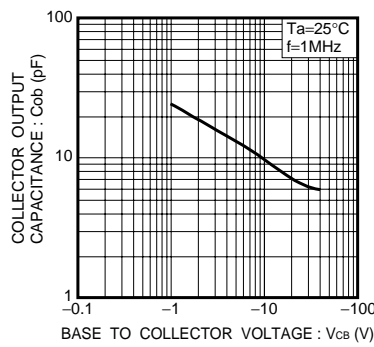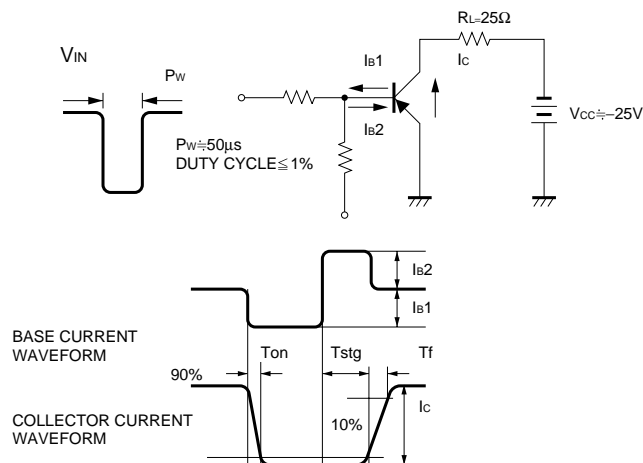
Fig.10 Collector Output Capacitance

● Switching characteristics measurement circuits

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