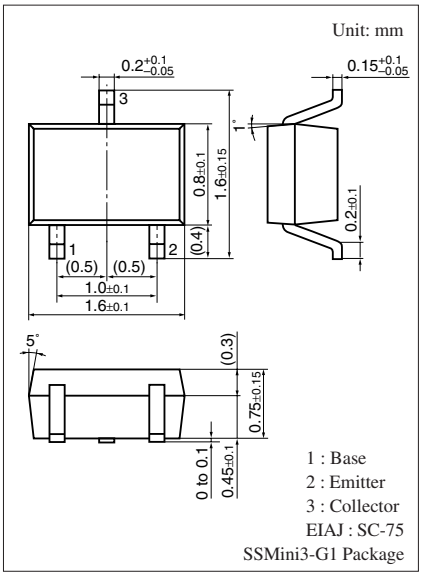
2SA1806

Silicon PNP epitaxial planar type

For high speed switching



Marking Symbol: AK

■ Features

- High speed switching
- Low collector-emitter saturation voltage $V_{CE(sat)}$
- SS-Mini type package allowing downsizing of the equipment and automatic insertion through the tape packing

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	−15	V
Collector-emitter voltage (Base open)	V_{CEO}	−15	V
Emitter-base voltage (Collector open)	V_{EBO}	−4	V
Collector current	I_C	−50	mA
Peak collector current	I_{CP}	−100	mA
Collector power dissipation	P_C	125	mW
Junction temperature	T_j	125	°C
Storage temperature	T_{stg}	−55 to +125	°C

■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -8$ V, $I_E = 0$			− 0.1	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{CE} = -3$ V, $I_C = 0$			− 0.1	μA
Forward current transfer ratio	h_{FE1} *	$V_{CE} = -1$ V, $I_C = -10$ mA	50		150	—
	h_{FE2}	$V_{CE} = -1$ V, $I_C = -1$ mA	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10$ mA, $I_B = -1$ mA		− 0.1	− 0.2	V
Transition frequency	f_T	$V_{CB} = -10$ V, $I_E = 10$ mA, f = 200 MHz	800	1 500		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = -5$ V, $I_E = 0$, f = 1 MHz		1		pF
Turn-on time	t_{on}	Refer to the switching time measurement circuit		12		ns
Turn-off time	t_{off}			20		ns
Storage time	t_{stg}			19		ns

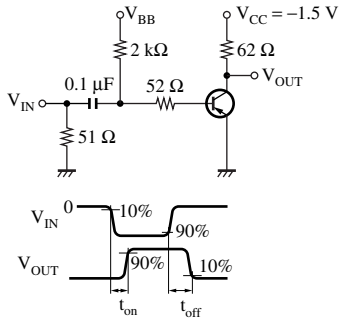
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Rank classification

Rank	Q	R
h_{FE1}	50 to 120	90 to 150

Switching time measurement circuit

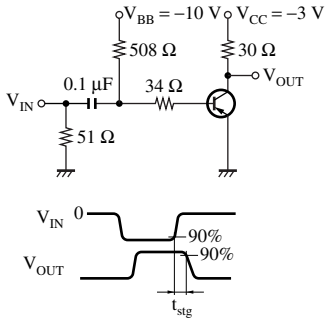
t_{on} , t_{off} Test circuit



V_{IN} = −5.8 V
V_{BB} = Ground

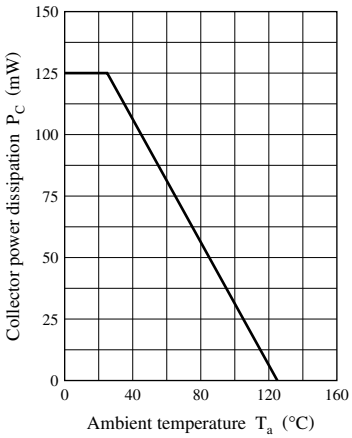
V_{IN} = 9.8 V
V_{BB} = −8.0 V

t_{stg} Test circuit

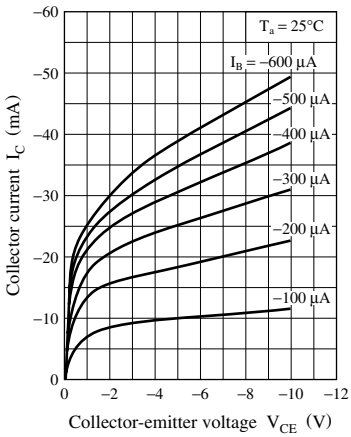


V_{IN} = 9.0 V

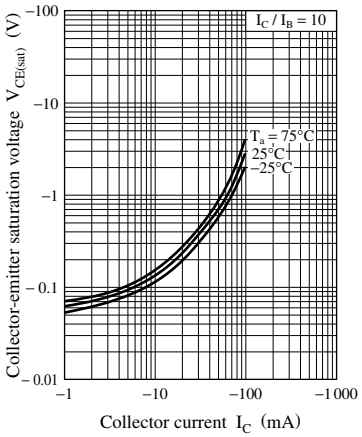
P_C — T_a



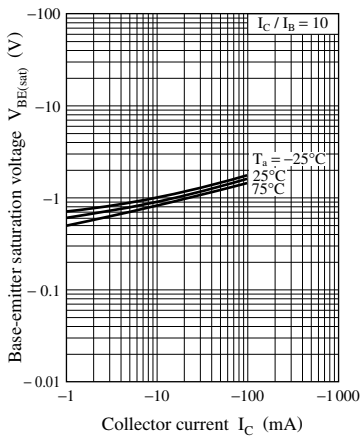
I_C — V_{CE}



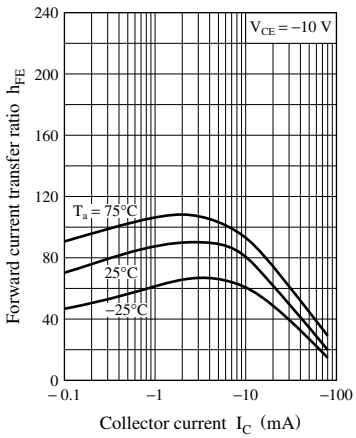
$V_{CE(sat)}$ — I_C



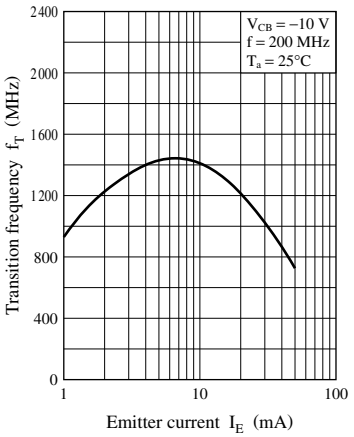
$V_{BE(sat)}$ — I_C



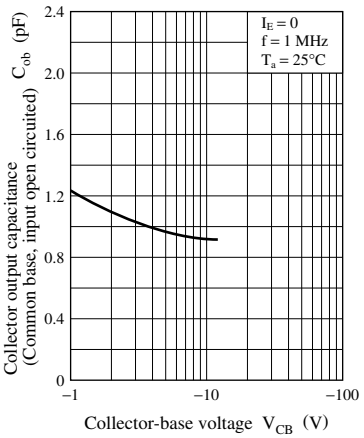
h_{FE} — I_C



f_T — I_E



C_{ob} — V_{CB}



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