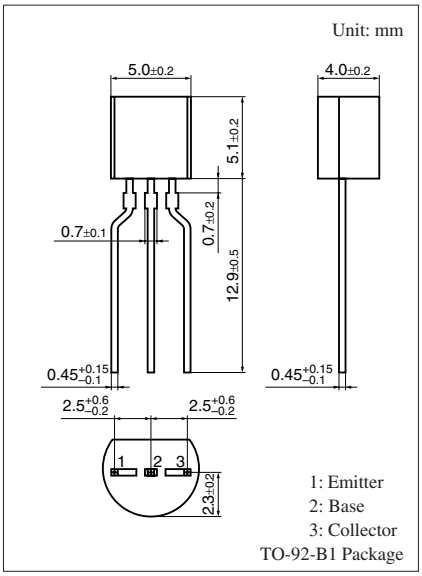
2SC3811

Silicon NPN epitaxial planar type

For high-speed switching



■ Features

- Low collector-emitter saturation voltage $V_{CE(sat)}$

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	40	V
Collector-emitter voltage (E-B short)	V_{CES}	40	V
Emitter-base voltage (Collector open)	V_{EBO}	5	V
Collector current	I_C	100	mA
Peak collector current	I_{CP}	300	mA
Collector power dissipation	P_C	400	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°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} = 40 V, I_E = 0			0.1	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 4 V, I_C = 0			0.1	μA
Forward current transfer ratio *	h_{FE}	V_{CE} = 1 V, I_C = 10 mA	60		200	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 10 mA, I_B = 1 mA		0.17	0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 10 mA, I_B = 1 mA			1	V
Transition frequency	f_T	V_{CB} = 10 V, I_E = −10 mA, f = 200 MHz		450		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz		2	6	pF
Turn-on time	t_{on}	Refer to the switching time measurement circuit		17		ns
Turn-off time	t_{off}			17		ns
Storage time	t_{stg}			10		ns

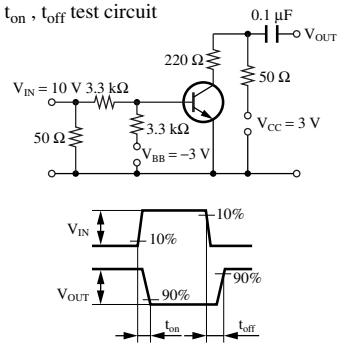
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Rank classification

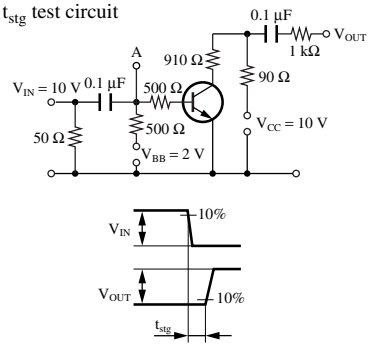
Rank	Q	R
h_{FE}	60 to 120	90 to 200

Switching time measurement circuit

t_{on} , t_{off} test circuit

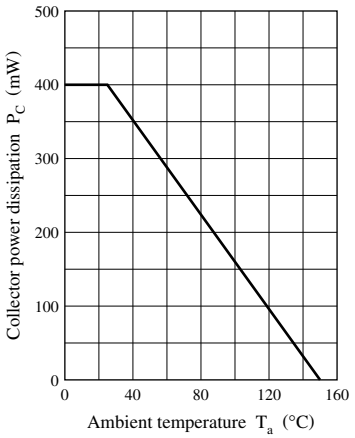


t_{stg} test circuit

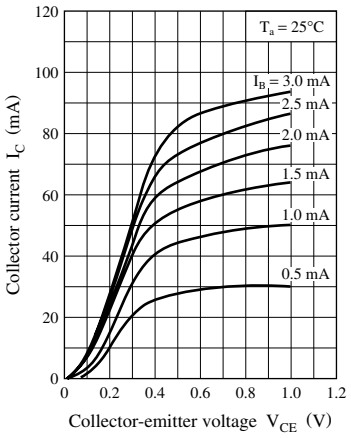


(Waveform at A)

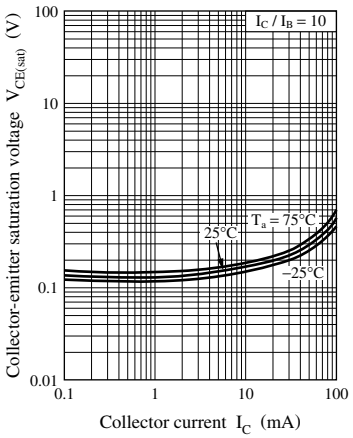
P_C — T_a



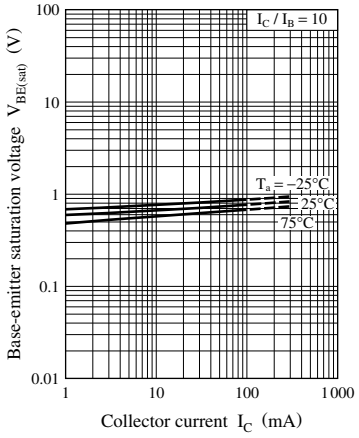
I_C — V_{CE}



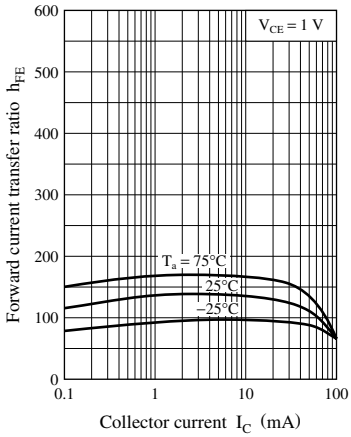
$V_{CE(sat)}$ — I_C



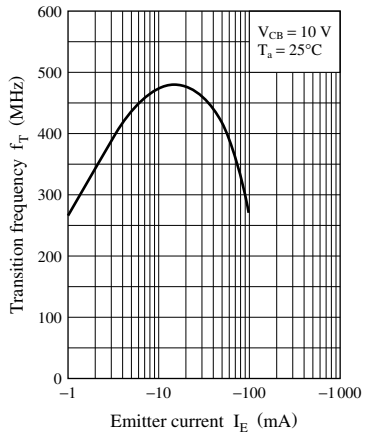
$V_{BE(sat)}$ — I_C



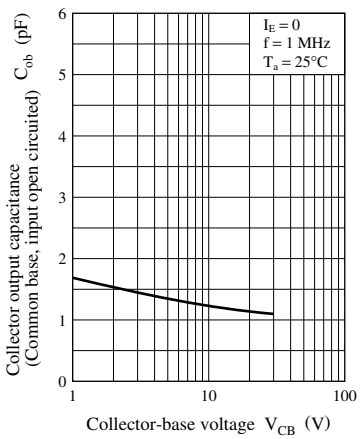
h_{FE} — I_C



f_T — I_E



C_{ob} — V_{CB}



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