

# 2SC3938

## Silicon NPN epitaxial planar type

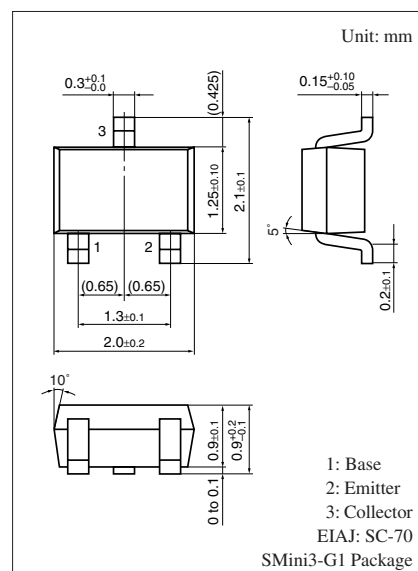
For high-speed switching

### ■ Features

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

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

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	$P_C$	150	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$



Marking Symbol: 2Y

### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

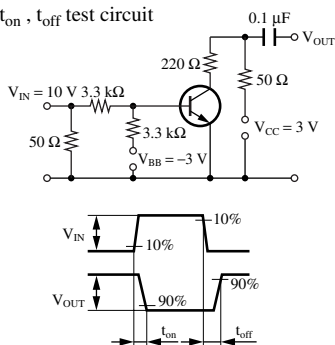
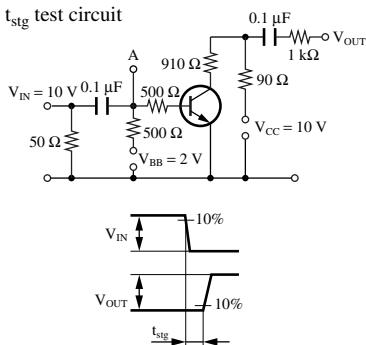
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 40\text{ V}, I_E = 0$			0.1	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 4\text{ V}, I_C = 0$			0.1	$\mu\text{A}$
Forward current transfer ratio *	$h_{FE}$	$V_{CE} = 1\text{ V}, I_C = 10\text{ mA}$	60		200	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$		0.17	0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$			1	V
Transition frequency	$f_T$	$V_{CB} = 10\text{ V}, I_E = -10\text{ mA}, f = 200\text{ MHz}$		450		MHz
Collector output capacitance (Common base, input open circuited)	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$		2	6	pF
Turn-on time	$t_{on}$	Refer to the 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.

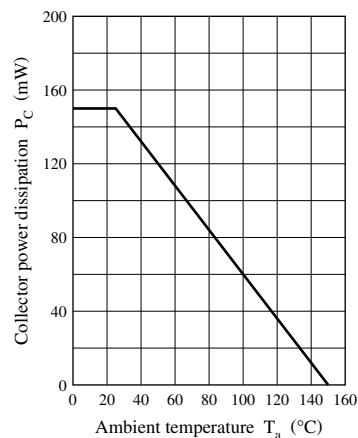
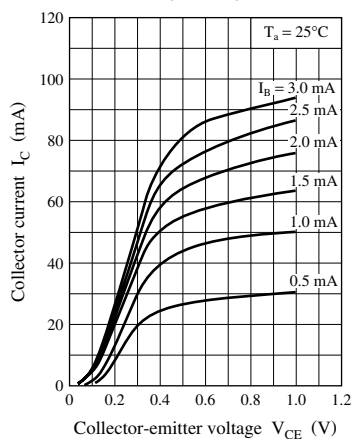
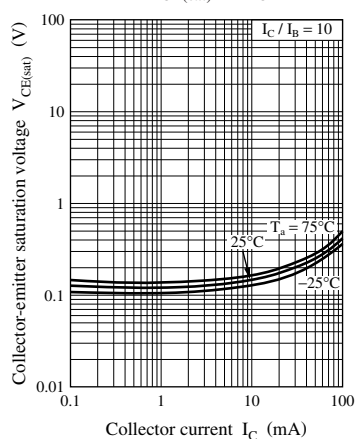
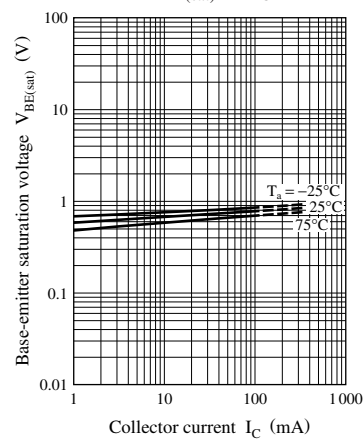
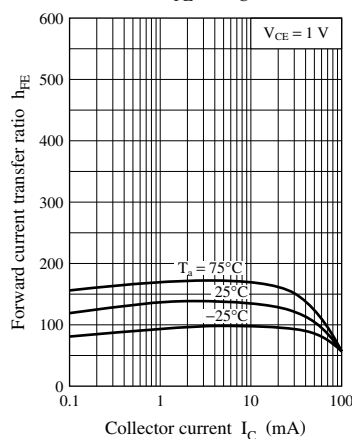
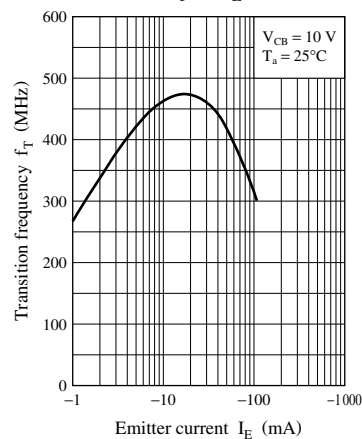
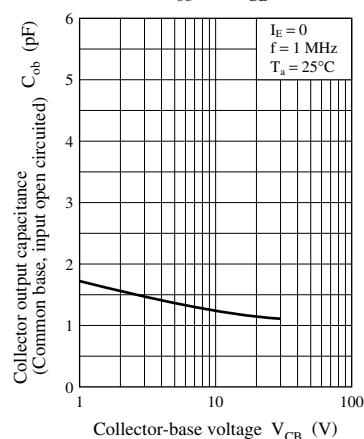
2. \*: Rank classification

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

## 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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