

2SC3938

Silicon NPN epitaxial planer type

For high speed switching

Features

- High-speed switching.
- Low collector to emitter saturation voltage $V_{CE(sat)}$.
- S-Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.
- Allowing pair use with 2SA1739.

Absolute Maximum Ratings (Ta=25°C)

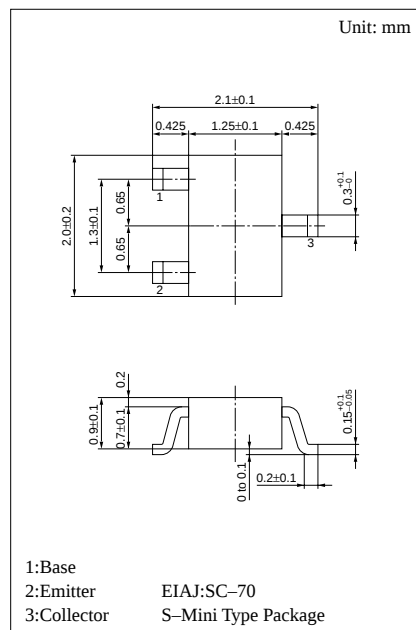
Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	40	V
Collector to emitter voltage	V_{CES}	40	V
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	300	mA
Collector current	I_C	100	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 ~ +150	°C

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 40V, I_E = 0$			0.1	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 4V, I_C = 0$			0.1	μA
Forward current transfer ratio	h_{FE}^*	$V_{CE} = 1V, I_C = 10mA$	60		200	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1mA$		0.17	0.25	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 1mA$			1.0	V
Transition frequency	f_T	$V_{CB} = 10V, I_E = -10mA, f = 200MHz$		450		MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$		2	6	pF
Turn-on time	t_{on}	Refer to the measurment circuit		17		ns
Turn-off time	t_{off}			17		ns
Storage time	t_{stg}			10		ns

* h_{FE} Rank classification

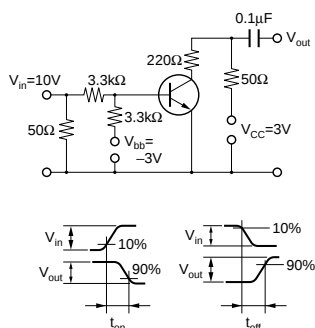
Rank	Q	R
h_{FE}	60 ~ 120	90 ~ 200
Marking Symbol	2YQ	2YR



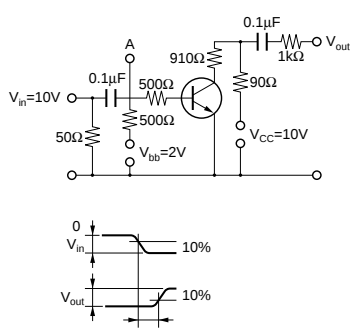
Marking symbol : 2Y

Switching time measurement circuit

t_{on} , t_{off} Test Circuit

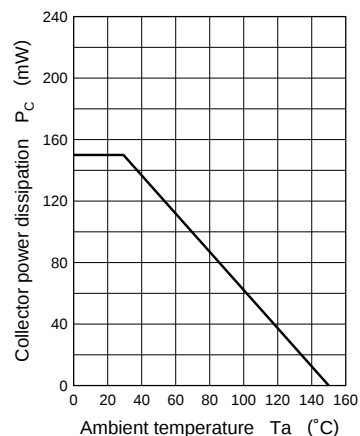


t_{stg} Test Circuit

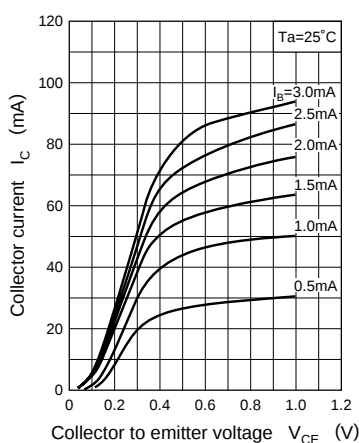


(Waveform at A)

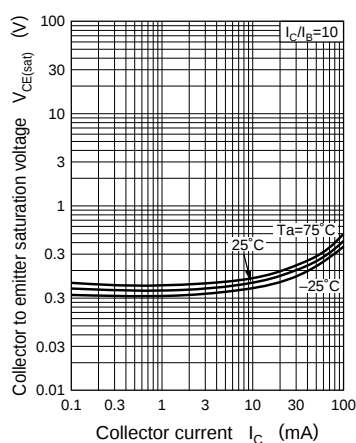
P_C — T_a



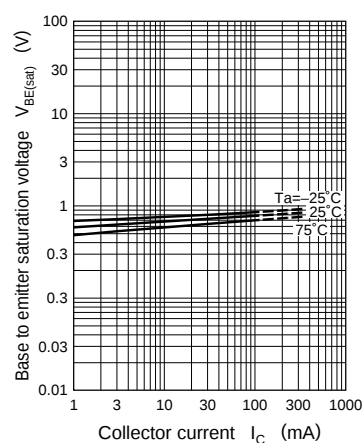
I_C — V_{CE}



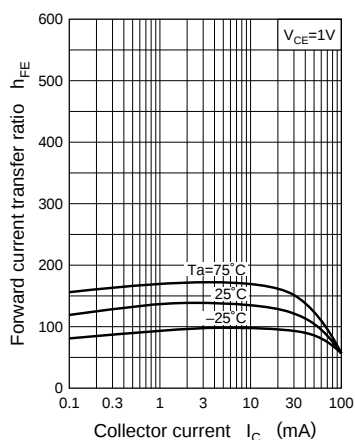
$V_{CE(sat)}$ — I_C



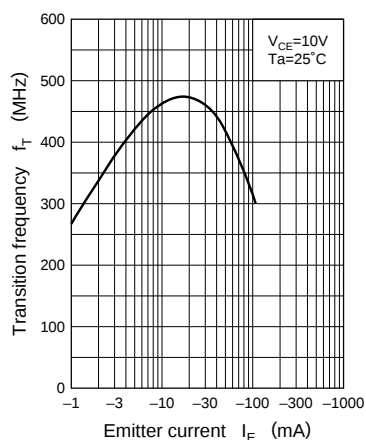
$V_{BE(sat)}$ — I_C



h_{FE} — I_C



f_T — I_E



C_{ob} — V_{CB}

