

# 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)

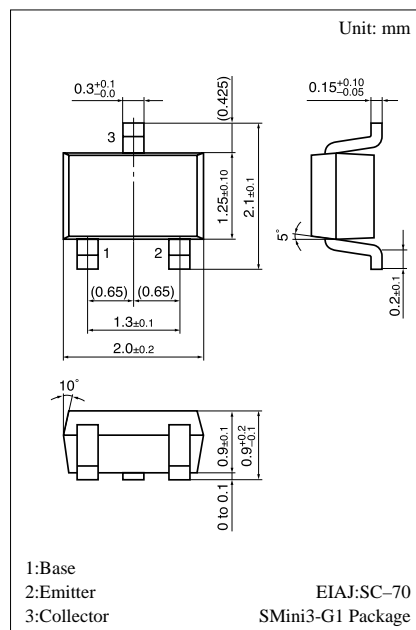
Parameter	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	40	V
Collector to emitter voltage	$V_{CES}$	40	V
Emitter to base voltage	$V_{EBO}$	5	V
Peak collector current	$I_{CP}$	300	mA
Collector current	$I_C$	100	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	150	°C
Storage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

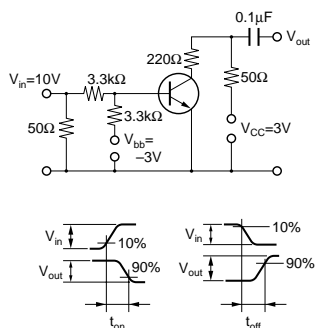
Rank	Q	R
$h_{FE}$	60 ~ 120	90 ~ 200
Marking Symbol	2YQ	2YR



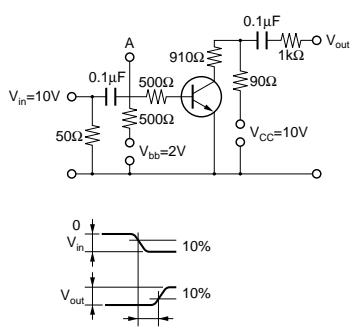
Marking symbol : 2Y

Switching time measurement circuit

$t_{on}$ ,  $t_{off}$  Test Circuit

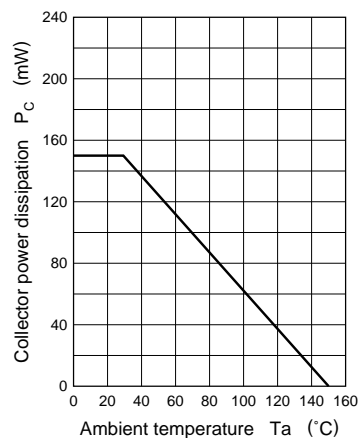


$t_{stg}$  Test Circuit

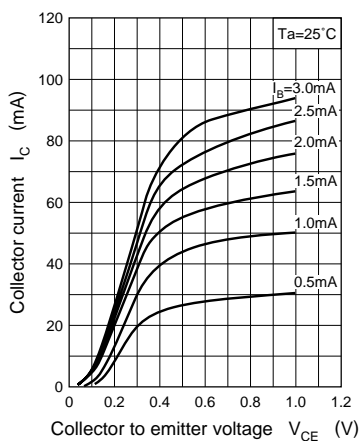


(Waveform at A)

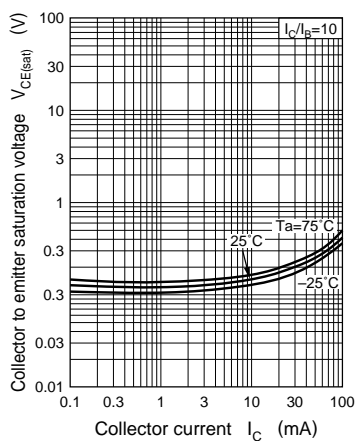
$P_C - T_a$



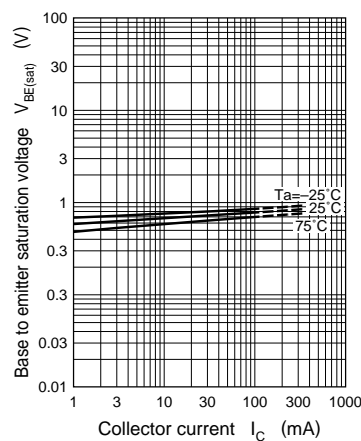
$I_C - V_{CE}$



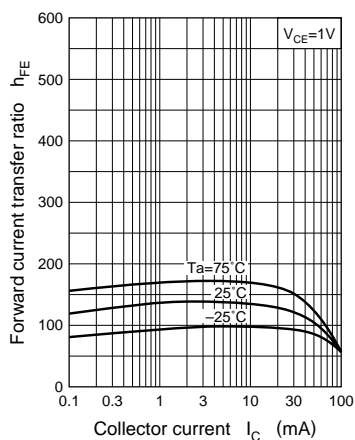
$V_{CE(sat)} - I_C$



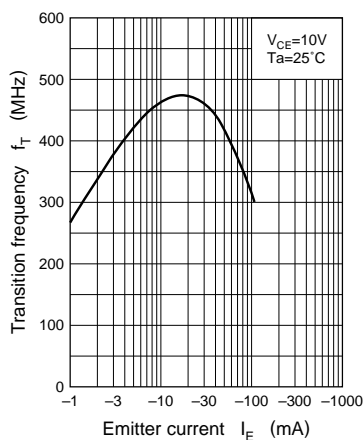
$V_{BE(sat)} - I_C$



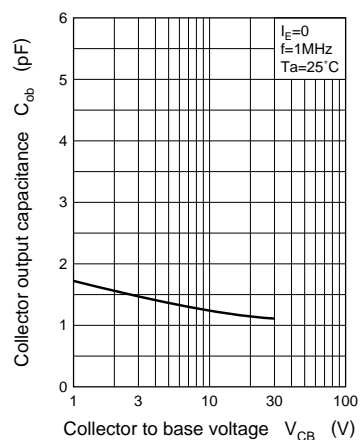
$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$



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