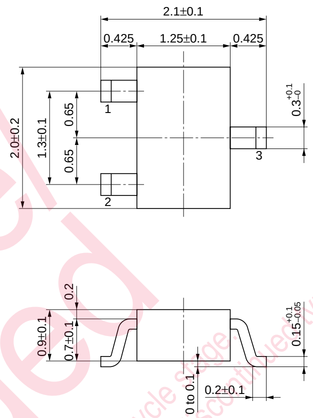
2SC3933

Silicon NPN planer type

For UHF amplification/mixing

Unit: mm



1:Base
2:Emitter
3:Collector

EIAJ:SC–70
S–Mini Type Package

Marking symbol : 1T

■ Features

- High power gain PG.
- High transition frequency f_T.
- S-Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

■ Absolute Maximum Ratings (Ta=25˚C)

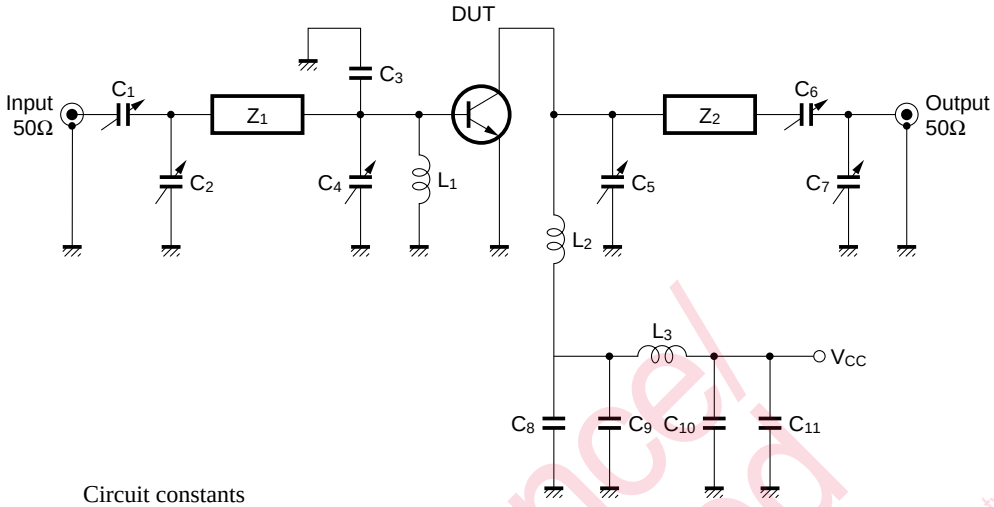
Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	150	˚C
Storage temperature	T_{stg}	–55 ~ +150	˚C

■ Electrical Characteristics (Ta=25˚C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 25V, I_E = 0			1	µA
Emitter cutoff current	I_{EBO}	V_{EB} = 3V, I_C = 0			10	µA
Forward current transfer ratio	h_{FE1}	V_{CB} = 10V, I_E = –3mA	40		200	
	h_{FE2}	V_{CB} = 10V, I_E = –10mA	40		200	
	h_{FE3}	V_{CB} = 10V, I_E = –100µA	60			
Transition frequency	f_T	V_{CB} = 10V, I_E = –3mA, f = 200MHz	750	1100	1400	MHz
Collector output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz		0.7		pF
Common emitter reverse transfer capacitance	C_{rb}	V_{CB} = 10V, I_E = 0, f = 1MHz		0.15		pF
Power gain	PG*	V_{CC} = 11V, V_{AGC} = 3V, f = 800MHz	14			dB
Noise figure	NF*	V_{CC} = 11V, V_{AGC} = 3V, f = 800MHz			5	dB

*PG, NF Refer to the measurment circuit

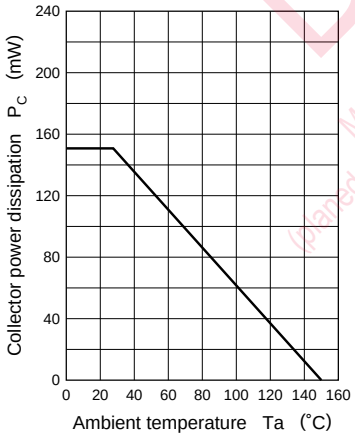
The high-frequency output measurment circuit



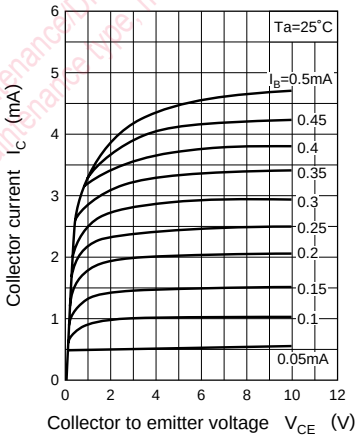
Circuit constants

C_1, C_2, C_4 ~ C_7 : ~ 20pF
C_3 : 5pF
C_8, C_{10} : 100pF
C_9, C_{11} : 1000pF
L_1, L_2 : ϕ0.6mm polyurethane, 2T, D = 5
L_3 : ϕ0.6mm polyurethane, 2T, D = 5
Z_1 : copper board, 2.75mm×20mm
Z_2 : copper board, 2.75mm×20mm

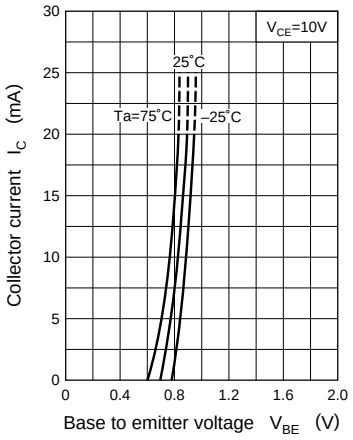
P_C — Ta



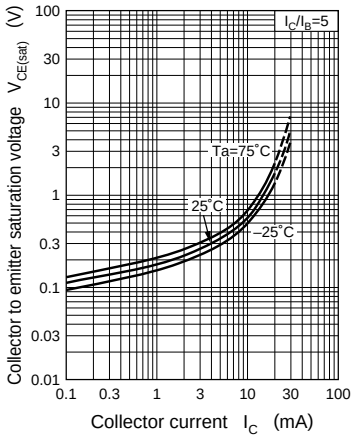
I_C — V_{CE}



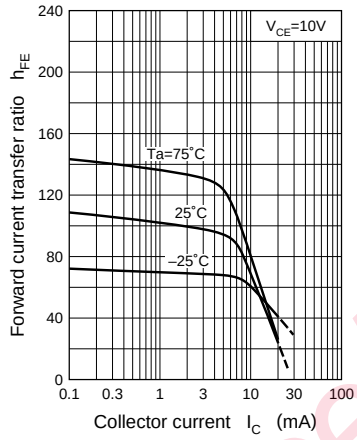
I_C — V_{BE}



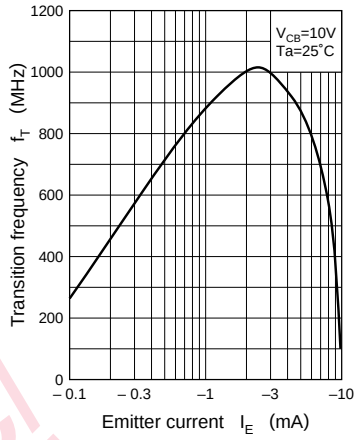
$V_{CE(sat)}$ — I_C



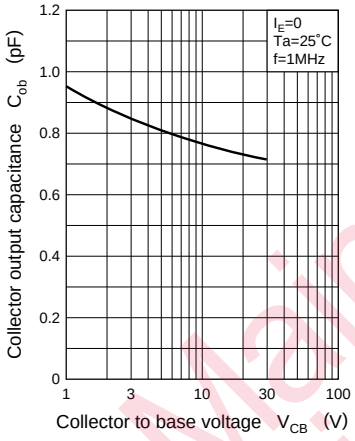
h_{FE} — I_C



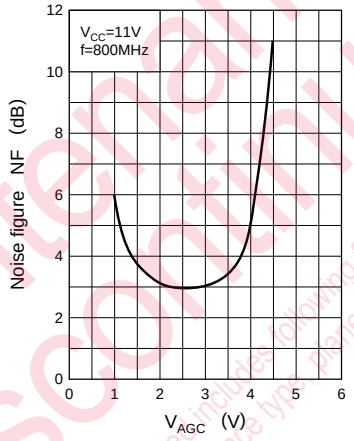
f_T — I_E



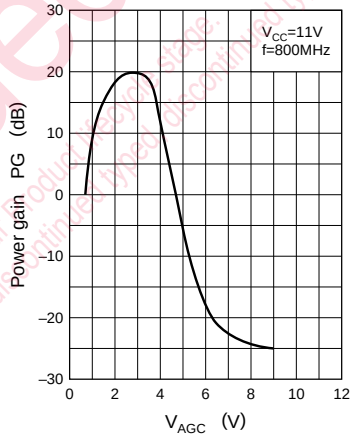
C_{ob} — V_{CB}



NF — V_{AGC}



PG — V_{AGC}



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