XN04609 (XN4609)

Silicon NPN epitaxial planer transistor (Tr1)
Silicon PNP epitaxial planer transistor (Tr2)

For amplification of low frequency output (Tr1)
For general amplification (Tr2)

■ Features

- Two elements incorporated into one package.
- Reduction of the mounting area and assembly cost by one half.

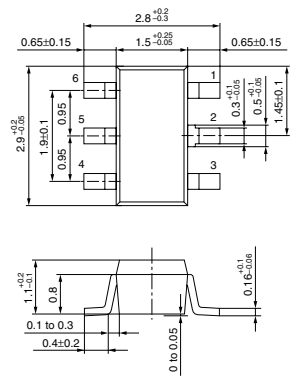
■ Basic Part Number of Element

- 2SD1328 + 2SB0709A(2SB709A)

■ Absolute Maximum Ratings (Ta=25˚C)

Parameter		Symbol	Ratings	Unit
Tr1	Collector to base voltage	V_{CBO}	25	V
	Collector to emitter voltage	V_{CEO}	20	V
	Emitter to base voltage	V_{EBO}	12	V
	Collector current	I_C	0.5	A
	Peak collector current	I_{CP}	1	A
Tr2	Collector to base voltage	V_{CBO}	–60	V
	Collector to emitter voltage	V_{CEO}	–50	V
	Emitter to base voltage	V_{EBO}	–7	V
	Collector current	I_C	–100	mA
	Peak collector current	I_{CP}	–200	mA
Overall	Total power dissipation	P_T	300	mW
	Junction temperature	T_j	150	˚C
	Storage temperature	T_{stg}	–55 to +150	˚C

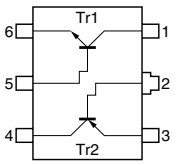
Unit: mm



1 : Collector (Tr1)
2 : Base (Tr2)
3 : Emitter (Tr2)
4 : Collector (Tr2)
5 : Base (Tr1)
6 : Emitter (Tr1)
EIAJ : SC–74
Mini Type Package (6–pin)

Marking Symbol: 5F

Internal Connection



Note.) The Part number in the Parenthesis shows conventional part number.

Electrical Characteristics (Ta=25˚C)

- Tr1

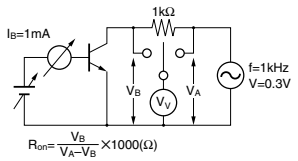
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V_{CBO}	I_C = 10µA, I_E = 0	25			V
Collector to emitter voltage	V_{CEO}	I_C = 1mA, I_B = 0	20			V
Emitter to base voltage	V_{EBO}	I_E = 10µA, I_C = 0	12			V
Collector cutoff current	I_{CBO}	V_{CB} = 25V, I_E = 0			0.1	µA
Forward current transfer ratio	h_{FE1}	V_{CE} = 2V, I_C = 0.5A*1	200		800	
	h_{FE2}	V_{CE} = 2V, I_C = 1A*1	60			
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = 0.5A, I_B = 20mA		0.13	0.4	V
Base to emitter saturation voltage	$V_{BE(sat)}$	I_C = 0.5A, I_B = 20mA			1.2	V
Transition frequency	f_T	V_{CB} = 10V, I_E = –50mA, f = 200MHz		200		MHz
Collector output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz		10		pF
ON Resistance	R_{on}*2			1.0		Ω

- Tr2

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V_{CBO}	I_C = –10µA, I_E = 0	–60			V
Collector to emitter voltage	V_{CEO}	I_C = –2mA, I_B = 0	–50			V
Emitter to base voltage	V_{EBO}	I_E = –10µA, I_C = 0	–7			V
Collector cutoff current	I_{CBO}	V_{CB} = –20V, I_E = 0			– 0.1	µA
	I_{CEO}	V_{CE} = –10V, I_E = 0			–100	µA
Forward current transfer ratio	h_{FE}	V_{CE} = –10V, I_C = –2mA	160		460	
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = –100mA, I_B = –10mA		– 0.3		V
Transition frequency	f_T	V_{CB} = –10V, I_E = 1mA, f = 200MHz		80		MHz
Collector output capacitance	C_{ob}	V_{CB} = –10V, I_E = 0, f = 1MHz		2.7		pF

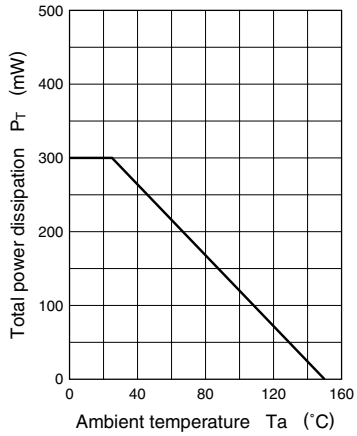
*1 Pulse measurement

*2 R_{on} test circuit



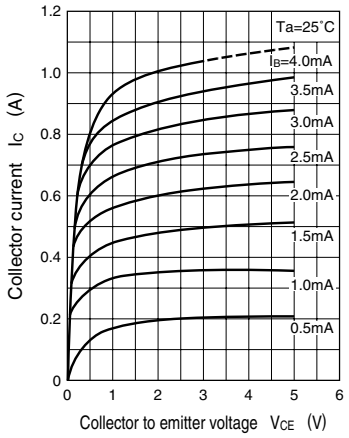
Common characteristics chart

P_T — Ta

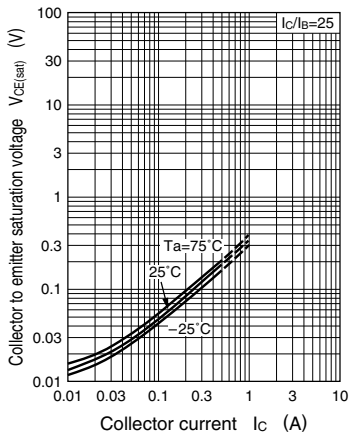


Characteristics charts of Tr1

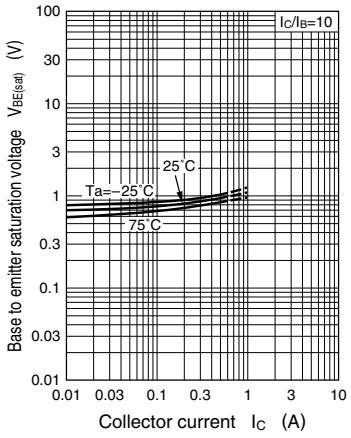
I_C — V_{CE}



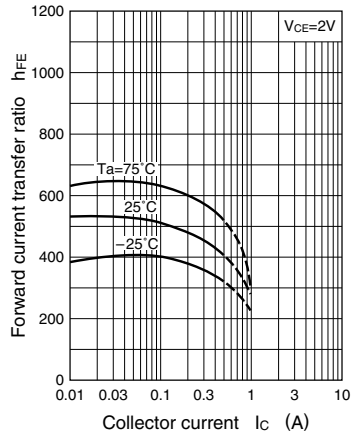
$V_{CE(sat)}$ — I_C



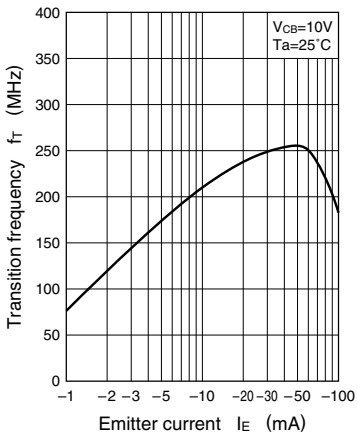
$V_{BE(sat)}$ — I_C



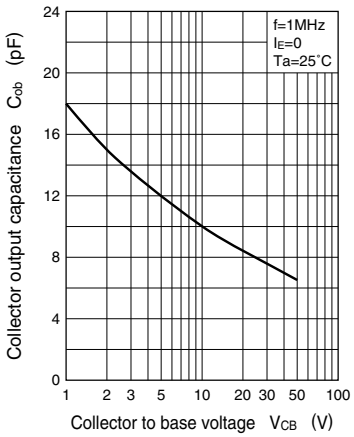
h_{FE} — I_C



f_T — I_E

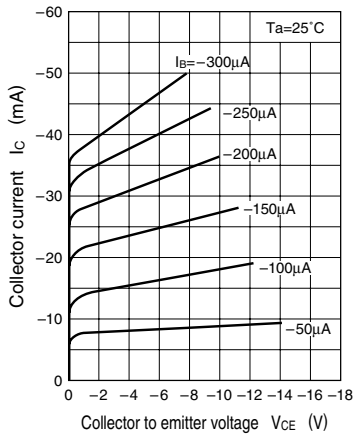


C_{ob} — V_{CB}

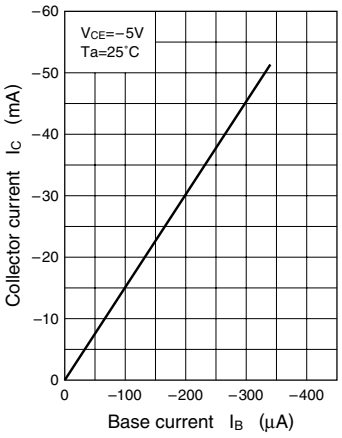


Characteristics charts of Tr2

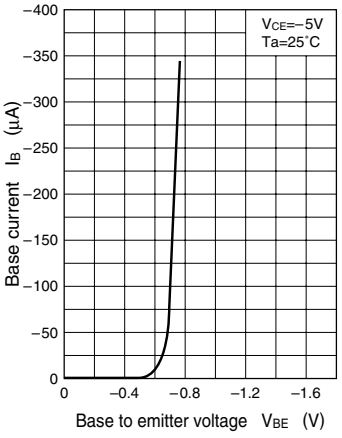
I_C — V_{CE}



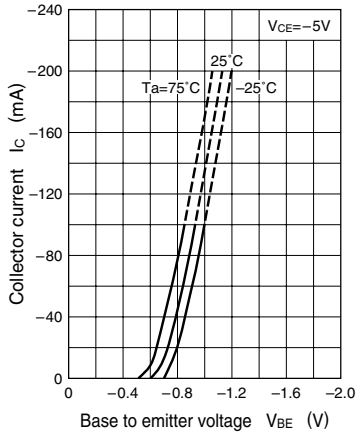
I_C — I_B



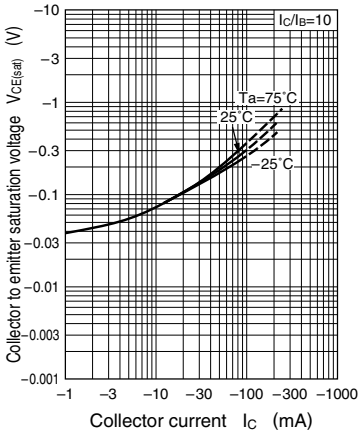
I_B — V_{BE}



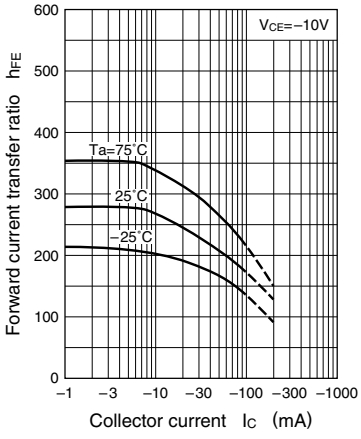
I_C — V_{BE}



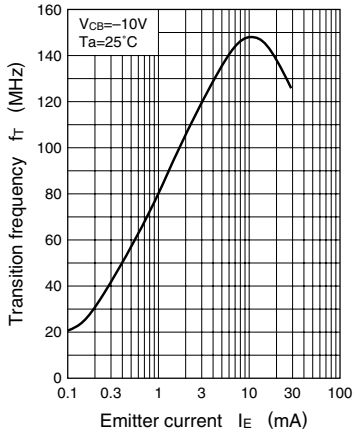
$V_{CE(sat)}$ — I_C



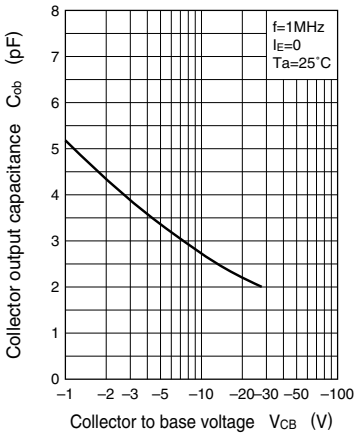
h_{FE} — I_C



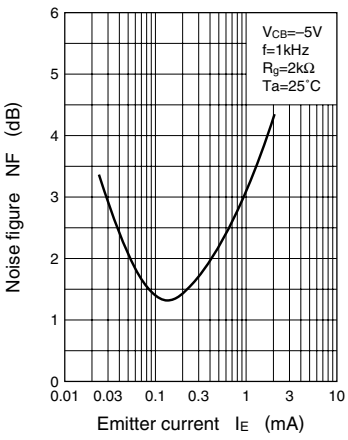
f_T — I_E



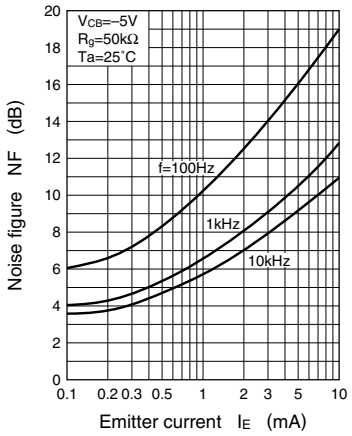
C_{ob} — V_{CB}



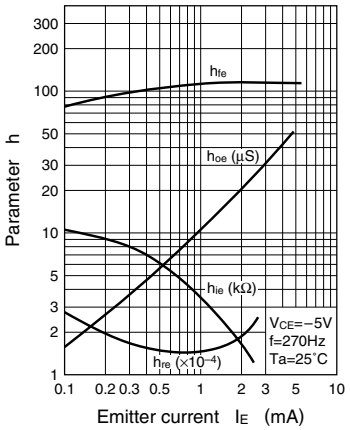
NF — I_E



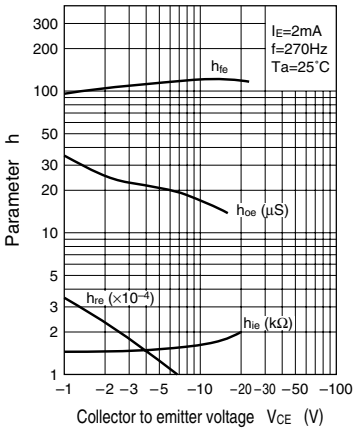
NF — I_E



h Parameter — I_E



h Parameter — V_{CE}



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