XN0B301 (XN1B301)

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

For general amplification

Features

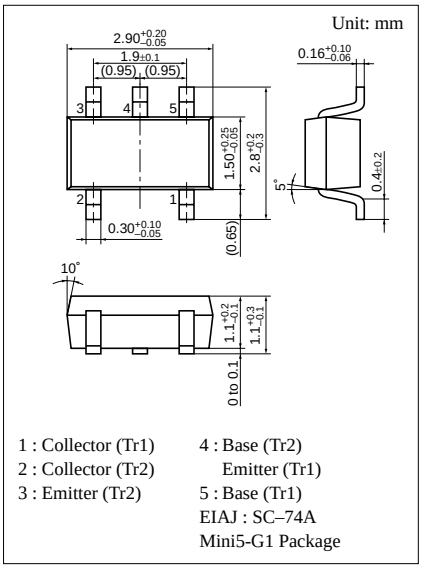
- Two elements incorporated into one package.
  (Tr1 emitter is connected to Tr2 base.)
- Reduction of the mounting area and assembly cost by one half.

Basic Part Number of Element

- 2SB709A (2SB0709A) +2SD601A (2SD0601A)

Absolute Maximum Ratings (Ta=25˚C)

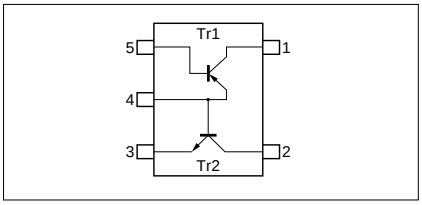
Parameter		Symbol	Ratings	Unit
Tr1	Collector to base voltage	V_{CBO}	–60	V
	Collector to emitter voltage	V_{CEO}	–50	V
	Emitter to base voltage	V_{EBO}	–7	V
	Collector current	I_C	–100	mA
	Peak collector current	I_{CP}	–200	mA
Tr2	Collector to base voltage	V_{CBO}	60	V
	Collector to emitter voltage	V_{CEO}	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



1 : Collector (Tr1)
2 : Collector (Tr2)
3 : Emitter (Tr2)
4 : Base (Tr2)
Emitter (Tr1)
5 : Base (Tr1)
EIAJ : SC–74A
Mini5-G1 Package

Marking Symbol: 4Q

Internal Connection



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

Electrical Characteristics (Ta=25˚C)

- Tr1

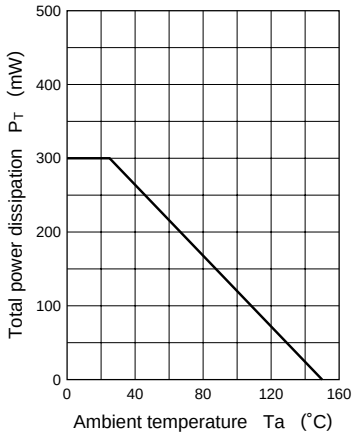
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V_{CBO}	I_C = –10μA, I_E = 0	–60			V
Collector to emitter voltage	V_{CEO}	I_C = –2mA, I_B = 0	–50			V
Emitter to base voltage	V_{EBO}	I_E = –10μA, I_C = 0	–7			V
Collector cutoff current	I_{CBO}	V_{CB} = –20V, I_E = 0			– 0.1	μA
	I_{CEO}	V_{CE} = –10V, I_B = 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	– 0.5	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

- 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_B = 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		0.1	0.3	V
Transition frequency	f_T	V_{CB} = 10V, I_E = –2mA, f = 200MHz		150		MHz
Collector output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz		3.5		pF

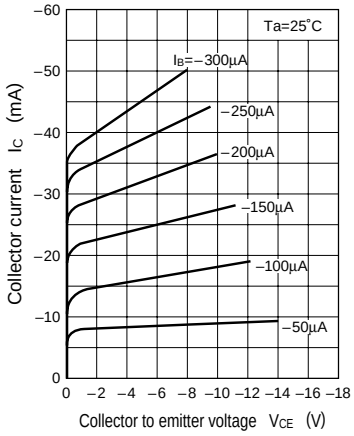
Common characteristics chart

P_T — Ta

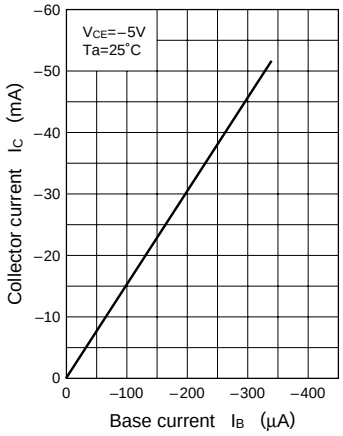


Characteristics charts of Tr1

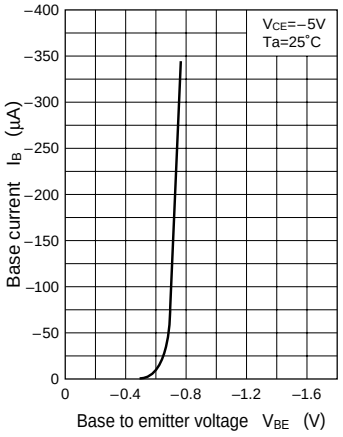
I_C — V_{CE}



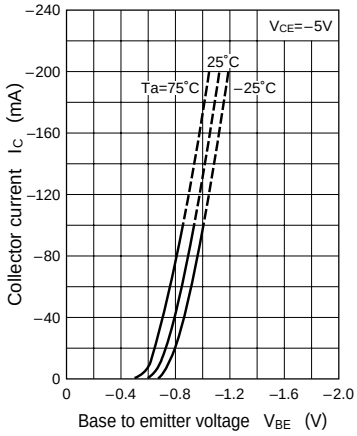
I_C — I_B



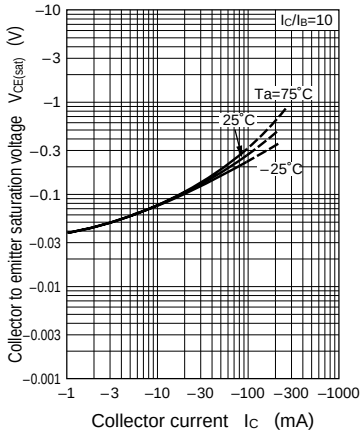
I_B — V_{BE}



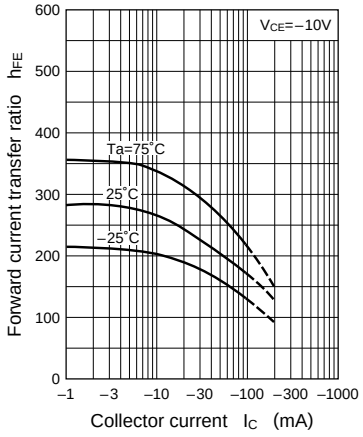
I_C — V_{BE}



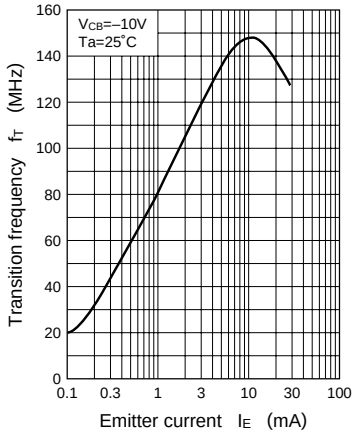
$V_{CE(sat)}$ — I_C



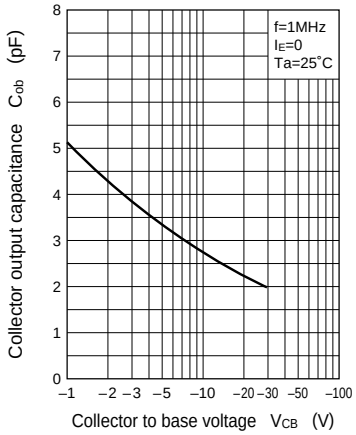
h_{FE} — I_C



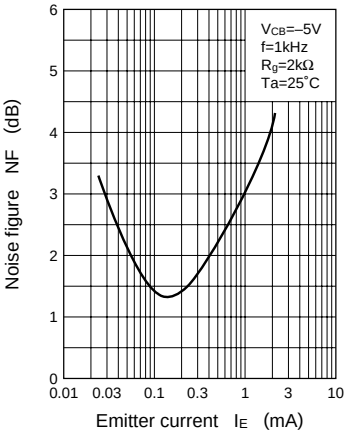
f_T — I_E



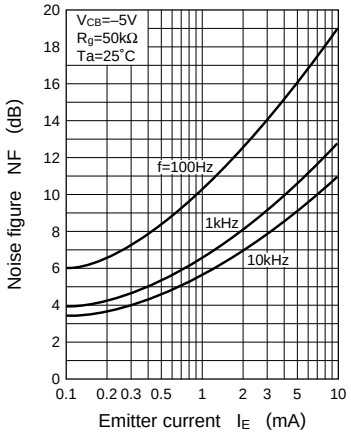
C_{ob} — V_{CB}



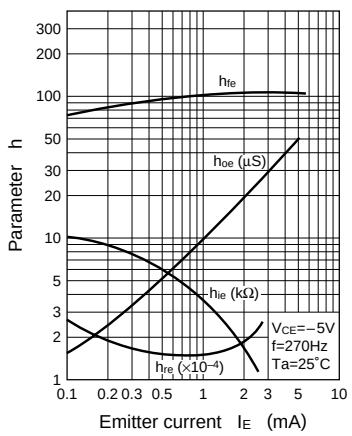
NF — I_E



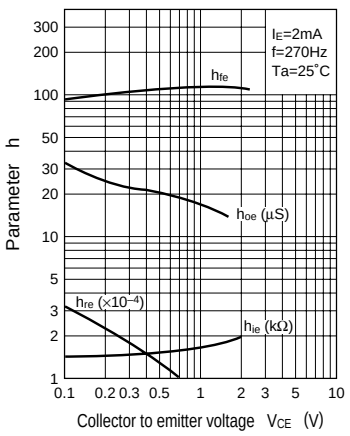
NF — I_E



h Parameter — I_E

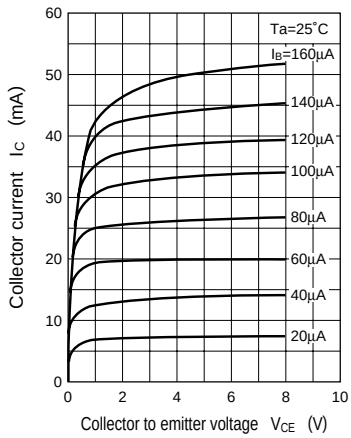


h Parameter — V_{CE}

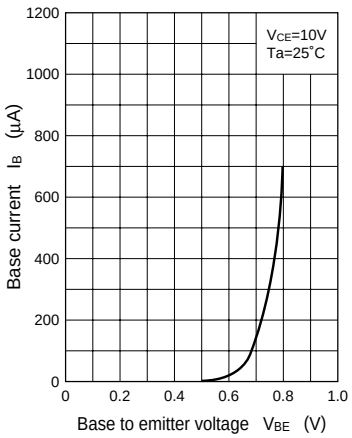


Characteristics charts of Tr2

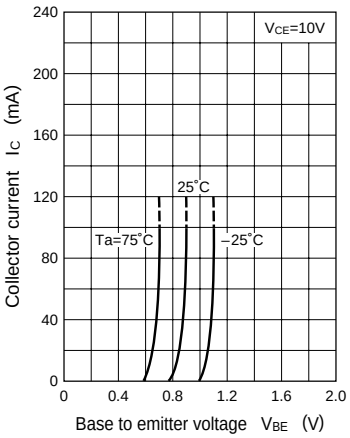
I_C — V_{CE}



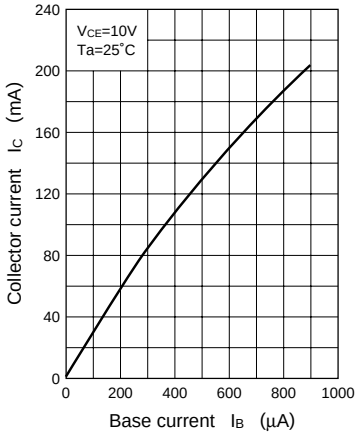
I_B — V_{BE}



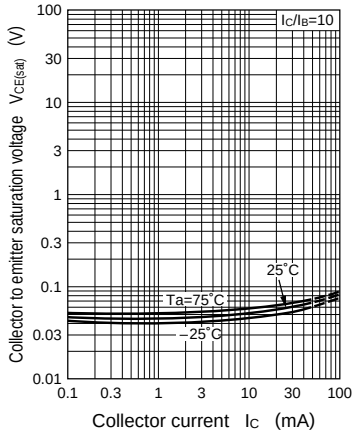
I_C — V_{BE}



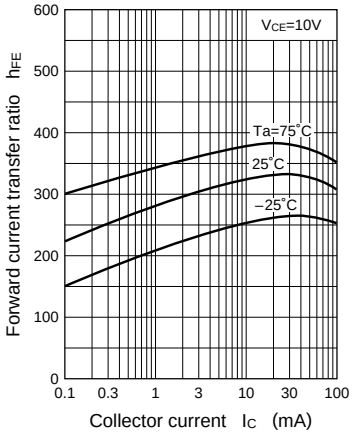
I_C — I_B



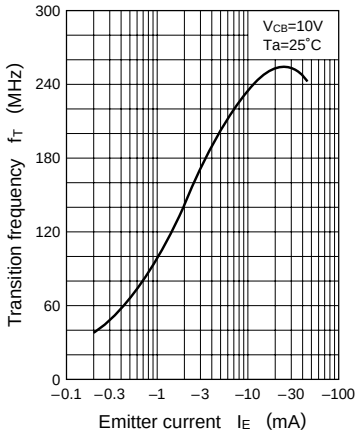
$V_{CE(sat)}$ — I_C



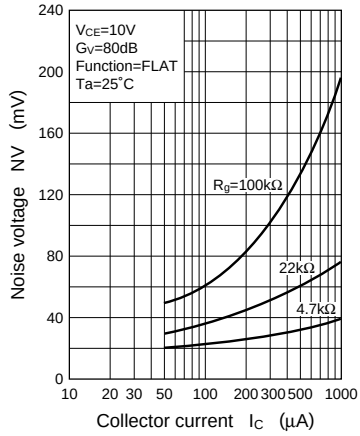
h_{FE} — I_C



f_T — I_E



NV — I_C



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