

# XN04683 (XN4683)

Silicon NPN epitaxial planer transistor (Tr1)

Silicon PNP epitaxial planer transistor (Tr2)

For high-frequency amplification/For general amplification

## Features

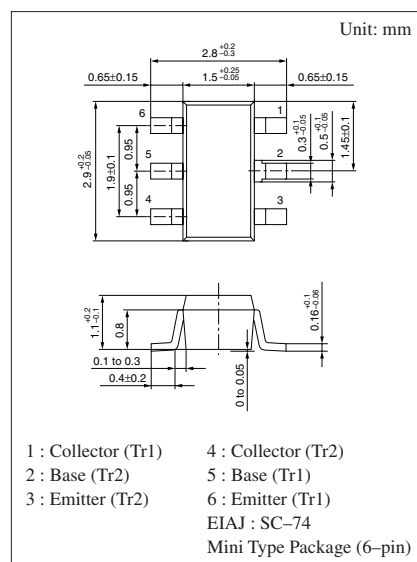
- Two elements incorporated into one package.
- Reduction of the mounting area and assembly cost by one half.

## Basic Part Number of Element

- 2SC2404 + 2SB0709A(2SB709A)

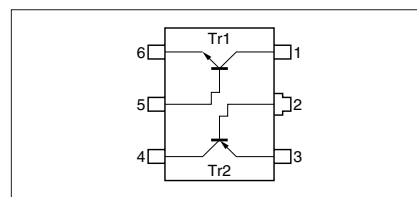
## Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Ratings	Unit
Tr1	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	$I_C$	15	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	$P_T$	200	mW
	Junction temperature	$T_j$	150	°C
	Storage temperature	$T_{stg}$	-55 to +150	°C



Marking Symbol: ER

Internal Connection



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

# ■ Electrical Characteristics (T<sub>a</sub>=25°C)

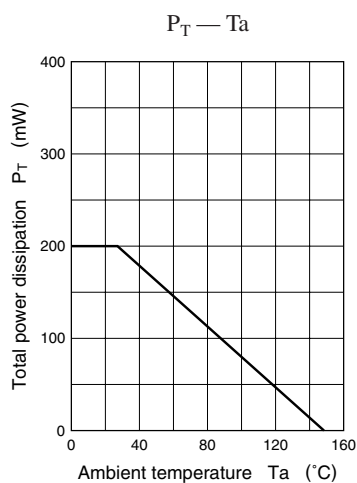
## • Tr1

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V <sub>CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> = 0	30			V
Emitter to base voltage	V <sub>EBO</sub>	I <sub>E</sub> = 10μA, I <sub>C</sub> = 0	3			V
Forward current transfer ratio	h <sub>FE1</sub>	V <sub>CE</sub> = 6V, I <sub>C</sub> = -1mA	40		260	
Base to emitter voltage	V <sub>BE</sub>	V <sub>CB</sub> = 6V, I <sub>E</sub> = -1mA		720		mV
Feedback capacitance	C <sub>re</sub>	V <sub>CB</sub> = 6V, I <sub>E</sub> = -1mA, f = 10.7MHz		0.8	1	pF
Transition frequency	f <sub>T</sub>	V <sub>CB</sub> = 6V, I <sub>E</sub> = -1mA, f = 200MHz	450	650		MHz
Noise figure	NF	V <sub>CB</sub> = 6V, I <sub>E</sub> = -1mA, f = 100MHz		3.3		dB
Power gain	PG	V <sub>CB</sub> = 6V, I <sub>E</sub> = -1mA, f = 100MHz		24		dB

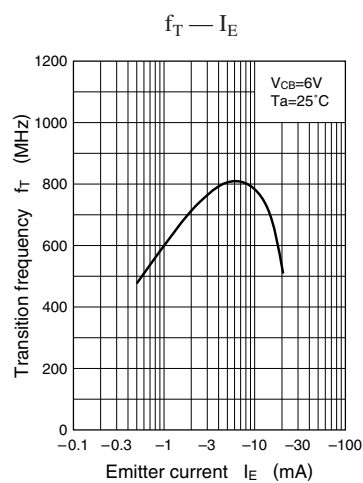
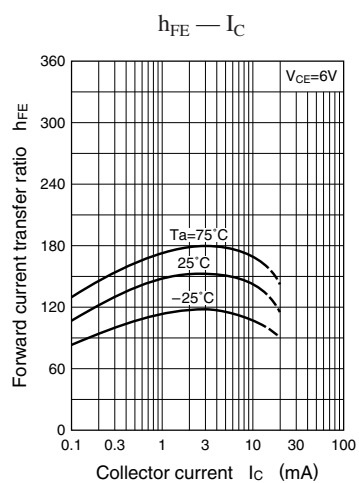
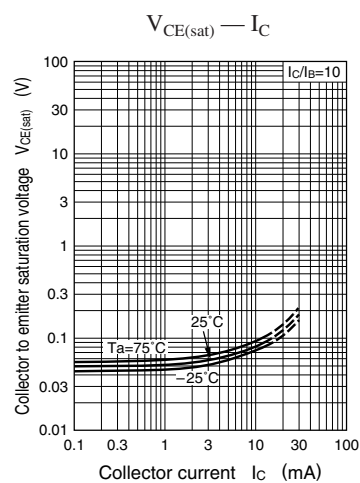
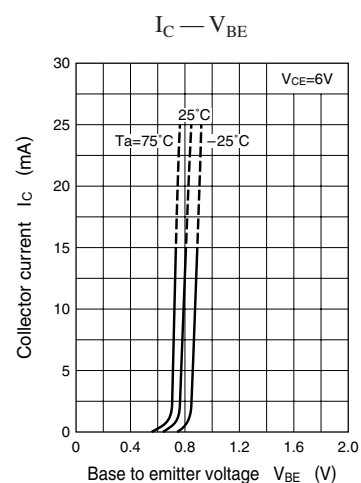
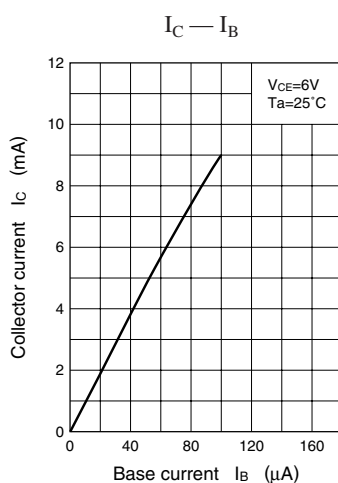
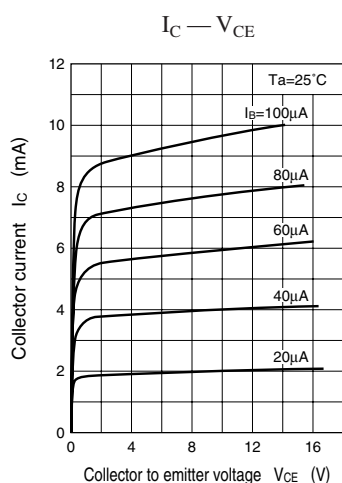
## • Tr2

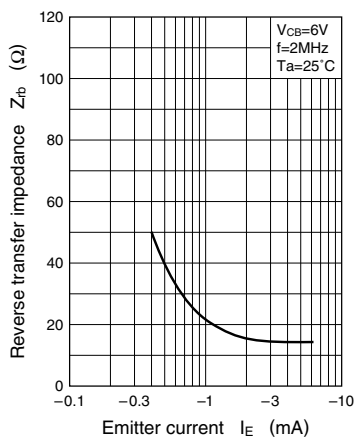
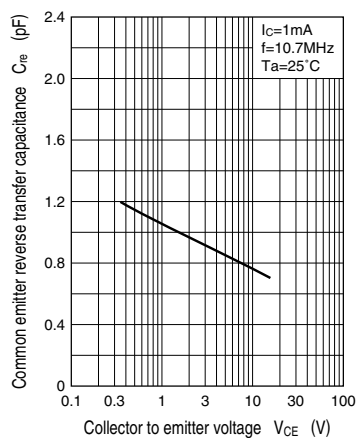
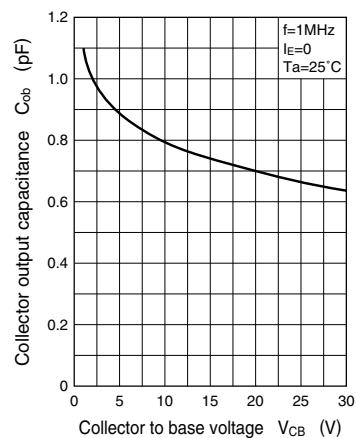
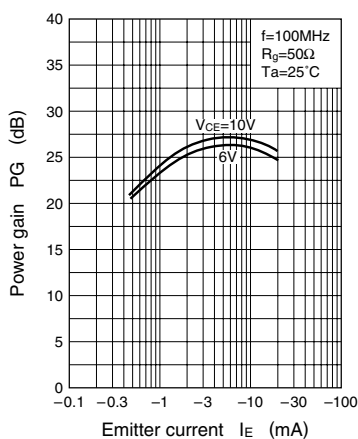
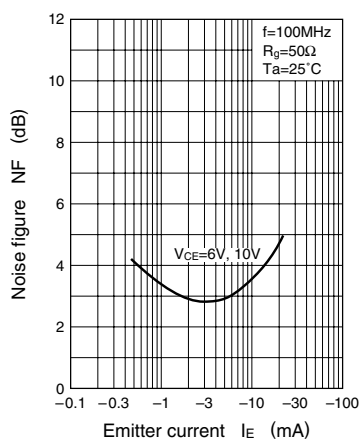
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V <sub>CBO</sub>	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0	-60			V
Collector to emitter voltage	V <sub>CEO</sub>	I <sub>C</sub> = -2mA, I <sub>B</sub> = 0	-50			V
Emitter to base voltage	V <sub>EBO</sub>	I <sub>E</sub> = -10μA, I <sub>C</sub> = 0	-7			V
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> = -20V, I <sub>E</sub> = 0			- 0.1	μA
	I <sub>CEO</sub>	V <sub>CE</sub> = -10V, I <sub>B</sub> = 0			-100	μA
Forward current transfer ratio	h <sub>FE</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -2mA	160		460	
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = -100mA, I <sub>B</sub> = -10mA		- 0.3	- 0.5	V
Transition frequency	f <sub>T</sub>	V <sub>CB</sub> = -10V, I <sub>E</sub> = 1mA, f = 200MHz		80		MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz		2.7		pF

Common characteristics chart

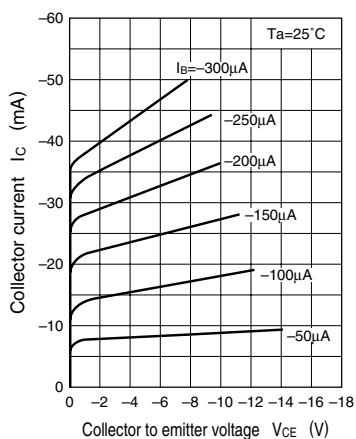
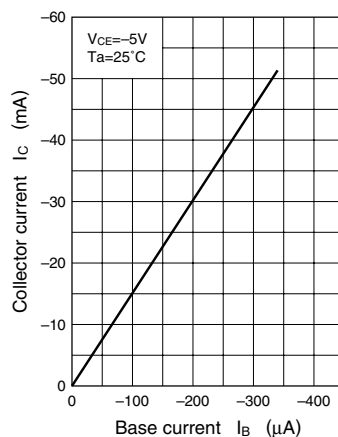
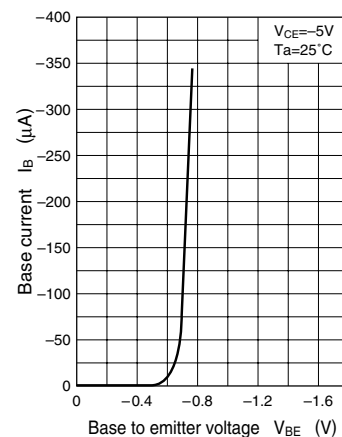


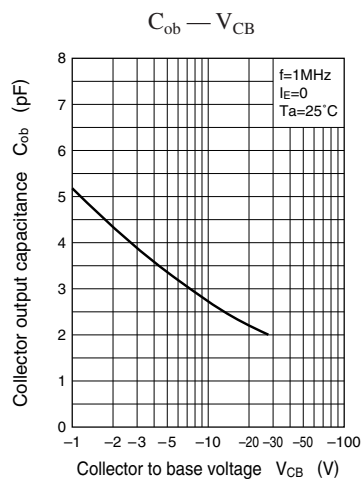
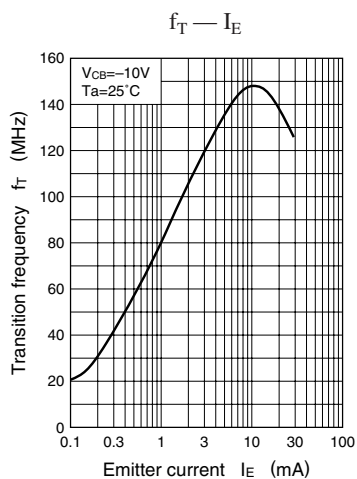
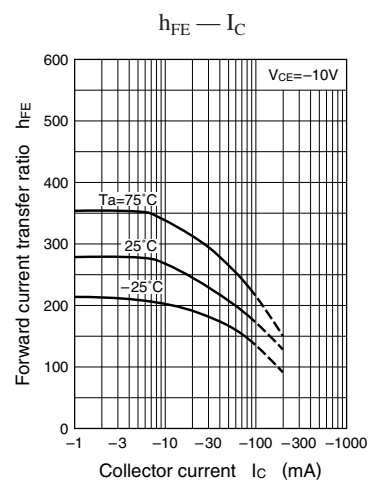
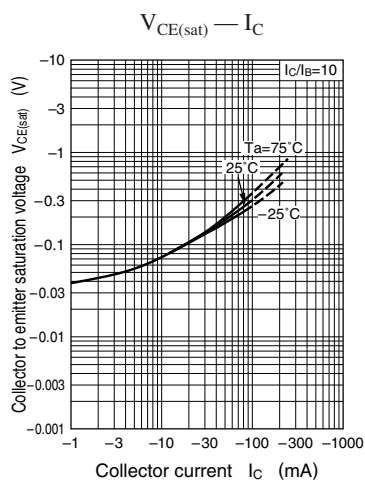
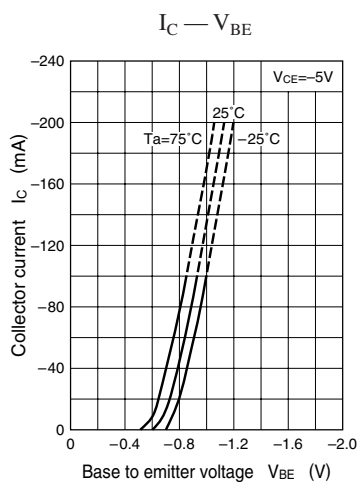
Characteristics charts of Tr1



$Z_{rb} - I_E$  $C_{re} - V_{CE}$  $C_{ob} - V_{CB}$  $P_G - I_E$  $NF - I_E$ 

## Characteristics charts of Tr2

 $I_C - V_{CE}$  $I_C - I_B$  $I_B - V_{BE}$ 



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