

# XP04683 (XP4683)

Silicon NPN epitaxial planar type (Tr1)  
 Silicon PNP epitaxial planar type (Tr2)

For high-frequency amplification (Tr1)  
 For general amplification (Tr2)

■ Features

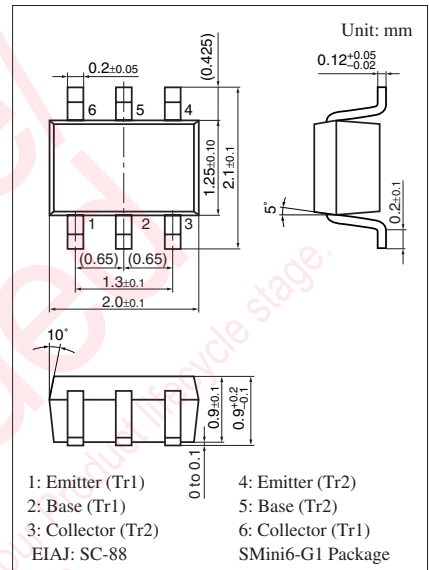
- Two elements incorporated into one package
- Reduction of the mounting area and assembly cost by one half

■ Basic Part Number

- 2SC2404 + 2SB0709A (2SB709A)

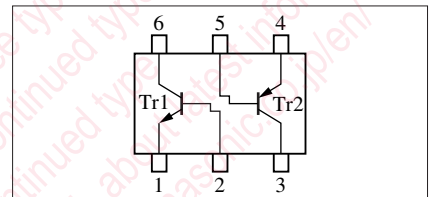
■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$

	Parameter	Symbol	Rating	Unit
Tr1	Collector-base voltage (Emitter open)	$V_{CBO}$	30	V
	Collector-emitter voltage (Base open)	$V_{CEO}$	20	V
	Emitter-base voltage (Collector open)	$V_{EBO}$	3	V
	Collector current	$I_C$	15	mA
Tr2	Collector-base voltage (Emitter open)	$V_{CBO}$	-60	V
	Collector-emitter voltage (Base open)	$V_{CEO}$	-50	V
	Emitter-base voltage (Collector open)	$V_{EBO}$	-7	V
	Collector current	$I_C$	-100	mA
	Peak collector current	$I_{CP}$	-200	mA
Overall	Total power dissipation	$P_T$	150	mW
	Junction temperature	$T_j$	150	$^\circ\text{C}$
	Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$



Marking Symbol: ER

Internal Connection



(Note) The part number in the parenthesis shows conventional part number.

### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

#### • Tr1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	$I_C = 10 \mu\text{A}, I_E = 0$	30			V
Emitter-base voltage (Collector open)	$V_{EBO}$	$I_E = 10 \mu\text{A}, I_C = 0$	3			V
Base-emitter voltage	$V_{BE}$	$V_{CB} = 6 \text{V}, I_E = -1 \text{mA}$		720		mV
Forward current transfer ratio	$h_{FE}$	$V_{CB} = 6 \text{V}, I_E = -1 \text{mA}$	40		260	—
Transition frequency	$f_T$	$V_{CB} = 6 \text{V}, I_E = -1 \text{mA}, f = 200 \text{MHz}$	450	650		MHz
Reverse transfer capacitance (Common emitter)	$C_{re}$	$V_{CB} = 6 \text{V}, I_E = -1 \text{mA}, f = 10.7 \text{MHz}$		0.8	1.0	pF
Power gain	$G_P$	$V_{CB} = 6 \text{V}, I_E = -1 \text{mA}, f = 100 \text{MHz}$		24		dB
Noise figure	NF	$V_{CB} = 6 \text{V}, I_E = -1 \text{mA}, f = 100 \text{MHz}$		3.3		dB

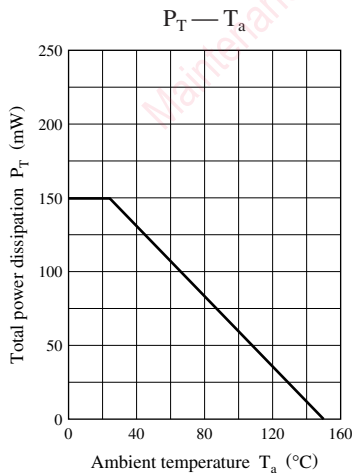
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

#### • Tr2

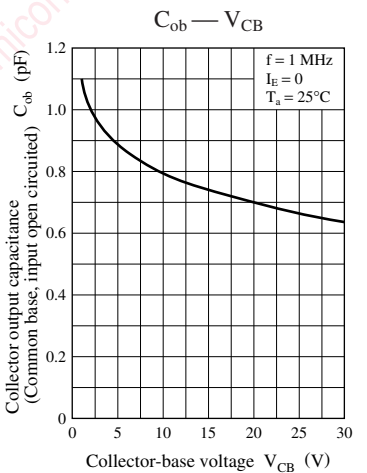
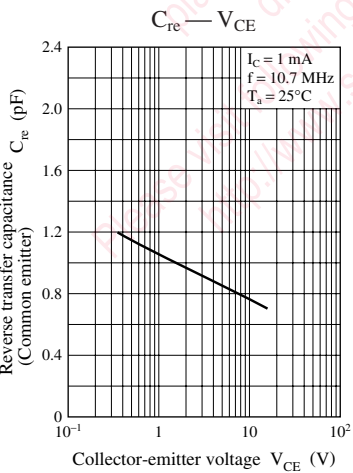
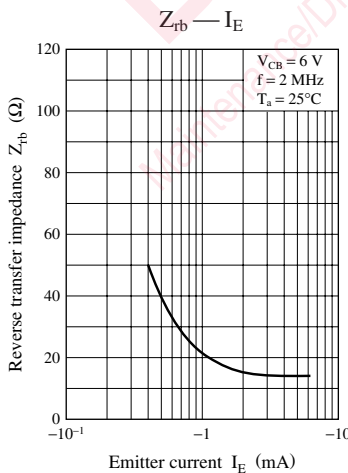
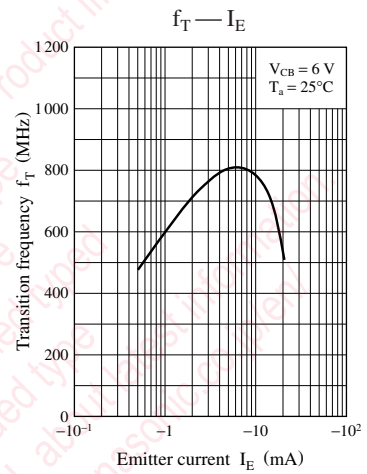
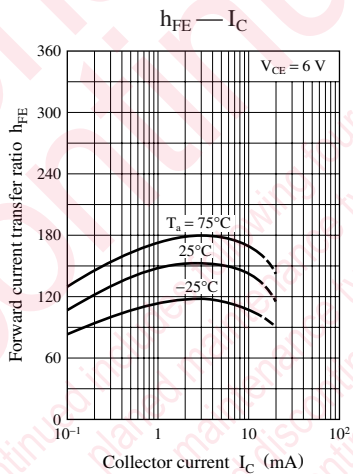
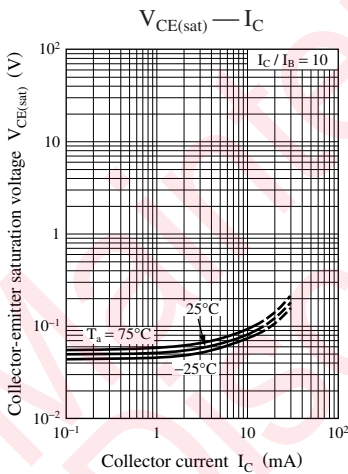
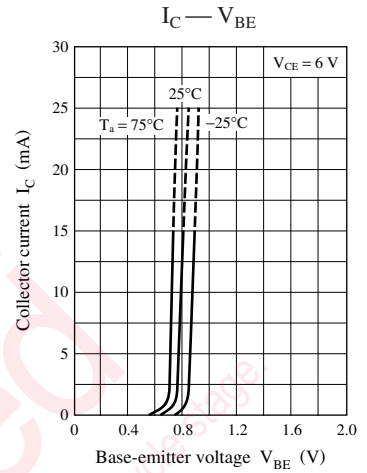
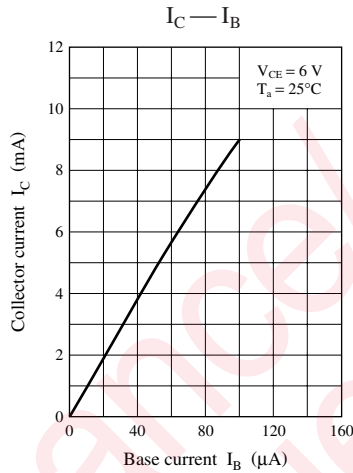
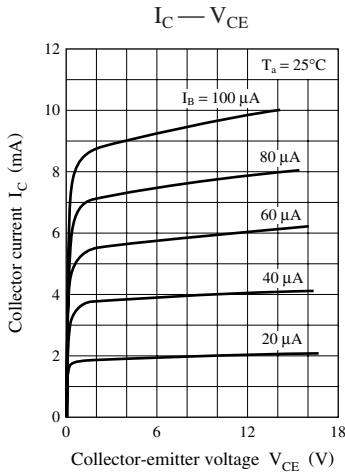
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	$I_C = -10 \mu\text{A}, I_E = 0$	-60			V
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = -2 \text{mA}, I_B = 0$	-50			V
Emitter-base voltage (Collector open)	$V_{EBO}$	$I_E = -10 \mu\text{A}, I_C = 0$	-7			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -20 \text{V}, I_E = 0$			-0.1	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = -10 \text{V}, I_B = 0$			-100	$\mu\text{A}$
Forward current transfer ratio	$h_{FE}$	$V_{CE} = -10 \text{V}, I_C = -2 \text{mA}$	160		460	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -100 \text{mA}, I_B = -10 \text{mA}$		-0.3	-0.5	V
Transition frequency	$f_T$	$V_{CB} = -10 \text{V}, I_E = 1 \text{mA}, f = 200 \text{MHz}$		80		MHz
Collector output capacitance (Common base, input open circuited)	$C_{ob}$	$V_{CB} = -10 \text{V}, I_E = 0, f = 1 \text{MHz}$		2.7		pF

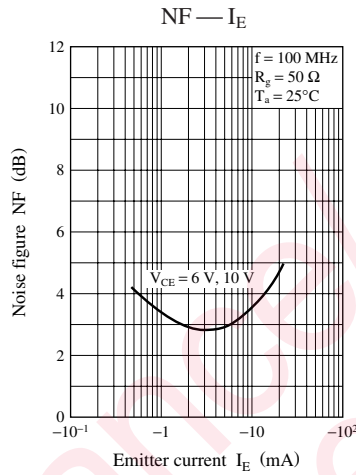
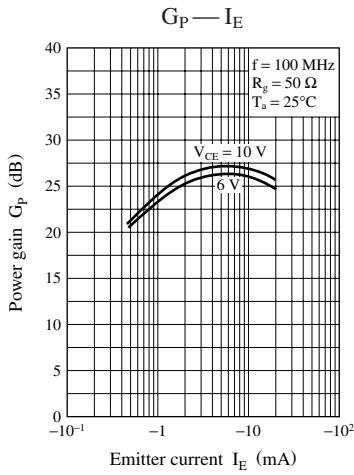
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

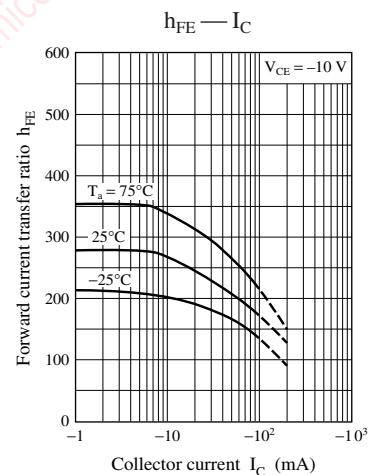
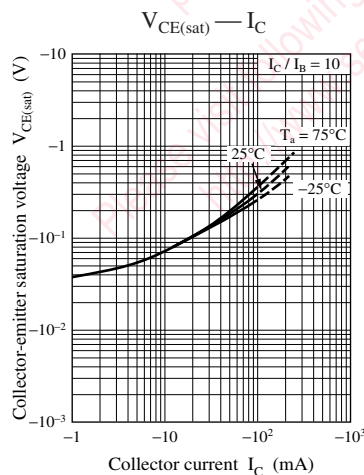
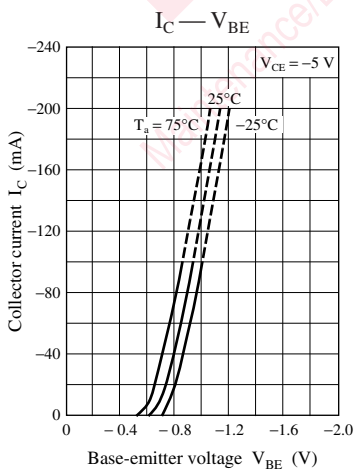
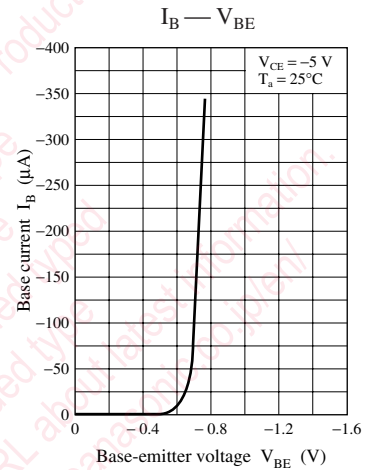
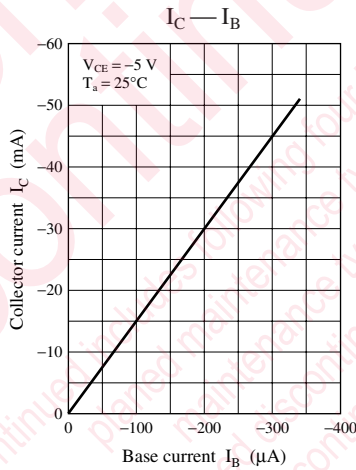
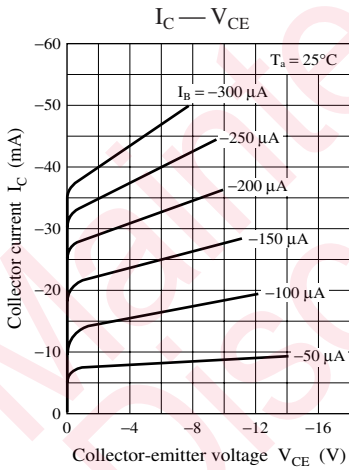


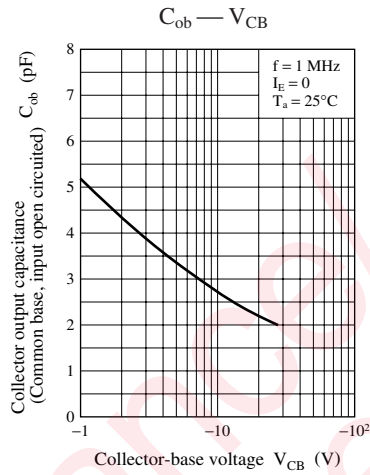
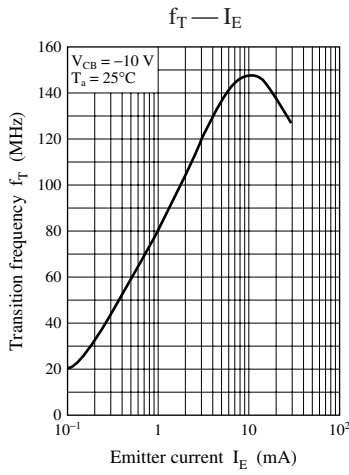
Characteristics charts of Tr1





Characteristics charts of Tr2





Maintenance/Discontinued

includes following four Product lifecycle stage.

- planned maintenance type
- maintenance type
- planned discontinued type
- discontinued type

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