

XN04608 (XN4608)

Silicon NPN epitaxial planar type (Tr1)

Silicon PNP epitaxial planar type (Tr2)

For general amplification (Tr1)

For amplification of low-frequency output (Tr2)

■ Features

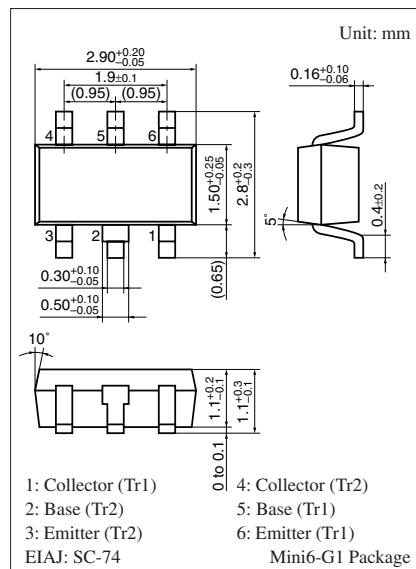
- Two elements incorporated into one package
- Reduction of the mounting area and assembly cost by one half

■ Basic Part Number

- 2SD0601A (2SD601A) + 2SB0970 (2SB970)

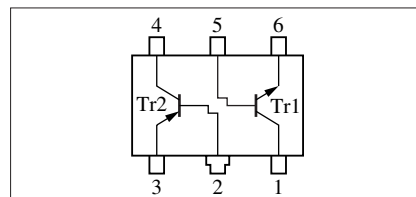
■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

	Parameter	Symbol	Rating	Unit
Tr1	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
Tr2	Collector-base voltage (Emitter open)	V_{CBO}	-15	V
	Collector-emitter voltage (Base open)	V_{CEO}	-10	V
	Emitter-base voltage (Collector open)	V_{EBO}	-7	V
	Collector current	I_{C}	-0.5	A
	Peak collector current	I_{CP}	-1	A
Overall	Total power dissipation	P_{T}	300	mW
	Junction temperature	T_{j}	150	$^\circ\text{C}$
	Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



Marking Symbol: 5E

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}	$I_{\text{C}} = 10\ \mu\text{A}, I_{\text{E}} = 0$	60			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_{\text{C}} = 2\ \text{mA}, I_{\text{B}} = 0$	50			V
Emitter-base voltage (Collector open)	V_{EBO}	$I_{\text{E}} = 10\ \mu\text{A}, I_{\text{C}} = 0$	7			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{\text{CB}} = 20\ \text{V}, I_{\text{E}} = 0$			0.1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{\text{CE}} = 10\ \text{V}, I_{\text{B}} = 0$			100	μA
Forward current transfer ratio	h_{FE}	$V_{\text{CE}} = 10\ \text{V}, I_{\text{C}} = 2\ \text{mA}$	160		460	—
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = 100\ \text{mA}, I_{\text{B}} = 10\ \text{mA}$		0.1	0.3	V
Transition frequency	f_{T}	$V_{\text{CB}} = 10\ \text{V}, I_{\text{E}} = -2\ \text{mA}, f = 200\ \text{MHz}$		150		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{\text{CB}} = 10\ \text{V}, I_{\text{E}} = 0, f = 1\ \text{MHz}$		3.5		pF

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

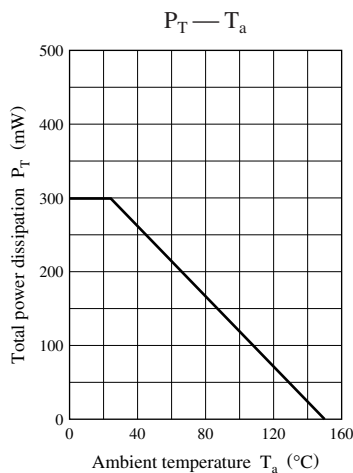
• Tr2

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_{\text{C}} = -10\ \mu\text{A}, I_{\text{E}} = 0$	-15			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_{\text{C}} = -1\ \text{mA}, I_{\text{B}} = 0$	-10			V
Emitter-base voltage (Collector open)	V_{EBO}	$I_{\text{E}} = -10\ \mu\text{A}, I_{\text{C}} = 0$	-7			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{\text{CB}} = -10\ \text{V}, I_{\text{E}} = 0$			-0.1	μA
Forward current transfer ratio *	h_{FE1}	$V_{\text{CE}} = -2\ \text{V}, I_{\text{C}} = -0.5\ \text{A}$	100		350	—
	h_{FE2}	$V_{\text{CE}} = -2\ \text{V}, I_{\text{C}} = -1\ \text{A}$	60			
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = -0.4\ \text{A}, I_{\text{B}} = -8\ \text{mA}$		-0.16	-0.30	V
Base-emitter saturation voltage	$V_{\text{BE(sat)}}$	$I_{\text{C}} = -0.4\ \text{A}, I_{\text{B}} = -8\ \text{mA}$		-0.8	-1.2	V
Transition frequency	f_{T}	$V_{\text{CB}} = -10\ \text{V}, I_{\text{E}} = 50\ \text{mA}, f = 200\ \text{MHz}$		130		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{\text{CB}} = -10\ \text{V}, I_{\text{E}} = 0, f = 1\ \text{MHz}$		22		pF

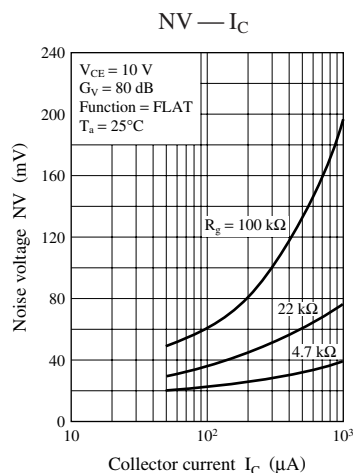
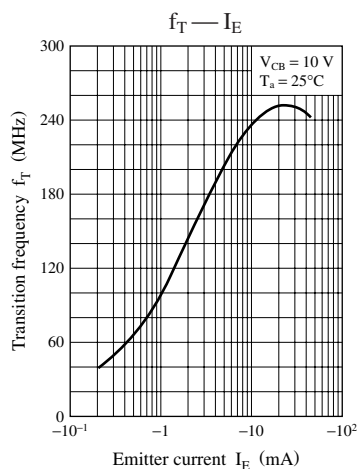
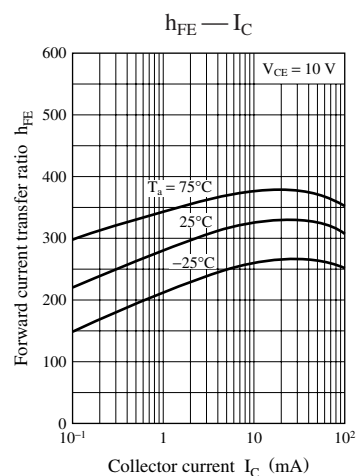
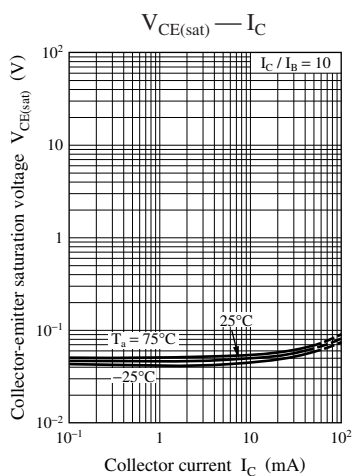
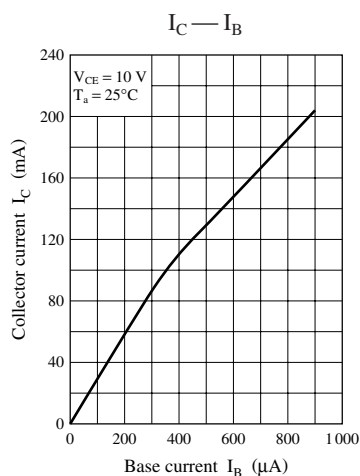
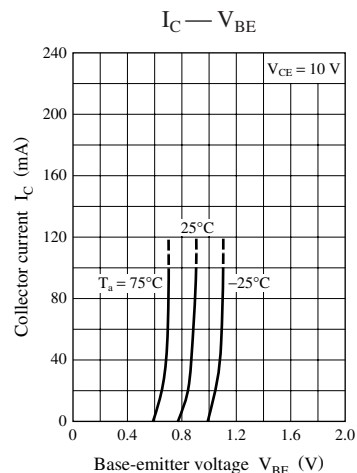
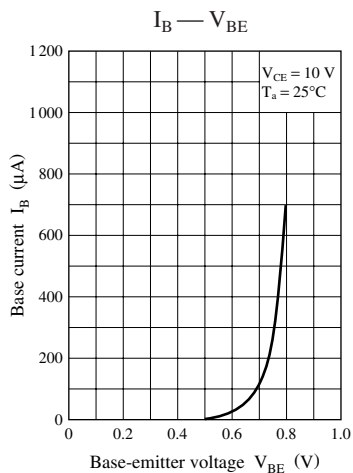
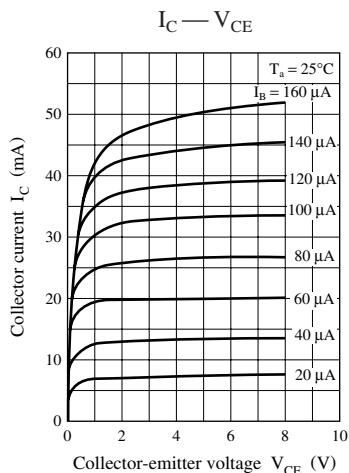
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Pulse measurement

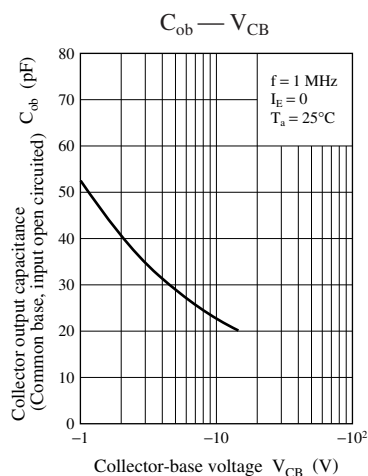
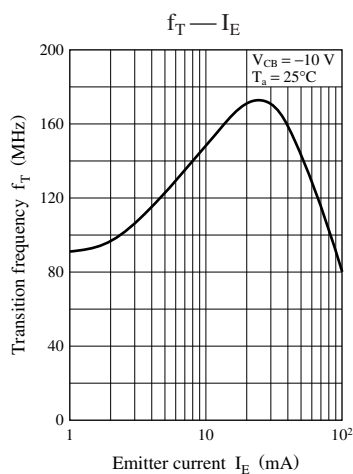
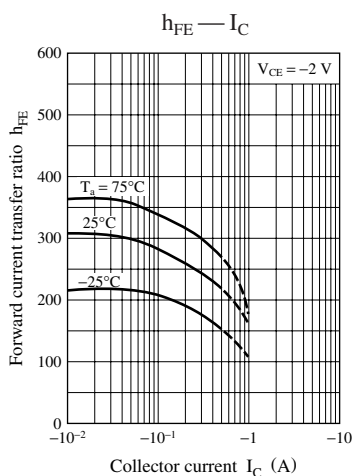
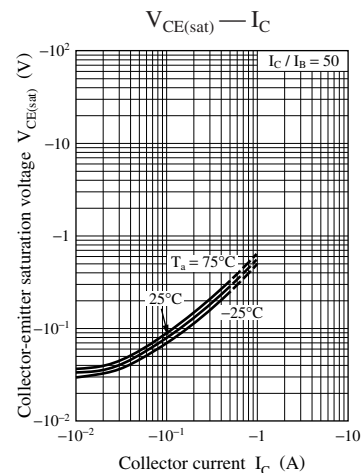
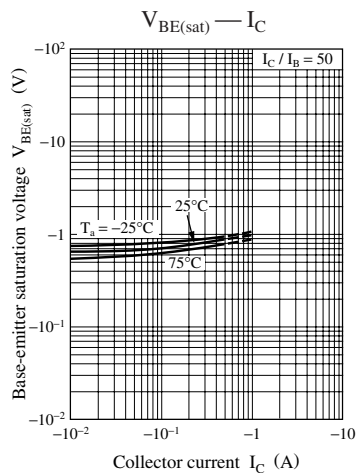
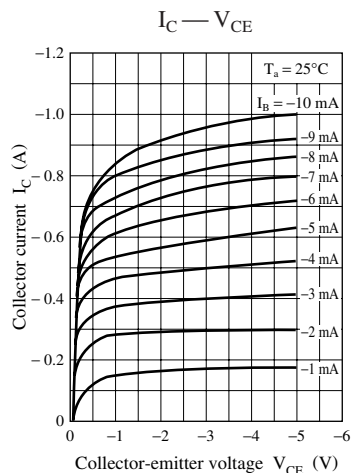
Common characteristics chart



Characteristics charts of Tr1



Characteristics charts of Tr2



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