

**UP04601**

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

For general amplification

## ■ Features

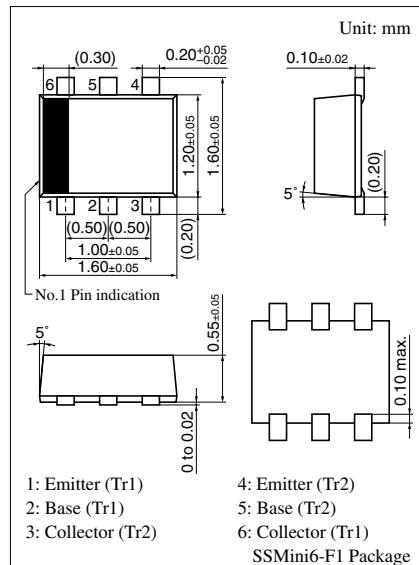
- Two elements incorporated into one package (Each transistor is separated)
- Reduction of the mounting area and assembly cost by one half

### ■ Basic Part Number of Element

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

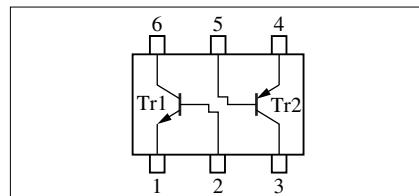
### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Tr1	Collector to base voltage	V <sub>CBO</sub>	60	V
	Collector to emitter voltage	V <sub>CEO</sub>	50	V
	Emitter to base voltage	V <sub>EBO</sub>	7	V
	Collector current	I <sub>C</sub>	100	mA
	Peak collector current	I <sub>CP</sub>	200	mA
Tr2	Collector to base voltage	V <sub>CBO</sub>	-60	V
	Collector to emitter voltage	V <sub>CEO</sub>	-50	V
	Emitter to base voltage	V <sub>EBO</sub>	-7	V
	Collector current	I <sub>C</sub>	-100	mA
	Peak collector current	I <sub>CP</sub>	-200	mA
Total	Total power dissipation	P <sub>T</sub>	125	mW
	Junction temperature	T <sub>j</sub>	125	°C
	Storage temperature	T <sub>stg</sub>	-55 to +125	°C



Marking Symbol: 5C

## Internal Connection



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

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

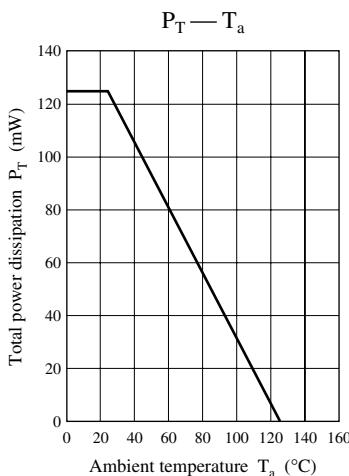
## • Tr1

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector to base voltage	$V_{CBO}$	$I_C = 10 \mu\text{A}, I_E = 0$	60			V
Collector to emitter voltage	$V_{CEO}$	$I_C = 2 \text{ mA}, I_B = 0$	50			V
Emitter to base voltage	$V_{EBO}$	$I_E = 10 \mu\text{A}, I_C = 0$	7			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = 20 \text{ V}, I_E = 0$			0.1	$\mu\text{A}$
	$I_{CEO}$	$V_{CE} = 10 \text{ V}, I_B = 0$			100	
Forward current transfer ratio	$h_{FE}$	$V_{CE} = 10 \text{ V}, I_C = 2 \text{ mA}$	180		390	—
Collector to emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$		0.1	0.3	V
Collector output capacitance	$C_{ob}$	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$		3.5		pF
Gain bandwidth product	$f_T$	$V_{CB} = 10 \text{ V}, I_E = -2 \text{ mA}, f = 200 \text{ MHz}$		150		MHz

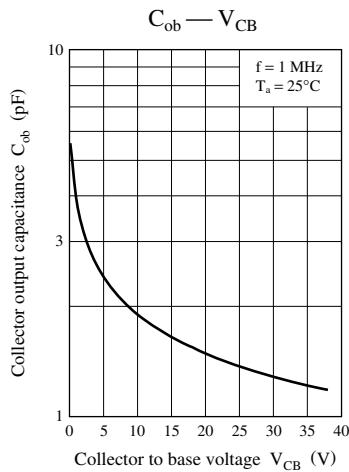
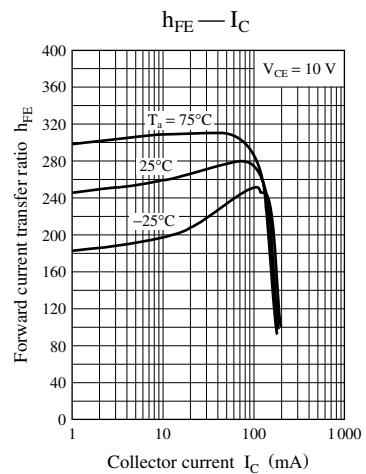
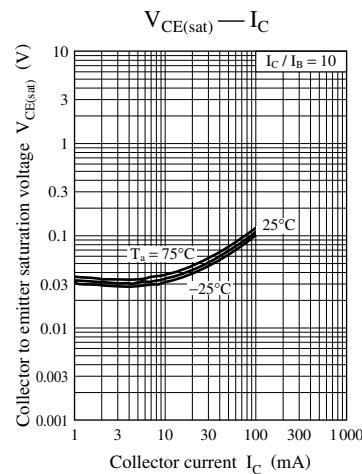
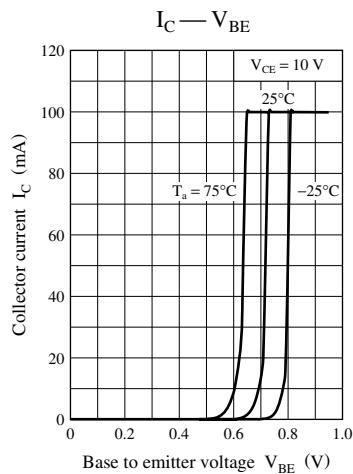
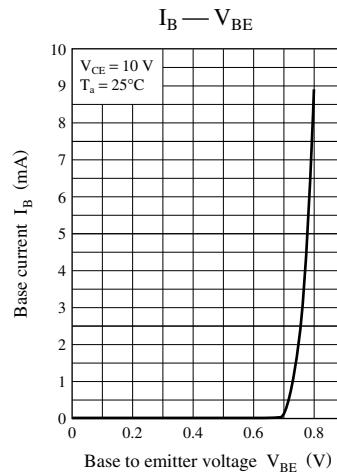
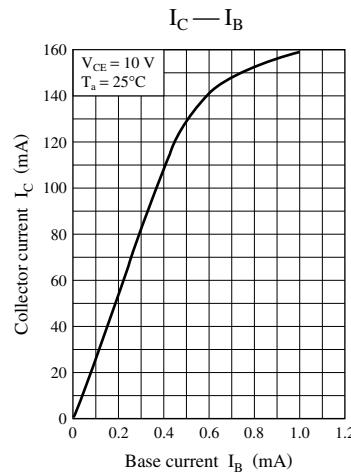
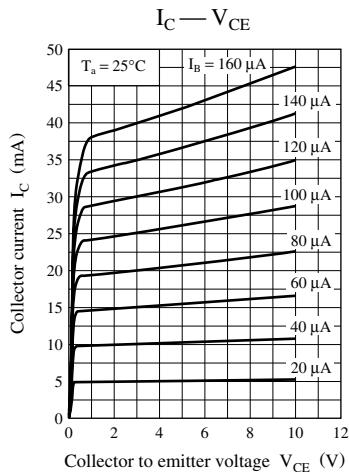
## • Tr2

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector to base voltage	$V_{CBO}$	$I_C = -10 \mu\text{A}, I_E = 0$	-60			V
Collector to emitter voltage	$V_{CEO}$	$I_C = -2 \text{ mA}, I_B = 0$	-50			V
Emitter to base voltage	$V_{EBO}$	$I_E = -10 \mu\text{A}, I_C = 0$	-7			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = -20 \text{ V}, I_E = 0$			-0.1	$\mu\text{A}$
	$I_{CEO}$	$V_{CE} = -10 \text{ V}, I_B = 0$			-100	
Forward current transfer ratio	$h_{FE}$	$V_{CE} = -10 \text{ V}, I_C = -5 \text{ mA}$	180		390	—
Collector to emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = -100 \text{ mA}, I_B = -10 \text{ mA}$		-0.3	-0.5	V
Collector output capacitance	$C_{ob}$	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$		2.7		pF
Gain bandwidth product	$f_T$	$V_{CB} = -10 \text{ V}, I_E = 1 \text{ mA}, f = 200 \text{ MHz}$		80		MHz

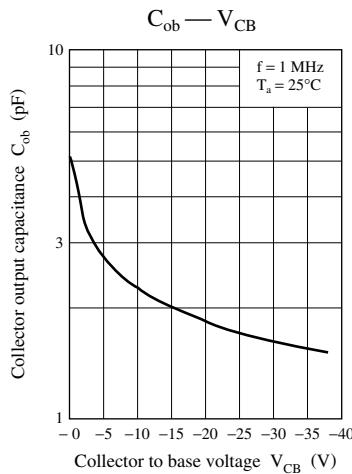
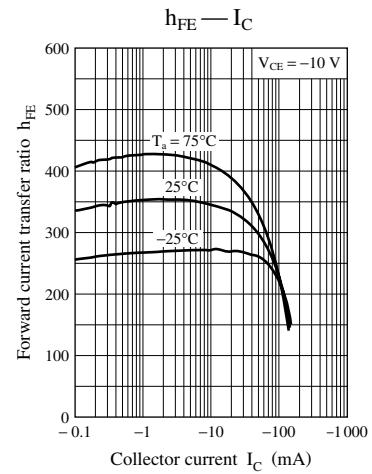
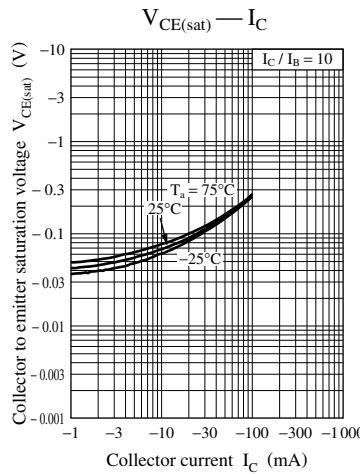
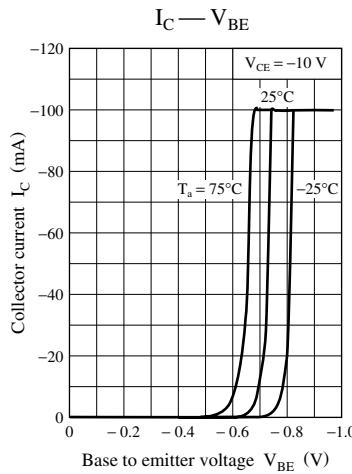
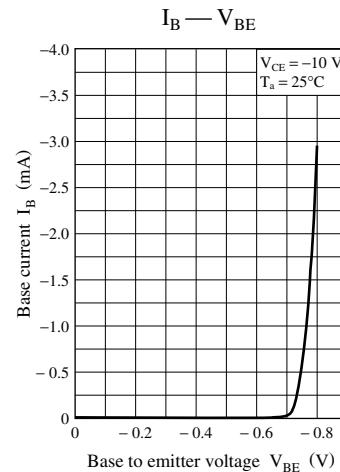
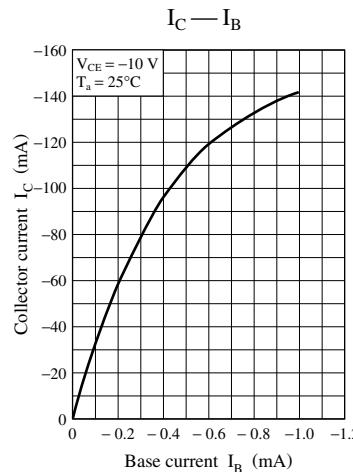
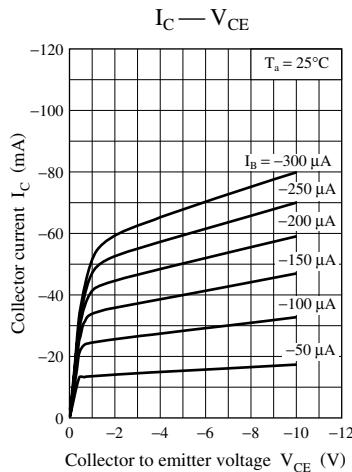
Common characteristics chart



## Characteristics chart of Tr1



## Characteristics chart of Tr2



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