

# UP0411x Series

Silicon PNP epitaxial planar type

For switching/digital circuits

## ■ Features

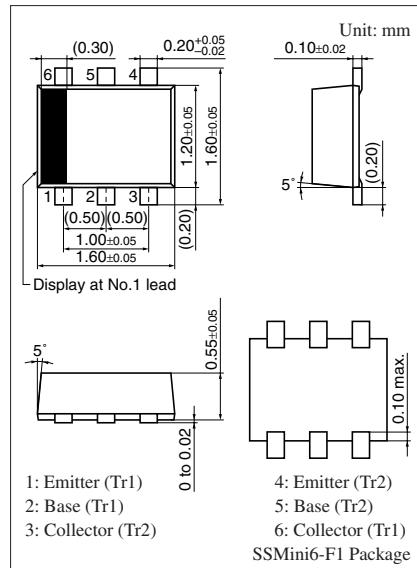
- Two elements incorporated into one package  
(Transistors with built-in resistor)
- Reduction of the mounting area and assembly cost by one half

## ■ Resistance by Part Number

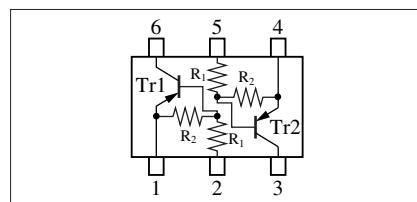
Marking	Symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UP04111	9U	10 kΩ	10 kΩ
• UP04113	6S	47 kΩ	47 kΩ
• UP04116	6U	4.7 kΩ	—

## ■ Absolute Maximum Ratings T<sub>a</sub> = 25°C

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	-50	V
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	-50	V
Collector current	I <sub>C</sub>	-100	mA
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



## Internal Connection

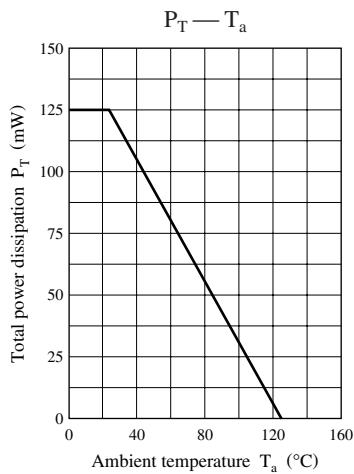


■ Electrical Characteristics  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$ 

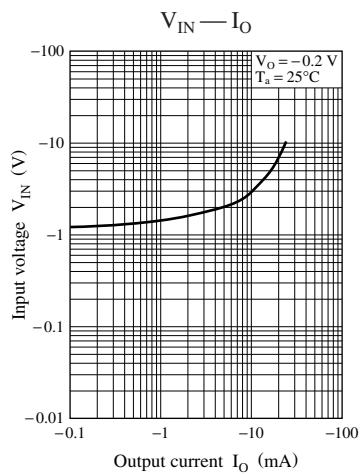
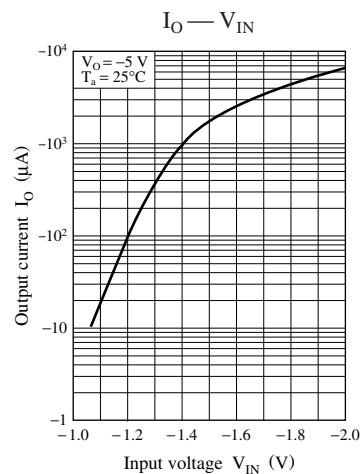
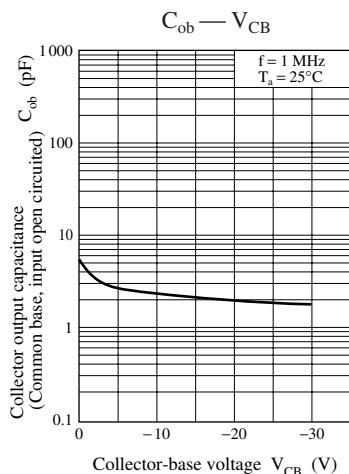
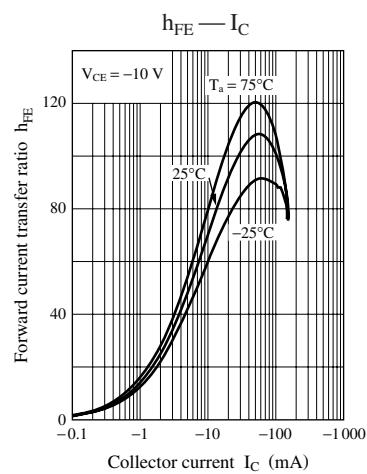
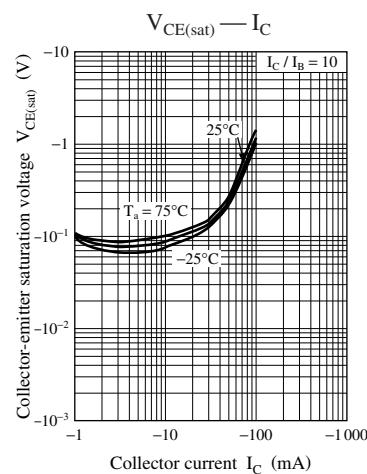
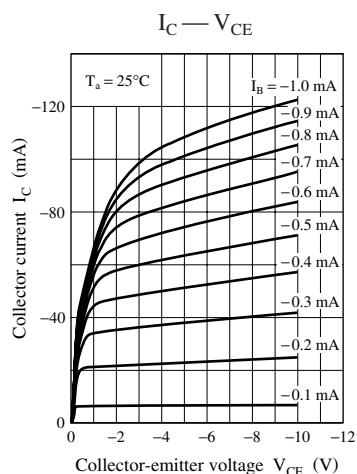
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	$I_C = -10 \mu\text{A}, I_E = 0$	-50			V
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = -2 \text{ mA}, I_B = 0$	-50			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -50 \text{ V}, I_E = 0$			-0.1	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = -50 \text{ V}, I_B = 0$			-0.5	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	UP04111 UP04113 UP04116	$I_{EBO}$ $V_{EB} = -6 \text{ V}, I_C = 0$			-0.5 -0.1 -0.01	mA
Forward current transfer ratio	UP04111 UP04113 UP04116	$h_{FE}$ $V_{CE} = -10 \text{ V}, I_C = -5 \text{ mA}$	35 80 160		460	—
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = -10 \text{ mA}, I_B = -0.3 \text{ mA}$			-0.25	V
Output voltage high-level	$V_{OH}$	$V_{CC} = -5 \text{ V}, V_B = -0.5 \text{ V}, R_L = 1 \text{ k}\Omega$	-4.9			V
Output voltage low-level	UP04113	$V_{OL}$ $V_{CC} = -5 \text{ V}, V_B = -2.5 \text{ V}, R_L = 1 \text{ k}\Omega$ $V_{CC} = -5 \text{ V}, V_B = -3.5 \text{ V}, R_L = 1 \text{ k}\Omega$			-0.2	V
Input resistance	UP04111 UP04113 UP04116	$R_I$		-30% 47 4.7	10 1.2	$\text{k}\Omega$
Resistance ratio	UP04111 UP04113	$R_1 / R_2$		0.8	1.0 1.2	—
Transition frequency	$f_T$	$V_{CB} = -10 \text{ V}, I_E = 1 \text{ mA}, f = 200 \text{ MHz}$		80		MHz

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

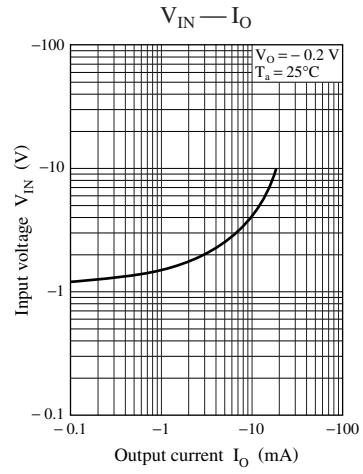
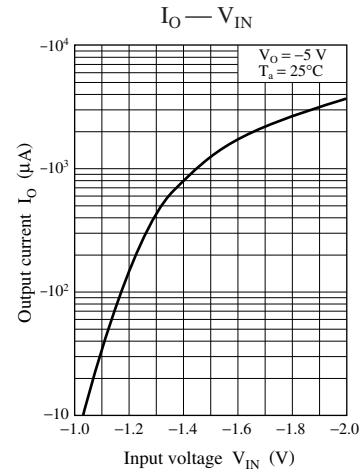
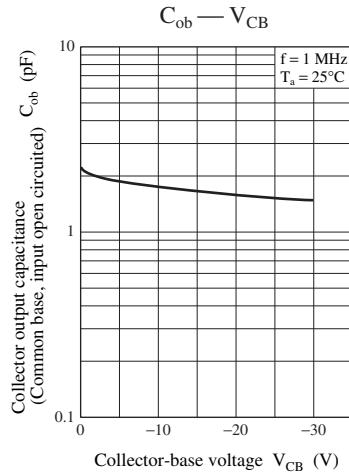
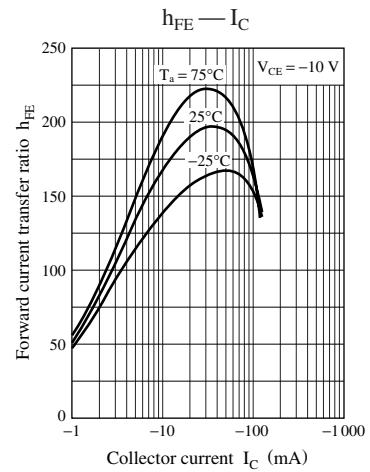
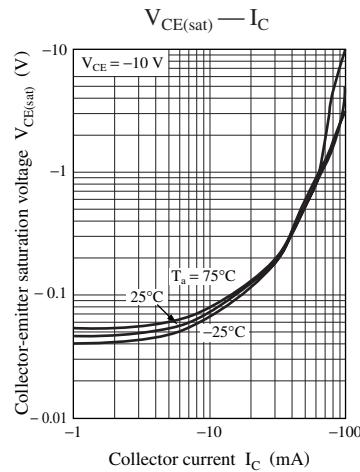
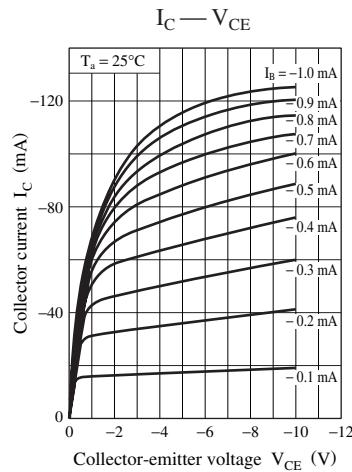
## Common characteristics chart



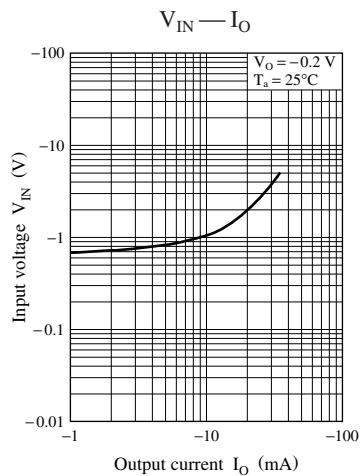
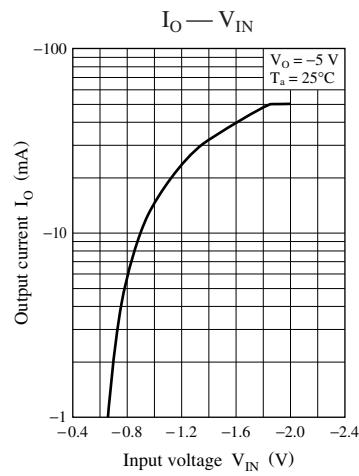
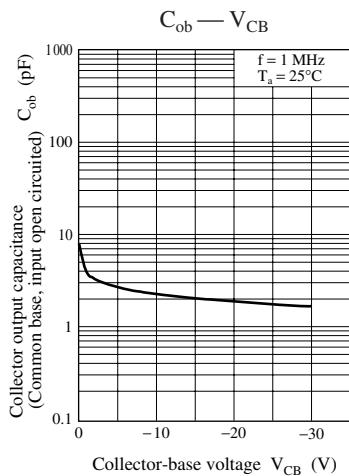
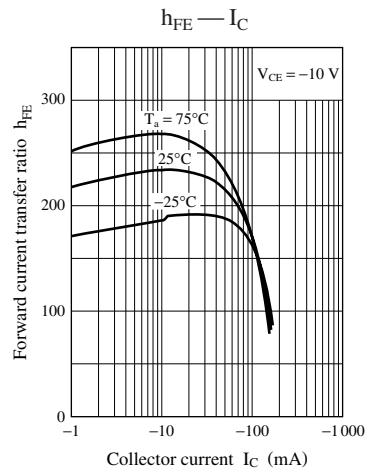
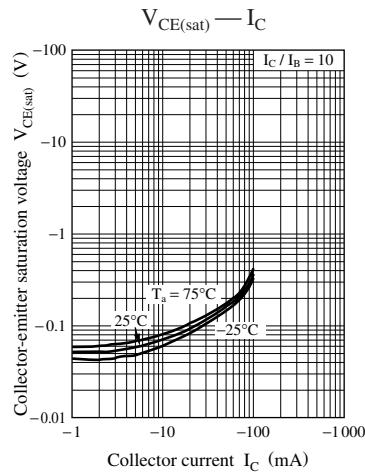
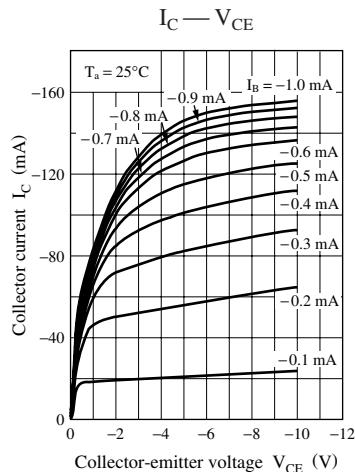
## Characteristics charts of UP04111



## Characteristics charts of UP04113



### Characteristics charts of UP04116



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