

XP04286

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

For switching/digital circuits

■ Features

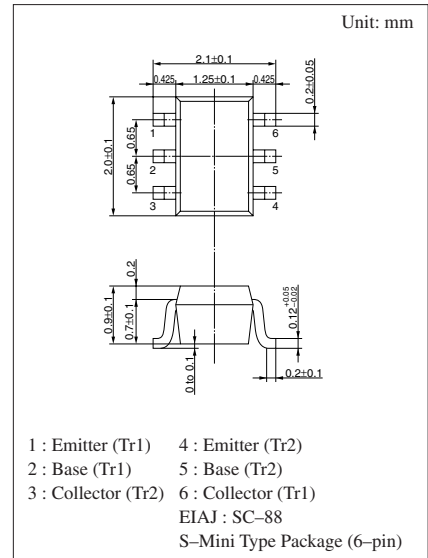
- Two elements incorporated into one package.
 (Transistors with built-in resistor)
- Reduction of the mounting area and assembly cost by one half.

■ Basic Part Number of Element

- UNR221N(UN221N)+UNR1119(UN1119)

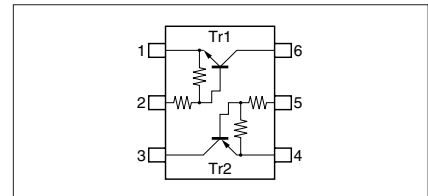
■ Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Ratings	Unit
Tr1	Collector to base voltage	V_{CBO}	50	V
	Collector to emitter voltage	V_{CEO}	50	V
	Collector current	I_C	100	mA
Tr2	Collector to base voltage	V_{CBO}	-50	V
	Collector to emitter voltage	V_{CEO}	-50	V
	Collector current	I_C	-100	mA
Overall	Total power dissipation	P_T	150	mW
	Junction temperature	T_j	150	°C
	Storage temperature	T_{stg}	-55 to +150	°C



Marking Symbol: HO

Internal Connection



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

■ Electrical Characteristics (T_a=25°C)

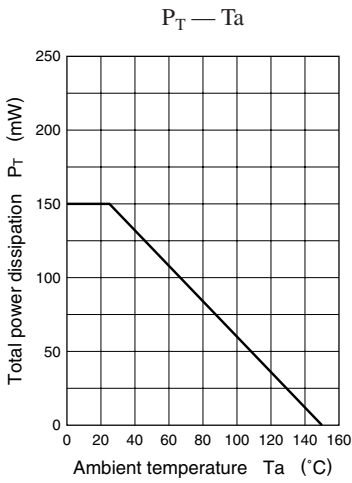
● Tr1

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V _{CBO}	I _C = 10μA, I _E = 0	50			V
Collector to emitter voltage	V _{CEO}	I _C = 2mA, I _B = 0	50			V
Collector cutoff current	I _{CBO}	V _{CB} = 50V, I _E = 0			0.1	μA
	I _{CEO}	V _{CE} = 50V, I _B = 0			0.5	μA
Emitter cutoff current	I _{EBO}	V _{EB} = 6V, I _C = 0			0.2	mA
Forward current transfer ratio	h _{FE}	V _{CE} = 10V, I _C = 5mA	80		400	
Collector to emitter saturation voltage	V _{CE(sat)}	I _C = 10mA, I _B = 0.3mA			0.25	V
Output voltage high level	V _{OH}	V _{CC} = 5V, V _B = 0.5V, R _L = 1kΩ	4.9			V
Output voltage low level	V _{OL}	V _{CC} = 5V, V _B = 2.5V, R _L = 1kΩ			0.2	V
Input resistance	R ₁		-30%	4.7	+30%	kΩ
Resistance ratio	R ₁ /R ₂			0.1		
Transition frequency	f _T	V _{CB} = 10V, I _E = -2mA, f = 200MHz		150		MHz

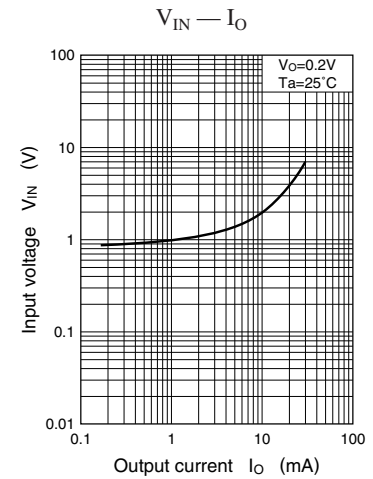
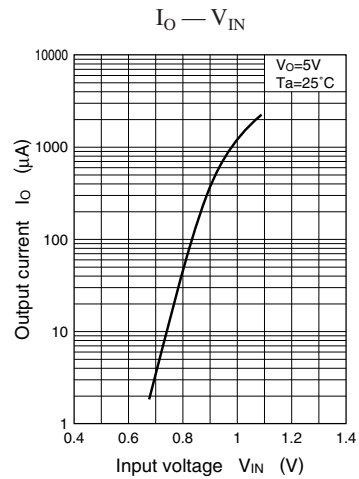
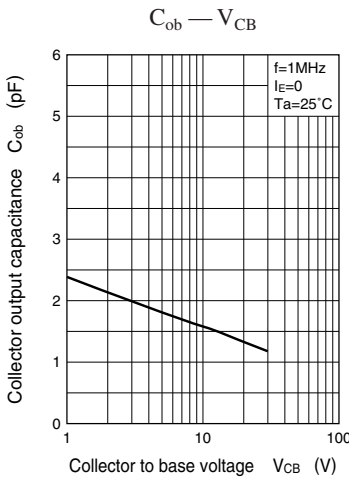
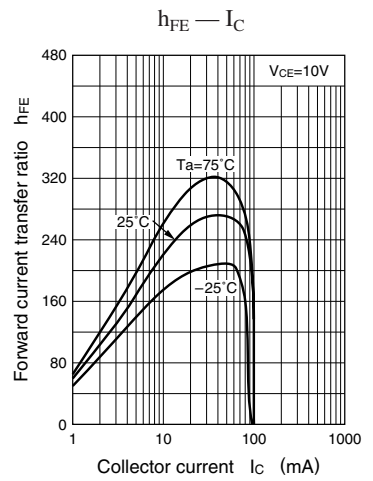
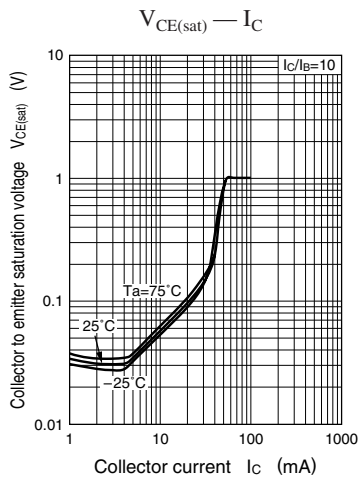
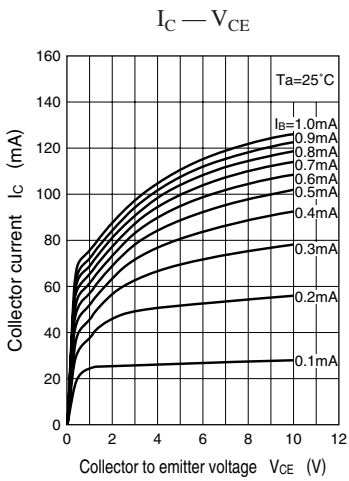
● Tr2

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V _{CBO}	I _C = -10μA, I _E = 0	-50			V
Collector to emitter voltage	V _{CEO}	I _C = -2mA, I _B = 0	-50			V
Collector cutoff current	I _{CBO}	V _{CB} = -50V, I _E = 0			-0.1	μA
	I _{CEO}	V _{CE} = -50V, I _B = 0			-0.5	μA
Emitter cutoff current	I _{EBO}	V _{EB} = -6V, I _C = 0			-1.5	mA
Forward current transfer ratio	h _{FE}	V _{CE} = -10V, I _C = -5mA	30			
Collector to emitter saturation voltage	V _{CE(sat)}	I _C = -10mA, I _B = -0.3mA			-0.25	V
Output voltage high level	V _{OH}	V _{CC} = -5V, V _B = -0.5V, R _L = 1kΩ	-4.9			V
Output voltage low level	V _{OL}	V _{CC} = -5V, V _B = -2.5V, R _L = 1kΩ			-0.2	V
Input resistance	R ₁		-30%	1	+30%	kΩ
Resistance ratio	R ₁ /R ₂			0.1		
Transition frequency	f _T	V _{CB} = -10V, I _E = 1mA, f = 200MHz		80		MHz

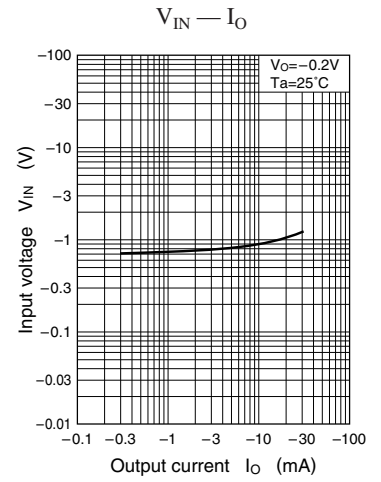
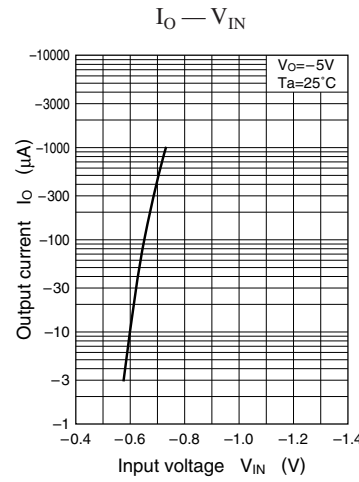
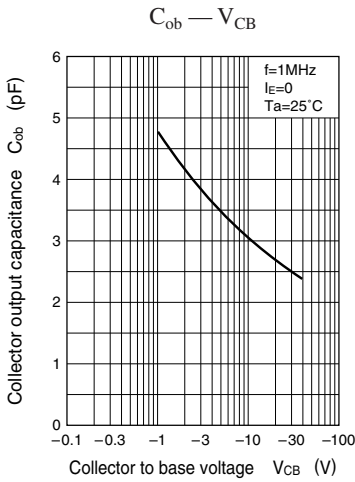
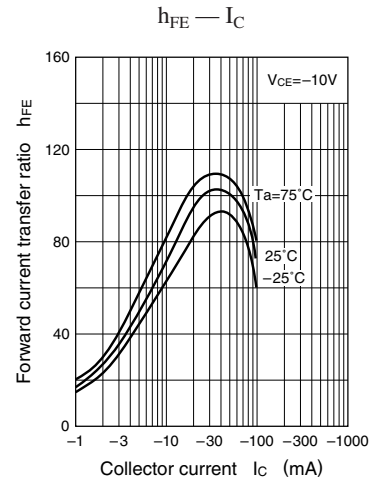
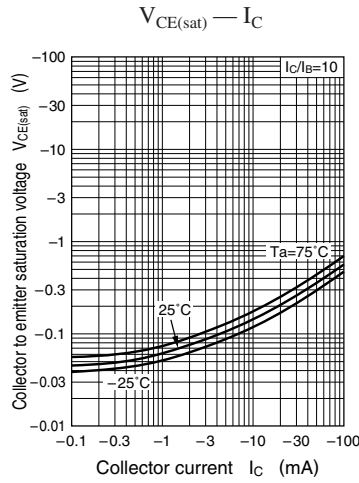
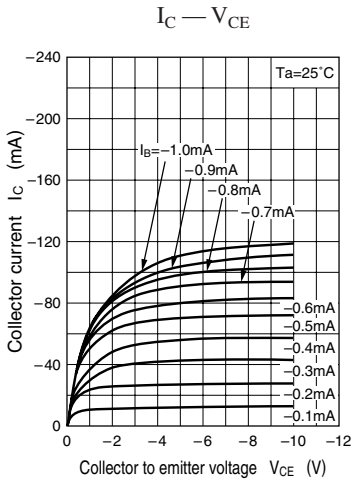
Common characteristics chart



Characteristics charts of Tr1



Characteristics charts of Tr2



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