

# XN121E

## Silicon NPN epitaxial planer transistor

For switching/digital circuits

### Features

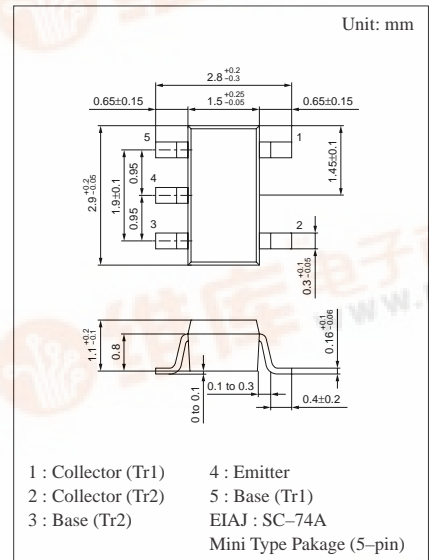
- Two elements incorporated into one package.  
(Emitter-coupled transistors with built-in resistor)
- Reduction of the mounting area and assembly cost by one half.

### Basic Part Number of Element

- UN121E × 2 elements

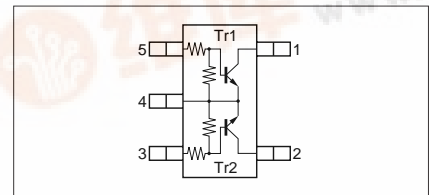
### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Rating of element	Collector to base voltage	V <sub>CBO</sub>	50 V
	Collector to emitter voltage	V <sub>CEO</sub>	50 V
	Collector current	I <sub>C</sub>	100 mA
Overall	Total power dissipation	P <sub>T</sub>	300 mW
	Junction temperature	T <sub>j</sub>	150 °C
	Storage temperature	T <sub>sig</sub>	-55 to +150 °C



Marking Symbol: AQ

Internal Connection



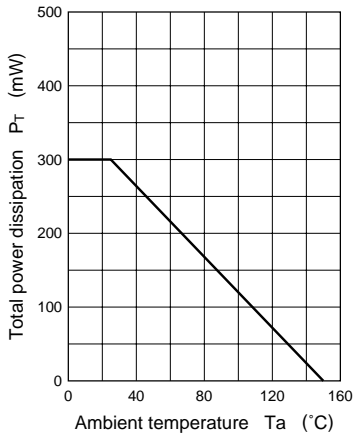
### Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V <sub>CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> = 0	50			V
Collector to emitter voltage	V <sub>CEO</sub>	I <sub>C</sub> = 2mA, I <sub>B</sub> = 0	50			V
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0			0.1	μA
	I <sub>CEO</sub>	V <sub>CE</sub> = 50V, I <sub>B</sub> = 0			0.5	μA
Emitter cutoff current	I <sub>EBO</sub>	V <sub>EB</sub> = 6V, I <sub>C</sub> = 0			0.2	mA
Forward current transfer ratio	h <sub>FE</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	60			
Forward current transfer h <sub>FE</sub> ratio	h <sub>FE</sub> (small/large)*1	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	0.5	0.99		
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0.3mA			0.25	V
Output voltage high level	V <sub>OH</sub>	V <sub>CC</sub> = 5V, V <sub>B</sub> = 0.5V, R <sub>L</sub> = 1kΩ	4.9			V
Output voltage low level	V <sub>OL</sub>	V <sub>CC</sub> = 5V, V <sub>B</sub> = 6V, R <sub>L</sub> = 1kΩ			0.2	V
Input resistance	R <sub>1</sub>		-30%	47	+30%	kΩ
Resistance ratio	R <sub>1</sub> /R <sub>2</sub>			2.14		
Transition frequency	f <sub>T</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = -2mA, f = 200MHz		150		MHz

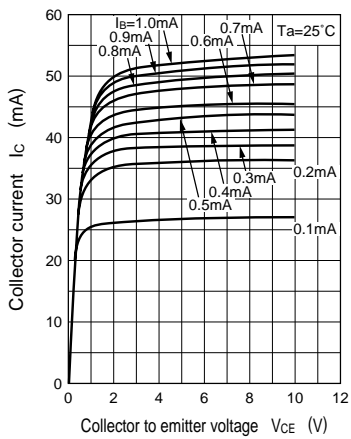
Ratio between 2 elements



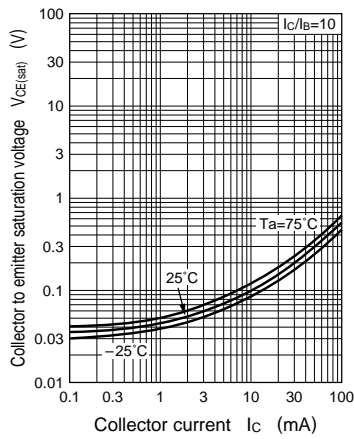
$P_T - T_a$



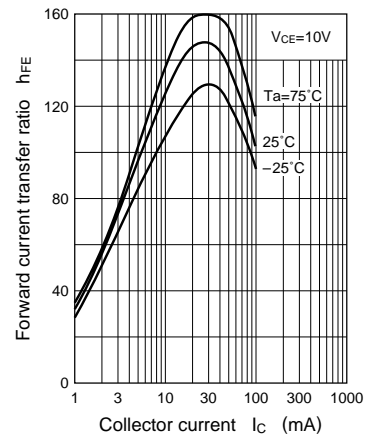
$I_C - V_{CE}$



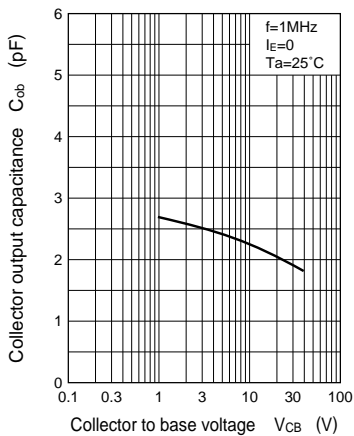
$V_{CE(sat)} - I_C$



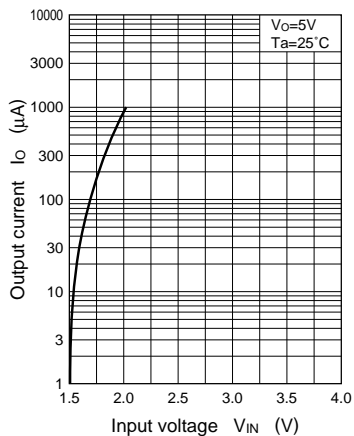
$h_{FE} - I_C$



$C_{ob} - V_{CB}$



$I_O - V_{IN}$



$V_{IN} - I_O$

