

# UN6211/6212/6213/6214/6215/6216/6217/6218/ 6219/6210/621D/621E/621F/621K/621L

Silicon NPN epitaxial planer transistor

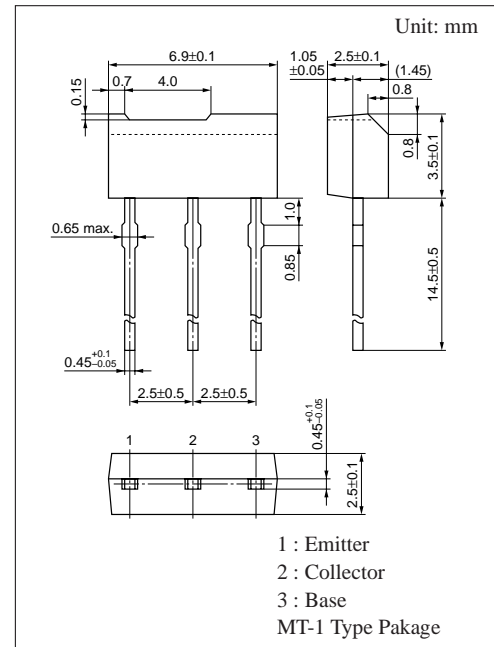
For digital circuits

## Features

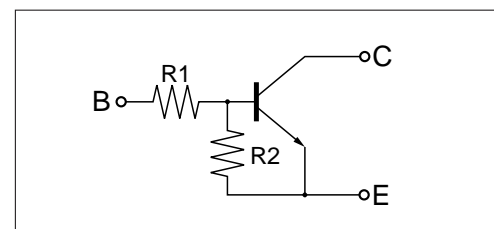
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- MT-1 type package, allowing supply with the radial taping.

## Resistance by Part Number

	(R <sub>1</sub> )	(R <sub>2</sub> )
• UN6211	10kΩ	10kΩ
• UN6212	22kΩ	22kΩ
• UN6213	47kΩ	47kΩ
• UN6214	10kΩ	47kΩ
• UN6215	10kΩ	—
• UN6216	4.7kΩ	—
• UN6217	22kΩ	—
• UN6218	0.51kΩ	5.1kΩ
• UN6219	1kΩ	10kΩ
• UN6210	47kΩ	—
• UN621D	47kΩ	10kΩ
• UN621E	47kΩ	22kΩ
• UN621F	4.7kΩ	10kΩ
• UN621K	10kΩ	4.7kΩ
• UN621L	4.7kΩ	4.7kΩ



Internal Connection



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

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V <sub>CB0</sub>	50	V
Collector to emitter voltage	V <sub>CEO</sub>	50	V
Collector current	I <sub>C</sub>	100	mA
Total power dissipation	P <sub>T</sub>	400	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

■ Electrical Characteristics (Ta=25°C)

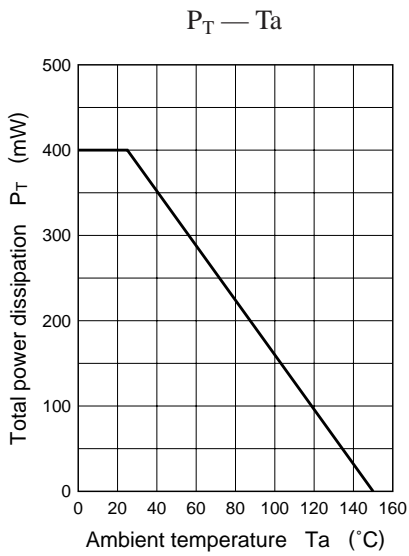
Parameter		Symbol	Conditions	min	typ	max	Unit	
Collector cutoff current		I <sub>CBO</sub>	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0			0.1	μA	
		I <sub>CEO</sub>	V <sub>CE</sub> = 50V, I <sub>B</sub> = 0			0.5	μA	
Emitter cutoff current	UN6211	I <sub>EBO</sub>	V <sub>EB</sub> = 6V, I <sub>C</sub> = 0			0.5	mA	
	UN6212/6214/621E/621D					0.2		
	UN6213					0.1		
	UN6215/6216/6217/6210					0.01		
	UN621F/621K					1.0		
	UN6219					1.5		
	UN6218/621L					2.0		
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	
Forward current transfer ratio	UN6211	h <sub>FE</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	35			V	
	UN6212/621E			60				
	UN6213/6214			80				
	UN6215*/6216*/6217*/6210*			160		460		
	UN621F/621D/6219			30				
	UN6218/621K/621L			20				
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> = 2.5V, R <sub>L</sub> = 1kΩ			0.2	V	
			UN6213/621K	V <sub>OC</sub> = 5V, V <sub>B</sub> = 3.5V, R <sub>1</sub> = 1kΩ				0.2
			UN621D	V <sub>CC</sub> = 5V, V <sub>B</sub> = 10V, R <sub>1</sub> = 1kΩ				0.2
			UN621E	V <sub>CC</sub> = 5V, V <sub>B</sub> = 6V, R <sub>L</sub> = 1kΩ				0.2
Transition frequency		f <sub>T</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = -2mA, f = 200MHz		150		MHz	
Input resistance	UN6211/6214/6215/621K	R <sub>1</sub>		(-30%)		10	(+30%)	kΩ
	UN6212/6217					22		
	UN6213/621D/621E/6210					47		
	UN6216/621F/621L					4.7		
	UN6218					0.51		
	UN6219					1		
Resistance ratio	UN6211/6212/6213/621L	R <sub>1</sub> /R <sub>2</sub>				0.8	1.0	1.2
	UN6214					0.17	0.21	0.25
	UN6218/6219					0.08	0.1	0.12
	UN621D					3.7	4.7	5.7
	UN621E					1.7	2.14	2.6
	UN621F					0.37	0.47	0.57
	UN621K					1.7	2.13	2.6

\* h<sub>FE</sub> rank classification (UN6215/6216/6217/6210)

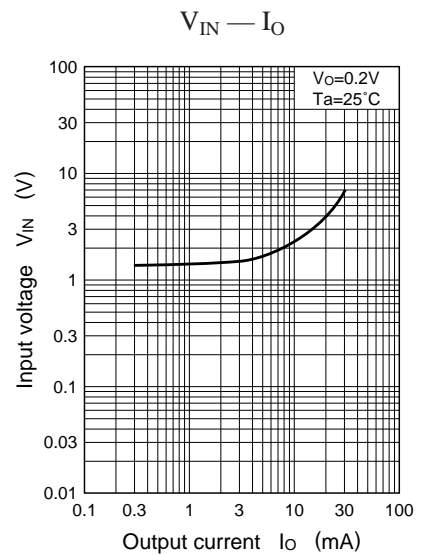
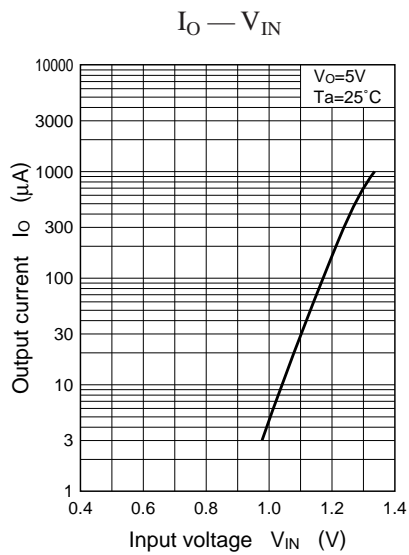
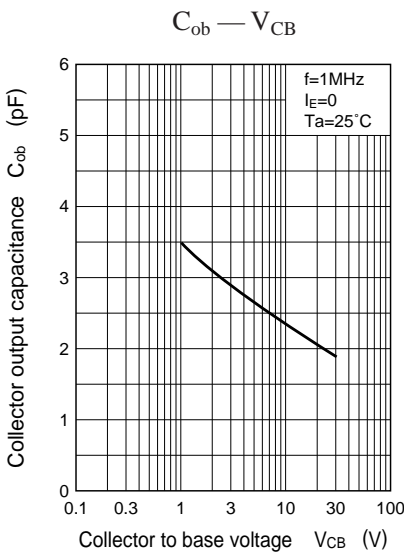
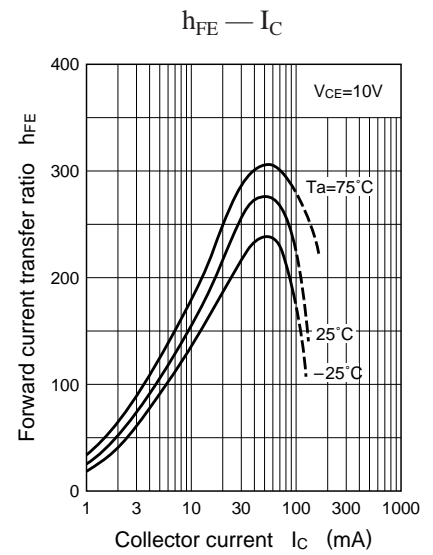
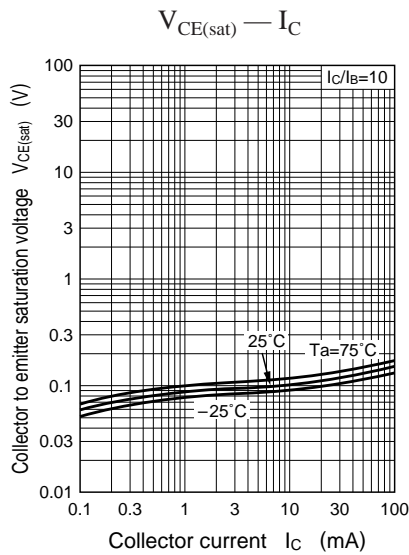
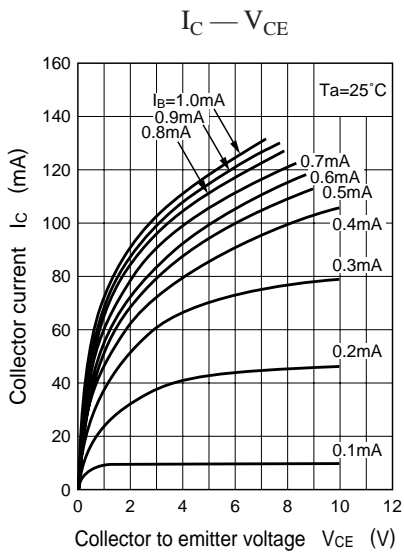
Rank	Q	R	S
h <sub>FE</sub>	160 to 260	210 to 340	290 to 460

Transistors with built-in Resistor

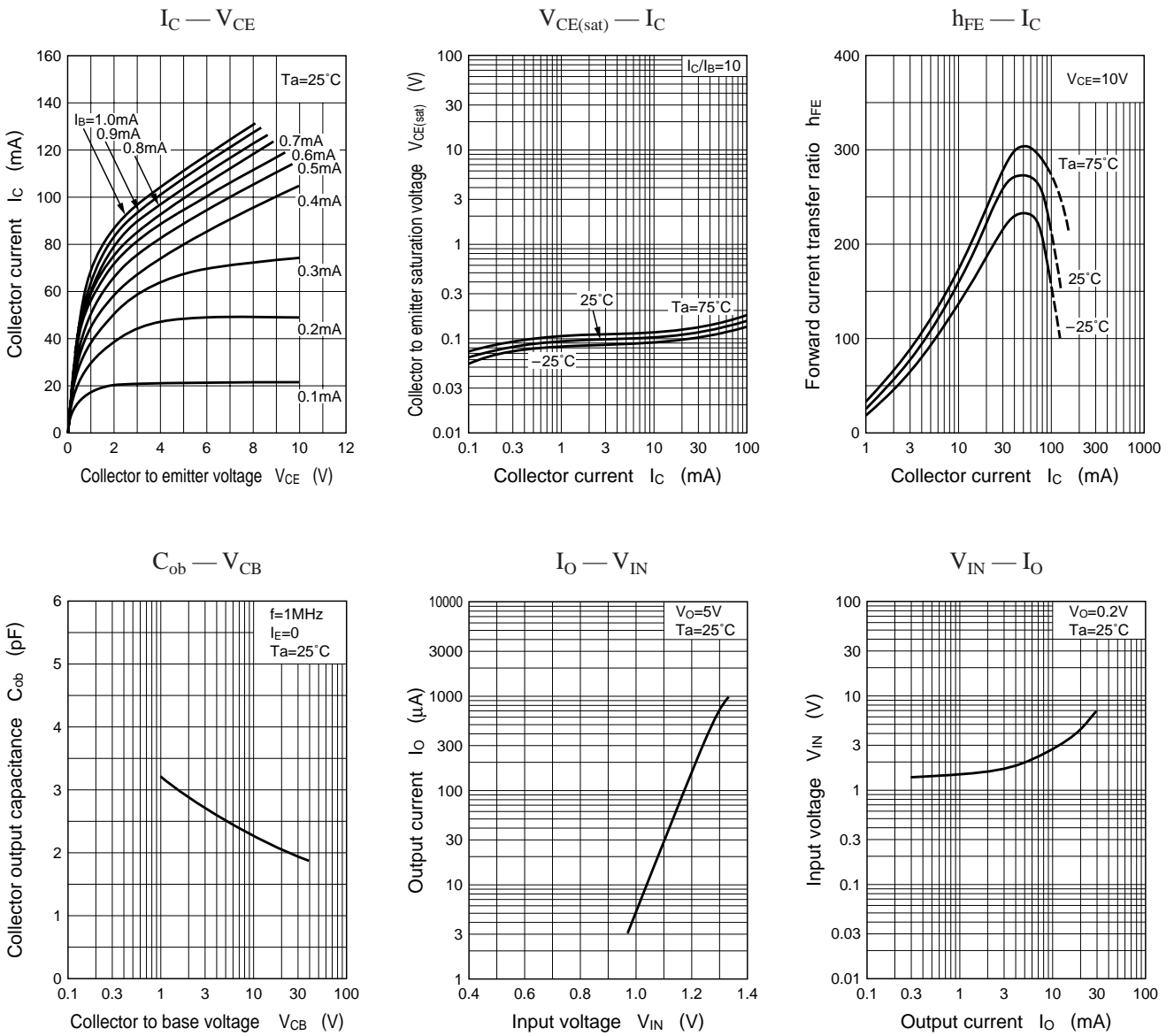
Common characteristics chart



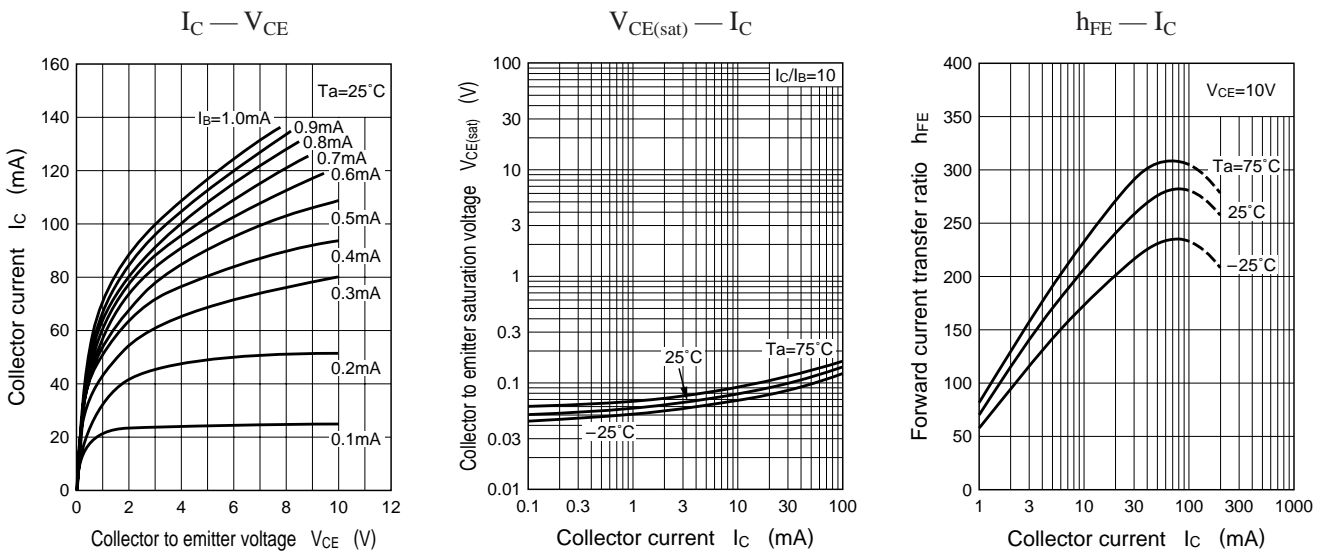
Characteristics charts of UN6211



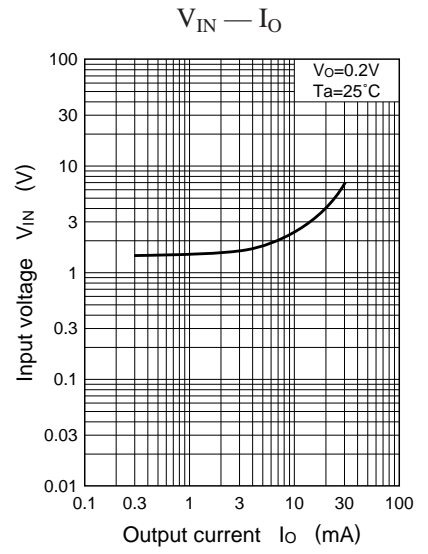
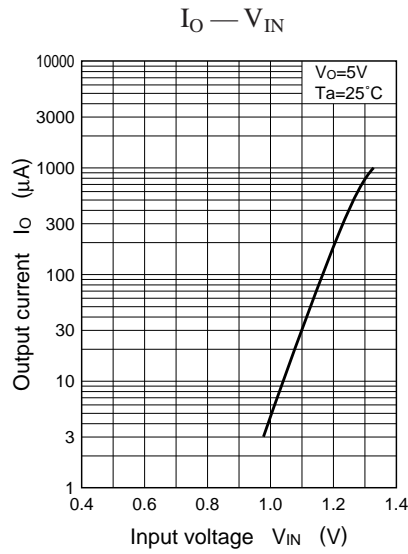
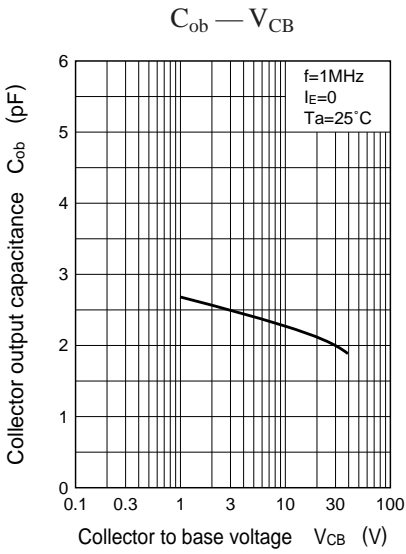
Characteristics charts of UN6212



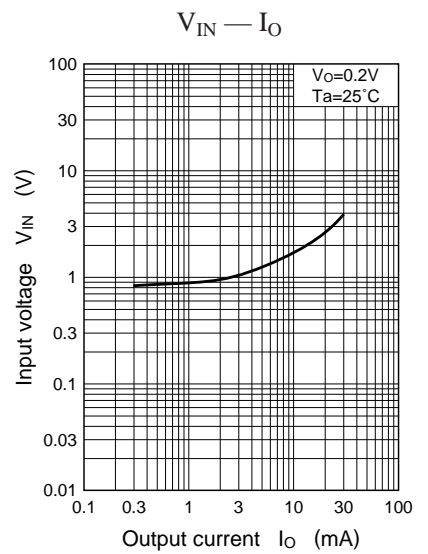
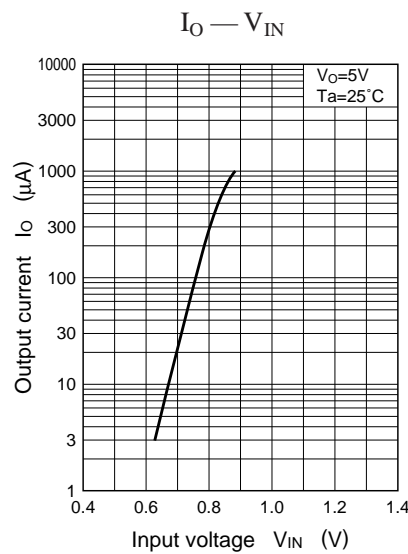
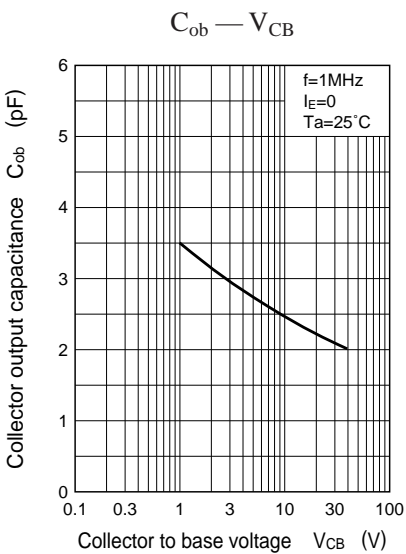
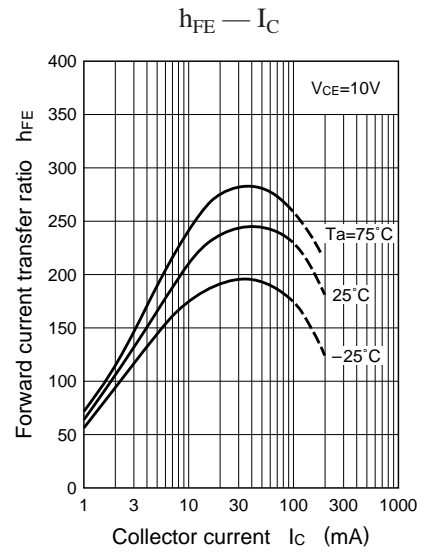
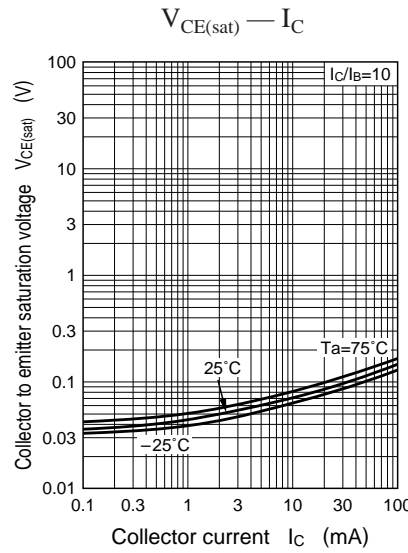
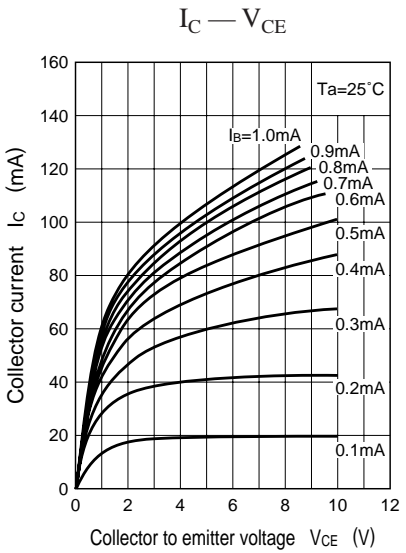
Characteristics charts of UN6213



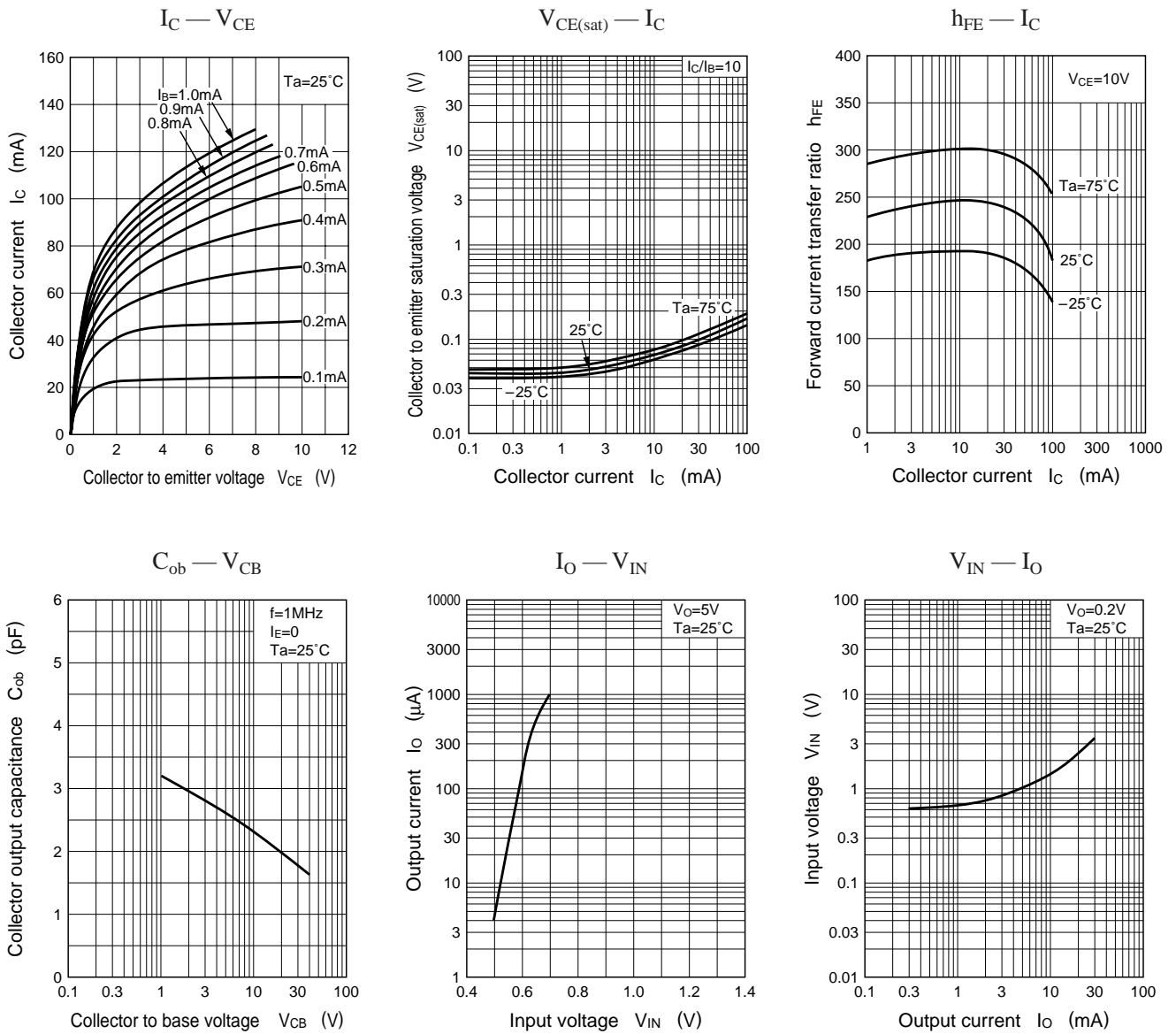
Transistors with built-in Resistor



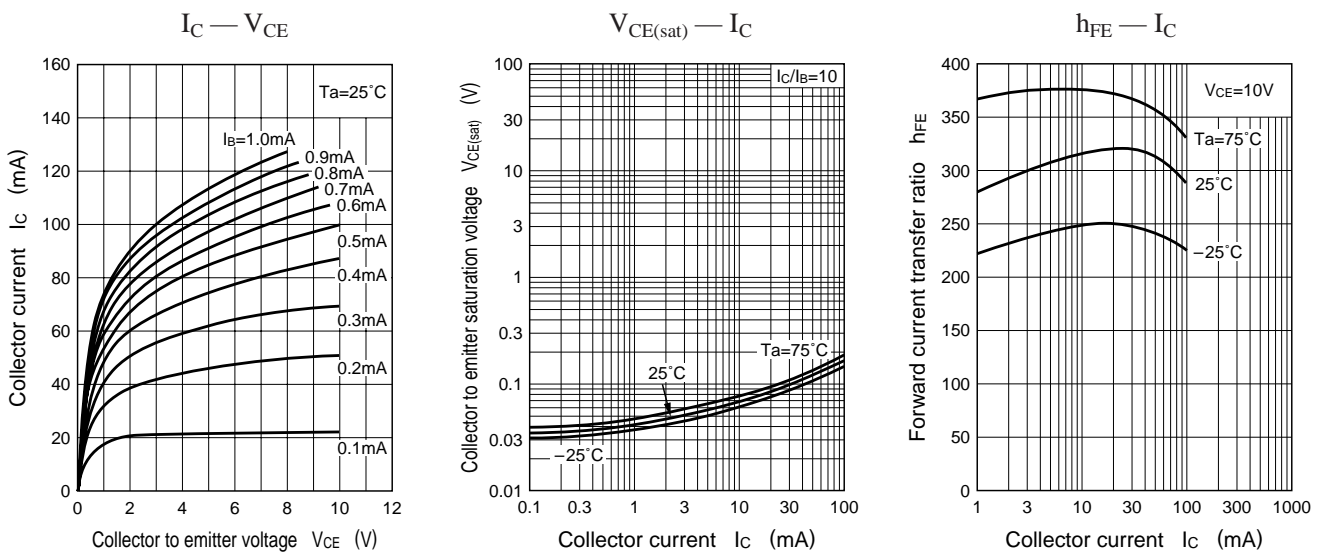
Characteristics charts of UN6214

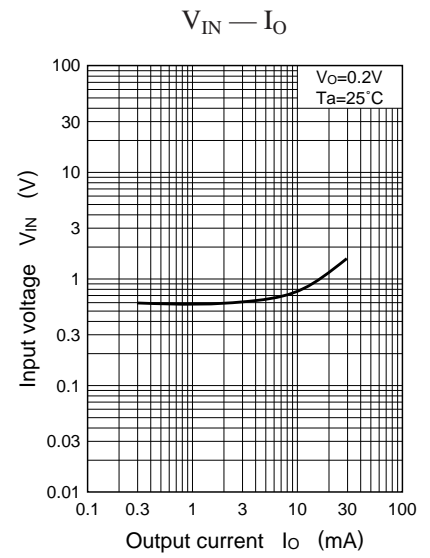
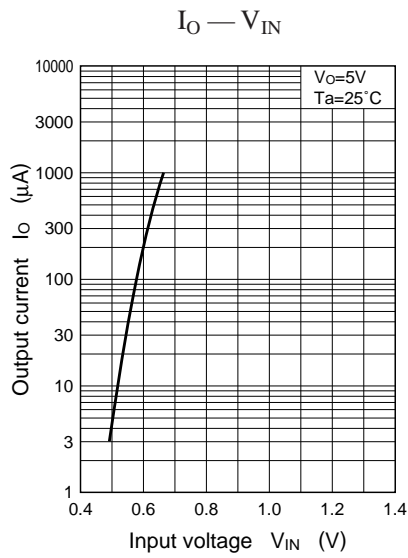
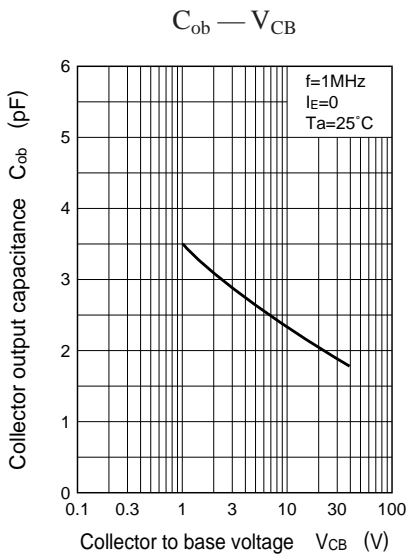


Characteristics charts of UN6215

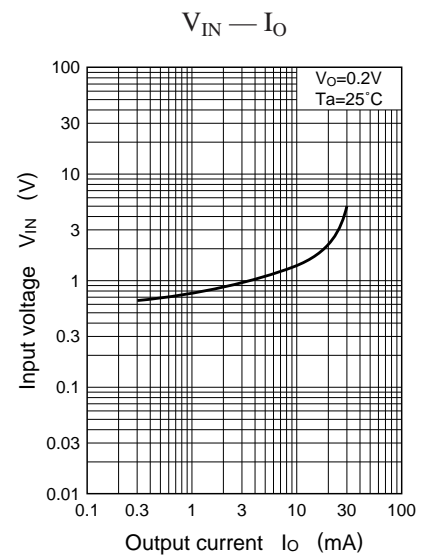
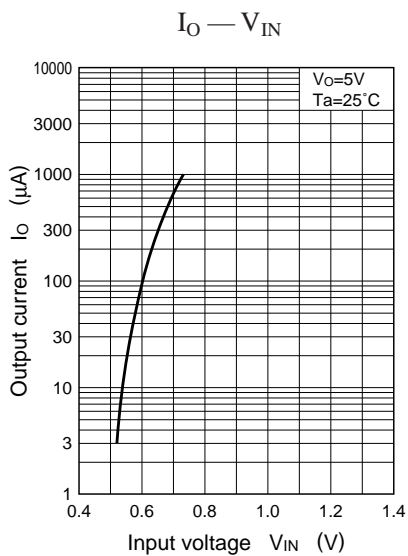
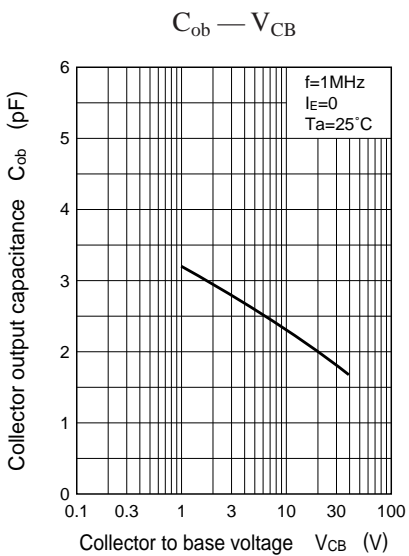
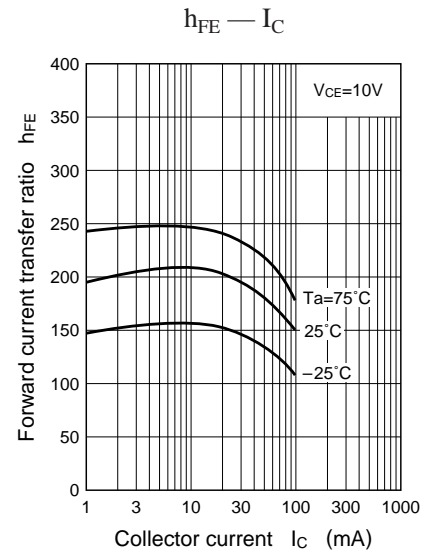
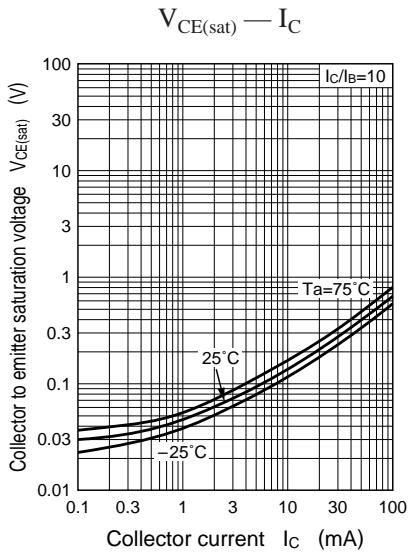
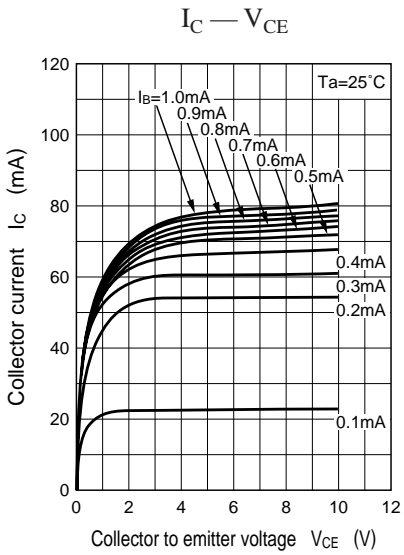


Characteristics charts of UN6216

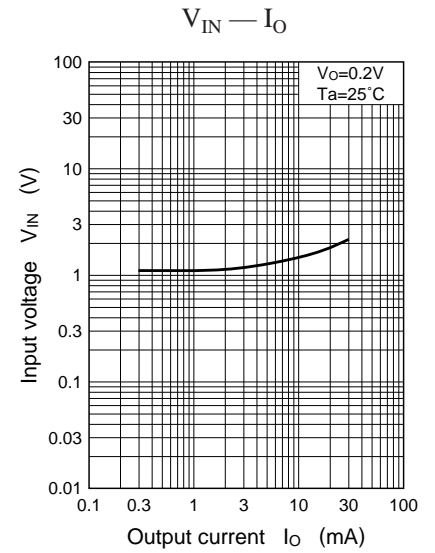
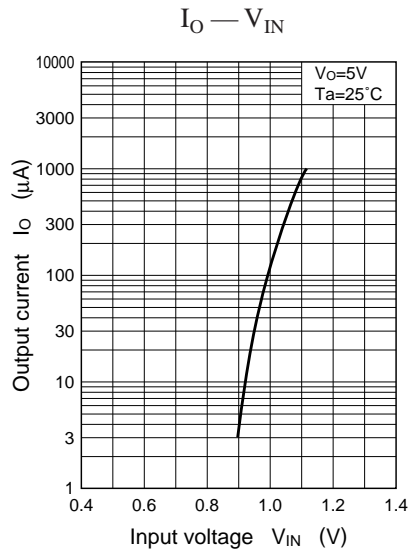
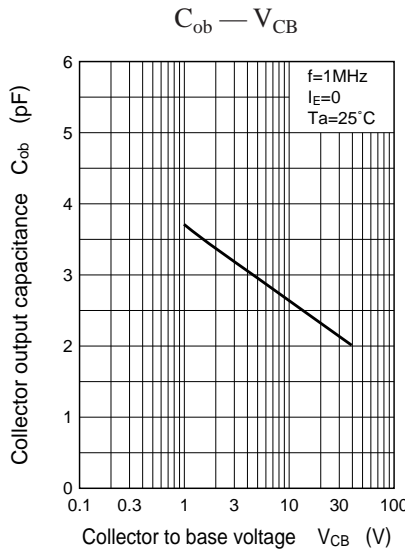
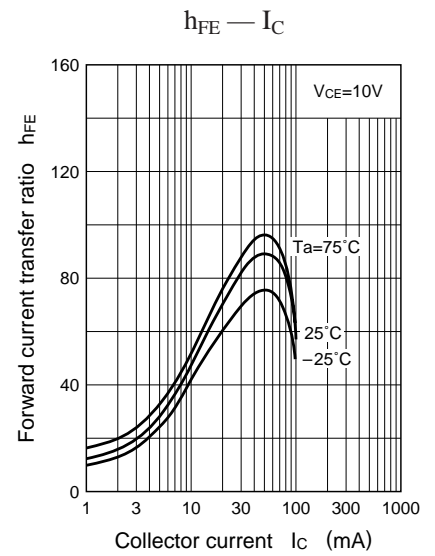
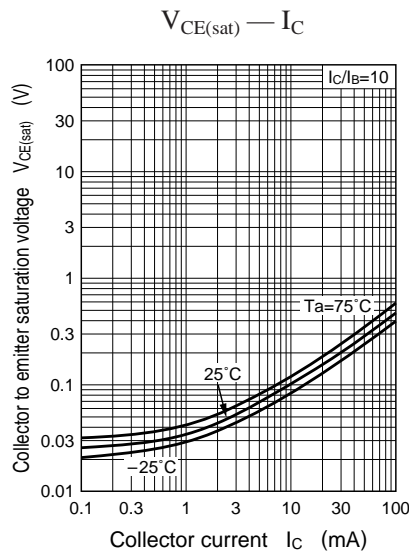
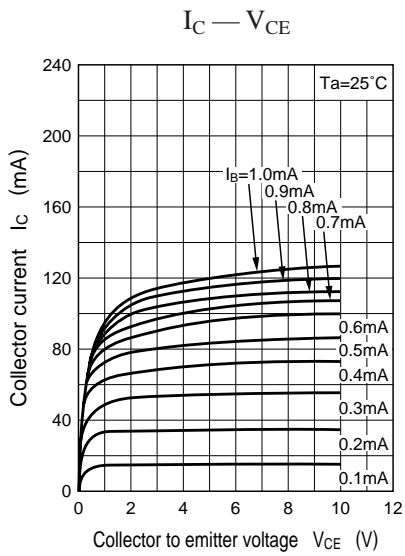




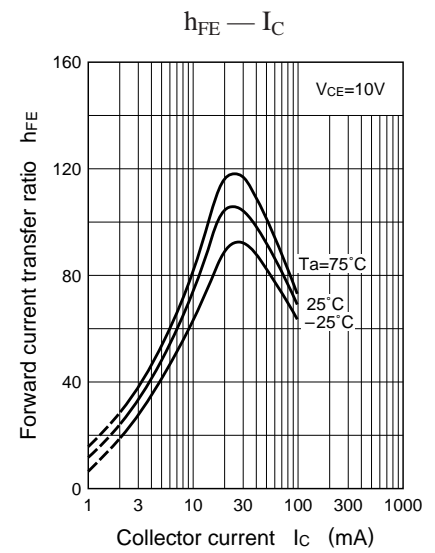
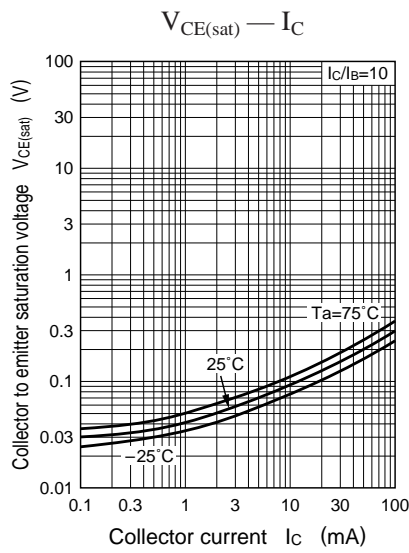
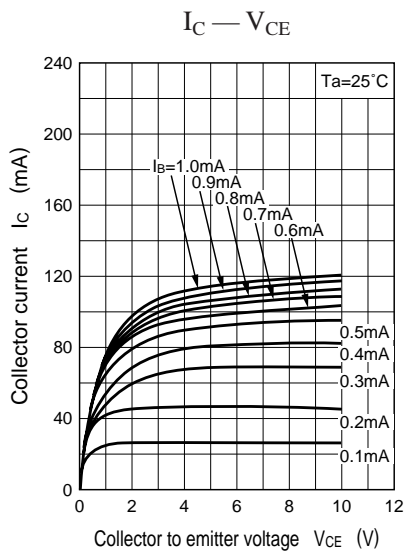
Characteristics charts of UN6217



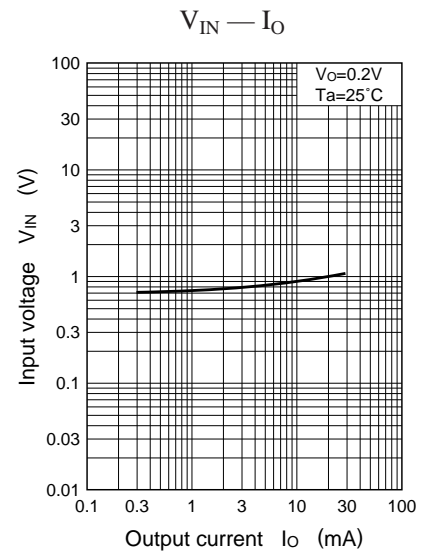
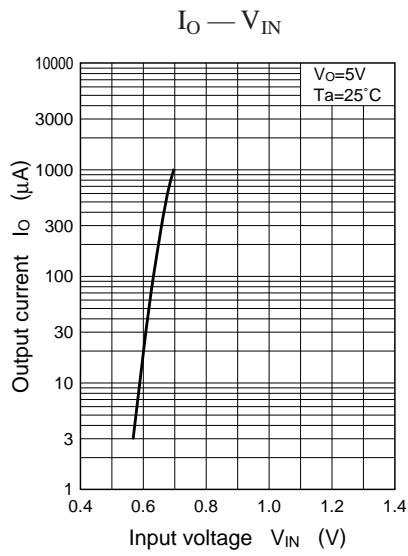
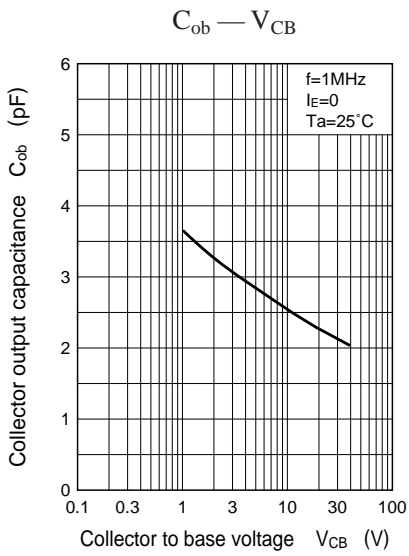
Characteristics charts of UN6218



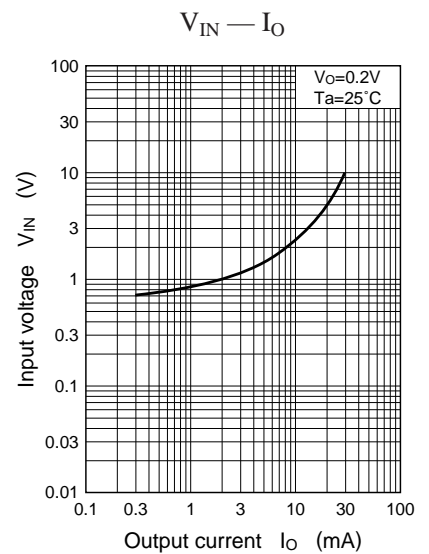
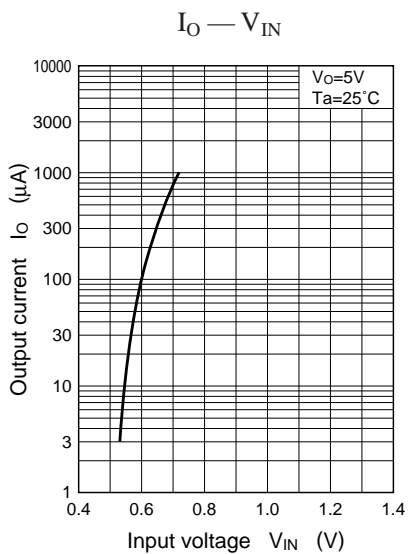
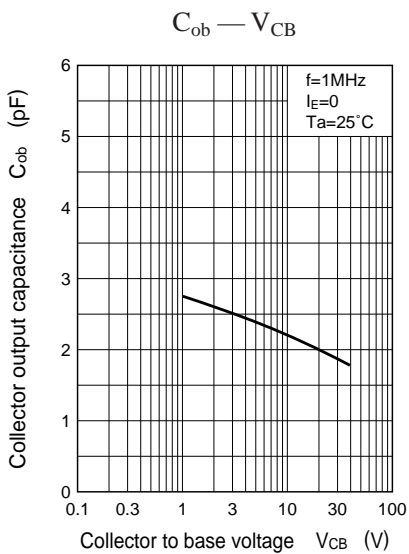
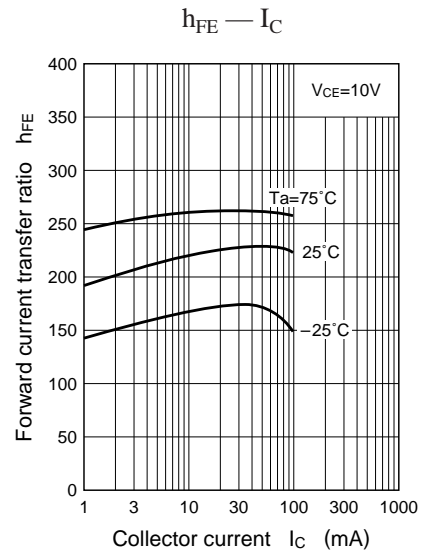
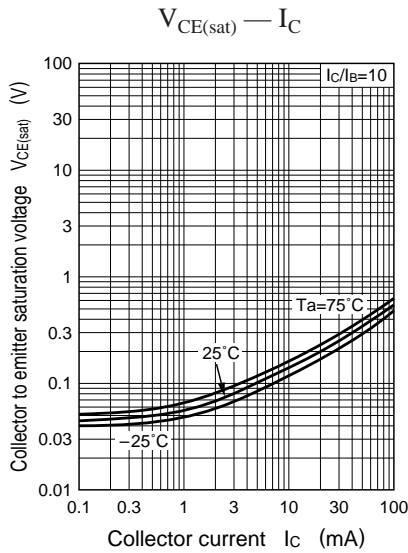
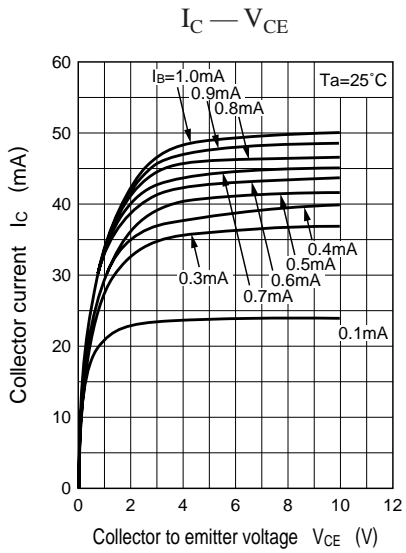
Characteristics charts of UN6219



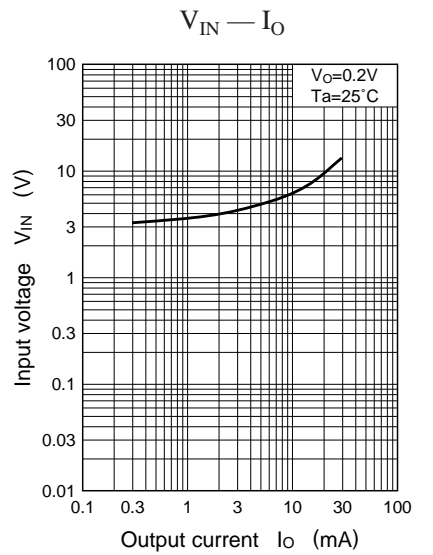
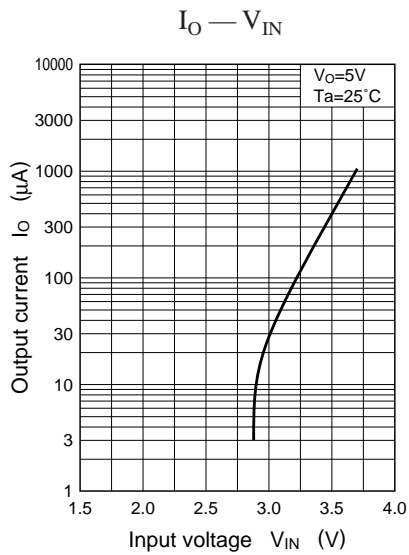
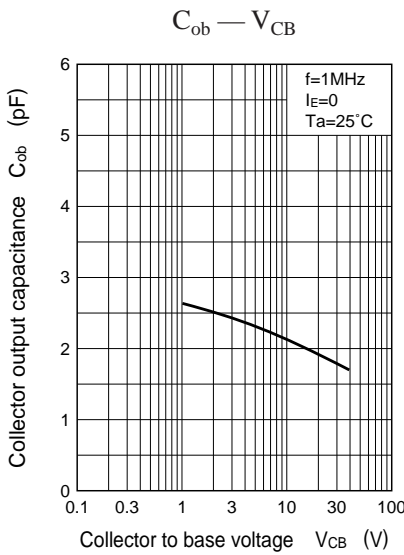
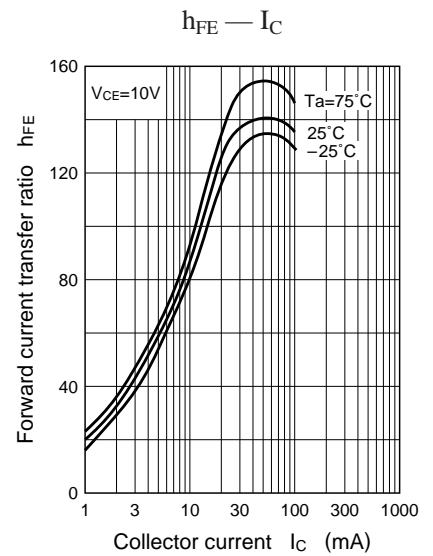
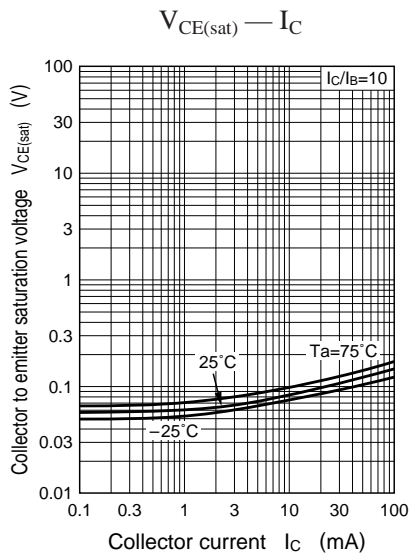
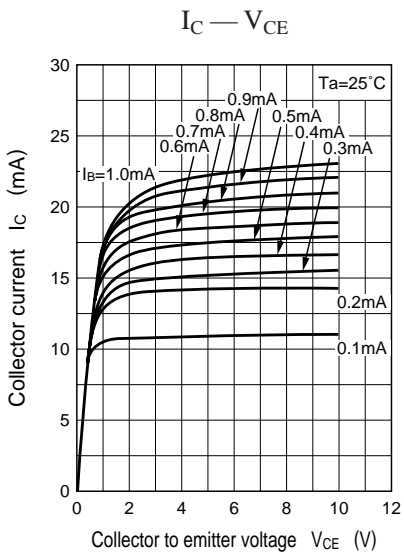




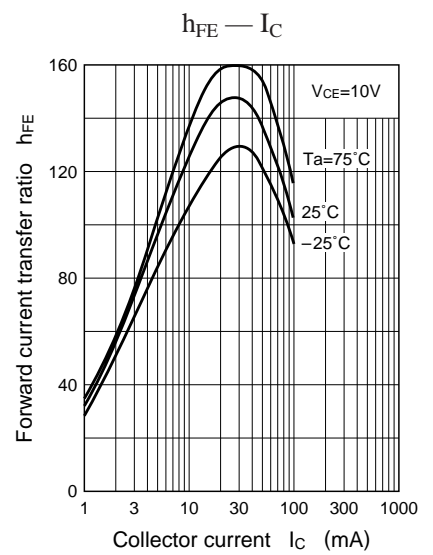
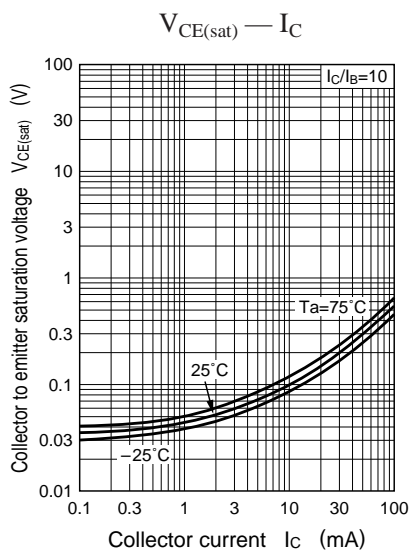
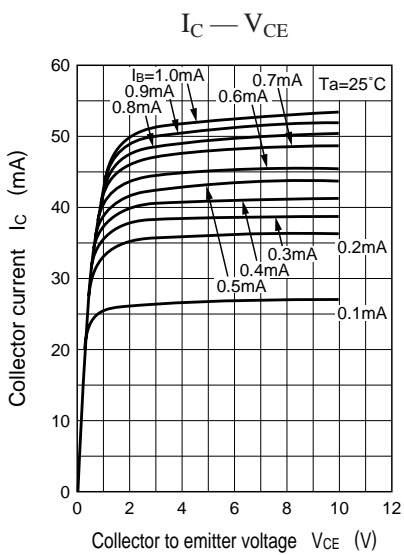
Characteristics charts of UN6210



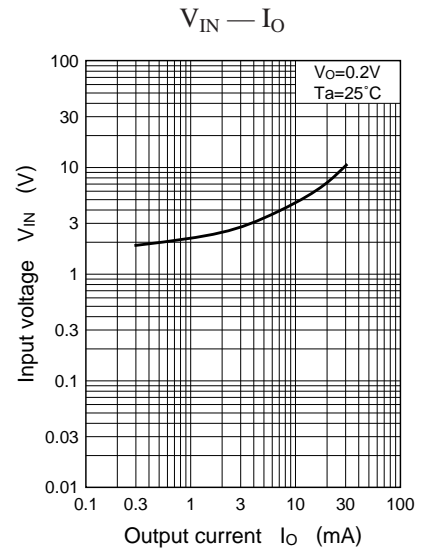
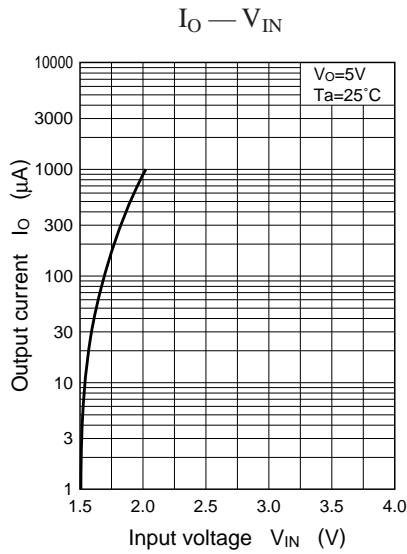
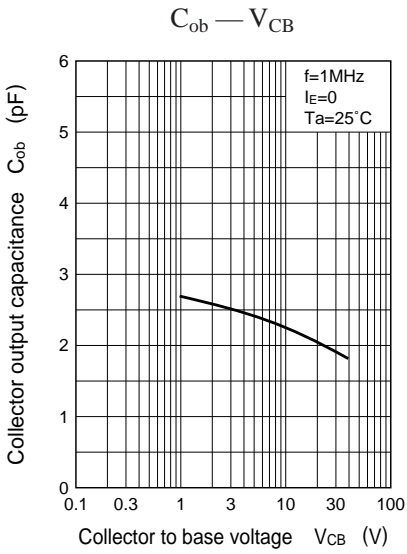
Characteristics charts of UN621D



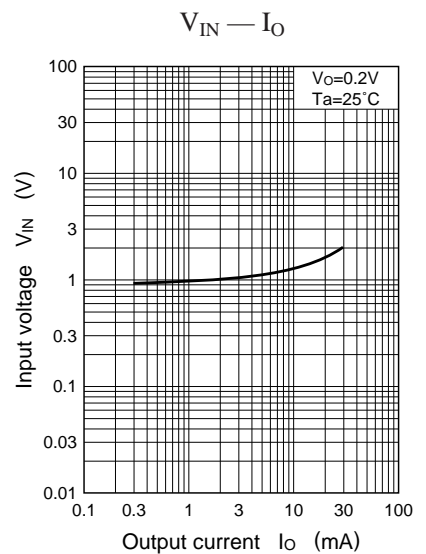
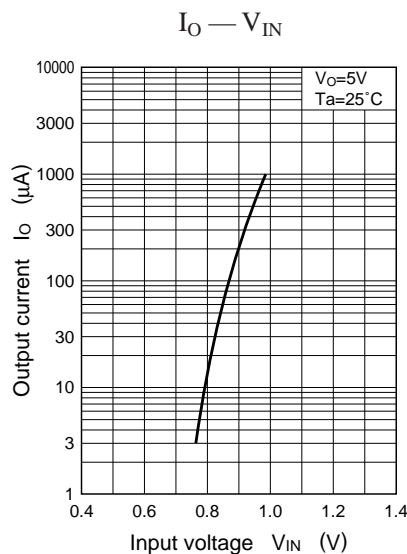
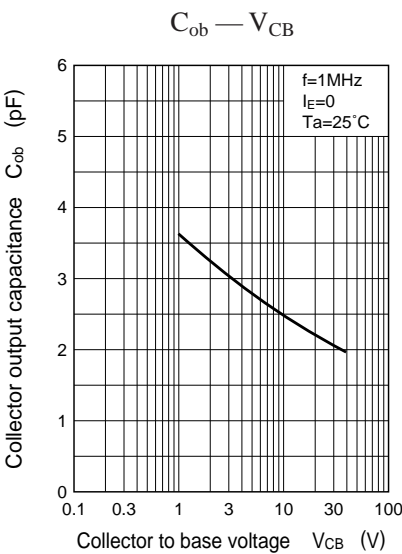
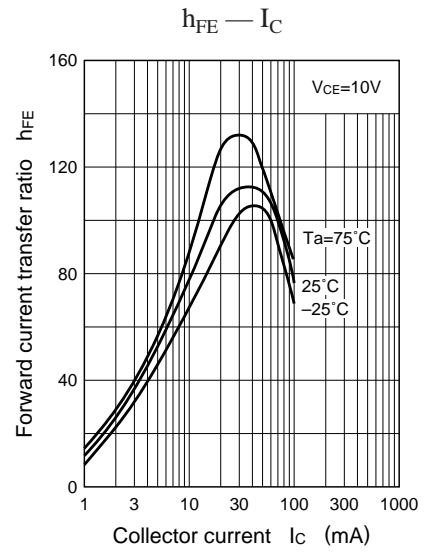
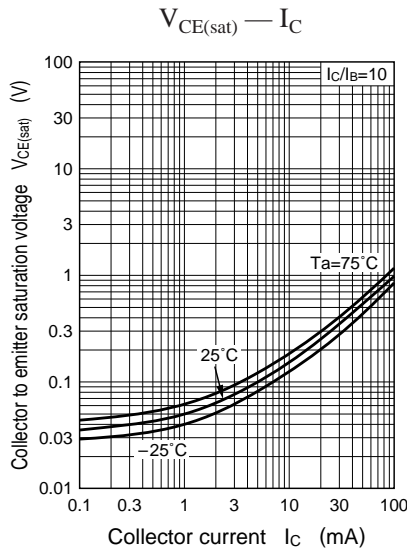
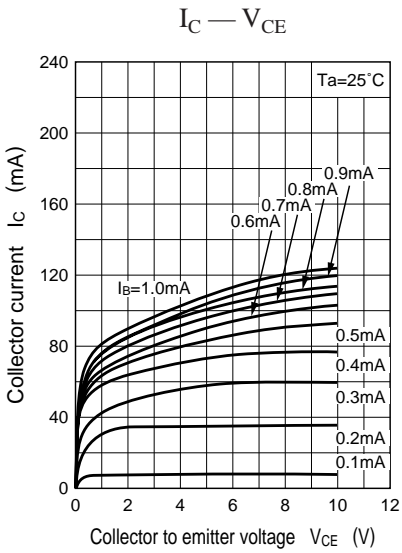
Characteristics charts of UN621E



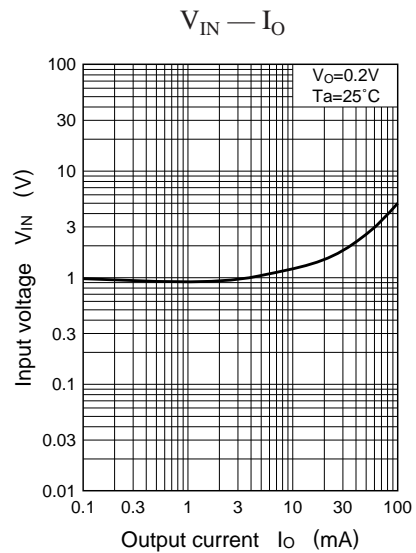
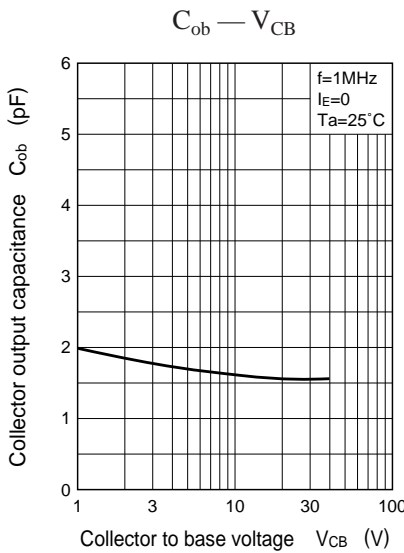
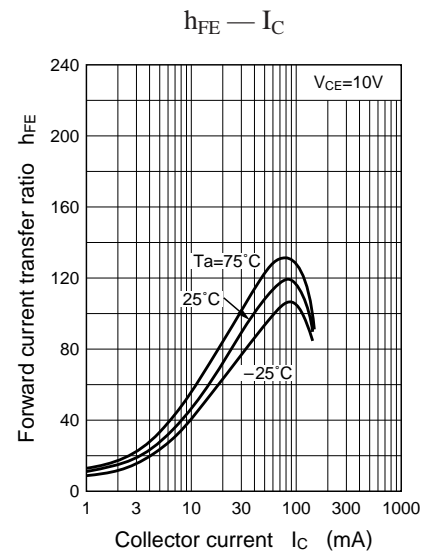
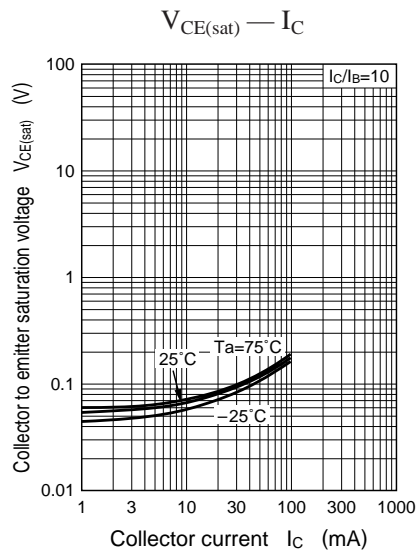
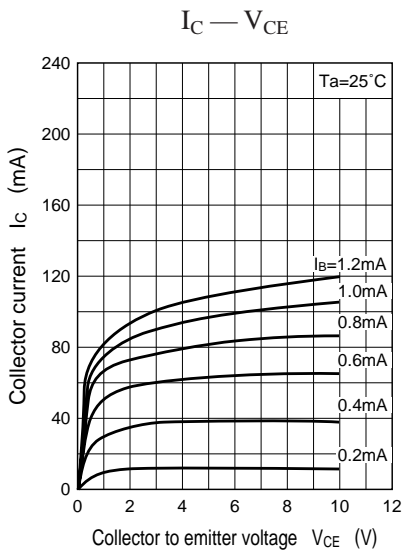
Transistors with built-in Resistor



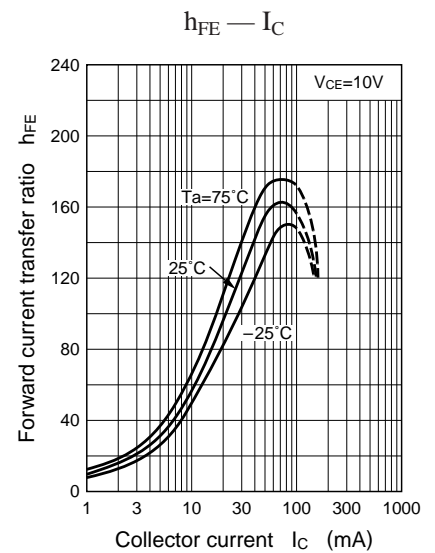
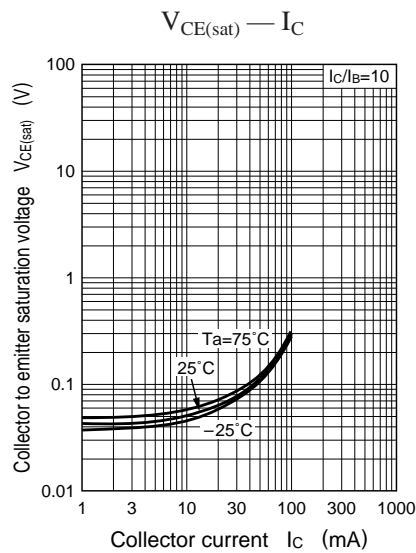
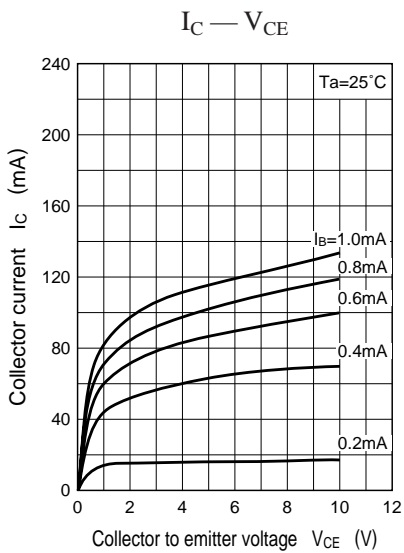
Characteristics charts of UN621F



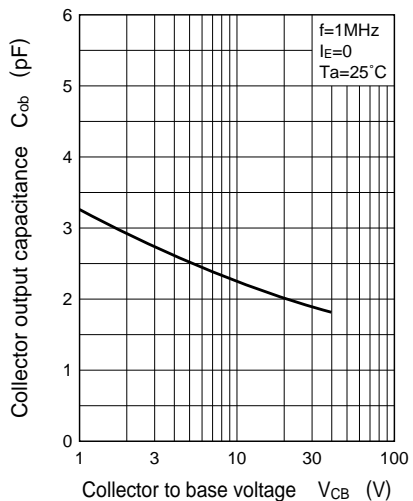
Characteristics charts of UN621K



Characteristics charts of UN621L



$C_{ob} - V_{CB}$



$I_O - V_{IN}$

