

# UN4211/4212/4213/4214/4215/4216/4217/4218/ 4219/4210/421D/421E/421F/421K/421L

Silicon NPN epitaxial planer transistor

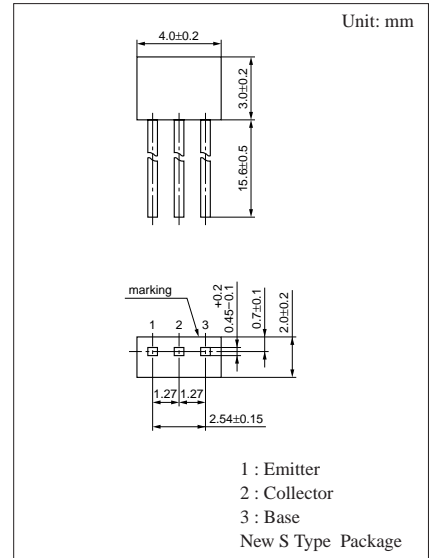
For digital circuits

## Features

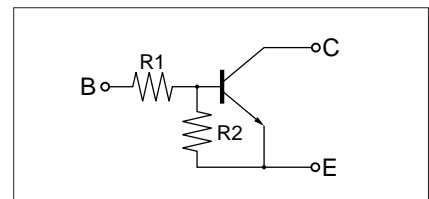
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- New S type package, allowing supply with the radial taping.

## Resistance by Part Number

	(R <sub>1</sub> )	(R <sub>2</sub> )
• UN4211	10kΩ	10kΩ
• UN4212	22kΩ	22kΩ
• UN4213	47kΩ	47kΩ
• UN4214	10kΩ	47kΩ
• UN4215	10kΩ	—
• UN4216	4.7kΩ	—
• UN4217	22kΩ	—
• UN4218	0.51kΩ	5.1kΩ
• UN4219	1kΩ	10kΩ
• UN4210	47kΩ	—
• UN421D	47kΩ	10kΩ
• UN421E	47kΩ	22kΩ
• UN421F	4.7kΩ	10kΩ
• UN421K	10kΩ	4.7kΩ
• UN421L	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>CBO</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>	300	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

UN4211/4212/4213/4214/4215/4216/4217/  
Transistors with built-in Resistor 4218/4219/4210/421D/421E/421F/421K/421L

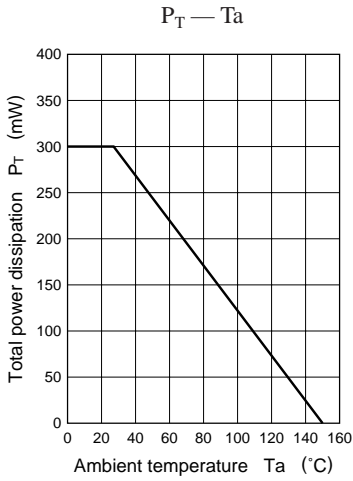
■ Electrical Characteristics (T<sub>a</sub>=25°C)

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	UN4211	I <sub>EBO</sub>	V <sub>EB</sub> = 6V, I <sub>C</sub> = 0			0.5	mA	
	UN4212/4214/421E/421D					0.2		
	UN4213					0.1		
	UN4215/4216/4217/4210					0.01		
	UN421F/421K					1.0		
	UN4219					1.5		
	UN4218/421L					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	UN4211	h <sub>FE</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	35				
	UN4212/421E			60				
	UN4213/4214			80				
	UN4215*/4216*/4217*/4210*			160		460		
	UN421F/421D/4219			30				
	UN4218/421K/421L			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	
			V <sub>CC</sub> = 5V, V <sub>B</sub> = 3.5V, R <sub>L</sub> = 1kΩ			0.2		
			V <sub>CC</sub> = 5V, V <sub>B</sub> = 10V, R <sub>L</sub> = 1kΩ			0.2		
			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	UN4211/4214/4215/421K	R <sub>i</sub>		(-30%)		10	(+30%)	kΩ
	UN4212/4217					22		
	UN4213/421D/421E/4210					47		
	UN4216/421F/421L					4.7		
	UN4218					0.51		
	UN4219					1		
Resistance ratio	UN4211/4212/4213/421L	R <sub>1</sub> /R <sub>2</sub>				0.8	1.0	1.2
	UN4214					0.17	0.21	0.25
	UN4218/4219					0.08	0.1	0.12
	UN421D					3.7	4.7	5.7
	UN421E					1.7	2.14	2.6
	UN421F					0.37	0.47	0.57
	UN421K					1.7	2.13	2.6

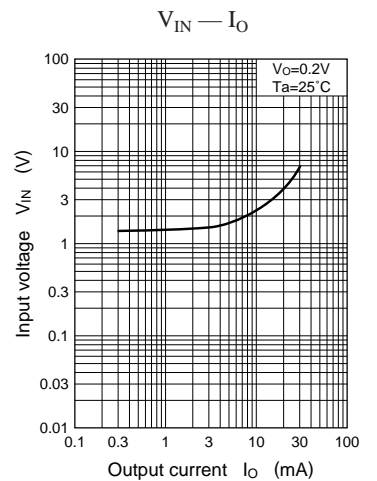
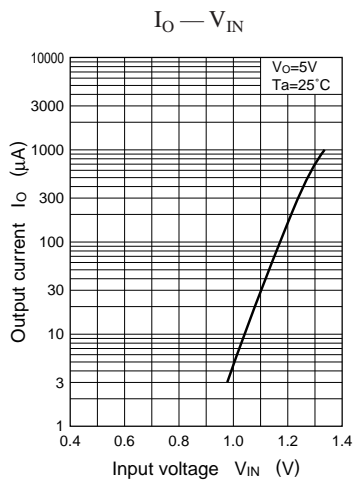
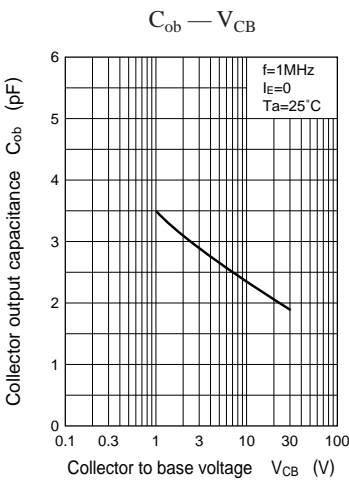
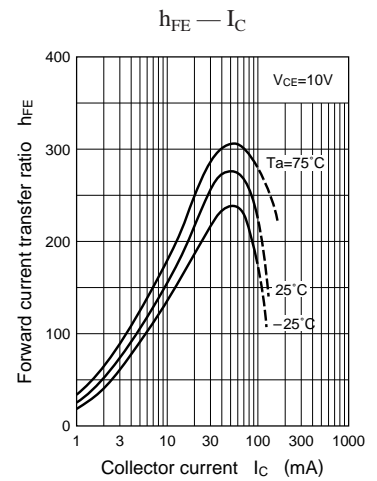
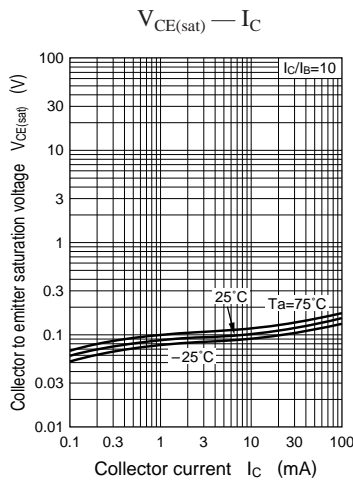
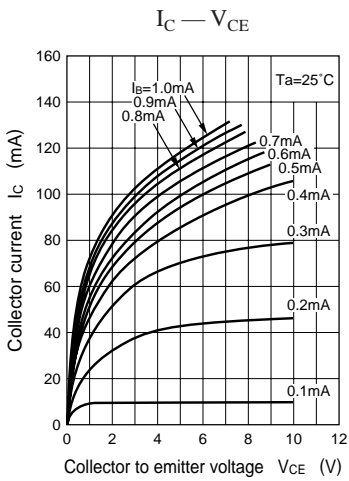
\* h<sub>FE</sub> rank classification (UN4215/4216/4217/4210)

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

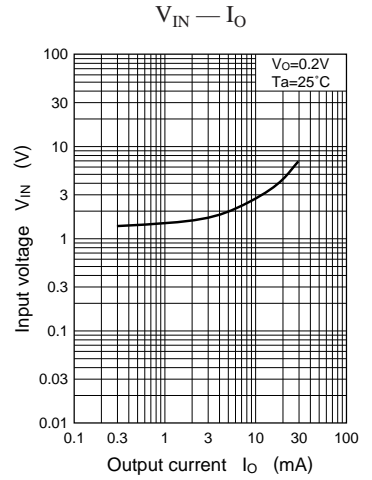
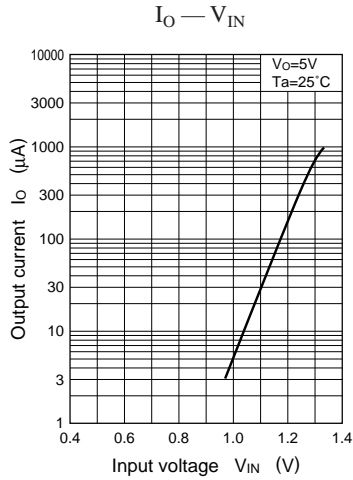
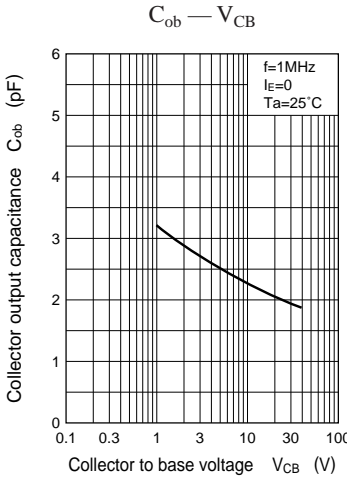
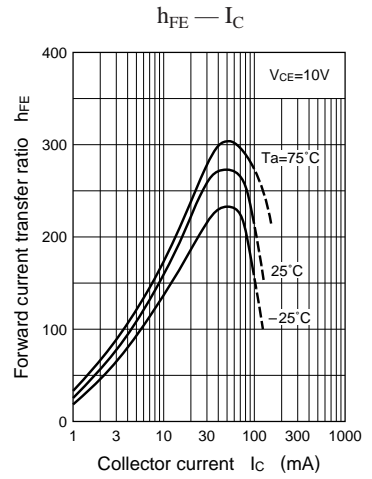
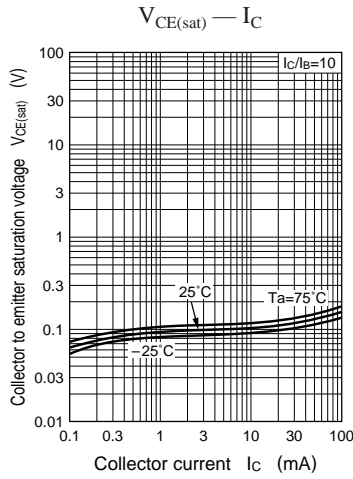
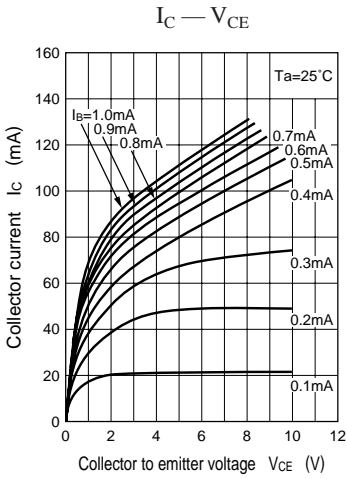
Common characteristics chart



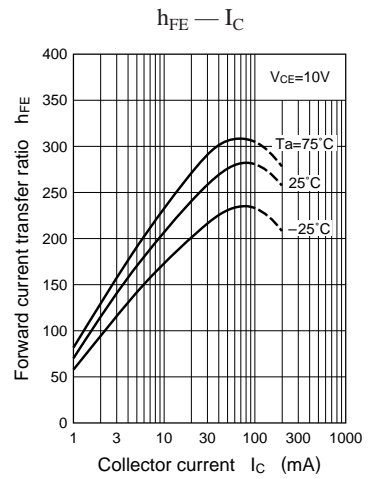
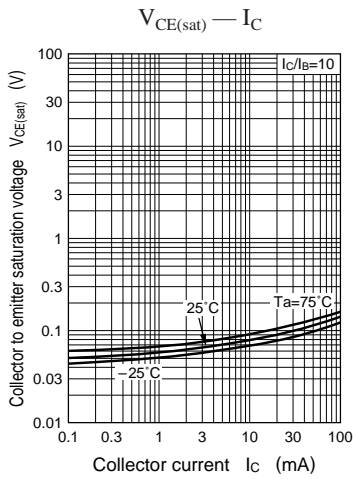
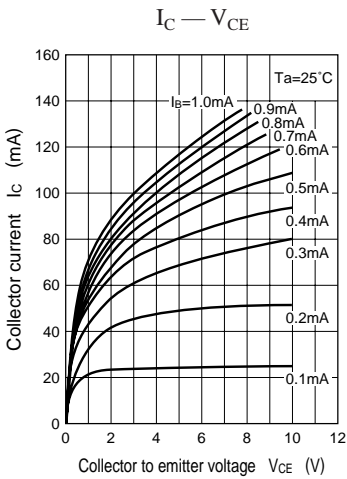
Characteristics charts of UN4211

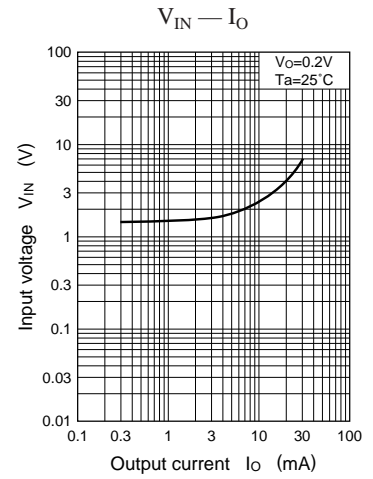
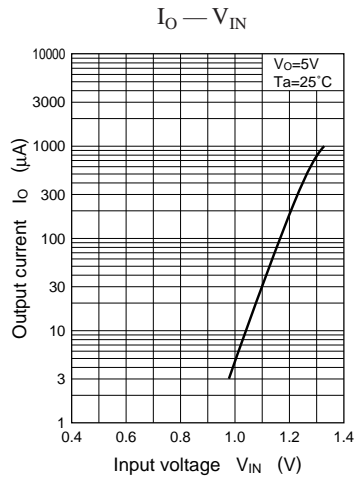
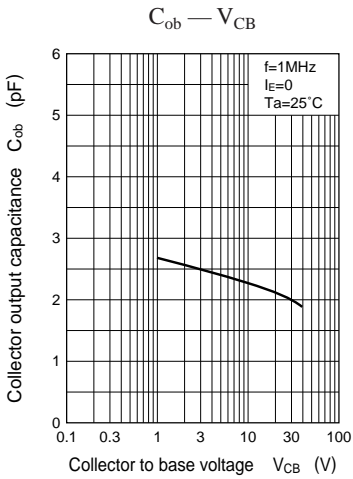


Characteristics charts of UN4212

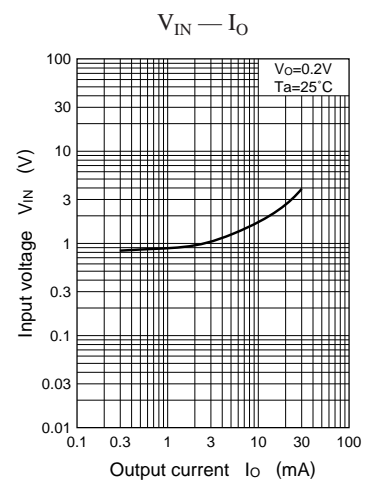
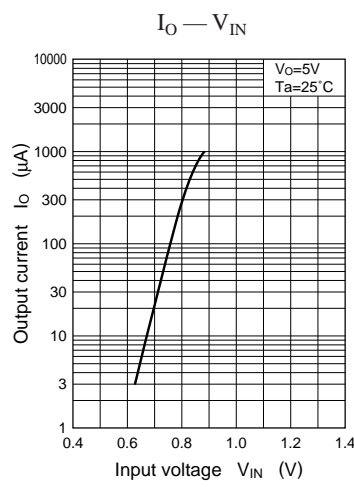
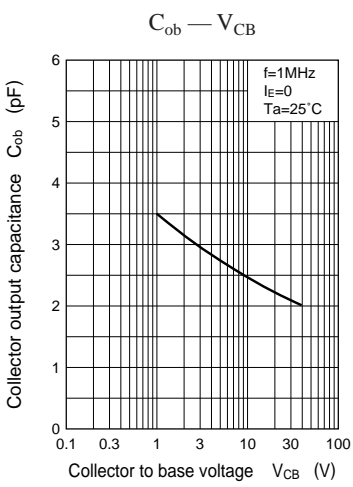
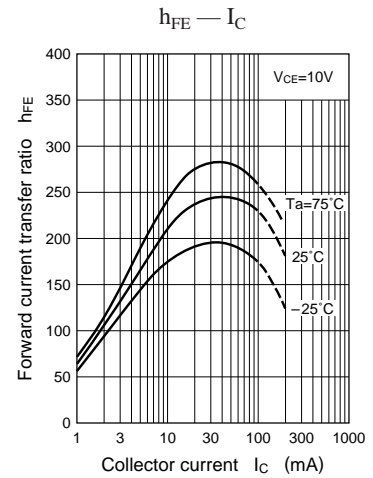
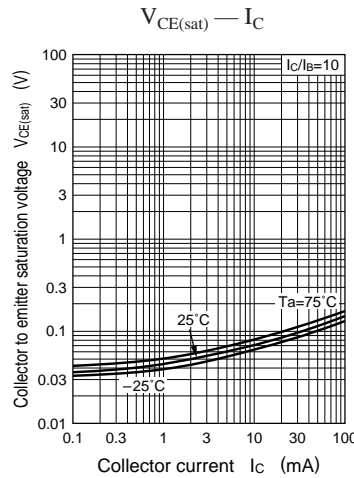
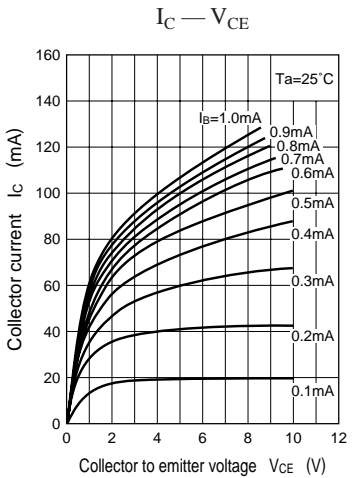


Characteristics charts of UN4213

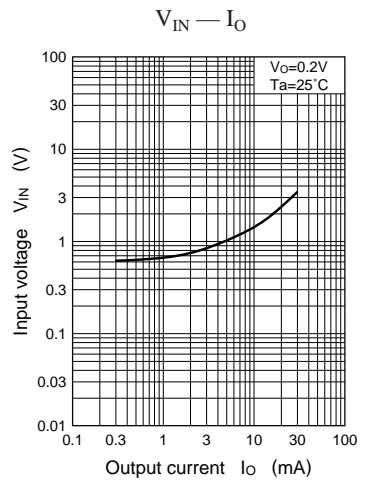
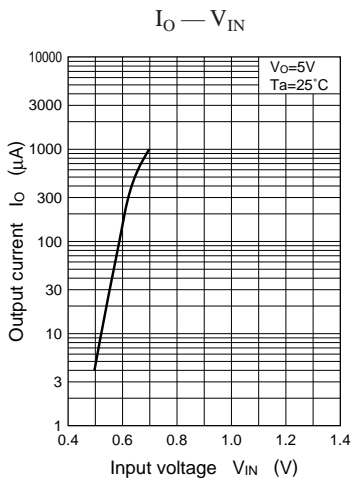
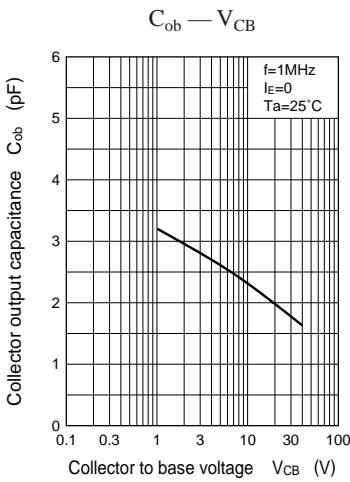
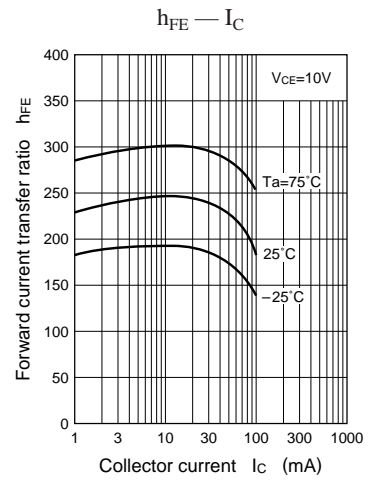
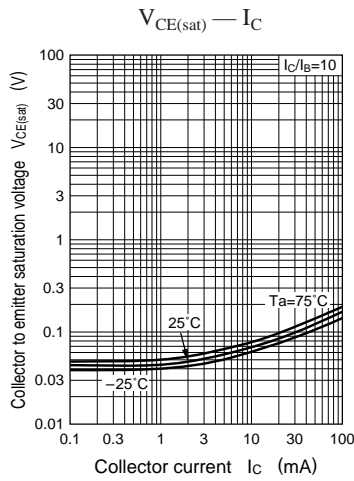
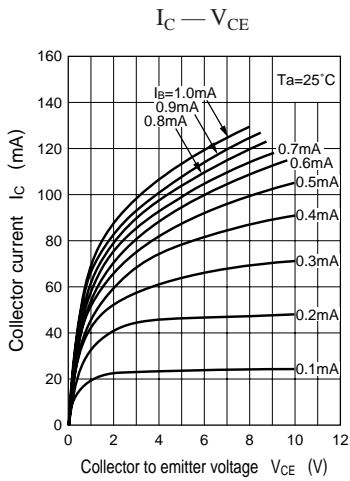




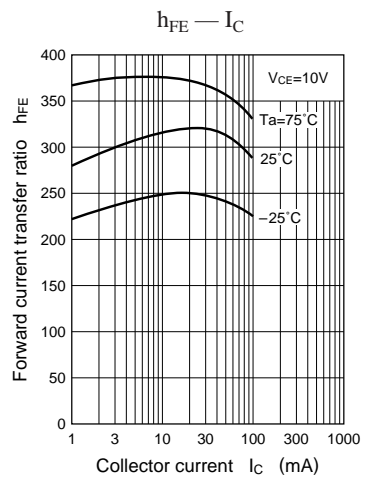
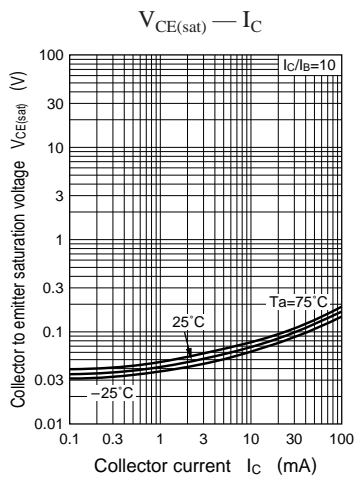
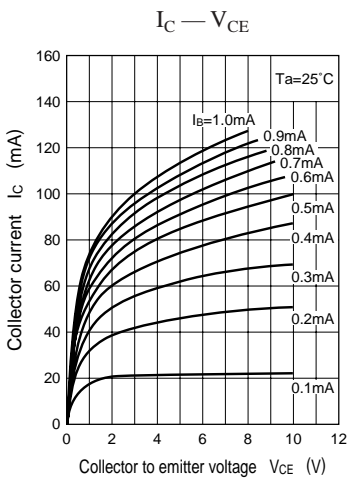
Characteristics charts of UN4214

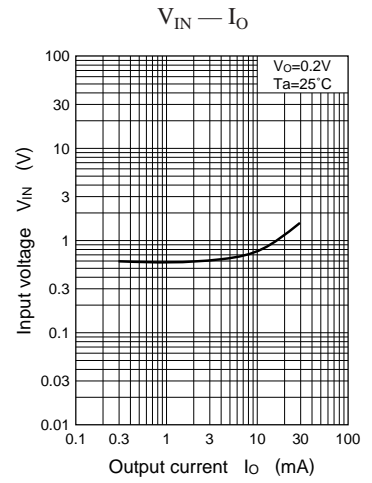
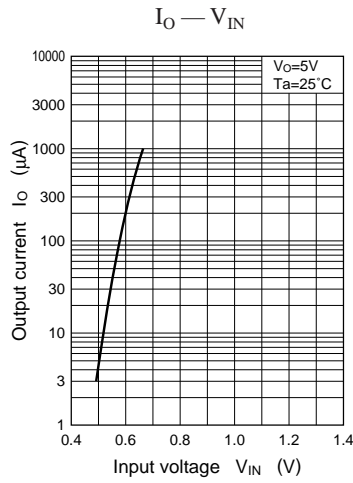
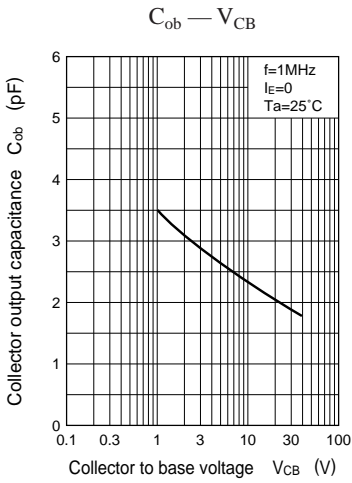


Characteristics charts of UN4215

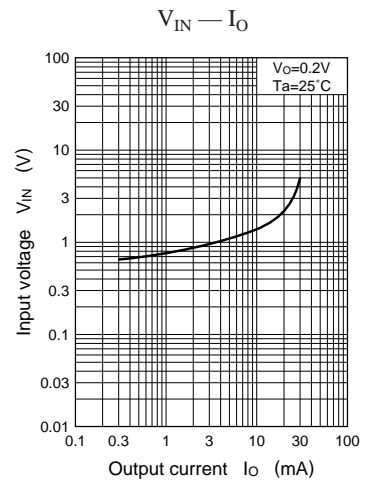
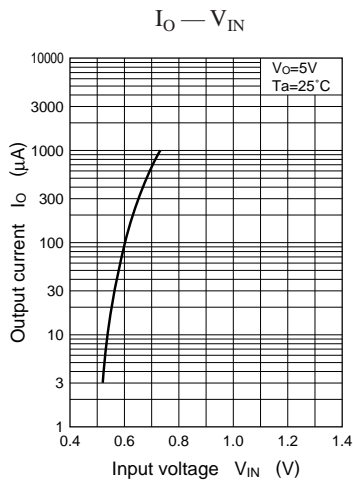
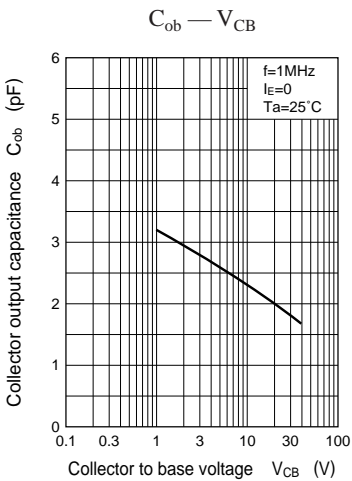
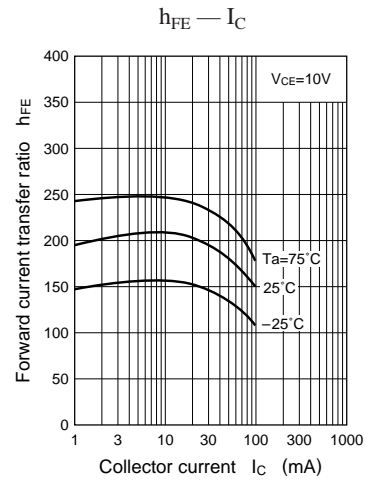
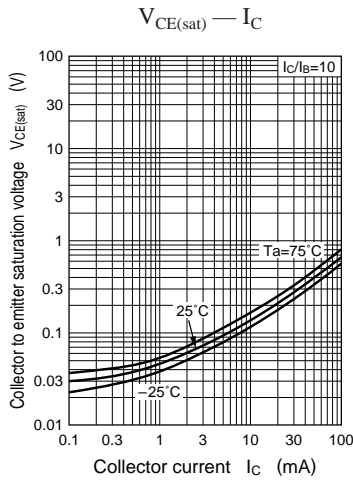
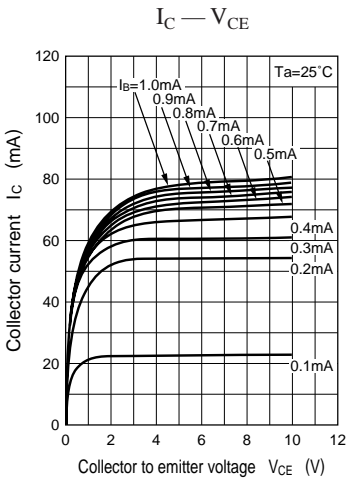


Characteristics charts of UN4216

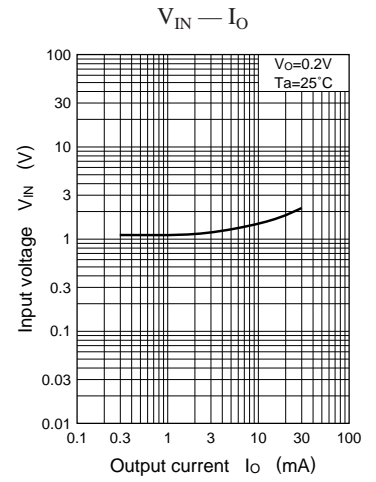
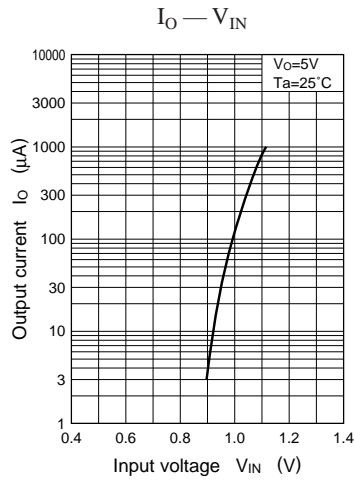
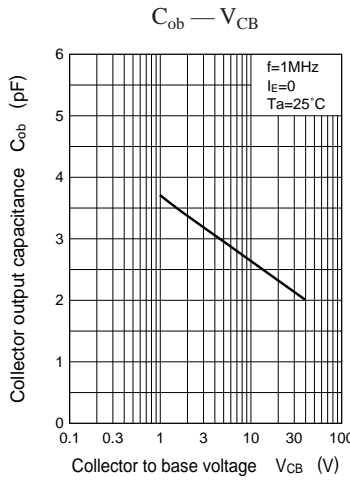
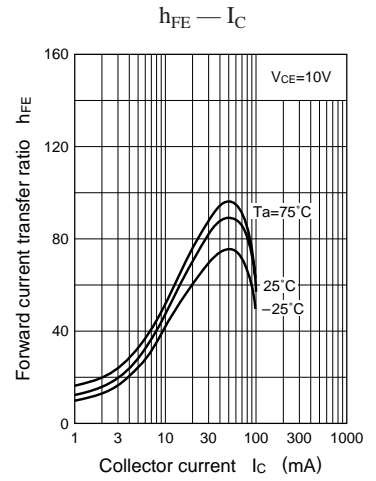
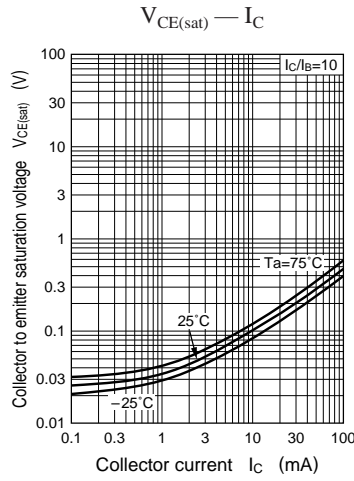
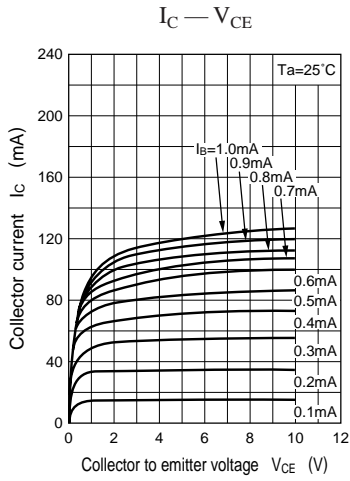




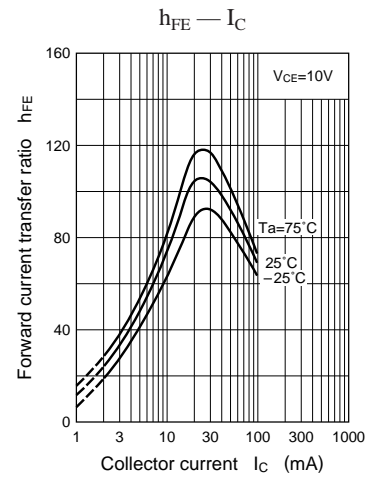
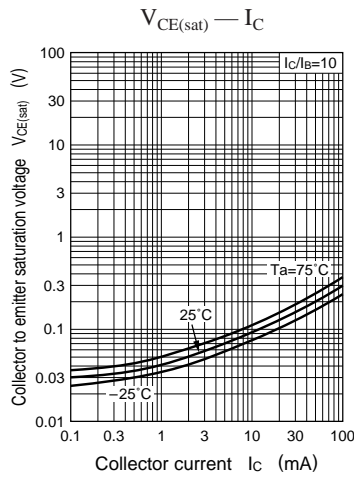
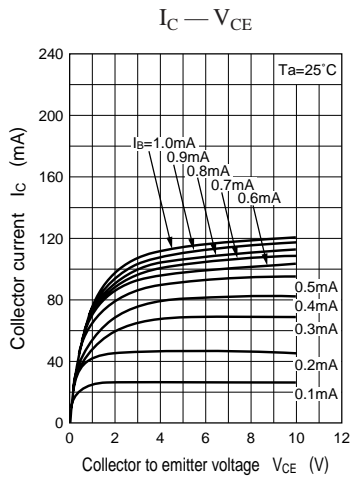
Characteristics charts of UN4217



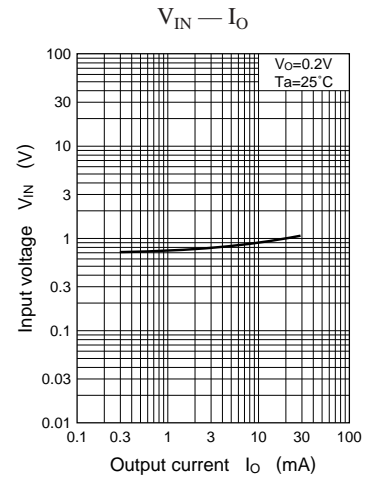
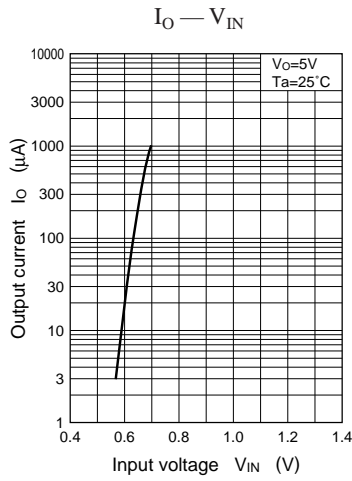
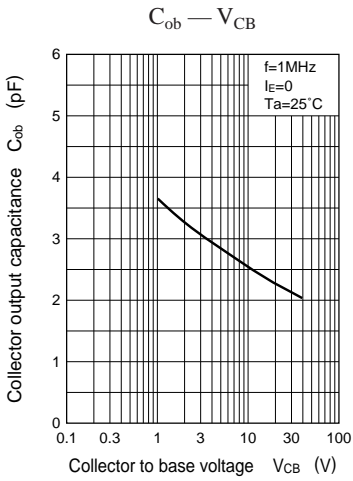
Characteristics charts of UN4218



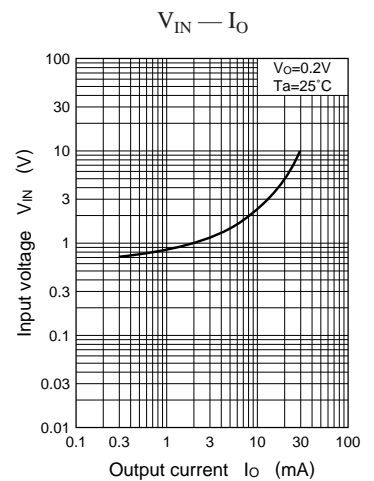
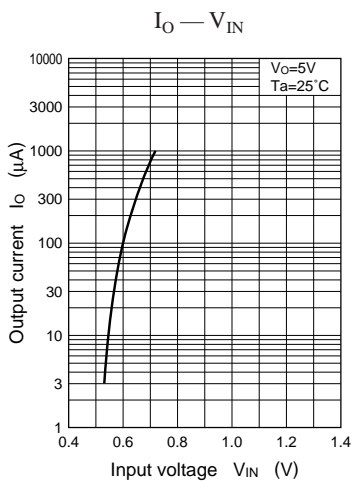
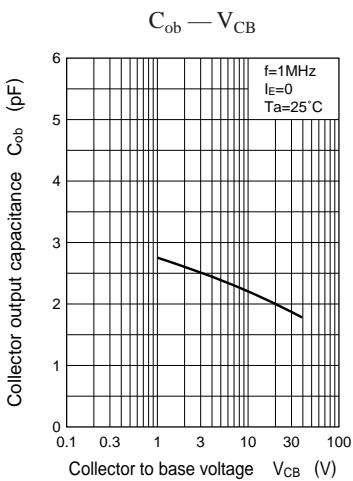
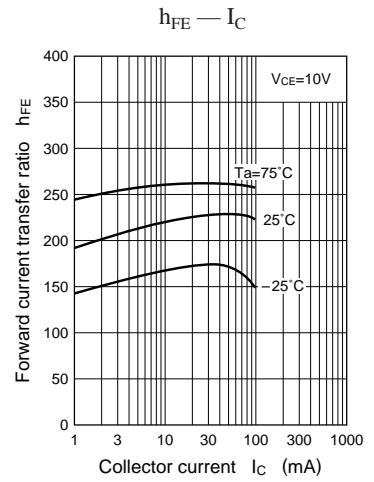
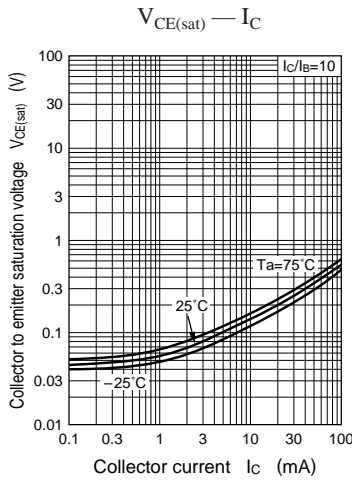
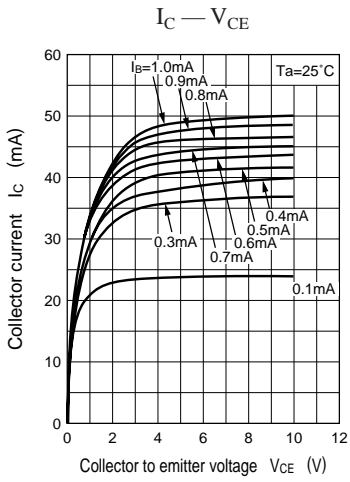
Characteristics charts of UN4219



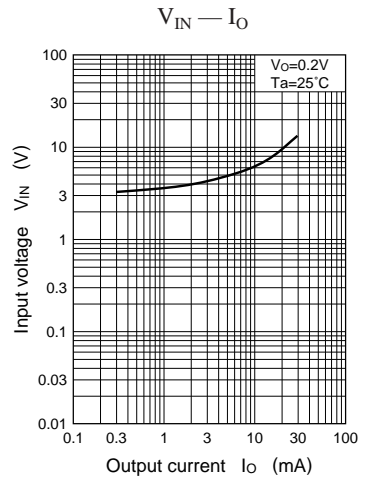
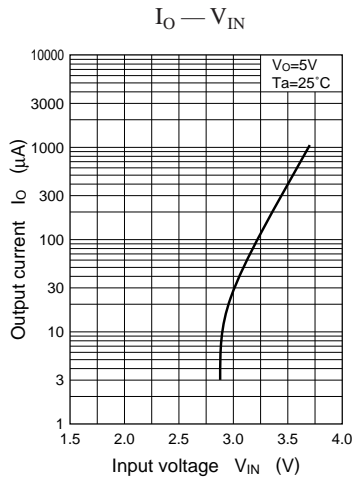
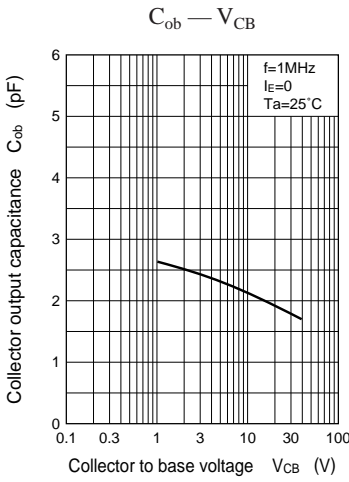
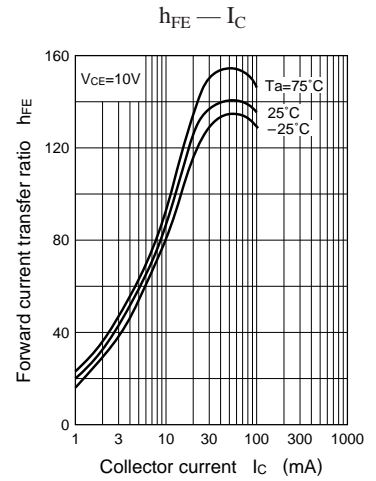
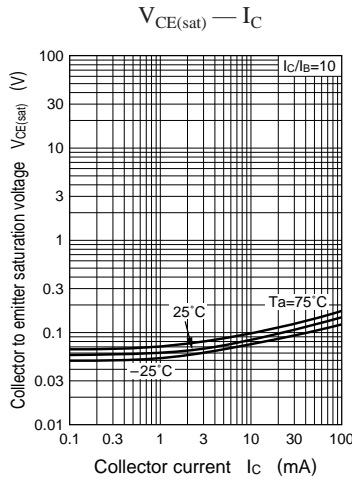
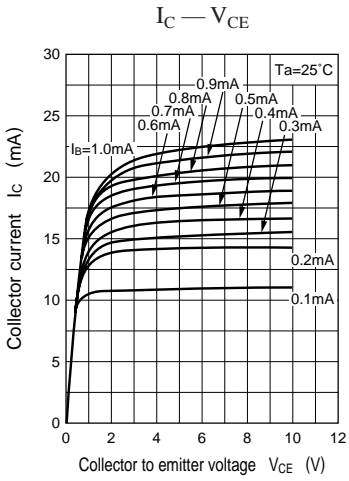




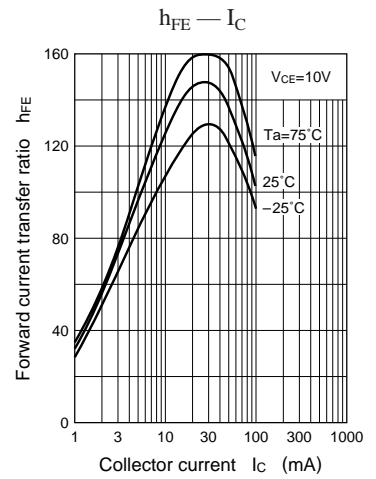
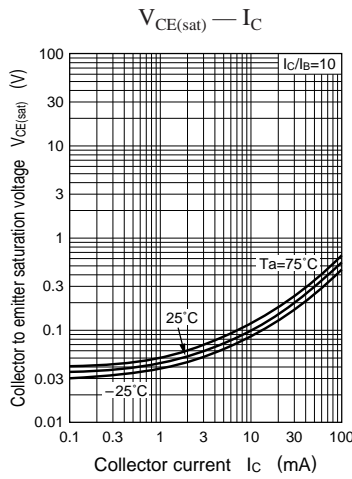
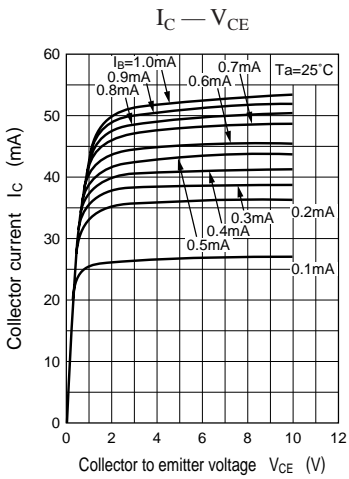
Characteristics charts of UN4210

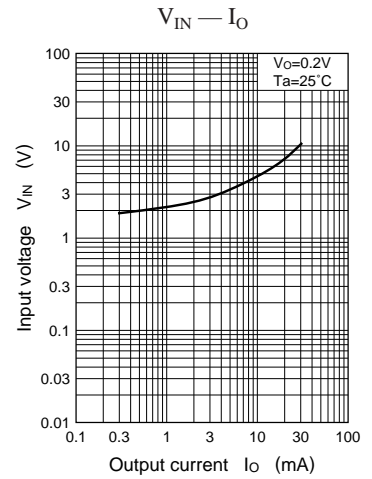
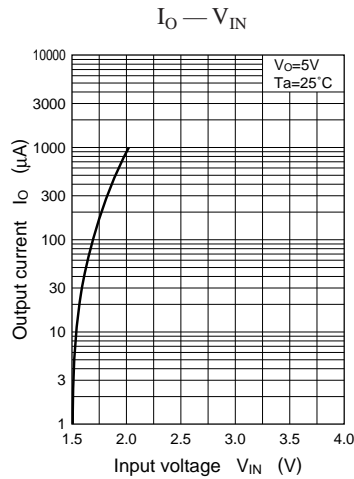
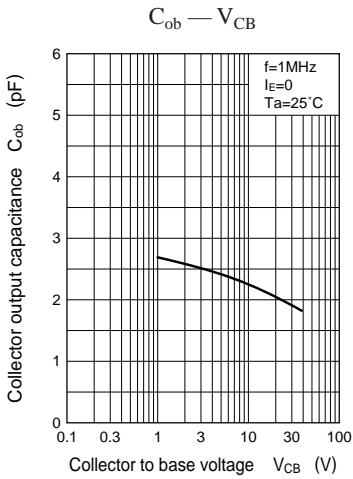


Characteristics charts of UN421D

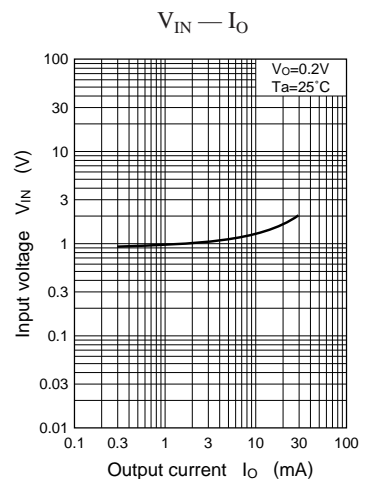
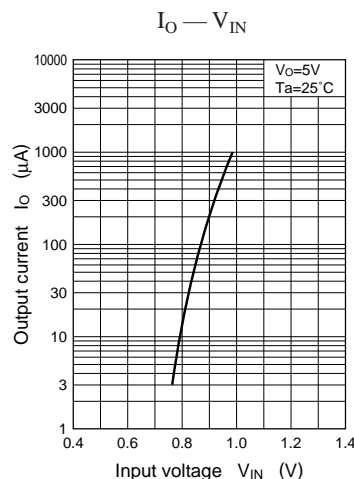
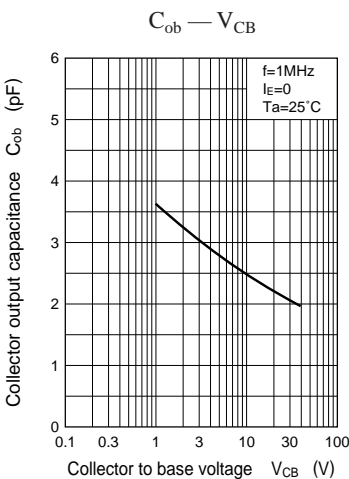
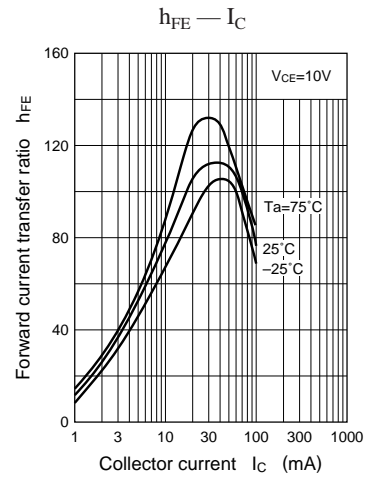
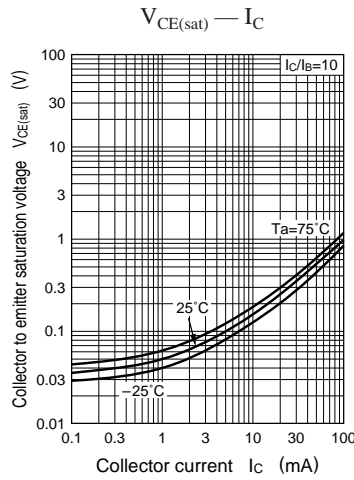
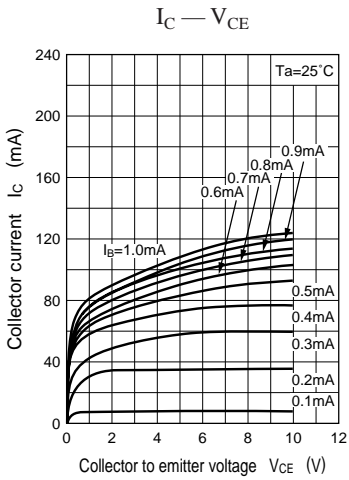


Characteristics charts of UN421E

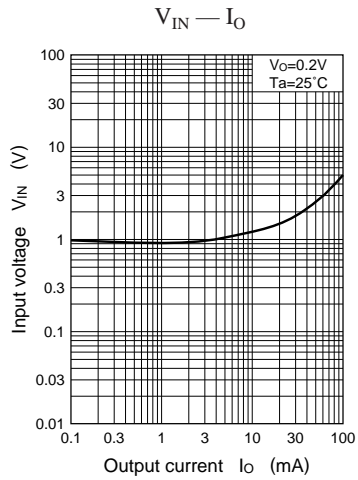
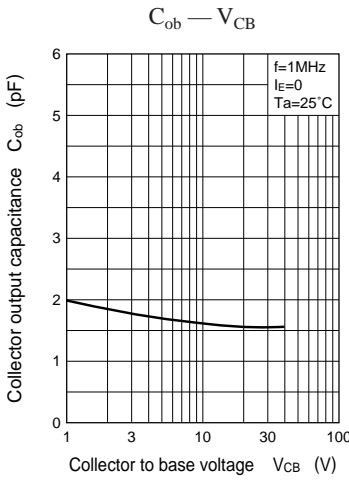
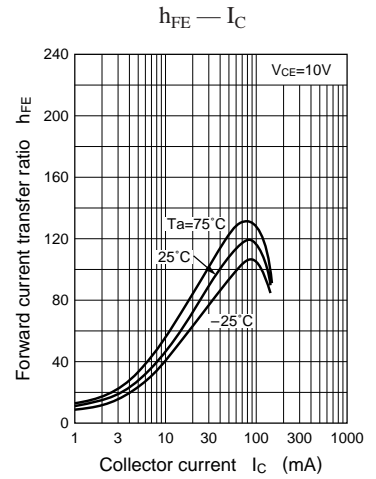
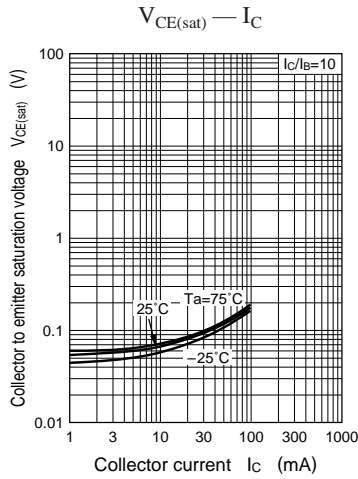
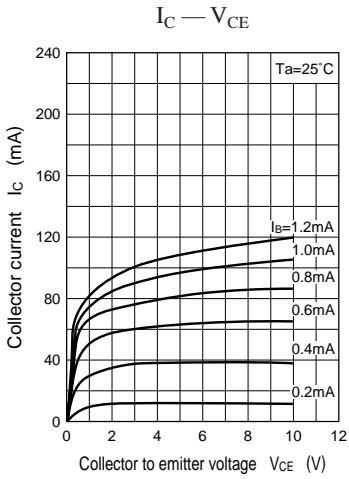




Characteristics charts of UN421F



Characteristics charts of UN421K



Characteristics charts of UN421L

