

# UN1111/1112/1113/1114/1115/1116/1117/1118/1119/1110/ 111D/111E/111F/111H/111L

## Silicon PNP epitaxial planer transistor

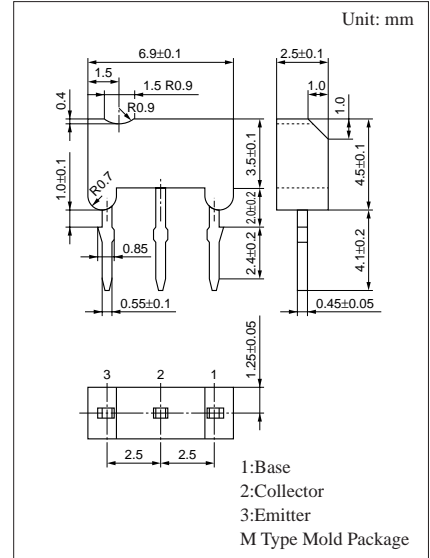
For digital circuits

### ■ Features

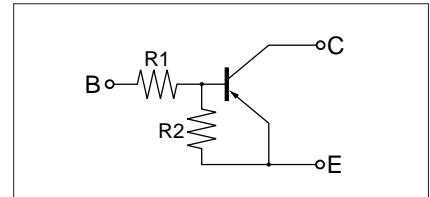
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

### ■ Resistance by Part Number

	(R <sub>1</sub> )	(R <sub>2</sub> )
• UN1111	10kΩ	10kΩ
• UN1112	22kΩ	22kΩ
• UN1113	47kΩ	47kΩ
• UN1114	10kΩ	47kΩ
• UN1115	10kΩ	—
• UN1116	4.7kΩ	—
• UN1117	22kΩ	—
• UN1118	0.51kΩ	5.1kΩ
• UN1119	1kΩ	10kΩ
• UN1110	47kΩ	—
• UN111D	47kΩ	10kΩ
• UN111E	47kΩ	22kΩ
• UN111F	4.7kΩ	10kΩ
• UN111H	2.2kΩ	10kΩ
• UN111L	4.7kΩ	4.7kΩ



### Internal Connection



### ■ Absolute Maximum Ratings (Ta=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>	400	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

UN1111/1112/1113/1114/1115/1116/1117/1118/  
Transistors with built-in Resistor 1119/1110/111D/111E/111F/111H/111L

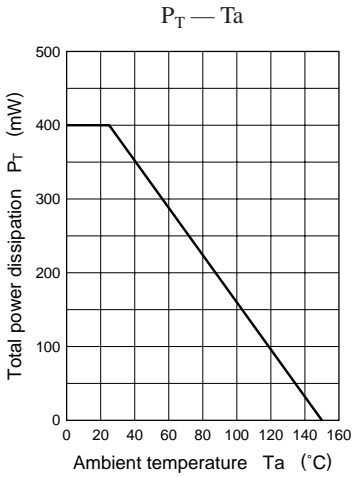
■ Electrical Characteristics (T<sub>a</sub>=25°C)

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	UN1111	I <sub>EBO</sub>	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0			-0.5	mA	
	UN1112/1114/111E/111D					-0.2		
	UN1113					-0.1		
	UN1115/1116/1117/1110					-0.01		
	UN111F/111H					-1.0		
	UN1119					-1.5		
	UN1118/111L					-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	UN1111	h <sub>FE</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA	35			V	
	UN1112/111E			60				
	UN1113/1114			80				
	UN1115*/1116*/1117*/1110*			160		460		
	UN111F/111D/1119/111H			30				
	UN1118/111L			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		80		MHz	
Input resistance	UN1111/1114/1115	R <sub>i</sub>		(-30%)	10	(±30%)	kΩ	
	UN1112/1117							22
	UN1113/1110/111D/111E							47
	UN1116/111F/111L							4.7
	UN1118							0.51
	UN1119							1
	UN111H							2.2
Resistance ratio	UN1111/1112/1113/111L	R <sub>i</sub> /R <sub>2</sub>			0.8	1.0	1.2	
	UN1114				0.17	0.21	0.25	
	UN1118/1119				0.08	0.1	0.12	
	UN111D					4.7		
	UN111E					2.14		
	UN111F					0.47		
	UN111H				0.17	0.22	0.27	

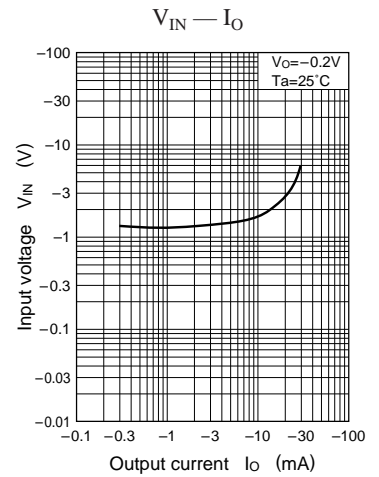
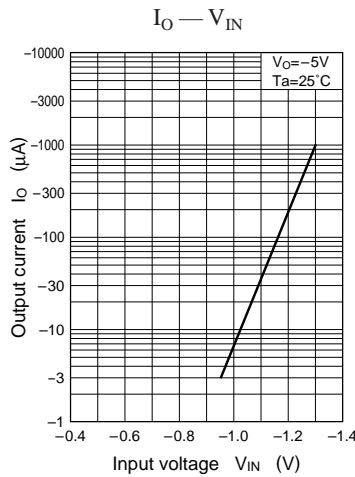
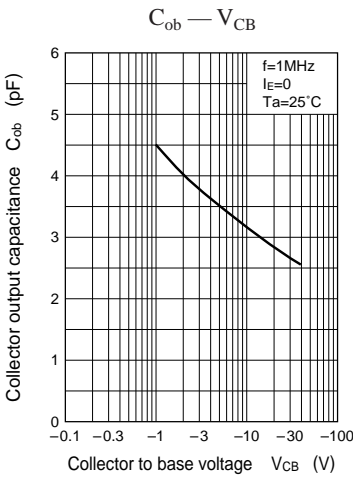
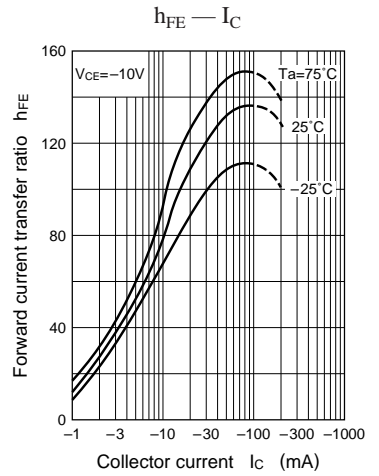
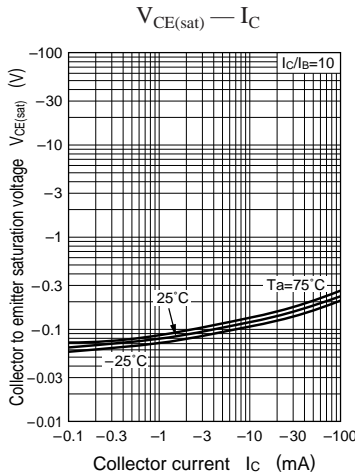
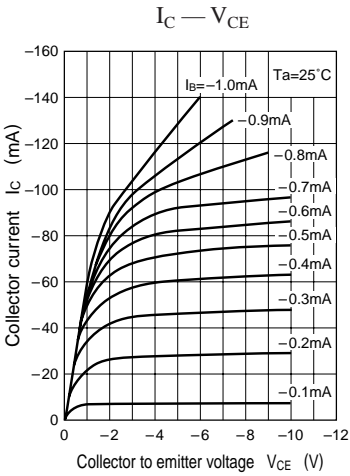
\* h<sub>FE</sub> rank classification (UN1115/1116/1117/1110)

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

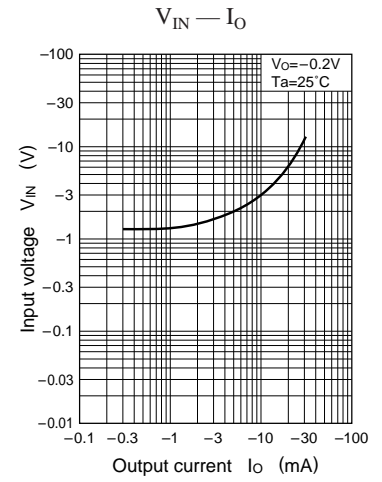
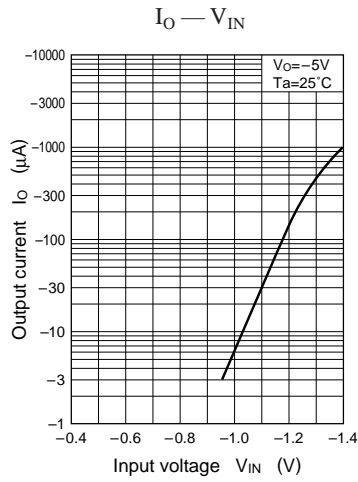
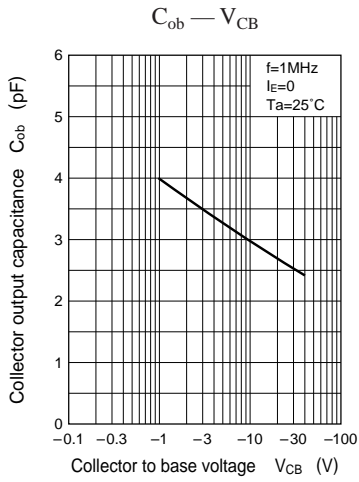
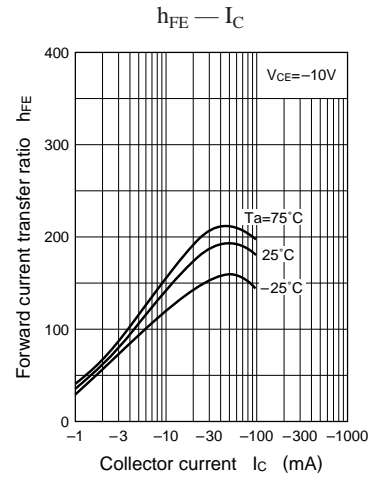
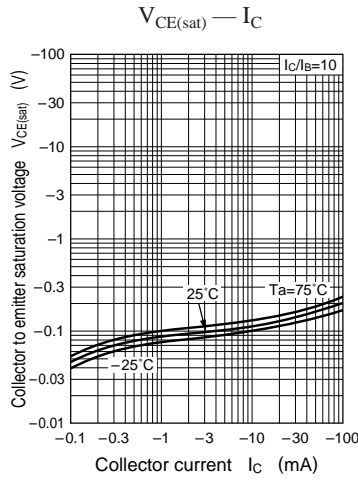
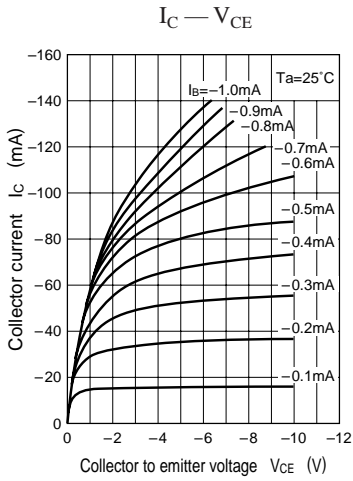
Common characteristics chart



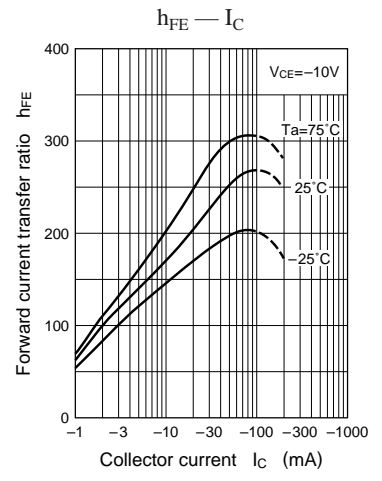
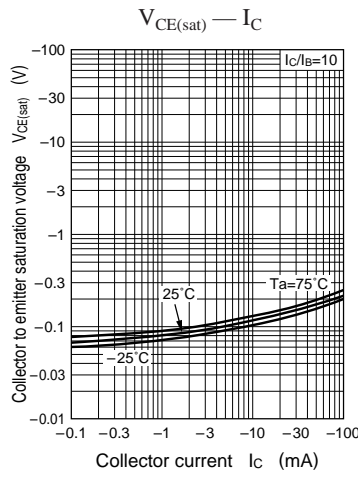
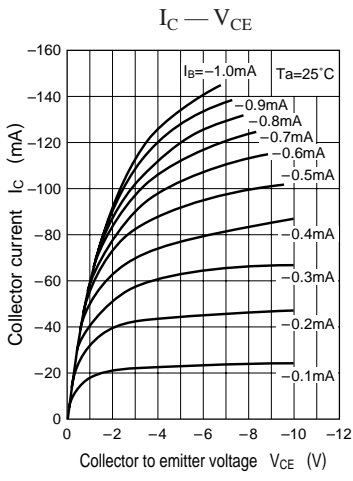
Characteristics charts of UN1111

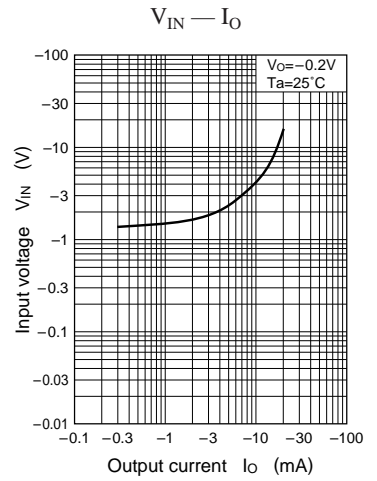
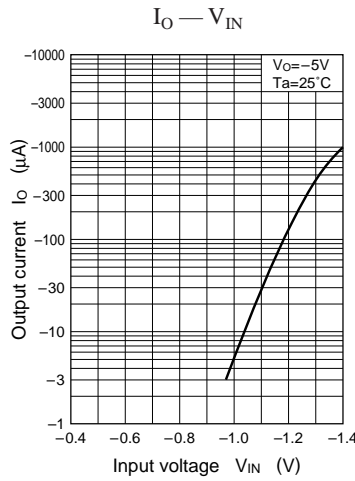
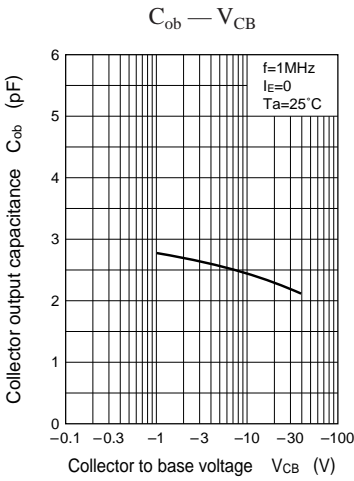


Characteristics charts of UN1112

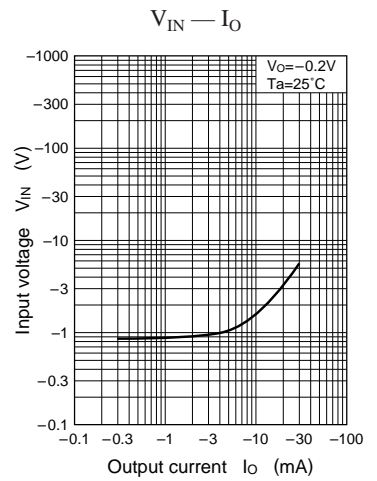
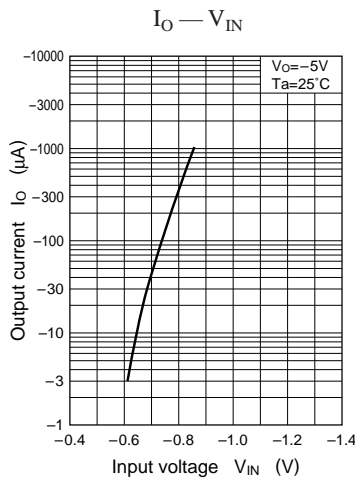
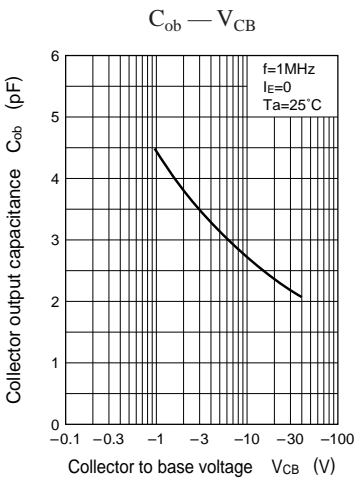
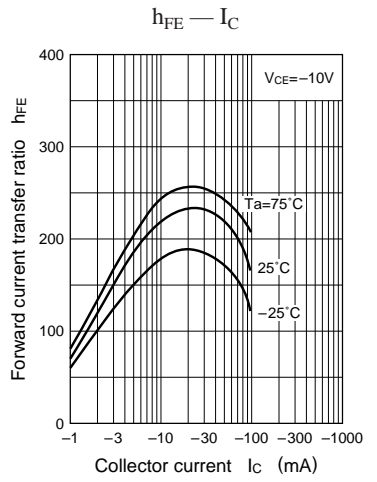
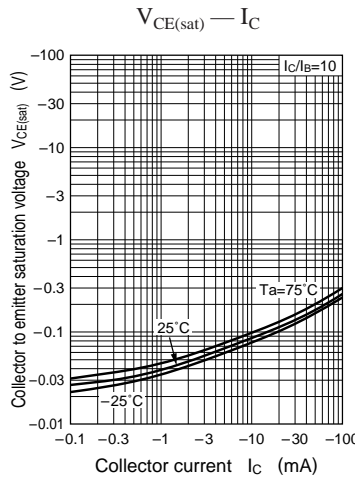
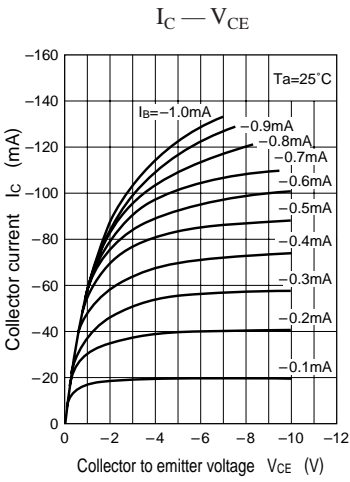


Characteristics charts of UN1113

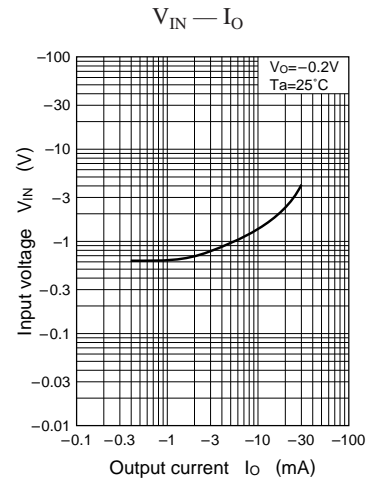
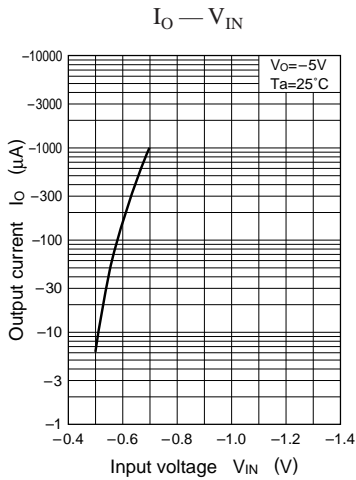
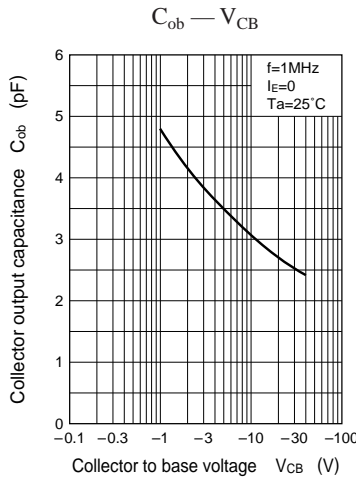
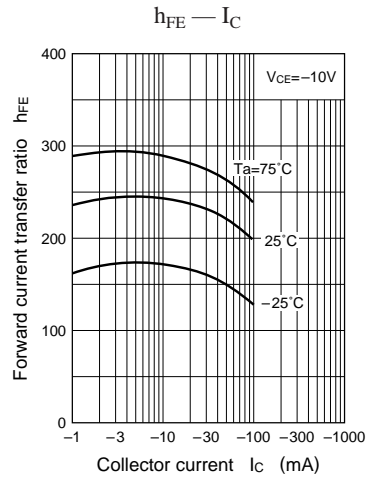
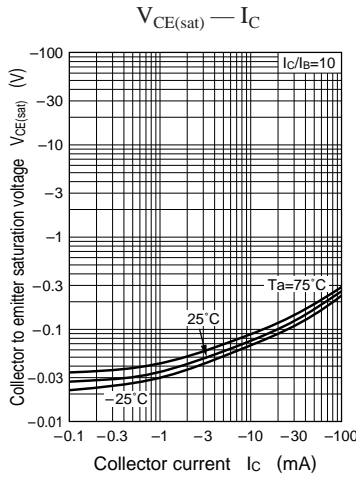
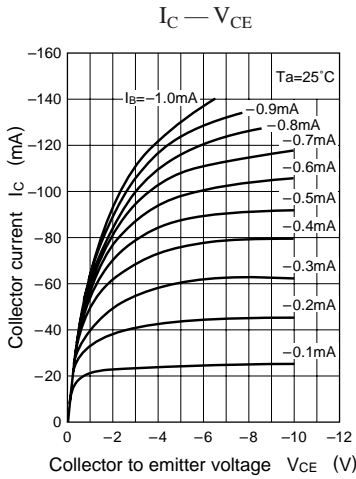




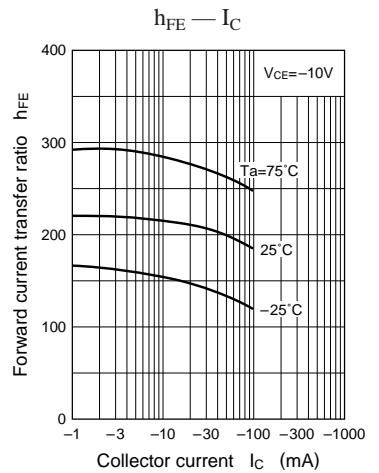
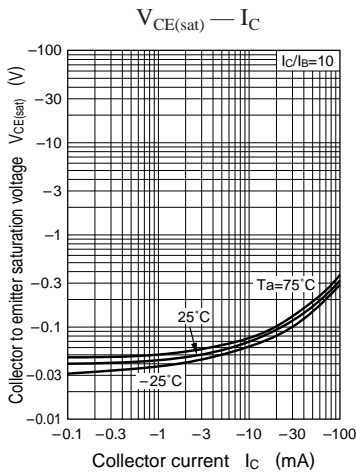
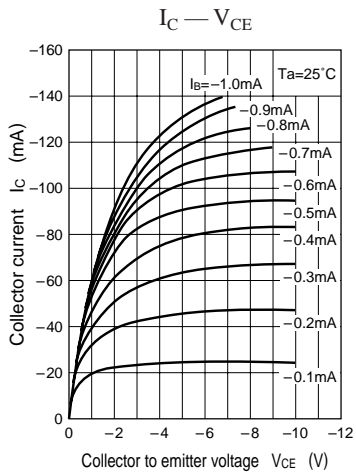
Characteristics charts of UN1114

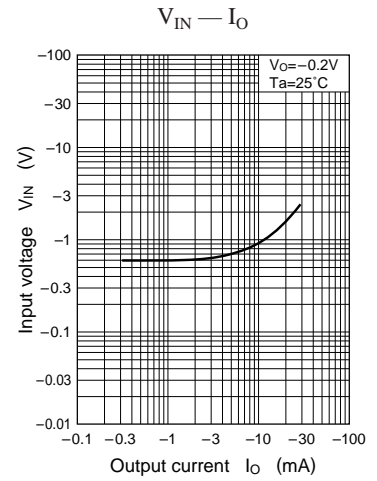
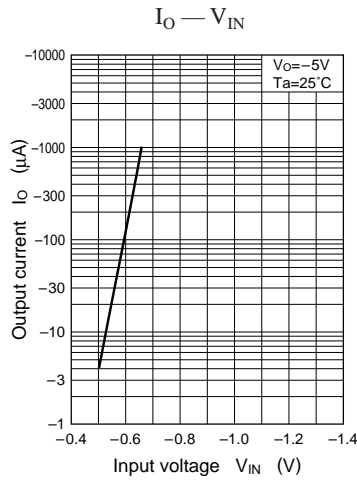
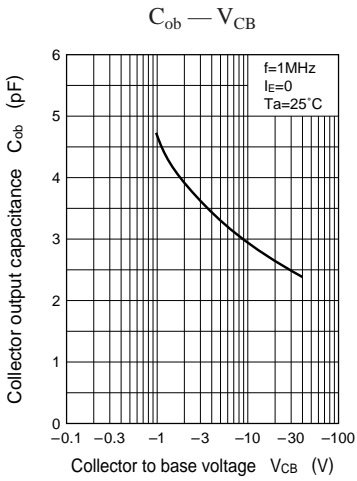


Characteristics charts of UN1115

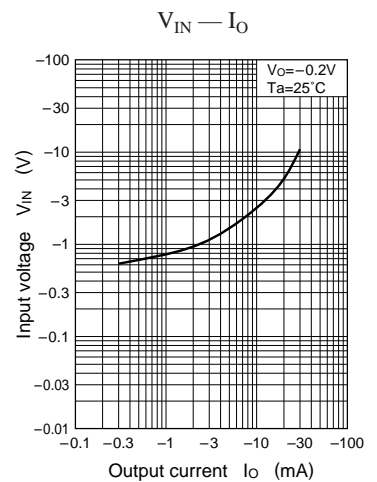
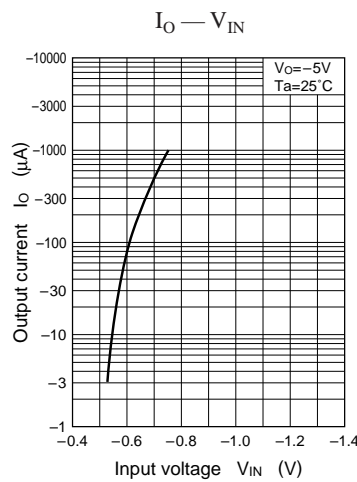
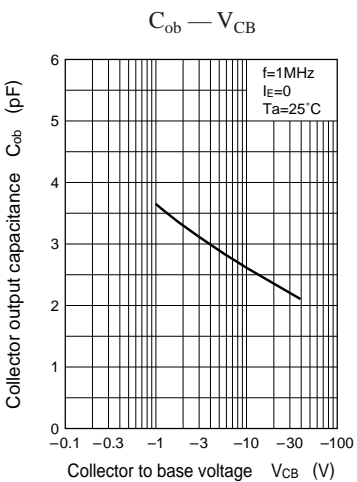
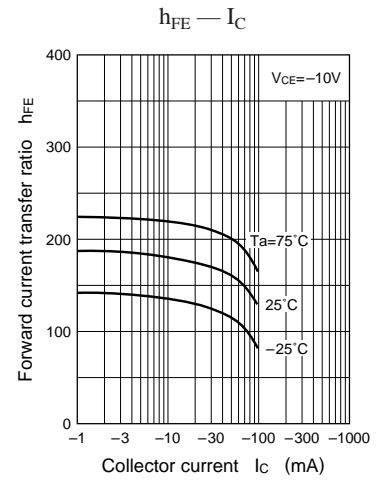
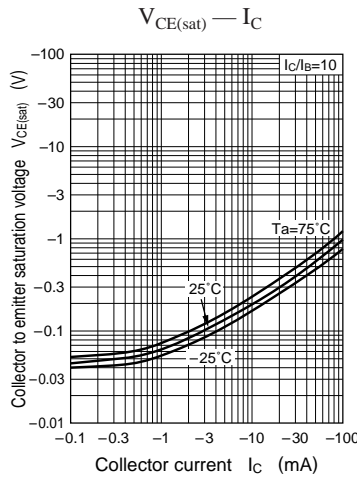
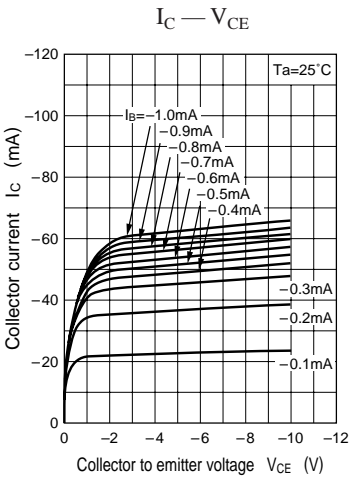


Characteristics charts of UN1116

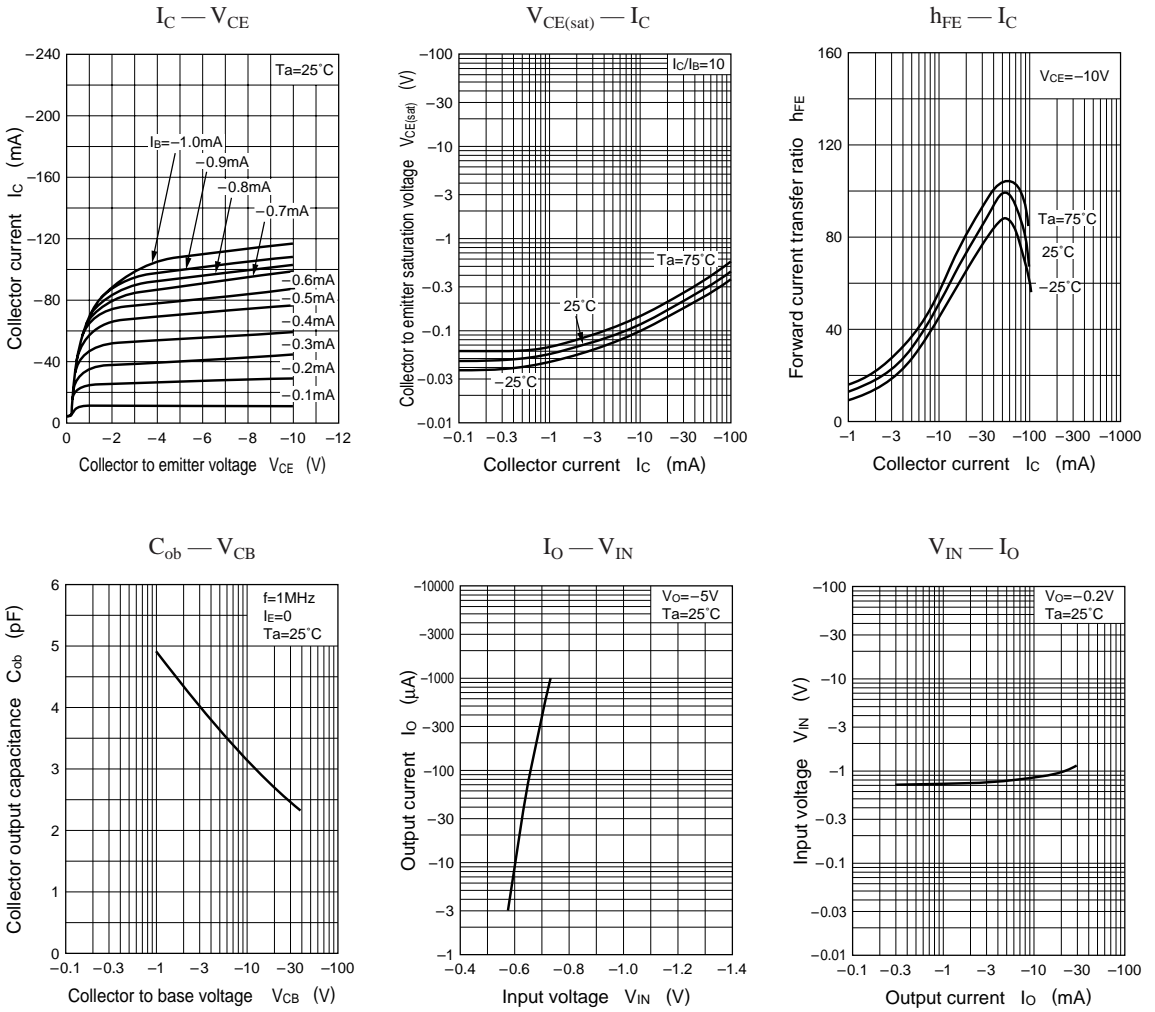




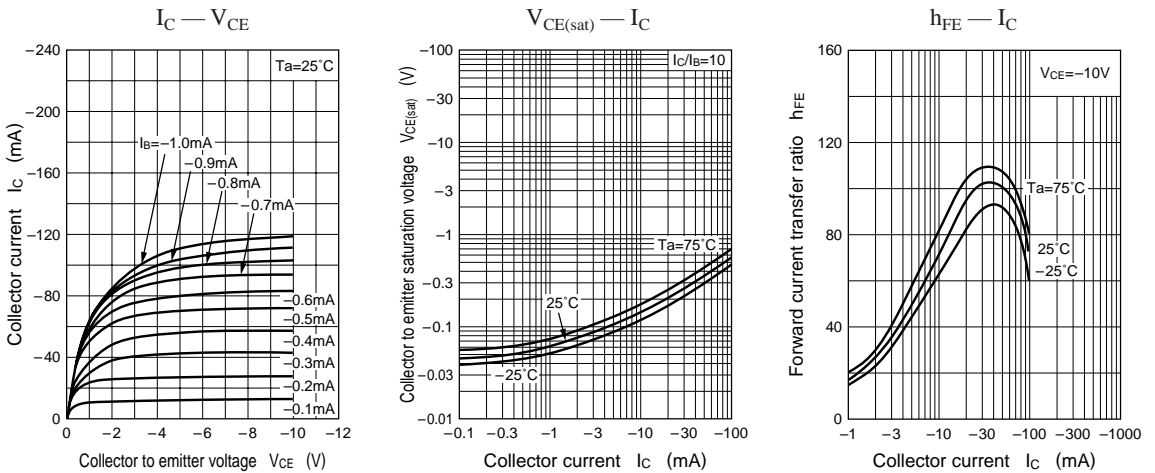
Characteristics charts of UN1117



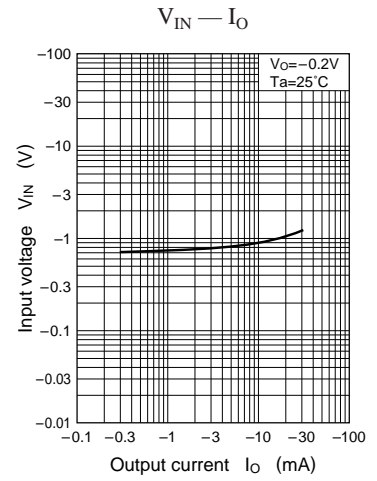
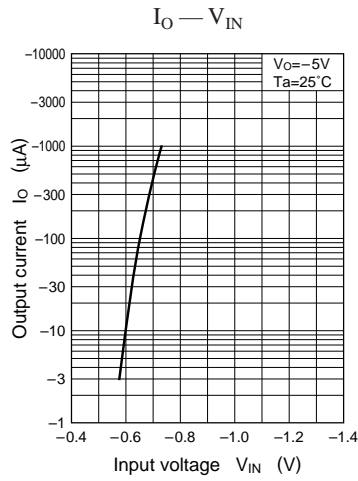
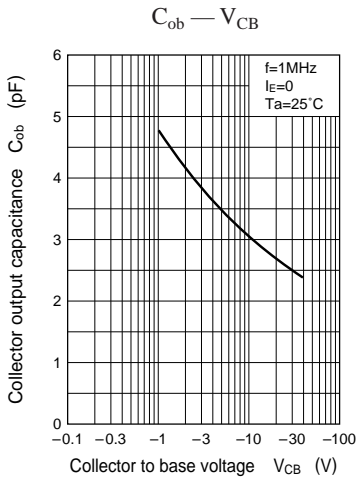
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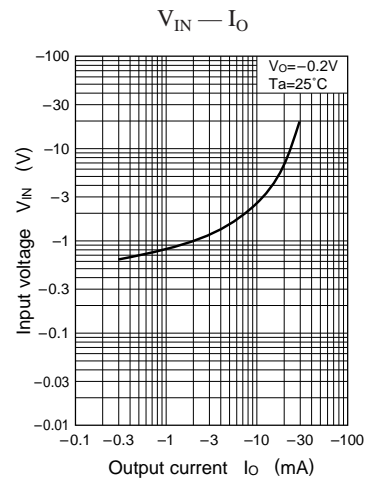
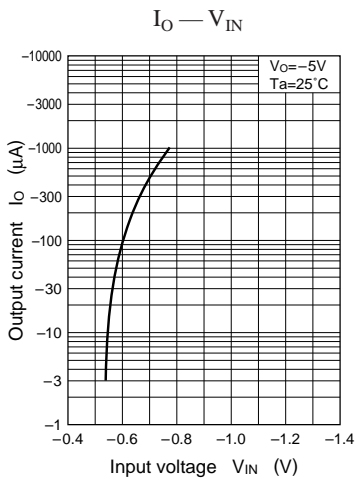
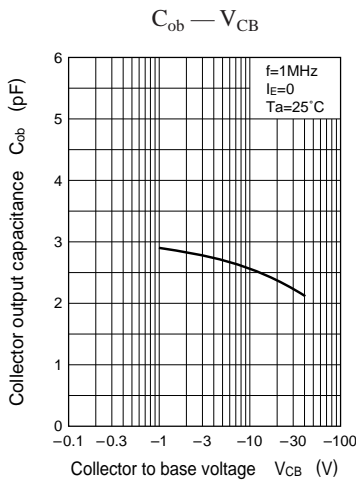
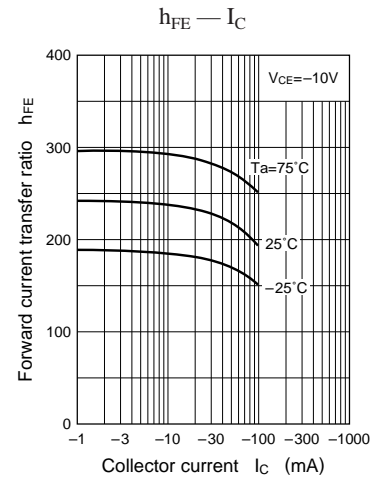
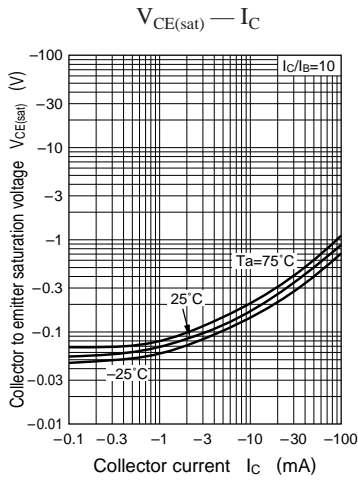
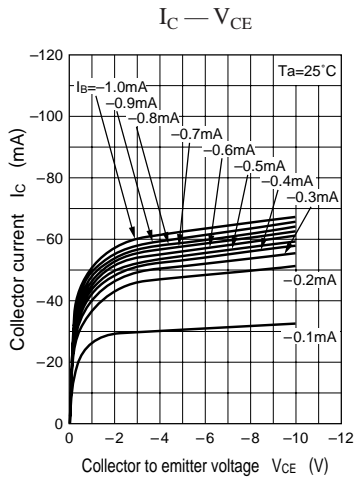
Characteristics charts of UN1119



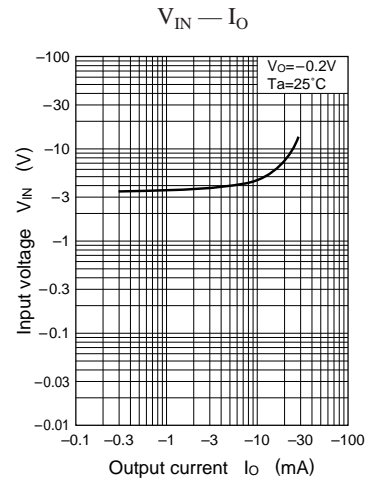
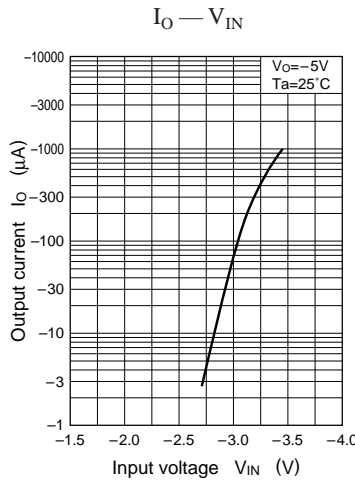
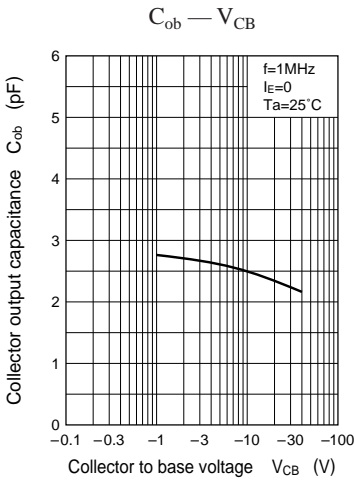
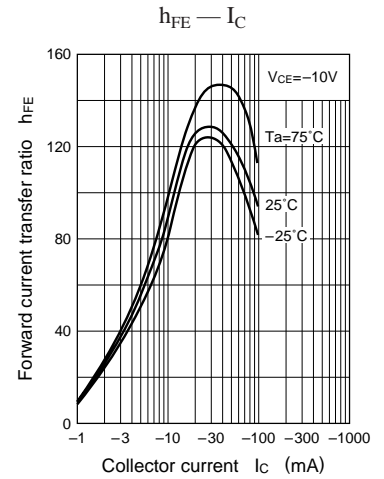
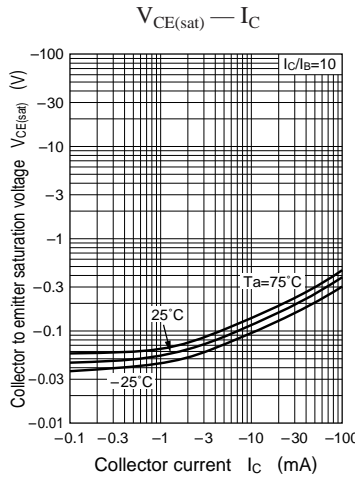
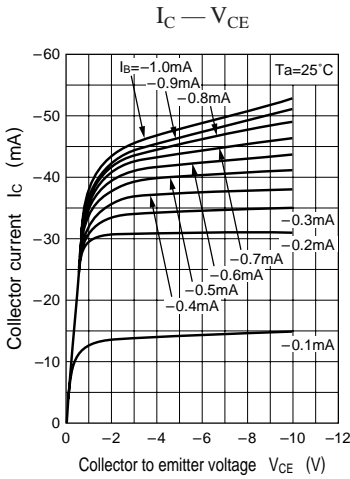




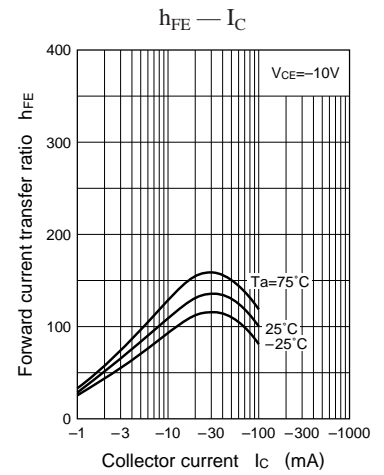
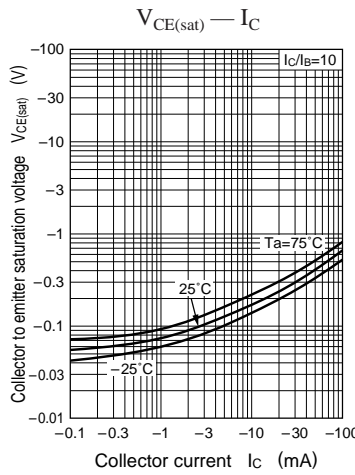
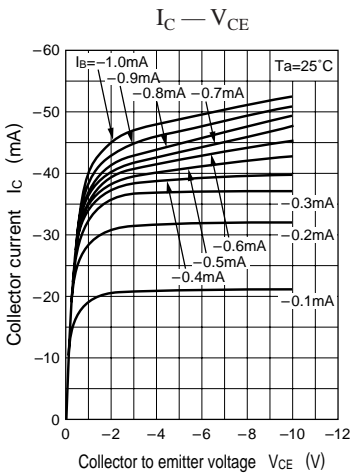
Characteristics charts of UN1110

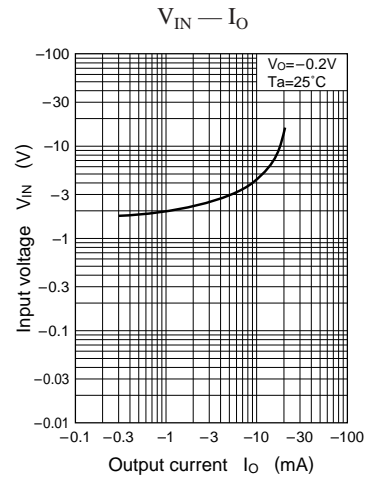
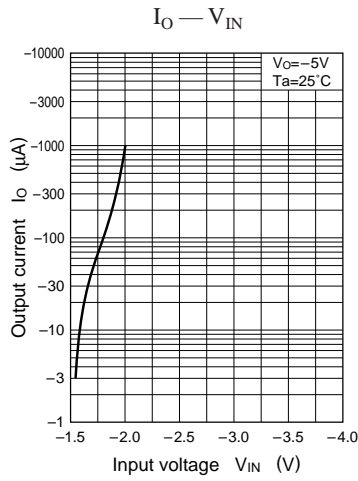
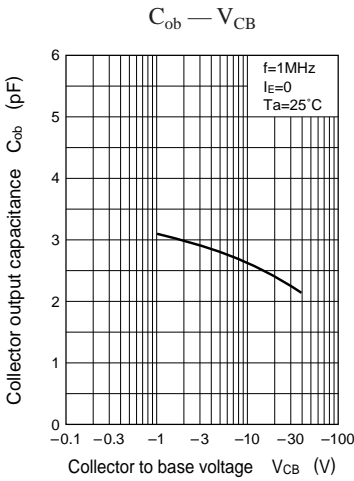


Characteristics charts of UN111D

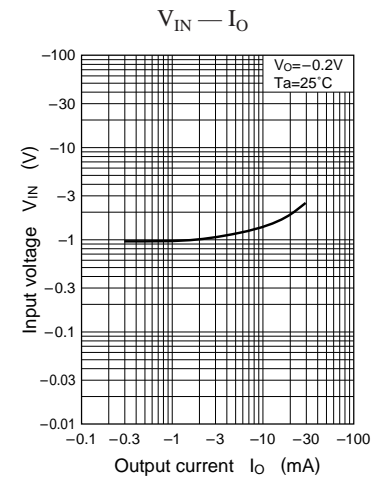
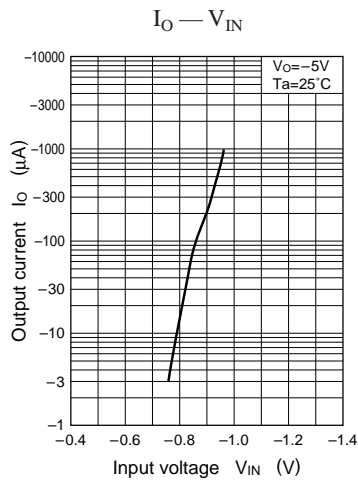
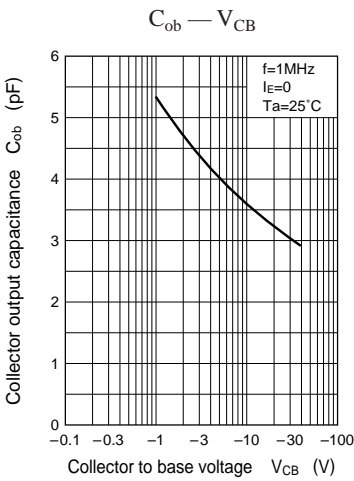
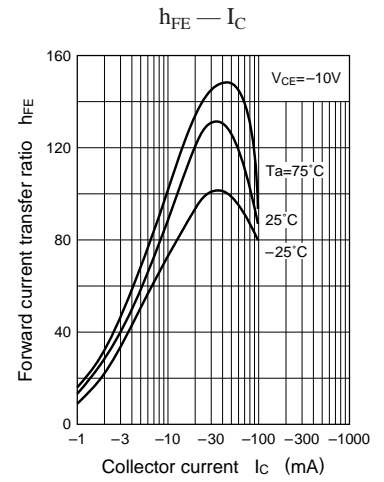
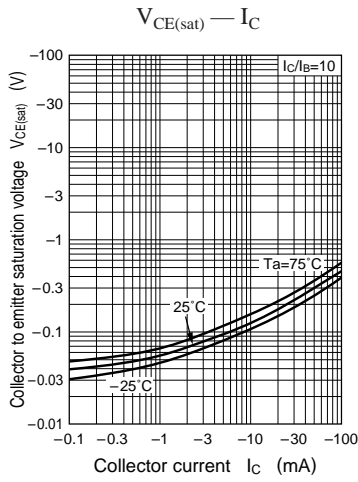
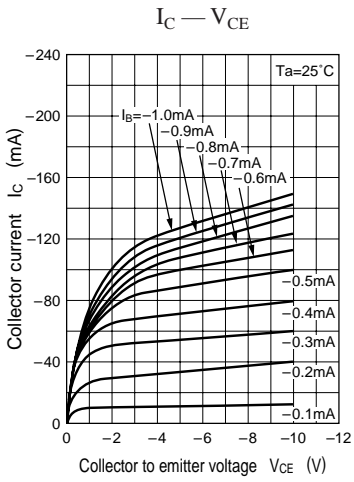


Characteristics charts of UN111E

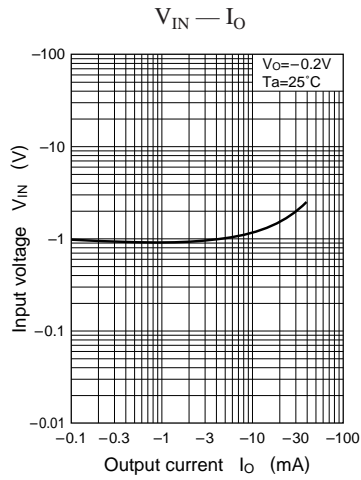
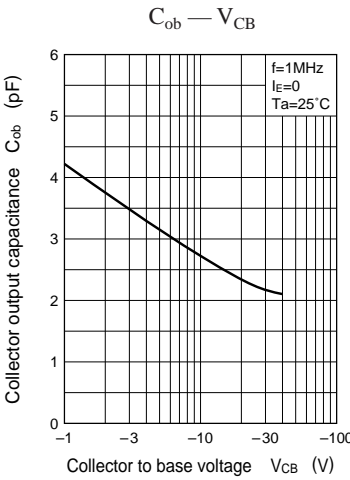
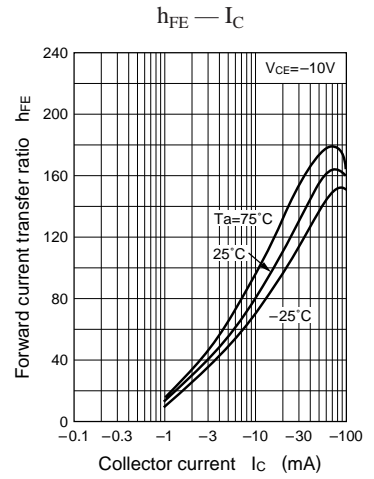
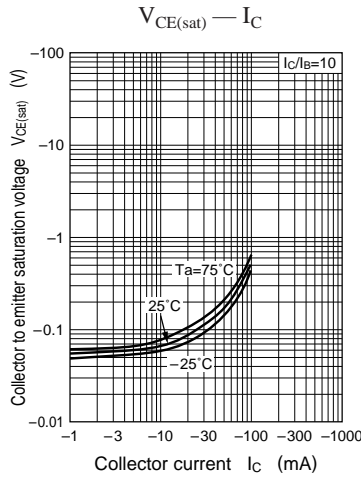
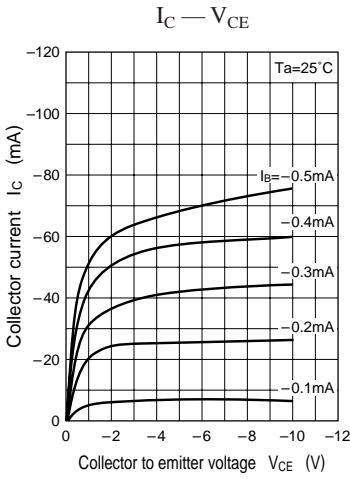




Characteristics charts of UN111F



Characteristics charts of UN111H



Characteristics charts of UN111L

