

# UN5111/5112/5113/5114/5115/5116/5117/5118/5119/5110/ 511D/511E/511F/511H/511L/511M/511N/511T/511V/511Z

## Silicon PNP epitaxial planer transistor

For digital circuits

### Features

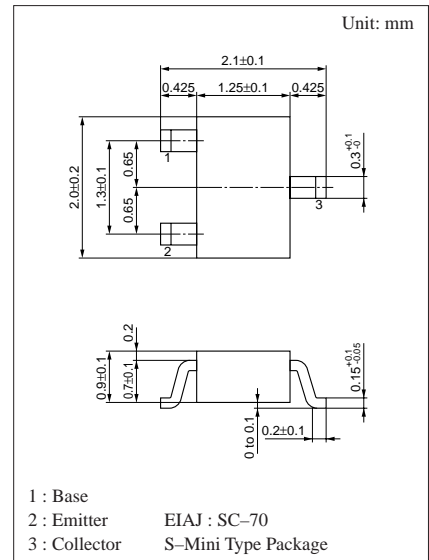
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- S-Mini type package, allowing automatic insertion through tape packing and magazine packing.

### Resistance by Part Number

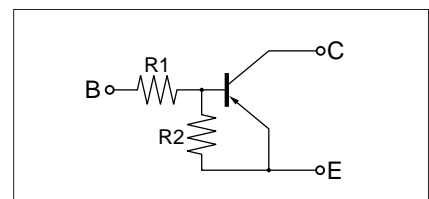
	Marking Symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UN5111	6A	10kΩ	10kΩ
• UN5112	6B	22kΩ	22kΩ
• UN5113	6C	47kΩ	47kΩ
• UN5114	6D	10kΩ	47kΩ
• UN5115	6E	10kΩ	—
• UN5116	6F	4.7kΩ	—
• UN5117	6H	22kΩ	—
• UN5118	6I	0.51kΩ	5.1kΩ
• UN5119	6K	1kΩ	10kΩ
• UN5110	6L	47kΩ	—
• UN511D	6M	47kΩ	10kΩ
• UN511E	6N	47kΩ	22kΩ
• UN511F	6O	4.7kΩ	10kΩ
• UN511H	6P	2.2kΩ	10kΩ
• UN511L	6Q	4.7kΩ	4.7kΩ
• UN511M	EI	2.2kΩ	47kΩ
• UN511N	EW	4.7kΩ	47kΩ
• UN511T	EY	22kΩ	47kΩ
• UN511V	FC	2.2kΩ	2.2kΩ
• UN511Z	FE	4.7kΩ	22kΩ

### 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>	150	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C



### Internal Connection



**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	UN5111	I <sub>EBO</sub>	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0			-0.5	mA	
	UN5112/5114/511E/511D/511M/511N/511T					-0.2		
	UN5113					-0.1		
	UN5115/5116/5117/5110					-0.01		
	UN511F/511H					-1.0		
	UN5119					-1.5		
	UN5118/511L/511V					-2.0		
	UN511Z					-0.4		
Collector to base voltage		V <sub>CBO</sub>	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0	-50			V	
UN511N/511T/511V/511Z				-50				
Collector to emitter voltage		V <sub>CEO</sub>	I <sub>C</sub> = -2mA, I <sub>B</sub> = 0	-50			V	
UN511N/511T				-50				
Forward current transfer ratio	UN5111	h <sub>FE</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA	35				
	UN5112/511E			60				
	UN5113/5114/511M			80				
	UN5115*/5116*/5117*/5110*			160		460		
	UN511F/511D/5119/511H			30				
	UN5118/511L			20				
	UN511N/511T			80		400		
	UN511V			6		20		
	UN511Z			60		200		
Collector to emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.3mA			-0.25	V	
UN511V				I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.5mA				-0.25
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> = 1mA, f = 200MHz		80		MHz	
			UN511Z	V <sub>CB</sub> = -10V, I <sub>E</sub> = 1mA, f = 200MHz		150		
Input resistance	UN5111/5114/5115	R <sub>i</sub>		(-30%)		10	(+30%)	kΩ
	UN5112/5117/511T					22		
	UN5113/5110/511D/511E					47		
	UN5116/511F/511L/511N/511Z					4.7		
	UN5118					0.51		
	UN5119					1		
	UN511H/511M/511V					2.2		

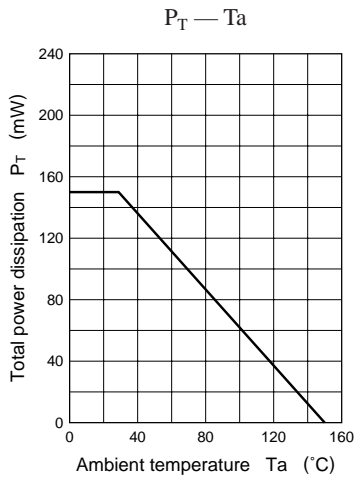
\* h<sub>FE</sub> rank classification (UN5115/5116/5117/5110)

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

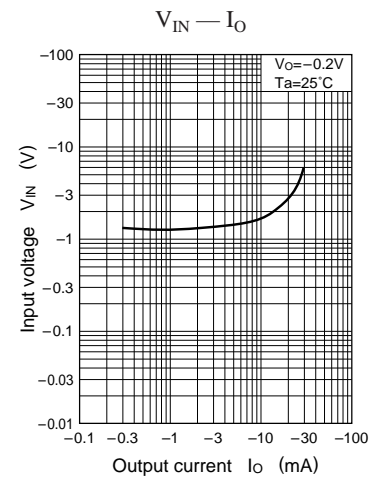
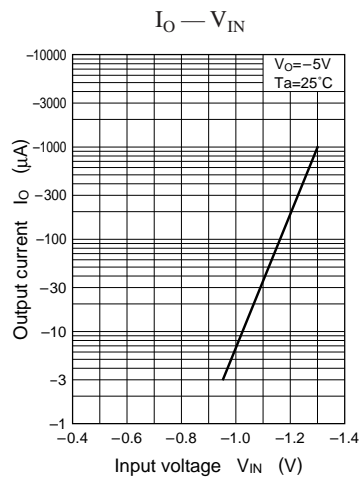
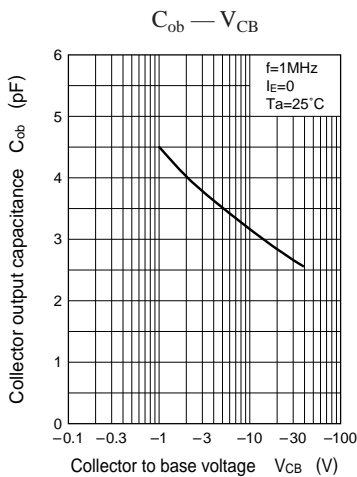
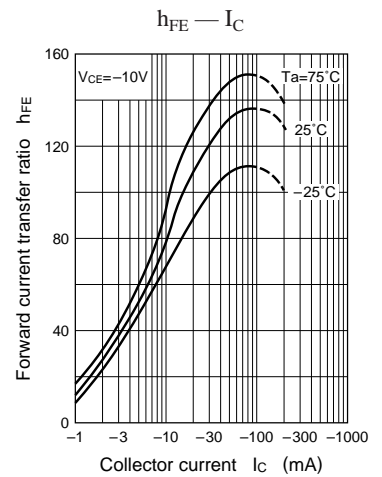
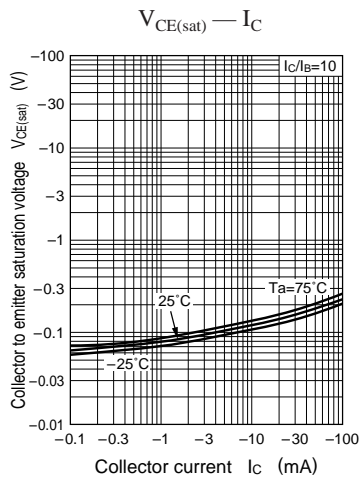
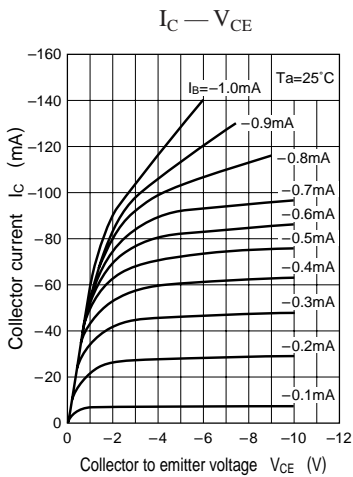
■ Electrical Characteristics (continued) (Ta=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Resis- tance ratio	UN5111/5112/5113/511L	R <sub>1</sub> /R <sub>2</sub>		0.8	1.0	1.2	
	UN5114			0.17	0.21	0.25	
	UN5118/5119			0.08	0.1	0.12	
	UN511D				4.7		
	UN511E				2.14		
	UN511F/511T				0.47		
	UN511H			0.17	0.22	0.27	
	UN511M				0.047		
	UN511N				0.1		
	UN511V				1.0		
	UN511Z				0.21		

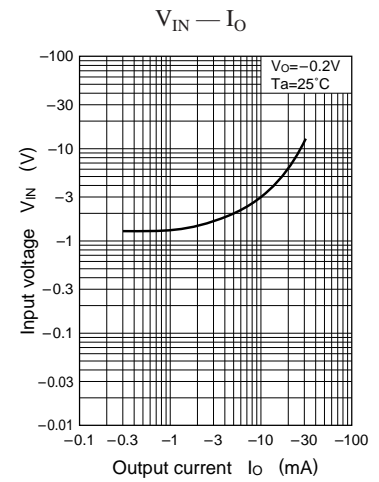
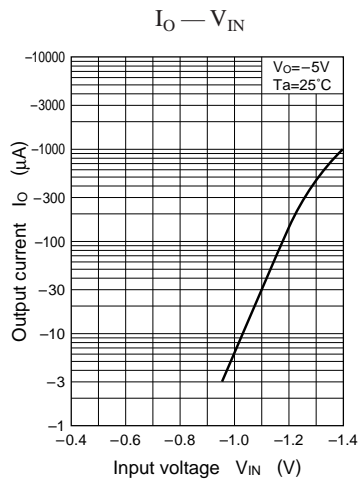
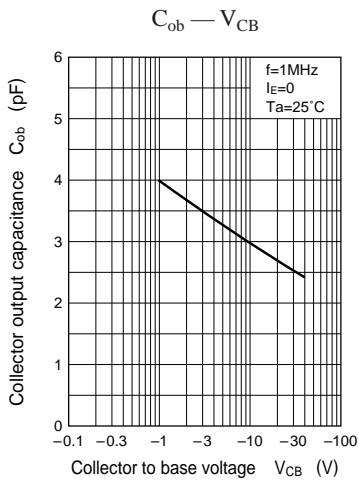
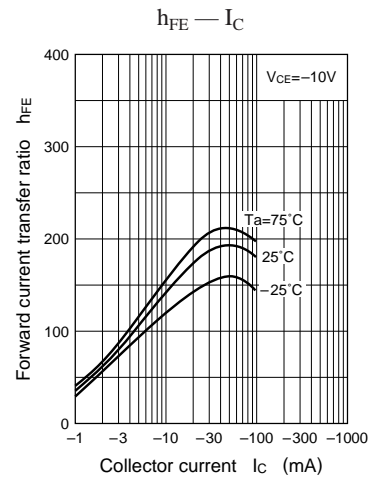
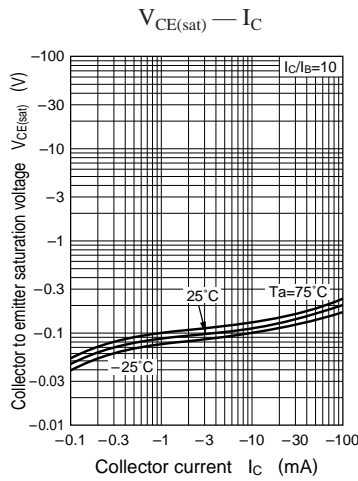
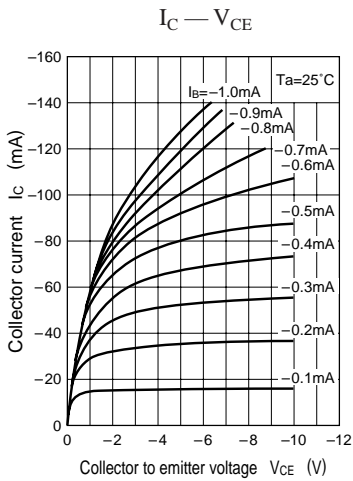
Common characteristics chart



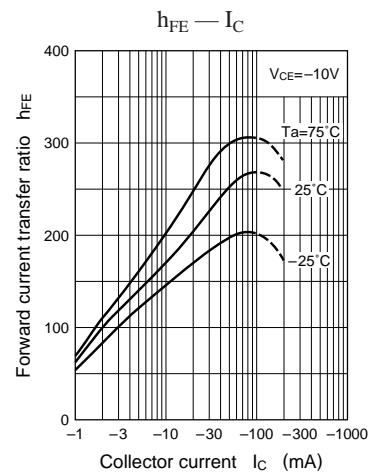
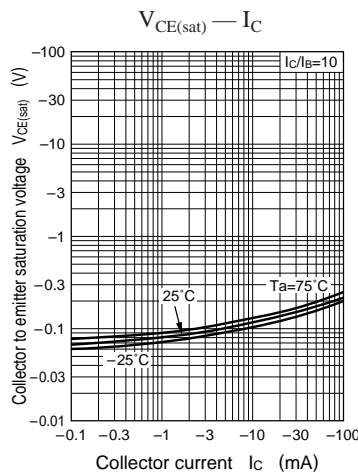
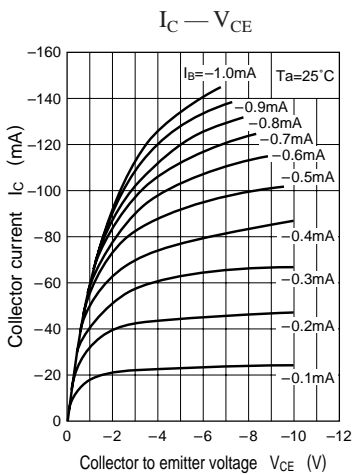
Characteristics charts of UN5111

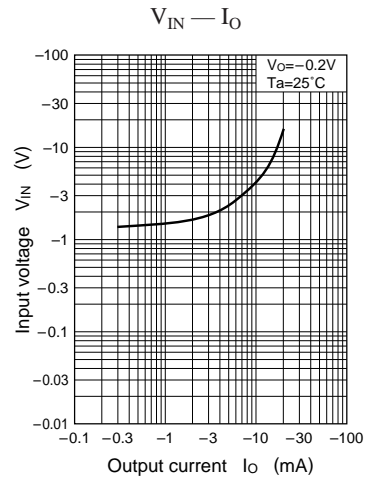
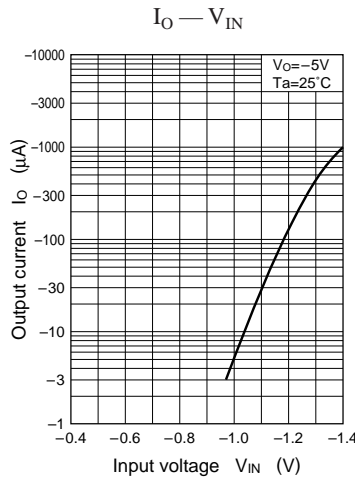
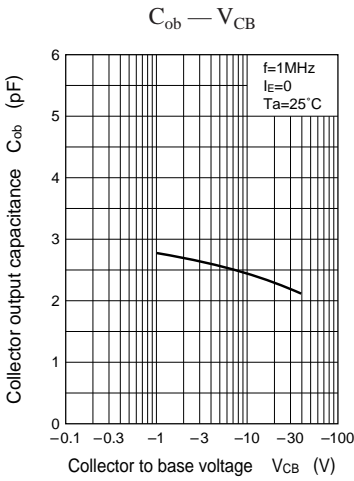


Characteristics charts of UN5112

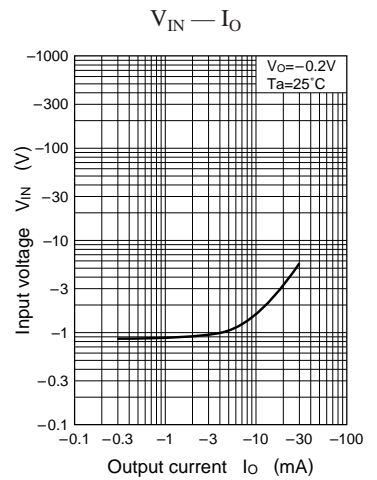
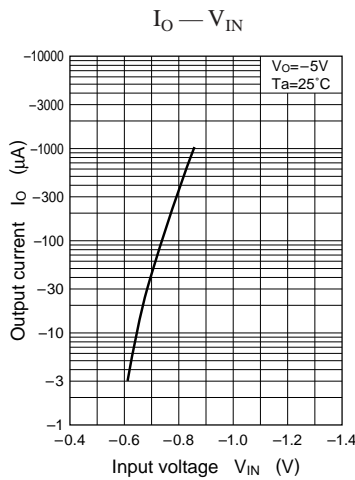
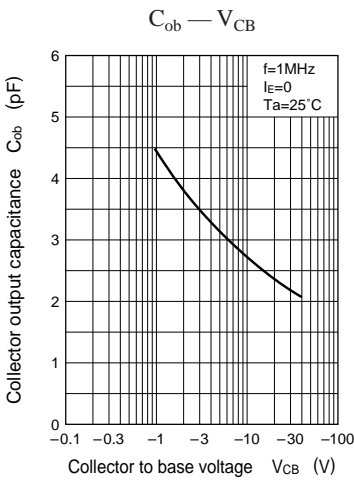
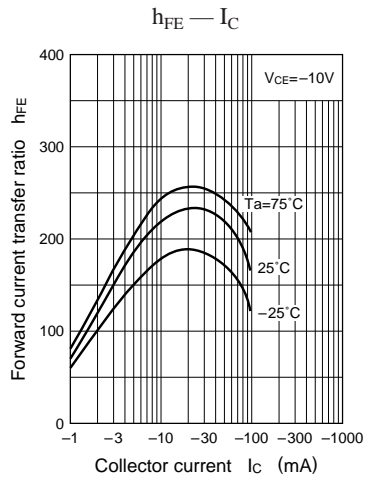
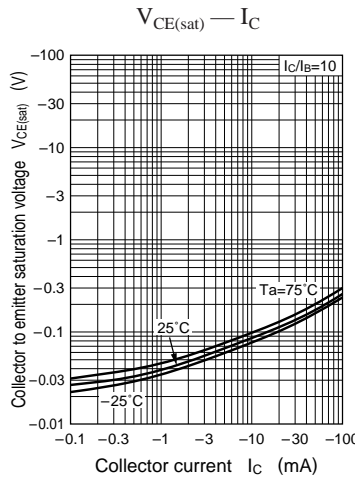
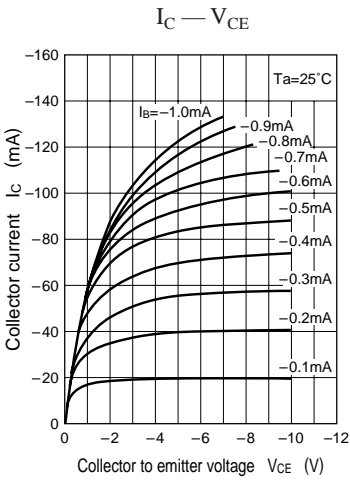


Characteristics charts of UN5113

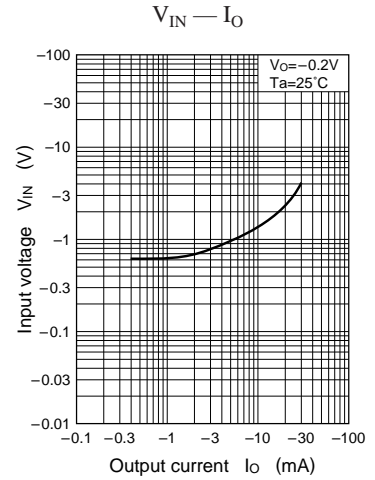
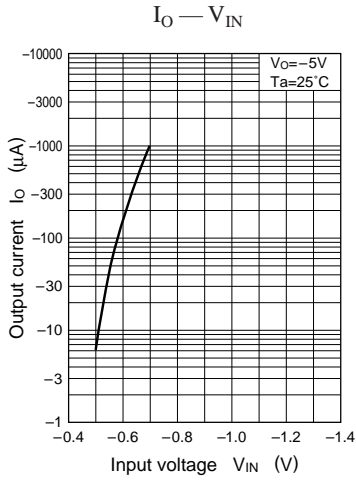
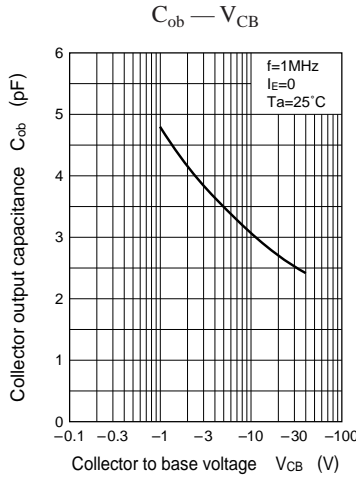
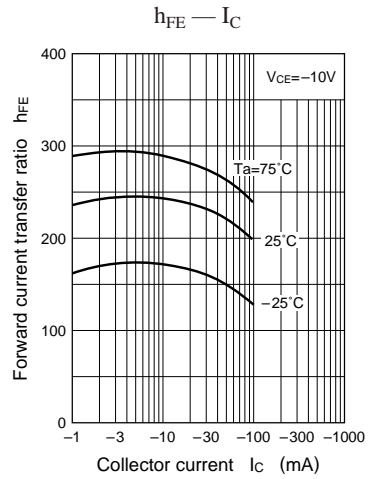
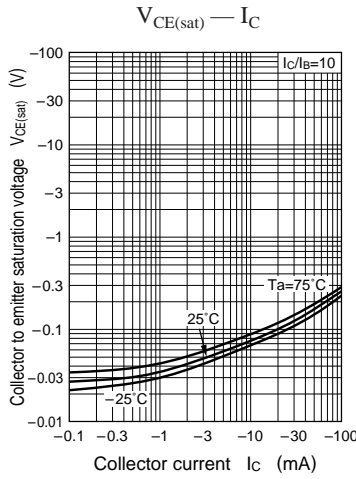
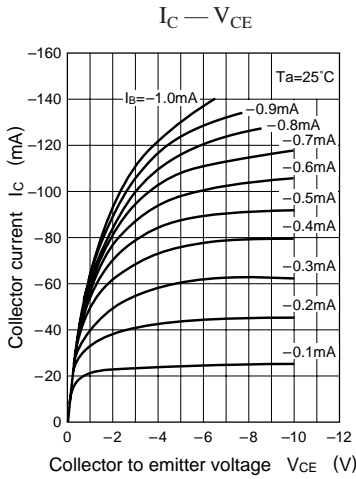




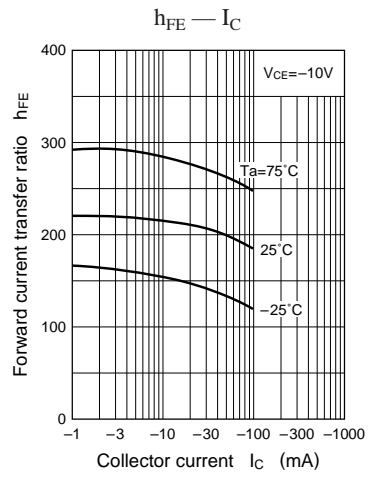
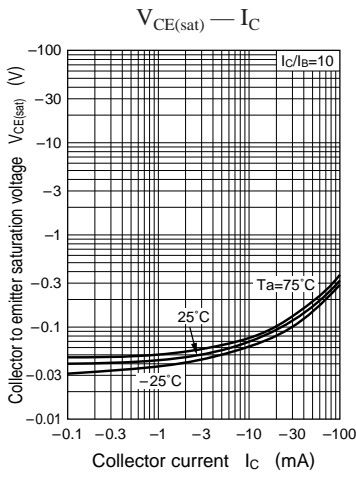
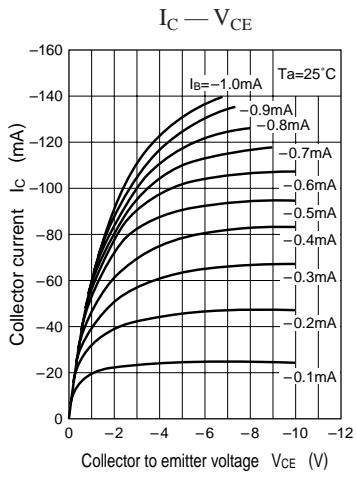
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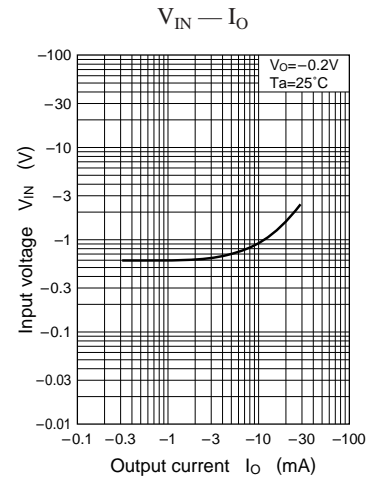
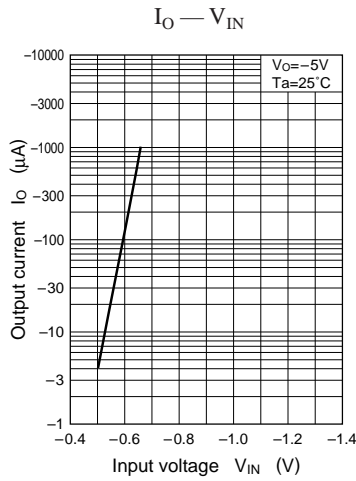
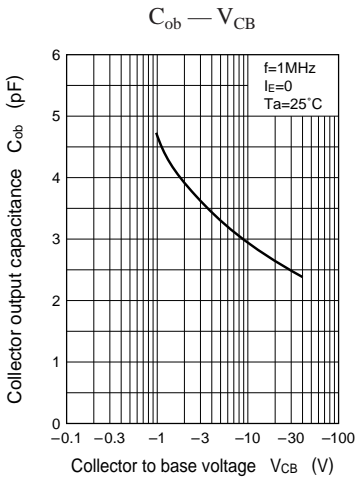


Characteristics charts of UN5115

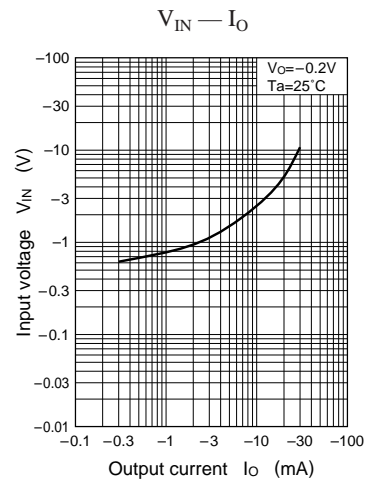
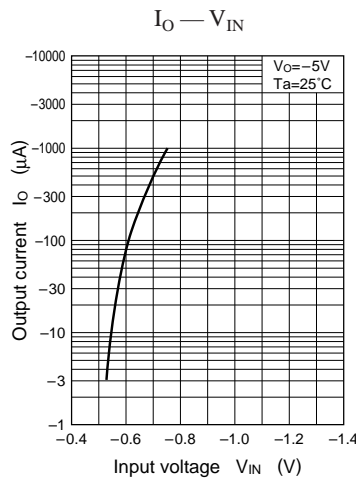
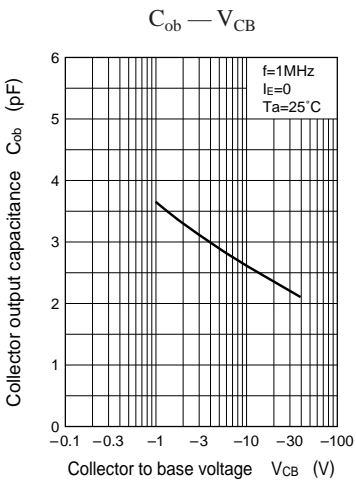
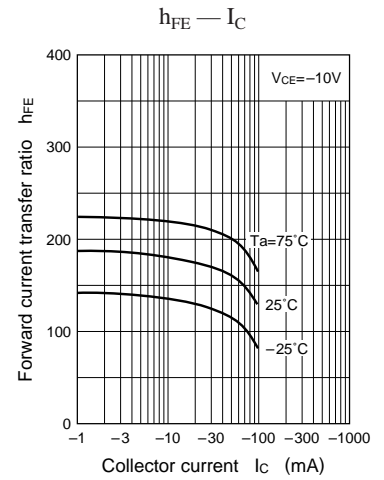
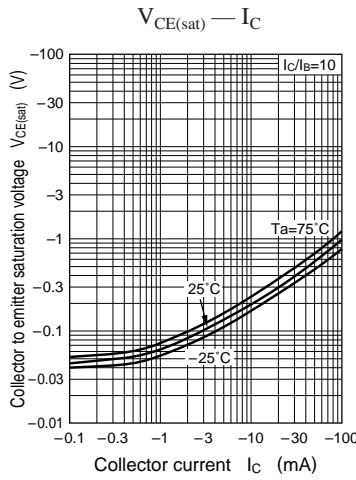
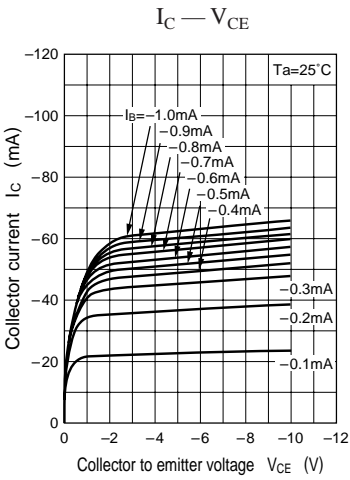


Characteristics charts of UN5116



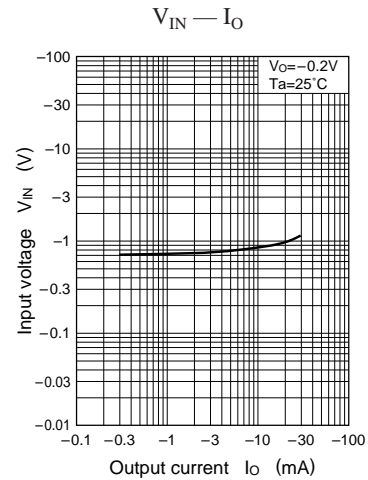
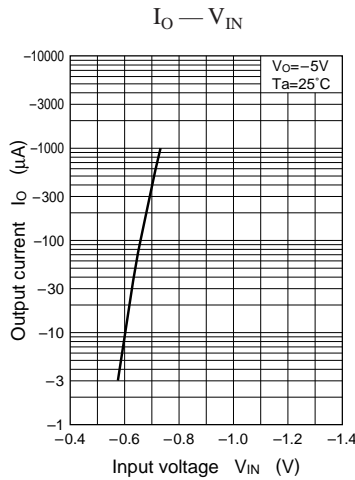
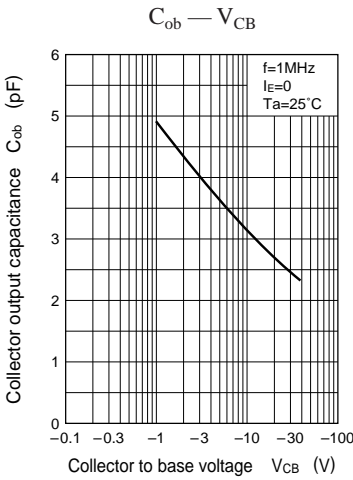
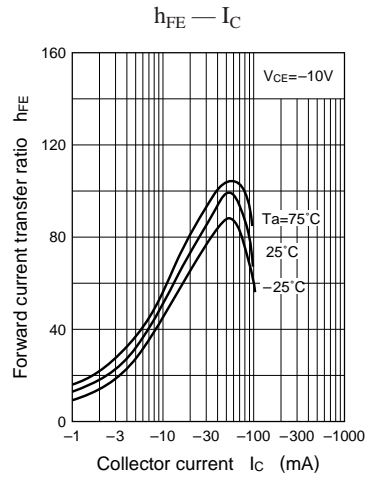
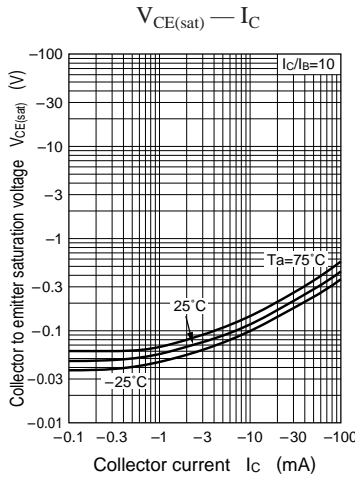
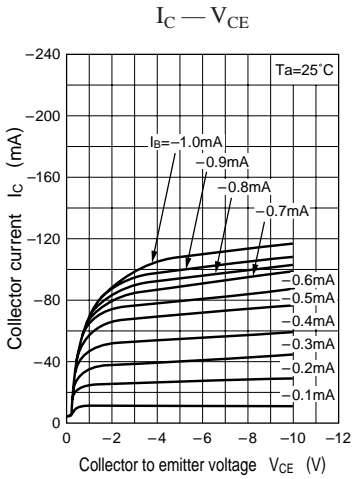


Characteristics charts of UN5117

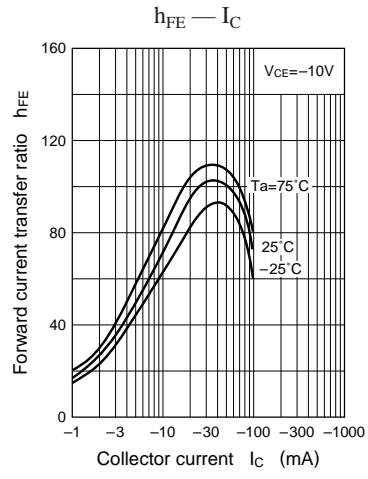
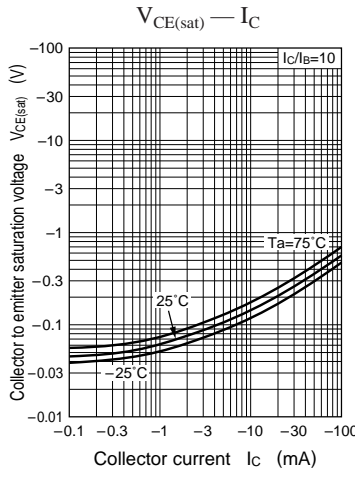
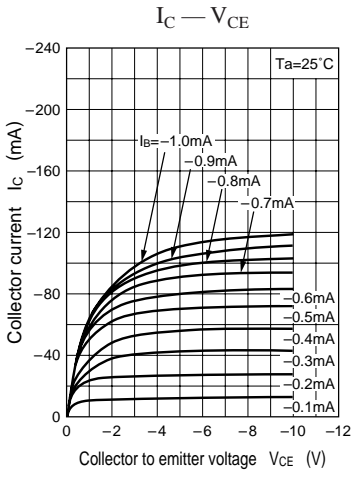


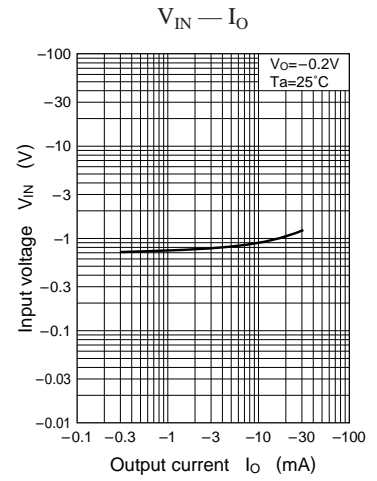
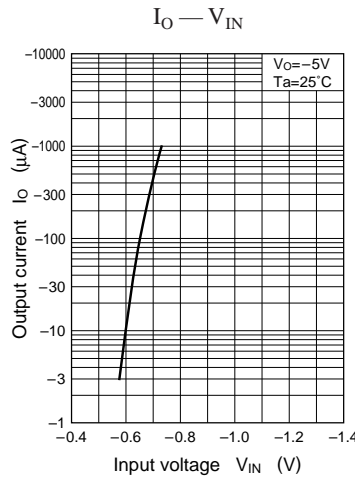
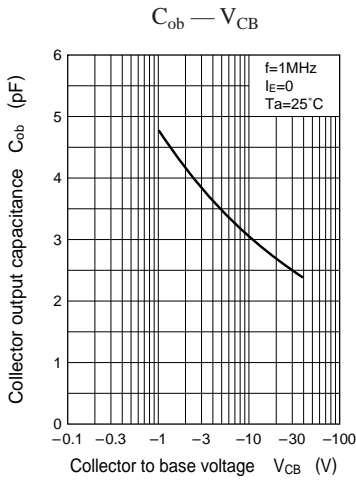


Characteristics charts of UN5118

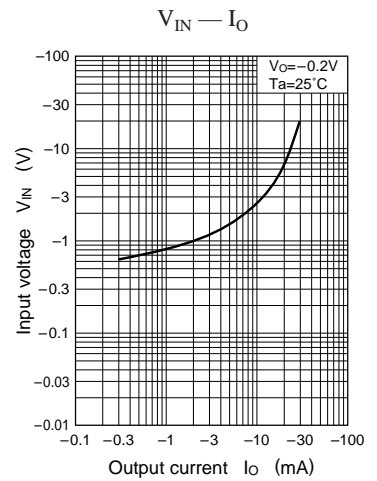
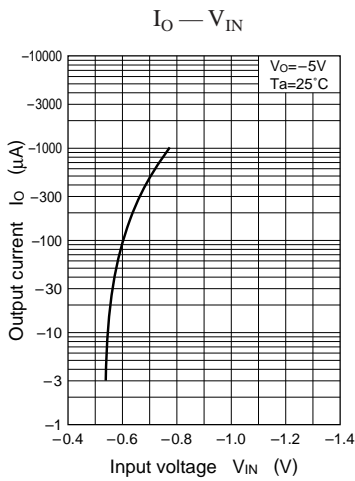
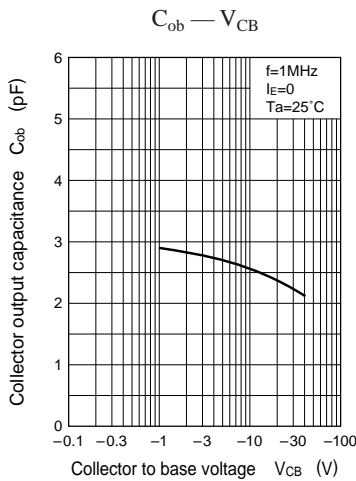
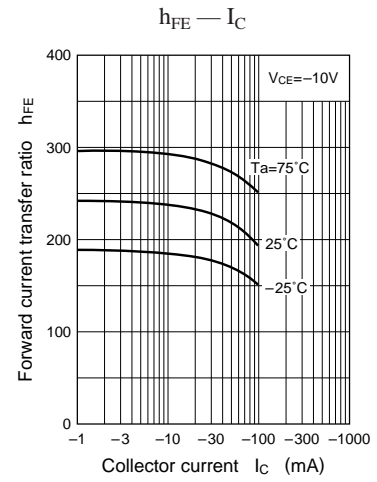
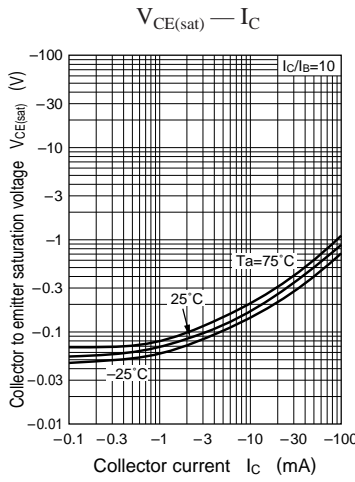
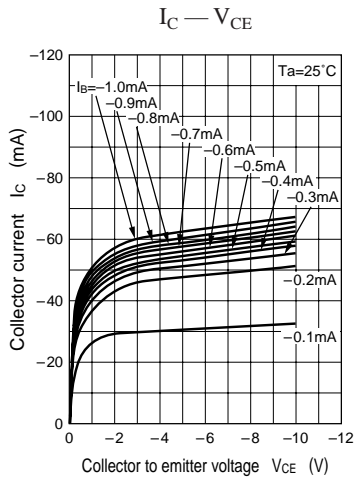


Characteristics charts of UN5119

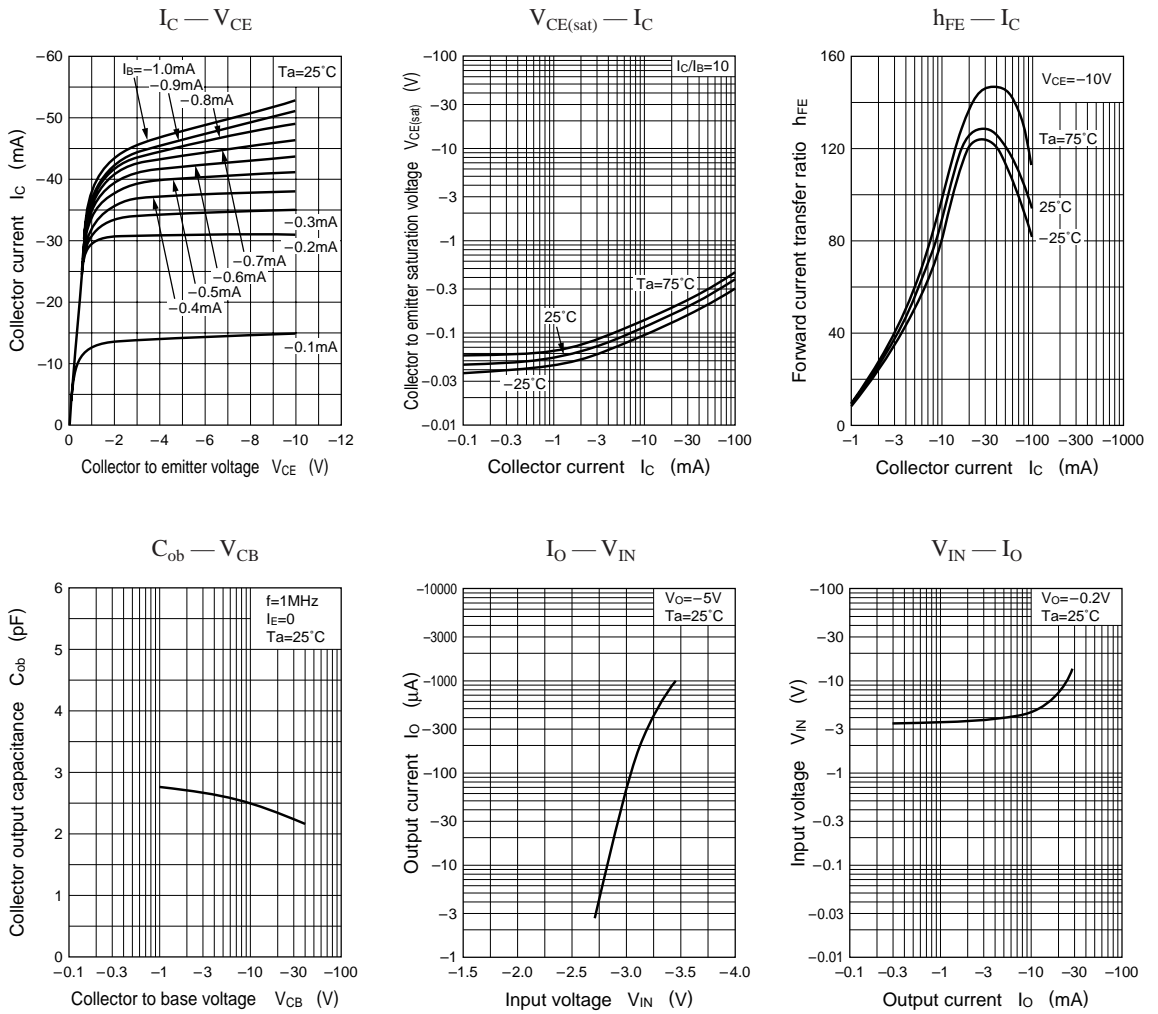




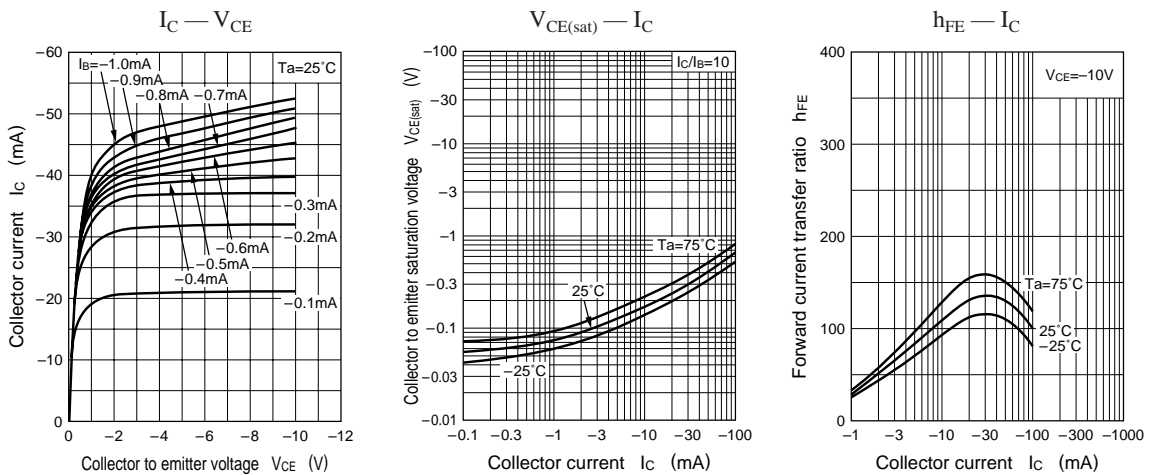
Characteristics charts of UN5110

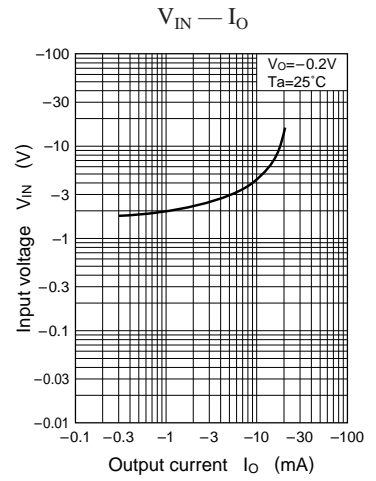
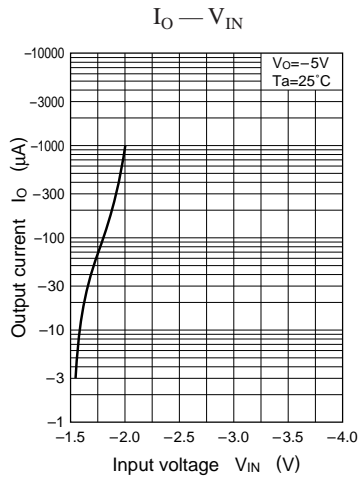
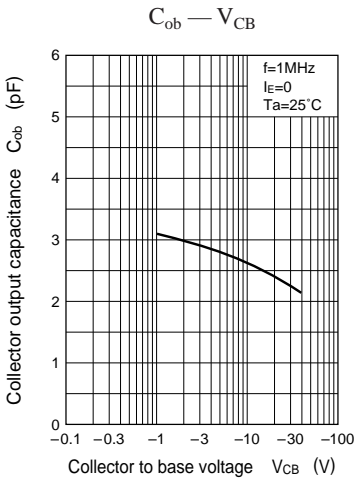


Characteristics charts of UN511D

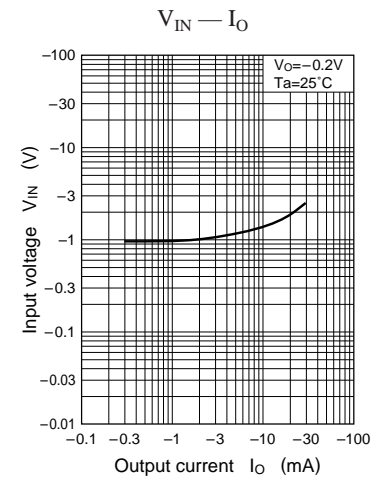
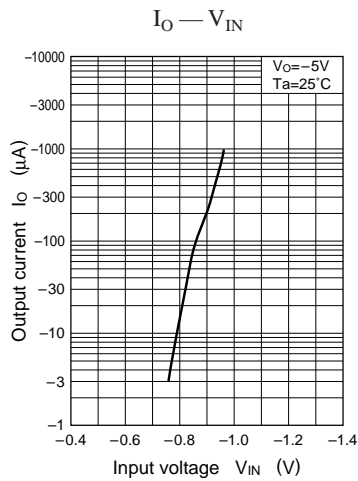
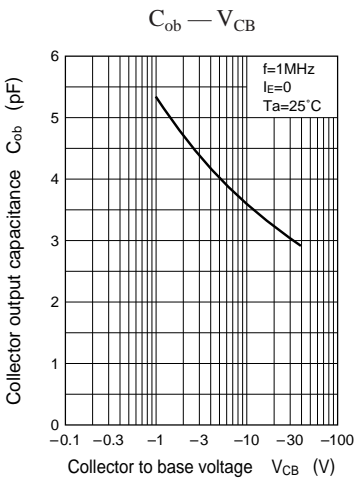
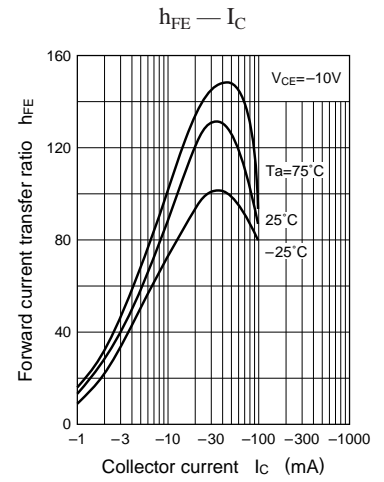
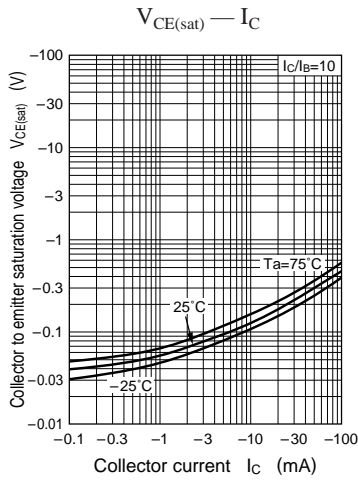
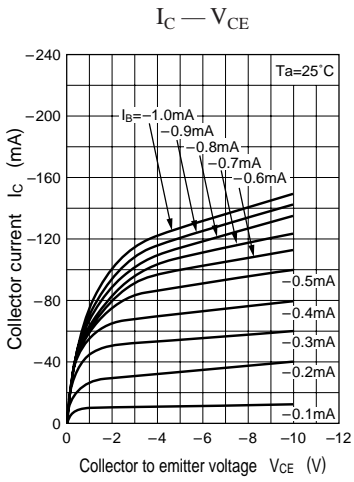


Characteristics charts of UN511E

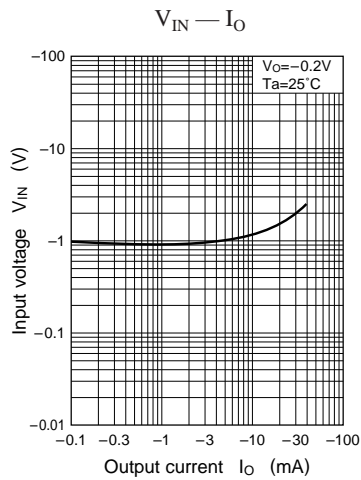
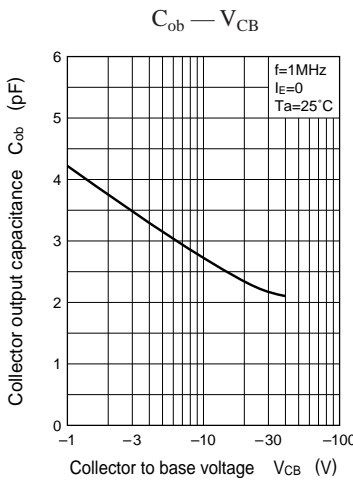
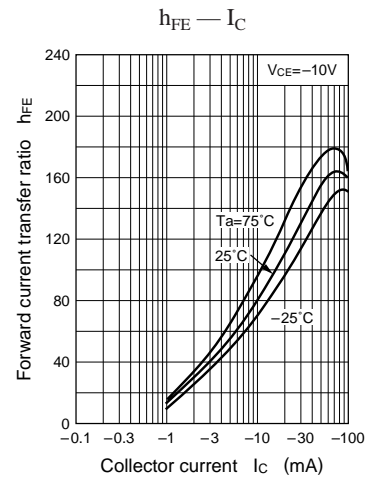
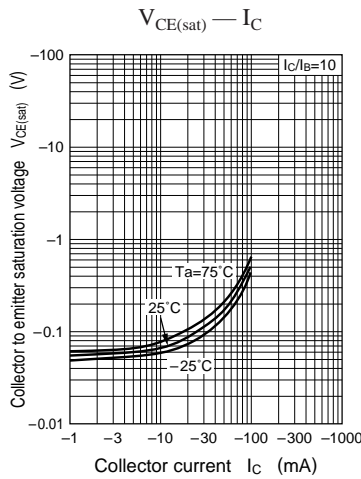
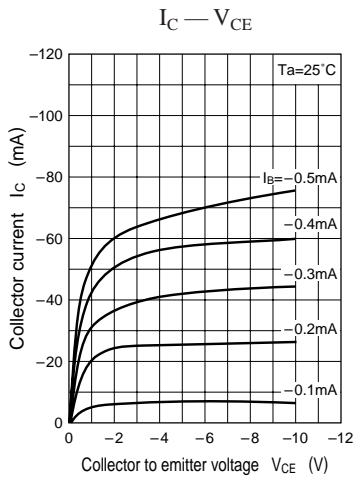




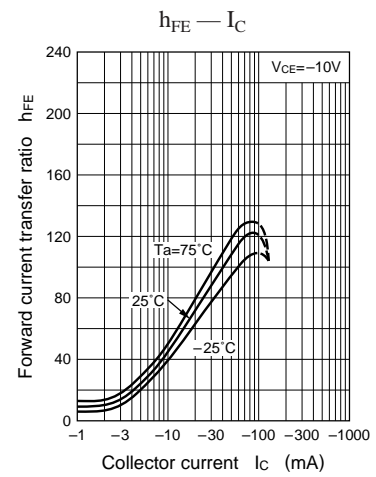
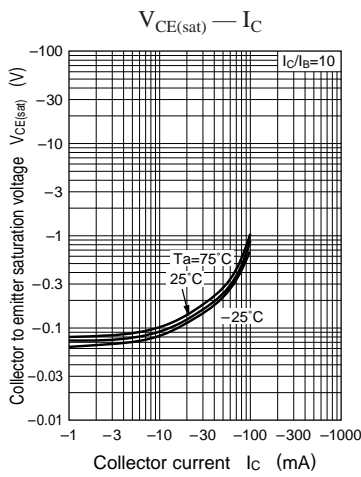
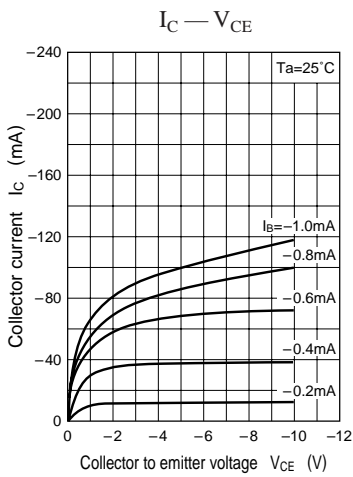
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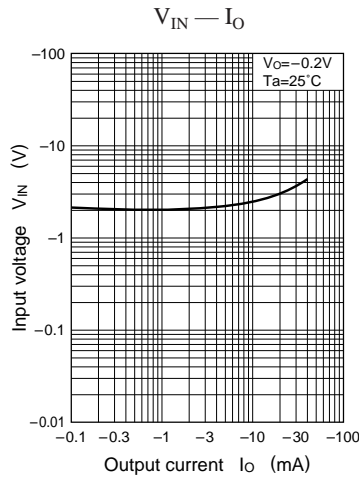
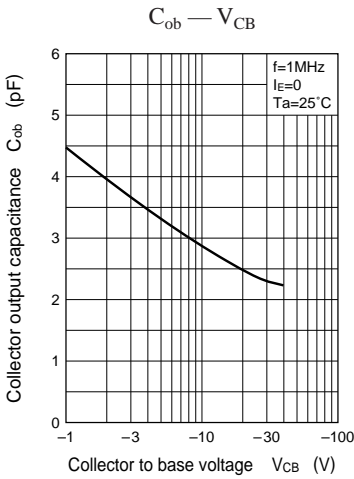


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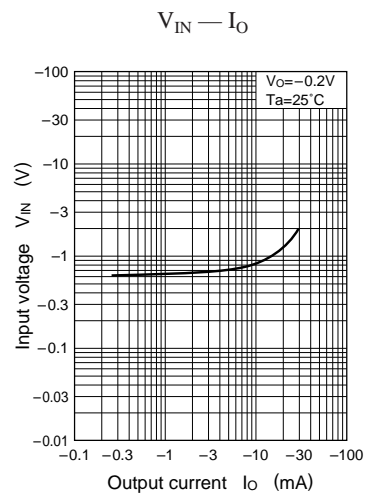
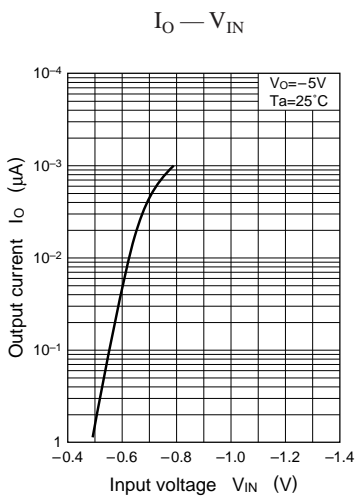
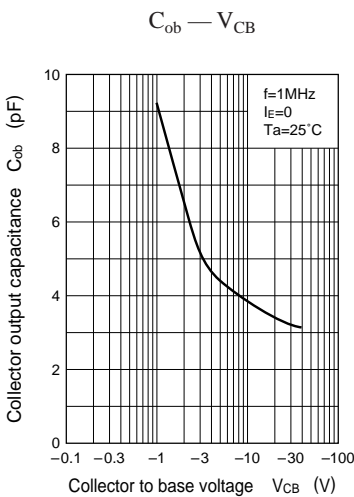
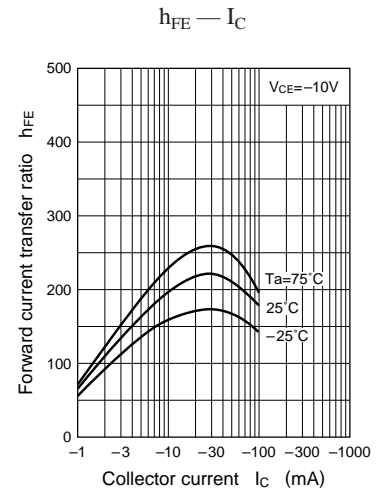
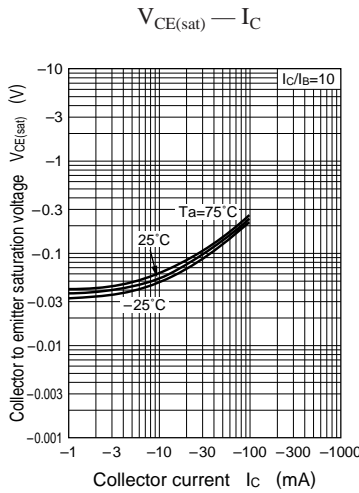
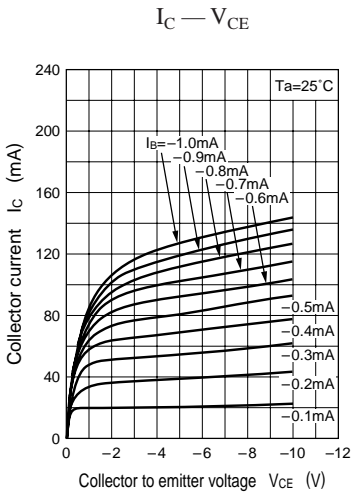


Characteristics charts of UN511L

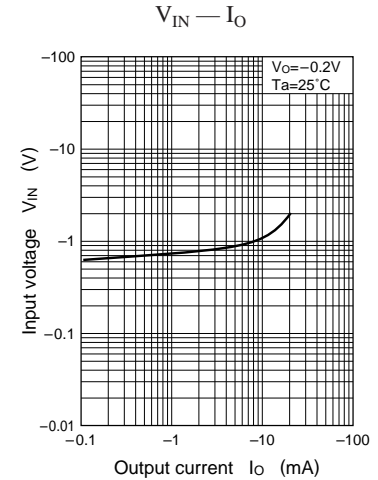
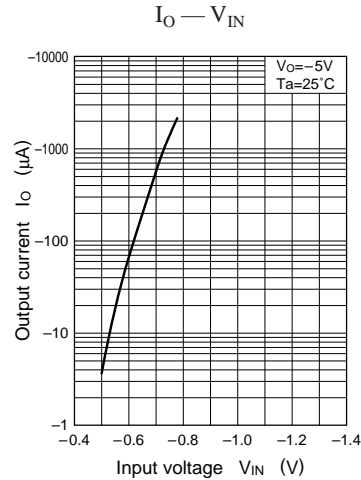
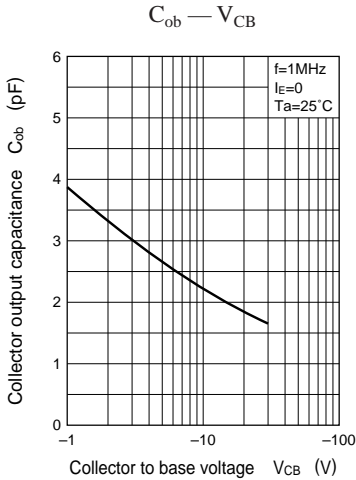
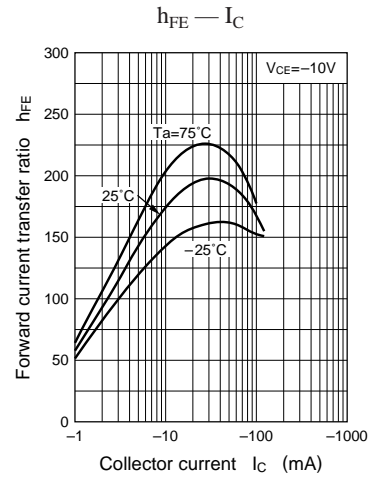
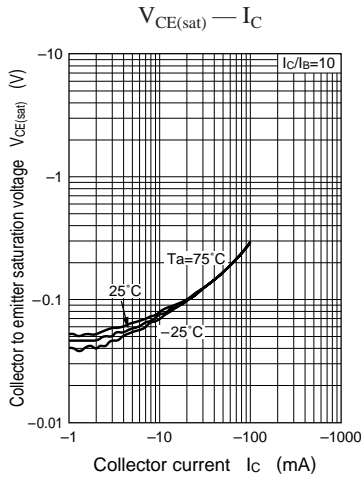
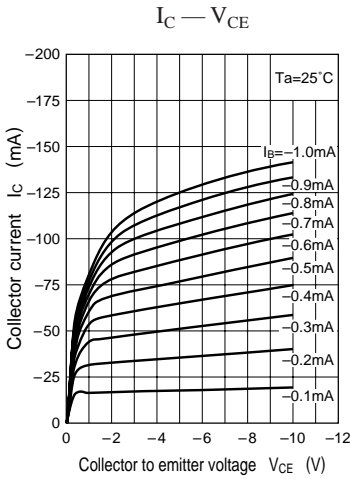




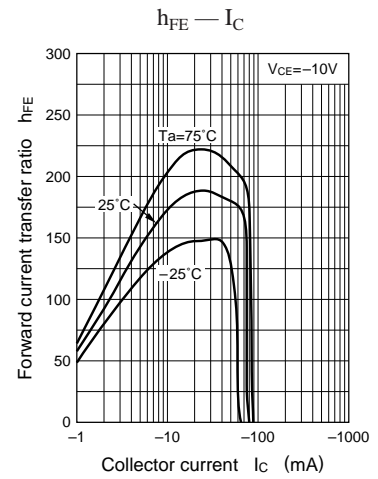
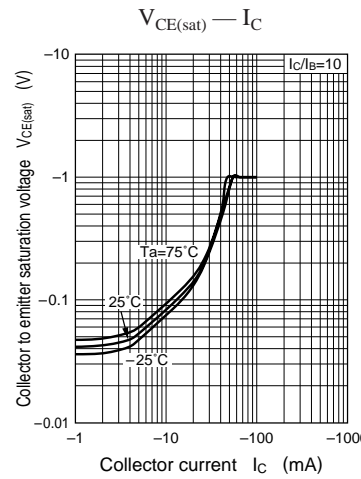
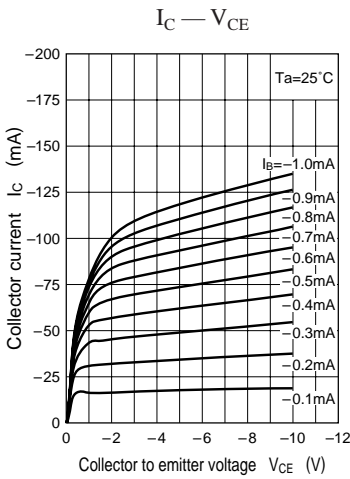
Characteristics charts of UN511M

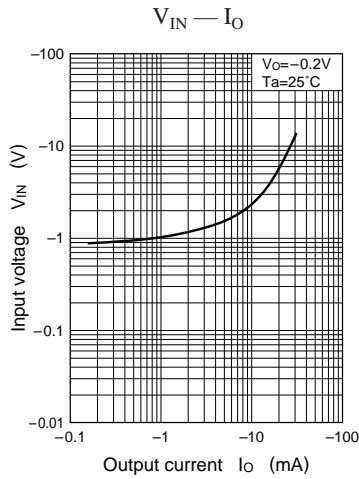
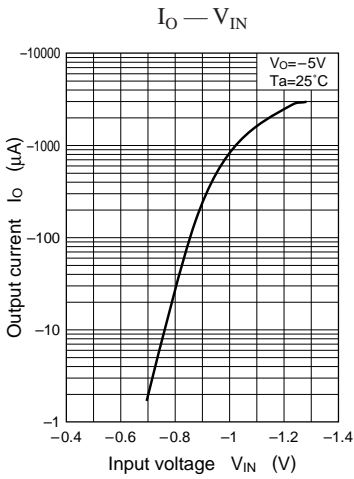


Characteristics charts of UN511N

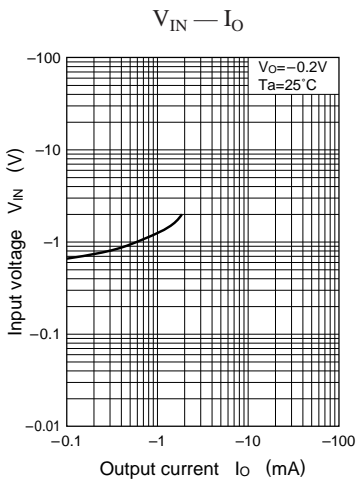
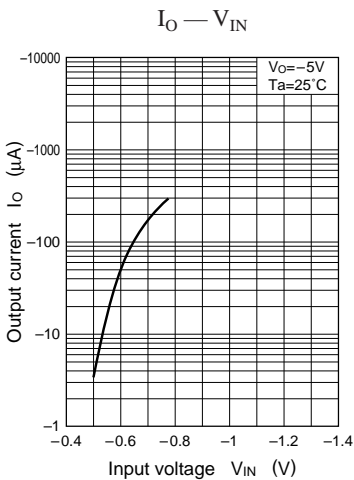
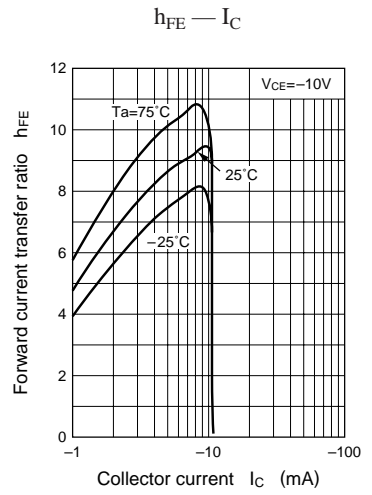
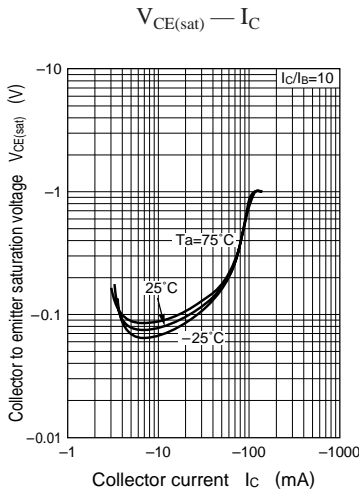
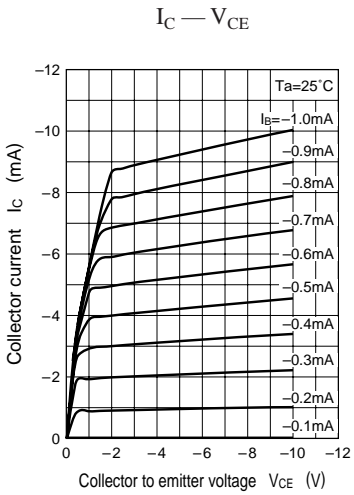


Characteristics charts of UN511T





Characteristics charts of UN511V





Characteristics charts of UN511Z

