

# UNR4111/4112/4113/4114/4115/4116/4117/ 4118/4119/4110/411D/411E/411F/411H/411L

## (UN4111/4112/4113/4114/4115/4116/4117/4118/ 4119/4110/411D/411E/411F/411H/411L)

Silicon PNP epitaxial planer transistor

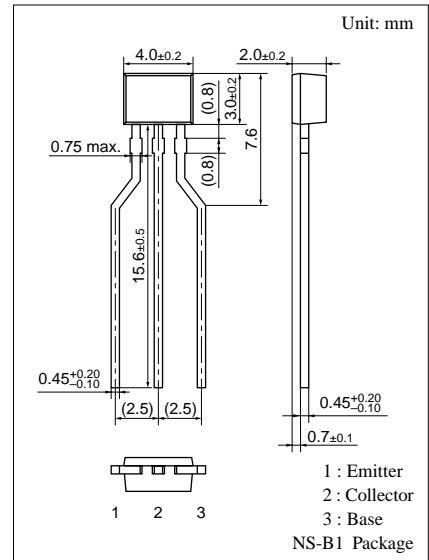
For digital circuits

### Features

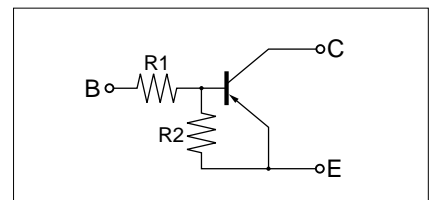
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- New S type package, allowing supply with the radial taping.

### Resistance by Part Number

	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR4111	10kΩ	10kΩ
• UNR4112	22kΩ	22kΩ
• UNR4113	47kΩ	47kΩ
• UNR4114	10kΩ	47kΩ
• UNR4115	10kΩ	—
• UNR4116	4.7kΩ	—
• UNR4117	22kΩ	—
• UNR4118	0.51kΩ	5.1kΩ
• UNR4119	1kΩ	10kΩ
• UNR4110	47kΩ	—
• UNR411D	47kΩ	10kΩ
• UNR411E	47kΩ	22kΩ
• UNR411F	4.7kΩ	10kΩ
• UNR411H	2.2kΩ	10kΩ
• UNR411L	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

Note) The part numbers in the parenthesis show conventional part number.

UNR4111/4112/4113/4114/4115/4116/4117/4118/  
Transistors with built-in Resistor 4119/4110/411D/411E/411F/411H/411L

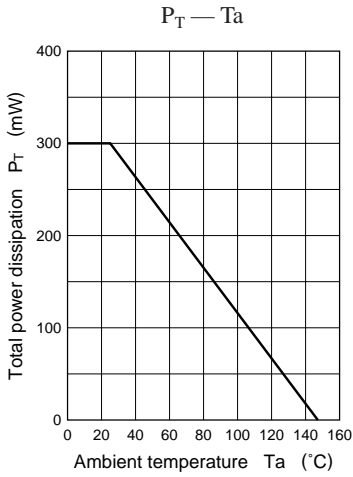
■ Electrical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit	
Collector cutoff current		I <sub>CB0</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	UNR4111	I <sub>EBO</sub>	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0			-0.5	mA	
	UNR4112/4114/411E/411D					-0.2		
	UNR4113					-0.1		
	UNR4115/4116/4117/4110					-0.01		
	UNR411F/411H					-1.0		
	UNR4119					-1.5		
	UNR4118/411L					-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	UNR4111	h <sub>FE</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA	35				
	UNR4112/411E			60				
	UNR4113/4114			80				
	UNR4115*/4116*/4117*/4110*			160		460		
	UNR411F/411D/4119/411H			30				
	UNR4118/411L			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> = 1mA, f = 200MHz		80		MHz	
Input resistance	UNR4111/4114/4115	R <sub>i</sub>		(-30%)		(±30%)	kΩ	
	UNR4112/4117							10
	UNR4113/4110/411D/411E							22
	UNR4116/411F/411L							47
	UNR4118							4.7
	UNR4119							0.51
	UNR411H							1
Resistance ratio	UNR4111/4112/4113/411L	R <sub>1</sub> /R <sub>2</sub>			0.8	1.0	1.2	
	UNR4114				0.17	0.21	0.25	
	UNR4118/4119				0.08	0.1	0.12	
	UNR411D				3.7	4.7	5.7	
	UNR411E				1.7	2.14	2.6	
	UNR411F				0.37	0.47	0.57	
	UNR411H				0.17	0.22	0.27	

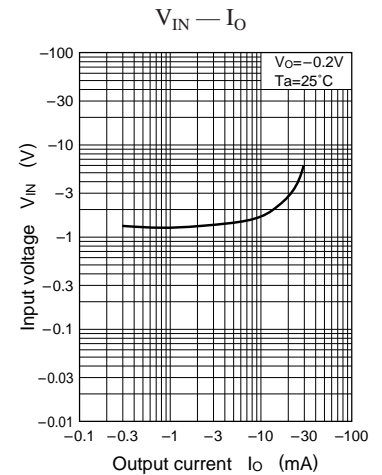
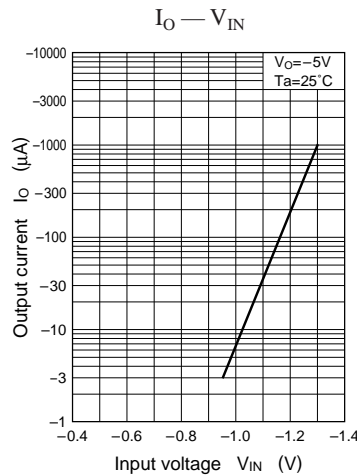
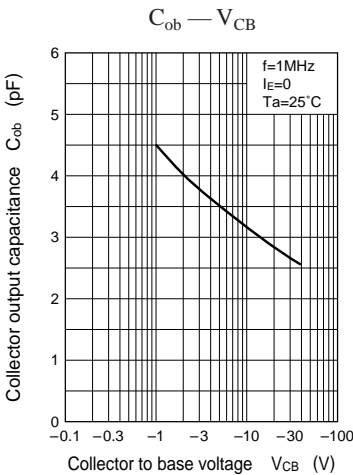
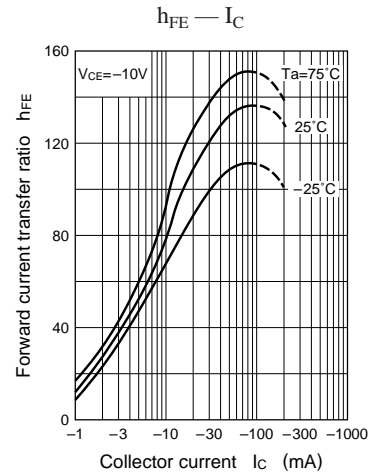
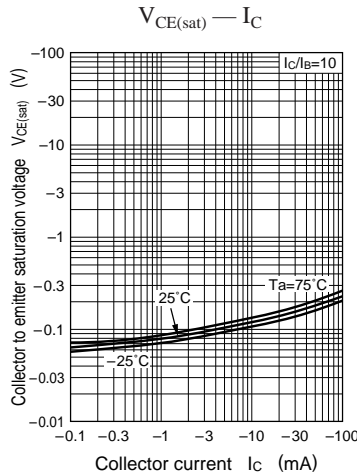
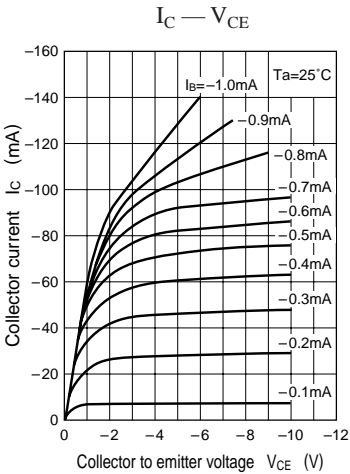
\* h<sub>FE</sub> rank classification (UNR4115/4116/4117/4110)

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

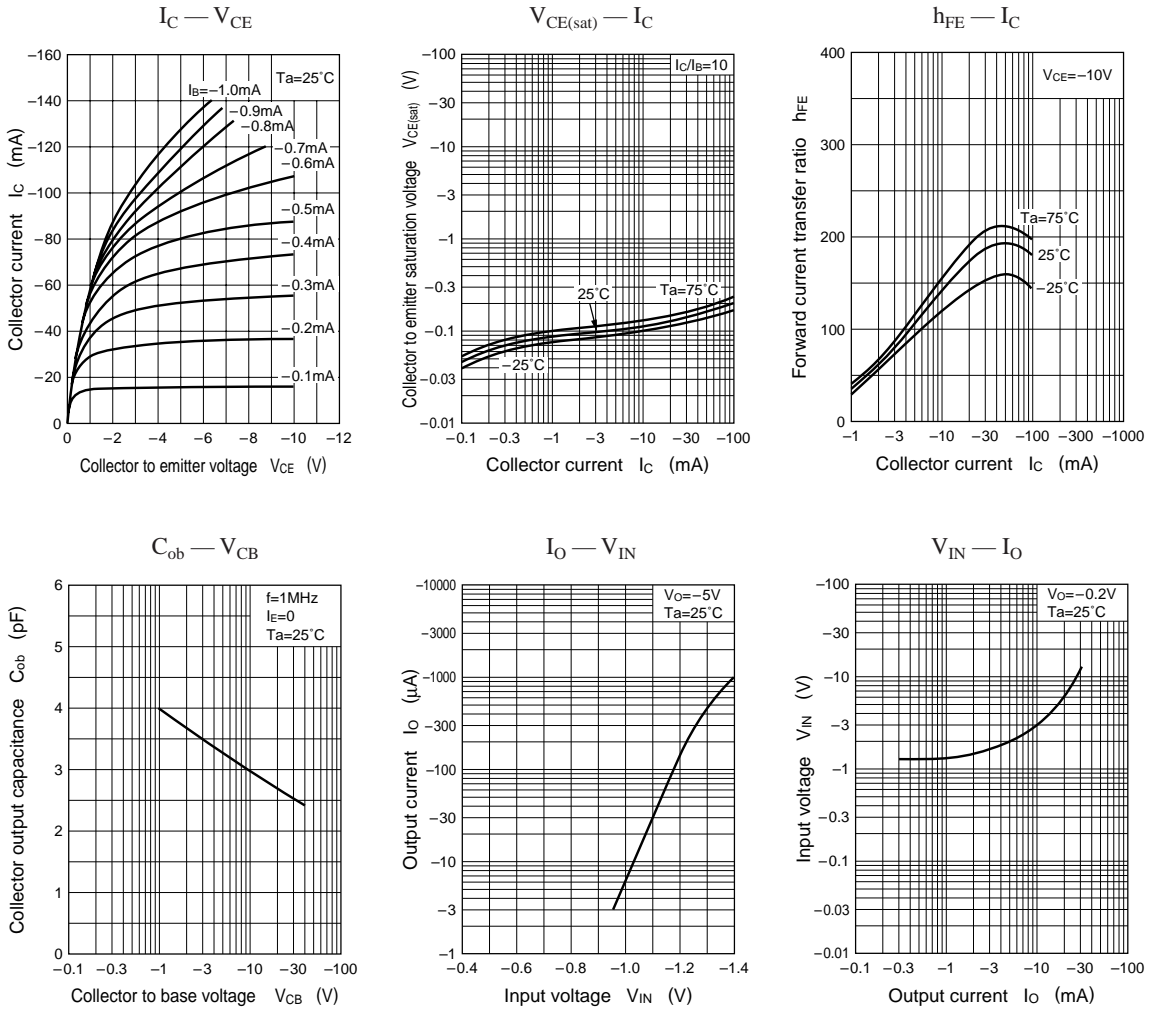
Common characteristics chart



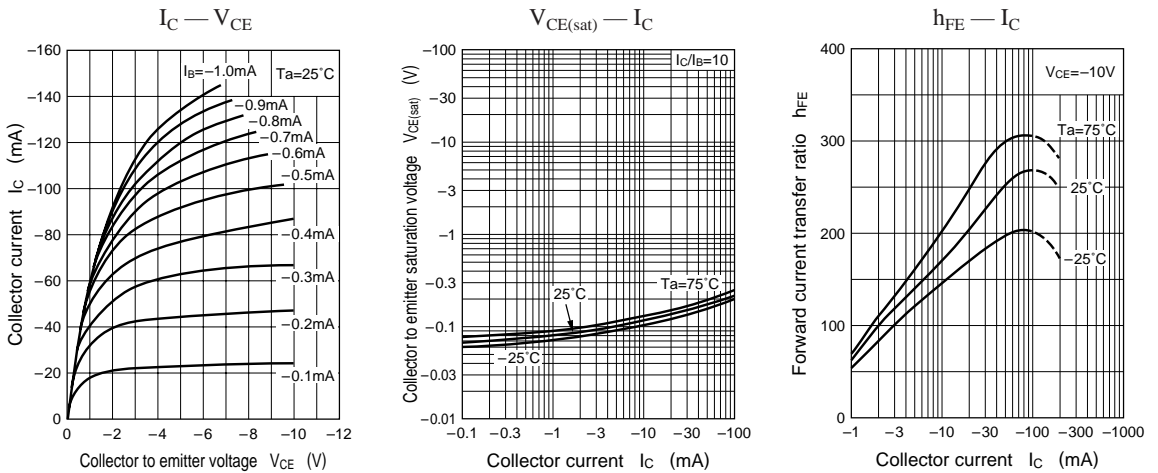
Characteristics charts of UNR4111

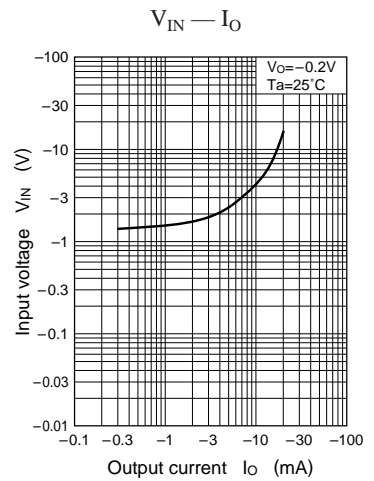
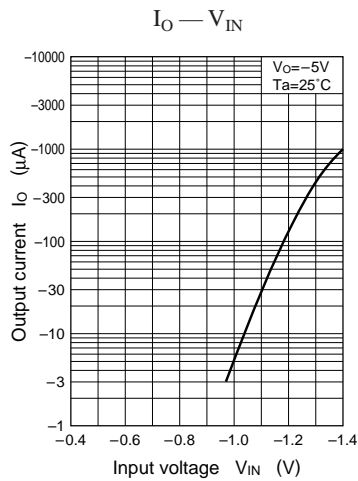
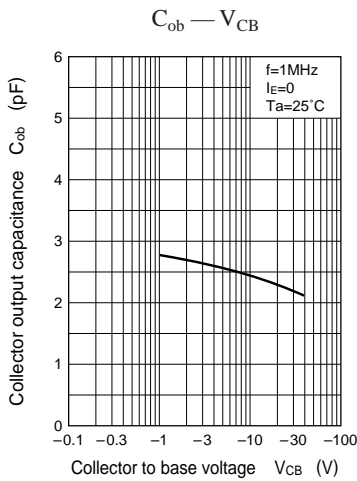


Characteristics charts of UNR4112

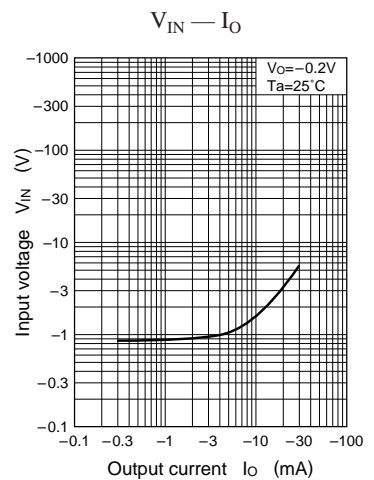
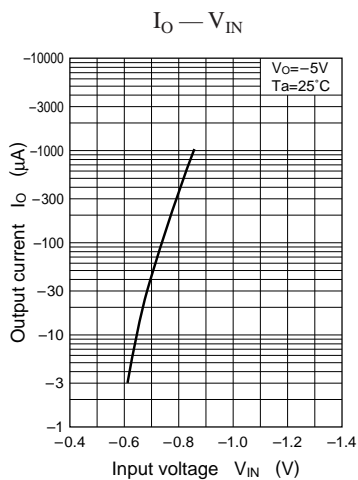
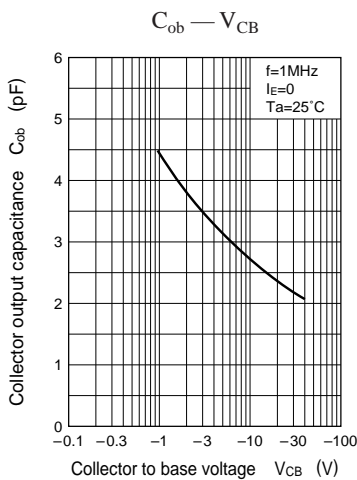
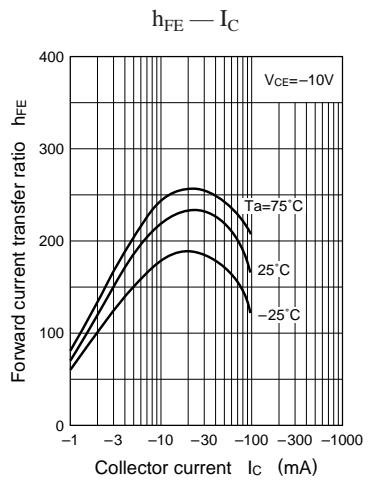
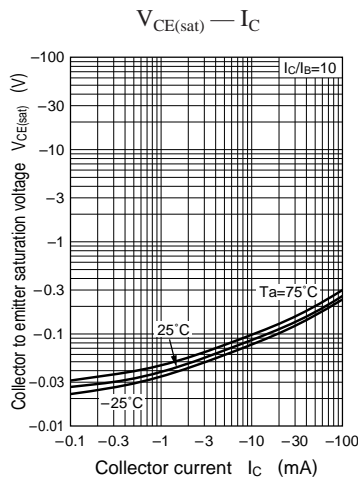
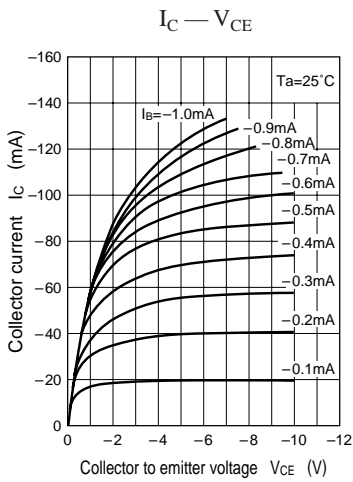


Characteristics charts of UNR4113

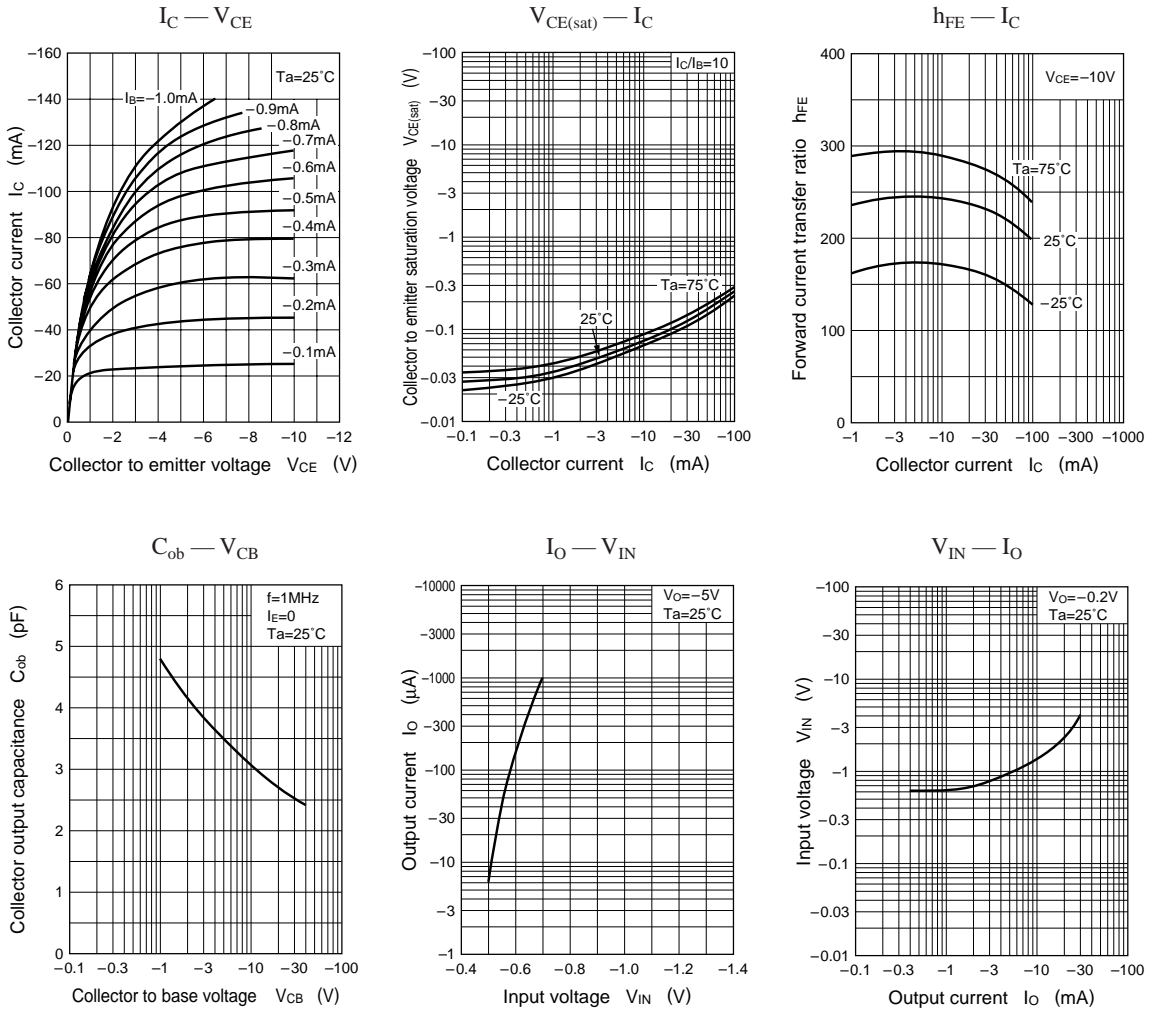




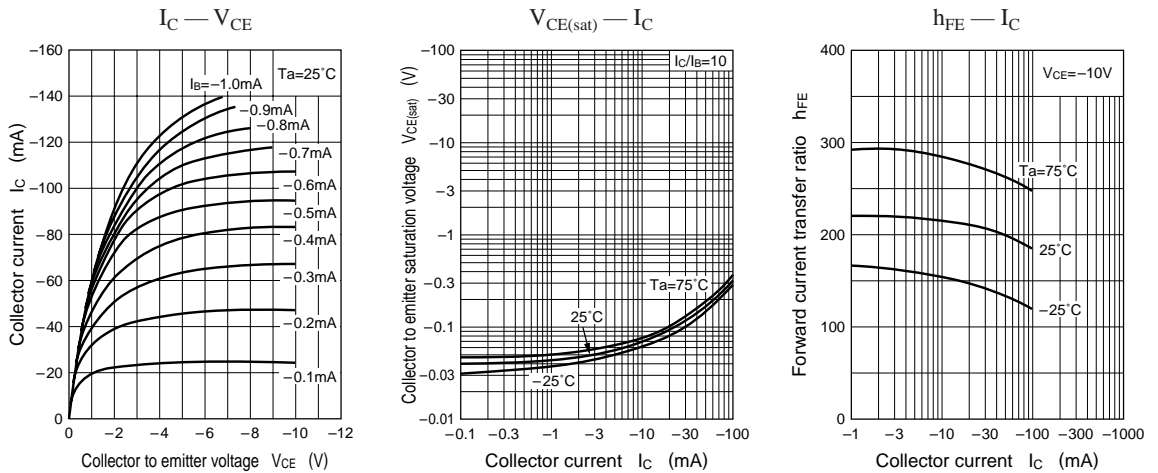
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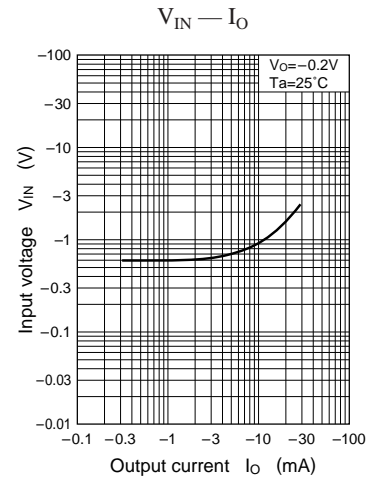
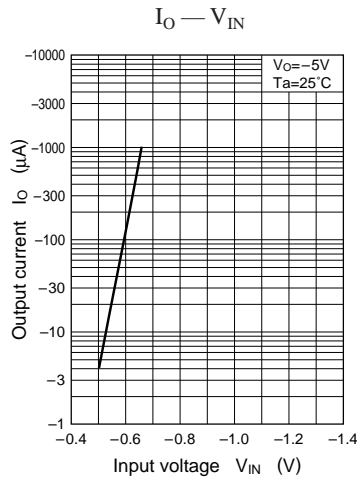
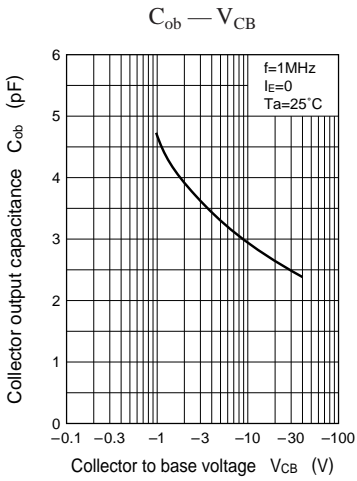


Characteristics charts of UNR4115

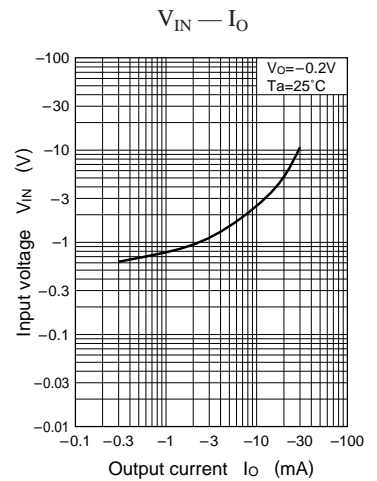
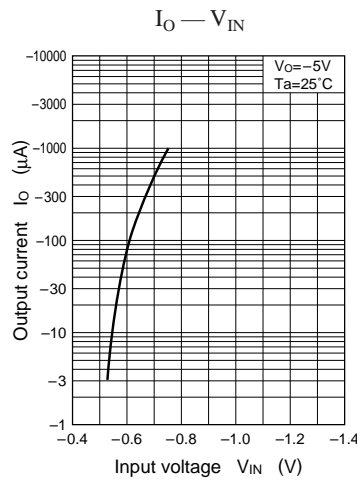
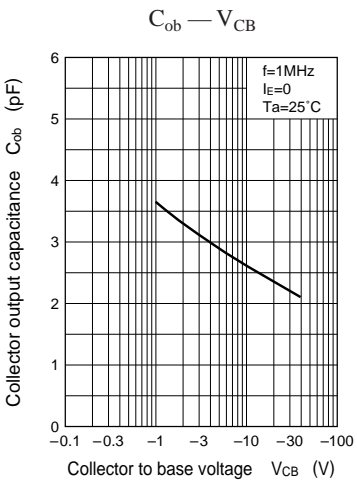
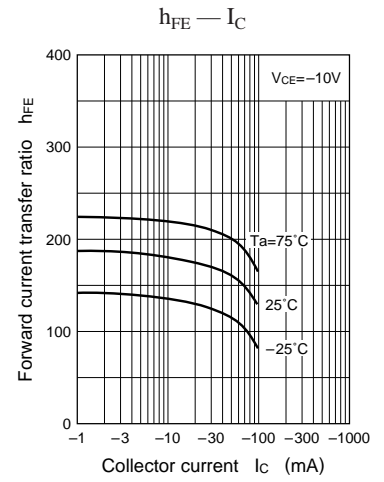
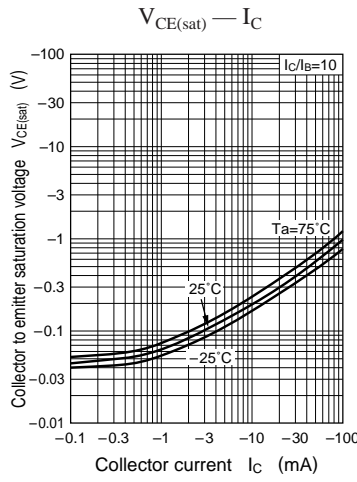
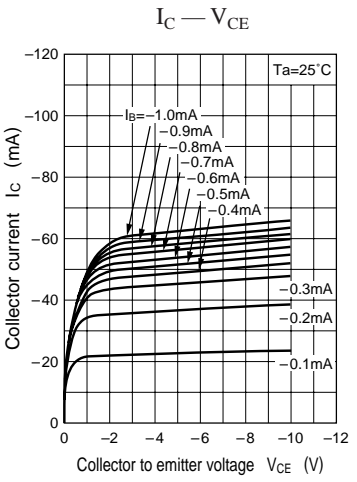


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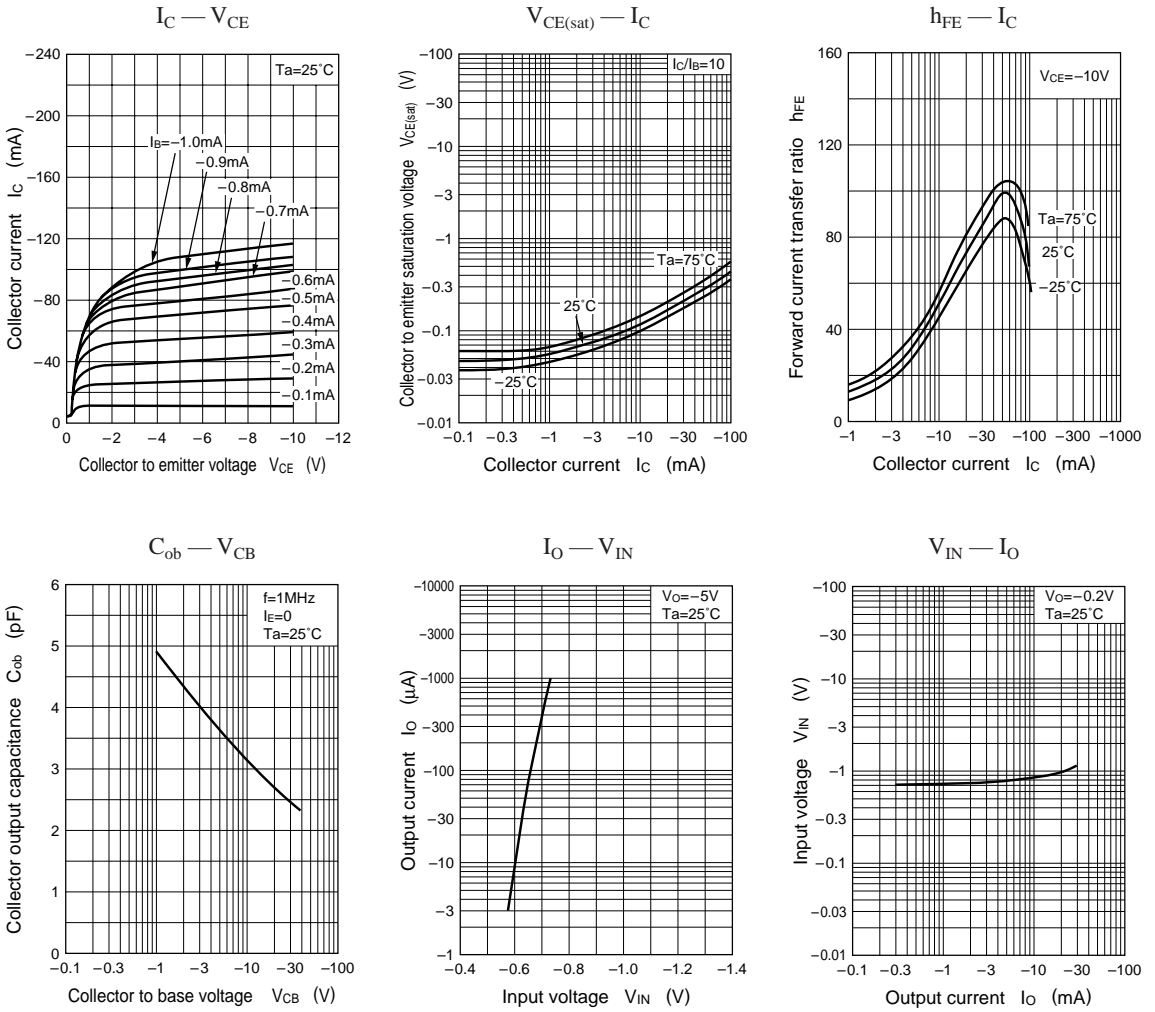




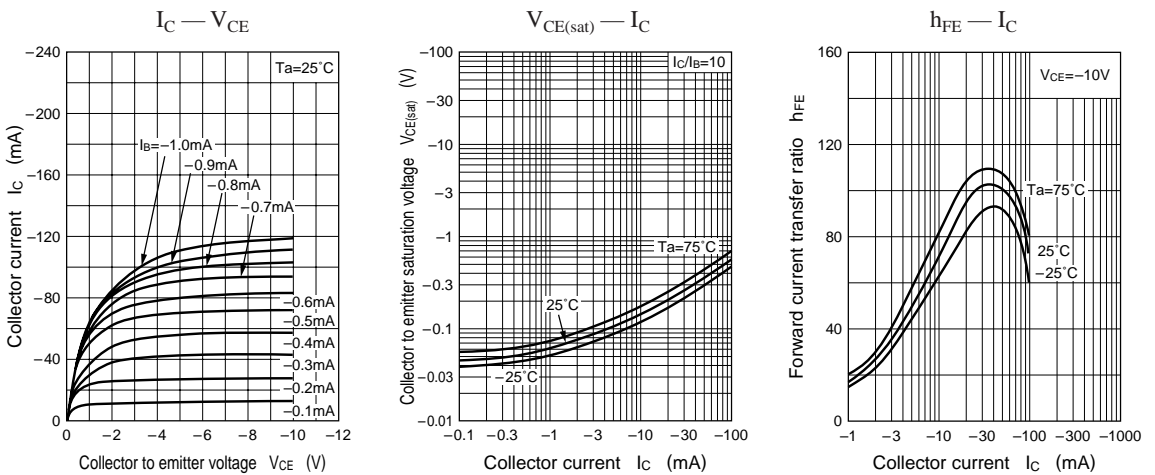
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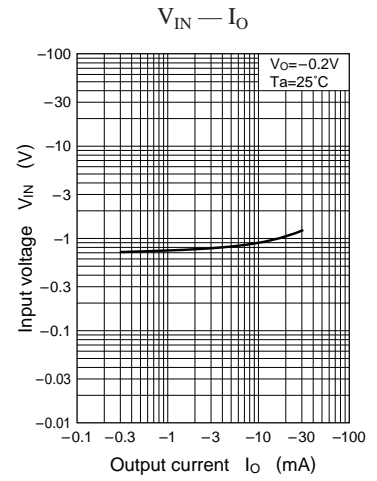
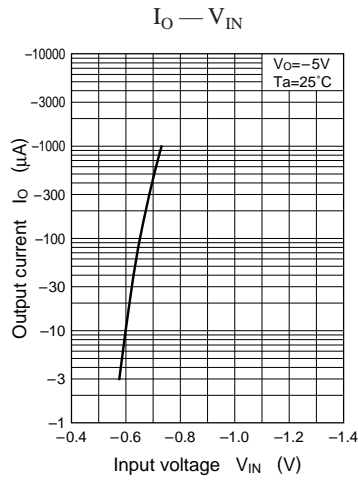
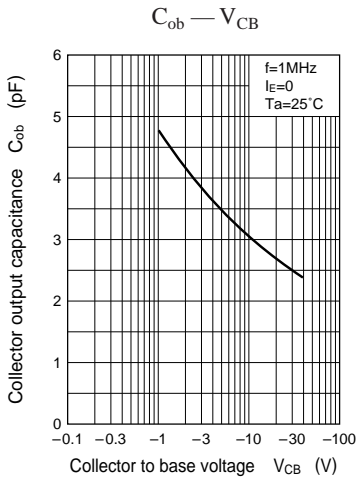


Characteristics charts of UNR4118

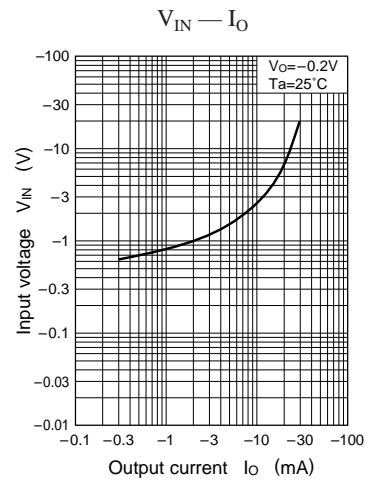
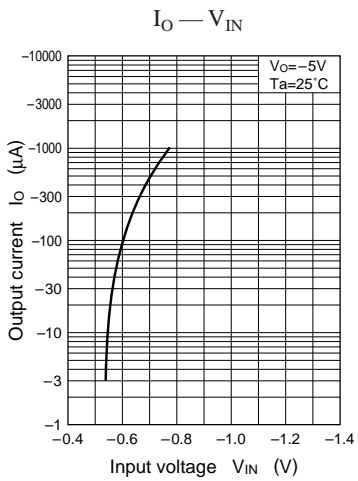
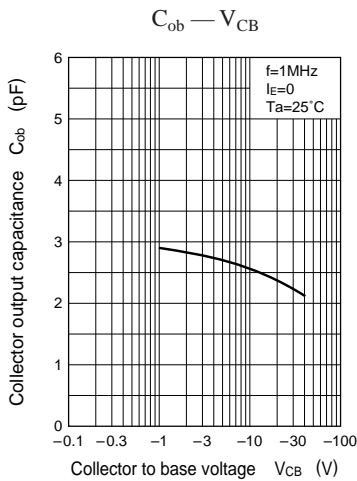
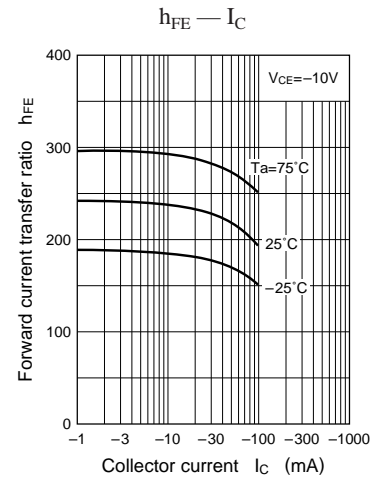
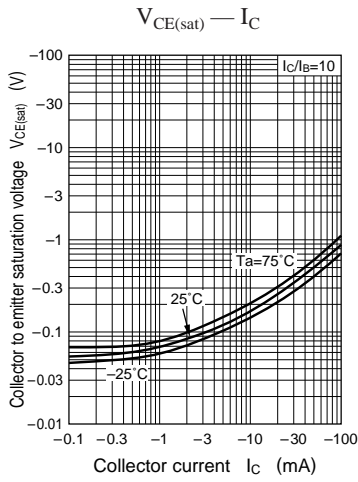
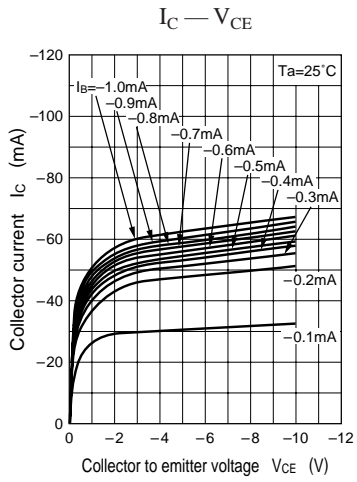


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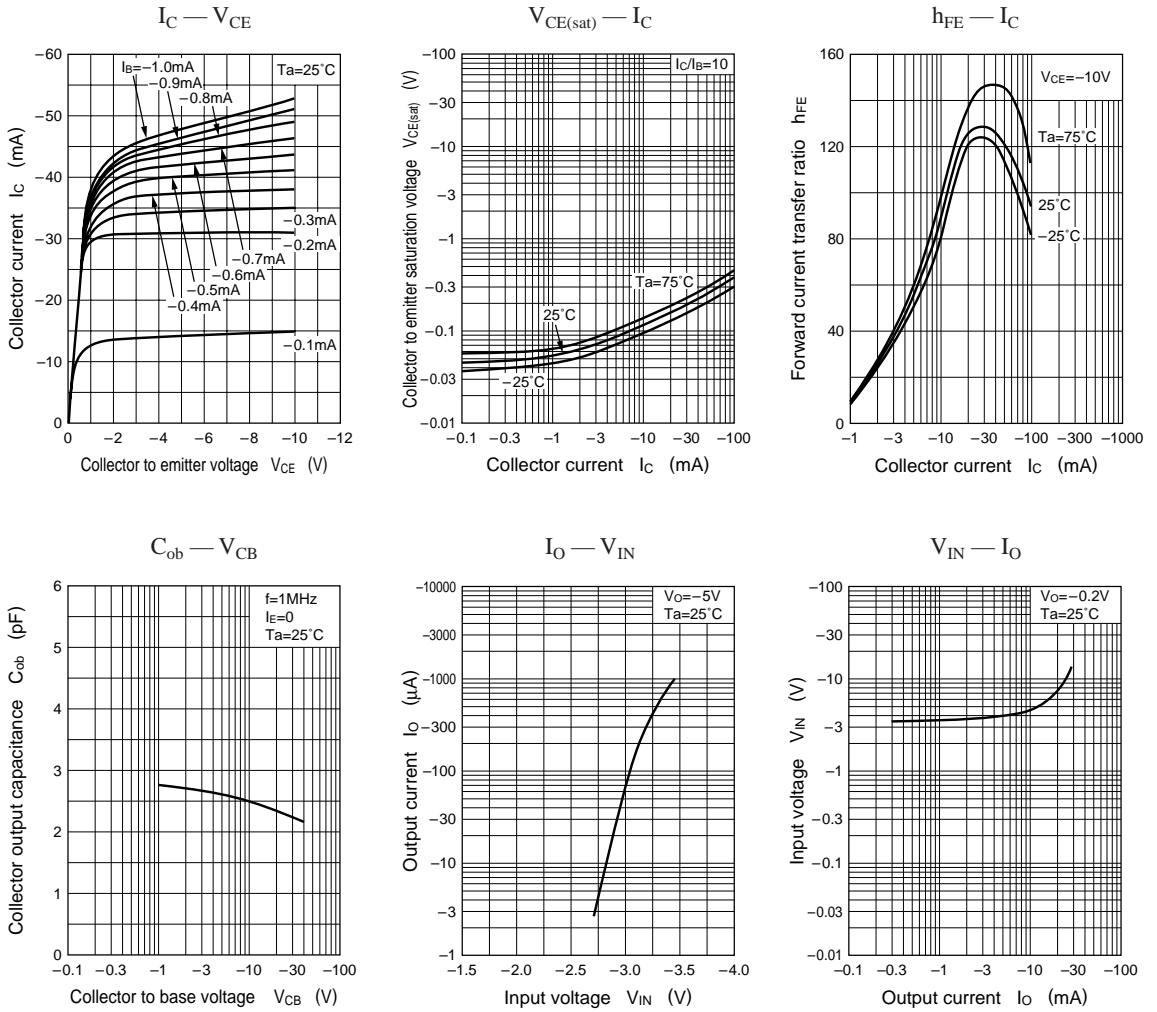




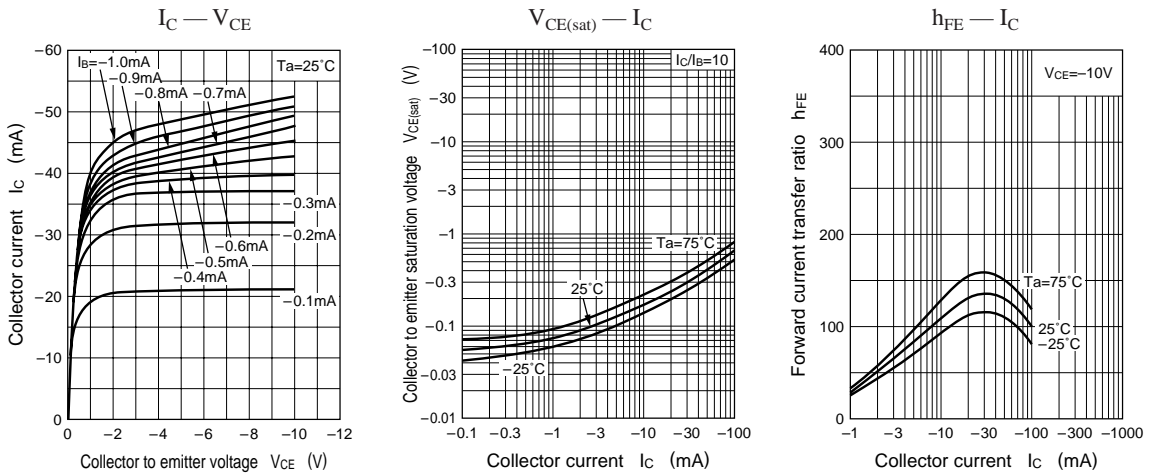
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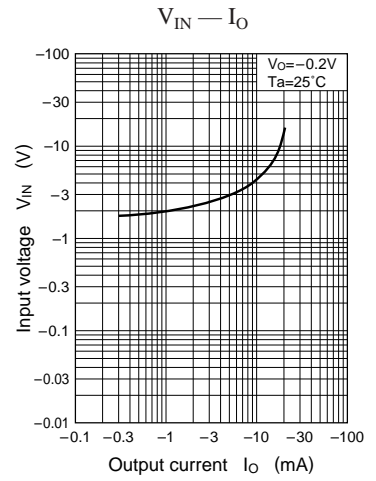
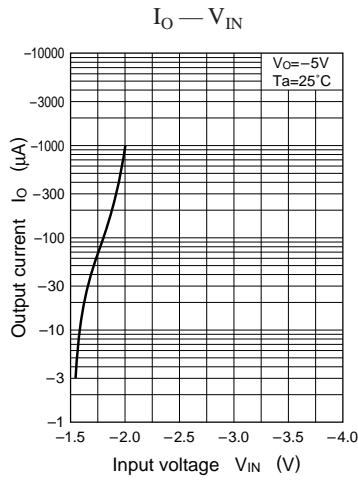
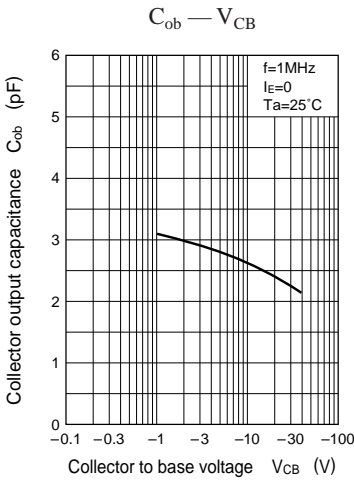


Characteristics charts of UNR411D

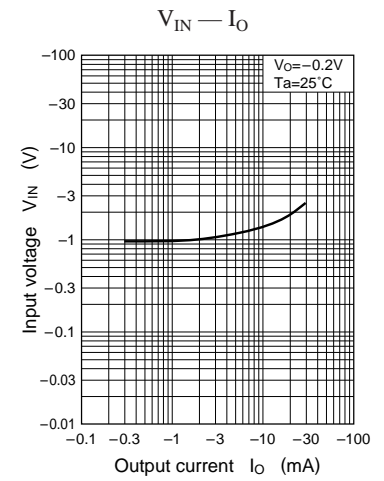
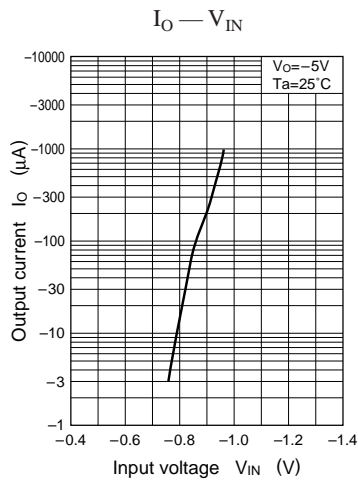
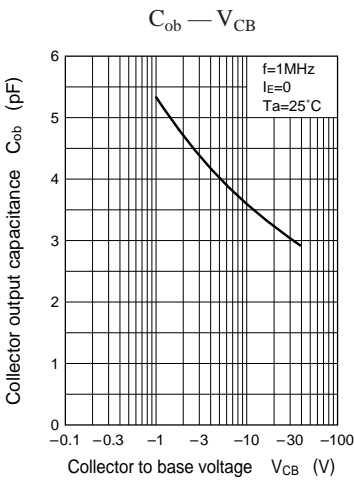
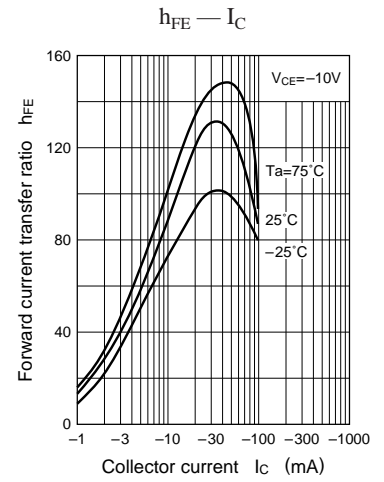
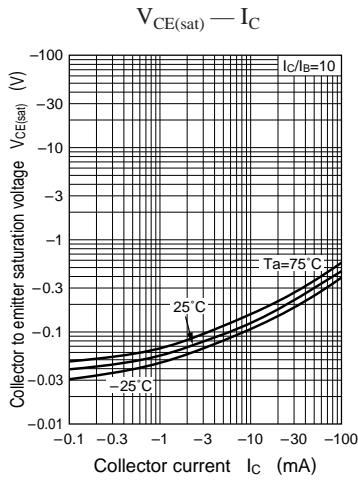
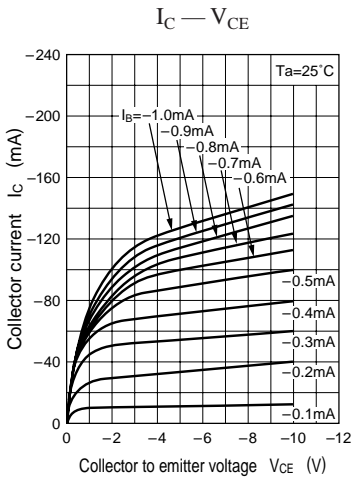


Characteristics charts of UNR411E

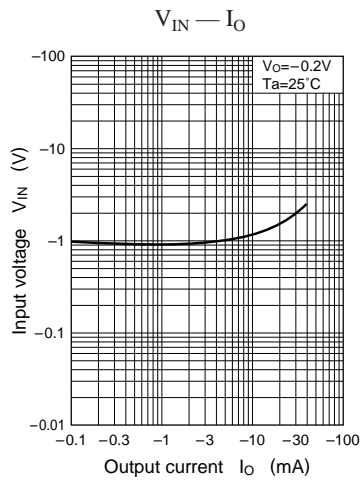
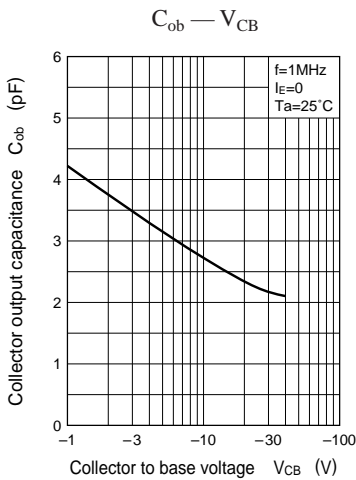
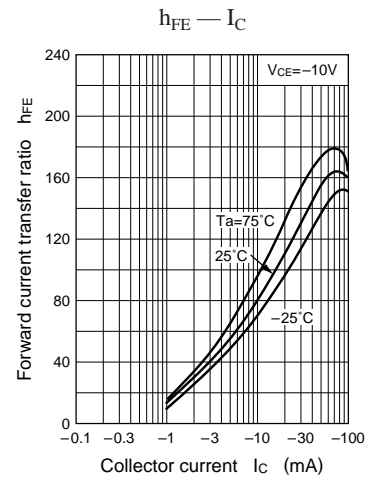
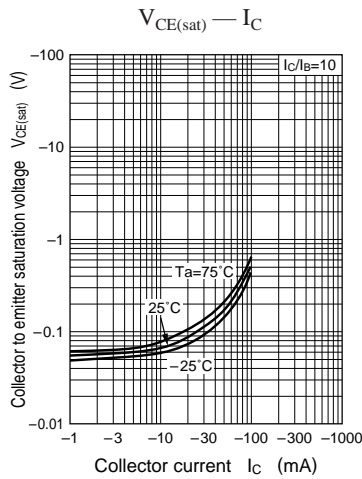
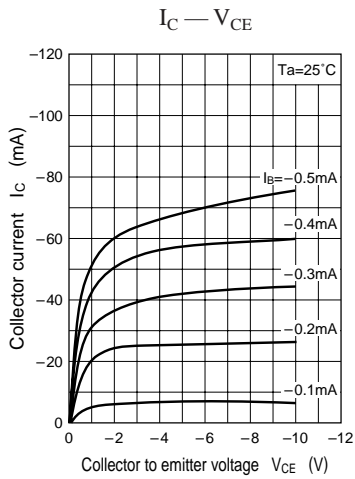




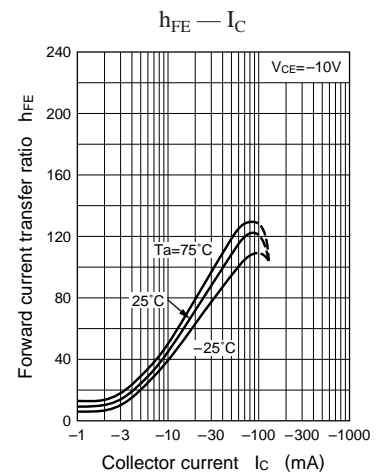
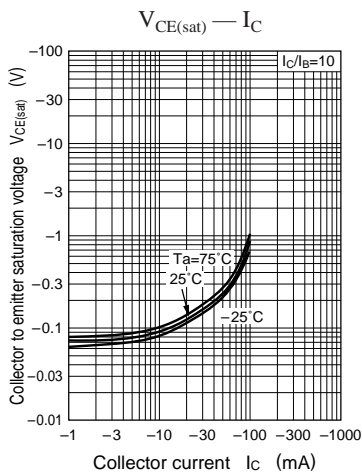
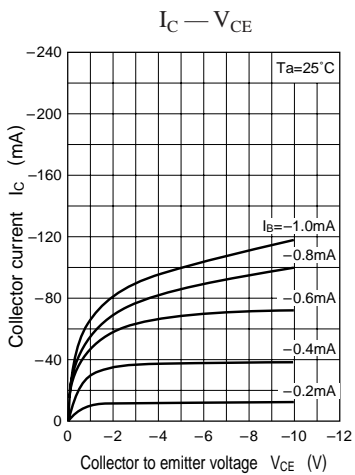
Characteristics charts of UNR411F

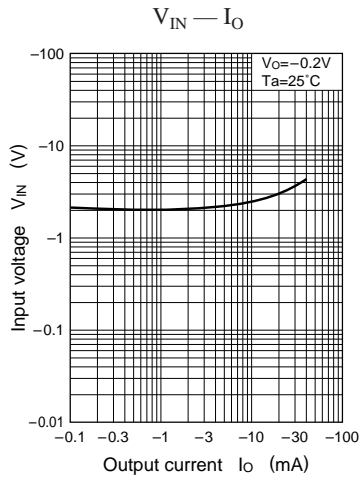
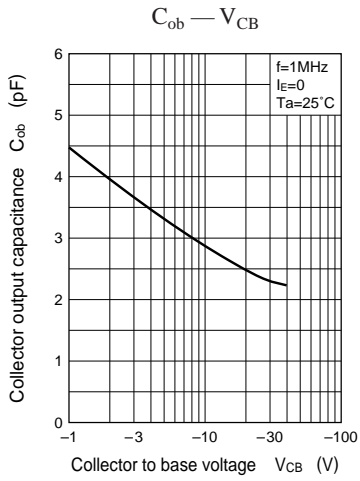


Characteristics charts of UNR411H



Characteristics charts of UNR411L





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