

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

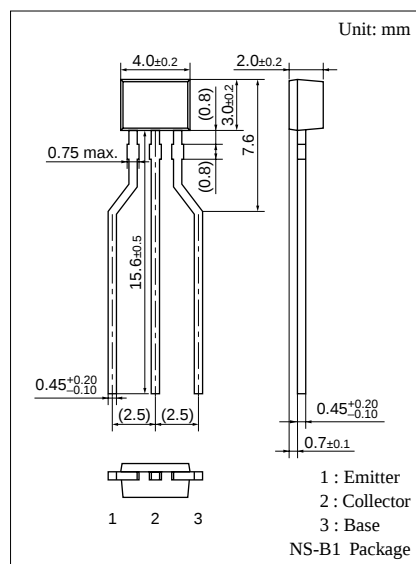
For digital circuits

■ Features

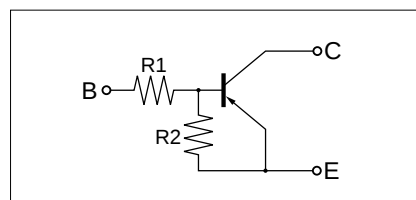
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- New S type package, allowing supply with the radial taping.

■ Resistance by Part Number

	(R ₁)	(R ₂)
• 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 (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	-50	V
Collector to emitter voltage	V _{CEO}	-50	V
Collector current	I _C	-100	mA
Total power dissipation	P _T	300	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{sig}	-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**

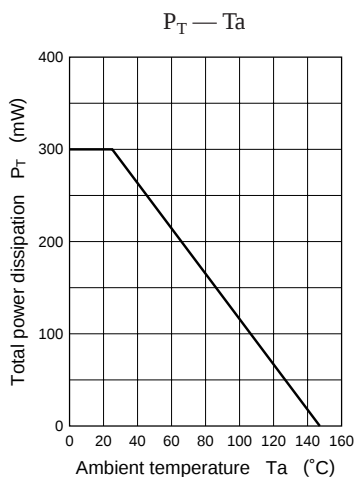
Electrical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit	
Collector cutoff current		I _{CBO}	V _{CB} = -50V, I _E = 0			- 0.1	μA	
		I _{CEO}	V _{CE} = -50V, I _B = 0			- 0.5	μA	
Emitter cutoff current	UNR4111	I _{EBO}	V _{EB} = -6V, I _C = 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 _{CBO}	I _C = -10μA, I _E = 0	-50			V	
Collector to emitter voltage		V _{CEO}	I _C = -2mA, I _B = 0	-50			V	
Forward current transfer ratio	UNR4111	h _{FE}	V _{CE} = -10V, I _C = -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 _{CE(sat)}	I _C = -10mA, I _B = - 0.3mA			- 0.25	V	
Output voltage high level		V _{OH}	V _{CC} = -5V, V _B = - 0.5V, R _L = 1kΩ	-4.9			V	
Output voltage low level		V _{OL}	V _{CC} = -5V, V _B = -2.5V, R _L = 1kΩ			- 0.2	V	
			UNR4113	V _{CC} = -5V, V _B = -3.5V, R _L = 1kΩ				- 0.2
			UNR411D	V _{CC} = -5V, V _B = -10V, R _L = 1kΩ				- 0.2
			UNR411E	V _{CC} = 5V, V _B = -6V, R _L = 1kΩ				- 0.2
Transition frequency		f _T	V _{CB} = -10V, I _E = 1mA, f = 200MHz		80		MHz	
Input resistance	UNR4111/4114/4115	R _i		(-30%)	10	(+30%)	kΩ	
	UNR4112/4117				22			
	UNR4113/4110/411D/411E				47			
	UNR4116/411F/411L				4.7			
	UNR4118				0.51			
	UNR4119				1			
	UNR411H				2.2			
Resistance ratio	UNR4111/4112/4113/411L	R _i /R ₂		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		

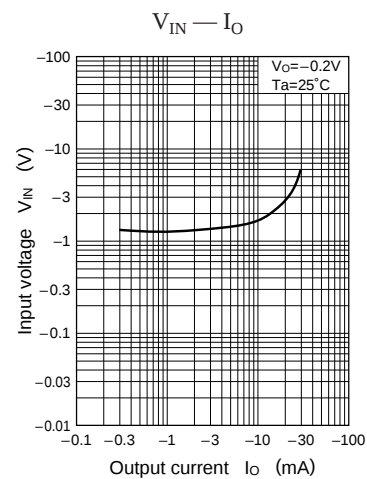
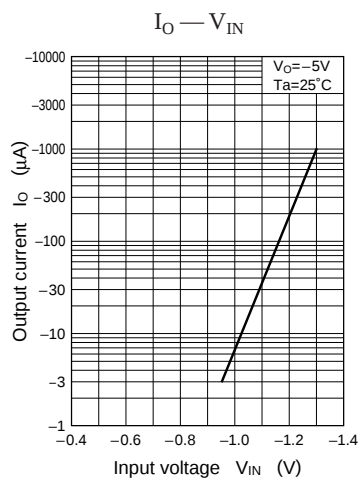
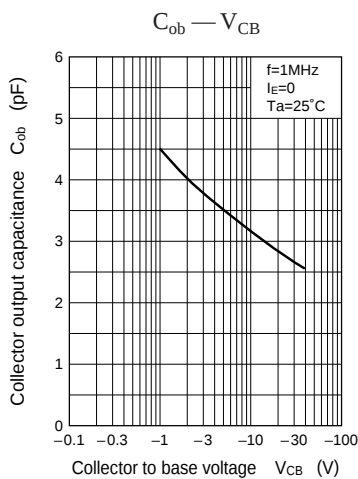
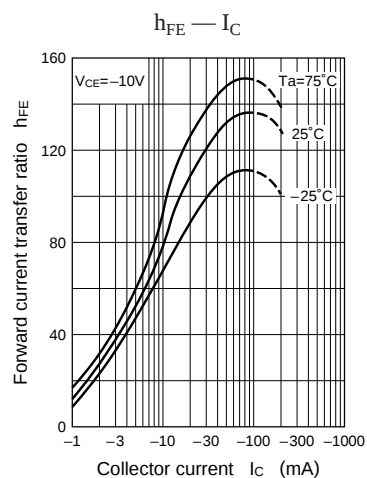
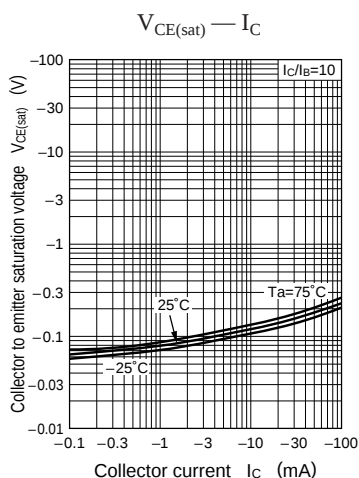
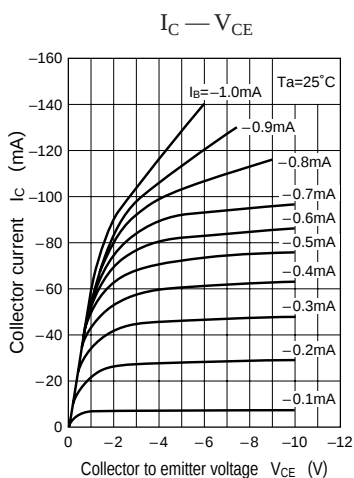
* h_{FE} rank classification (UNR4115/4116/4117/4110)

Rank	Q	R	S
h _{FE}	160 to 260	210 to 340	290 to 460

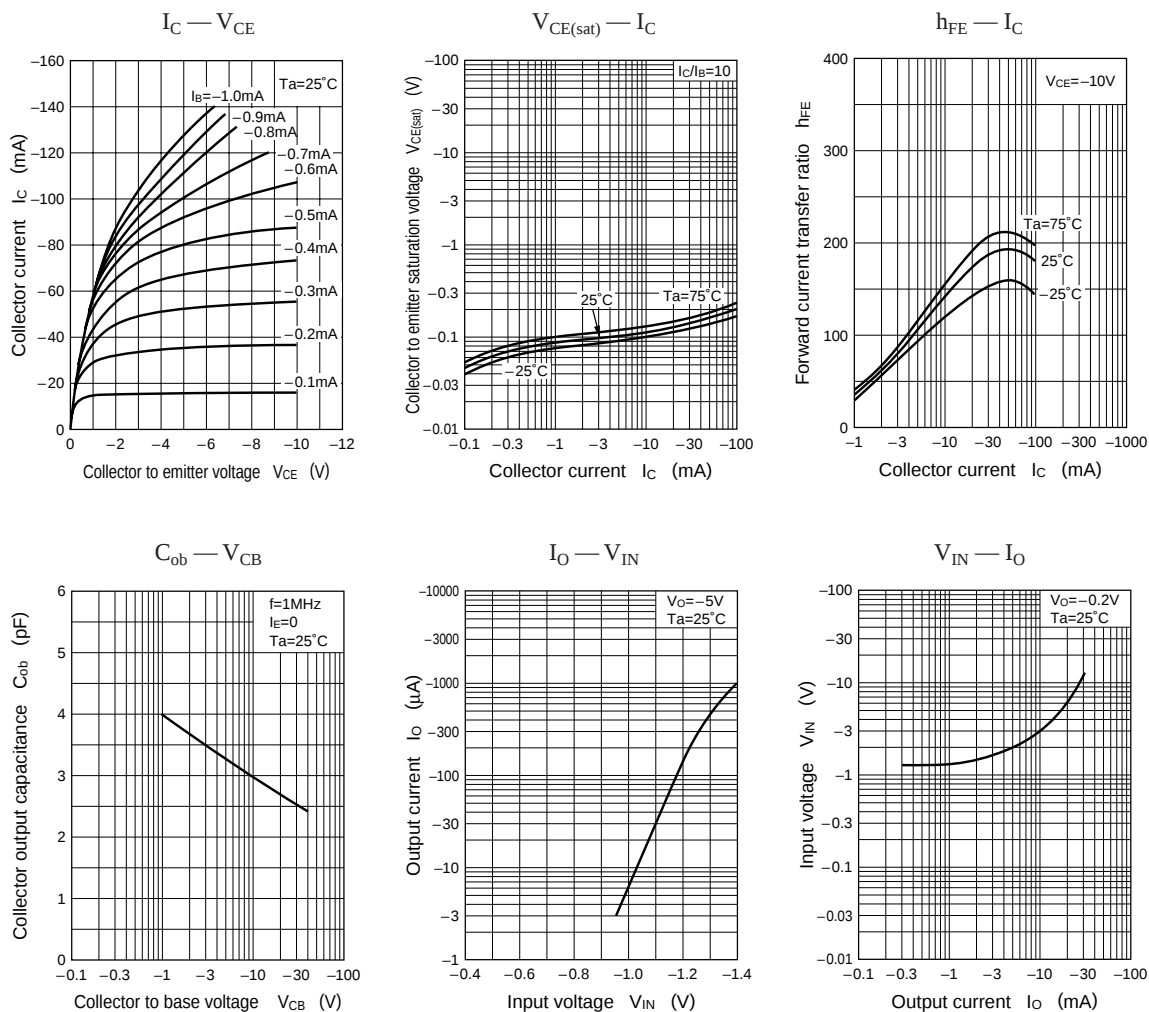
Common characteristics chart



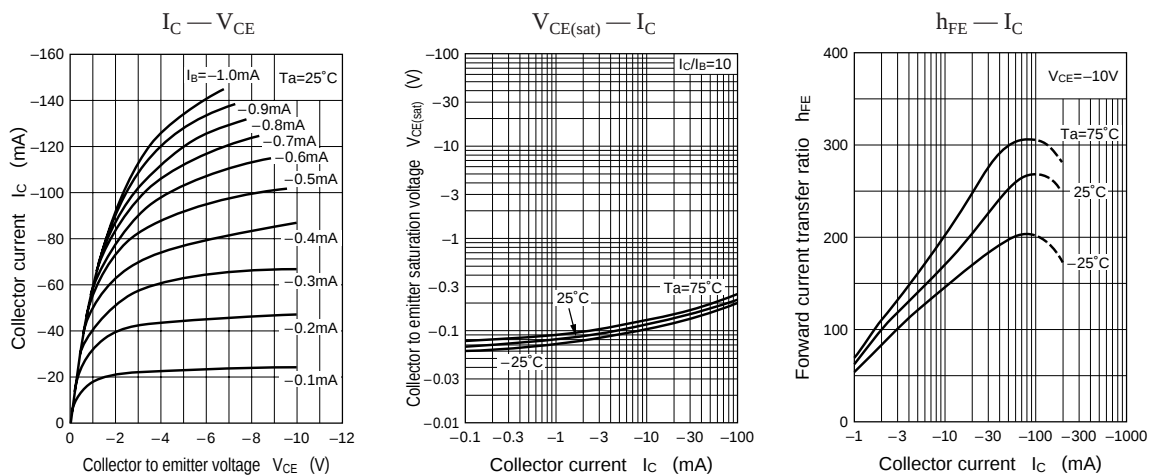
Characteristics charts of UNR4111

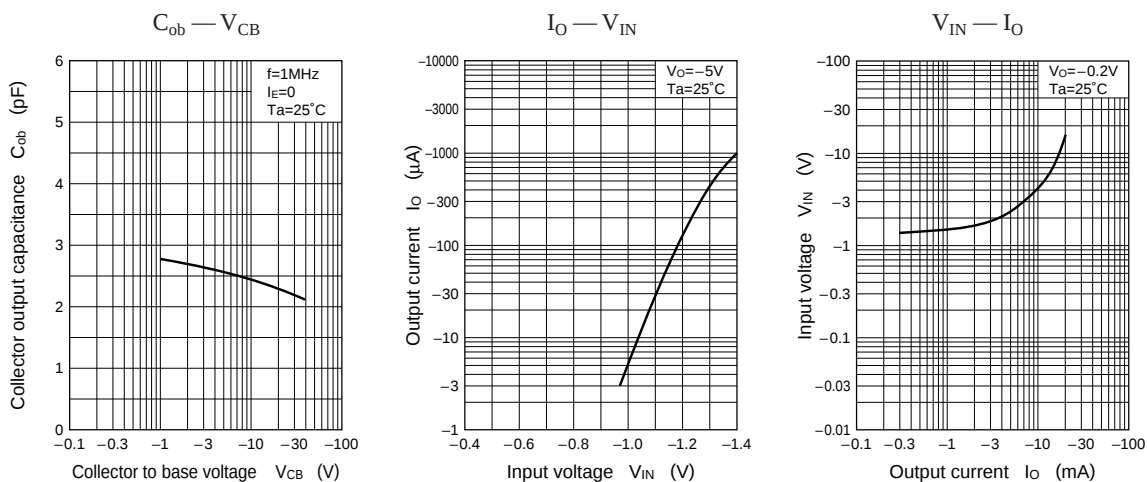


Characteristics charts of UNR4112

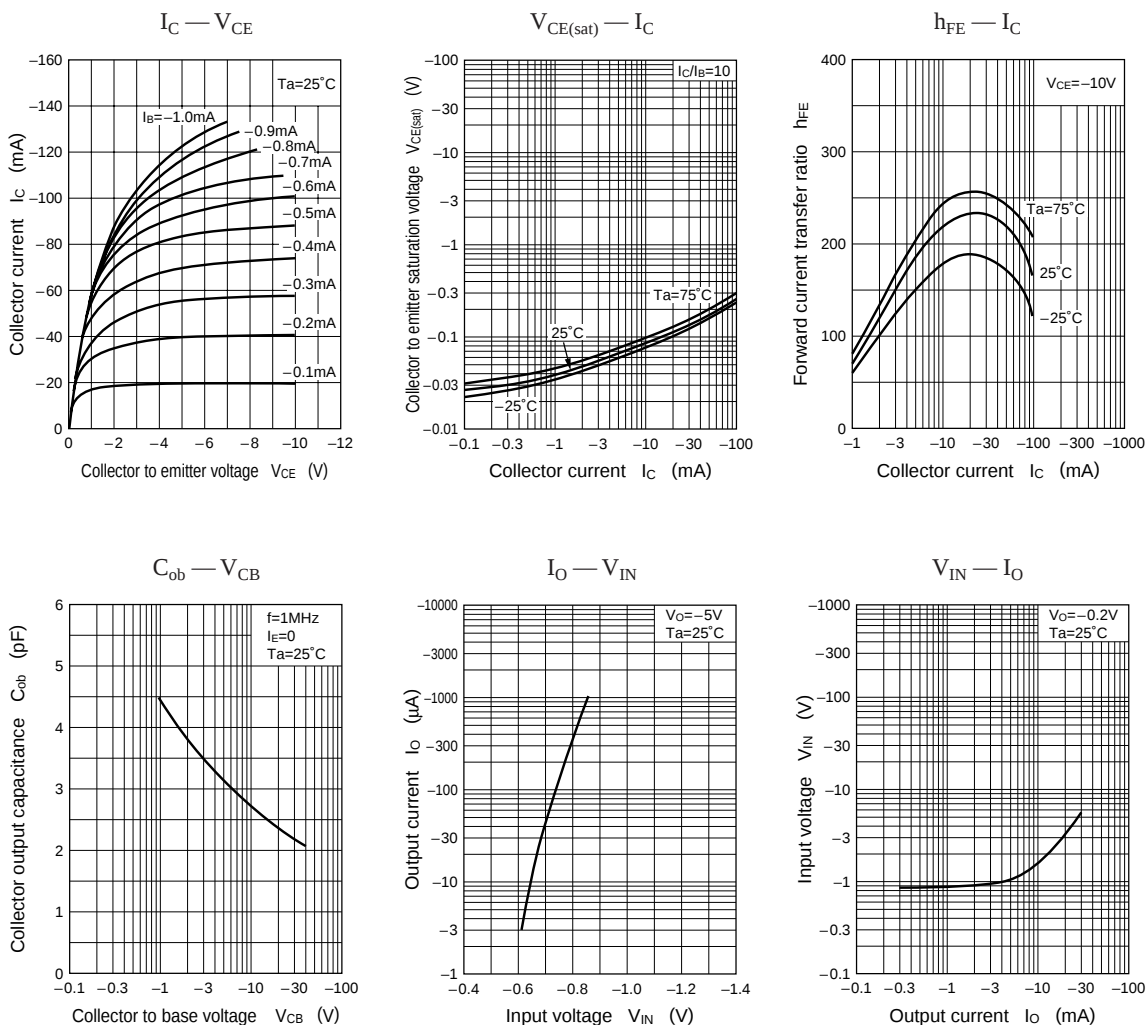


Characteristics charts of UNR4113

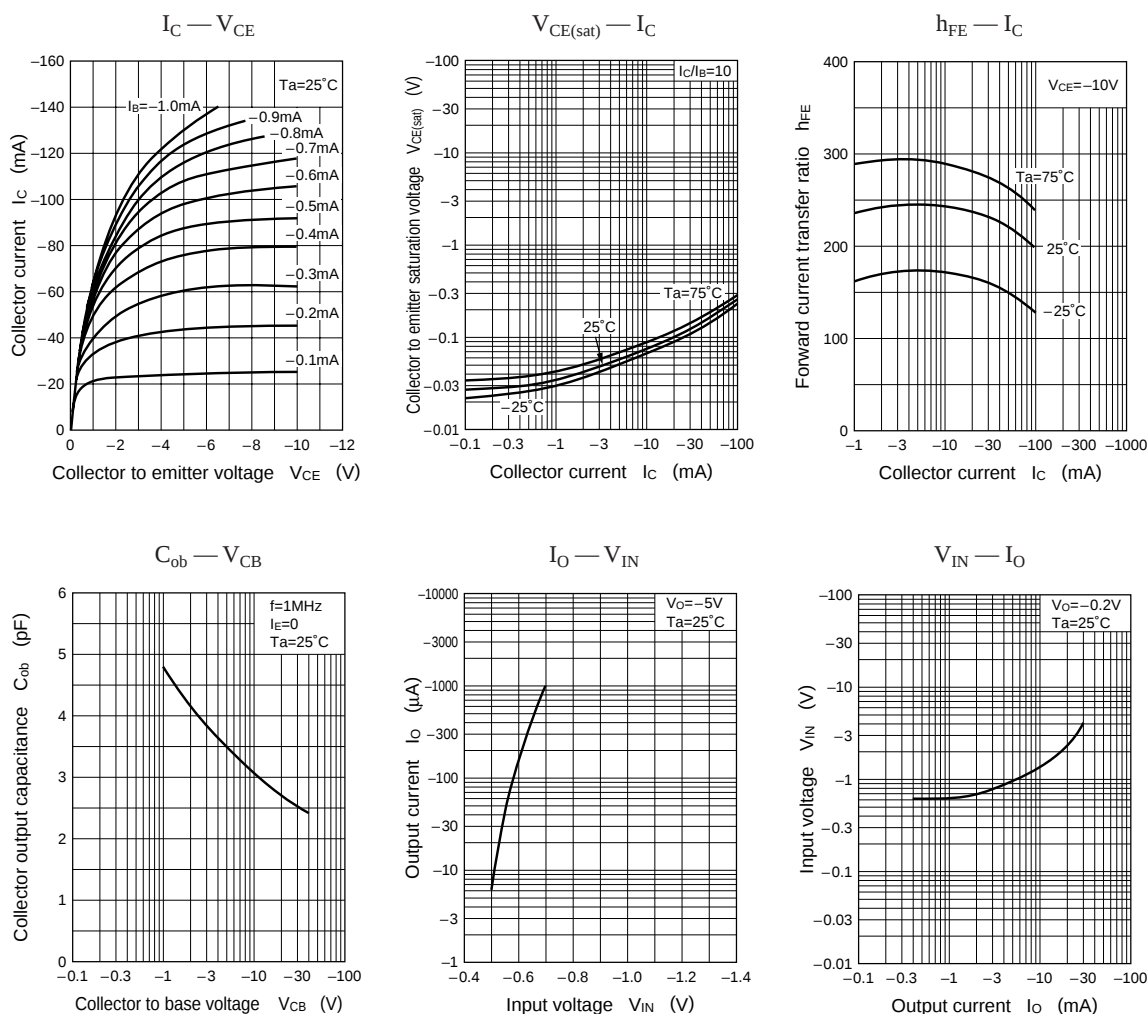




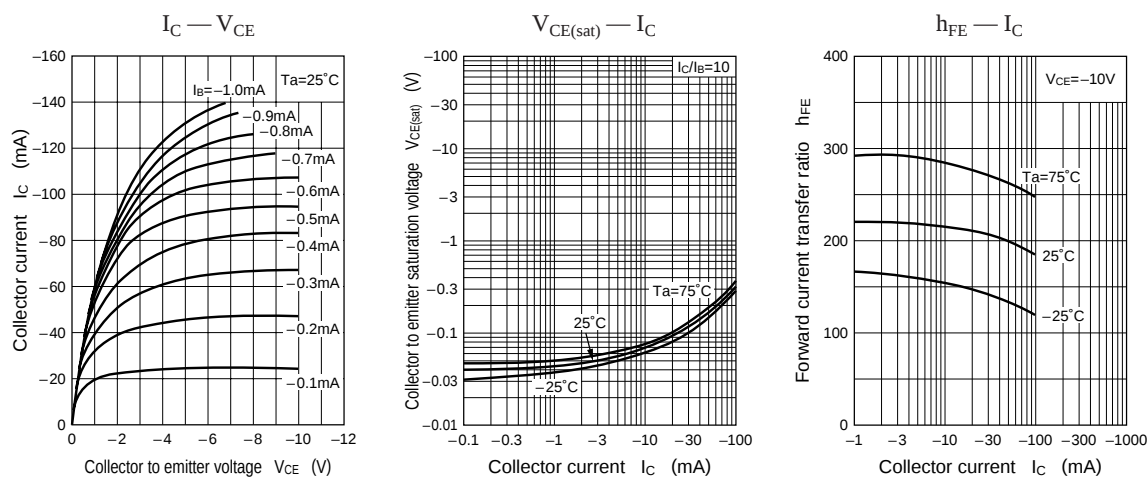
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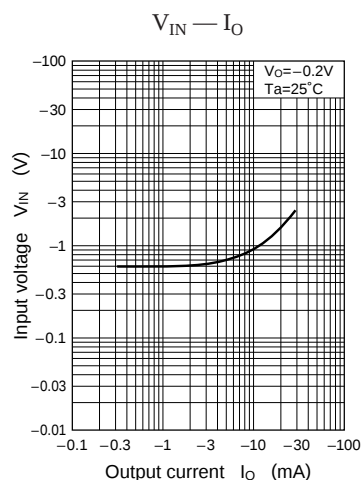
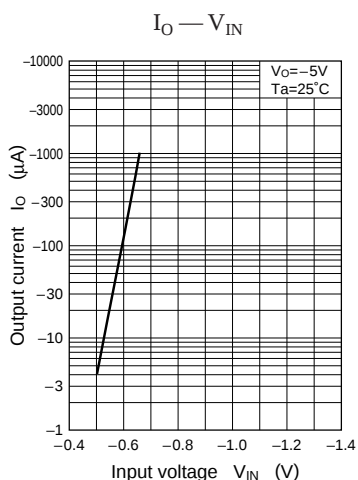
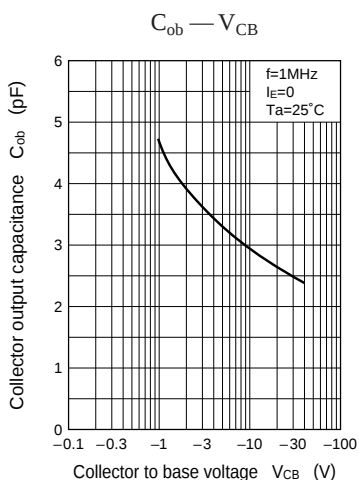


Characteristics charts of UNR4115

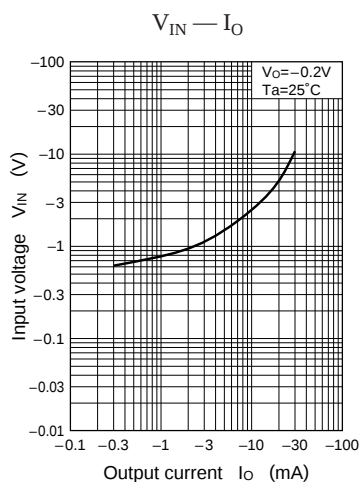
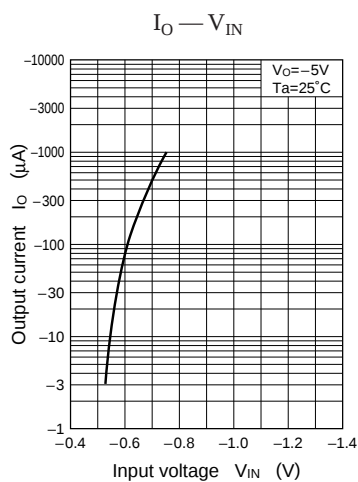
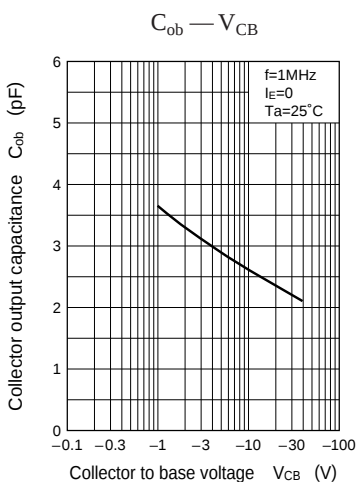
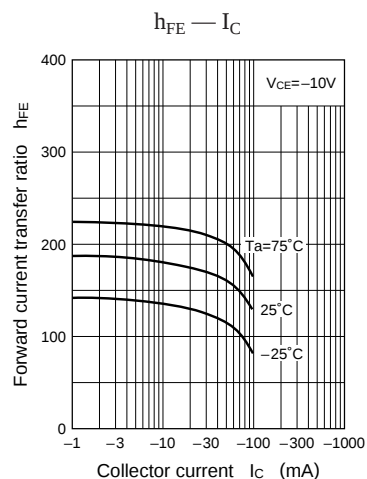
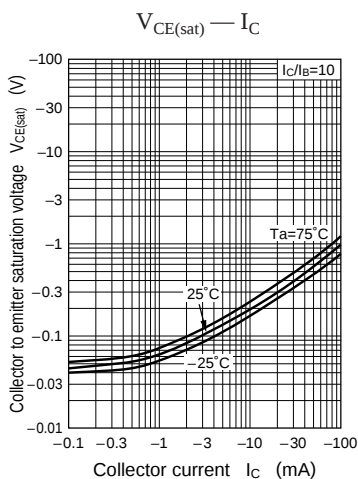
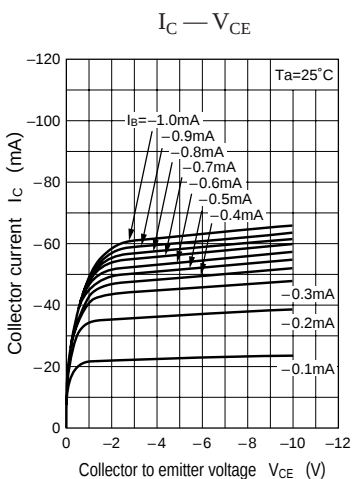


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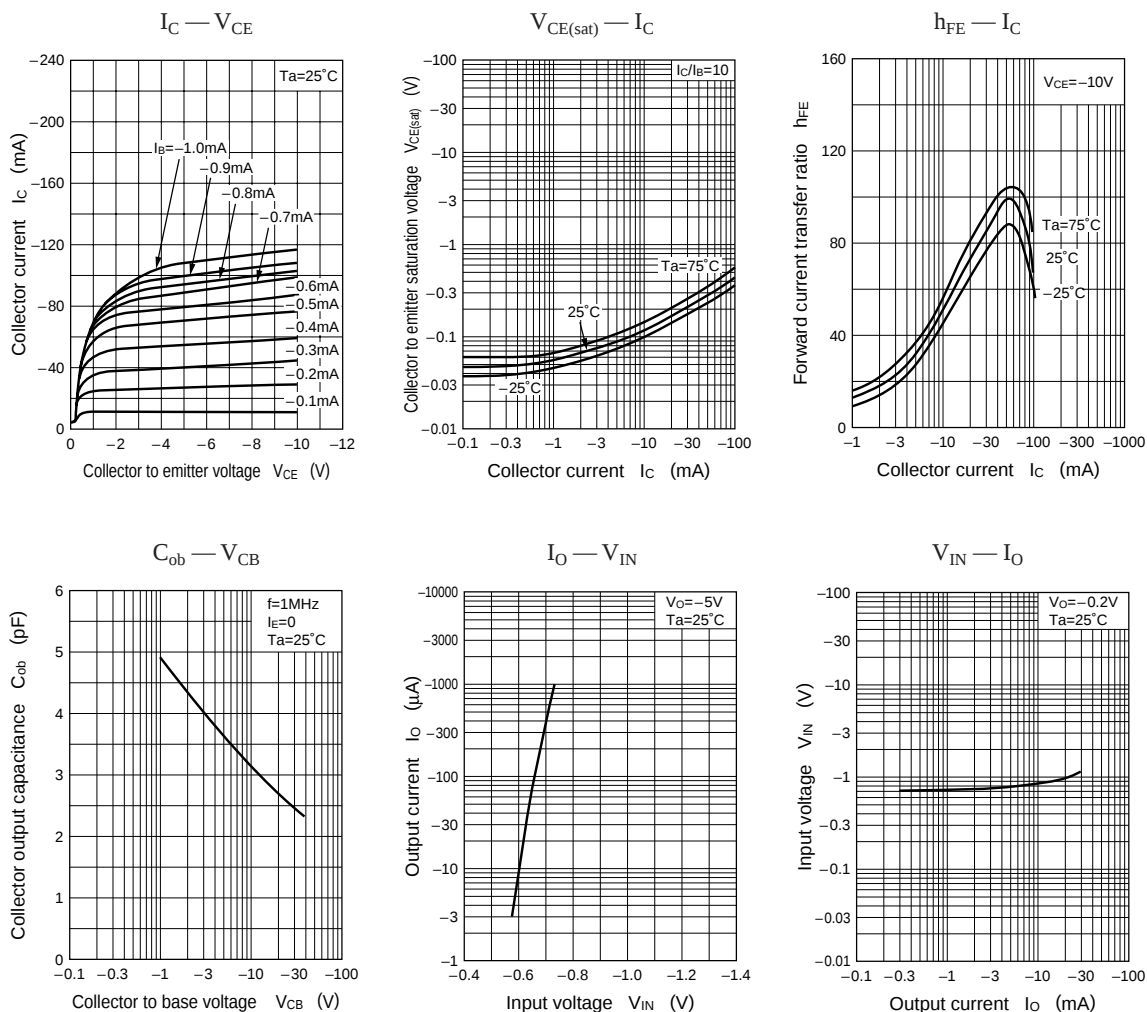




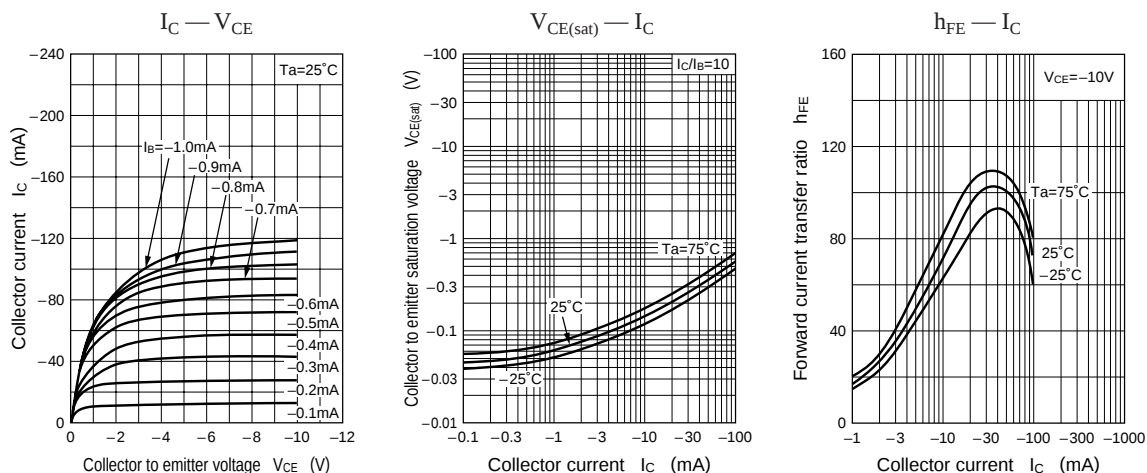
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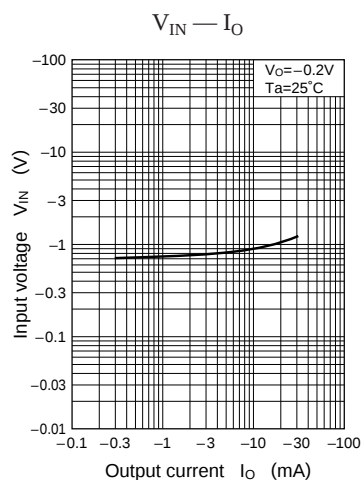
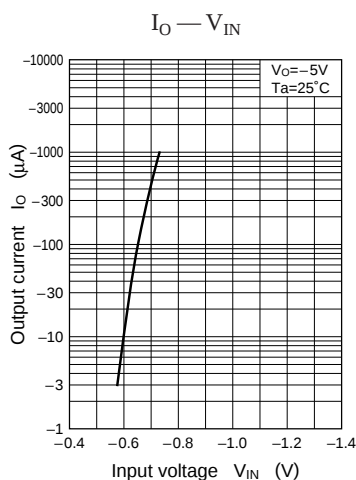
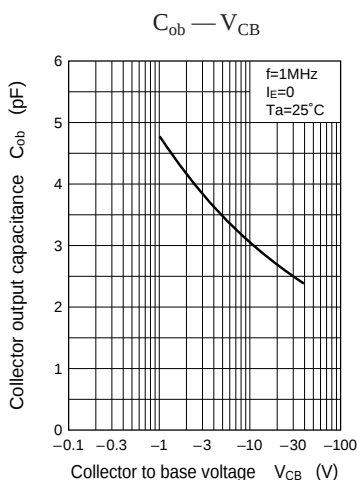


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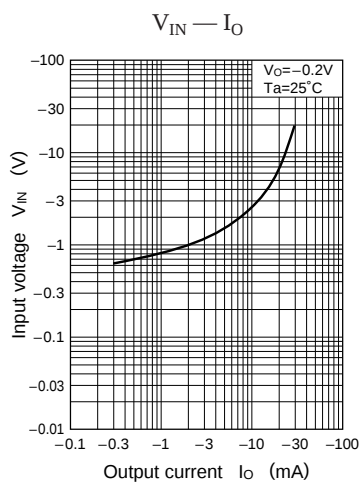
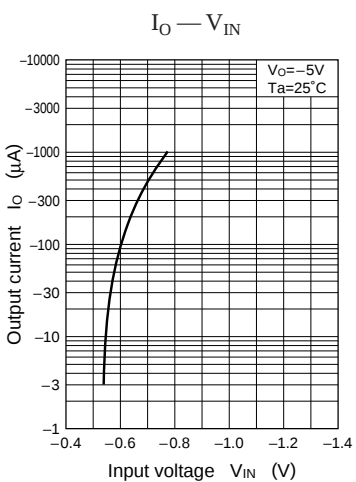
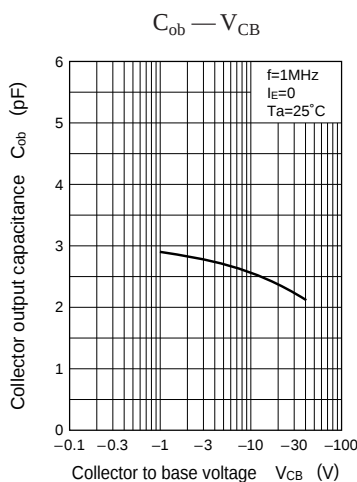
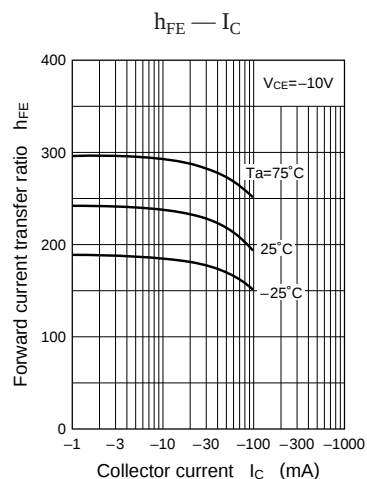
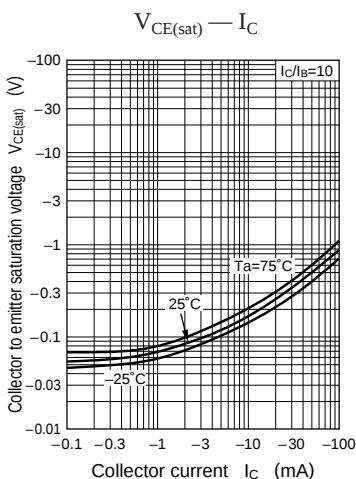
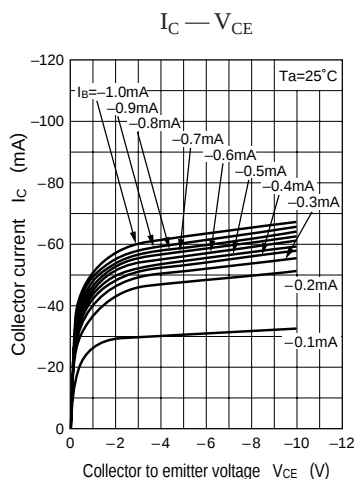


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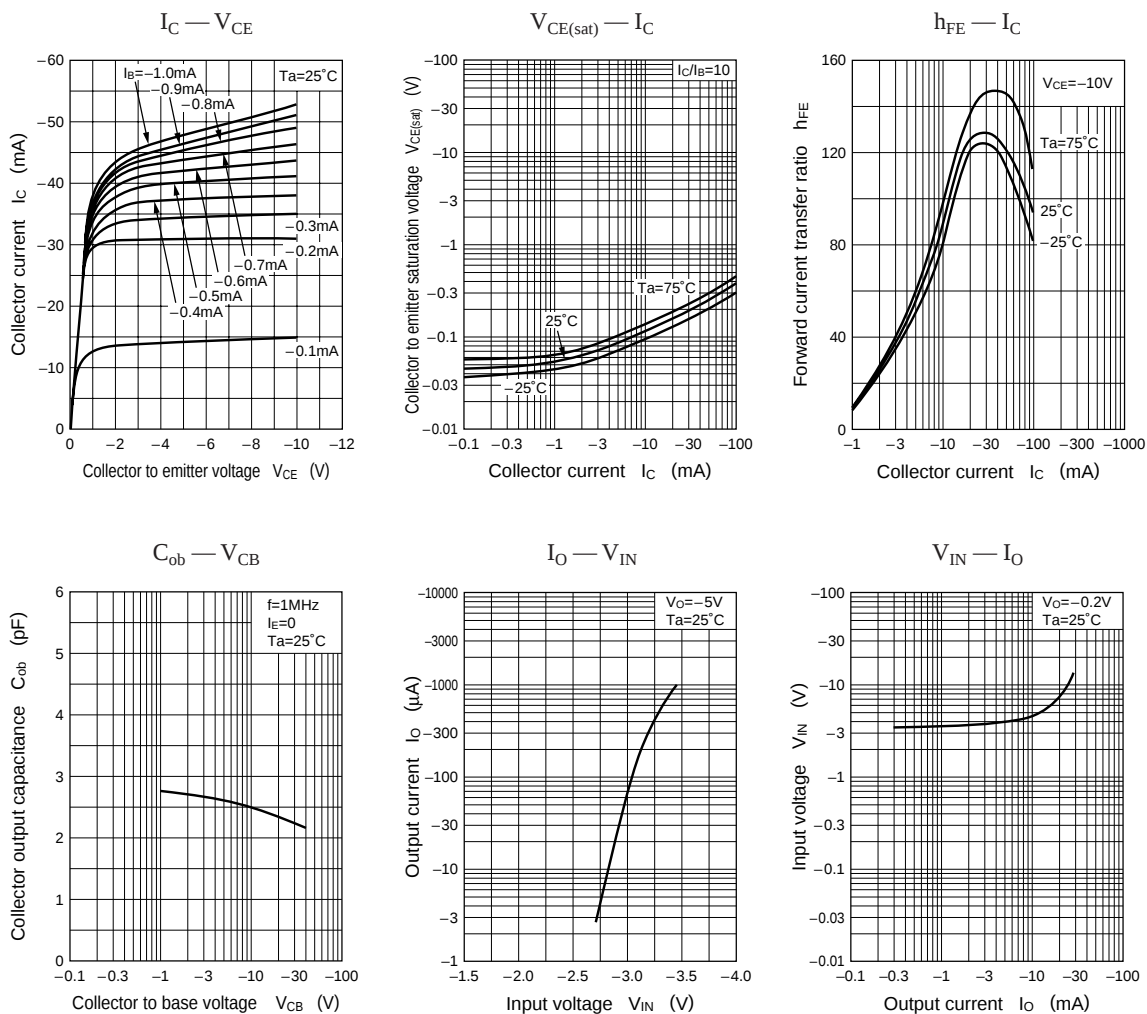




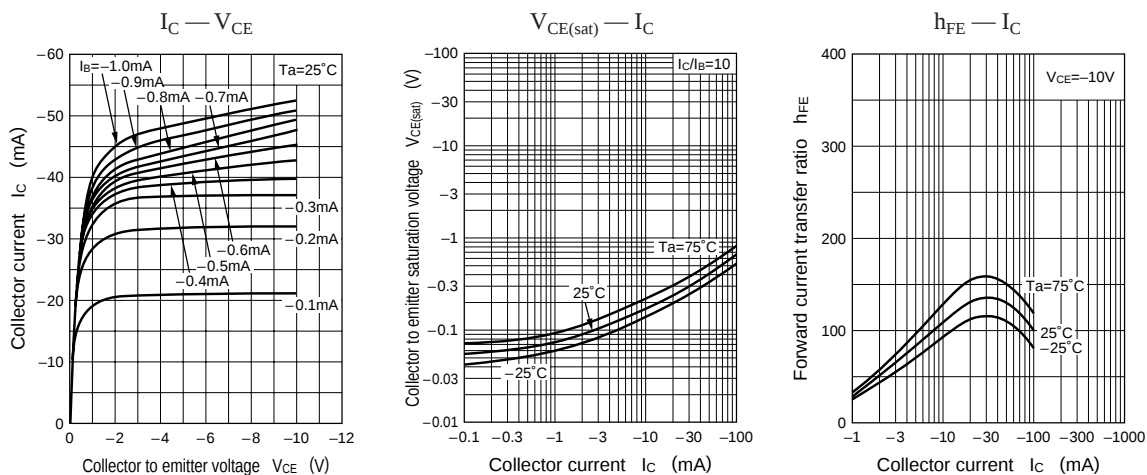
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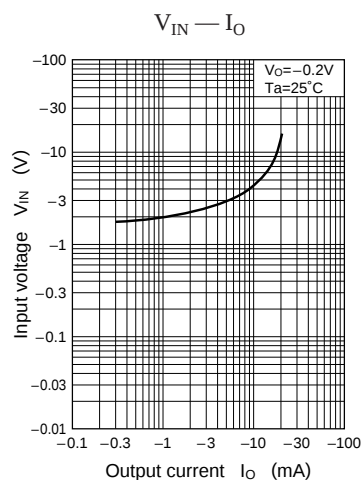
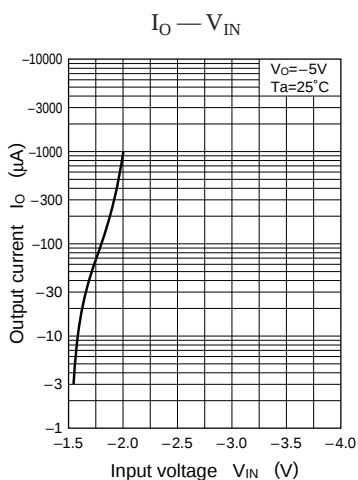
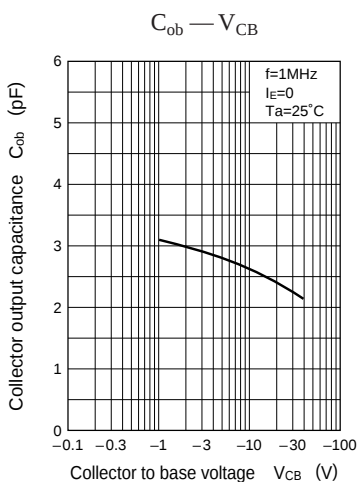


Characteristics charts of UNR411D

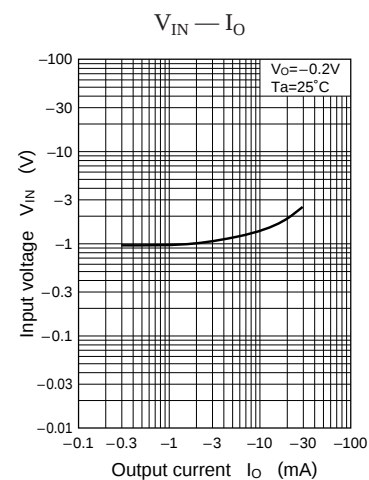
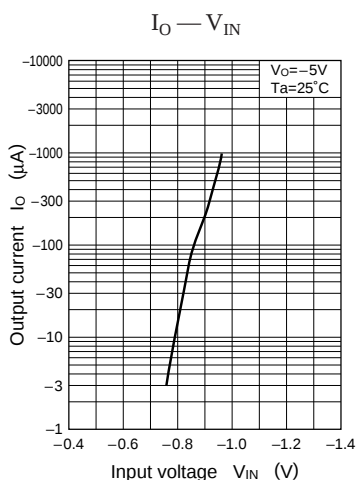
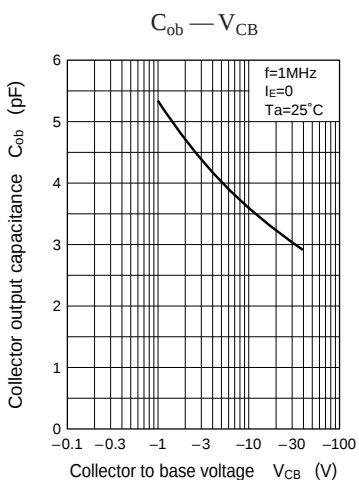
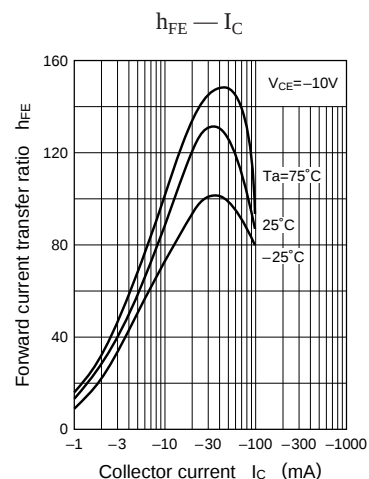
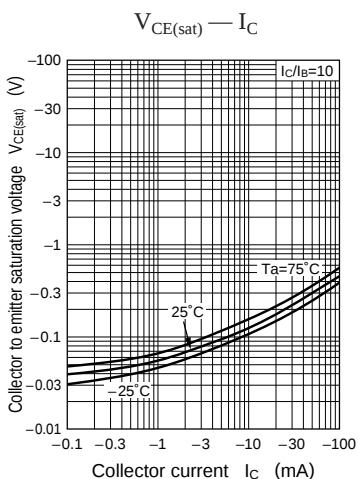
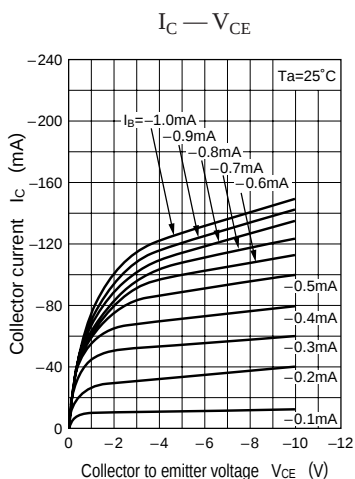


Characteristics charts of UNR411E

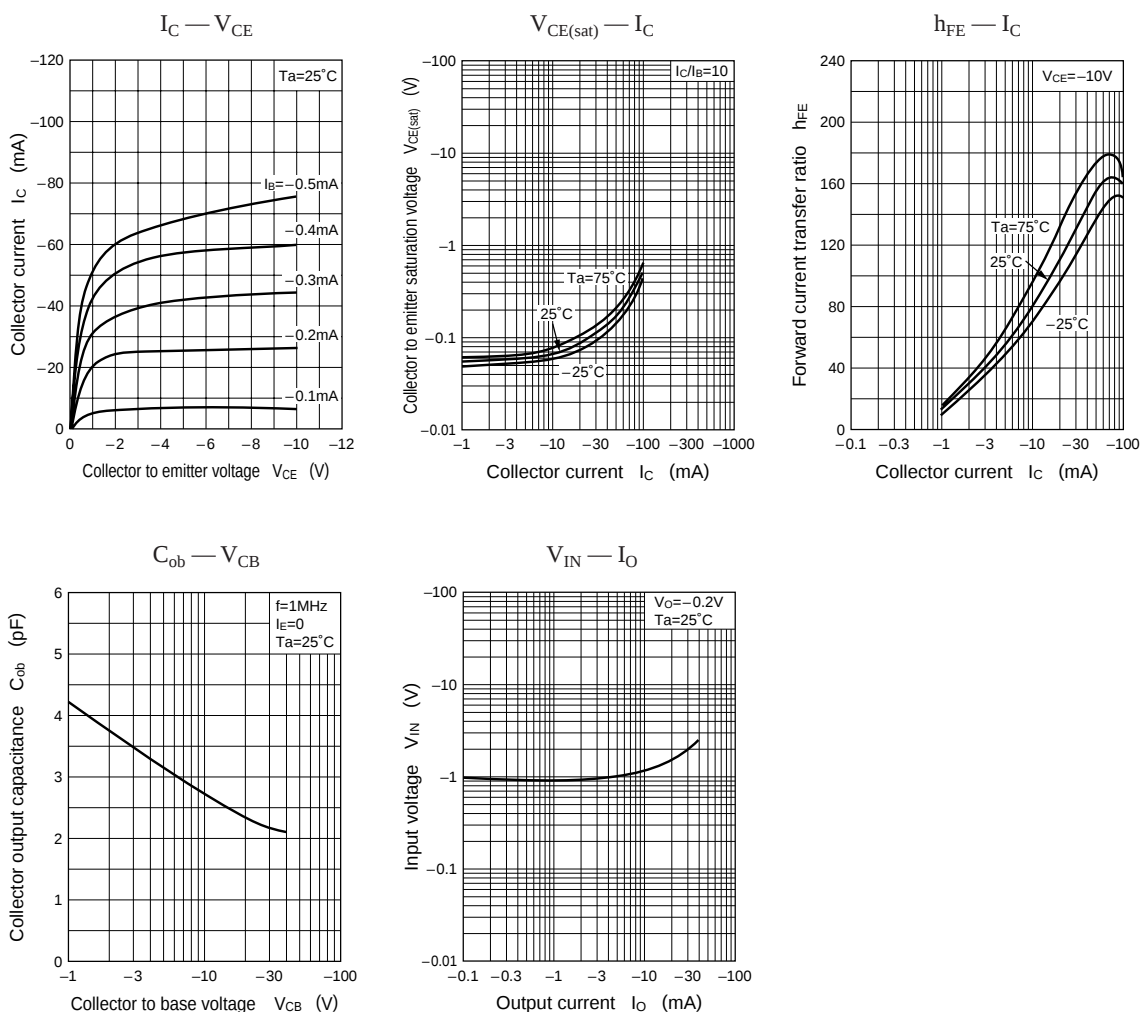




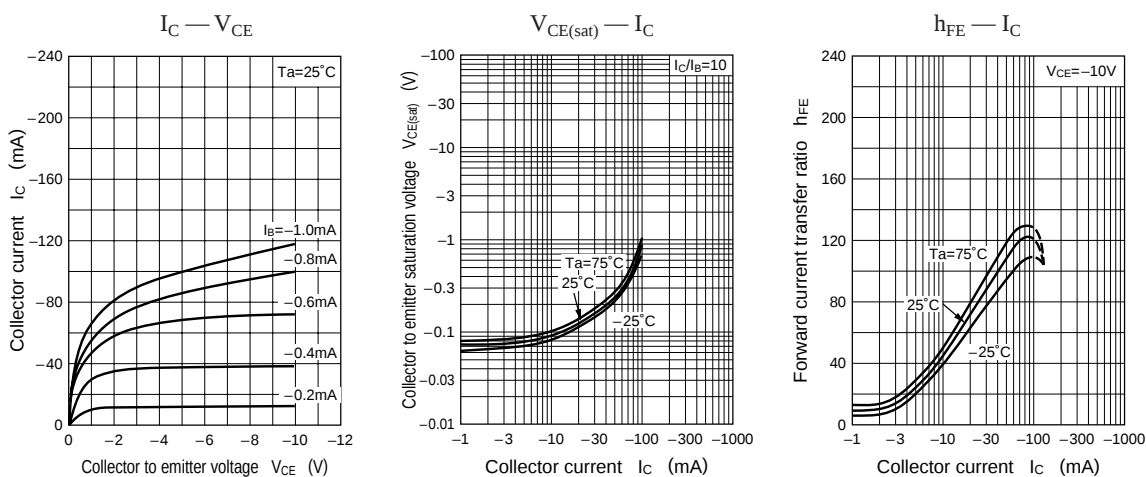
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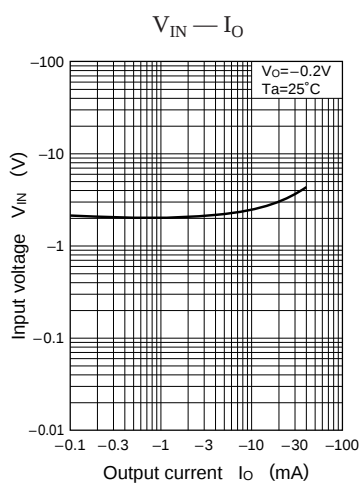
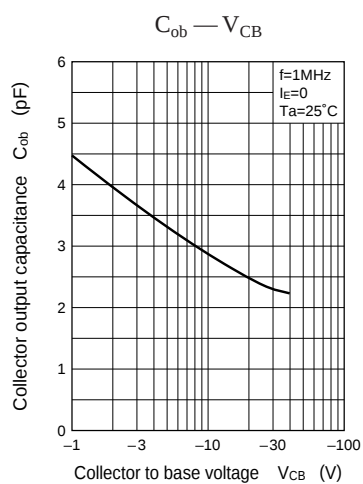


Characteristics charts of UNR411H



Characteristics charts of UNR411L





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