

UNR1111/1112/1113/1114/1115/1116/1117/1118/1119/1110/ 111D/111E/111F/111H/111L

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

Silicon PNP epitaxial planar transistor

For digital circuits

Features

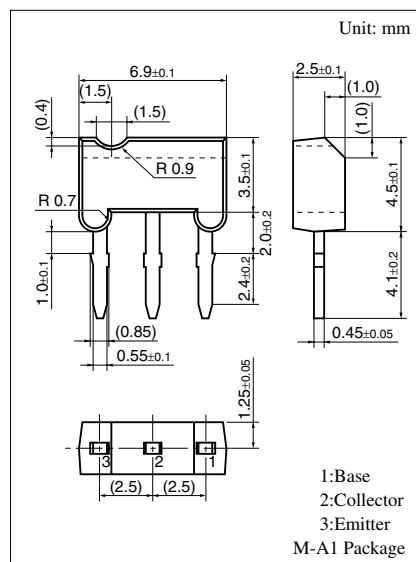
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

Resistance by Part Number

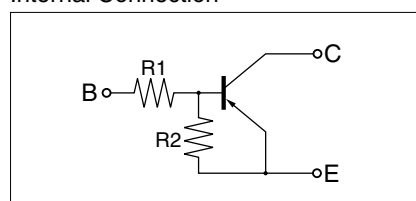
	(R ₁)	(R ₂)
• UNR1111	10kΩ	10kΩ
• UNR1112	22kΩ	22kΩ
• UNR1113	47kΩ	47kΩ
• UNR1114	10kΩ	47kΩ
• UNR1115	10kΩ	—
• UNR1116	4.7kΩ	—
• UNR1117	22kΩ	—
• UNR1118	0.51kΩ	5.1kΩ
• UNR1119	1kΩ	10kΩ
• UNR1110	47kΩ	—
• UNR111D	47kΩ	10kΩ
• UNR111E	47kΩ	22kΩ
• UNR111F	4.7kΩ	10kΩ
• UNR111H	2.2kΩ	10kΩ
• UNR111L	4.7kΩ	4.7kΩ

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	400	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C



Internal Connection



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

**UNR1111/1112/1113/1114/1115/1116/1117/1118/
Transistors with built-in Resistor 1119/1110/111D/111E/111F/111H/111L**

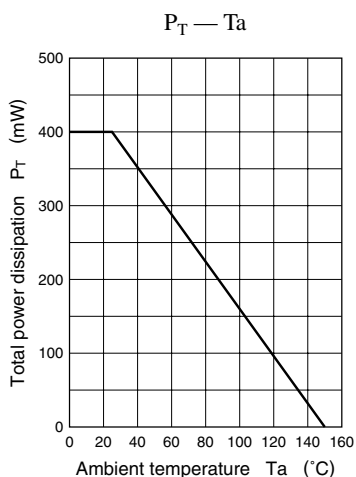
Electrical Characteristics (Ta=25°C)

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	UNR1111	I _{EBO}	V _{EB} = -6V, I _C = 0			- 0.5	mA
	UNR1112/1114/111E/111D					- 0.2	
	UNR1113					- 0.1	
	UNR1115/1116/1117/1110					- 0.01	
	UNR111F/111H					-1.0	
	UNR1119					-1.5	
	UNR1118/111L					-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	UNR1111	h _{FE}	V _{CE} = -10V, I _C = -5mA	35			
	UNR1112/111E			60			
	UNR1113/1114			80			
	UNR1115*/1116*/1117*/1110*			160		460	
	UNR111F/111D/1119/111H			30			
	UNR1118/111L			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
			V _{CC} = -5V, V _B = -3.5V, R _L = 1kΩ			- 0.2	
			V _{CC} = -5V, V _B = -10V, R _L = 1kΩ			- 0.2	
			V _{CC} = -5V, V _B = -6V, R _L = 1kΩ			- 0.2	
Transition frequency		f _T	V _{CB} = -10V, I _E = 2mA, f = 200MHz		80		MHz
Input resistance	UNR1111/1114/1115	R _i		(-30%)	10	(+30%)	kΩ
	UNR1112/1117				22		
	UNR1113/1110/111D/111E				47		
	UNR1116/111F/111L				4.7		
	UNR1118				0.51		
	UNR1119				1		
	UNR111H				2.2		
Resistance ratio	UNR1111/1112/1113/111L	R _i /R ₂		0.8	1.0	1.2	
	UNR1114			0.17	0.21	0.25	
	UNR1118/1119			0.08	0.1	0.12	
	UNR111D				4.7		
	UNR111E				2.14		
	UNR111F				0.47		
	UNR111H			0.17	0.22	0.27	

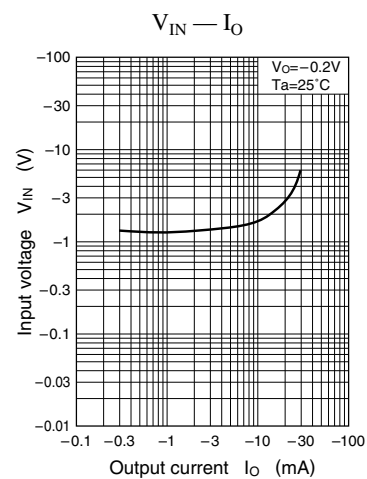
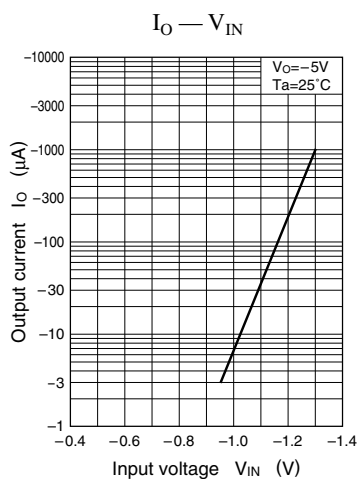
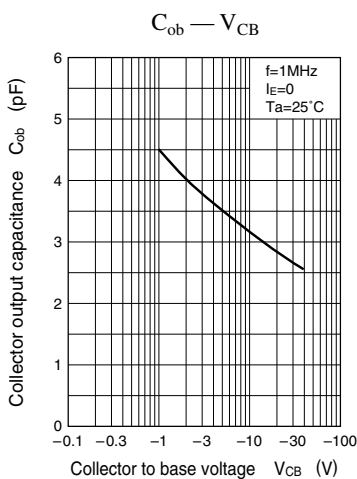
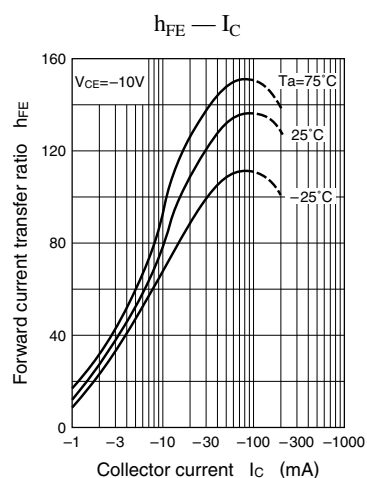
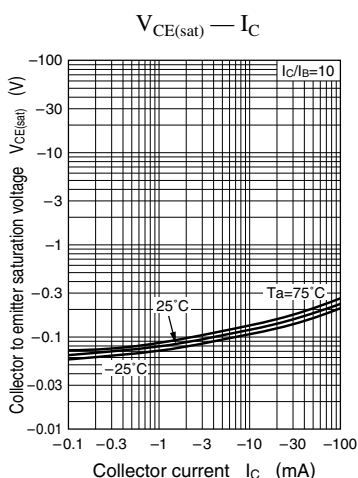
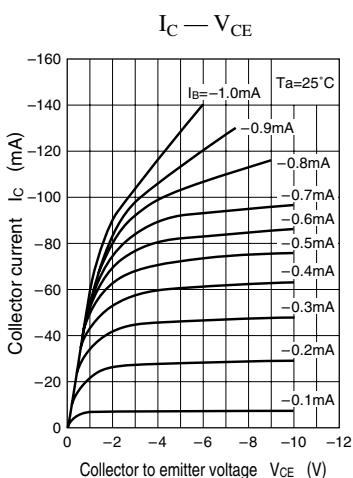
* h_{FE} rank classification (UNR1115/1116/1117/1110)

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

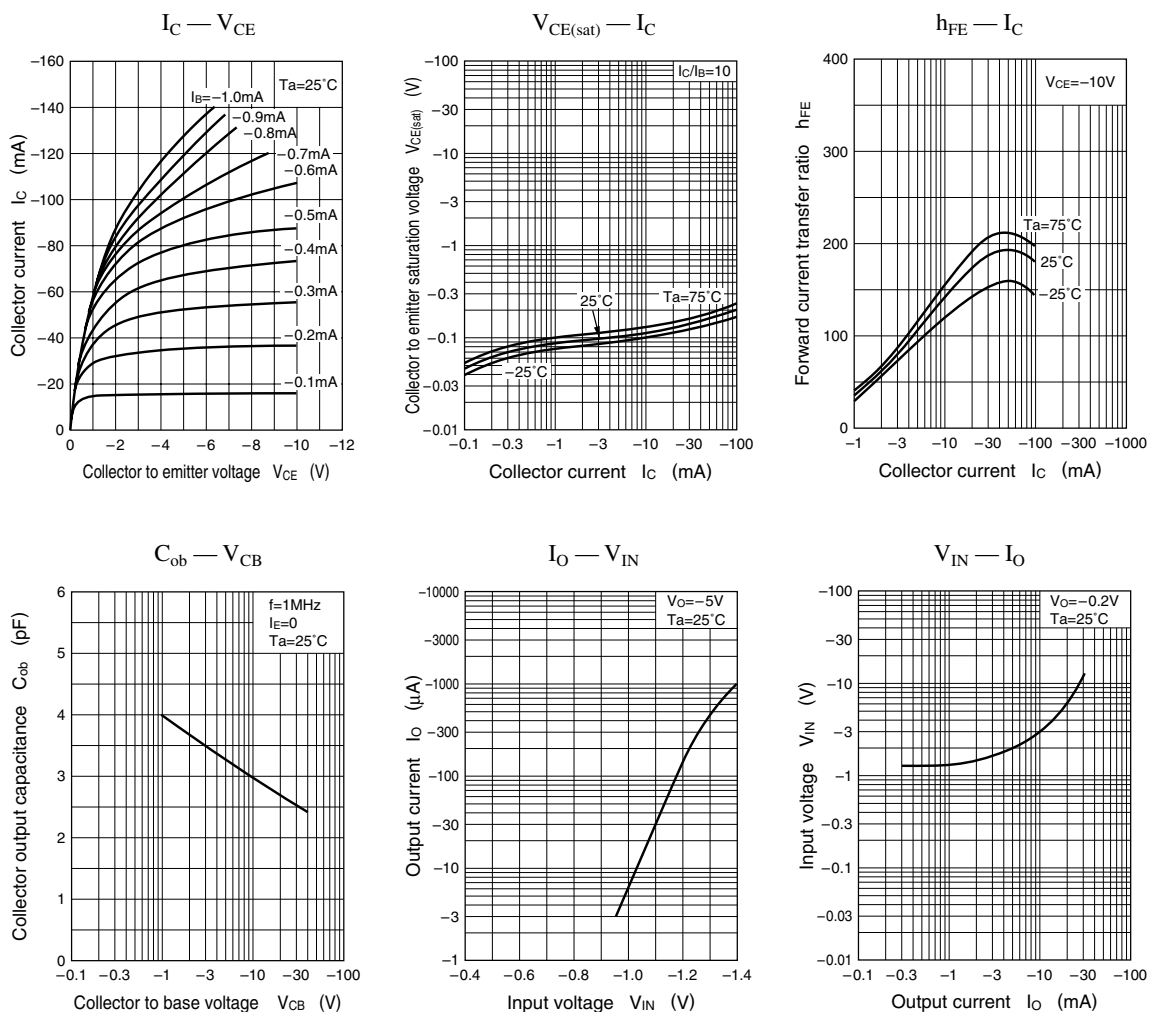
Common characteristics chart



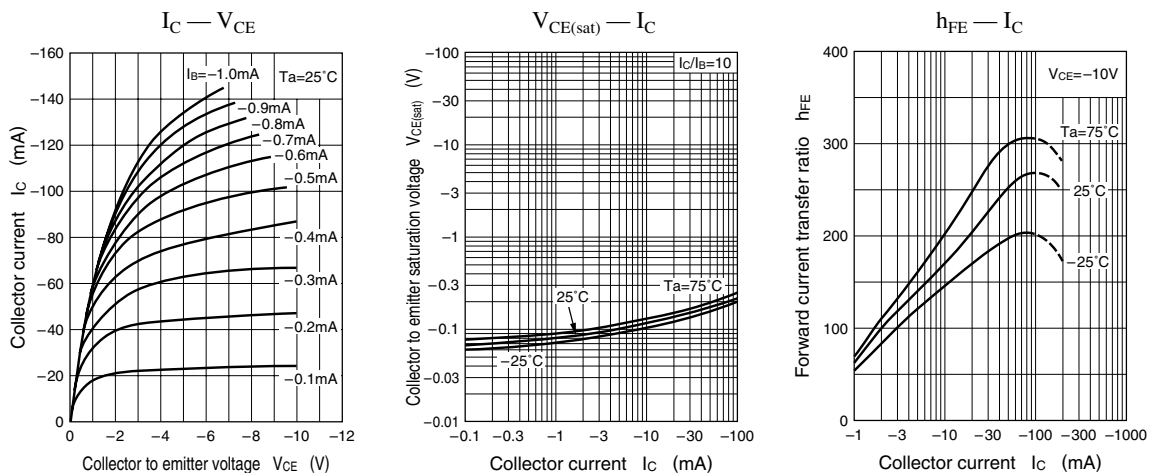
Characteristics charts of UNR1111

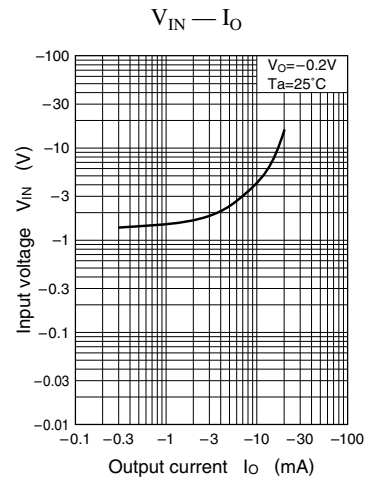
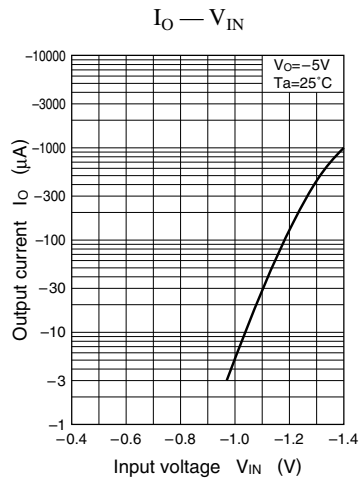
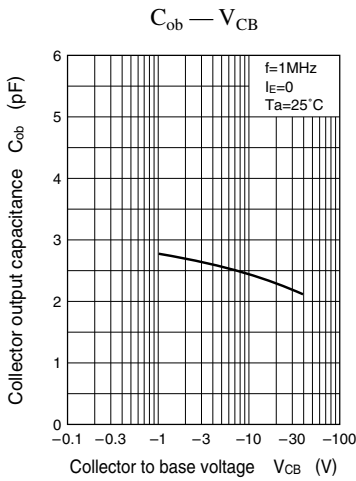


Characteristics charts of UNR1112

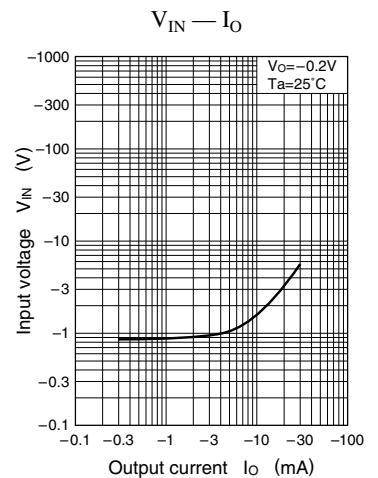
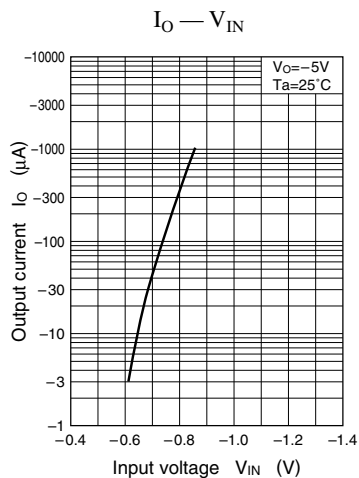
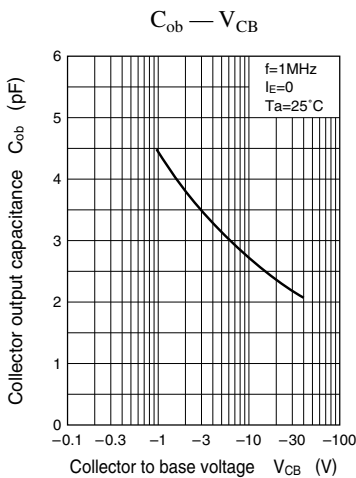
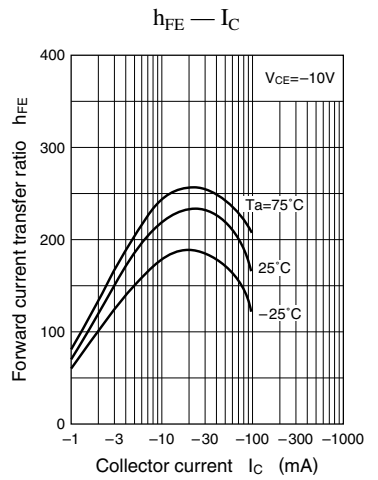
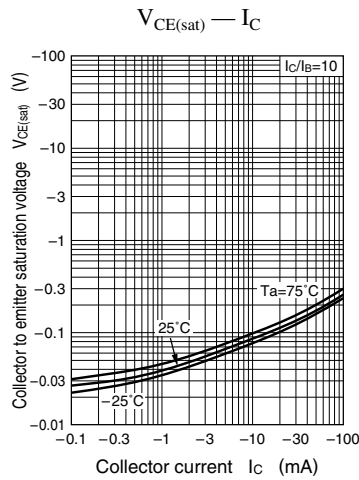
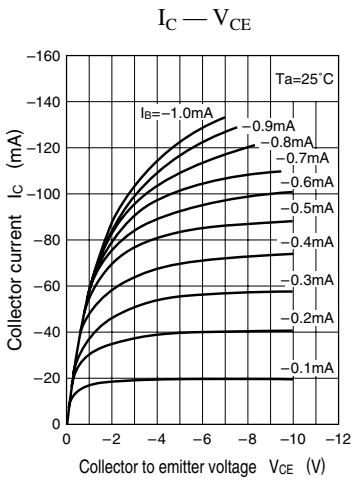


Characteristics charts of UNR1113

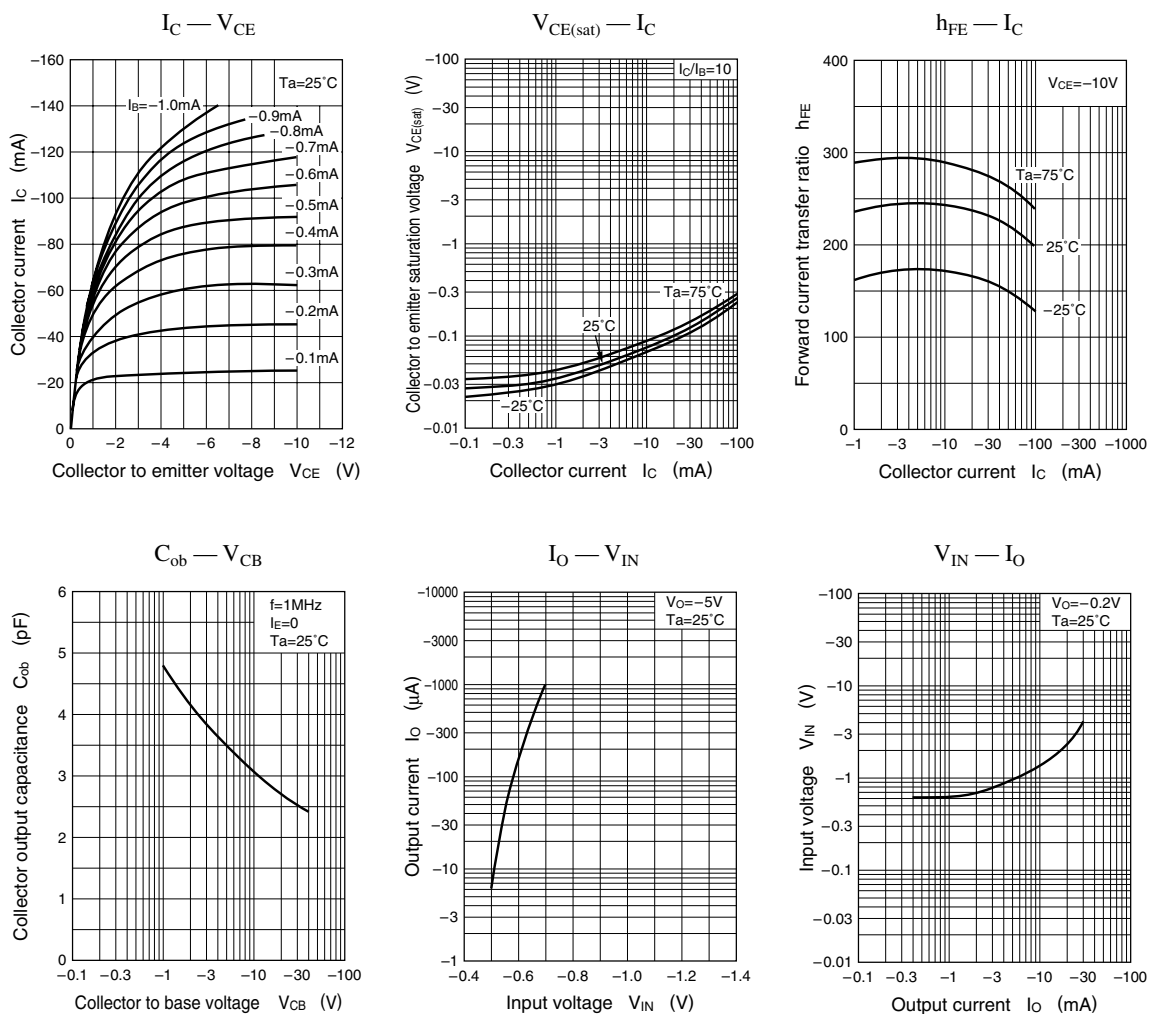




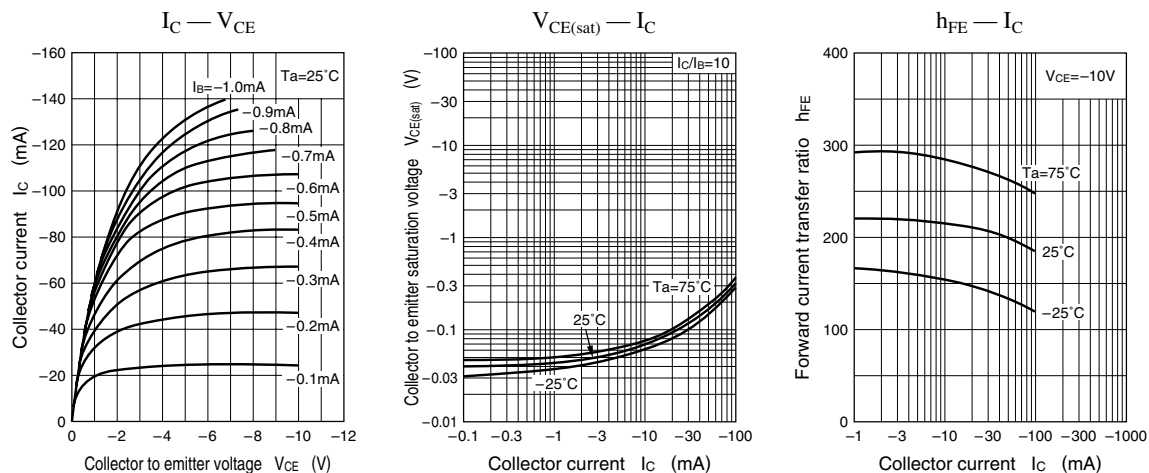
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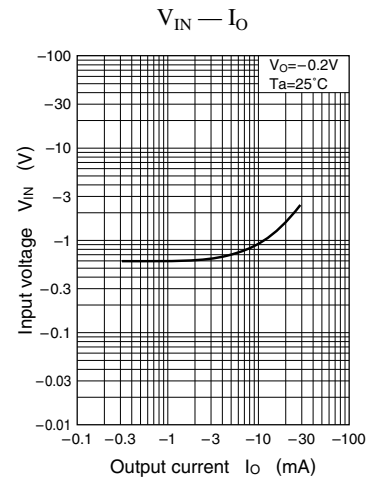
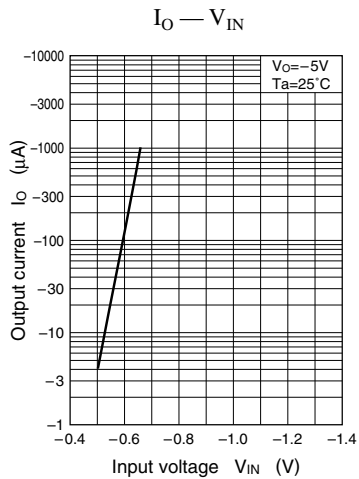
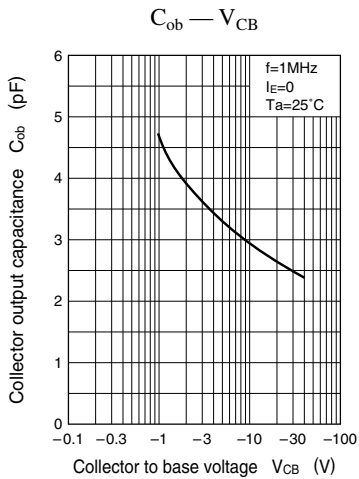


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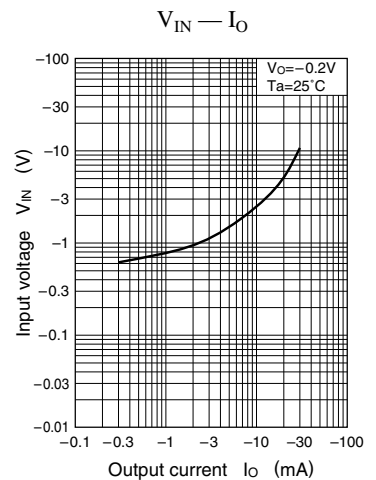
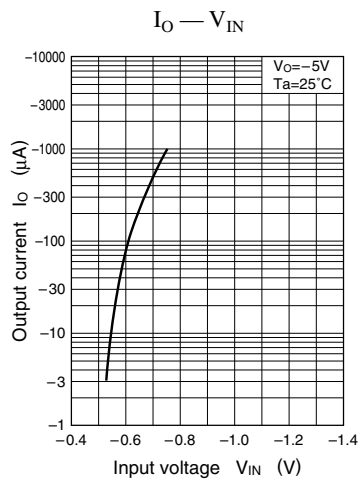
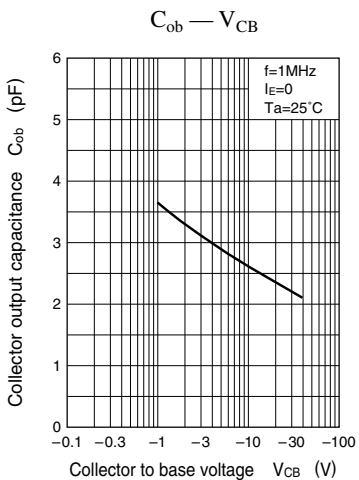
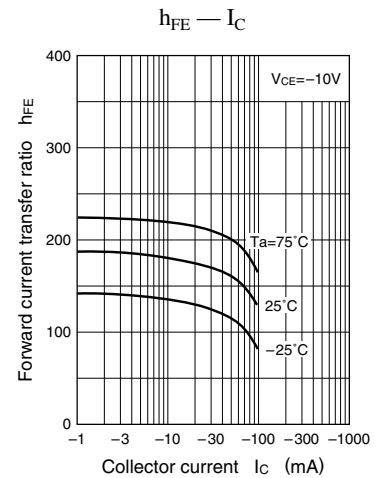
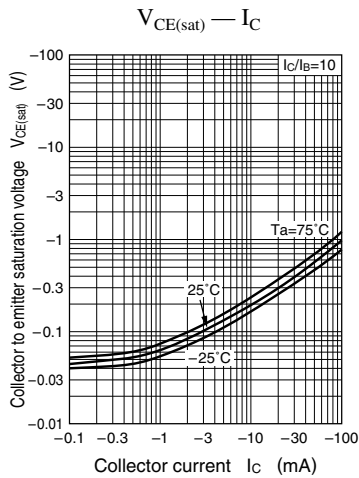
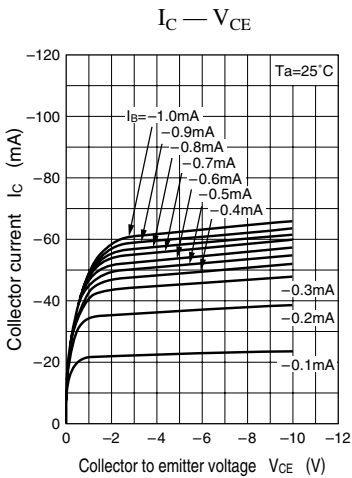


Characteristics charts of UNR1116

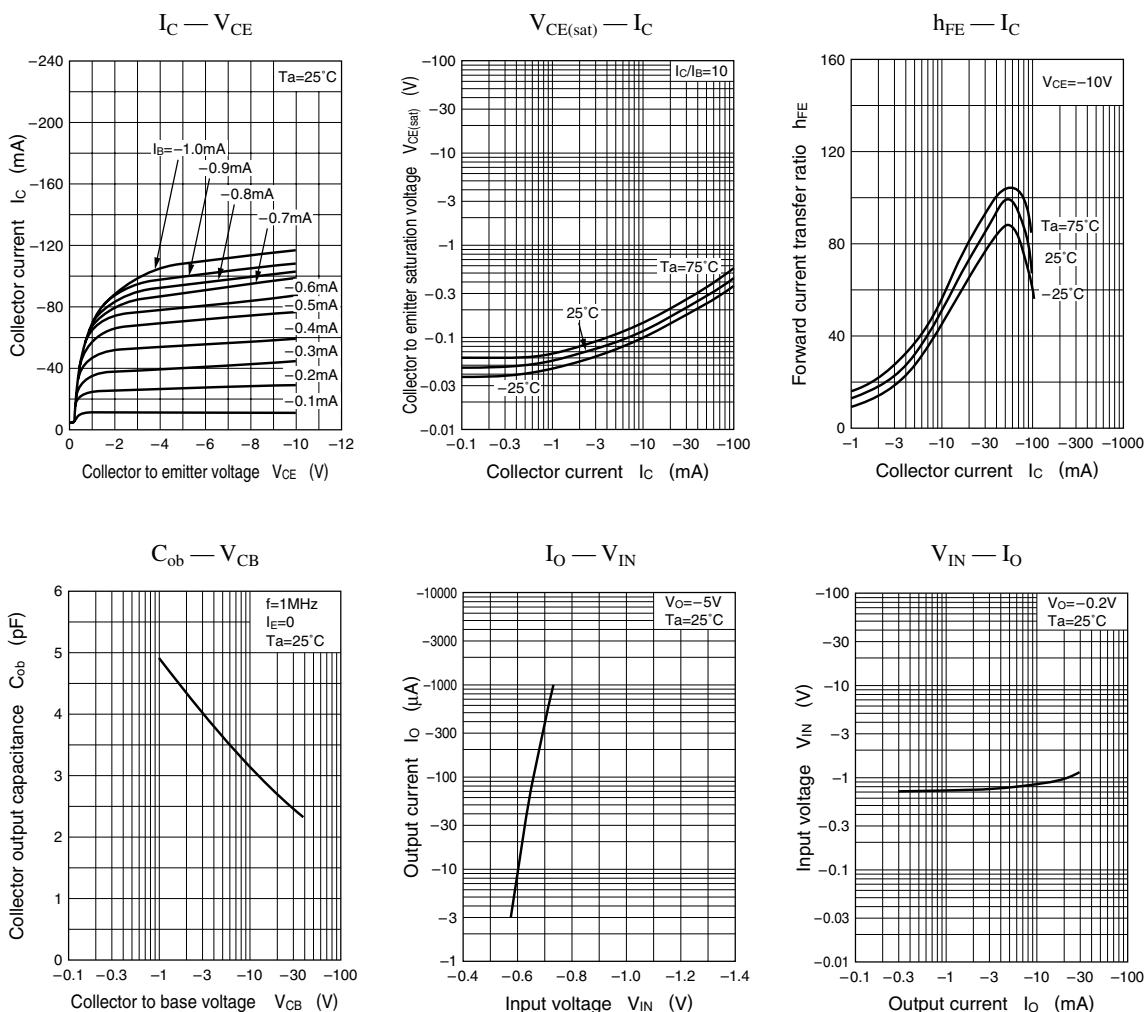




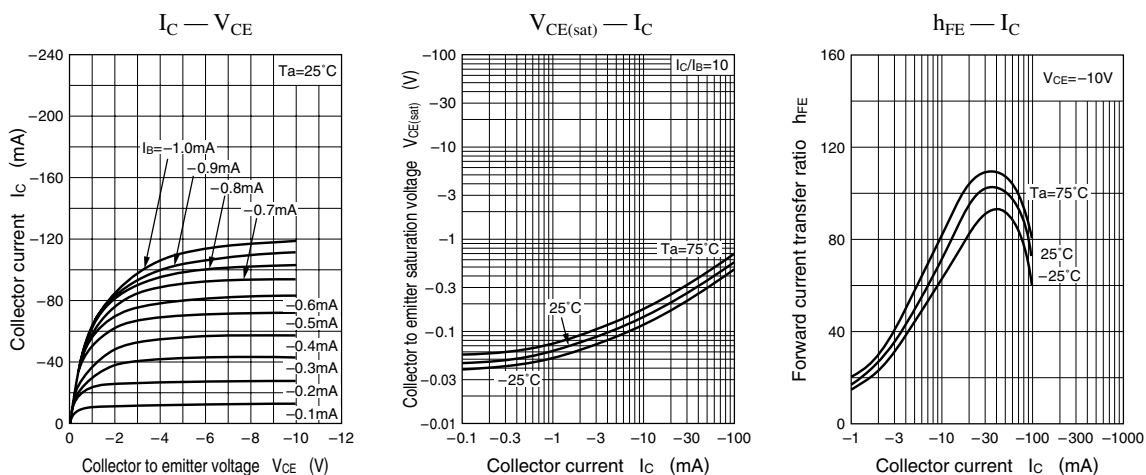
Characteristics charts of UNR1117

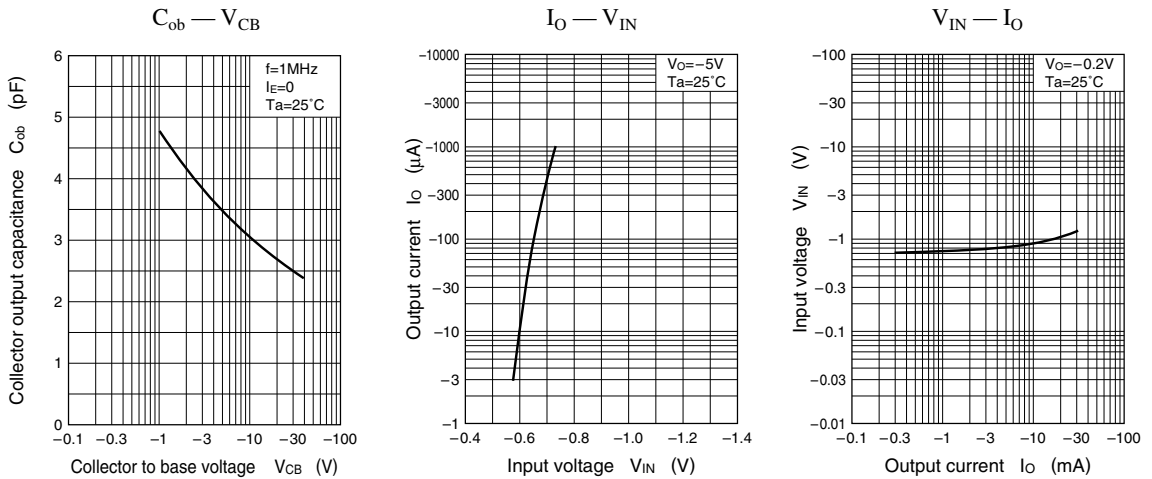


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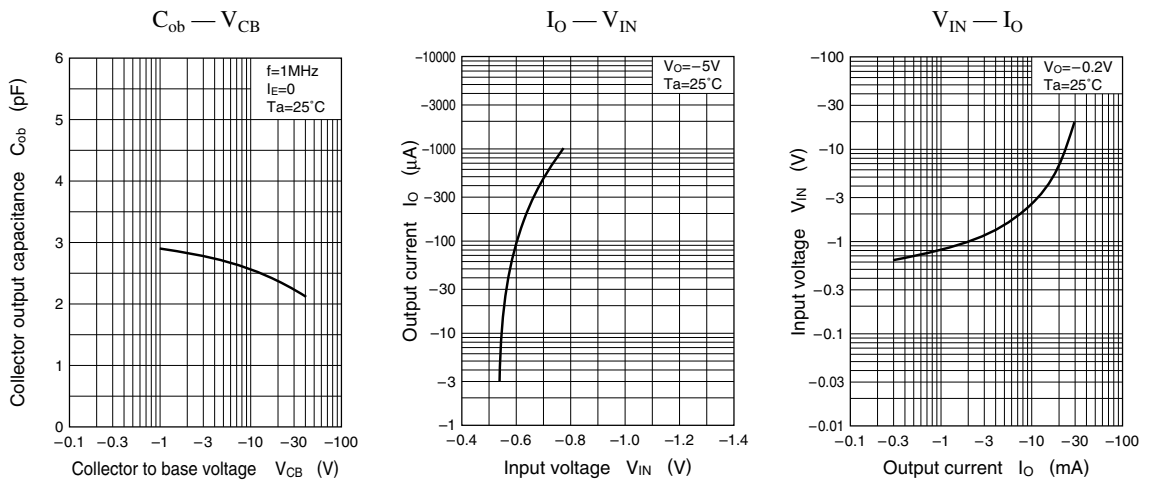
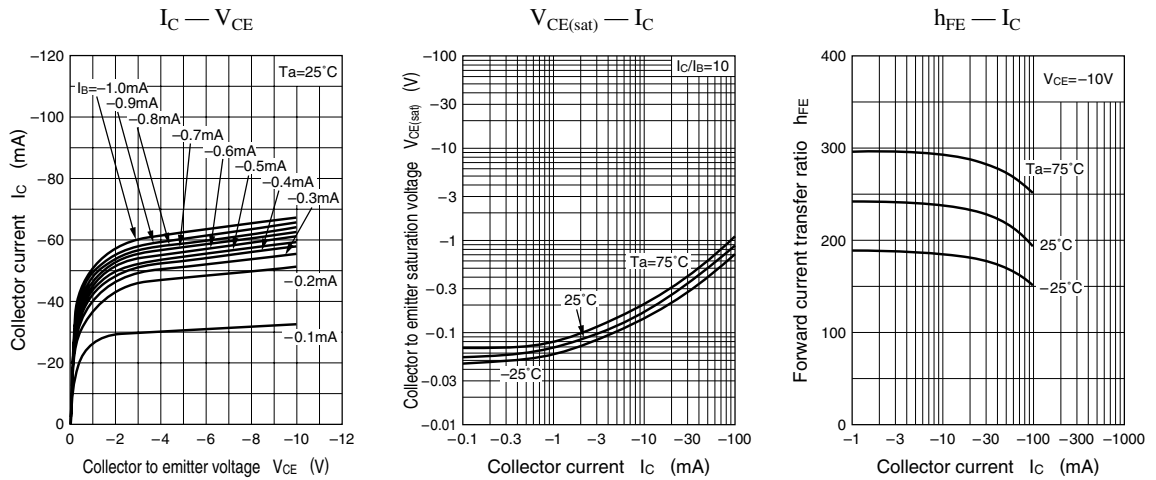


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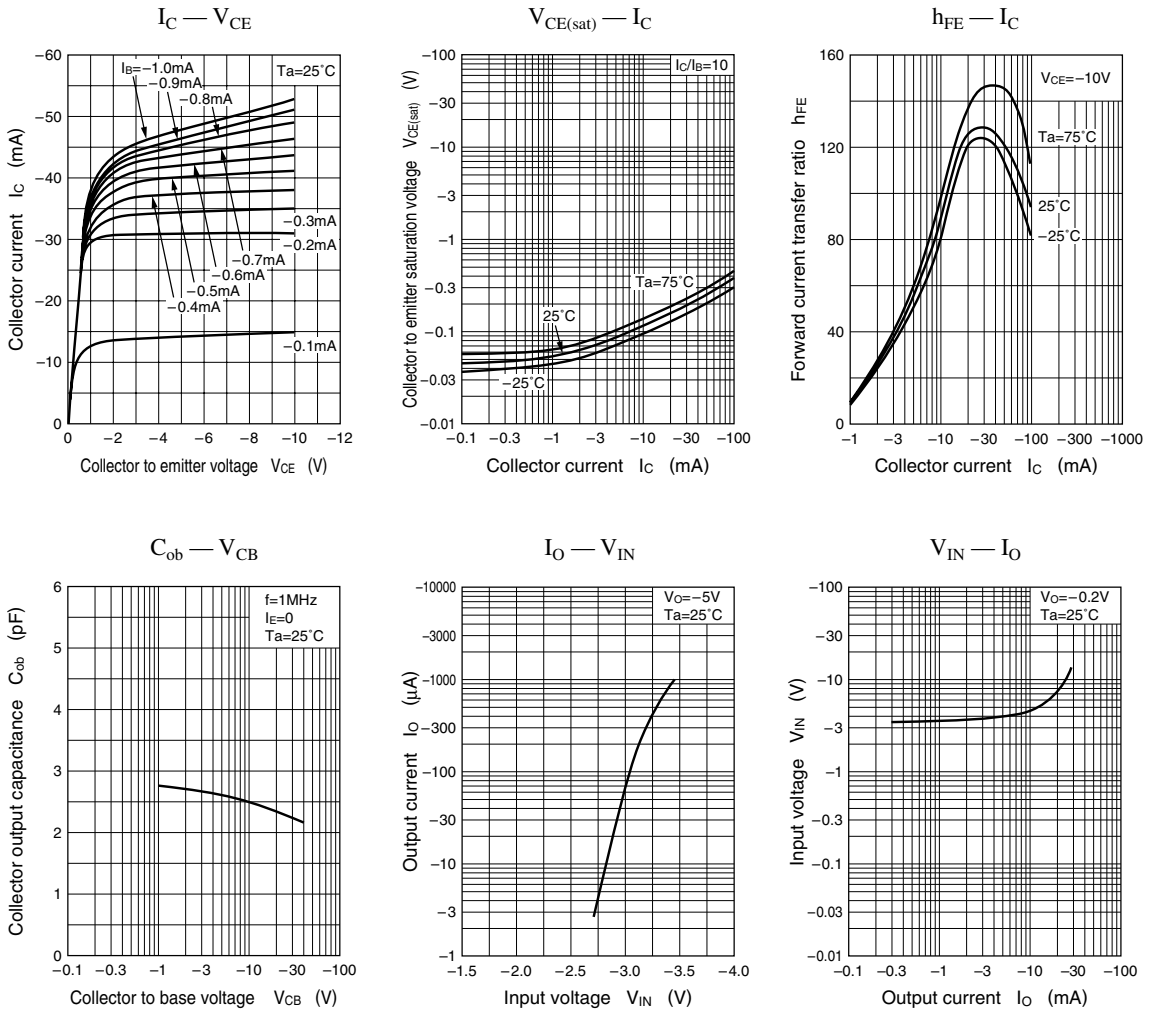




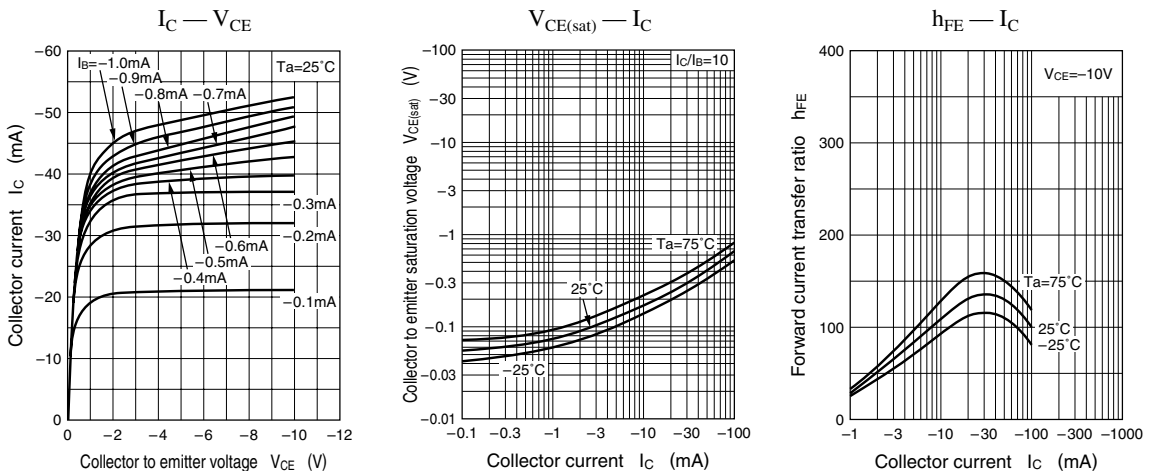
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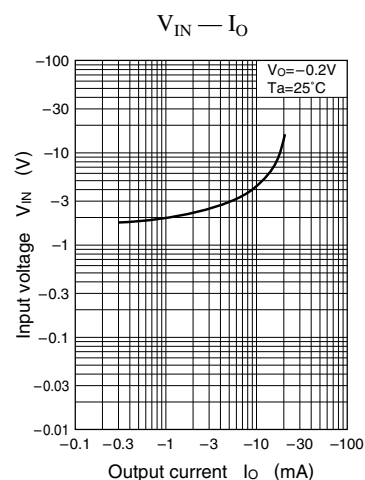
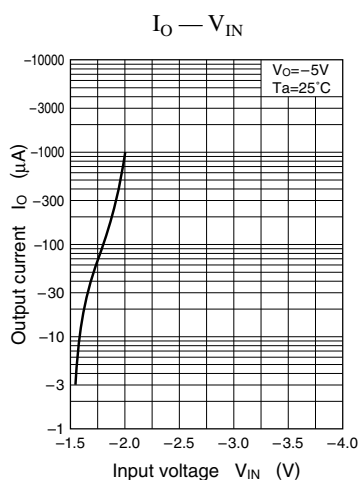
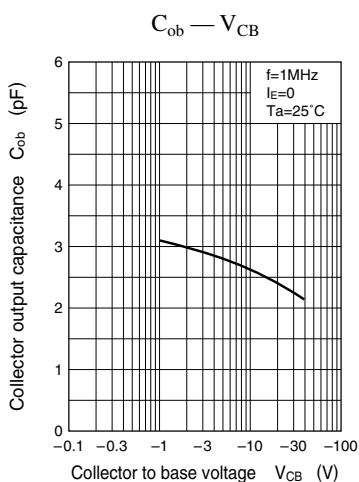


Characteristics charts of UNR111D

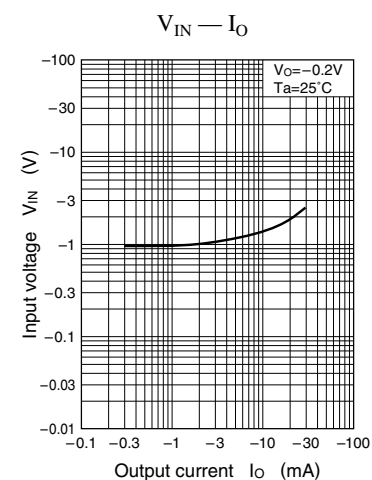
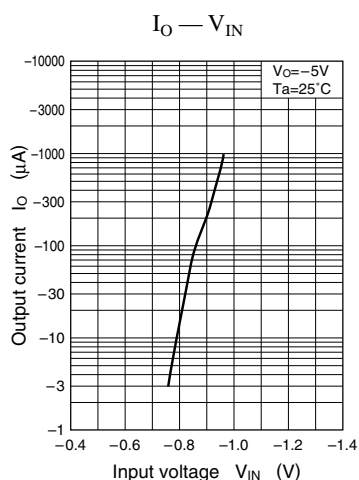
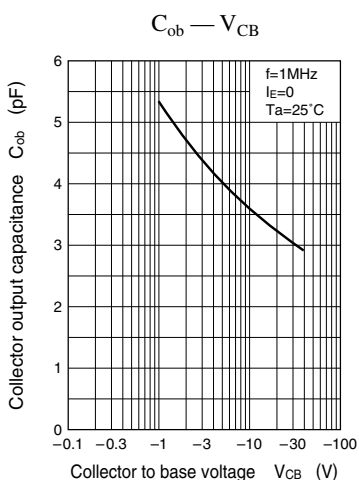
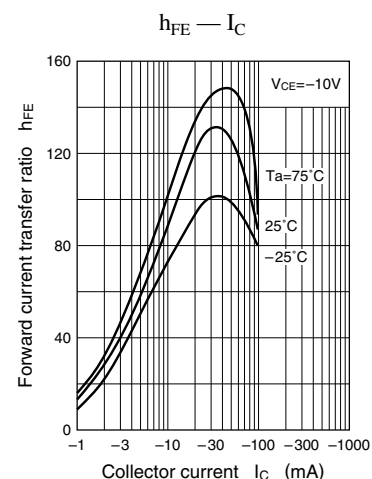
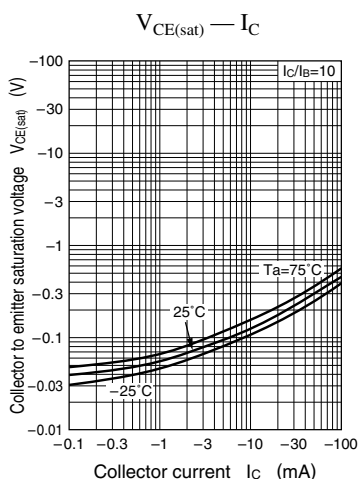
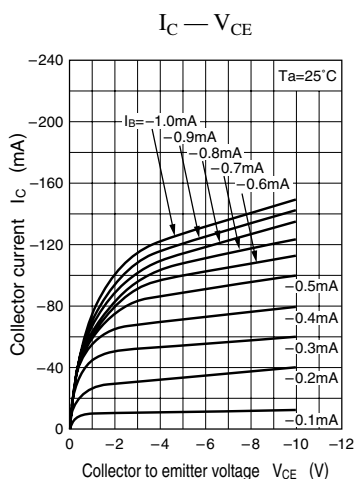


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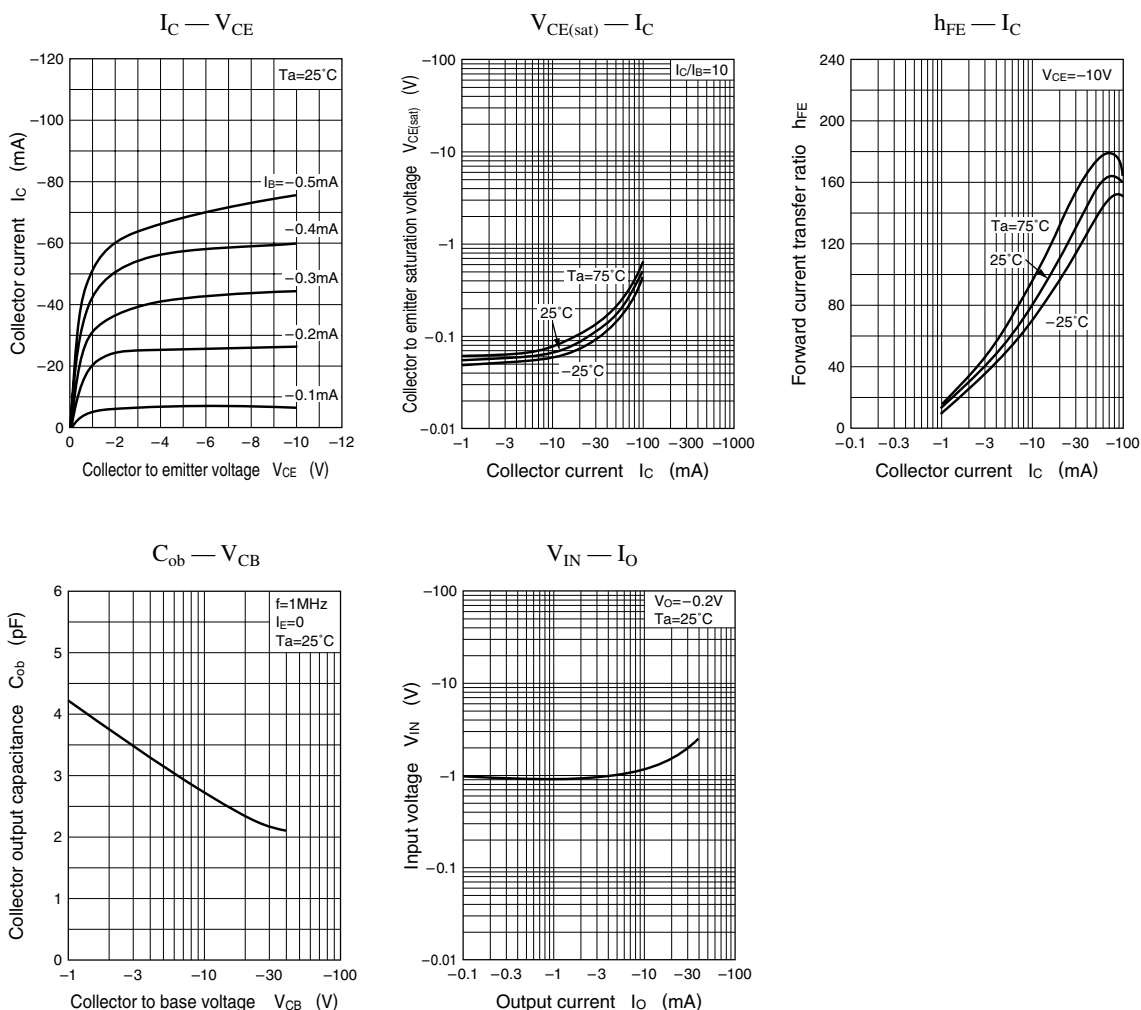




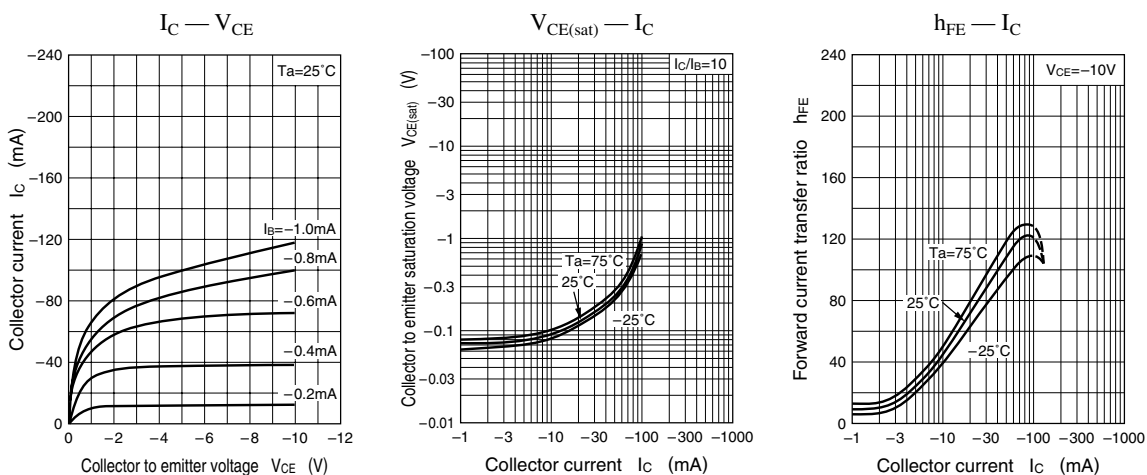
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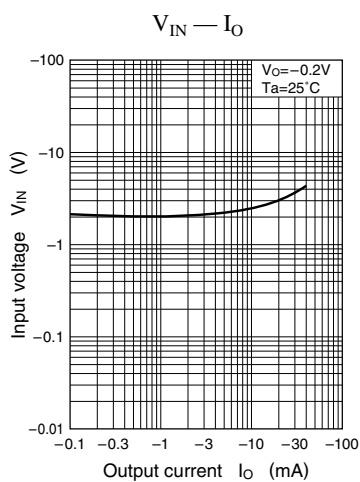
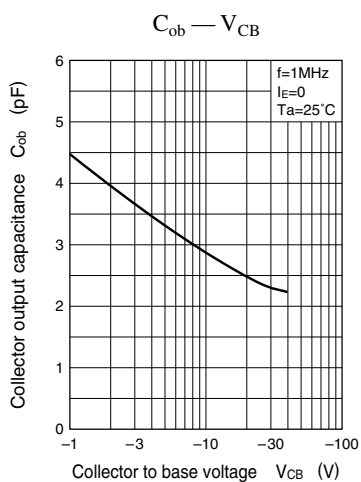


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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