

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 planer transistor

For digital circuits

Features

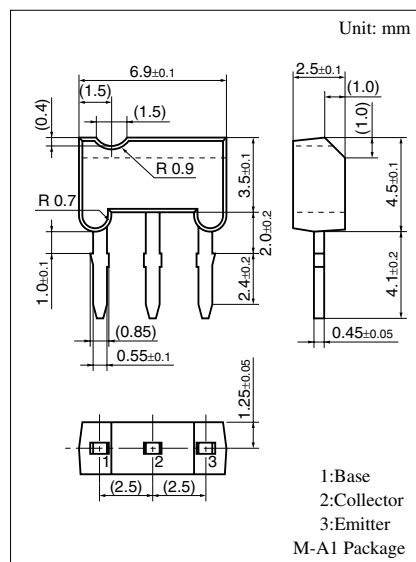
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

Resistance by Part Number

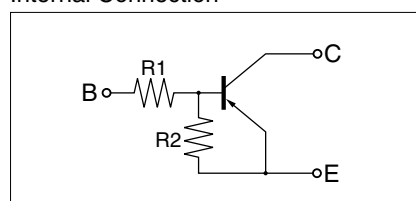
	(R ₁)	(R ₂)
• UNR1111	10kΩ	10kΩ
• UNR1112	22kΩ	22kΩ
• UNR1113	47kΩ	47kΩ
• UNR1114	10kΩ	47kΩ
• UNR1115	10kΩ	—
• UNR1116	4.7kΩ	—
• UNR1117	22kΩ	—
• UNR1118	0.51kΩ	5.1kΩ
• UNR1119	1kΩ	10kΩ
• UNR1110	47kΩ	—
• UNR111D	47kΩ	10kΩ
• UNR111E	47kΩ	22kΩ
• UNR111F	4.7kΩ	10kΩ
• UNR111H	2.2kΩ	10kΩ
• UNR111L	4.7kΩ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

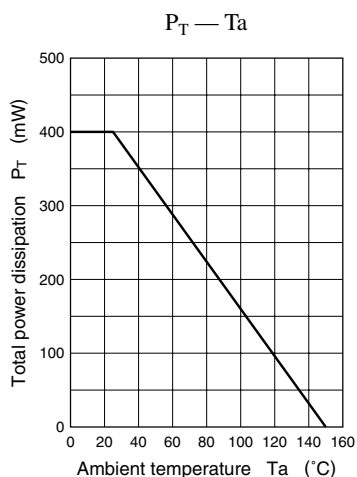
Electrical Characteristics (Ta=25°C)

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	

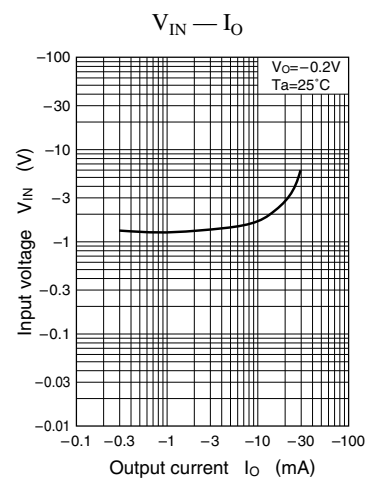
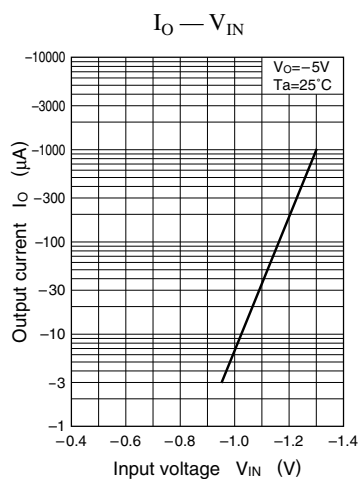
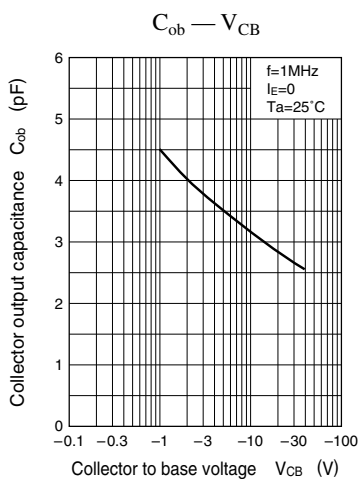
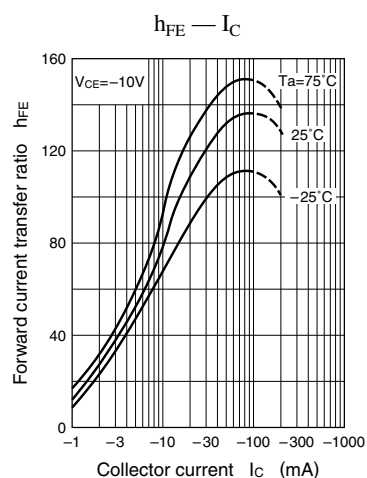
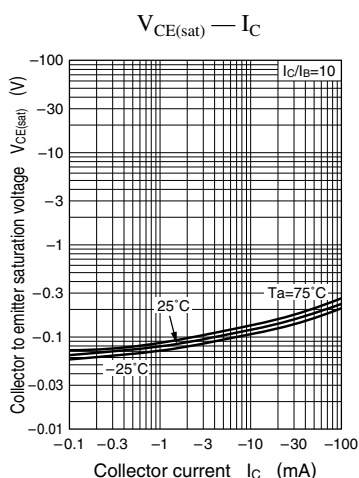
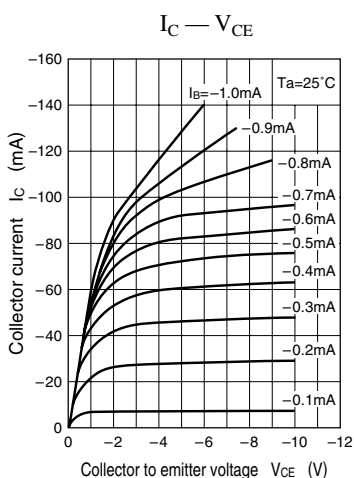
* h_{FE} rank classification (UNR1115/1116/1117/1110)

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

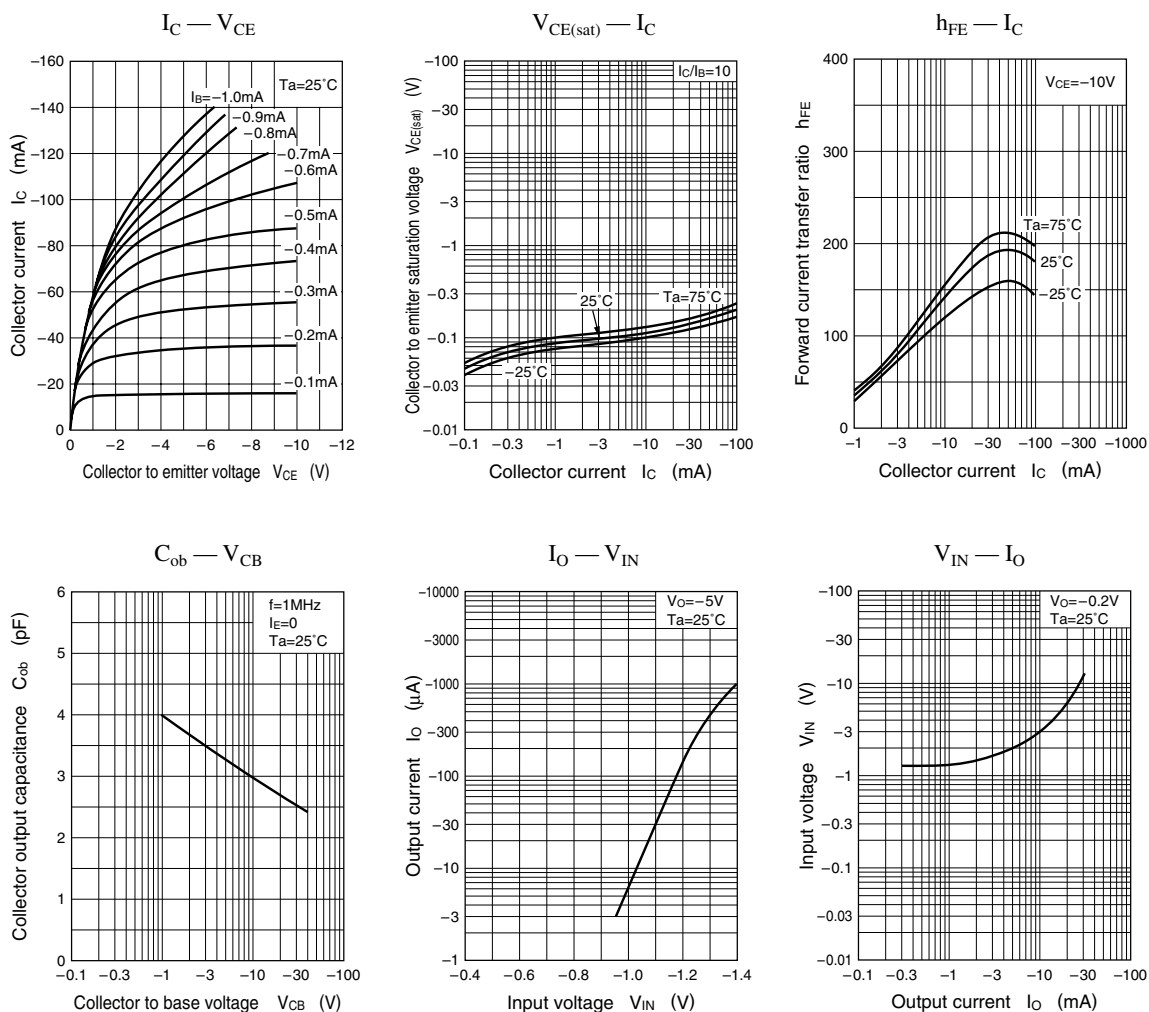
Common characteristics chart



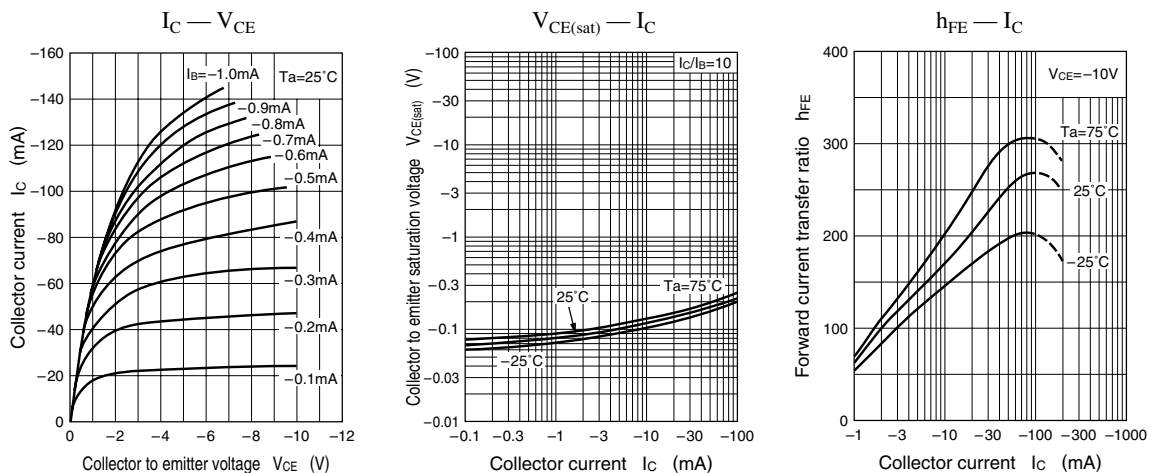
Characteristics charts of UNR1111

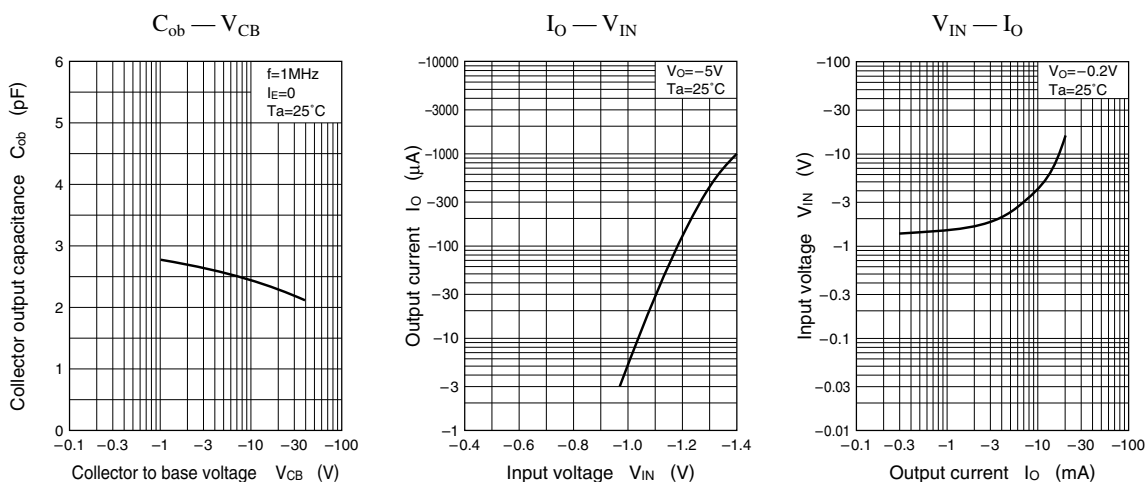


Characteristics charts of UNR1112

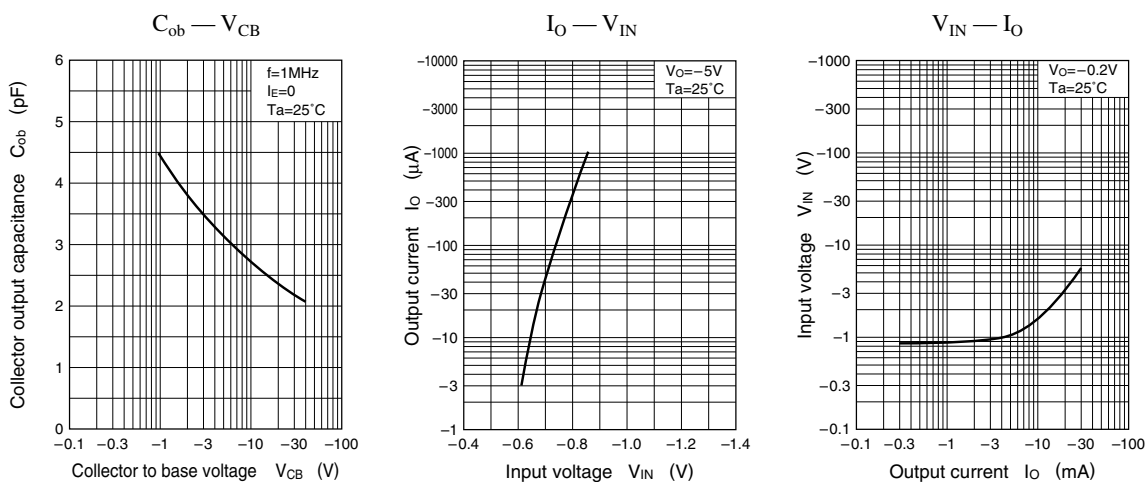
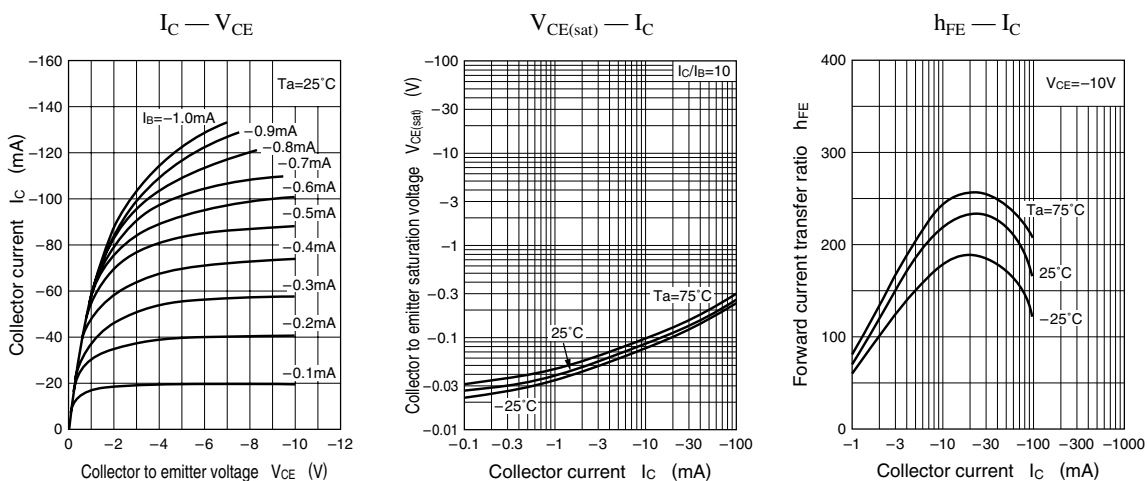


Characteristics charts of UNR1113

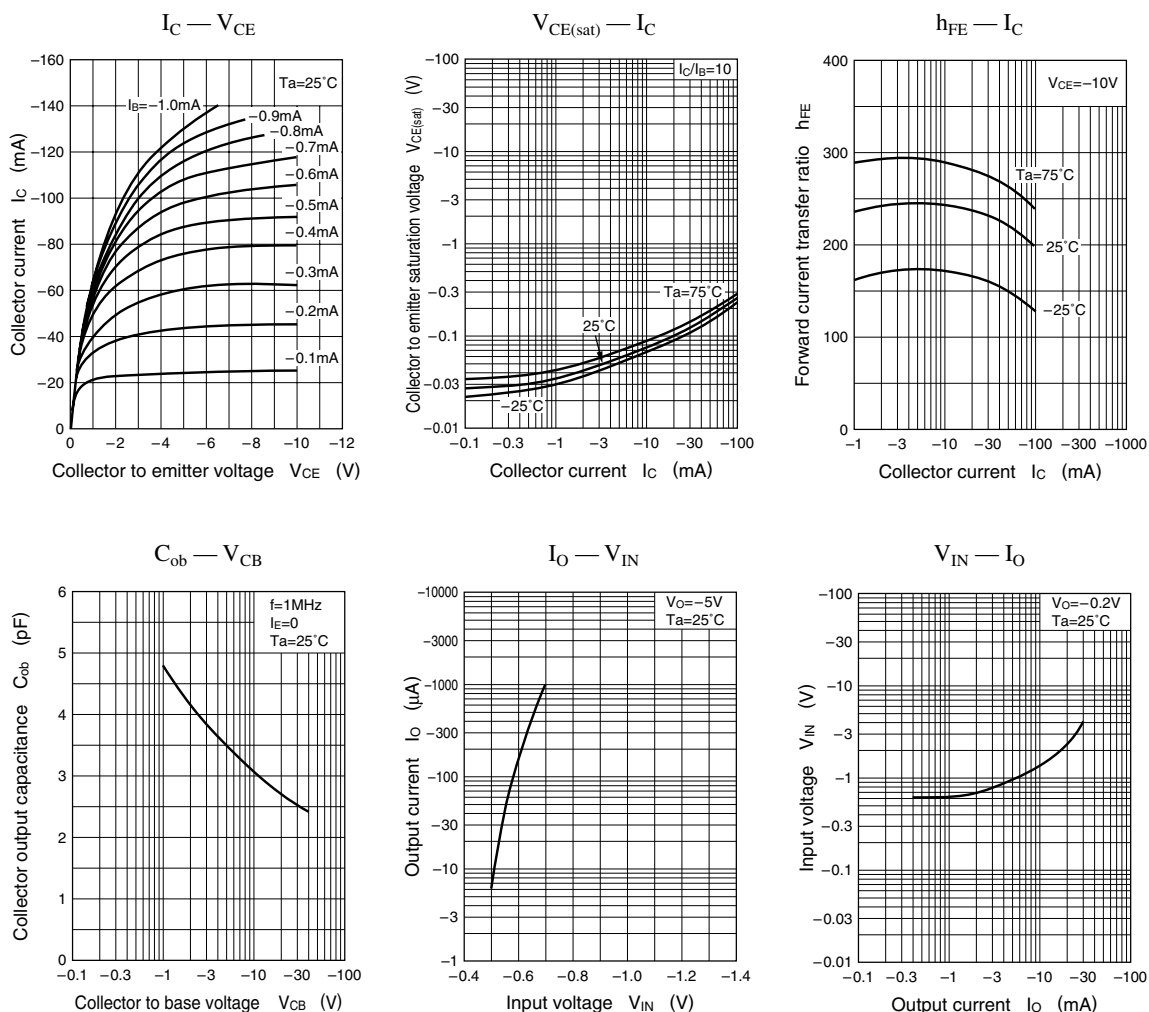




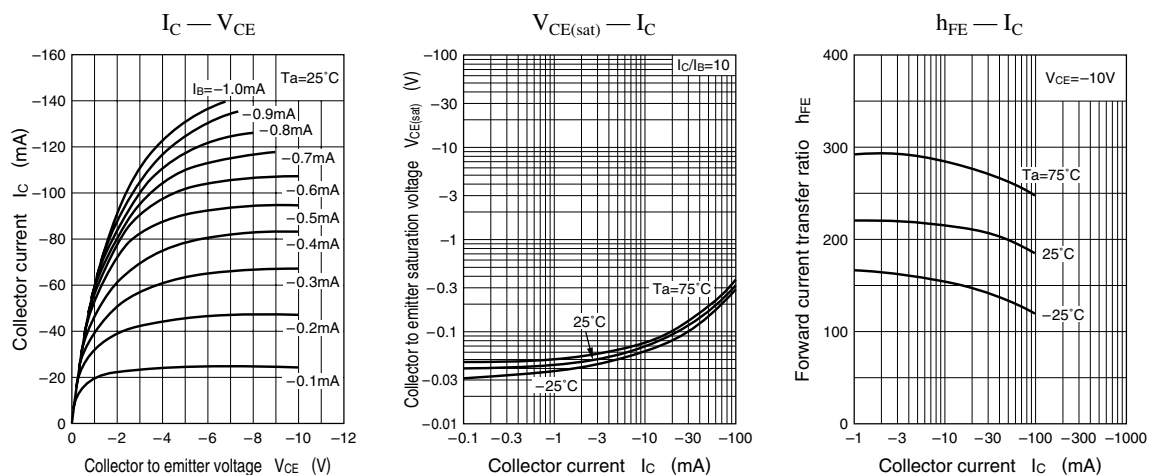
Characteristics charts of UNR1114

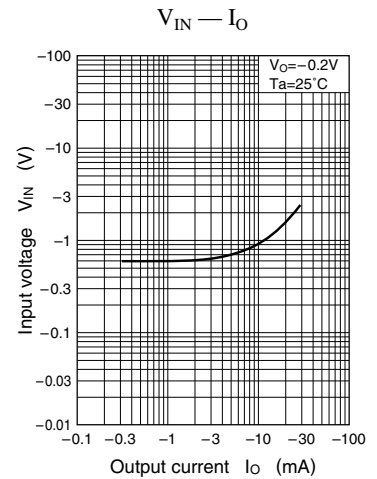
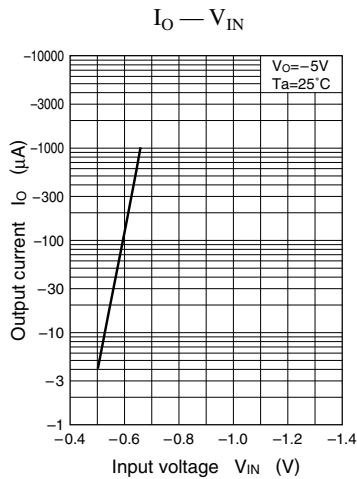
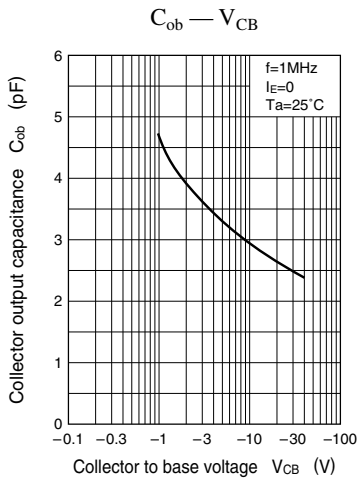


Characteristics charts of UNR1115

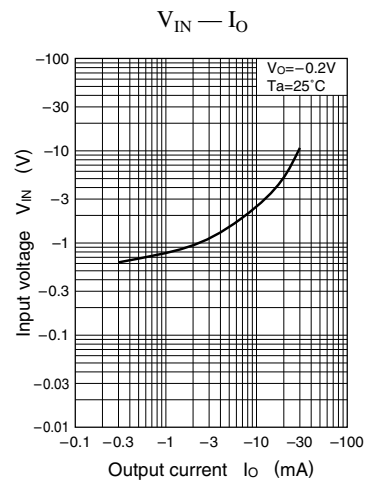
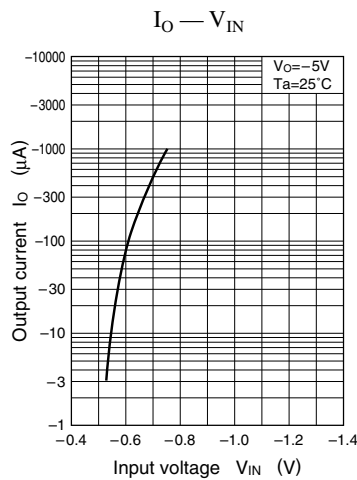
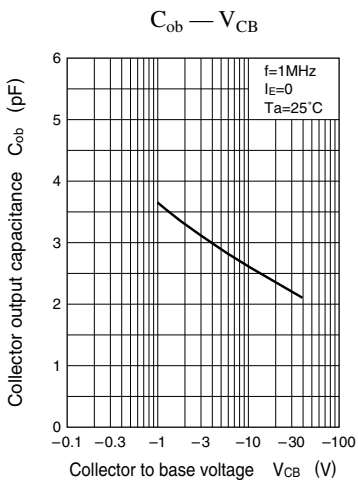
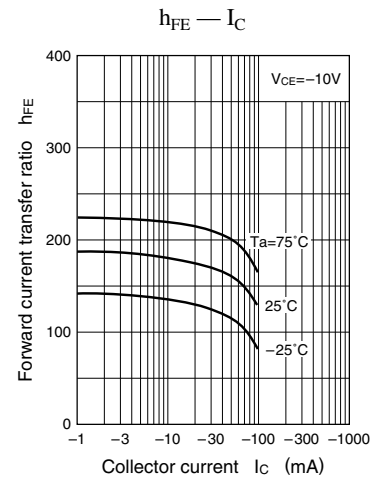
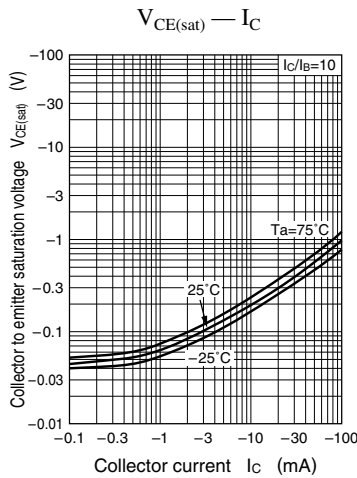
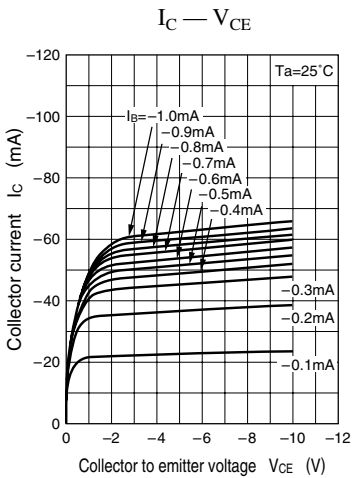


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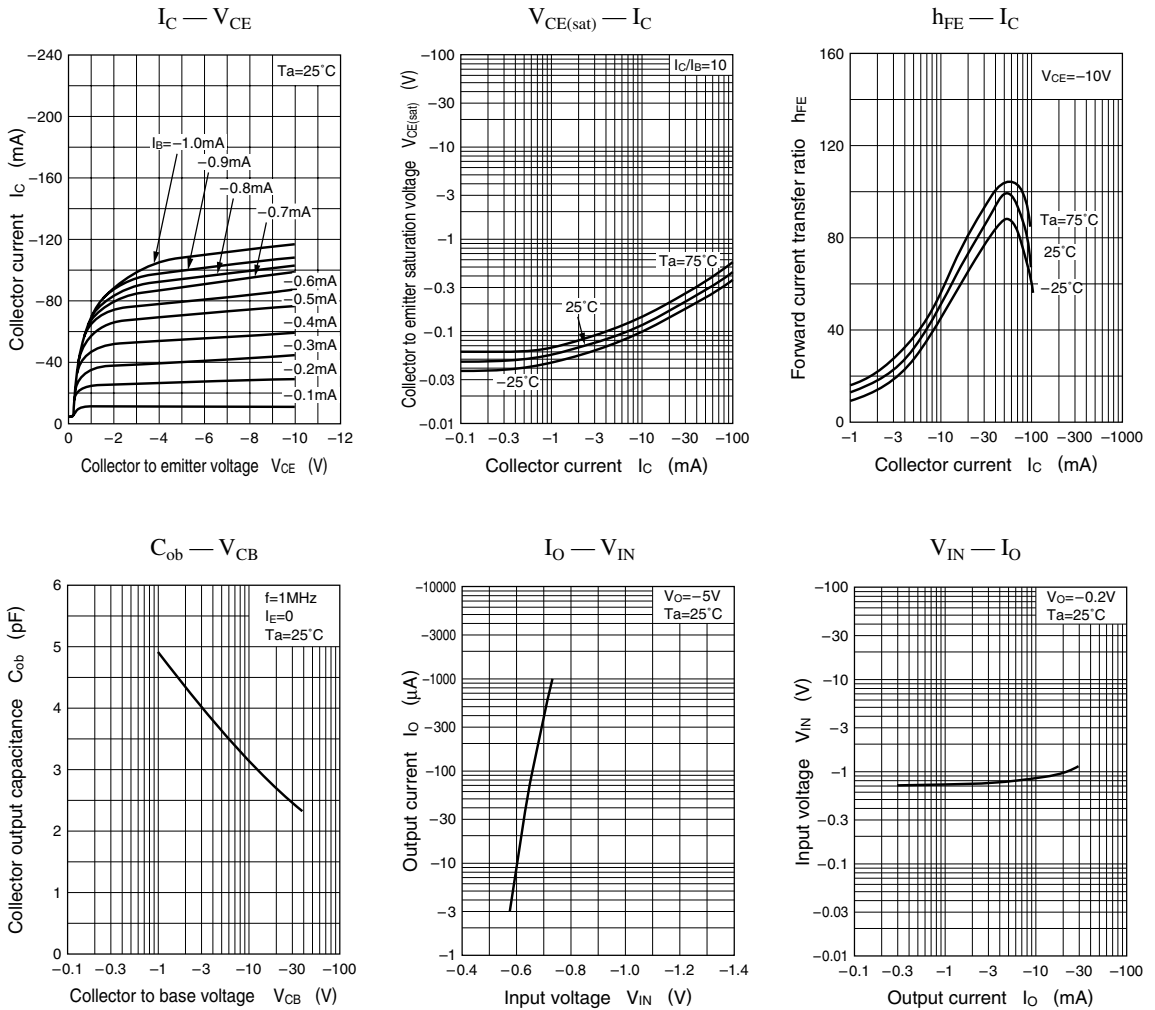




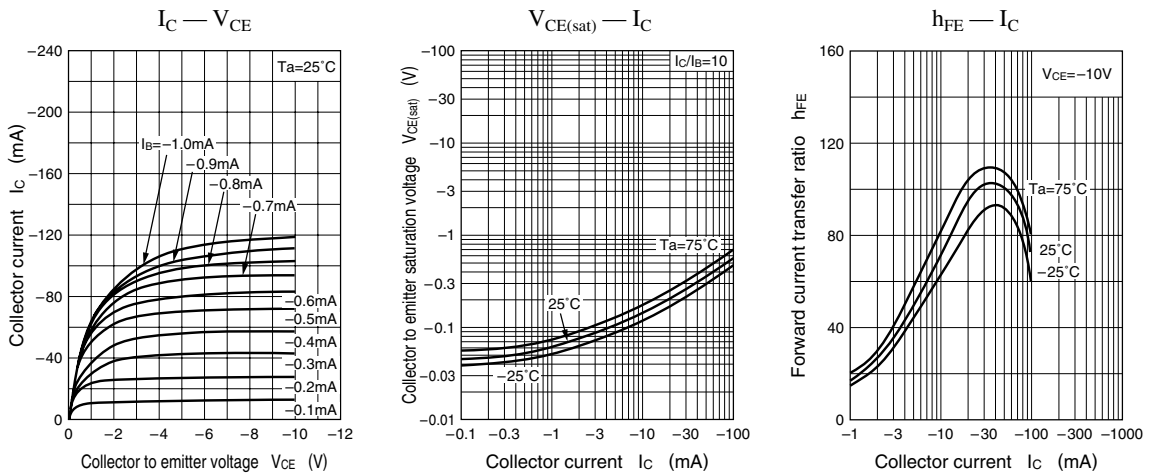
Characteristics charts of UNR1117

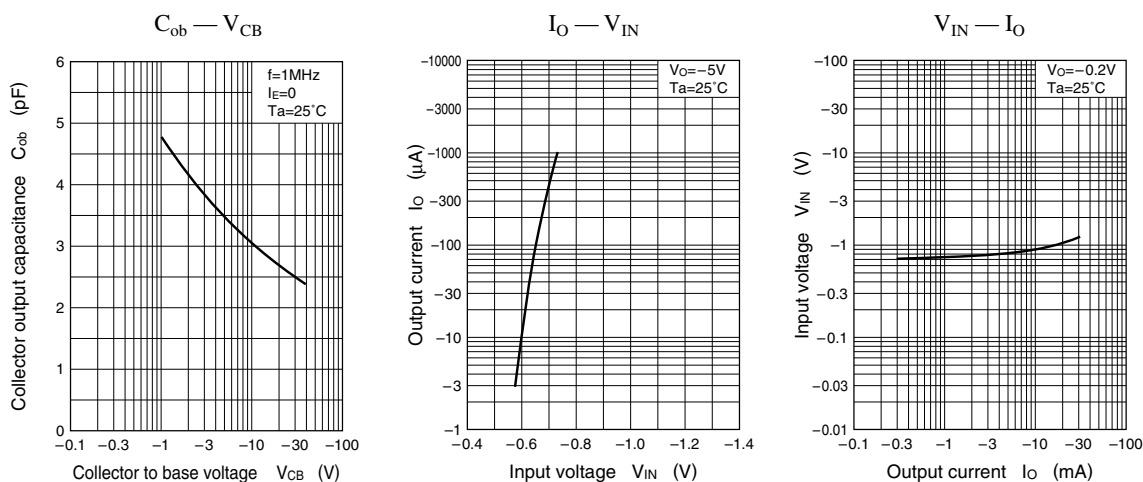


Characteristics charts of UNR1118

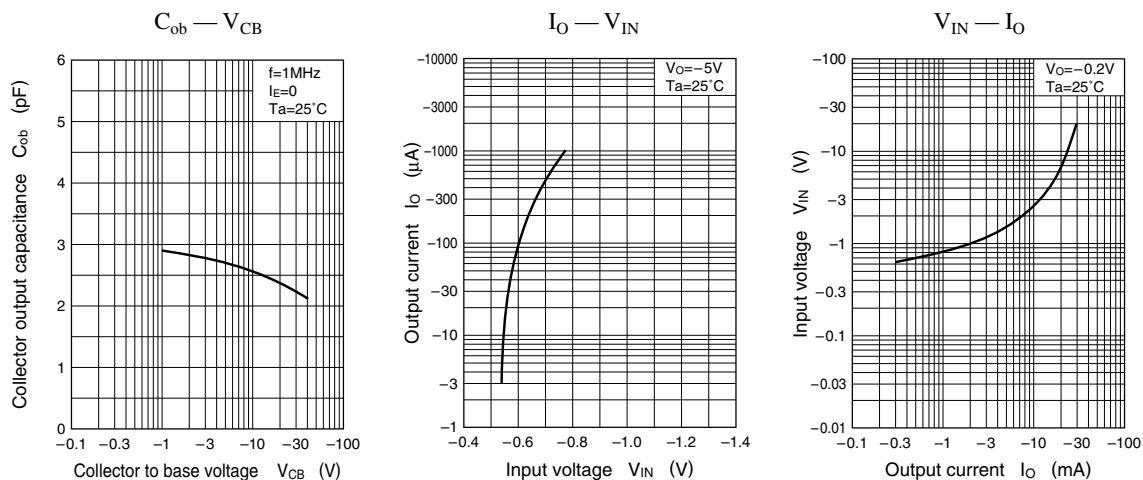
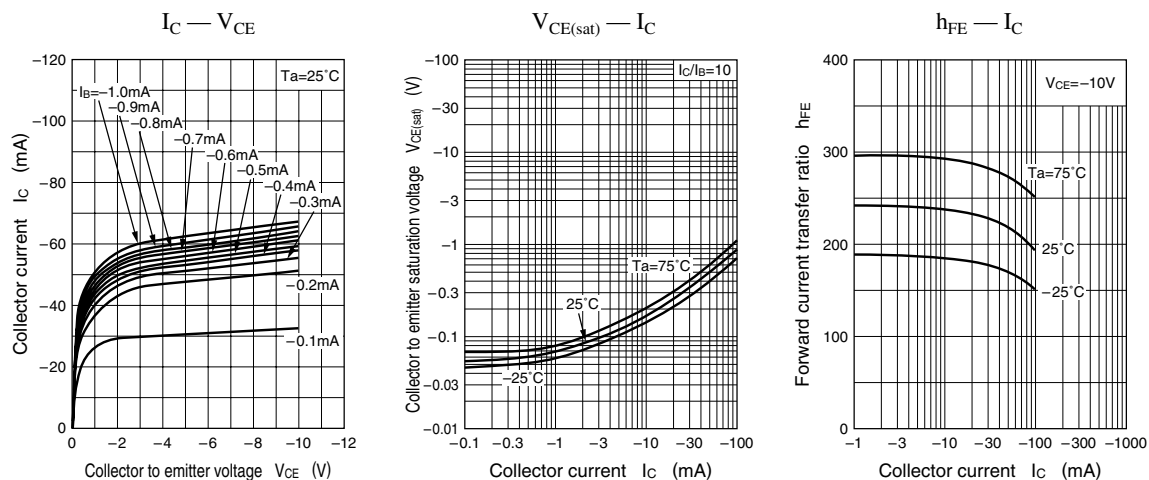


Characteristics charts of UNR1119

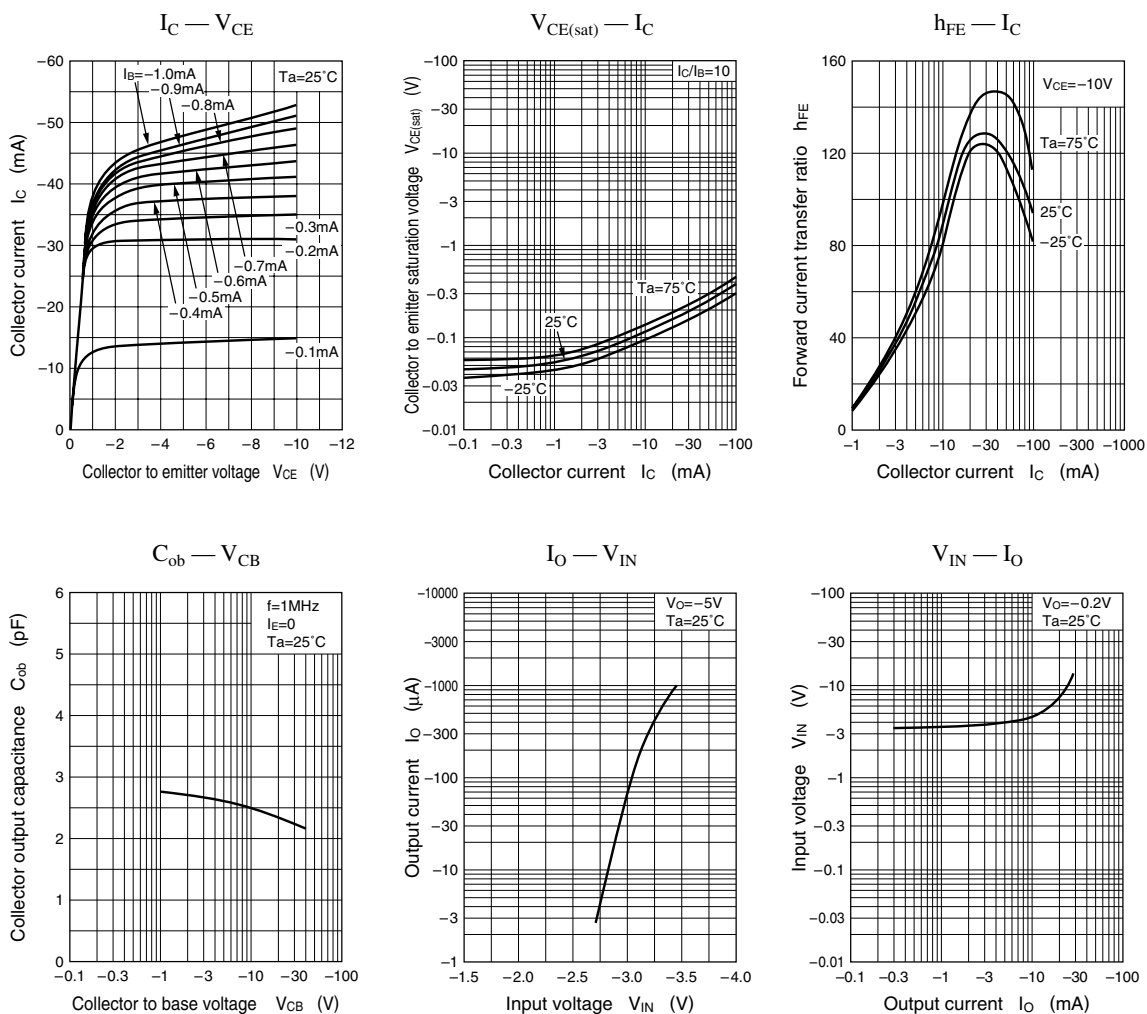




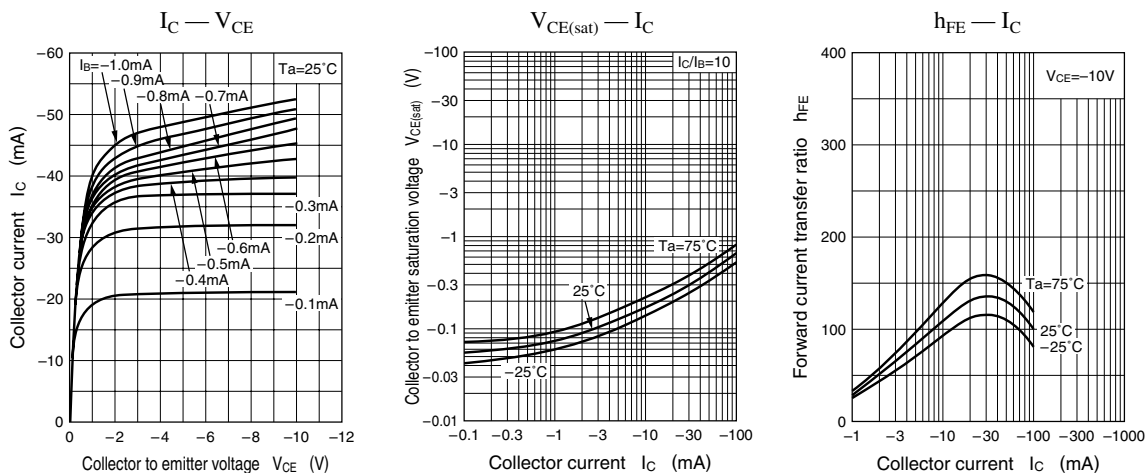
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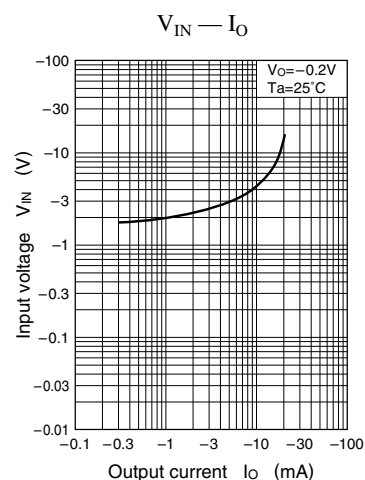
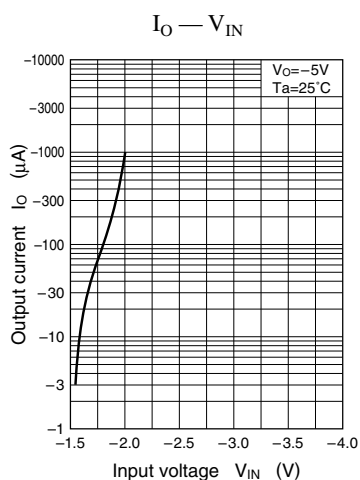
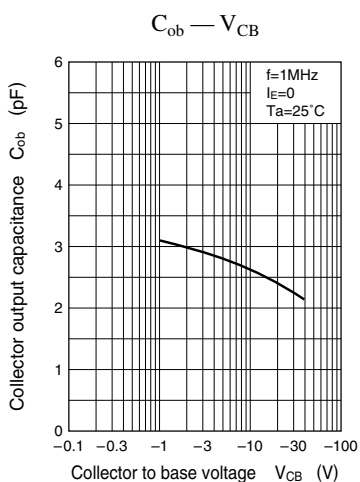


Characteristics charts of UNR111D

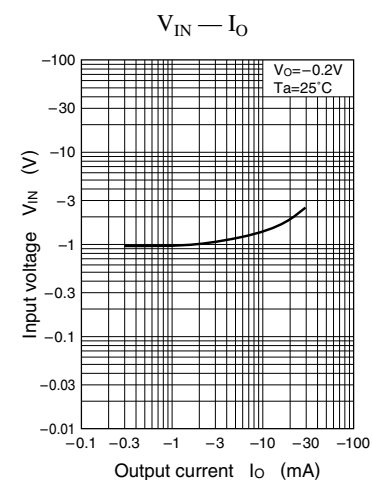
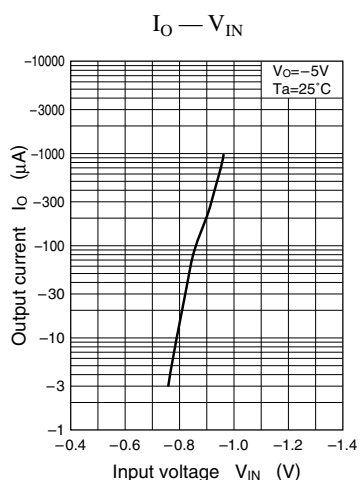
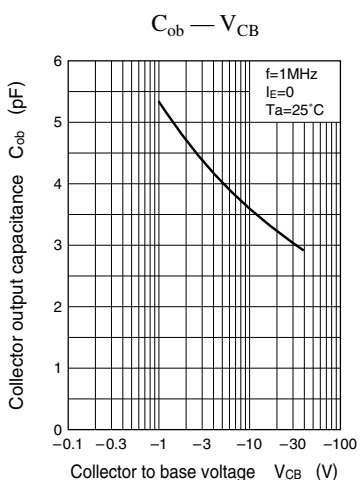
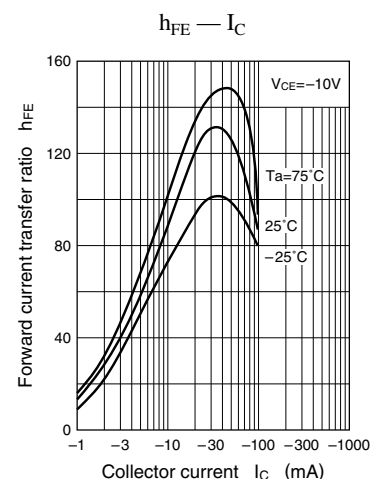
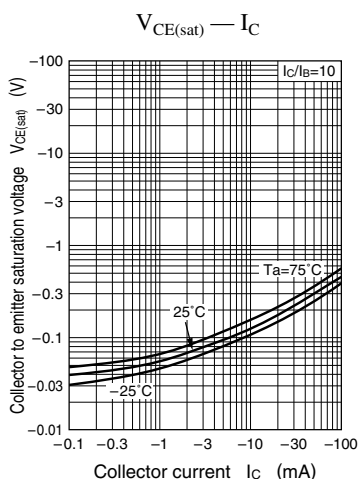
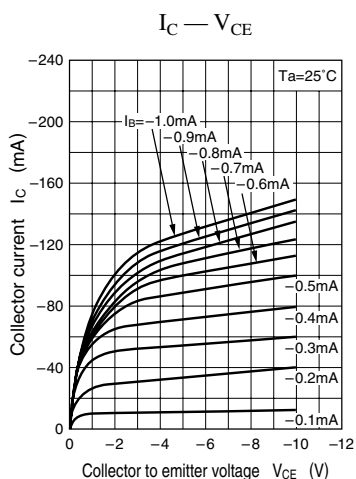


Characteristics charts of UNR111E

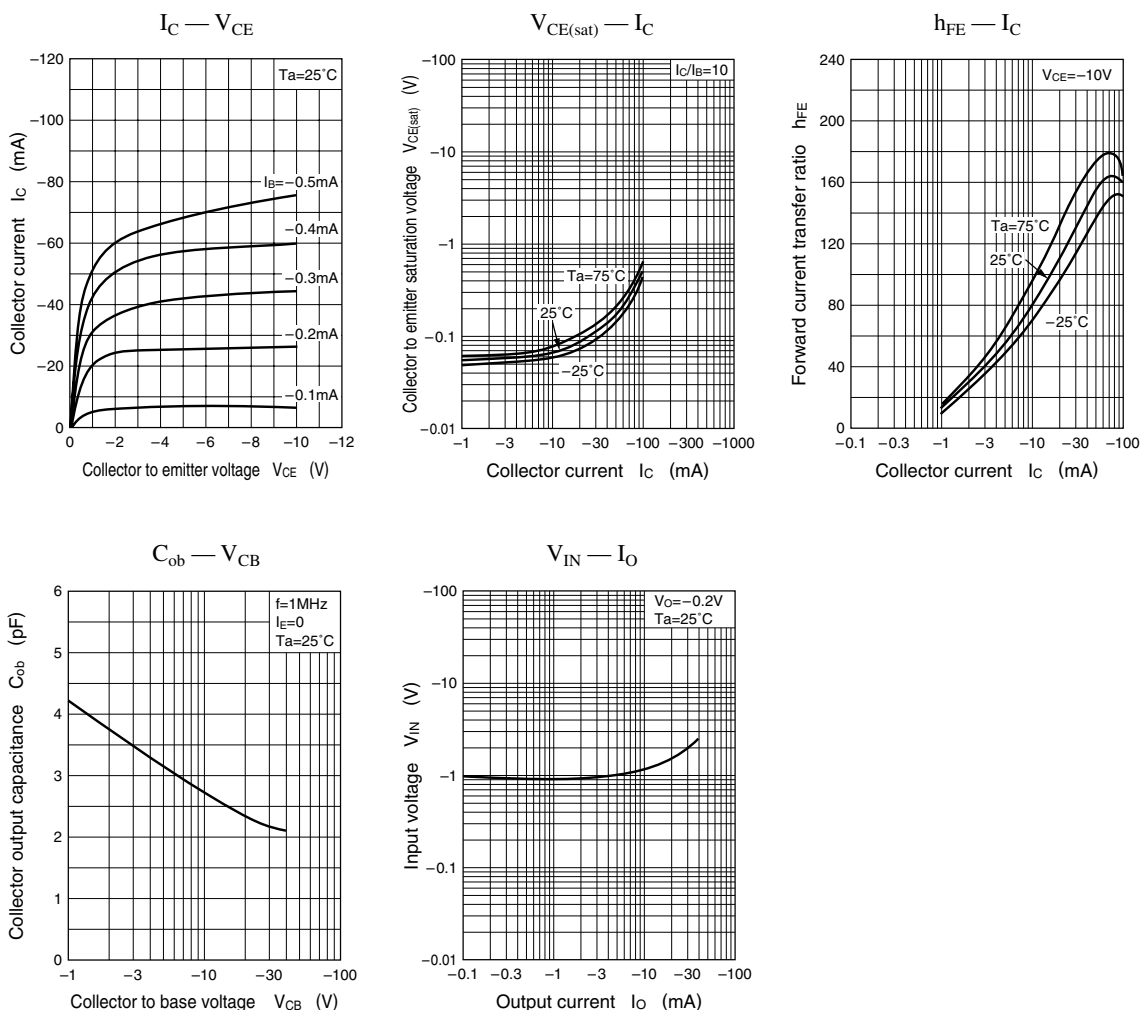




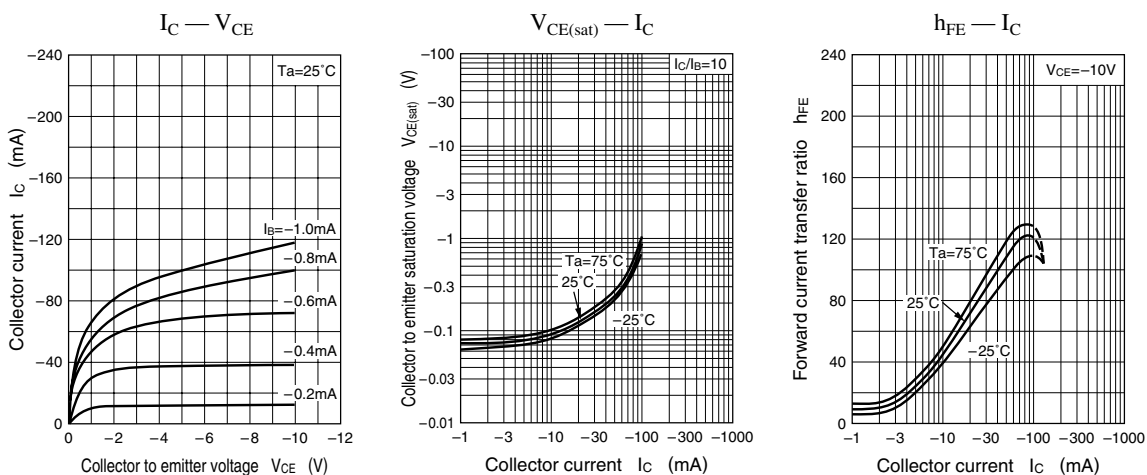
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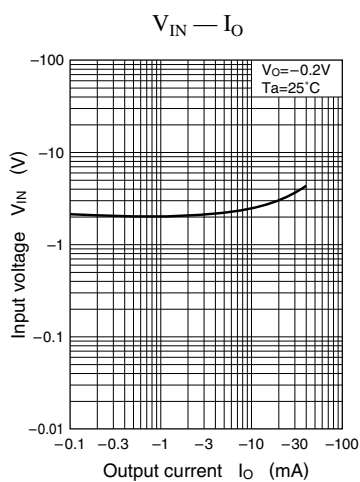
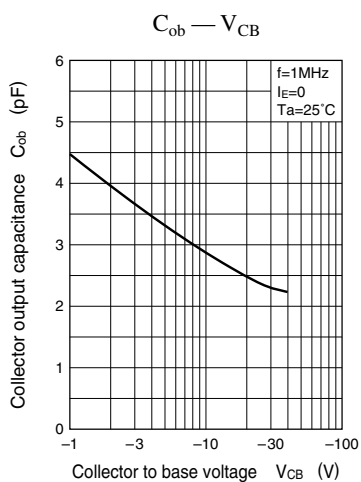


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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