

UNR511x Series (UN511x Series)

Silicon PNP epitaxial planar type

For digital circuits

■ Features

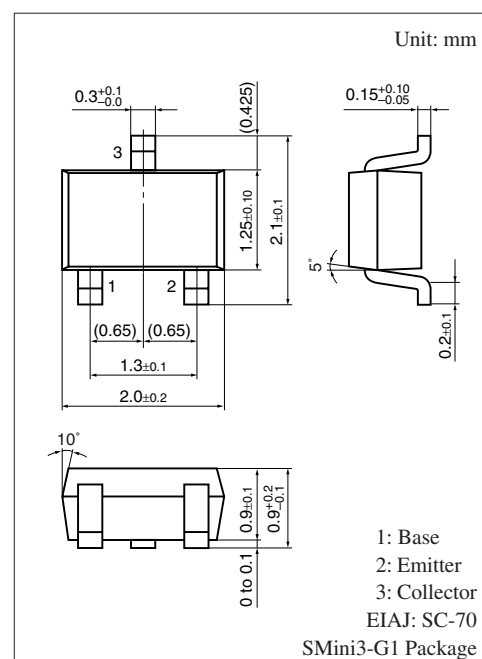
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- S-Mini type package, allowing automatic insertion through the tape/magazine packing

■ Resistance by Part Number

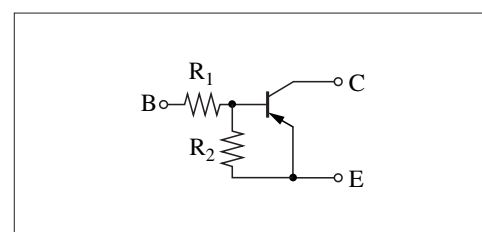
	Marking symbol	(R ₁)	(R ₂)
• UNR5110 (UN5110)	6L	47 kΩ	—
• UNR5111 (UN5111)	6A	10 kΩ	10 kΩ
• UNR5112 (UN5112)	6B	22 kΩ	22 kΩ
• UNR5113 (UN5113)	6C	47 kΩ	47 kΩ
• UNR5114 (UN5114)	6D	10 kΩ	47 kΩ
• UNR5115 (UN5115)	6E	10 kΩ	—
• UNR5116 (UN5116)	6F	4.7 kΩ	—
• UNR5117 (UN5117)	6H	22 kΩ	—
• UNR5118 (UN5118)	6I	0.51 kΩ	5.1 kΩ
• UNR5119 (UN5119)	6K	1 kΩ	10 kΩ
• UNR511D (UN511D)	6M	47 kΩ	10 kΩ
• UNR511E (UN511E)	6N	47 kΩ	22 kΩ
• UNR511F (UN511F)	6O	4.7 kΩ	10 kΩ
• UNR511H (UN511H)	6P	2.2 kΩ	10 kΩ
• UNR511L (UN511L)	6Q	4.7 kΩ	4.7 kΩ
• UNR511M (UN511M)	EI	2.2 kΩ	47 kΩ
• UNR511N (UN511N)	EW	4.7 kΩ	47 kΩ
• UNR511T (UN511T)	EY	22 kΩ	47 kΩ
• UNR511V (UN511V)	FC	2.2 kΩ	2.2 kΩ
• UNR511Z (UN511Z)	FE	4.7 kΩ	22 kΩ

■ Absolute Maximum Ratings T_a = 25°C

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V _{CBO}	−50	V
Collector-emitter voltage (Base open)	V _{CEO}	−50	V
Collector current	I _C	−100	mA
Total power dissipation	P _T	150	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.

■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit	
Collector-base voltage (Emitter open)		V _{CBO}	I _C = −10 μA, I _E = 0	−50			V	
Collector-emitter voltage (Base open)		V _{CEO}	I _C = −2 mA, I _B = 0	−50			V	
Collector-base cutoff current (Emitter open)		I _{CBO}	V _{CB} = −50 V, I _E = 0			− 0.1	μA	
Collector-emitter cutoff current (Base open)		I _{CEO}	V _{CE} = −50 V, I _B = 0			− 0.5	μA	
Emitter-base cutoff current (Collector open)	UNR5110/5115/5116/5117	I _{EBO}	V _{EB} = −6 V, I _C = 0			− 0.01	mA	
	UNR5113					− 0.1		
	UNR5112/5114/511D/ 511E/511M/511N/511T					− 0.2		
	UNR511Z					− 0.4		
	UNR5111					− 0.5		
	UNR511F/511H					−1.0		
	UNR5119					−1.5		
	UNR5118/511L/511V					−2.0		
Forward current transfer ratio	UNR511V	h _{FE}	V _{CE} = −10 V, I _C = −5 mA	6		20	—	
	UNR5118/511L			20				
	UNR5119/511D/511F/511H			30				
	UNR5111			35				
	UNR5112/511E			60				
	UNR511Z			60		200		
	UNR5113/5114/511M			80				
	UNR511N/511T			80		400		
	UNR5110*/5115*/5116*/5117*			160		460		
Collector-emitter saturation voltage		V _{CE(sat)}	I _C = −10 mA, I _B = − 0.3 mA			− 0.25	V	
UNR511V			I _C = −10 mA, I _B = −1.5 mA					
Output voltage high-level		V _{OH}	V _{CC} = −5 V, V _B = − 0.5 V, R _L = 1 kΩ	−4.9			V	
Output voltage low-level		V _{OL}	V _{CC} = −5 V, V _B = −2.5 V, R _L = 1 kΩ			− 0.2	V	
UNR5113			V _{CC} = −5 V, V _B = −3.5 V, R _L = 1 kΩ					
UNR511D			V _{CC} = −5 V, V _B = −10 V, R _L = 1 kΩ					
UNR511E			V _{CC} = −5 V, V _B = −6 V, R _L = 1 kΩ					
Transition frequency		f _T	V _{CB} = −10 V, I _E = 1 mA, f = 200 MHz		80		MHz	
UNR5116			V _{CB} = −10 V, I _E = 2 mA, f = 200 MHz		150			
Input resistance	UNR5118	R ₁		−30%	0.51	+30%	kΩ	
	UNR5119				1.0			
	UNR511H/511M/511V				2.2			
	UNR5116/511F/511L 511N/511Z				4.7			
	UNR5111/5114/5115				10			
	UNR5112/5117/511T				22			
	UNR5110/5113/511D/511E				47			
Resistance ratio	UNR511M	R ₁ /R ₂			0.047		—	
	UNR511N				0.1			
	UNR5118/5119				0.08	0.10		0.12
	UNR511Z					0.21		

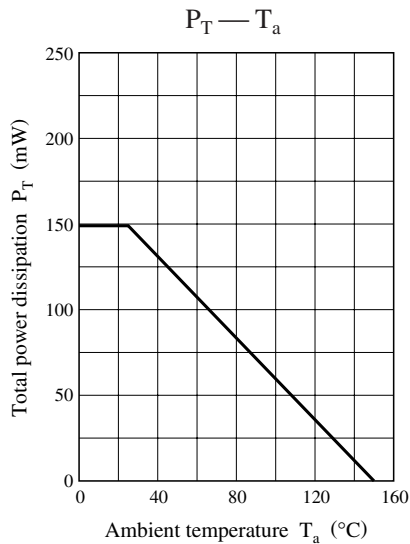
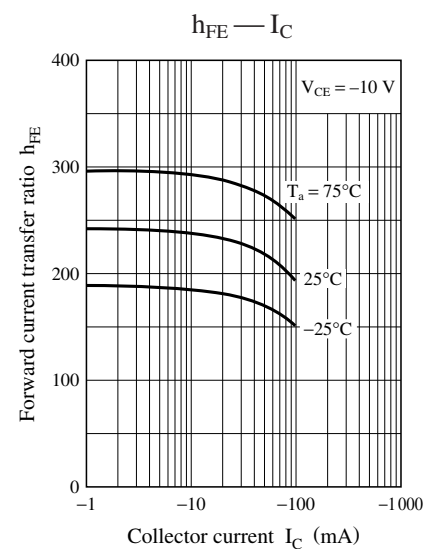
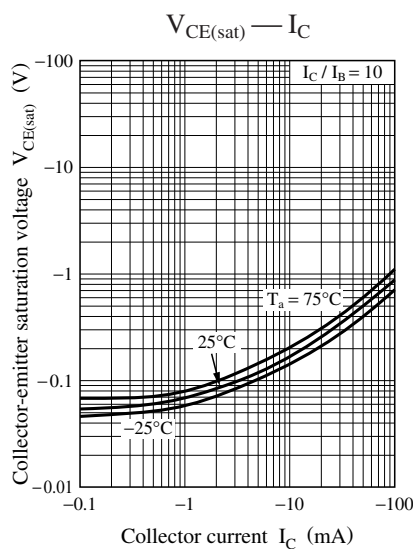
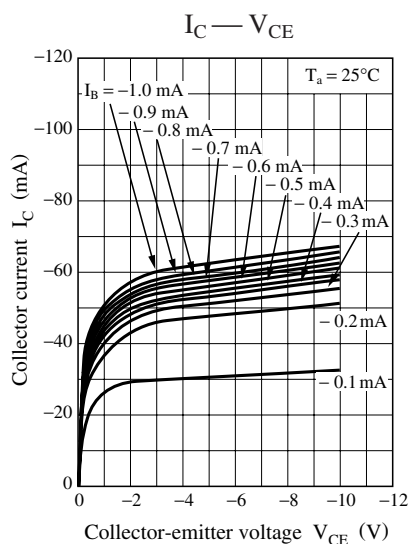
■ Electrical Characteristics (continued) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

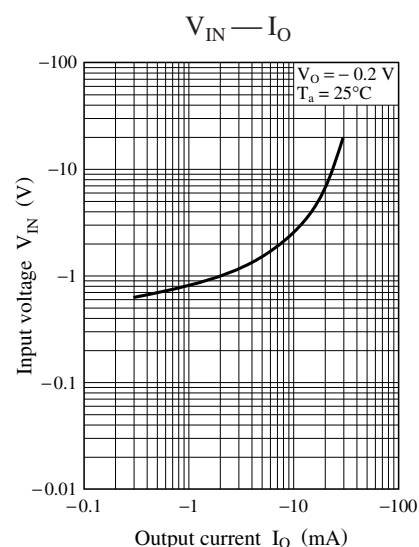
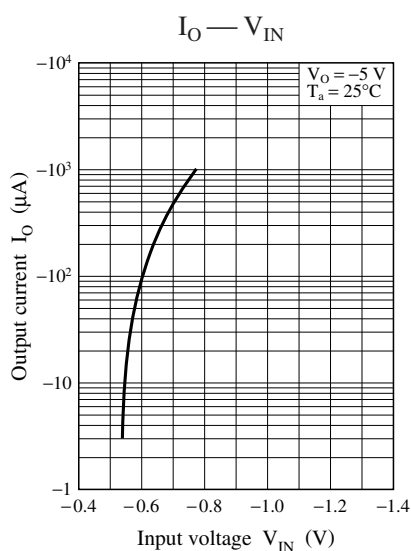
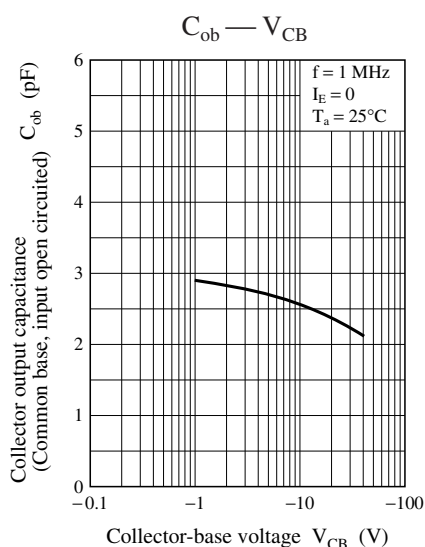
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR5114			0.17	0.21	0.25	
	UNR511H			0.17	0.22	0.27	
	UNR511T				0.47		
	UNR511F			0.37	0.47	0.57	
	UNR511V				1.0		
	UNR5111/5112/5113/511L			0.8	1.0	1.2	
	UNR511E			1.70	2.14	2.60	
	UNR511D			3.7	4.7	5.7	

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

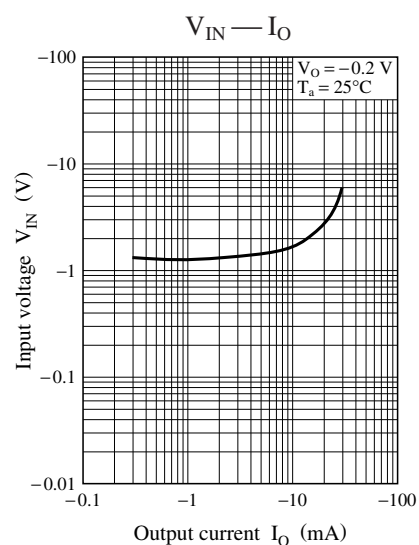
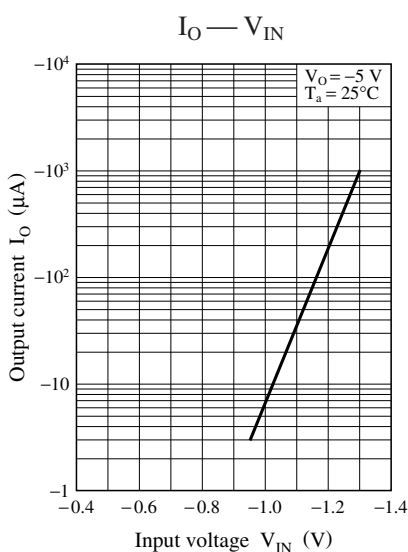
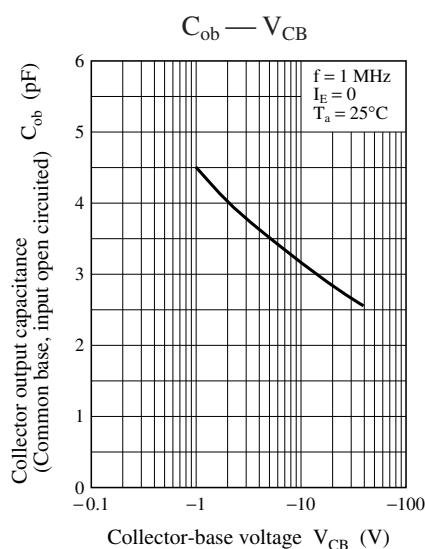
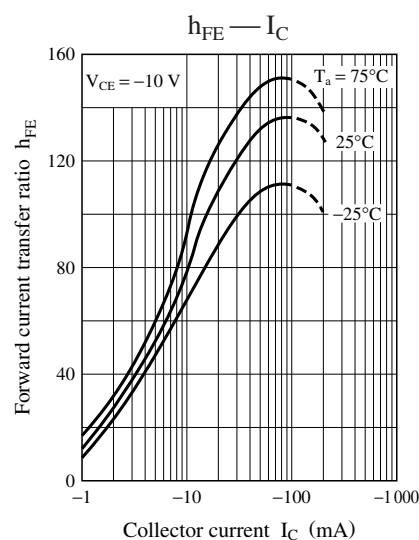
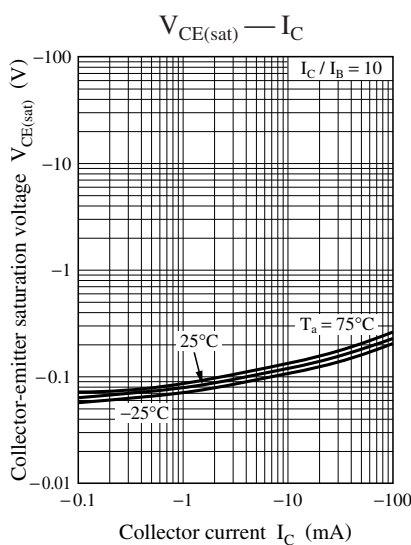
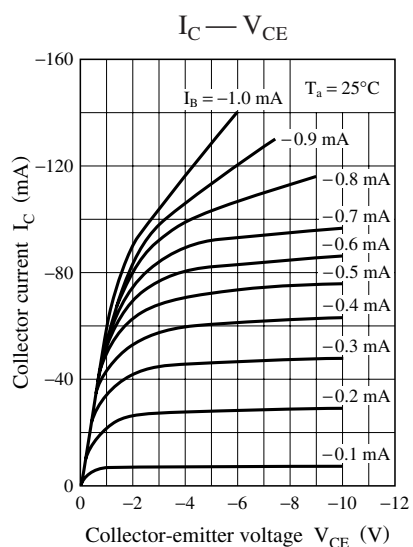
2. *: Rank classification

Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

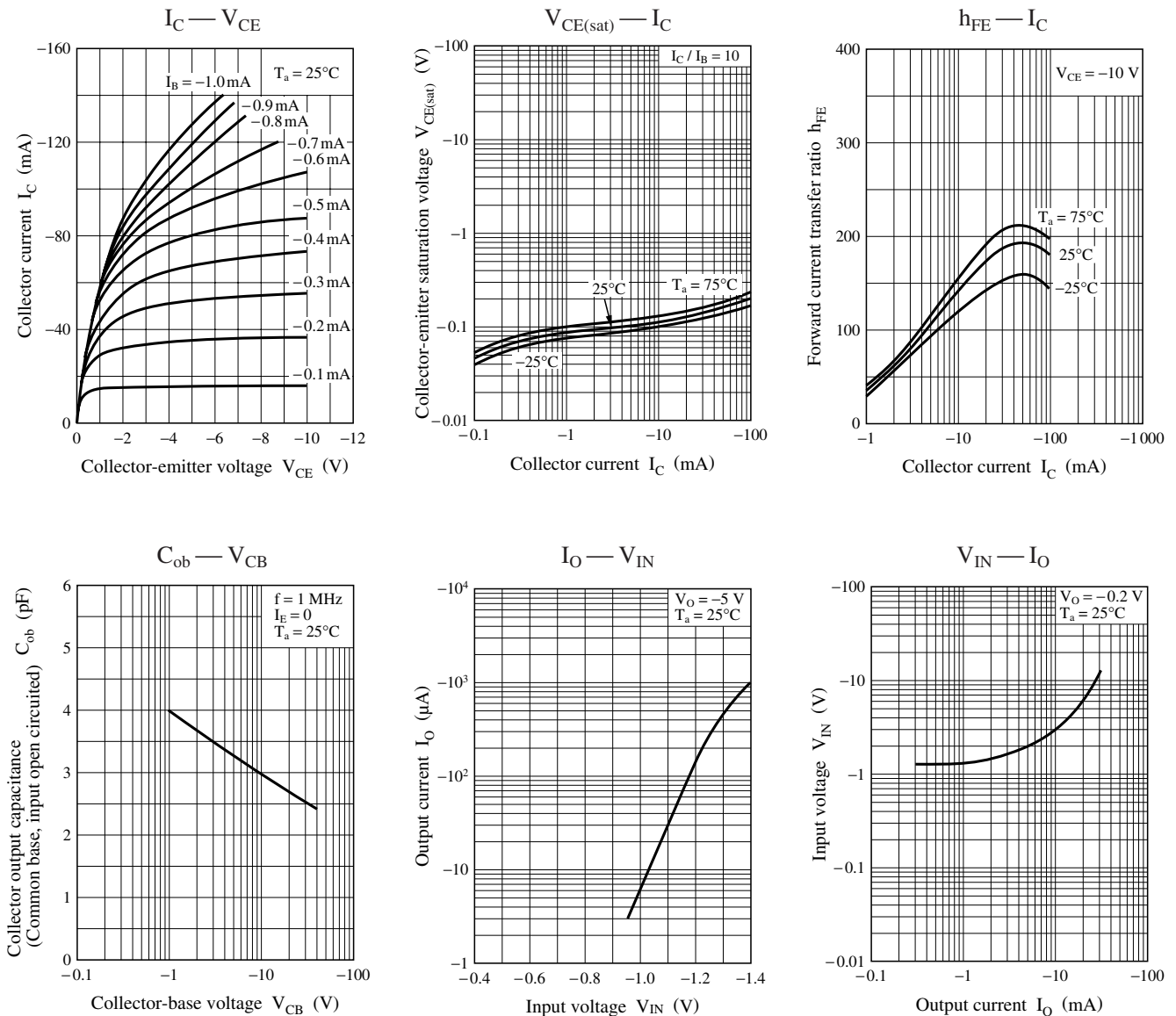
Common characteristics chart

Characteristics charts of UNR5110




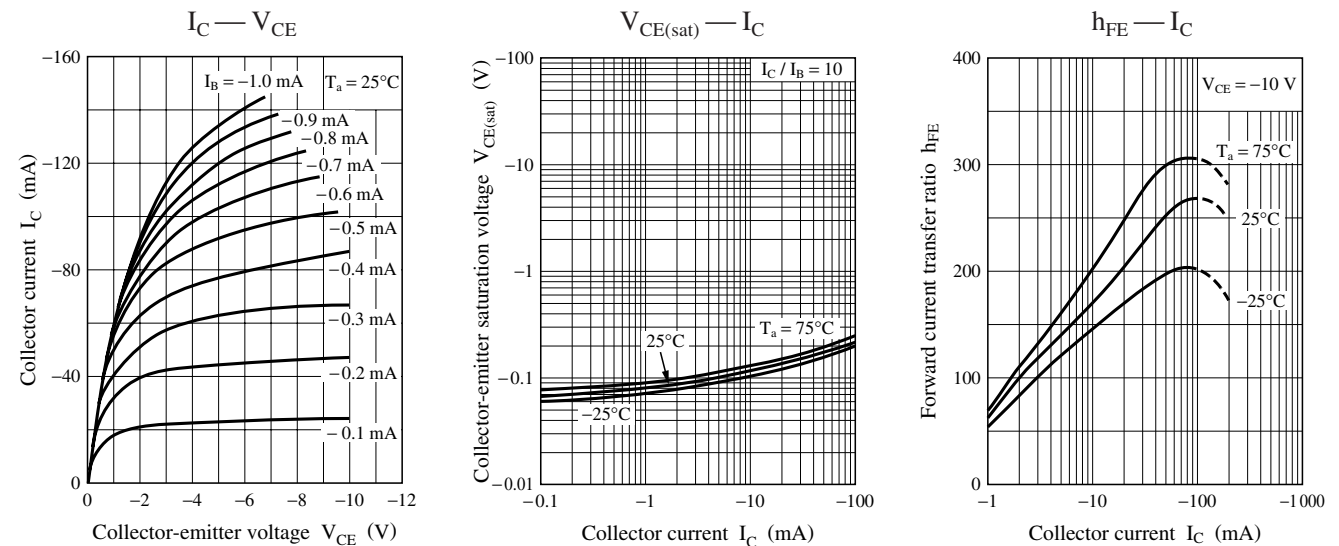
Characteristics charts of UNR5111

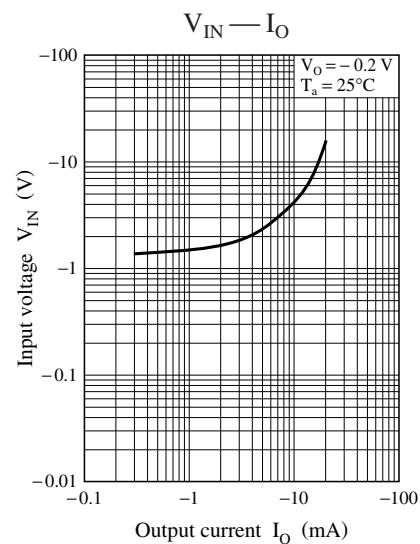
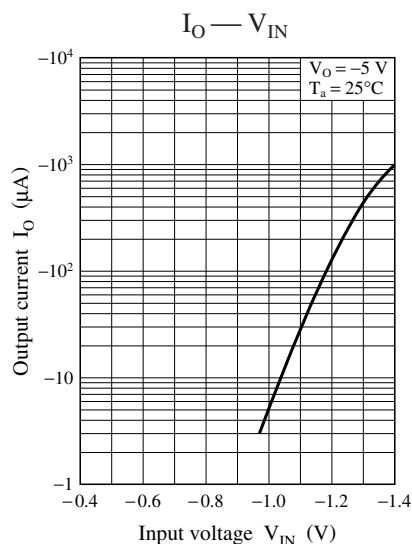
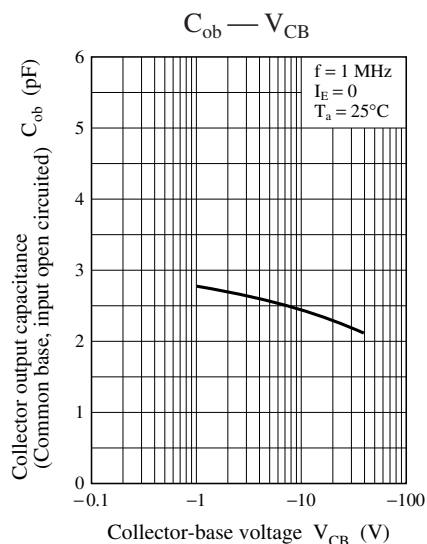


Characteristics charts of UNR5112

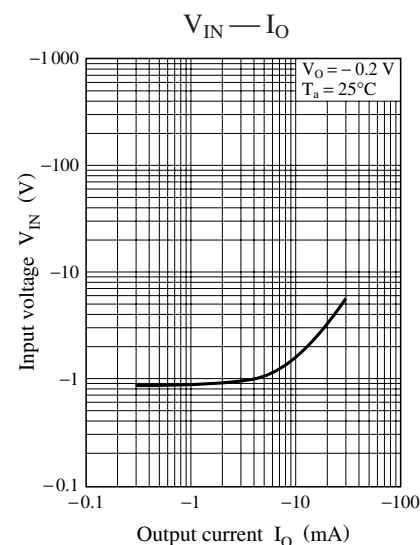
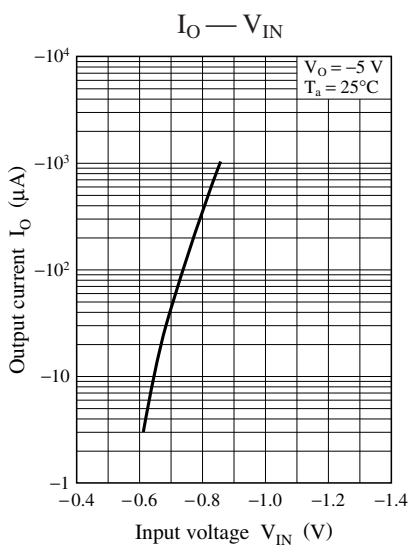
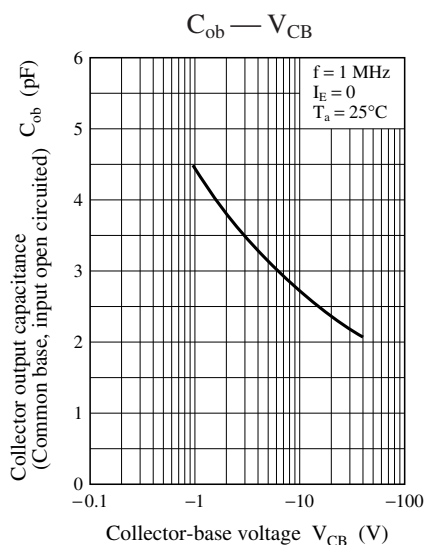
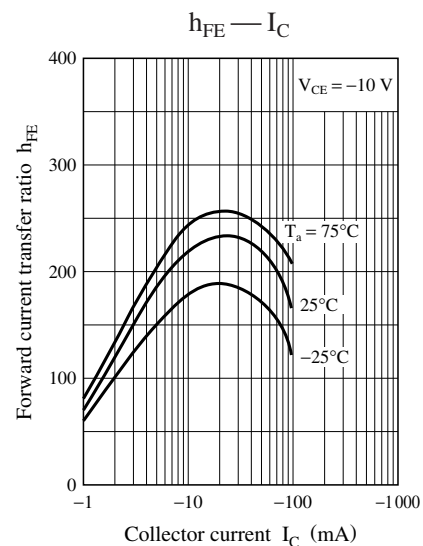
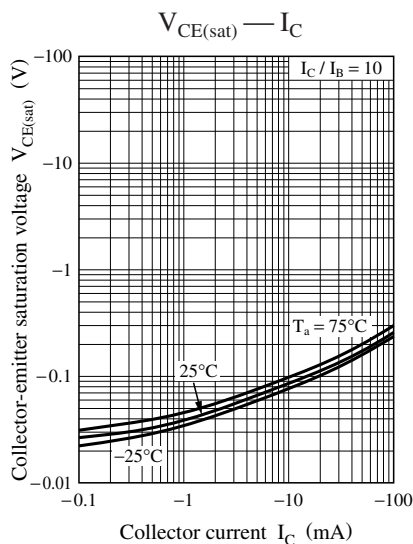
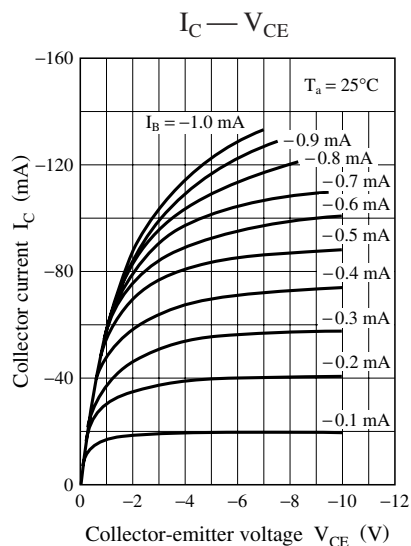


Characteristics charts of UNR5113

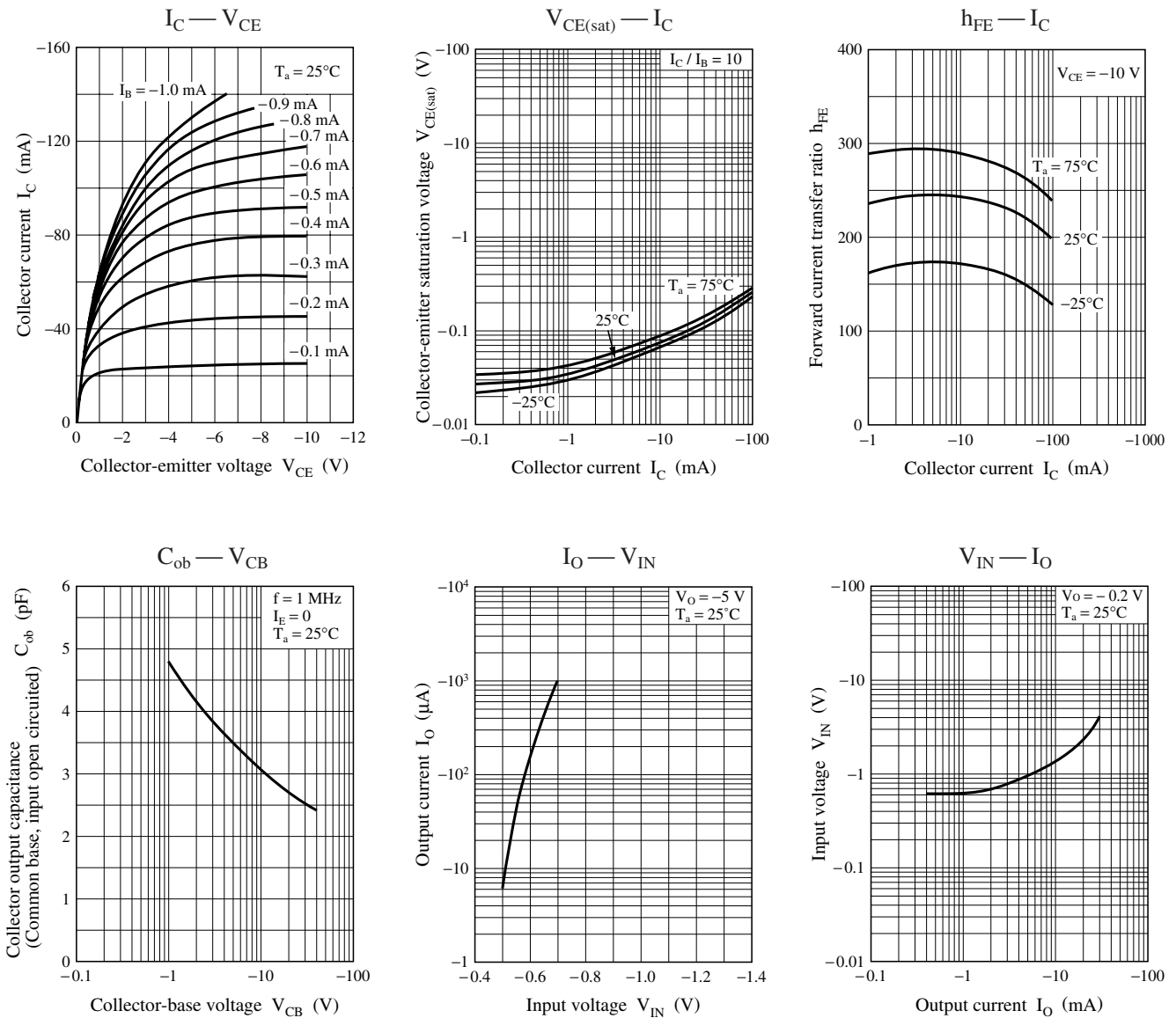




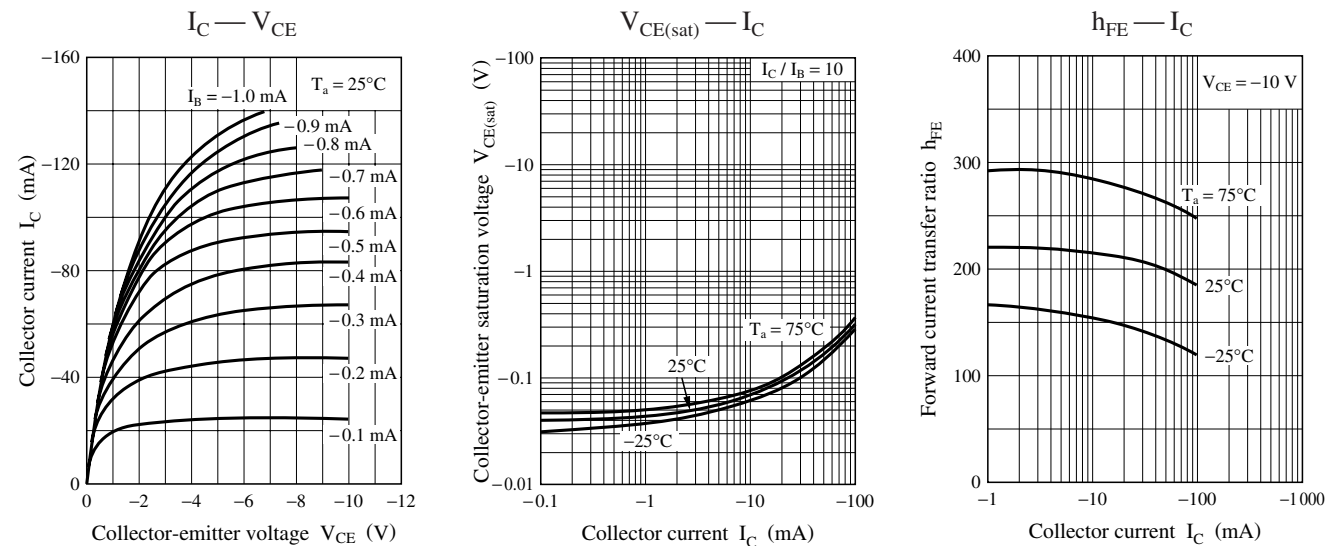
Characteristics charts of UNR5114

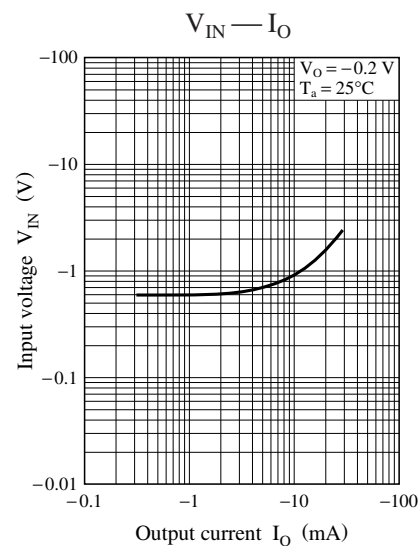
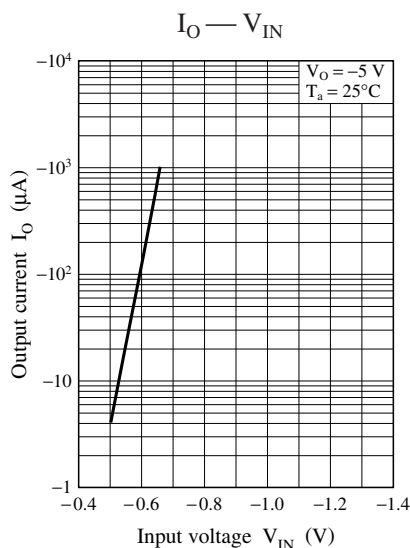
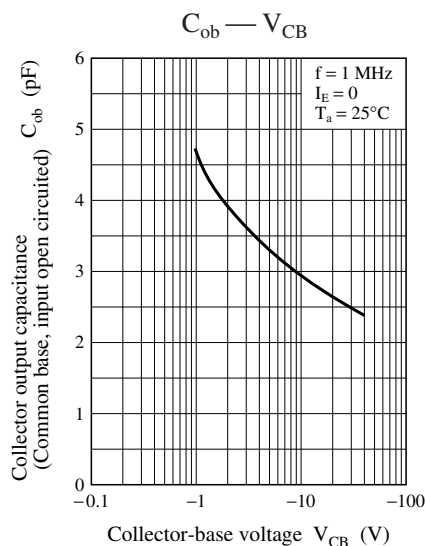


Characteristics charts of UNR5115

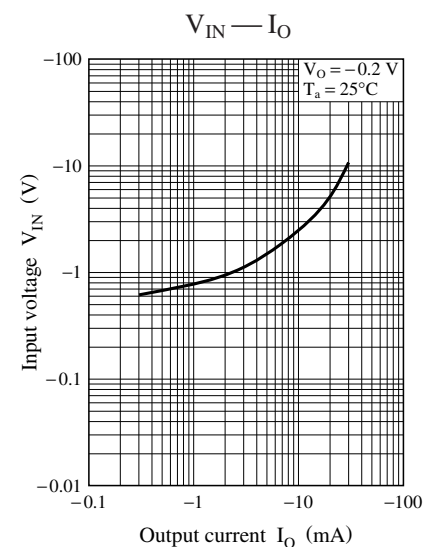
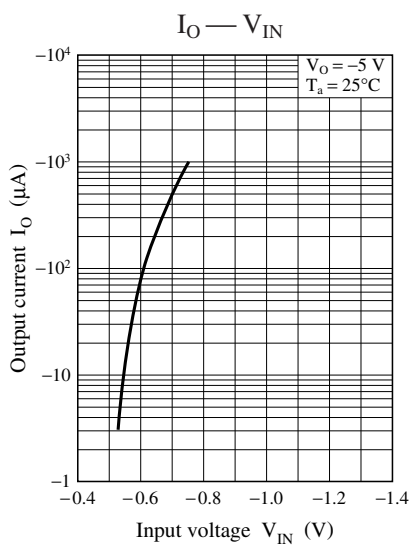
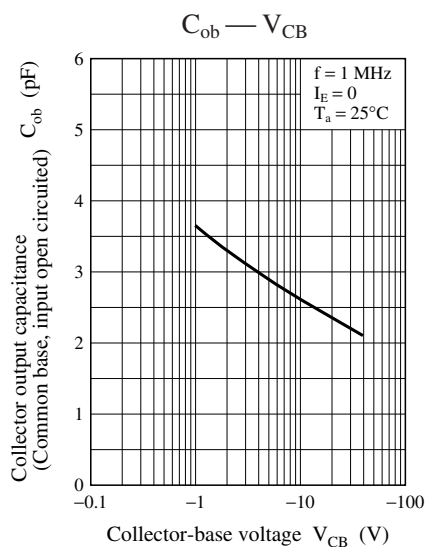
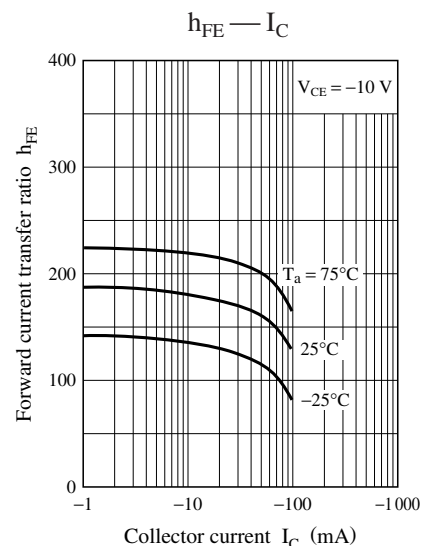
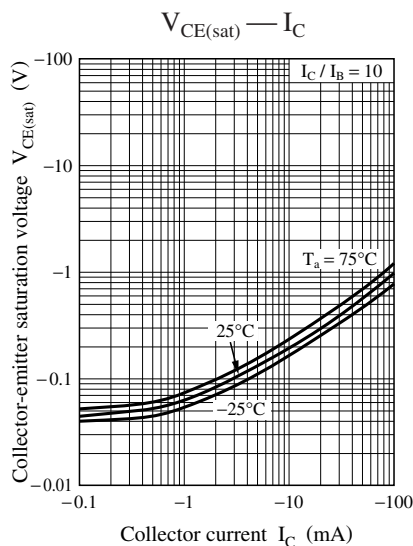
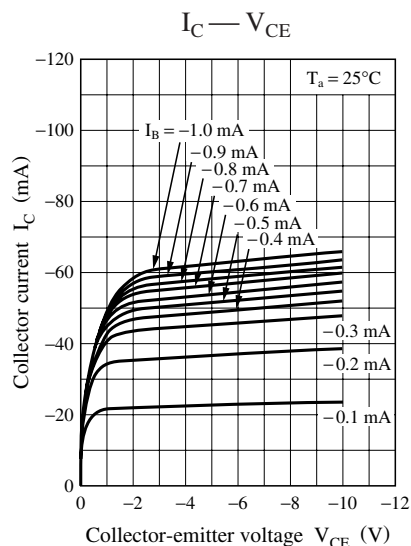


Characteristics charts of UNR5116

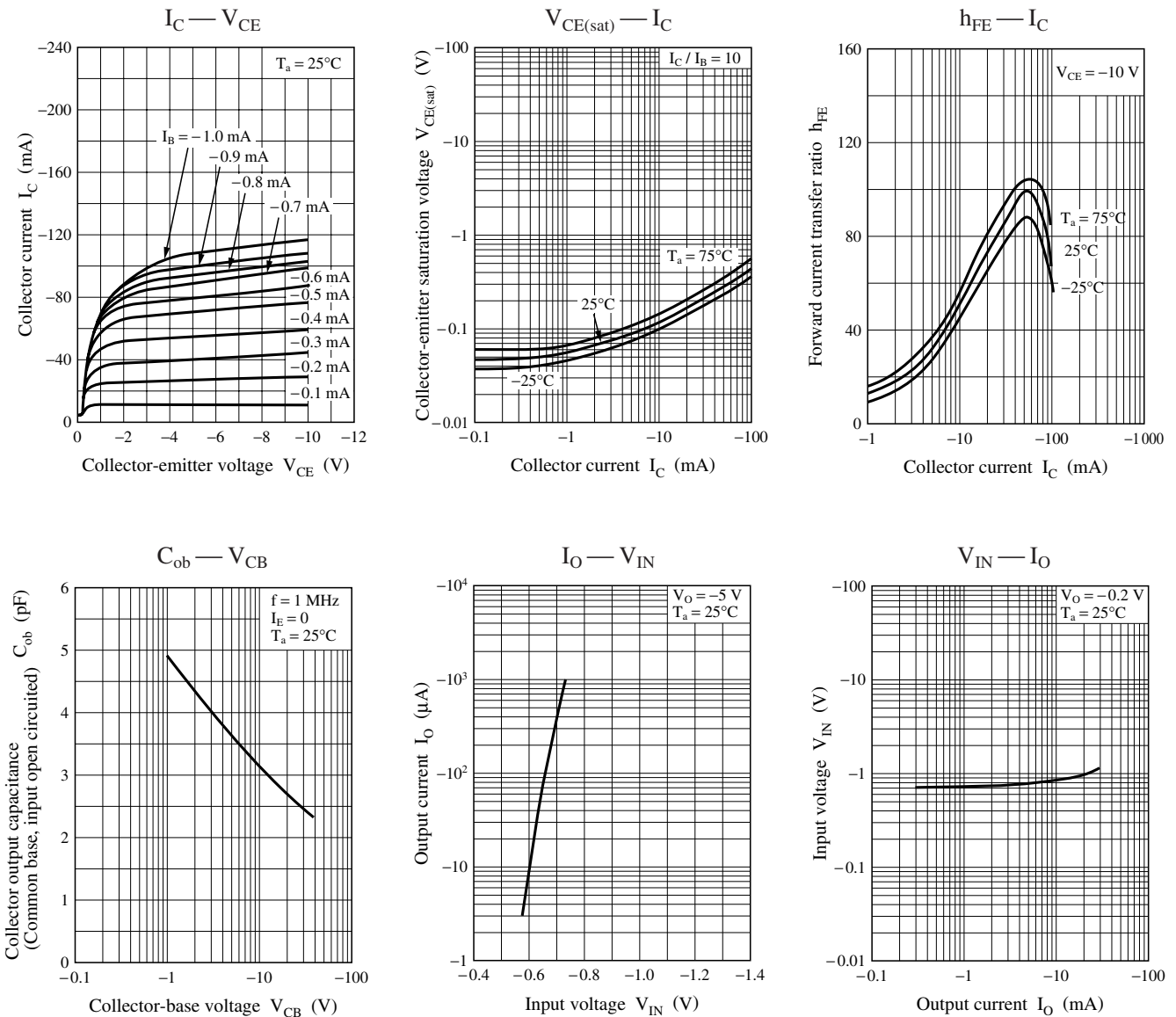




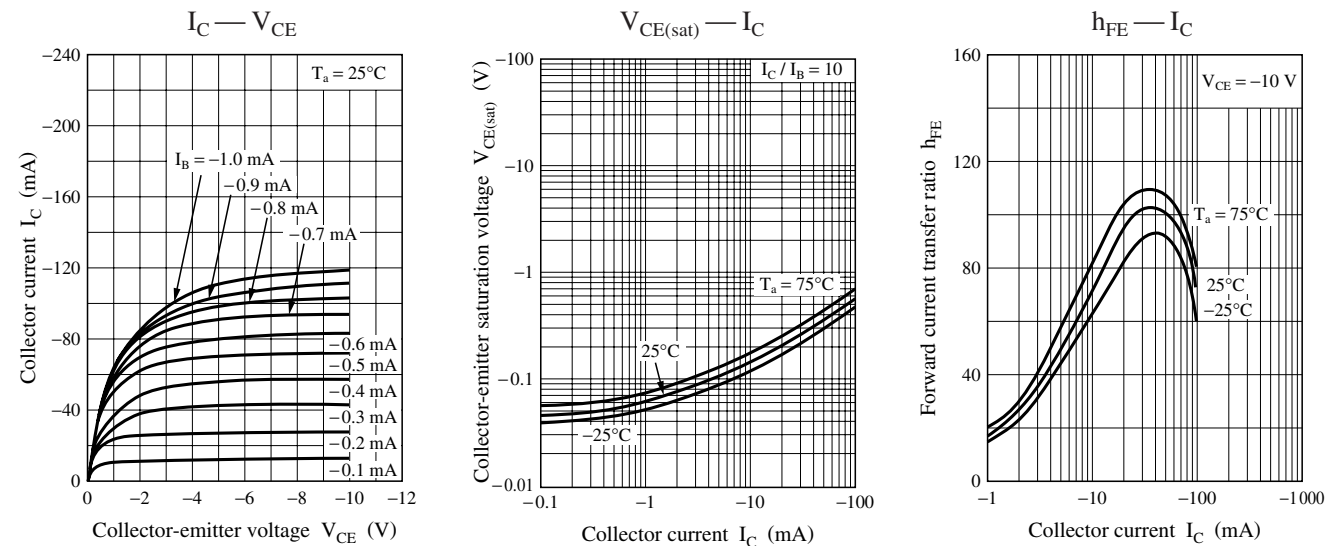
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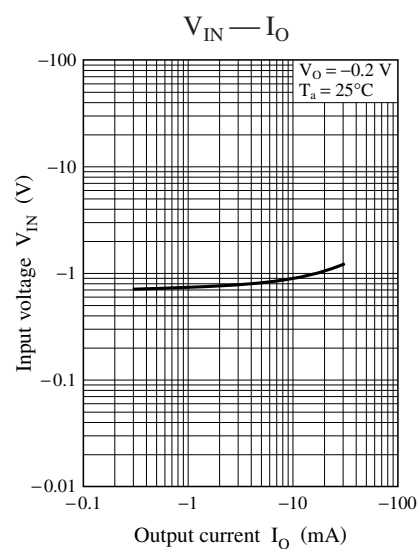
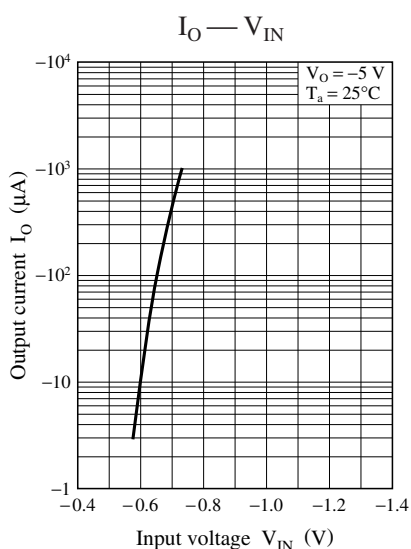
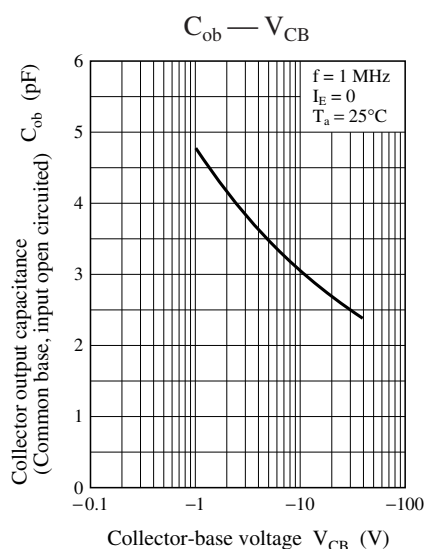


Characteristics charts of UNR5118

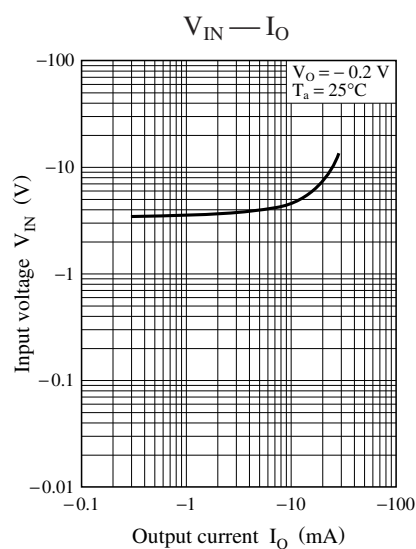
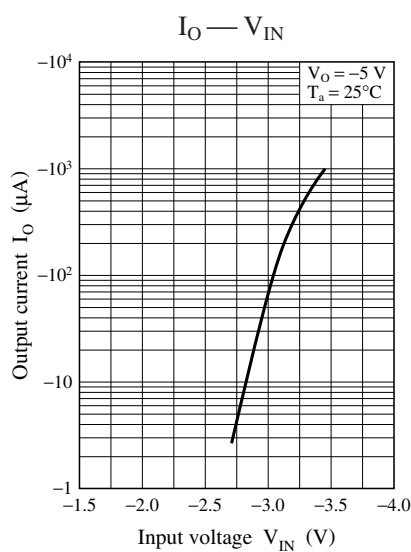
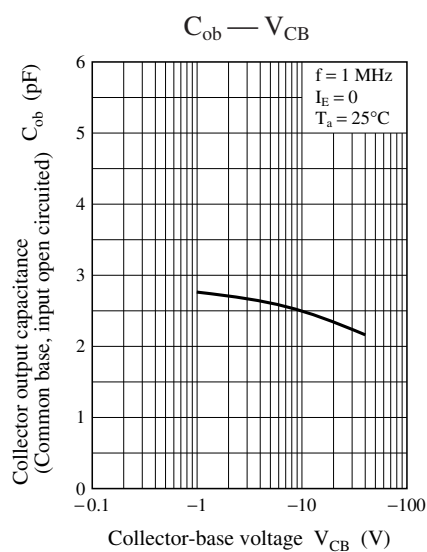
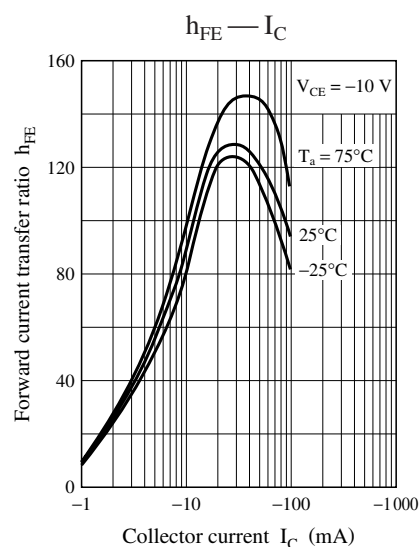
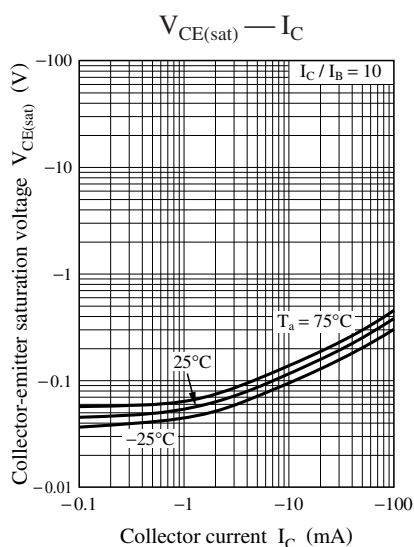
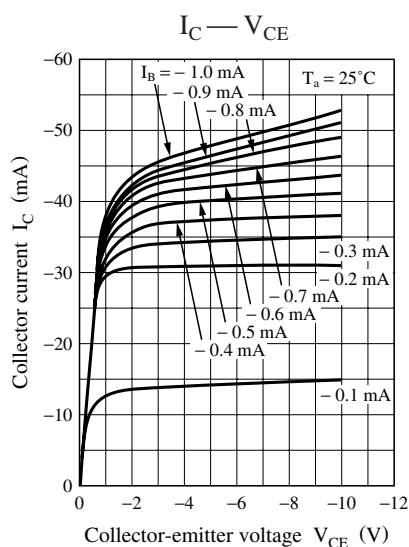


Characteristics charts of UNR5119

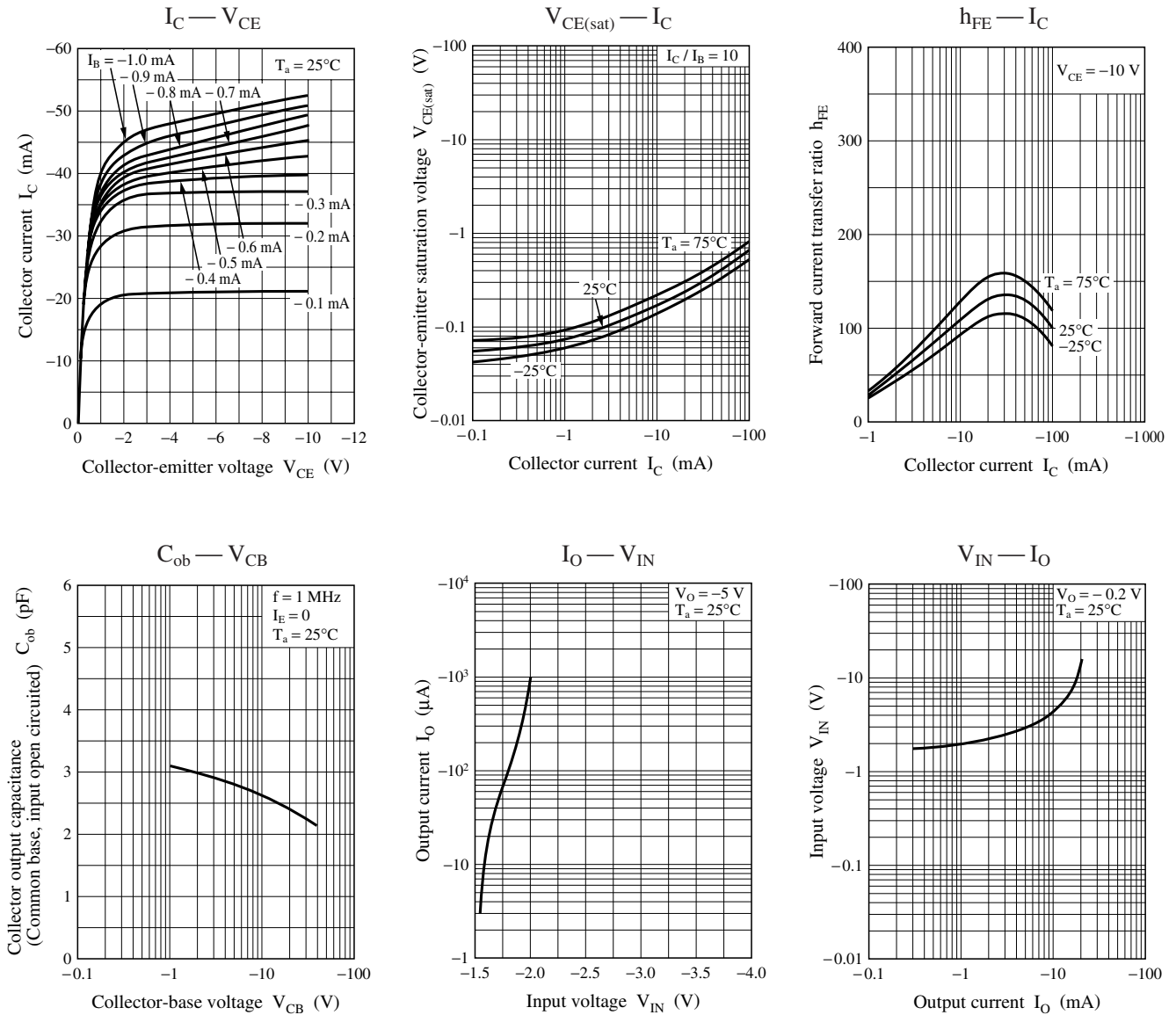




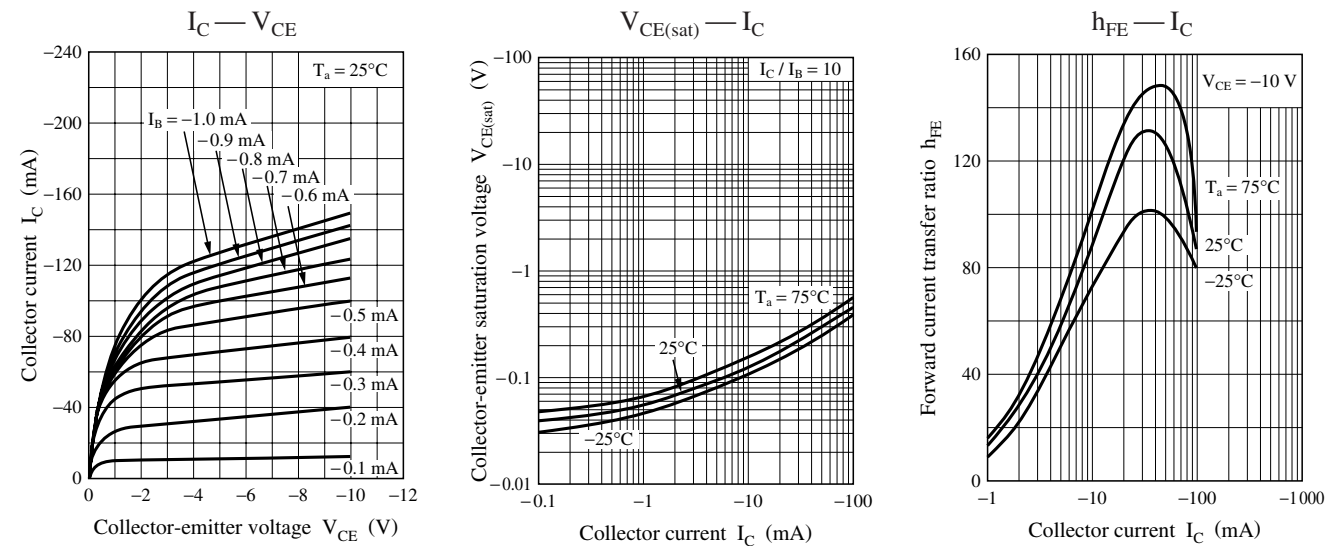
Characteristics charts of UNR511D

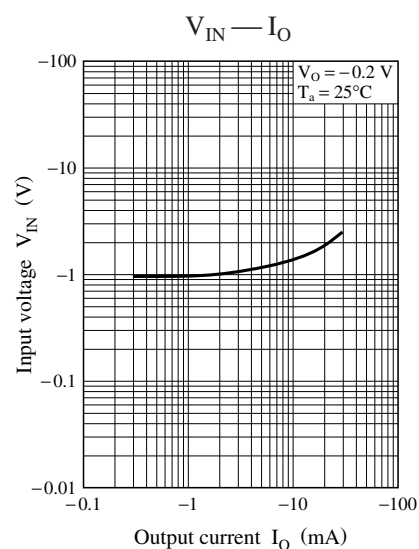
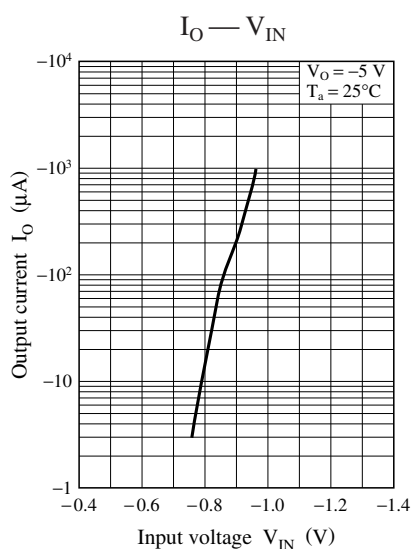
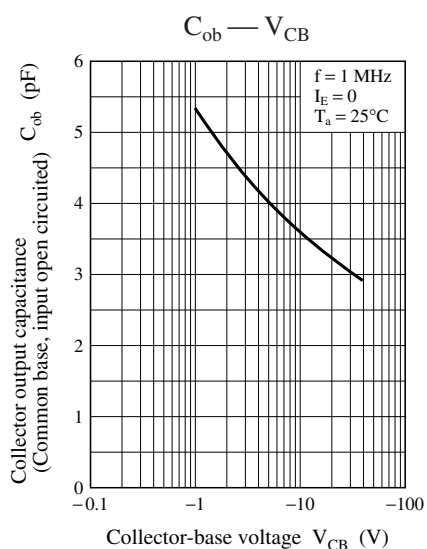


Characteristics charts of UNR511E

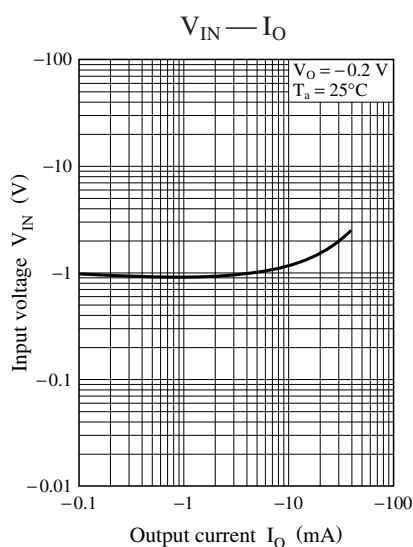
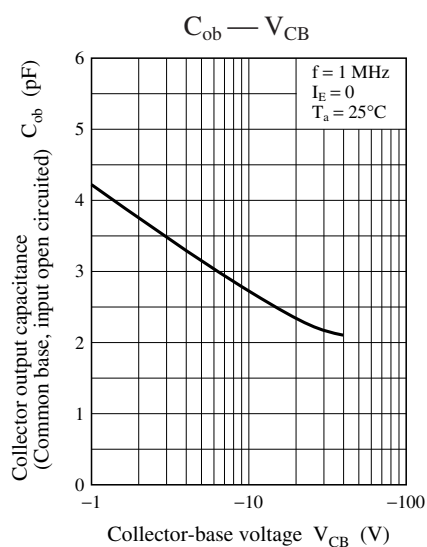
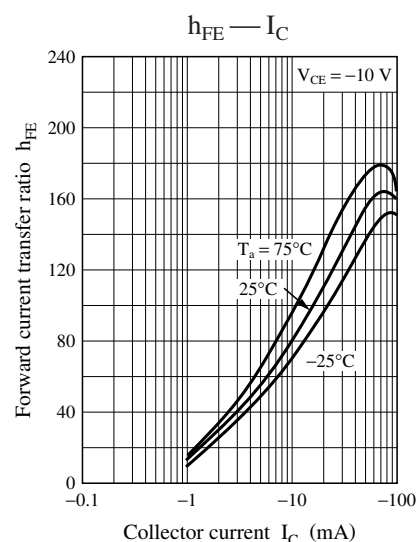
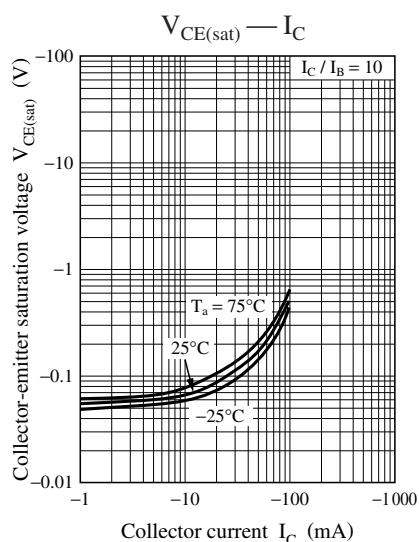
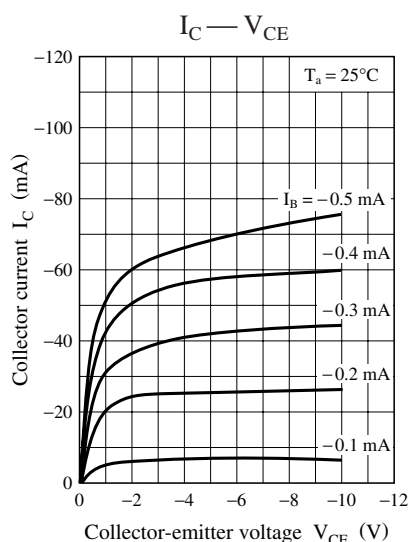


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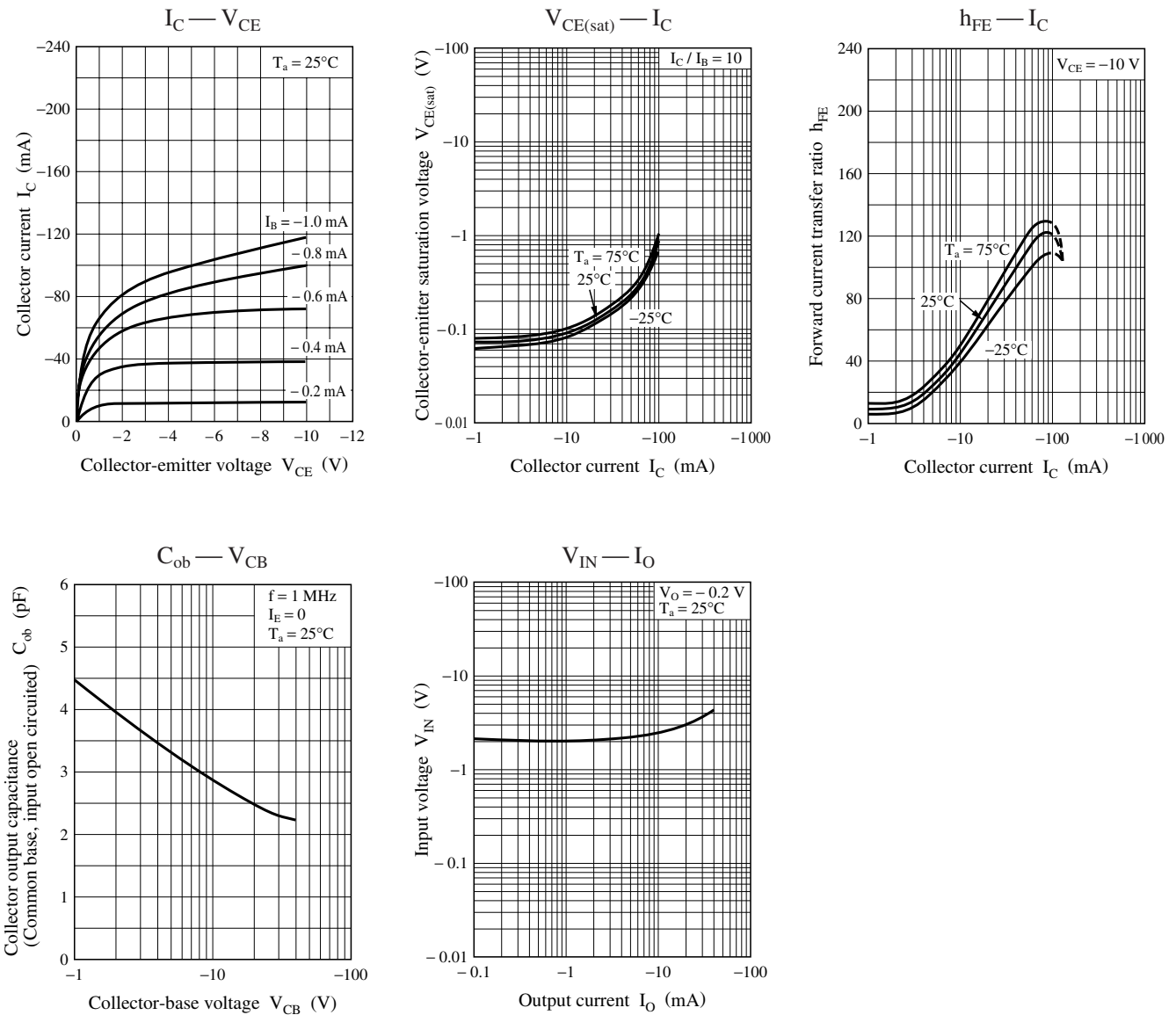




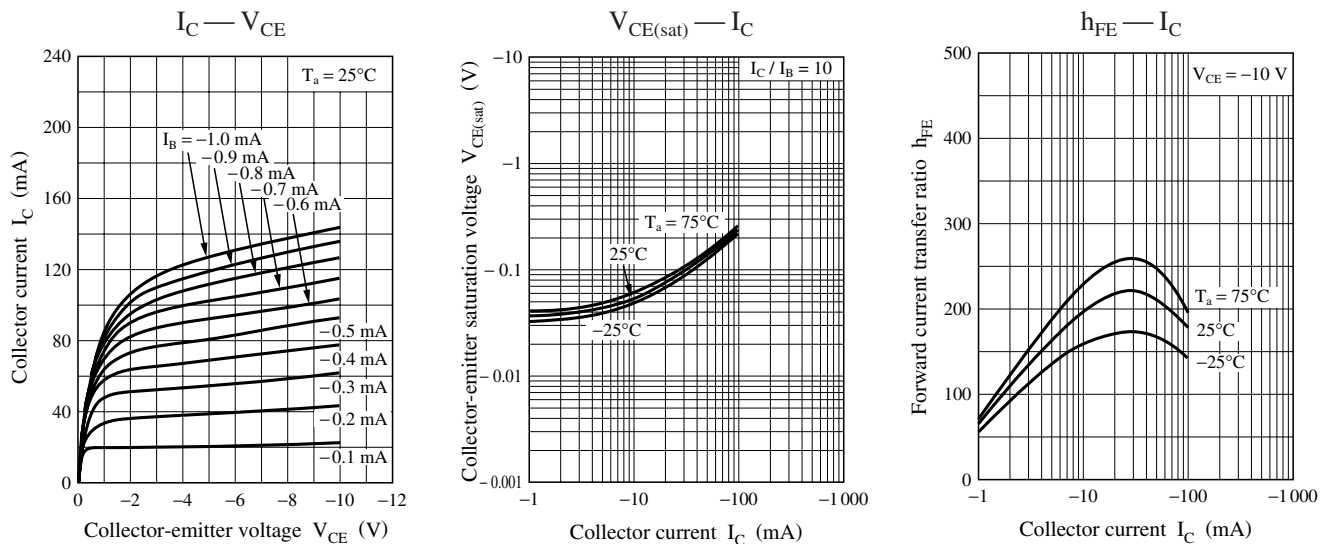
Characteristics charts of UNR511H

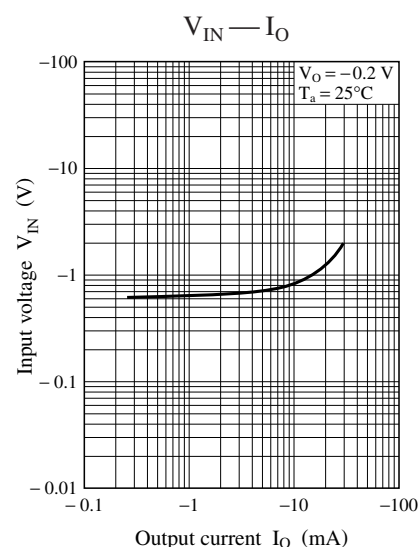
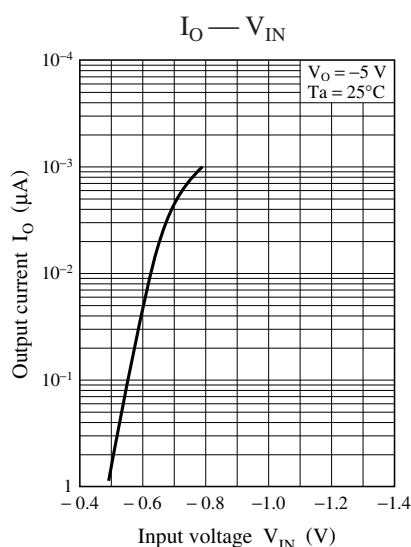
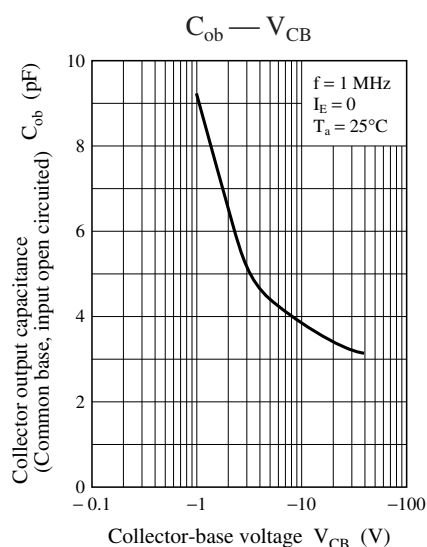


Characteristics charts of UNR511L

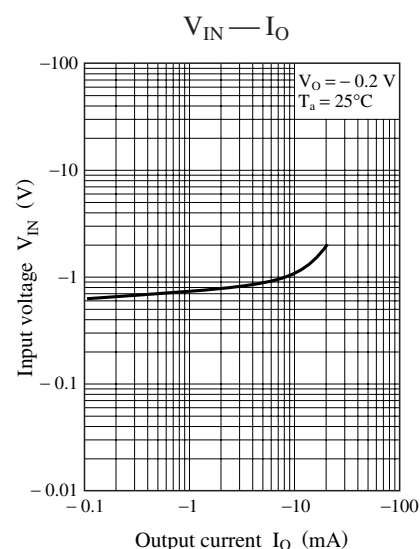
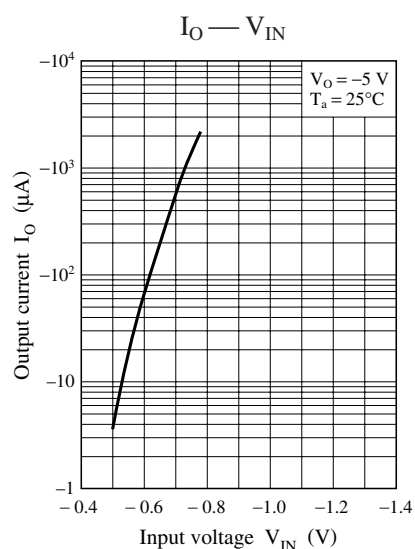
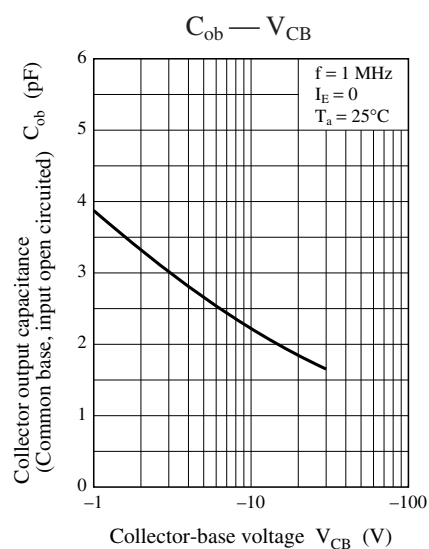
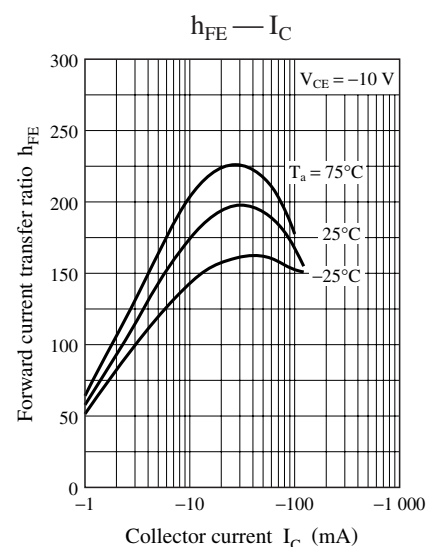
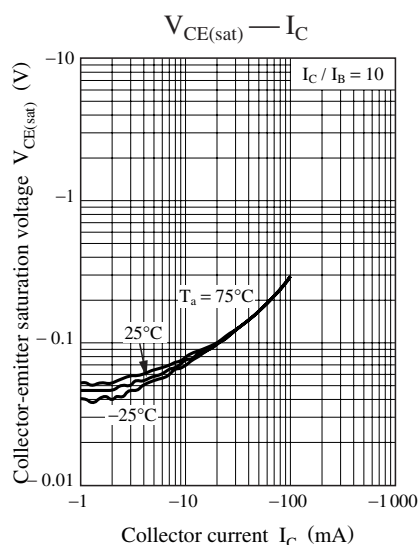
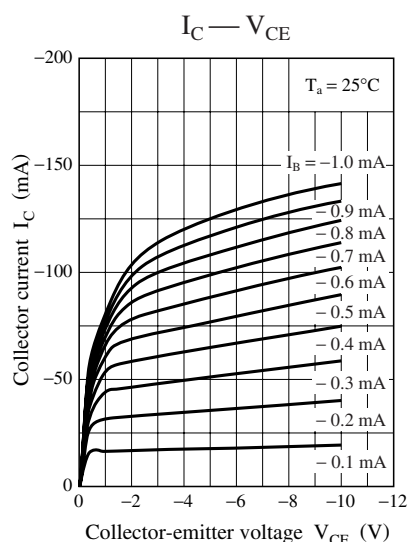


Characteristics charts of UNR511M

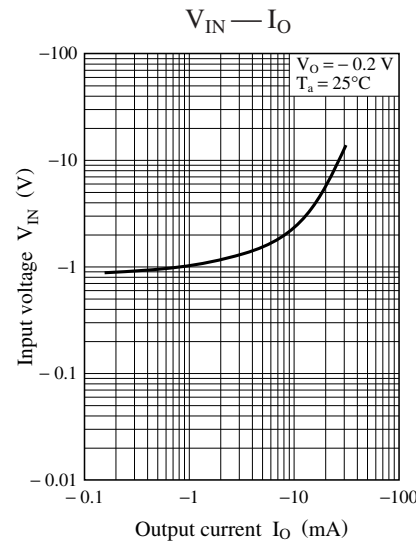
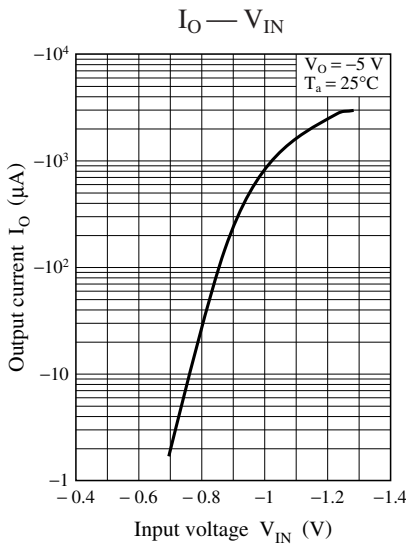
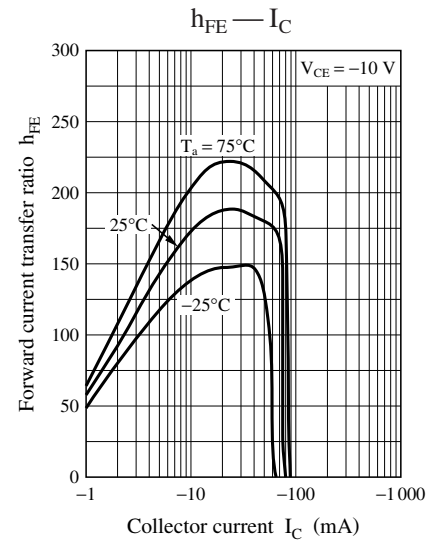
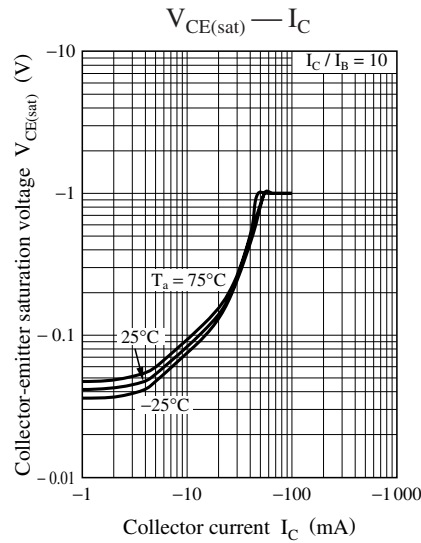
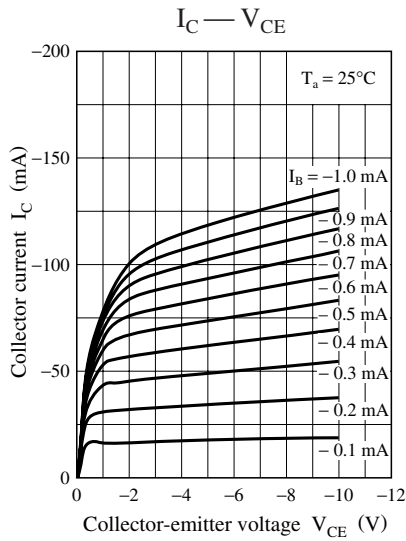




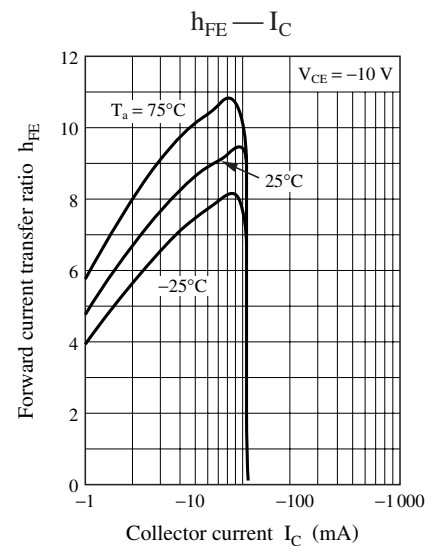
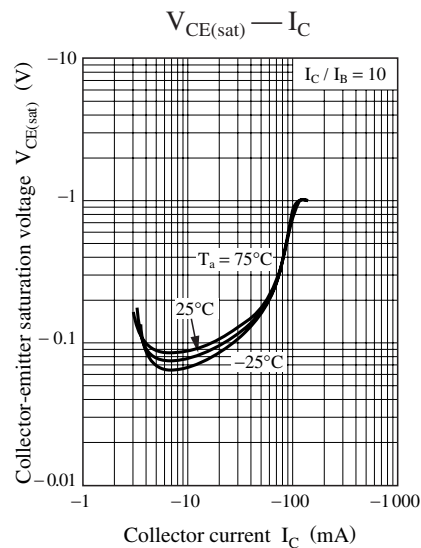
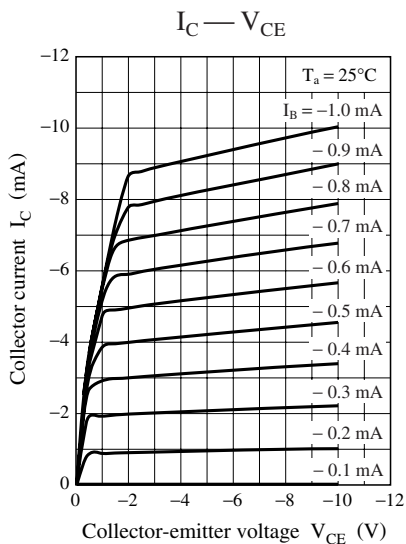
Characteristics charts of UNR511N

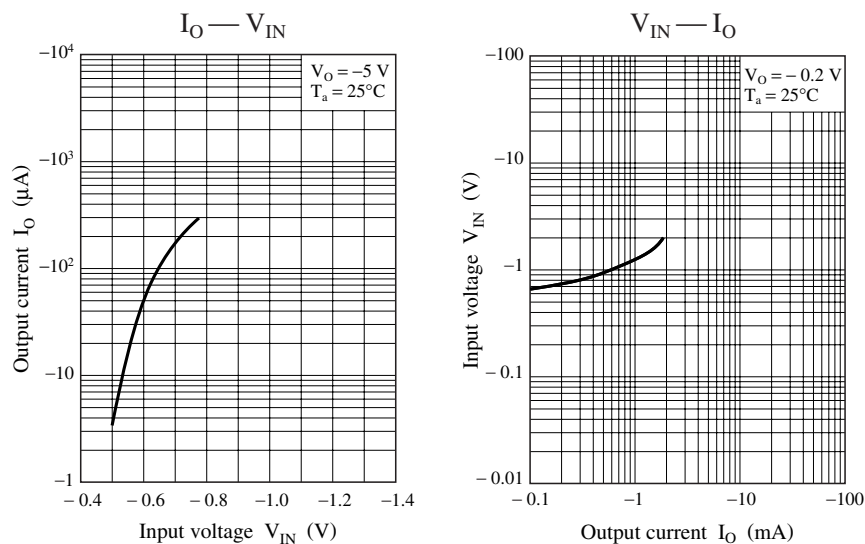


Characteristics charts of UNR511T

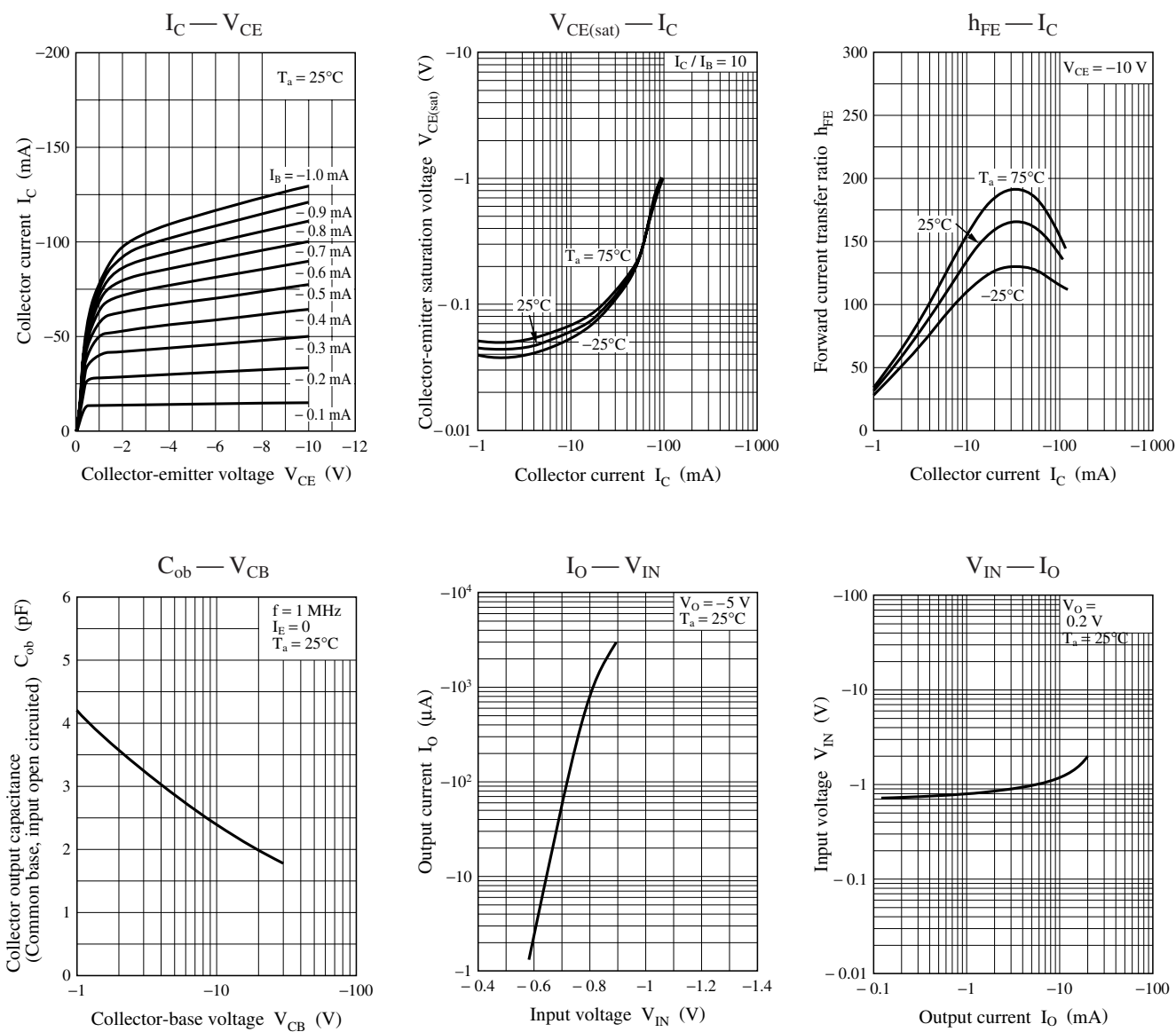


Characteristics charts of UNR511V





Characteristics charts of UNR511Z



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