

UNR211x Series (UN211x Series)

Silicon PNP epitaxial planar type

For digital circuits

■ Features

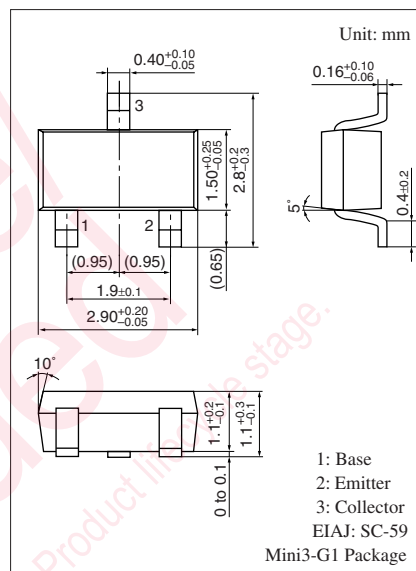
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- Mini type package allowing easy automatic insertion through tape packing and magazine packing

■ Resistance by Part Number

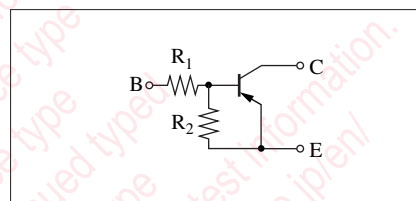
			Marking Symbol (R_1)	(R_2)
• UNR2110	(UN2110)	6L	47 k Ω	—
• UNR2111	(UN2111)	6A	10 k Ω	10 k Ω
• UNR2112	(UN2112)	6B	22 k Ω	22 k Ω
• UNR2113	(UN2113)	6C	47 k Ω	47 k Ω
• UNR2114	(UN2114)	6D	10 k Ω	47 k Ω
• UNR2115	(UN2115)	6E	10 k Ω	—
• UNR2116	(UN2116)	6F	4.7 k Ω	—
• UNR2117	(UN2117)	6H	22 k Ω	—
• UNR2118	(UN2118)	6I	0.51 k Ω	5.1 k Ω
• UNR2119	(UN2119)	6K	1 k Ω	10 k Ω
• UNR211D	(UN211D)	6M	47 k Ω	10 k Ω
• UNR211E	(UN211E)	6N	47 k Ω	22 k Ω
• UNR211F	(UN211F)	6O	4.7 k Ω	10 k Ω
• UNR211H	(UN211H)	6P	2.2 k Ω	10 k Ω
• UNR211L	(UN211L)	6Q	4.7 k Ω	4.7 k Ω
• UNR211M	(UN211M)	EI	2.2 k Ω	47 k Ω
• UNR211N	(UN211N)	EW	4.7 k Ω	47 k Ω
• UNR211T	(UN211T)	EY	22 k Ω	47 k Ω
• UNR211V	(UN211V)	FC	2.2 k Ω	2.2 k Ω
• UNR211Z	(UN211Z)	FE	4.7 k Ω	22 k Ω

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

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	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



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)	UNR2110/2115/2116/2117	I _{EBO}	V _{EB} = -6 V, I _C = 0			- 0.01	mA
	UNR2113					- 0.1	
	UNR2112/2114/211D/ 211E/211M/211N/211T					- 0.2	
	UNR211Z					- 0.4	
	UNR2111					- 0.5	
	UNR211F/211H					-1.0	
	UNR2119					-1.5	
	UNR2118/211L/211V					-2.0	
Forward current	UNR211V	h _{FE}	V _{CE} = -10 V, I _C = -5 mA	6		20	—
transfer ratio	UNR2118/211L			20			
	UNR2119/211D/211F/211H			30			
	UNR2111			35			
	UNUNR2112/211E			60			
	UNR211Z			60		200	
	UNR2113/2114/211M			80			
	UNR211N/211T			80		400	
	UNR2110*/2115*/2116*/2117*			160		460	
Collector-emitter saturation voltage		V _{CE(sat)}	I _C = -10 mA, I _B = - 0.3 mA			- 0.25	V
UNR211V			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
			V _{CC} = -5 V, V _B = -3.5 V, R _L = 1 kΩ				
UNR2113			V _{CC} = -5 V, V _B = -10 V, R _L = 1 kΩ				
UNR211D			V _{CC} = -5 V, V _B = -6 V, R _L = 1 kΩ				
UNR211E							
Transition frequency		f _T	V _{CB} = -10 V, I _E = 1 mA, f = 200 MHz		80		MHz
			V _{CB} = -10 V, I _E = 2 mA, f = 200 MHz		150		
Input resistance	UNR2118	R _I		-30%	0.51	+30%	kΩ
	UNR2119				1.0		
	UNR211H/211M/211V				2.2		
	UNR2116/211F/211L/211N/211Z				4.7		
	UNR2111/2114/2115				10		
	UNR2112/2117/211T				22		
	UNR2110/2113/211D/211E				47		

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

2. *: Rank classification

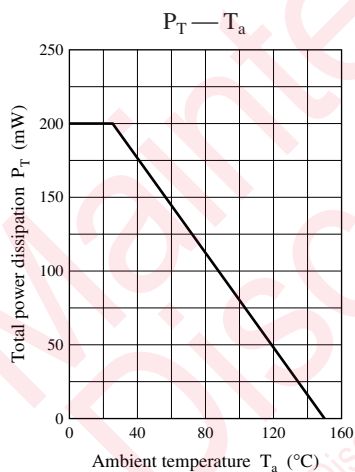
Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

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

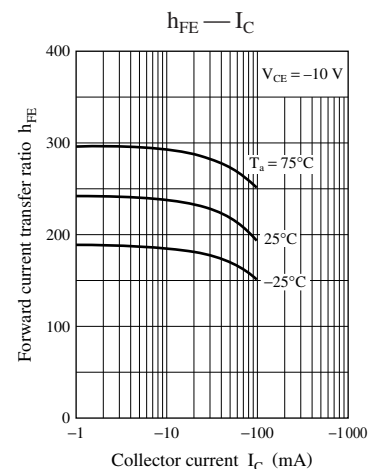
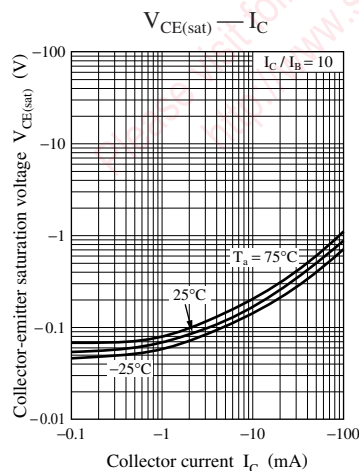
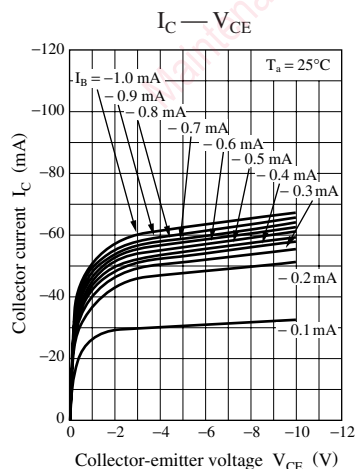
	Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR211M	R_1/R_2			0.047		—
	UNR211N				0.1		
	UNR2118/2119			0.08	0.10	0.12	
	UNR211Z				0.21		
	UNR2114			0.17	0.21	0.25	
	UNR211H			0.17	0.22	0.27	
	UNR211T				0.47		
	UNR211F			0.37	0.47	0.57	
	UNR211V				1.0		
	UNR2111/2112/2113/211L			0.8	1.0	1.2	
	UNR211E			1.70	2.14	2.60	
	UNR211D			3.7	4.7	5.7	

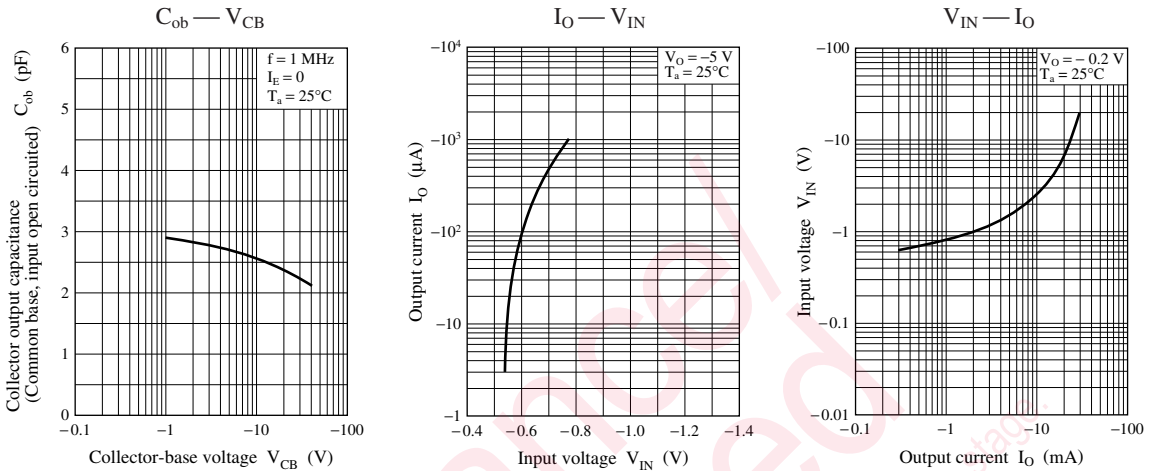
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

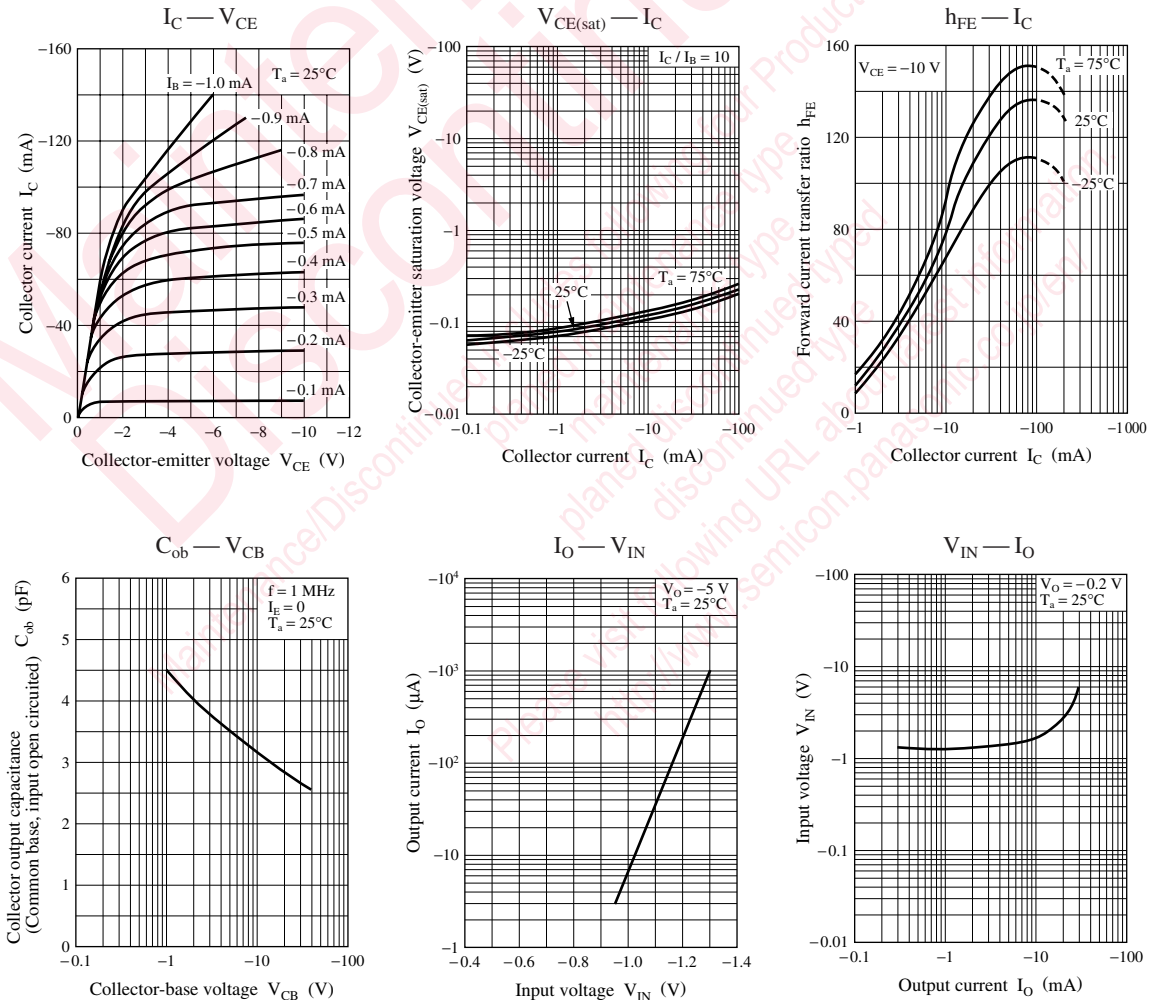


Characteristics charts of UNR2110

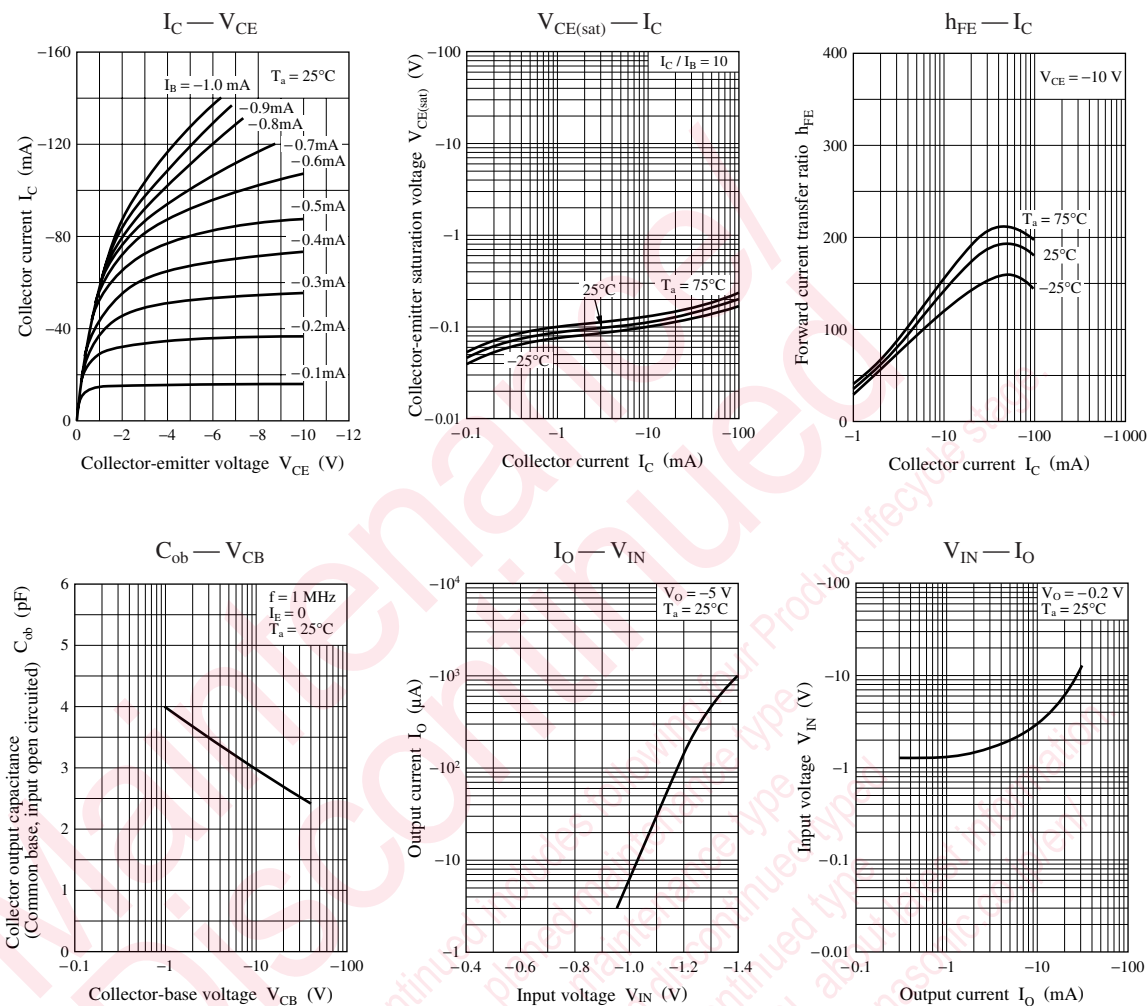




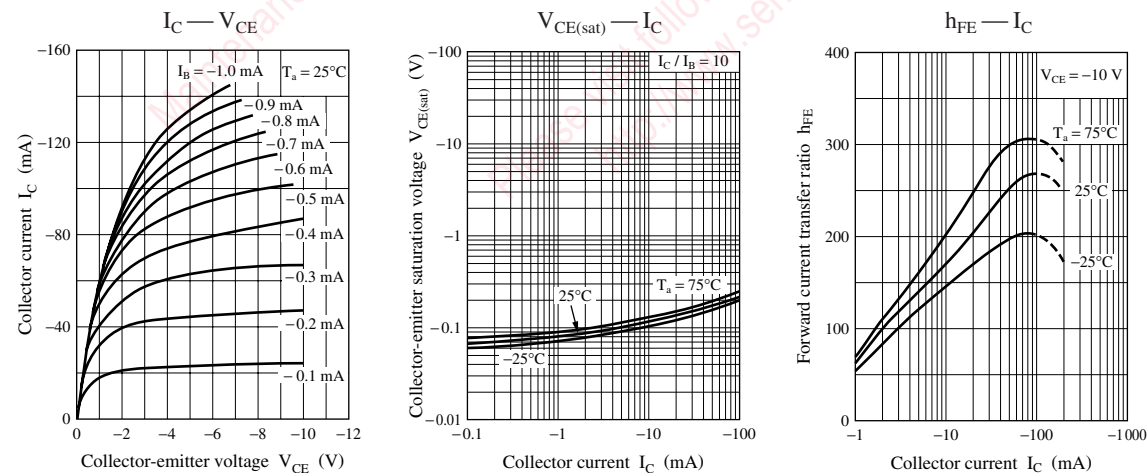
Characteristics charts of UNR2111

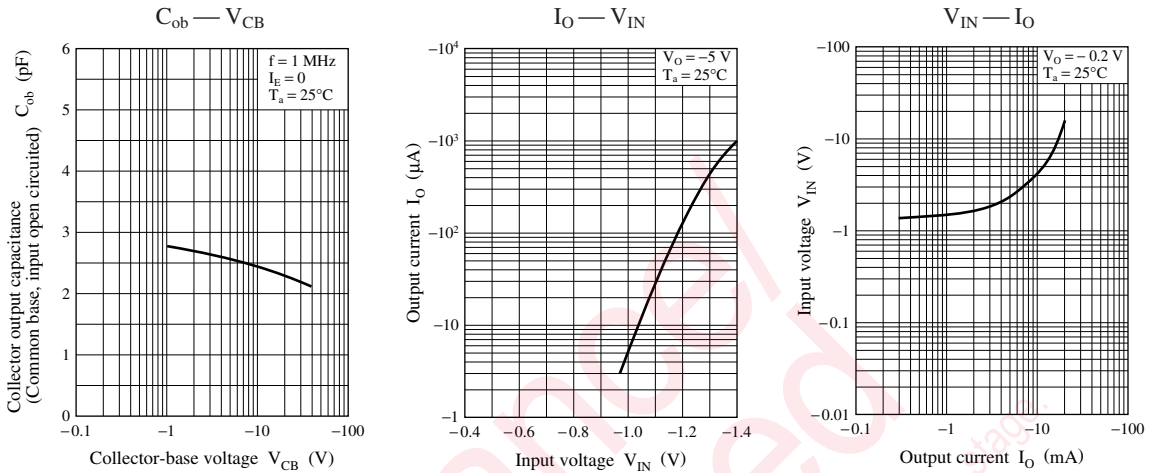


Characteristics charts of UNR2112

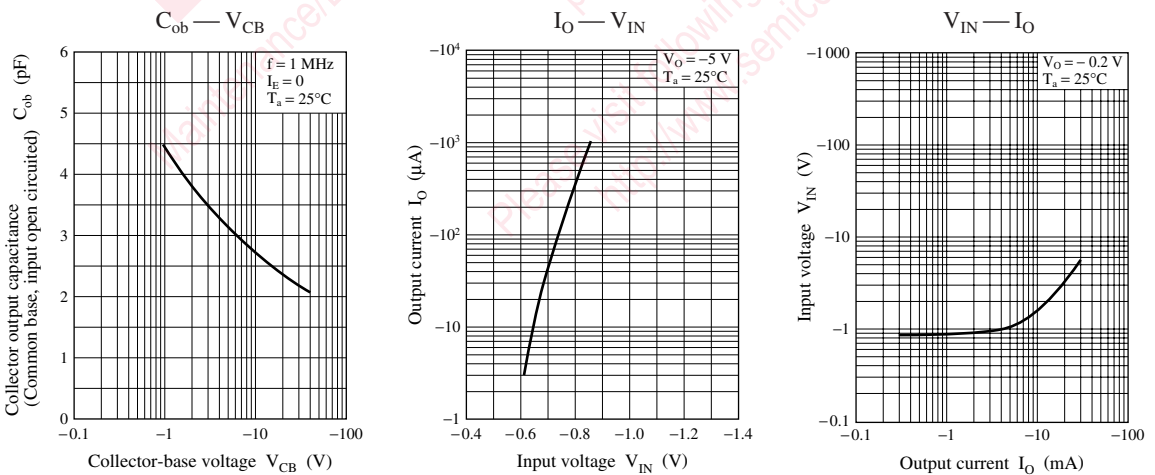
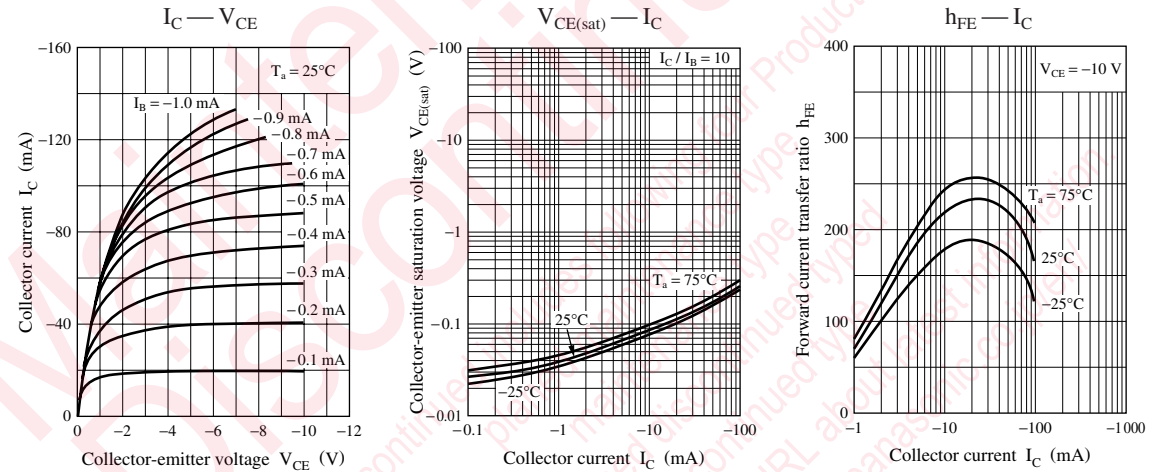


Characteristics charts of UNR2113

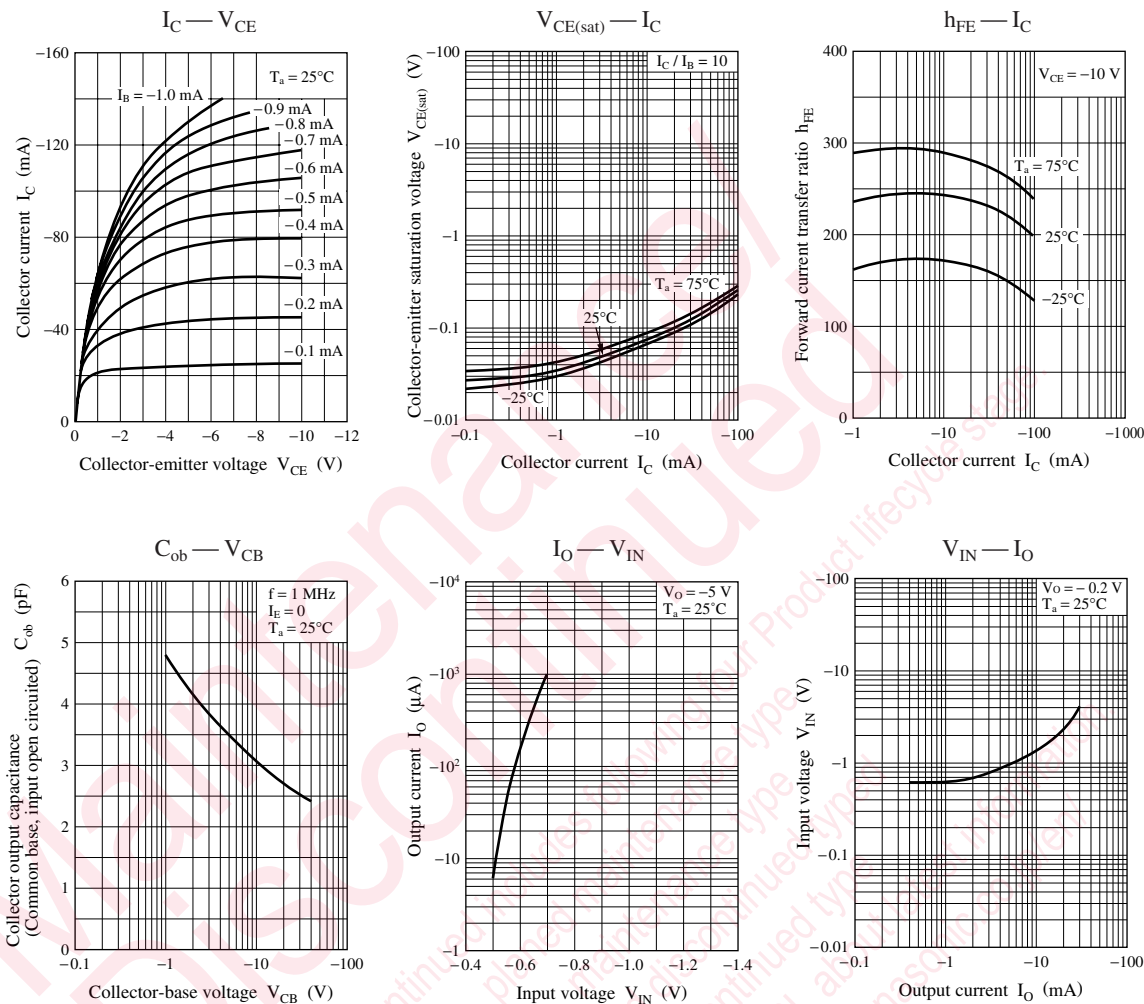




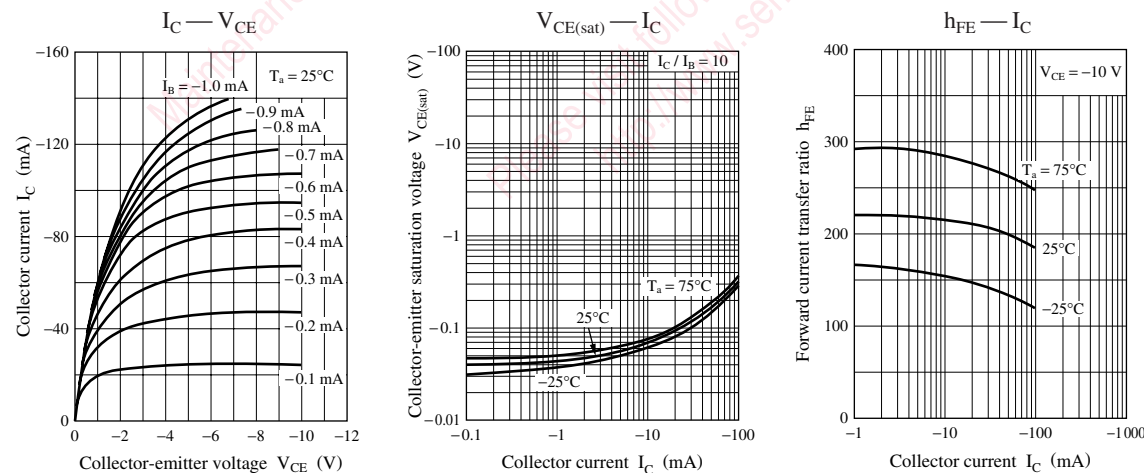
Characteristics charts of UNR2114

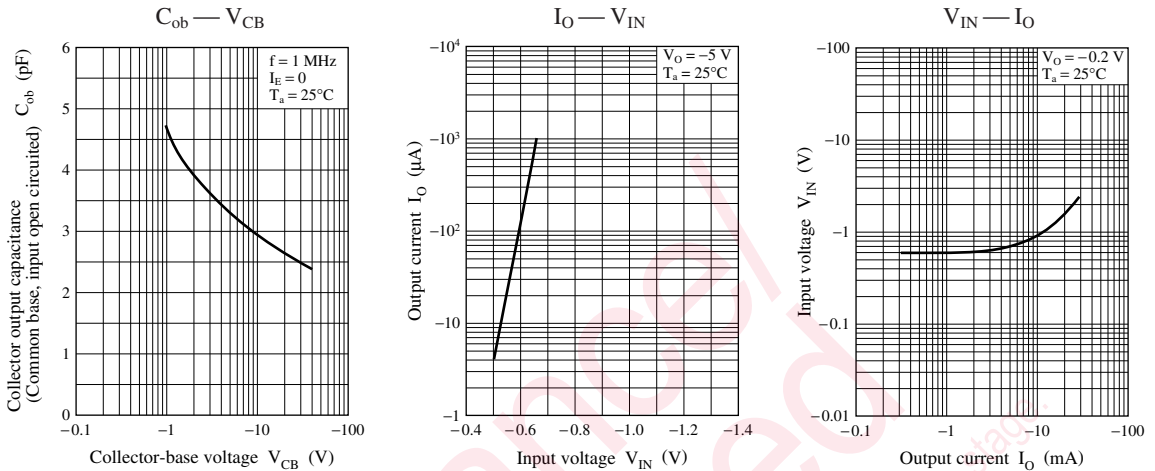


Characteristics charts of UNR2115

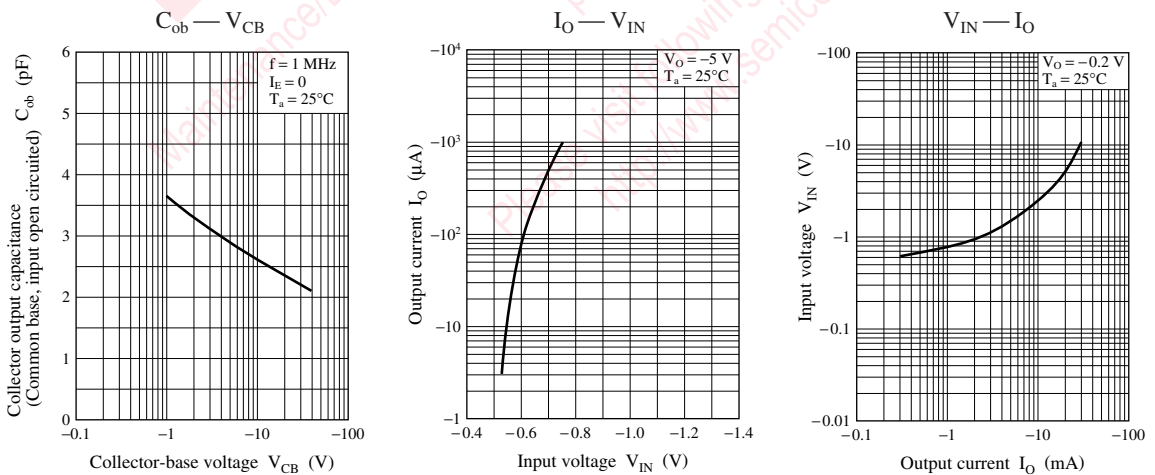
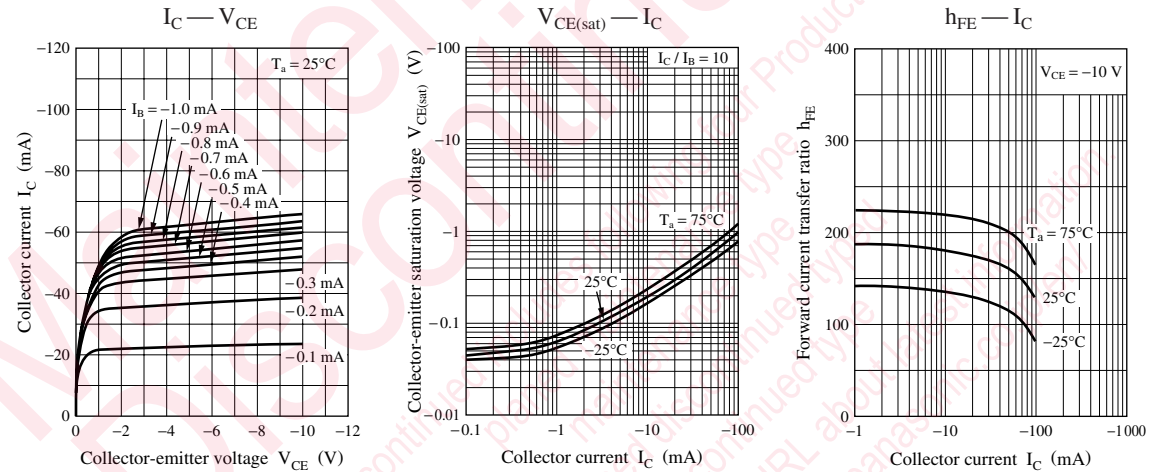


Characteristics charts of UNR2116

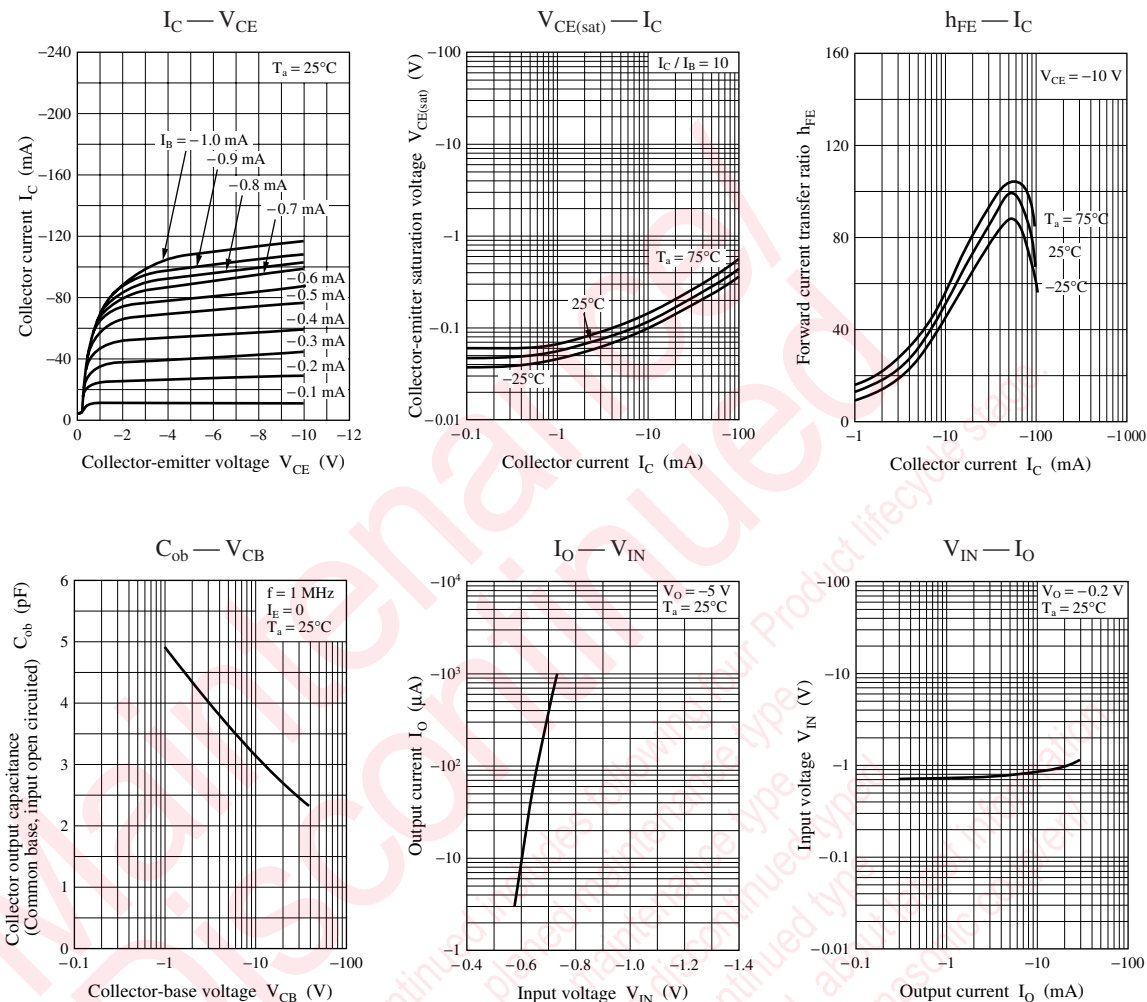




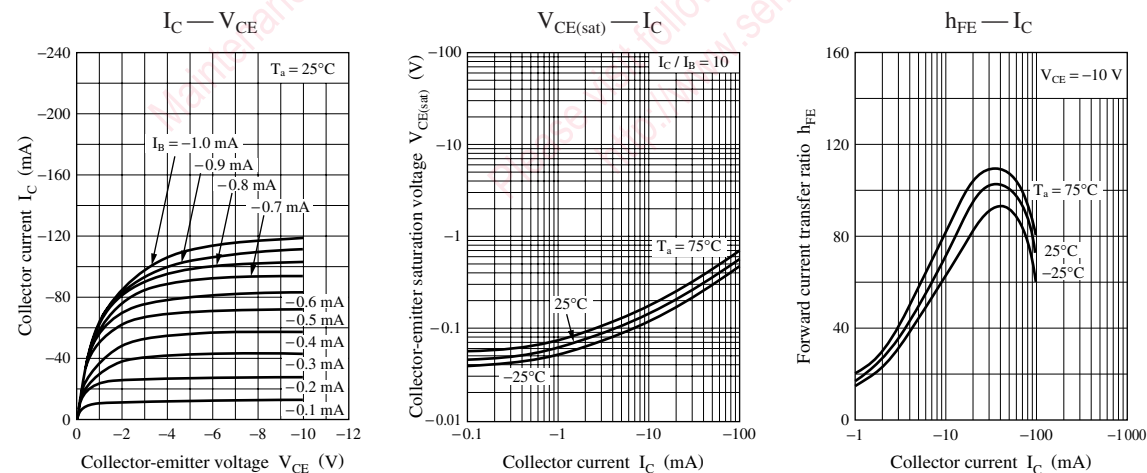
Characteristics charts of UNR2117

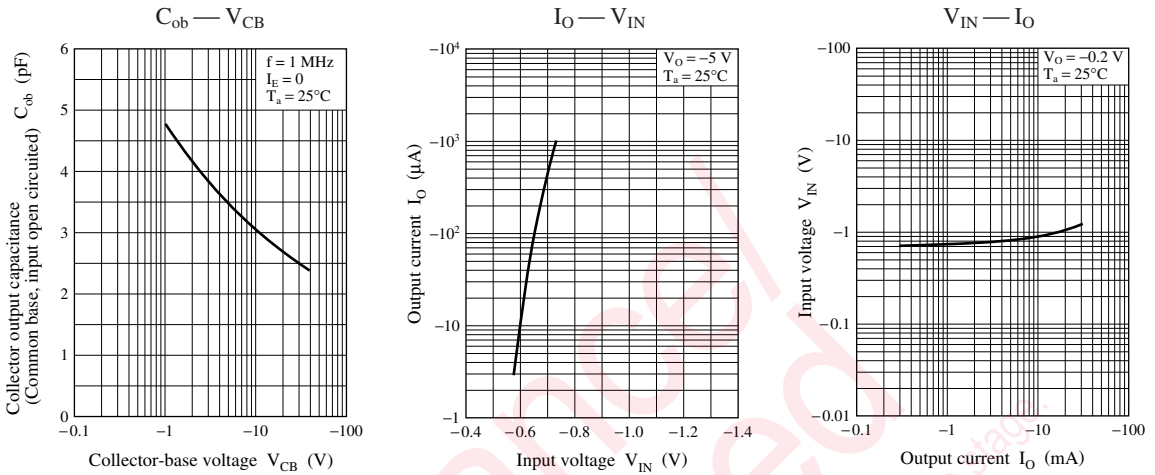


Characteristics charts of UNR2118

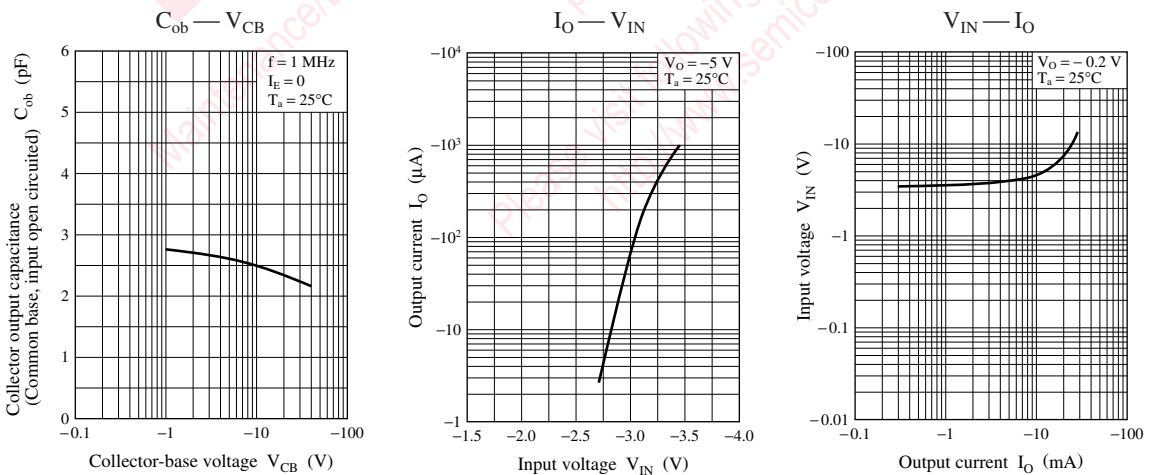
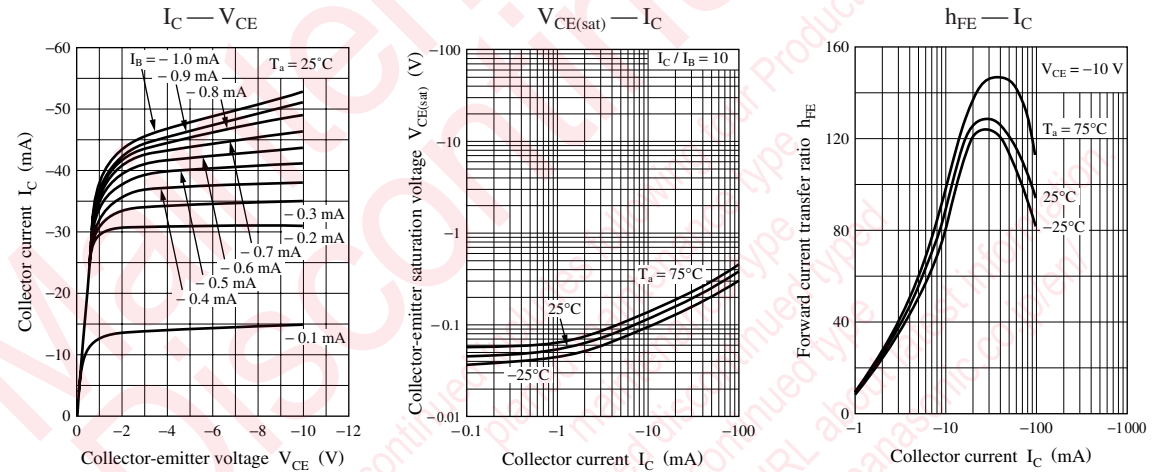


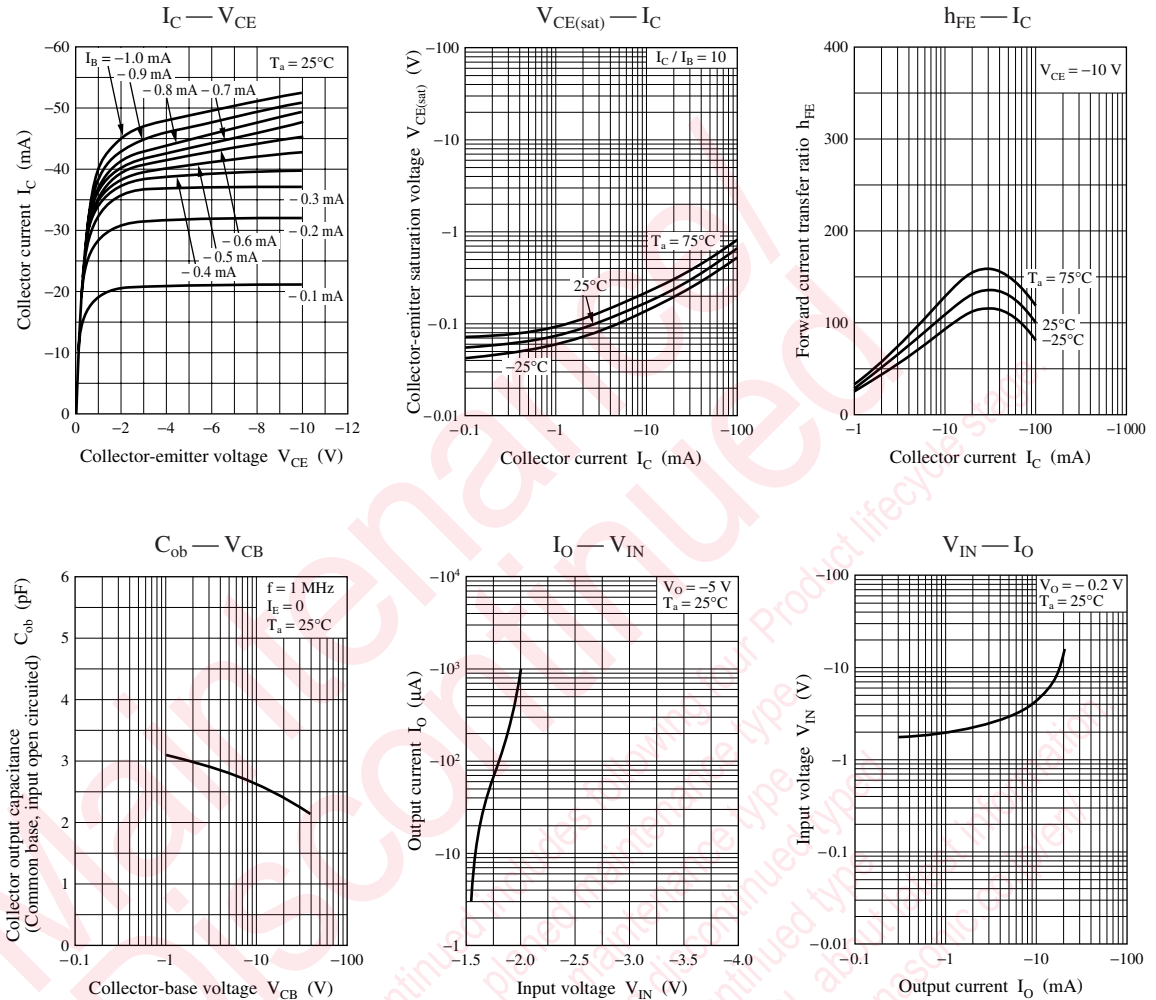
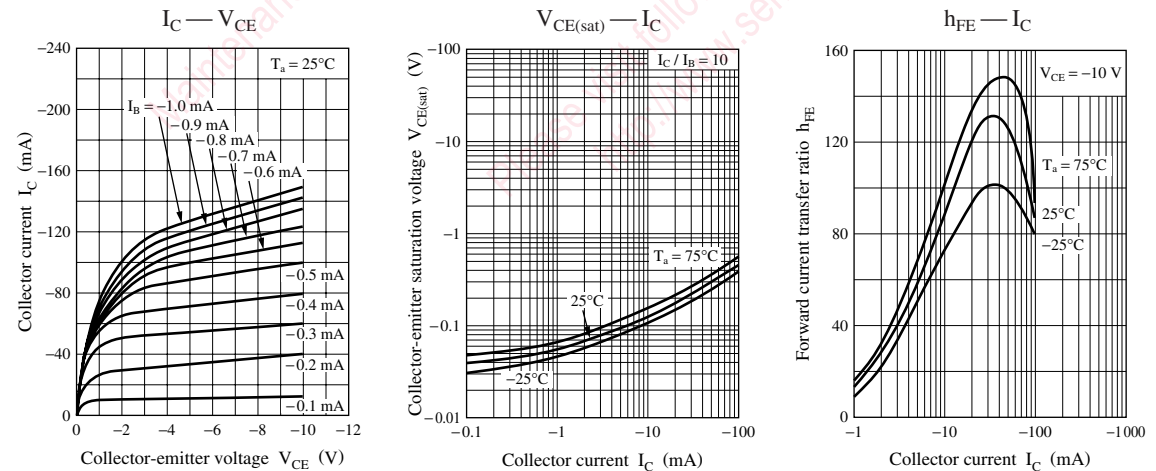
Characteristics charts of UNR2119

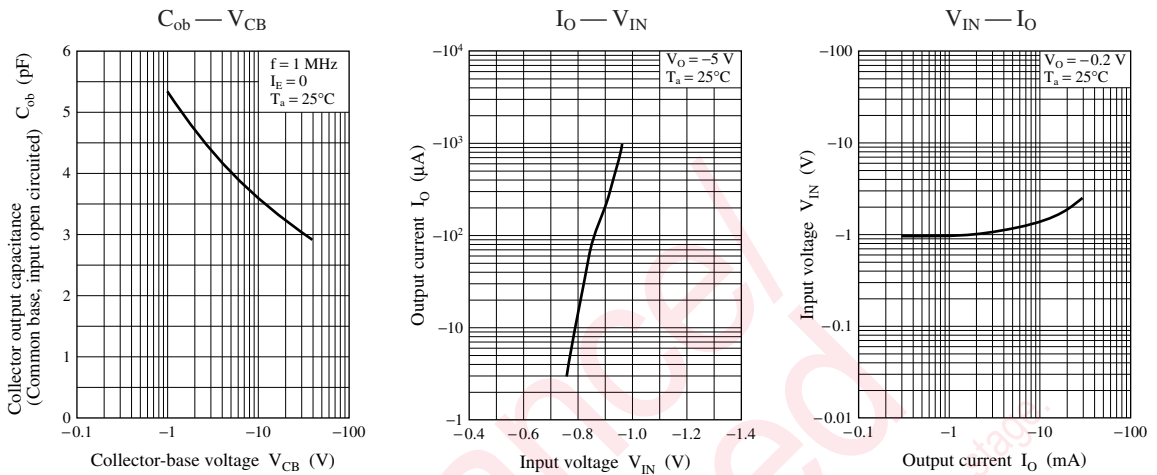




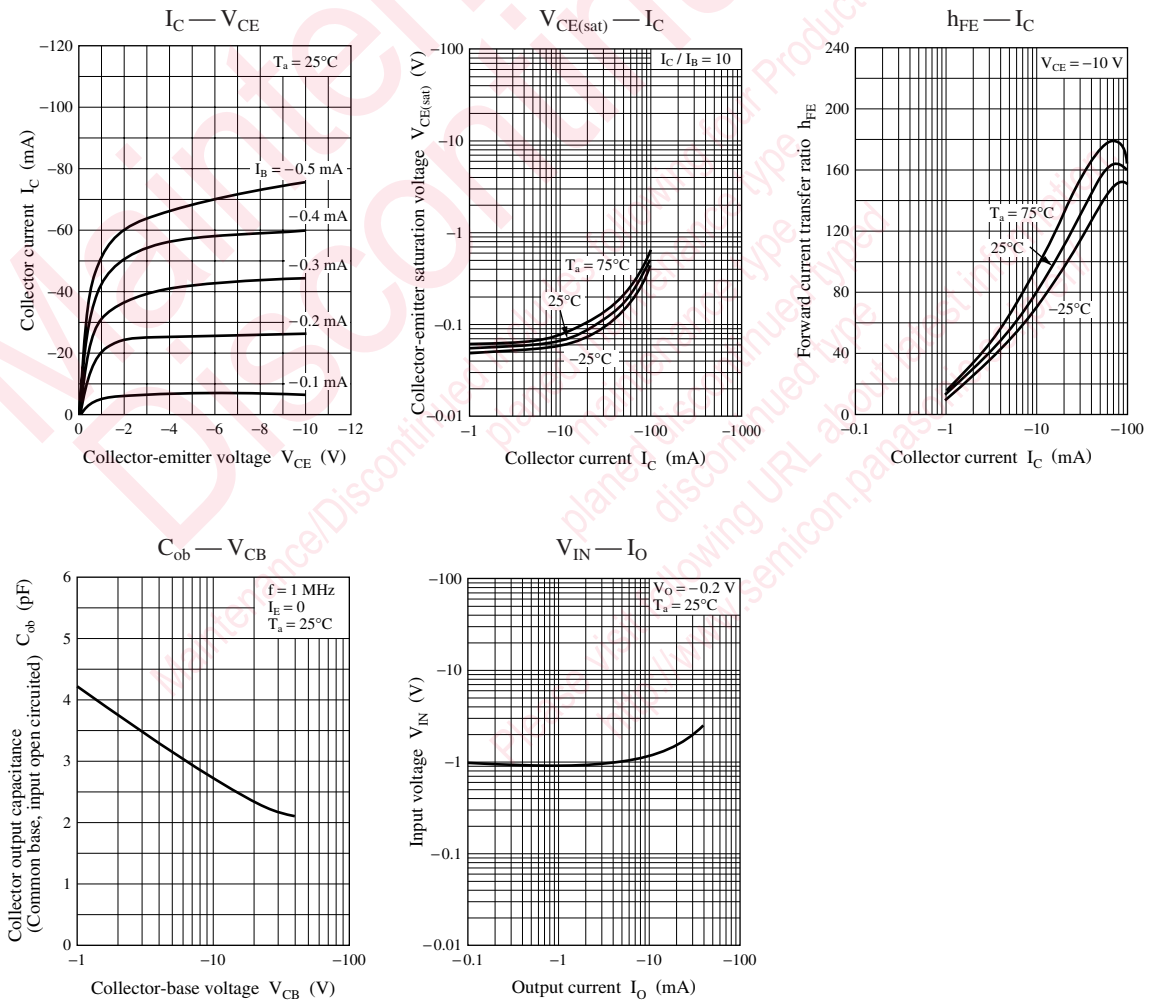
Characteristics charts of UNR211D



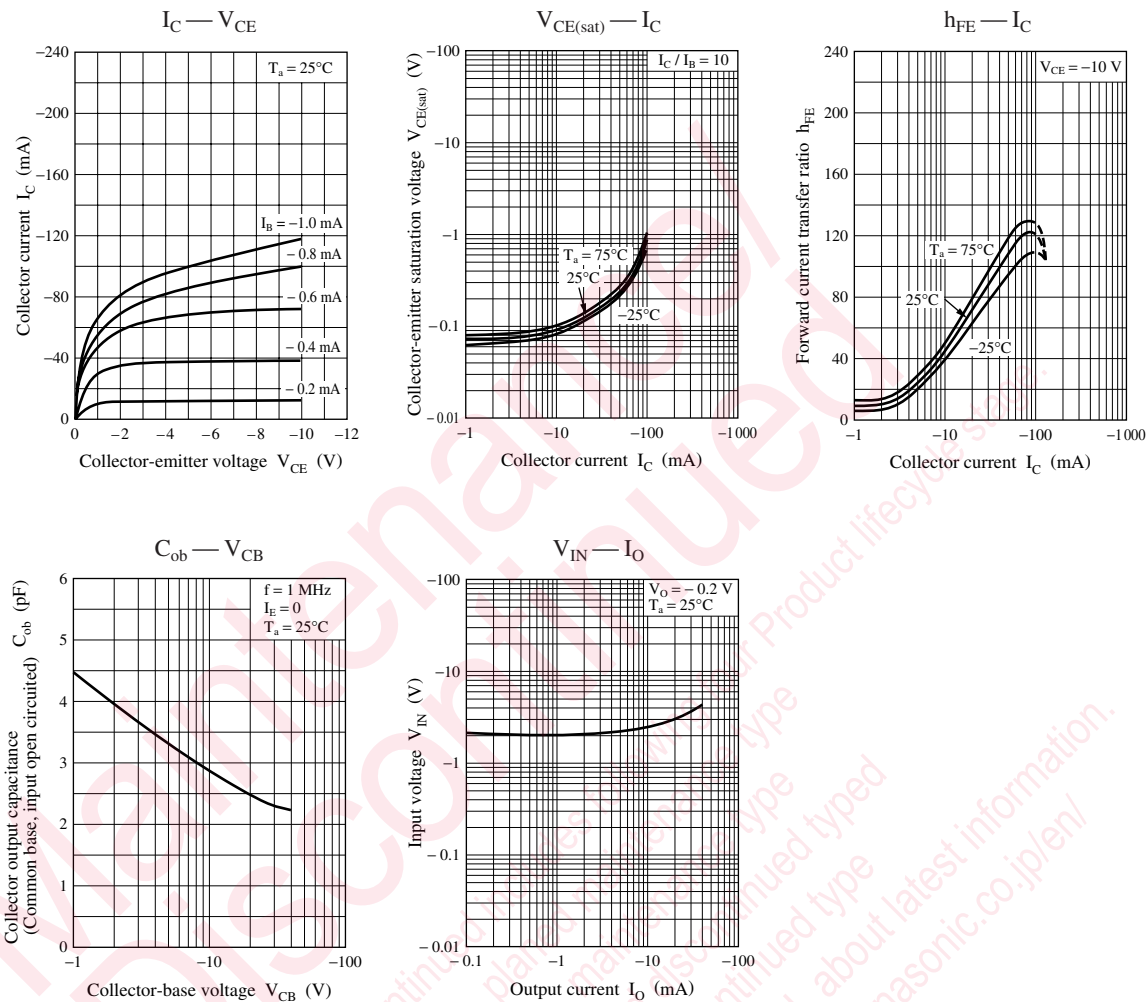
Characteristics charts of UNR211E**Characteristics charts of UNR211F**



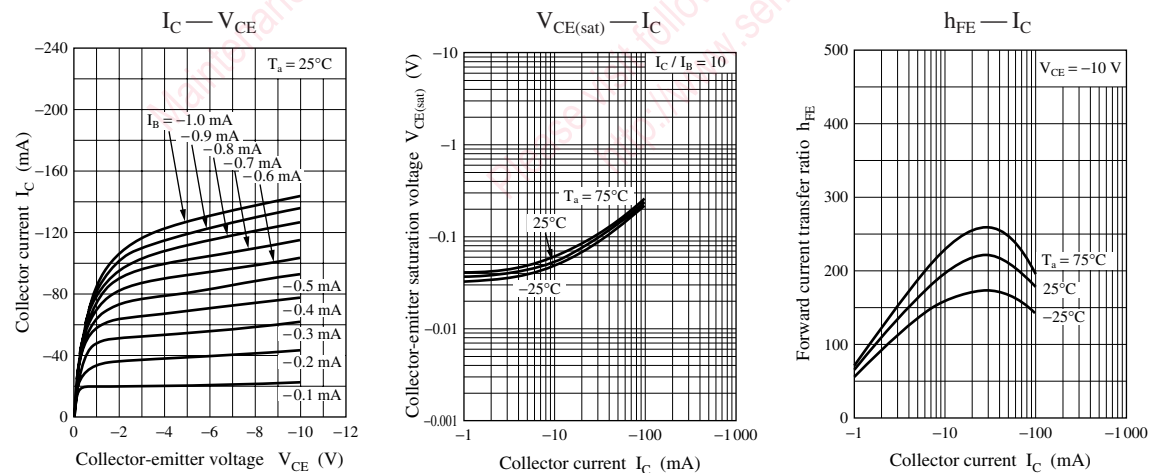
Characteristics charts of UNR211H

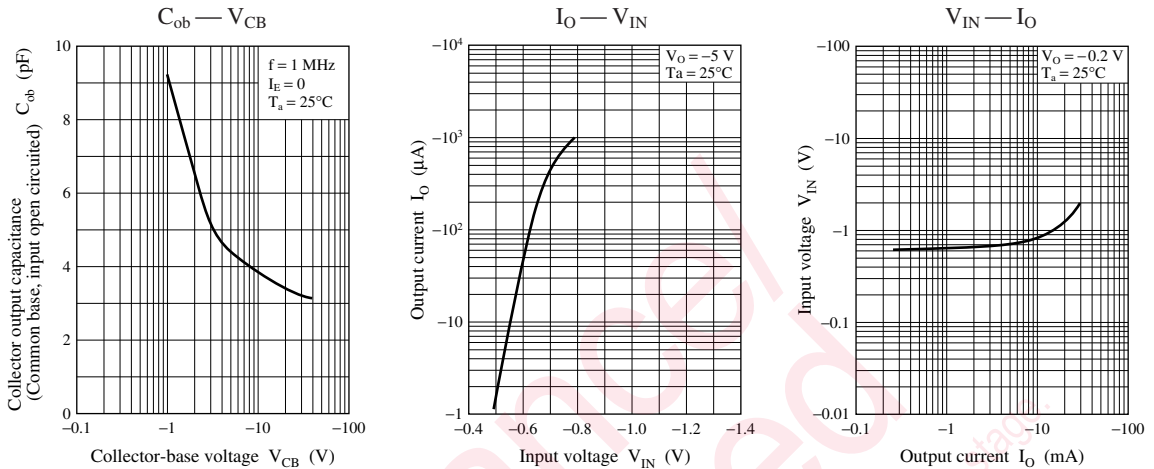


Characteristics charts of UNR211L

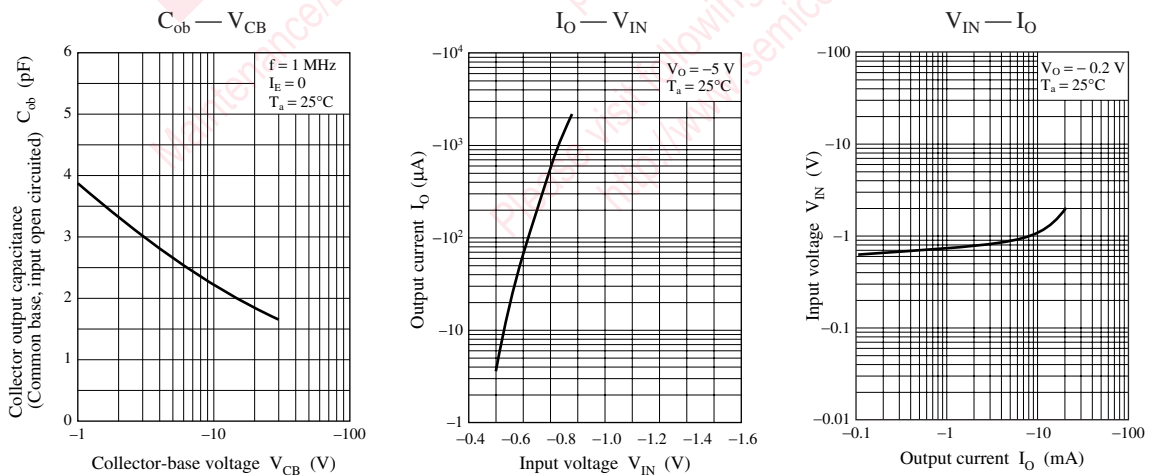
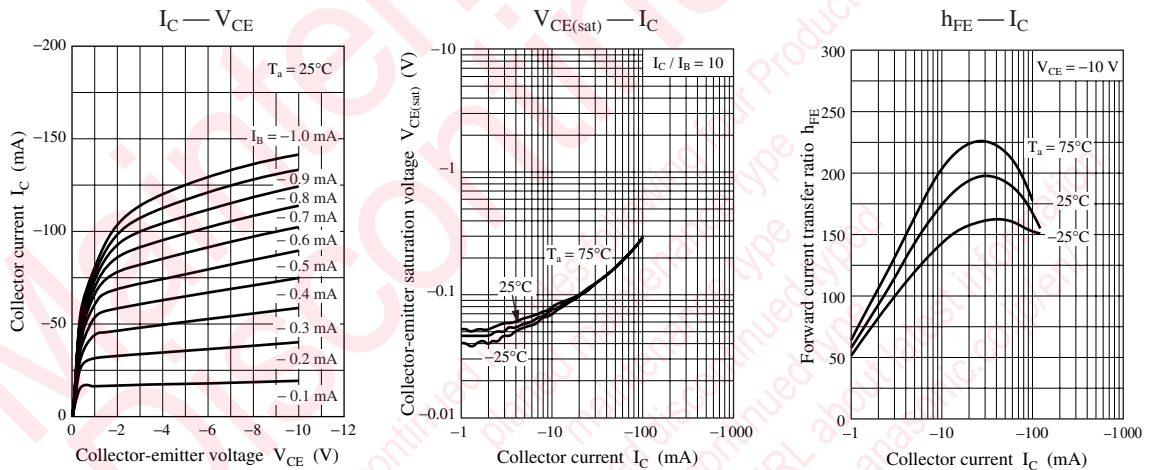


Characteristics charts of UNR211M

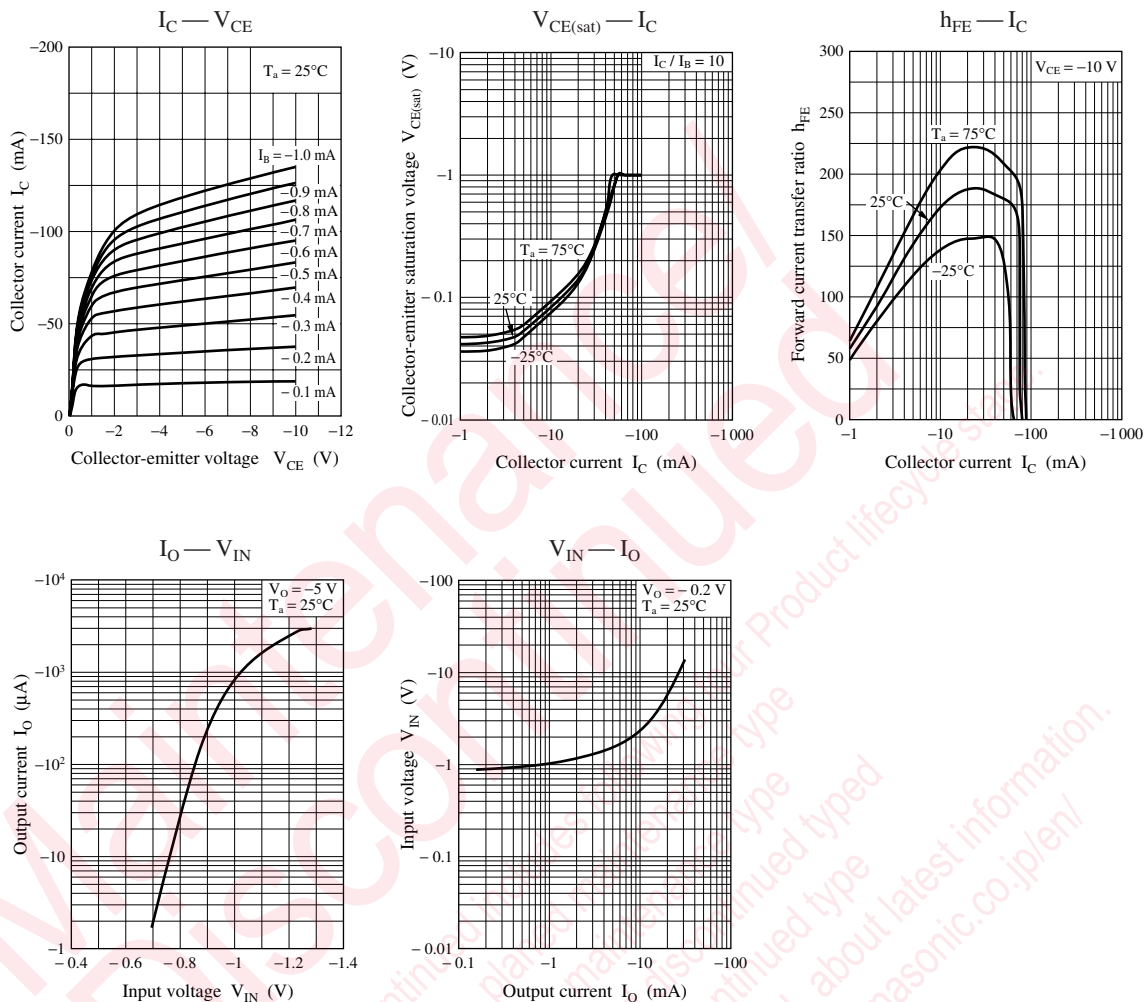




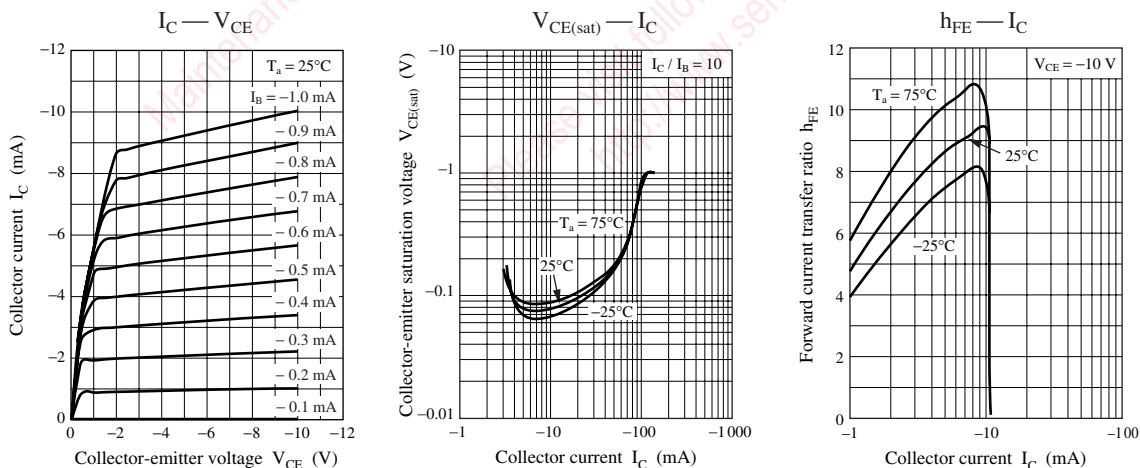
Characteristics charts of UNR211N

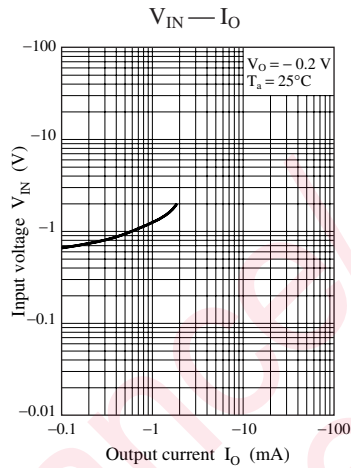
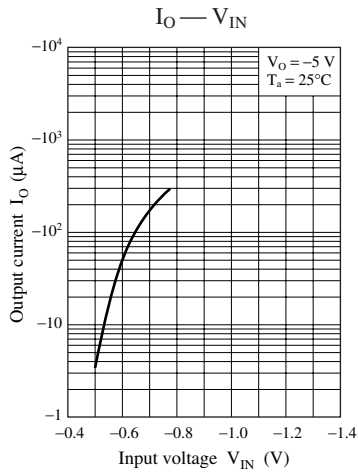


Characteristics charts of UNR211T

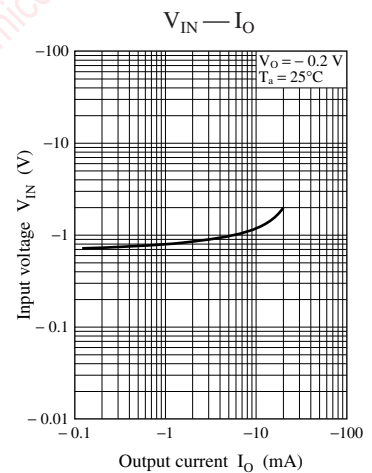
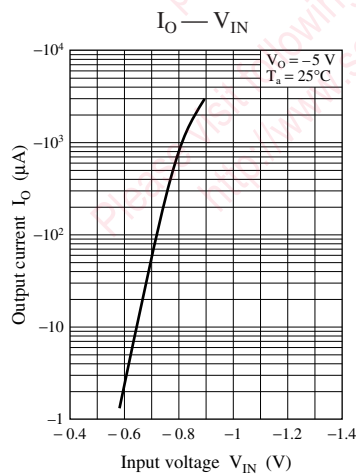
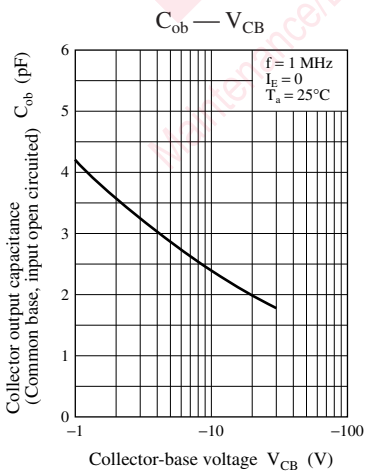
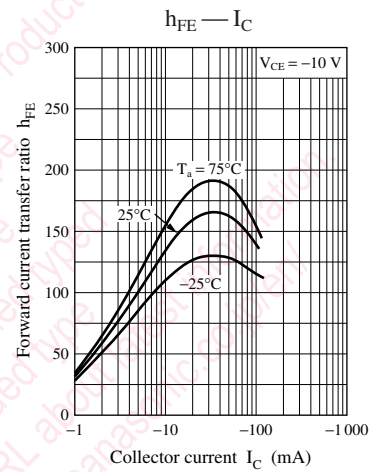
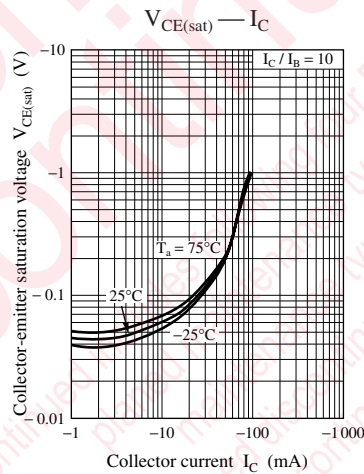
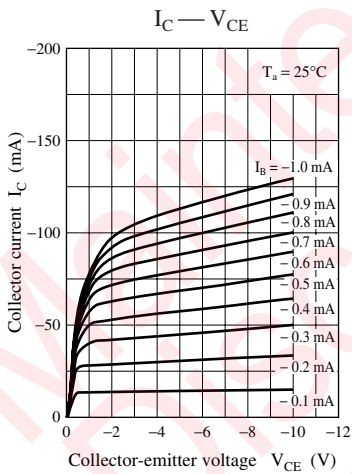


Characteristics charts of UNR211V





Characteristics charts of UNR211Z



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