

UNR211x Series (UN211x Series)

Silicon PNP epitaxial planar type

For digital circuits

■ Features

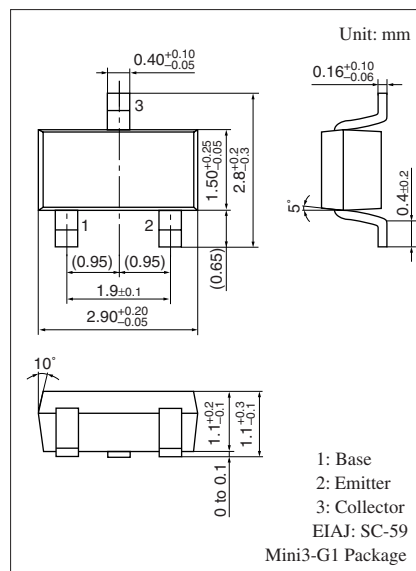
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- Mini type package allowing easy automatic insertion through tape packing and magazine packing

■ Resistance by Part Number

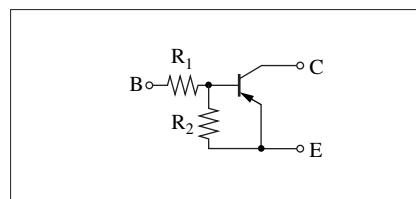
			Marking Symbol (R_1)	(R_2)
• UNR2110	(UN2110)	6L	47 k Ω	—
• UNR2111	(UN2111)	6A	10 k Ω	10 k Ω
• UNR2112	(UN2112)	6B	22 k Ω	22 k Ω
• UNR2113	(UN2113)	6C	47 k Ω	47 k Ω
• UNR2114	(UN2114)	6D	10 k Ω	47 k Ω
• UNR2115	(UN2115)	6E	10 k Ω	—
• UNR2116	(UN2116)	6F	4.7 k Ω	—
• UNR2117	(UN2117)	6H	22 k Ω	—
• UNR2118	(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 transfer ratio			UNR211V	h _{FE}	V _{CE} = −10 V, I _C = −5 mA	
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
UNR2113			V _{CC} = −5 V, V _B = −3.5 V, R _L = 1 kΩ				
UNR211D			V _{CC} = −5 V, V _B = −10 V, R _L = 1 kΩ				
UNR211E			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
UNR2114/2119/211E 211F/211H			V _{CB} = −10 V, I _E = 2 mA, f = 200 MHz		150		
Input resistance	UNR2118	R ₁		−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

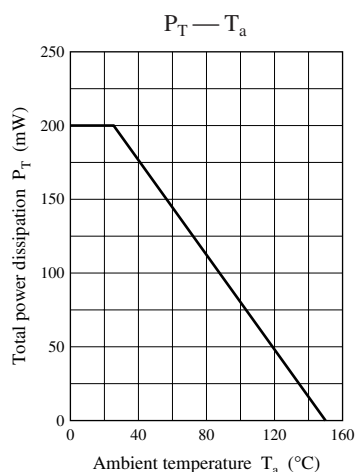
Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

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

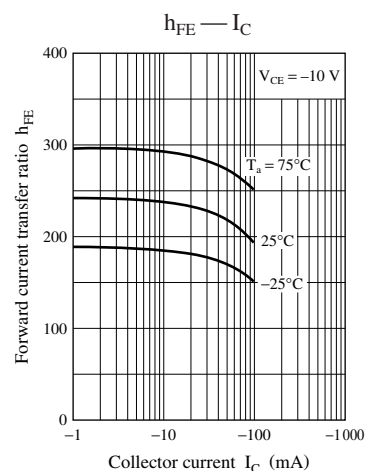
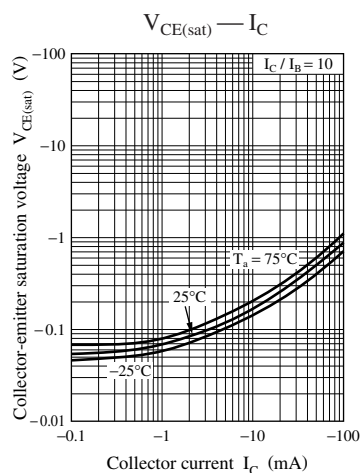
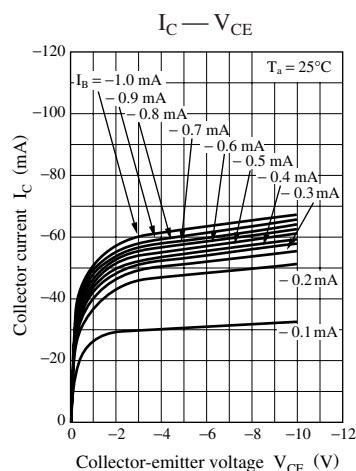
	Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR211M	R_1/R_2			0.047		—
	UNR211N				0.1		
	UNR2118/2119			0.08	0.10	0.12	
	UNR211Z				0.21		
	UNR2114			0.17	0.21	0.25	
	UNR211H			0.17	0.22	0.27	
	UNR211T				0.47		
	UNR211F			0.37	0.47	0.57	
	UNR211V				1.0		
	UNR2111/2112/2113/211L	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

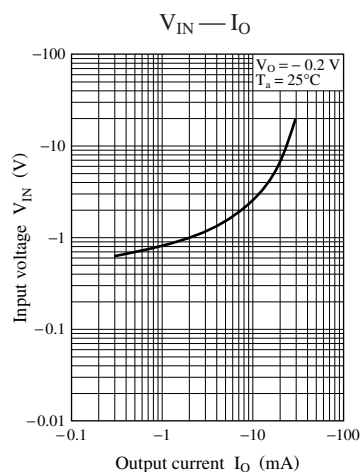
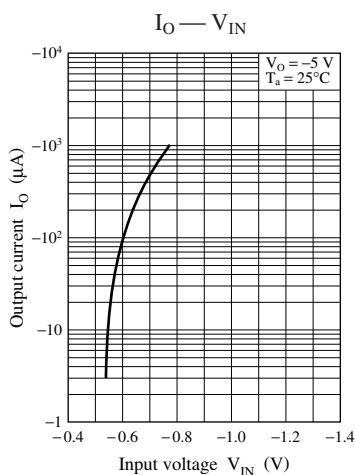
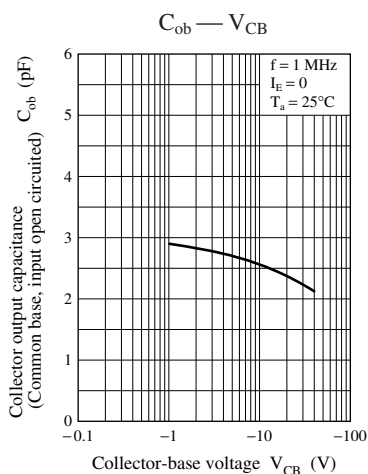
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

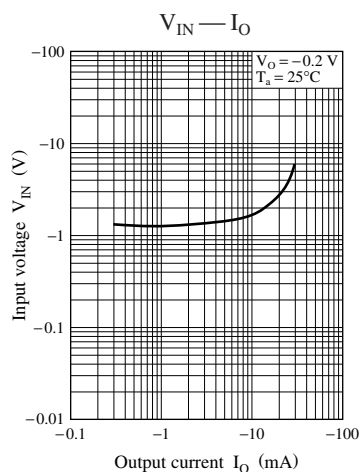
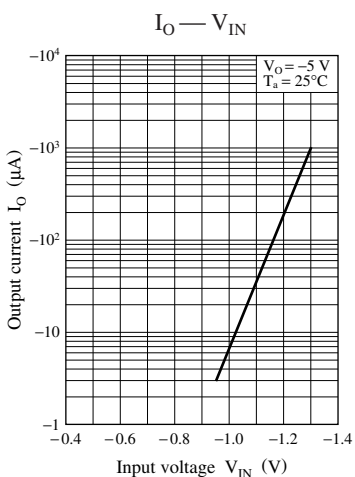
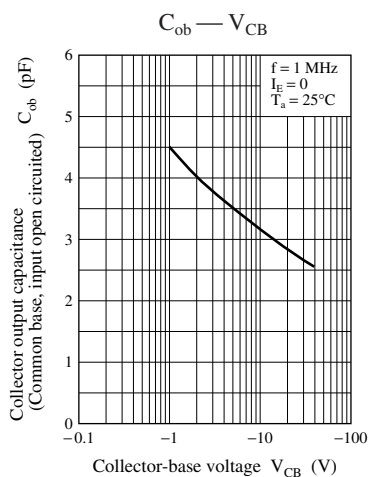
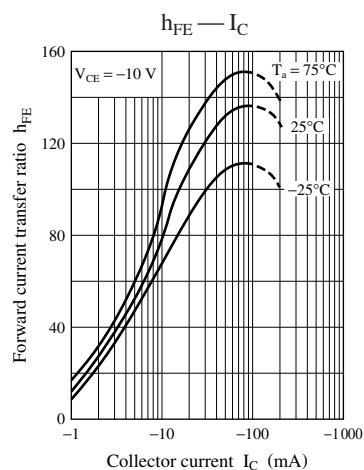
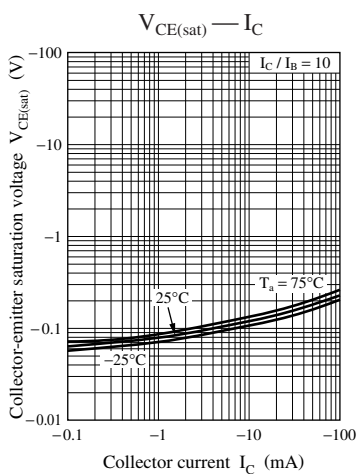
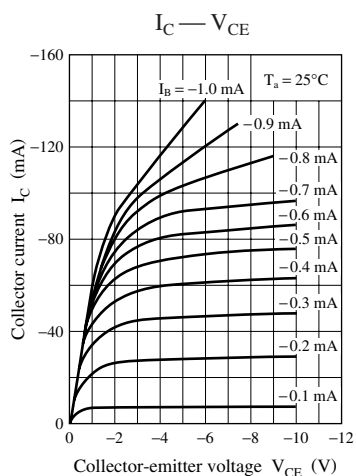


Characteristics charts of UNR2110

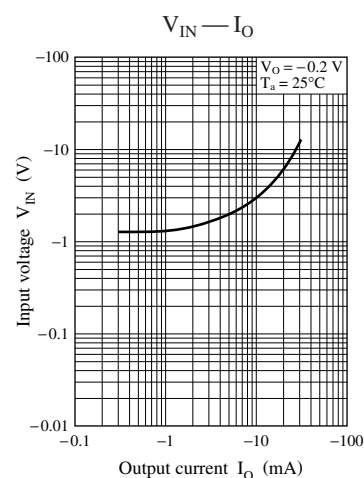
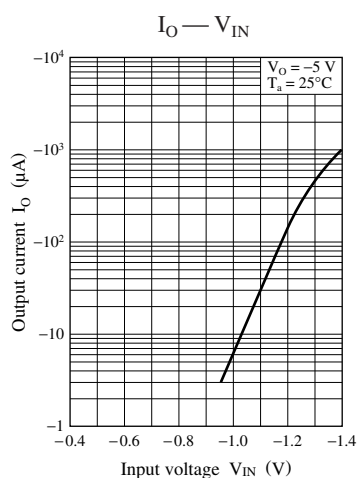
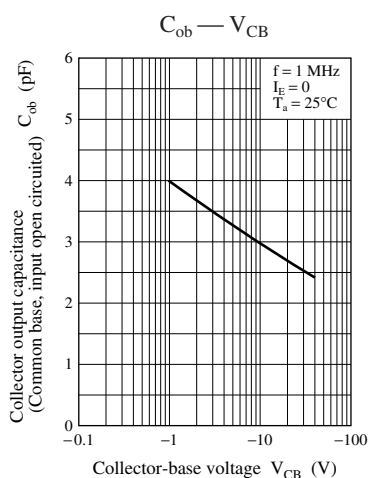
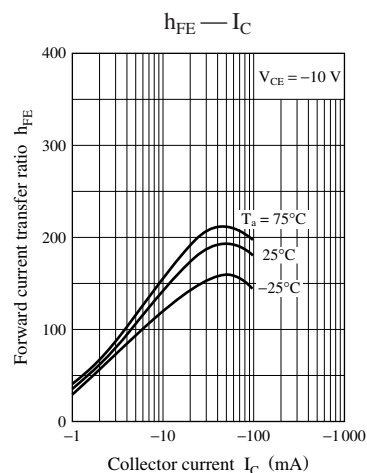
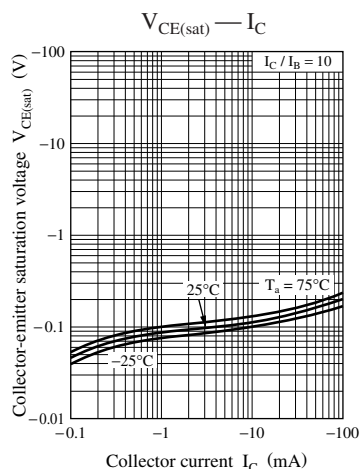
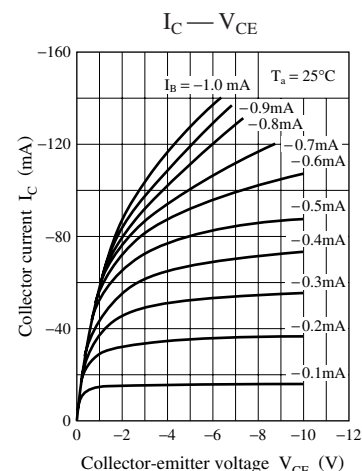




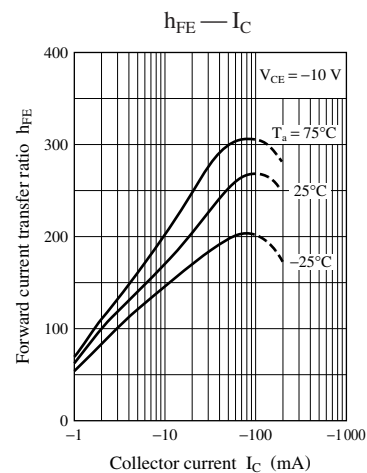
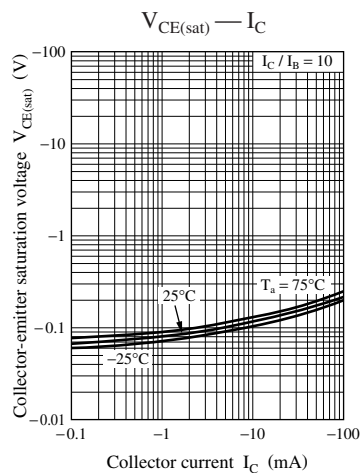
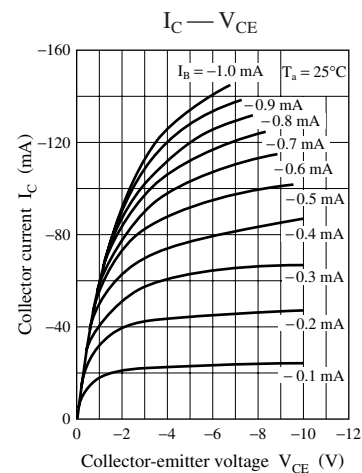
Characteristics charts of UNR2111

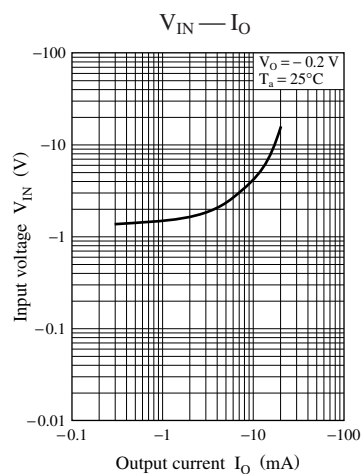
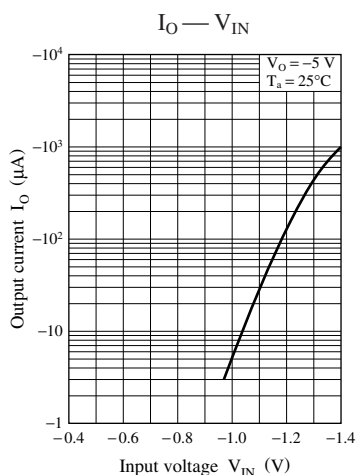
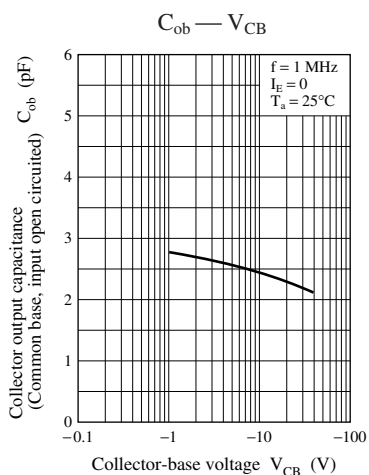


Characteristics charts of UNR2112

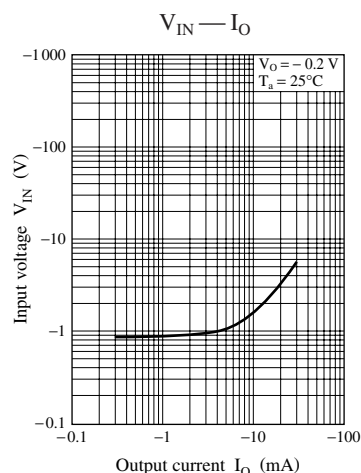
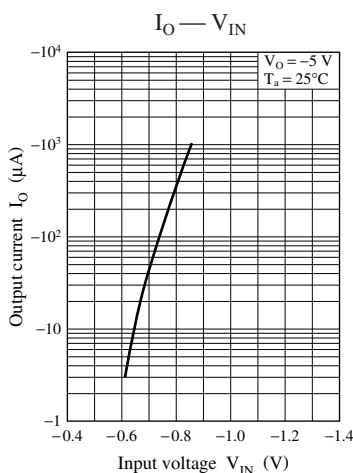
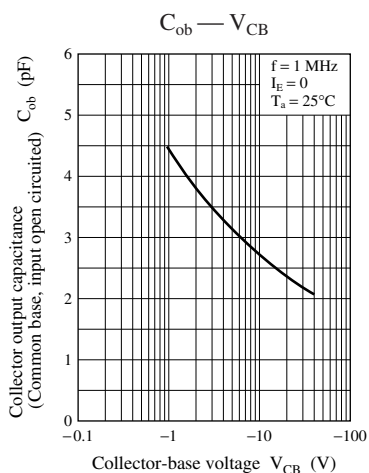
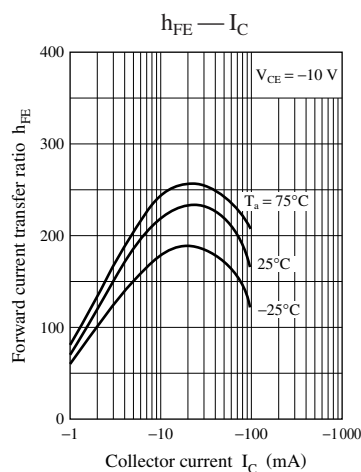
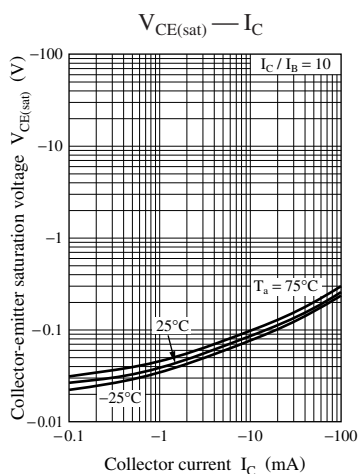
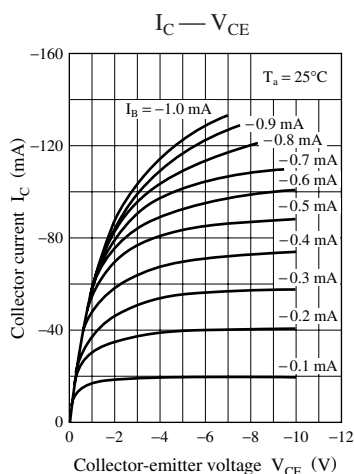


Characteristics charts of UNR2113

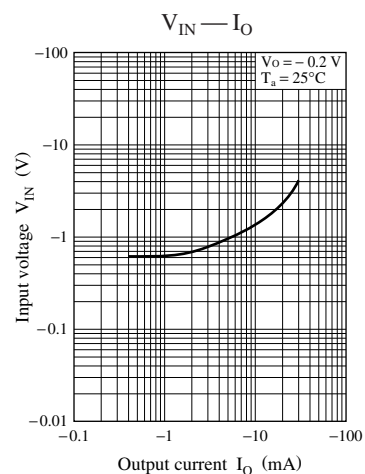
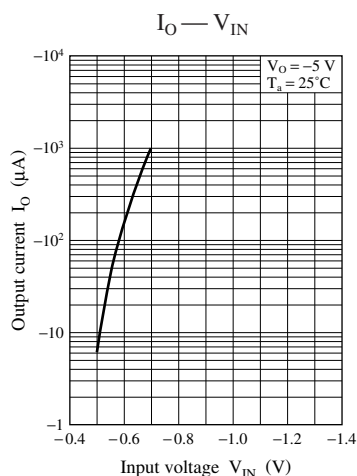
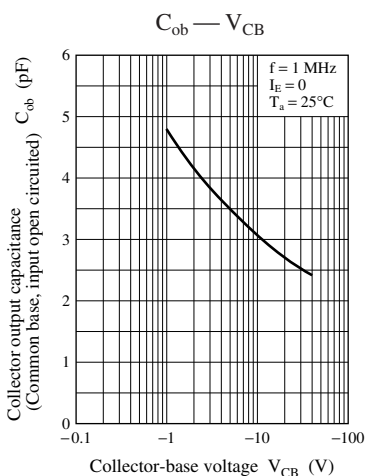
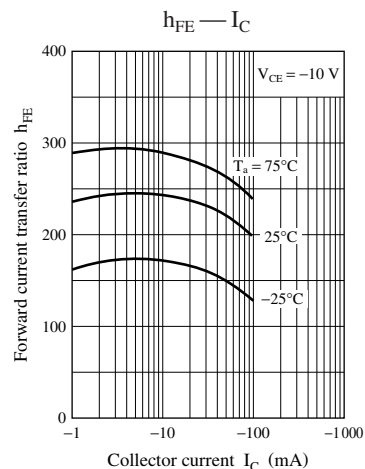
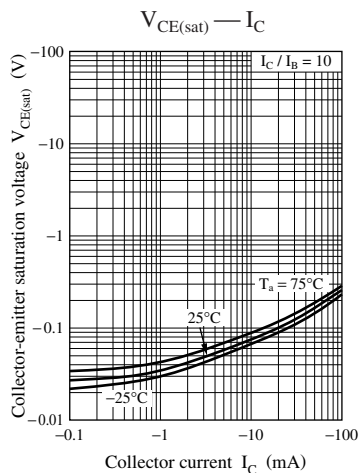
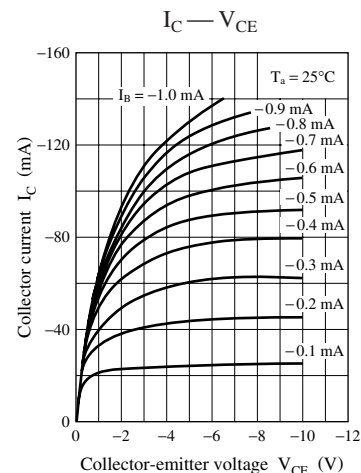




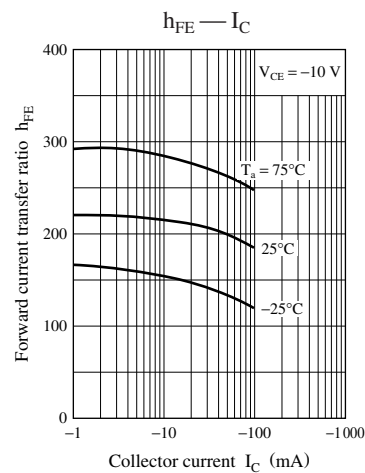
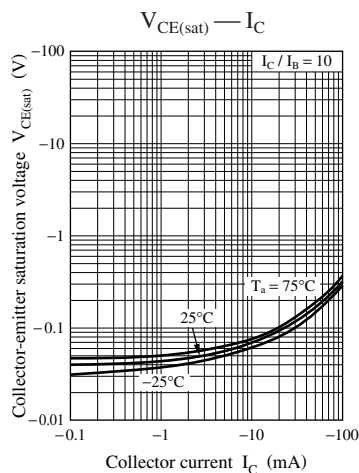
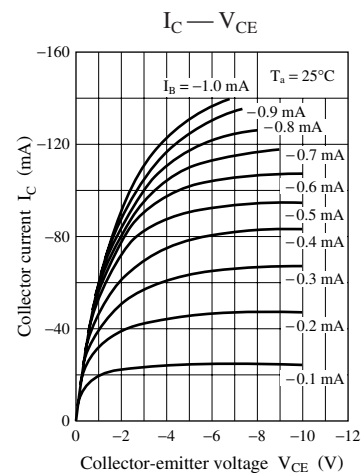
Characteristics charts of UNR2114

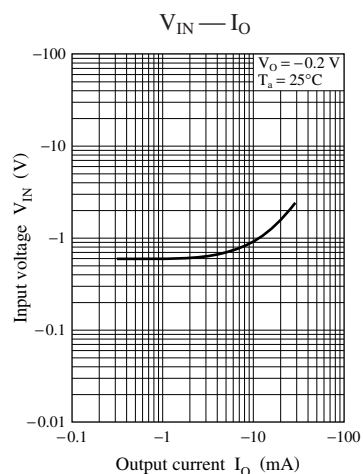
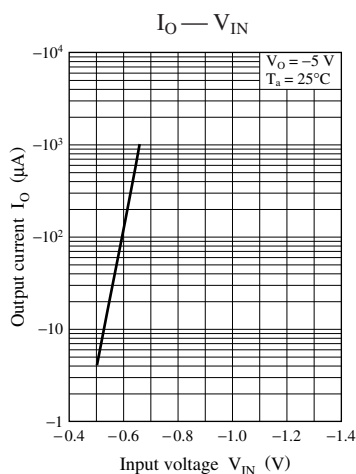
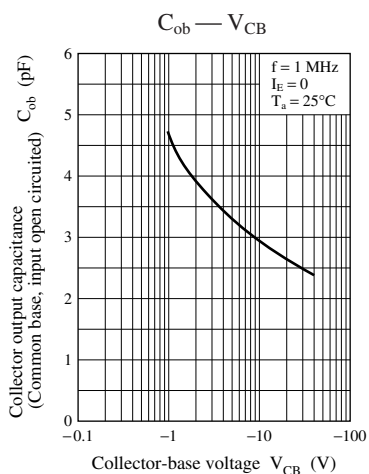


Characteristics charts of UNR2115

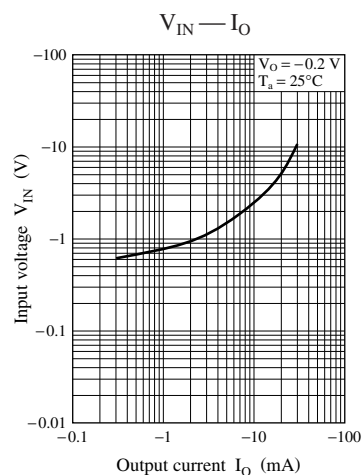
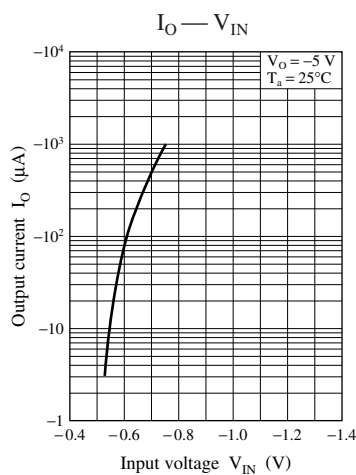
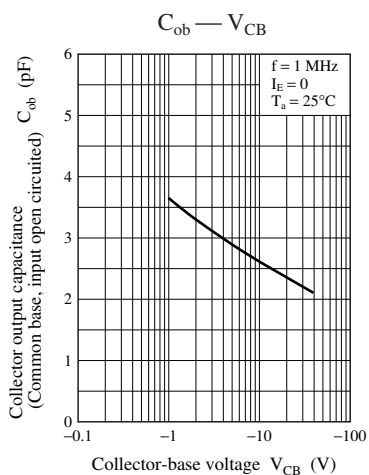
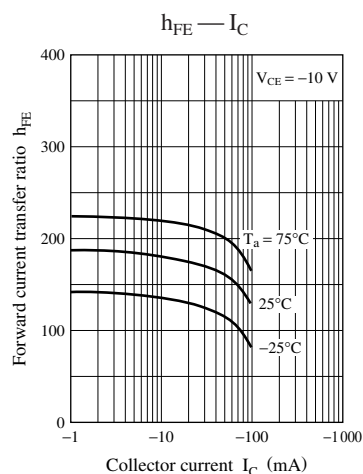
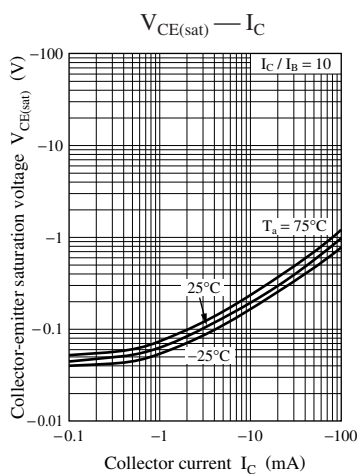
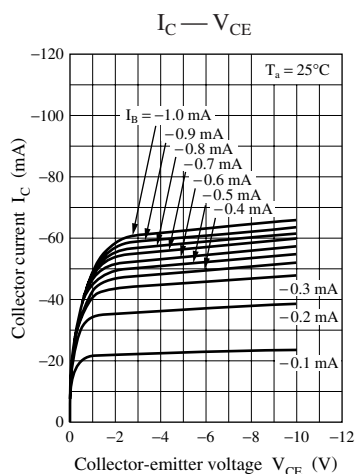


Characteristics charts of UNR2116

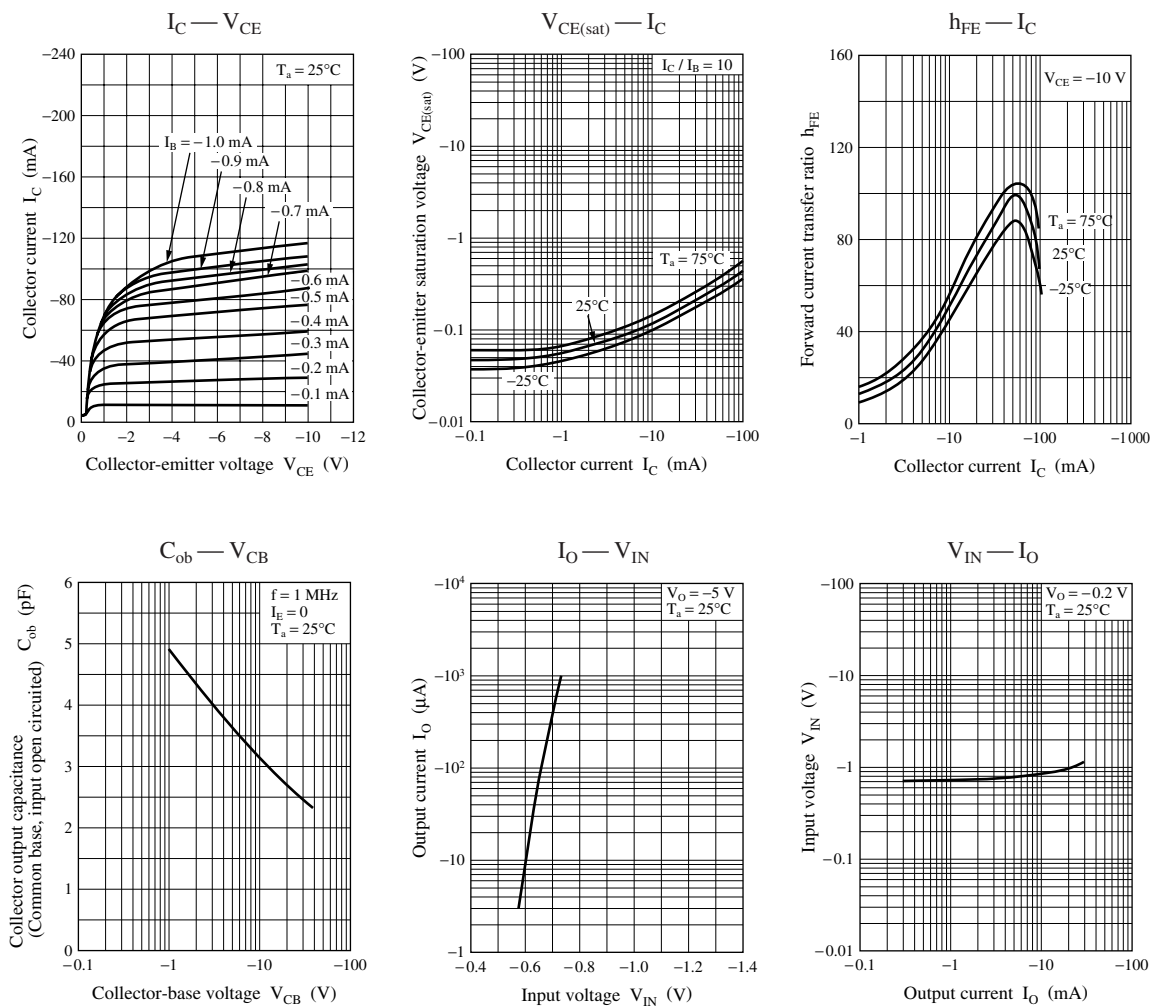




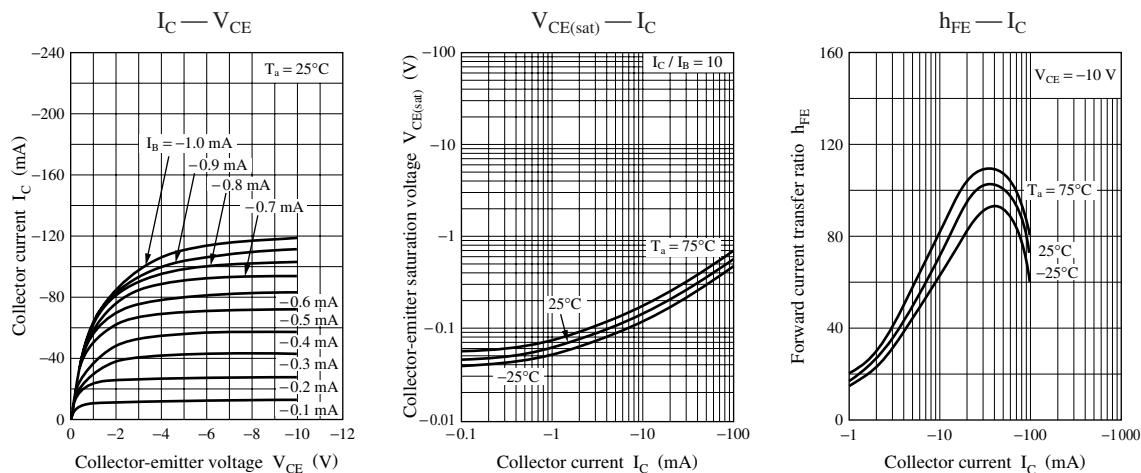
Characteristics charts of UNR2117

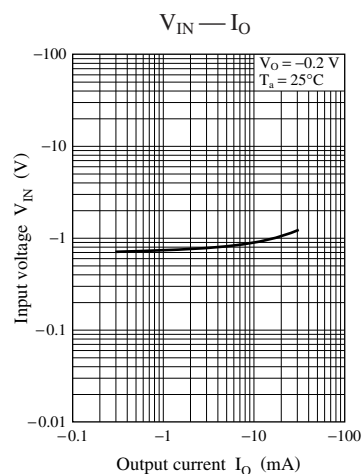
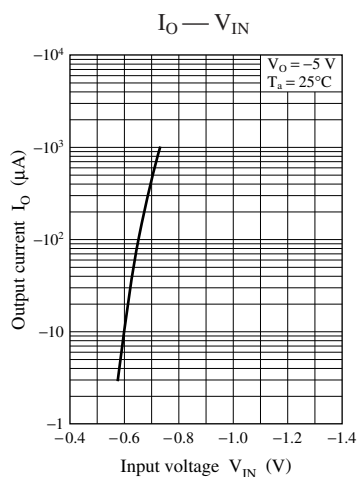
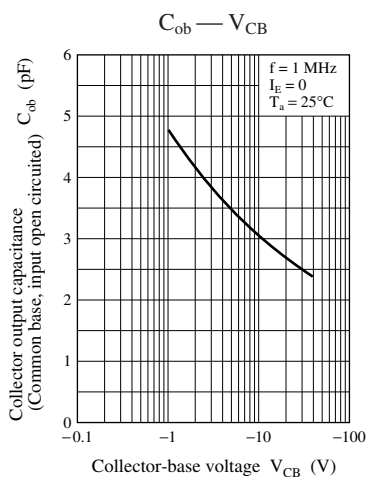


Characteristics charts of UNR2118

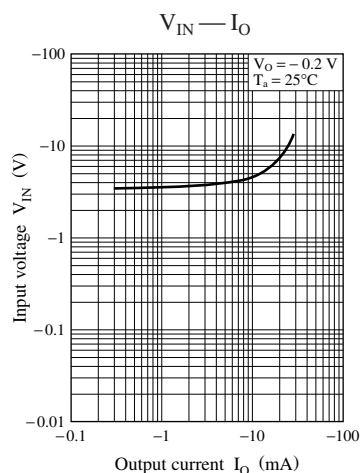
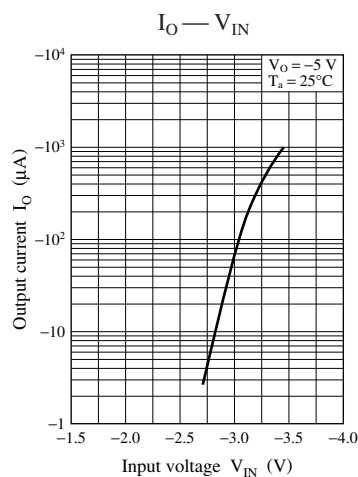
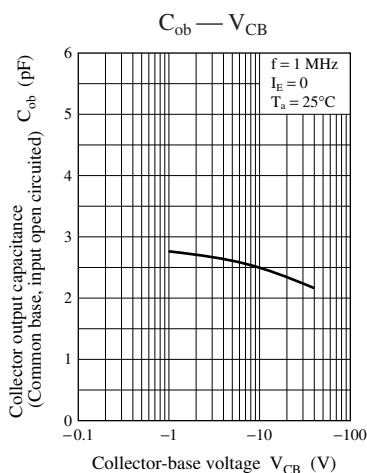
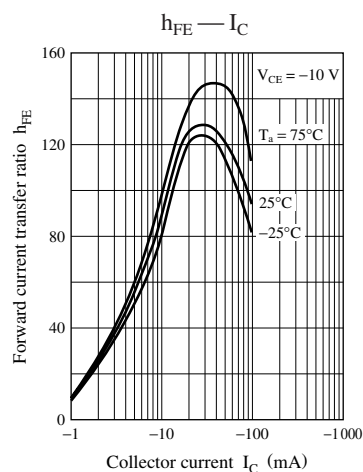
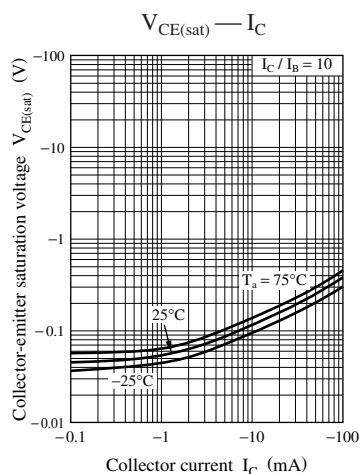
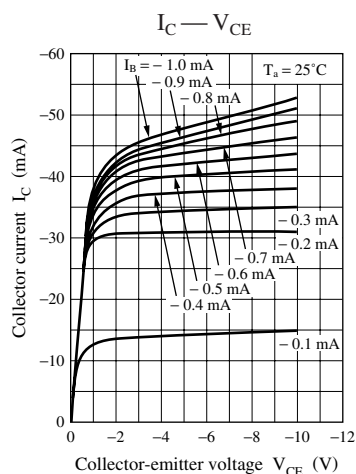


Characteristics charts of UNR2119

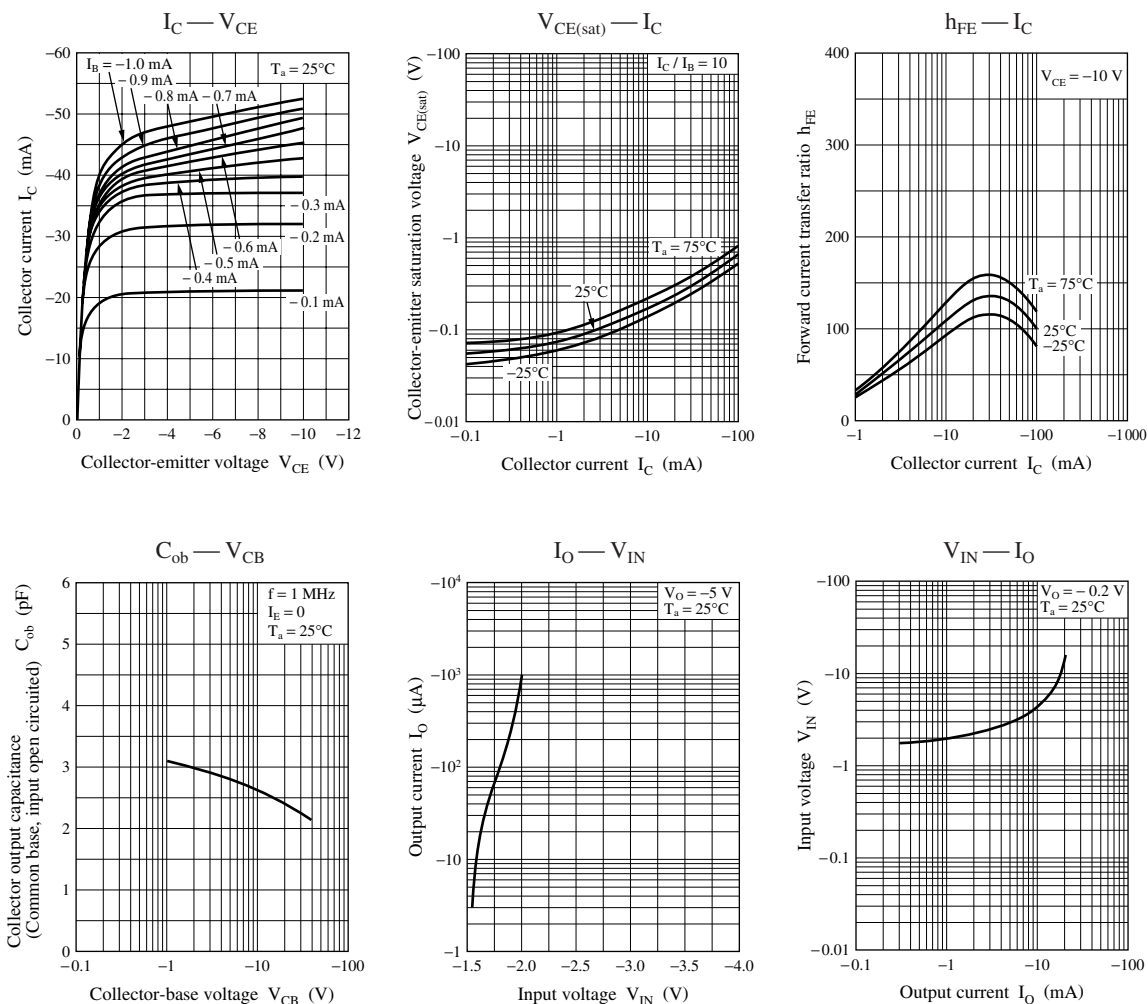




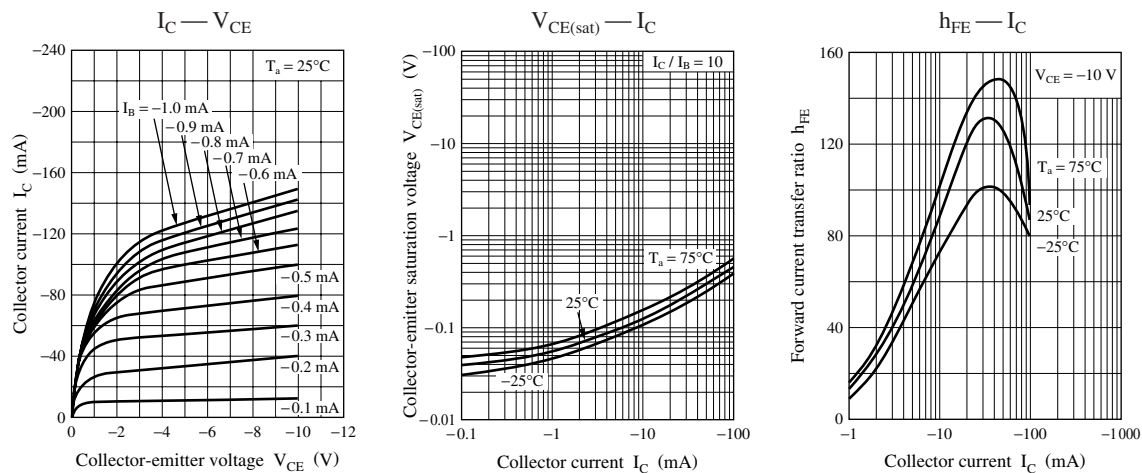
Characteristics charts of UNR211D

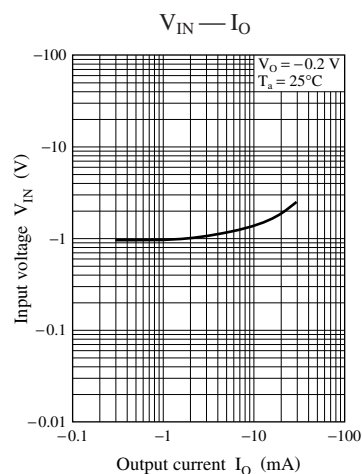
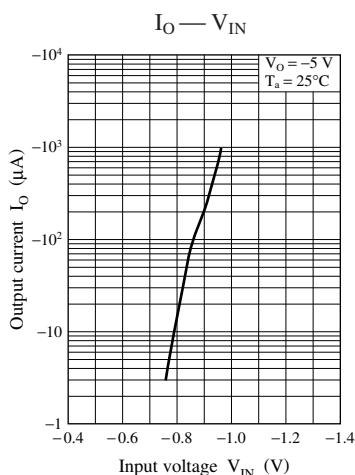
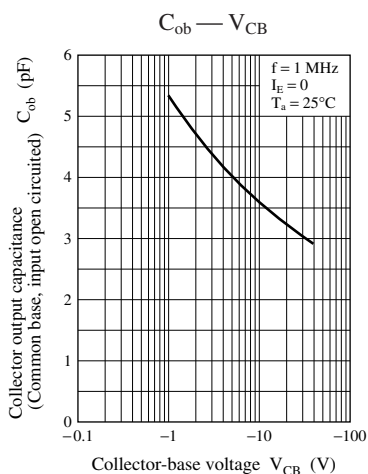


Characteristics charts of UNR211E

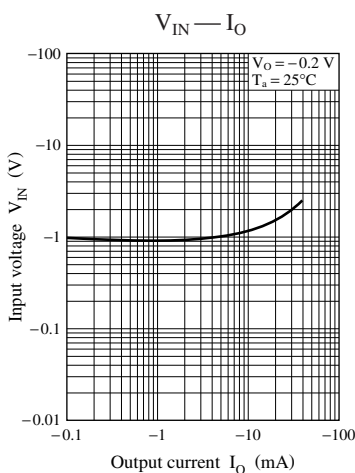
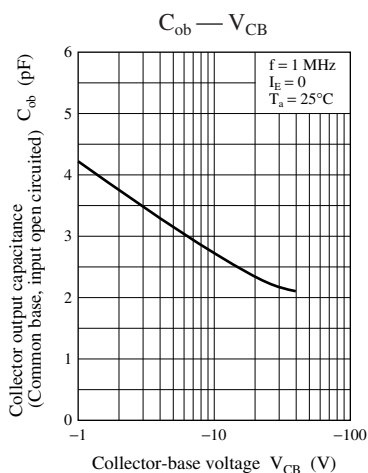
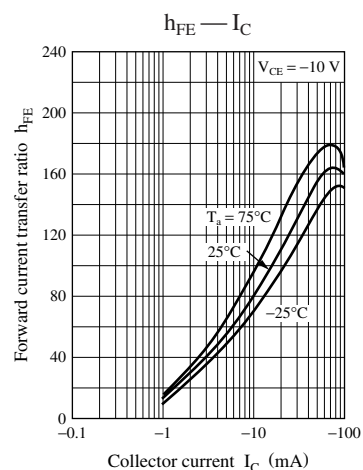
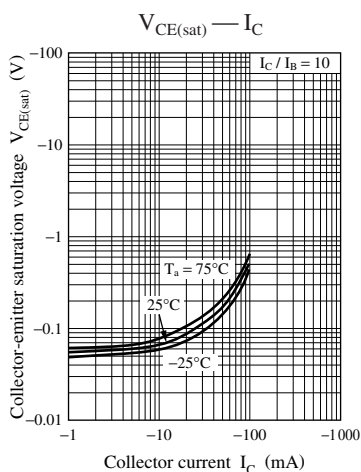
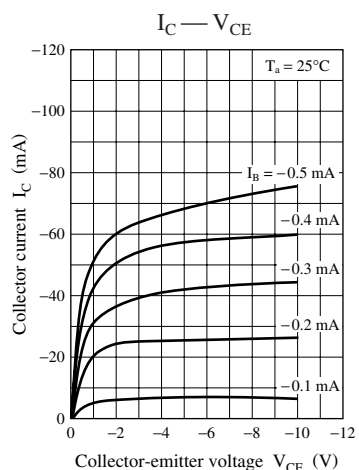


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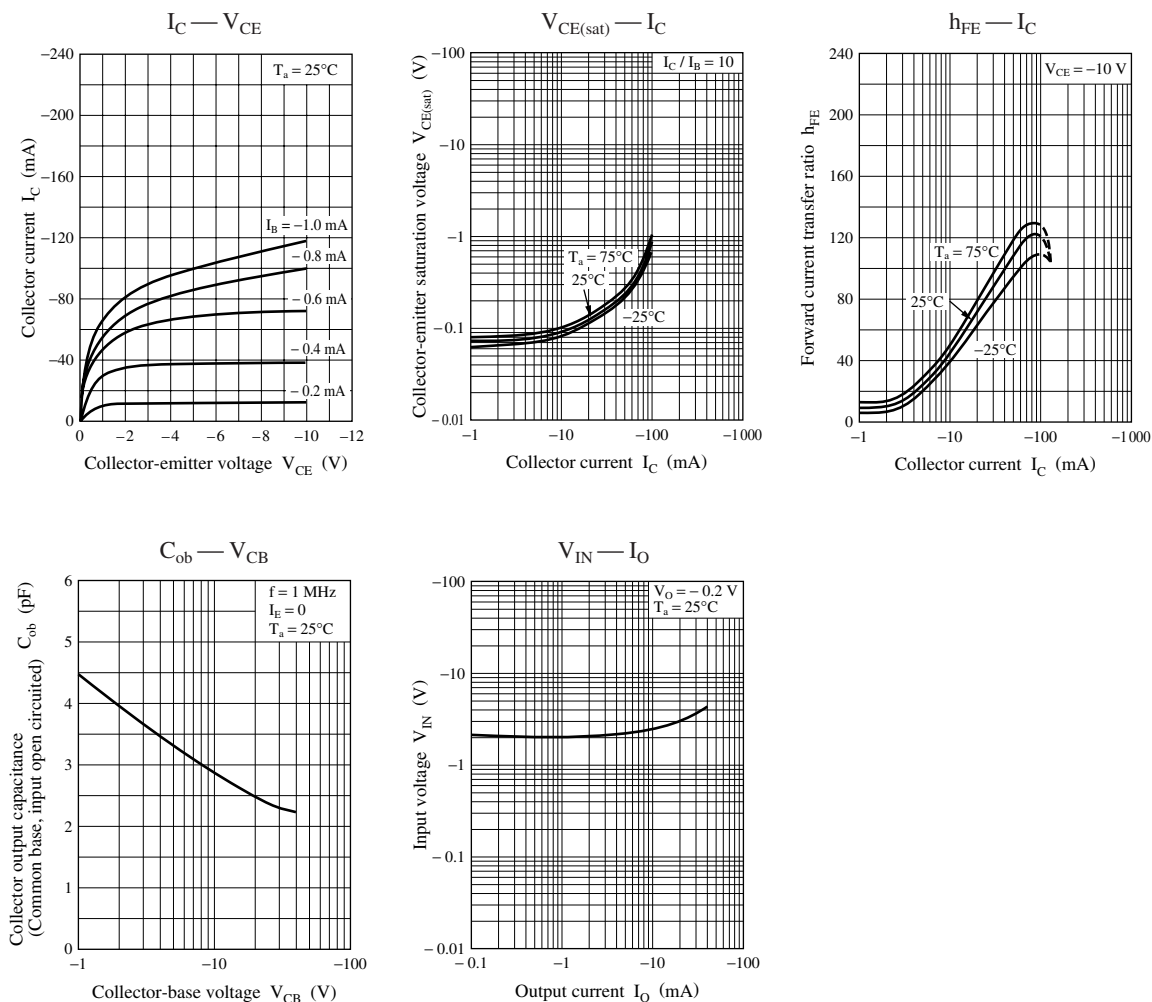




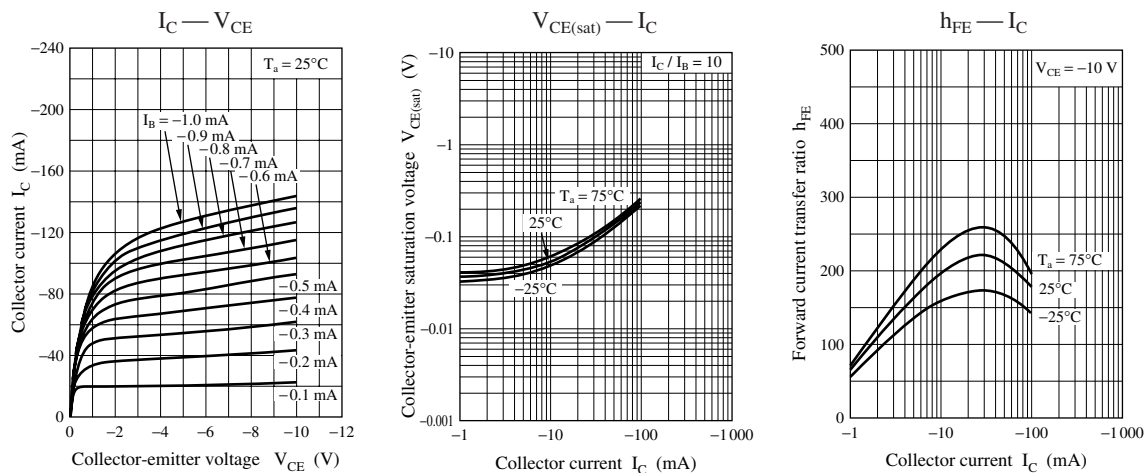
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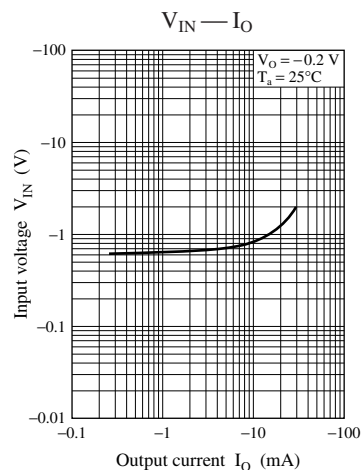
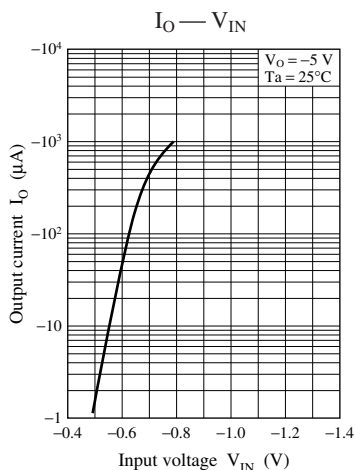
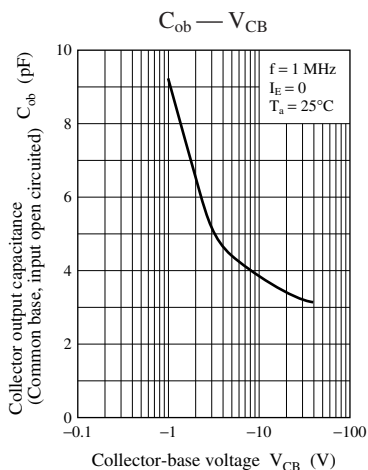


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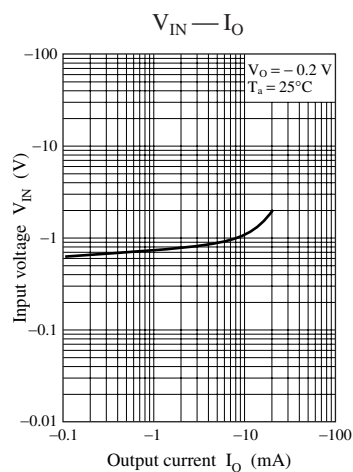
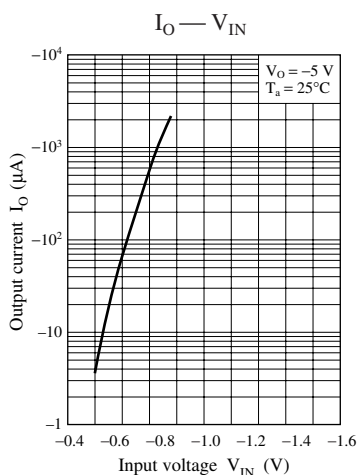
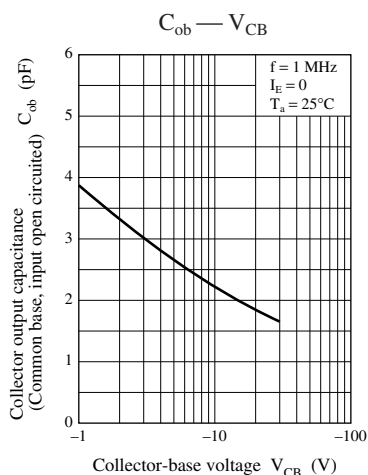
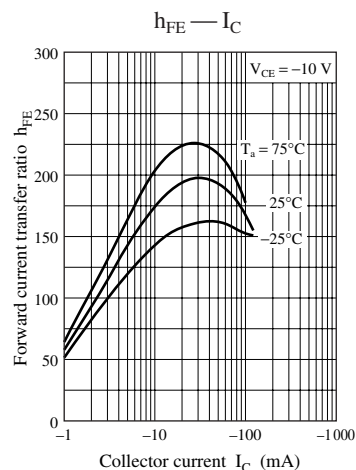
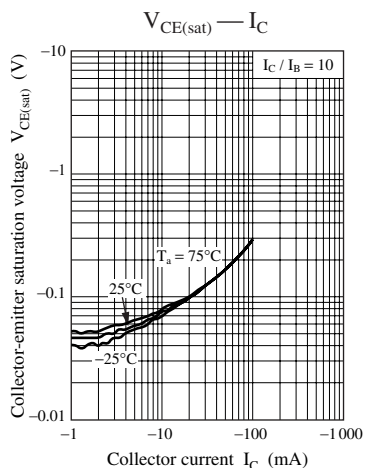
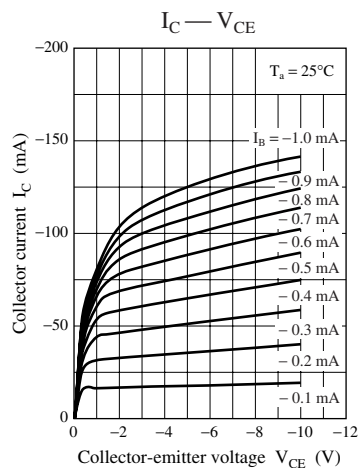


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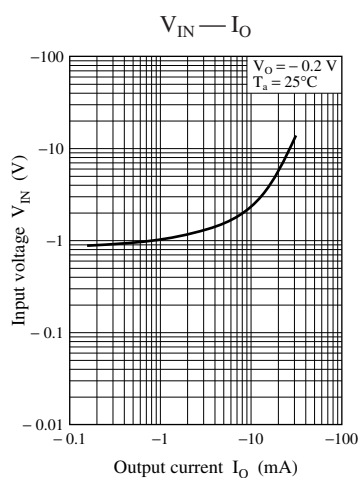
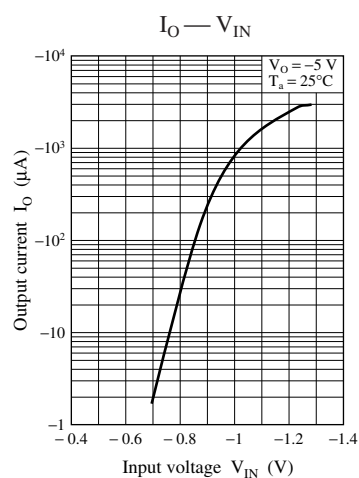
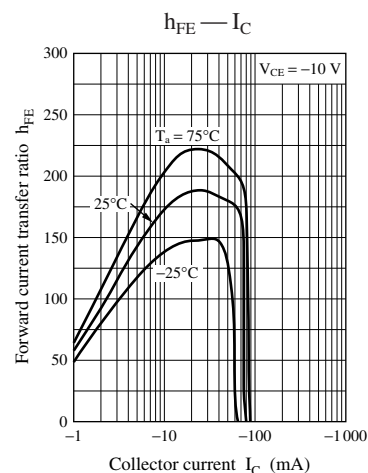
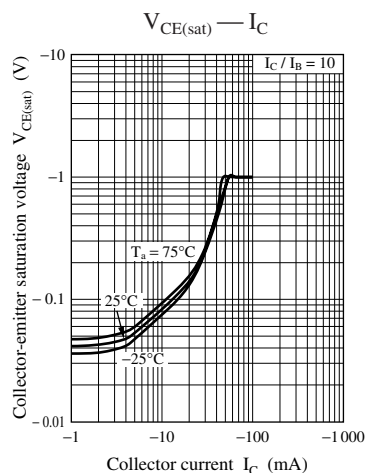
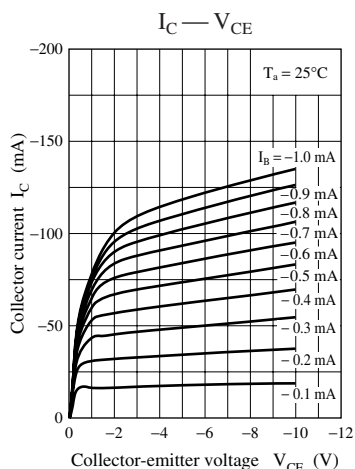




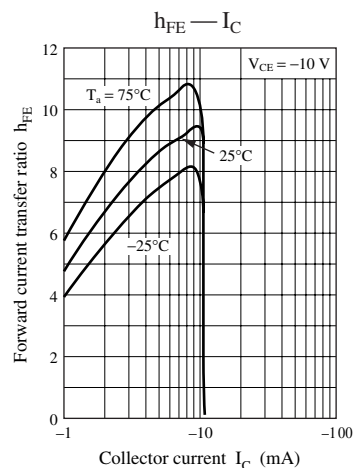
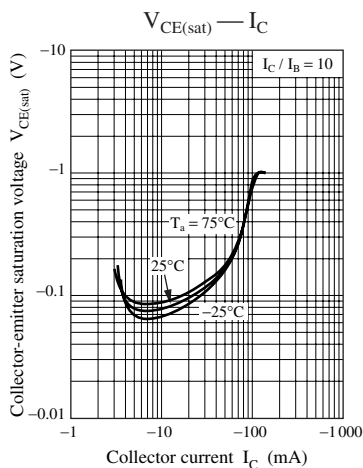
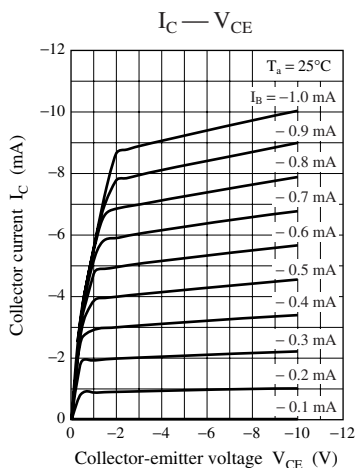
Characteristics charts of UNR211N

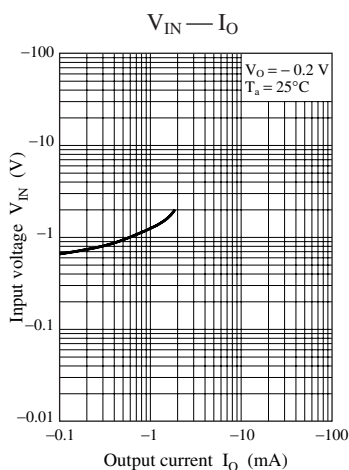
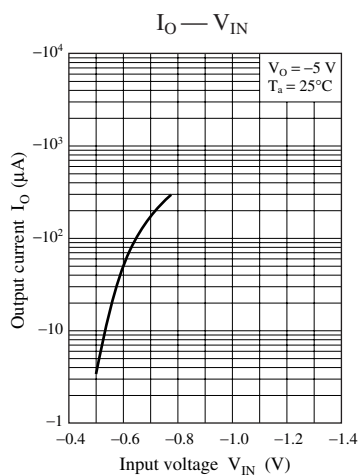


Characteristics charts of UNR211T

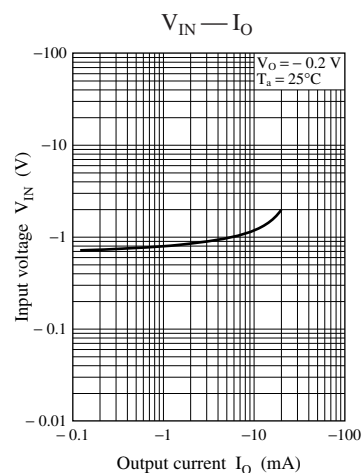
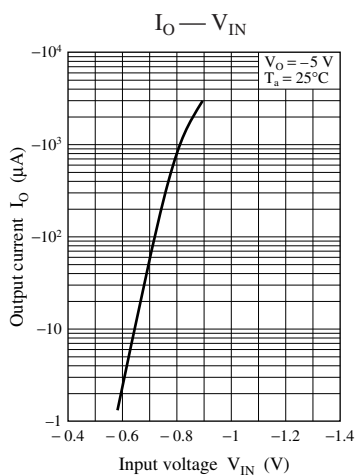
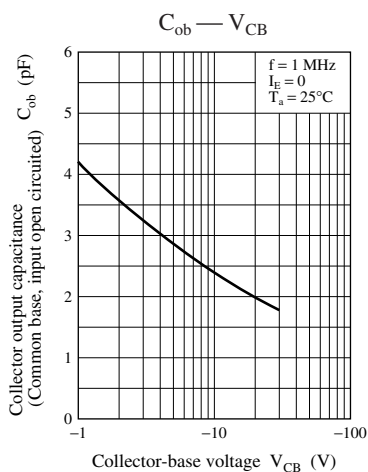
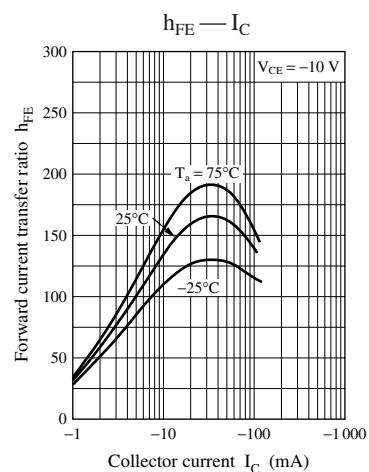
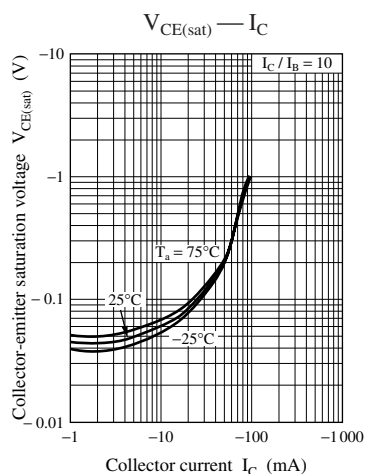
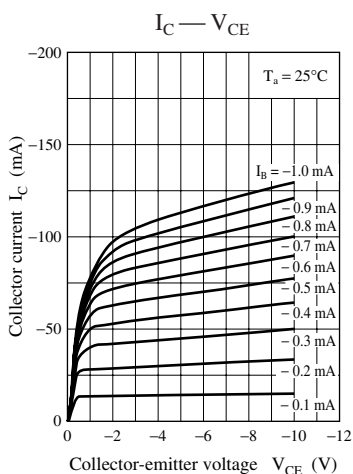


Characteristics charts of UNR211V





Characteristics charts of UNR211Z



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