

UNR21XX Series (UN21XX Series)

Silicon PNP epitaxial planer transistor

For digital circuits

■ Features

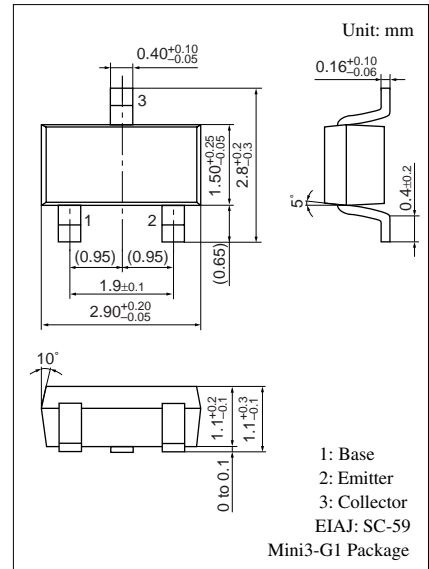
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- Mini type package, allowing downsizing of the equipment and automatic insertion through tape packing and magazine packing.

■ Resistance by Part Number

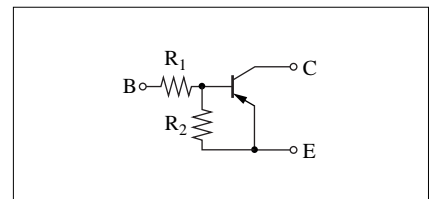
	Marking Symbol (R ₁)	(R ₂)
• UNR2110 (UN2110)	6L	47 kΩ —
• UNR2111 (UN2111)	6A	10 kΩ 10 kΩ
• UNR2112 (UN2112)	6B	22 kΩ 22 kΩ
• UNR2113 (UN2113)	6C	47 kΩ 47 kΩ
• UNR2114 (UN2114)	6D	10 kΩ 47 kΩ
• UNR2115 (UN2115)	6E	10 kΩ —
• UNR2116 (UN2116)	6F	4.7 kΩ —
• UNR2117 (UN2117)	6H	22 kΩ —
• UNR2118 (UN2118)	6I	0.51 kΩ 5.1 kΩ
• UNR2119 (UN2119)	6K	1 kΩ 10 kΩ
• UNR211D (UN211D)	6M	47 kΩ 10 kΩ
• UNR211E (UN211E)	6N	47 kΩ 22 kΩ
• UNR211F (UN211F)	6O	4.7 kΩ 10 kΩ
• UNR211H (UN211H)	6P	2.2 kΩ 10 kΩ
• UNR211L (UN211L)	6Q	4.7 kΩ 4.7 kΩ
• UNR211M (UN211M)	EI	2.2 kΩ 47 kΩ
• UNR211N (UN211N)	EW	4.7 kΩ 47 kΩ
• UNR211T (UN211T)	EY	22 kΩ 47 kΩ
• UNR211V (UN211V)	FC	2.2 kΩ 2.2 kΩ
• UNR211Z (UN211Z)	FE	4.7 kΩ 22 kΩ

■ Absolute Maximum Ratings T_a = 25°C

Parameter	Symbol	Rating	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	200	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 $T_a = 25^\circ\text{C}$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit	
Collector cutoff current		I_{CBO}	$V_{CB} = -50\text{ V}, I_E = 0$			-0.1	μA	
		I_{CEO}	$V_{CE} = -50\text{ V}, I_B = 0$			-0.5		
Emitter cutoff current	UNR2111	I_{EBO}	$V_{EB} = -6\text{ V}, I_C = 0$			-0.5	mA	
	UNR2112/2114/211D/ 211E/211M/211N/211T					-0.2		
	UNR2113					-0.1		
	UNR2110/2115/2116/2117					-0.01		
	UNR211F/211H					-1.0		
	UNR2119					-1.5		
	UNR2118/211L/211V					-2.0		
	UNR211Z					-0.4		
Collector to base voltage		V_{CBO}	$I_C = -10\ \mu\text{A}, I_E = 0$	-50			V	
Collector to emitter voltage		V_{CEO}	$I_C = -2\text{ mA}, I_B = 0$	-50			V	
Forward current transfer ratio	UNR2111	h_{FE}	$V_{CE} = -10\text{ V}, I_C = -5\text{ mA}$	35				
	UNR2112/211E			60				
	UNR2113/2114/211M			80				
	UNR2110*/2115*/2116*/2117*			160		460		
	UNR2118/211L			20				
	UNR2119/211D/211F/211H			30				
	UNR211N/211T			80		400		
	UNR211V			6		20		
UNR211Z	60		200					
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = -10\text{ mA}, I_B = -0.3\text{ mA}$			-0.25	V	
				$I_C = -10\text{ mA}, I_B = -1.5\text{ mA}$	-0.07	-0.25		
Output voltage high level		V_{OH}	$V_{CC} = -5\text{ V}, V_B = -0.5\text{ V}, R_L = 1\text{ k}\Omega$	-4.9			V	
Output voltage low level		V_{OL}	$V_{CC} = -5\text{ V}, V_B = -2.5\text{ V}, R_L = 1\text{ k}\Omega$			-0.2	V	
				UNR2113	$V_{CC} = -5\text{ V}, V_B = -3.5\text{ V}, R_L = 1\text{ k}\Omega$			
				UNR211D	$V_{CC} = -5\text{ V}, V_B = -10\text{ V}, R_L = 1\text{ k}\Omega$			
				UNR211E	$V_{CC} = -5\text{ V}, V_B = -6\text{ V}, R_L = 1\text{ k}\Omega$			
Transition frequency		f_T	$V_{CB} = -10\text{ V}, I_E = 1\text{ mA}, f = 200\text{ MHz}$		80		MHz	
Input resistance	UNR2118	R_1		-30%	0.51	+30%	k Ω	
	UNR2119				1			
	UNR211H/211M/211V				2.2			
	UNR2116/211F/211L/211N UNR211Z				4.7			
	UNR2111/2114/2115				10			
	UNR2112/2117/211T				22			
	UNR2110/2113/211D/211E				47			

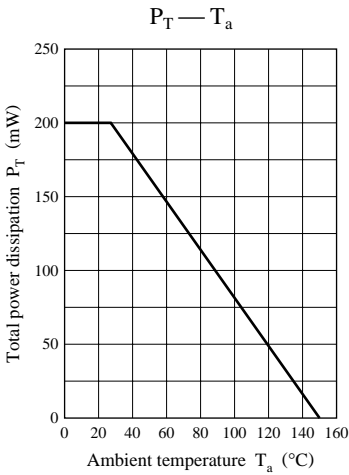
 Note) *: h_{FE} rank classification (UNR2110/2115/2116/2117)

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

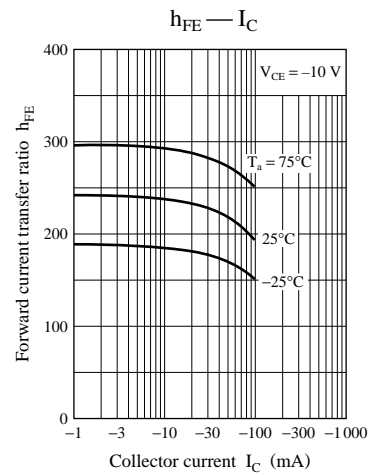
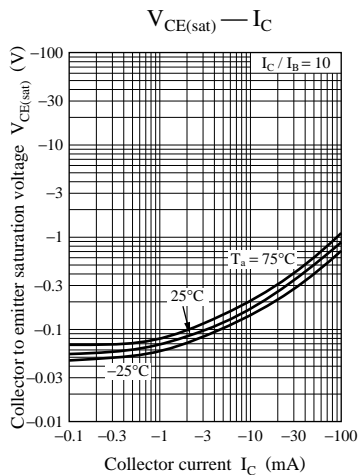
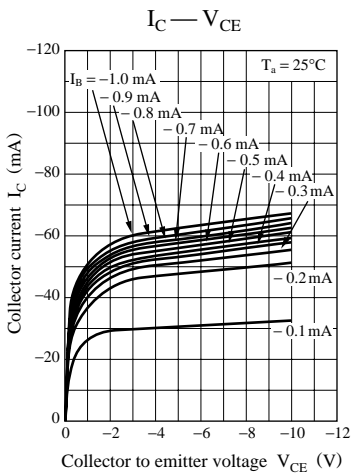
■ Electrical Characteristics (continued) $T_a = 25^\circ\text{C}$

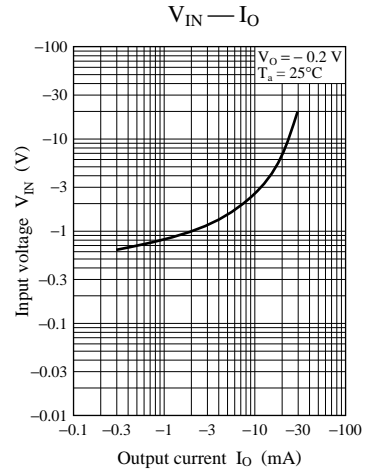
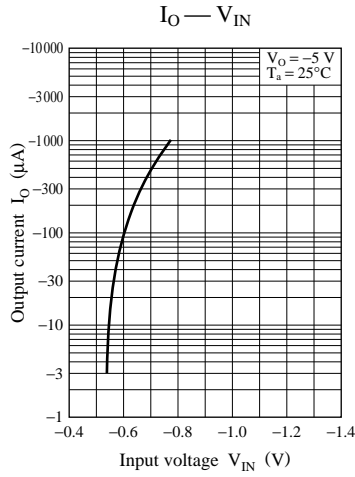
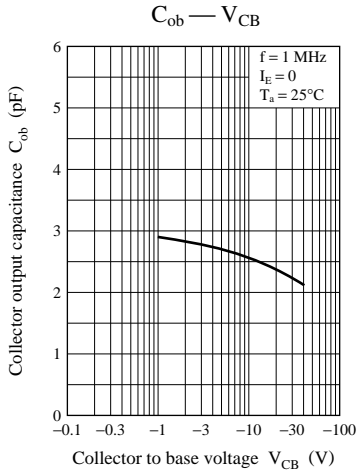
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resis- tance ratio	UNR2111/2112/2113/211L	R_1/R_2		0.8	1.0	1.2	
	UNR2114			0.17	0.21	0.25	
	UNR2118/2119			0.08	0.1	0.12	
	UNR211D				4.7		
	UNR211E				2.14		
	UNR211F/211T				0.47		
	UNR211H			0.17	0.22	0.27	
	UNR211M				0.047		
	UNR211N				0.1		
	UNR211V				1.0		
	UNR211Z				0.21		

Common characteristics chart

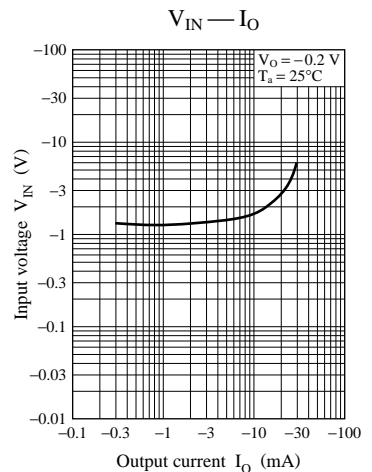
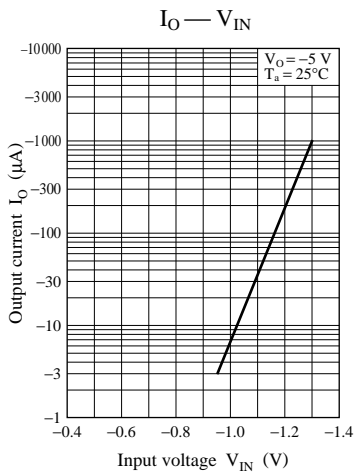
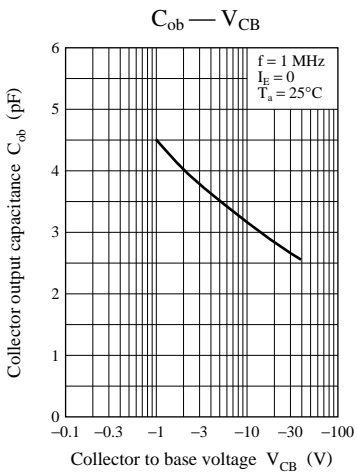
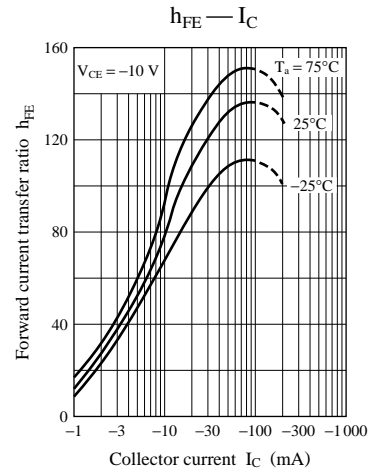
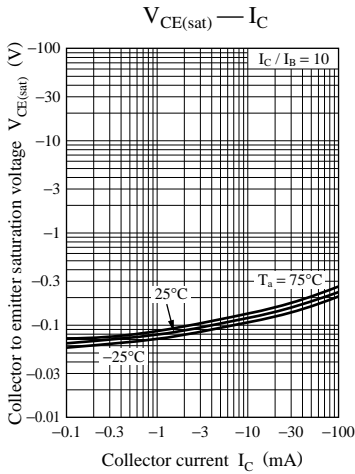
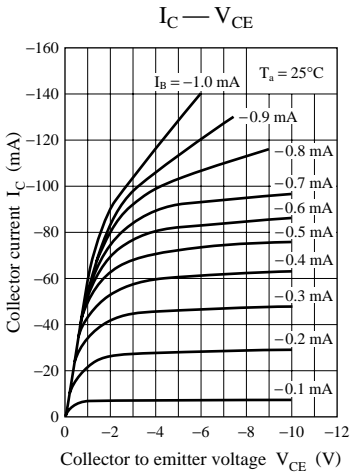


Characteristics charts of UNR2110

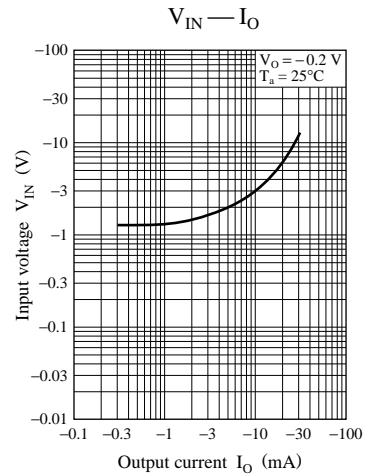
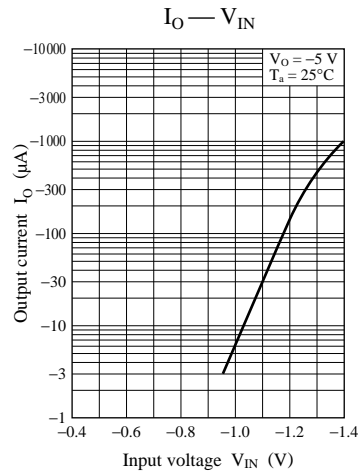
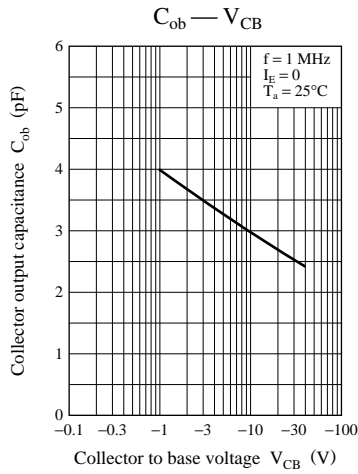
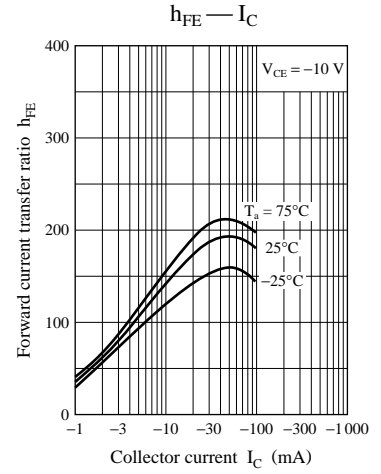
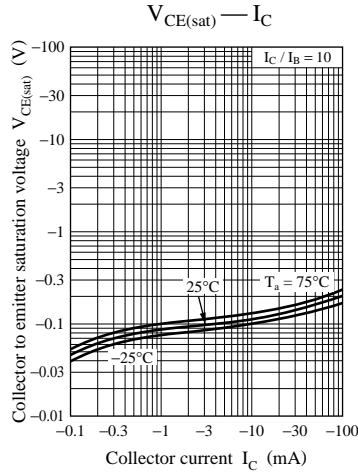
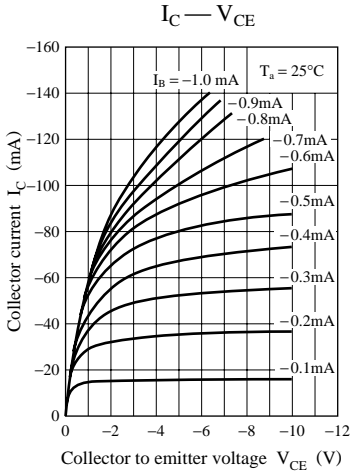




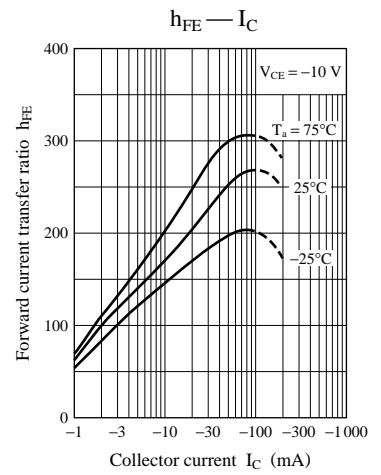
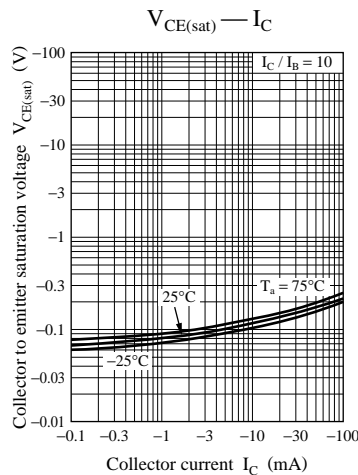
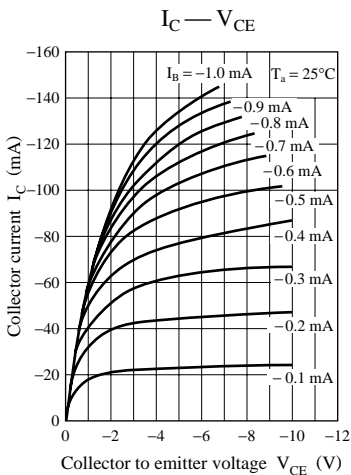
Characteristics charts of UNR2111

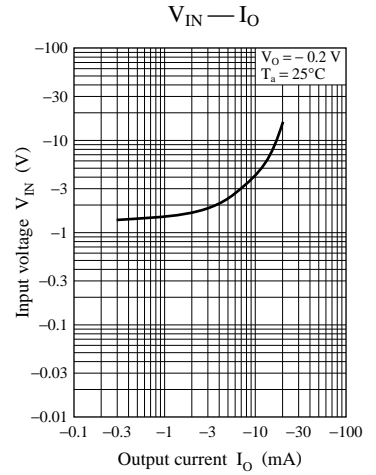
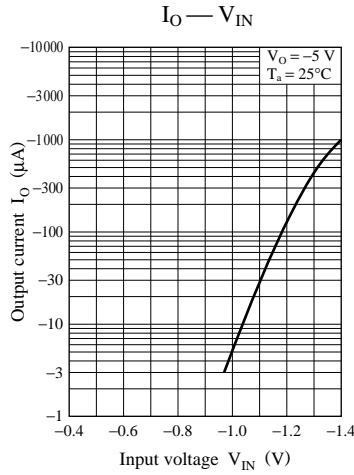
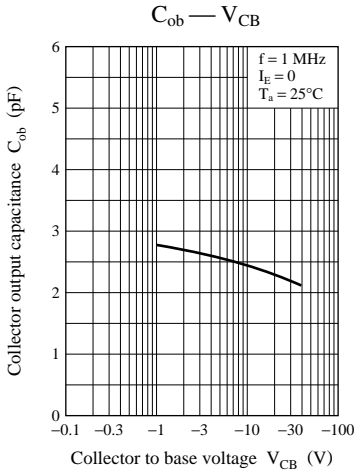


Characteristics charts of UNR2112

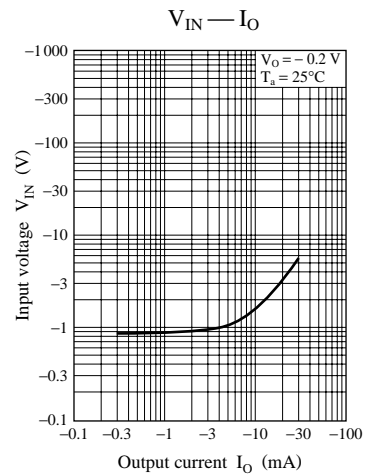
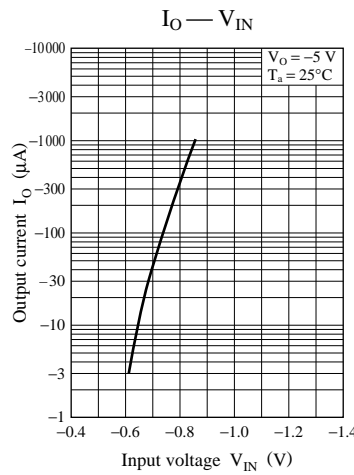
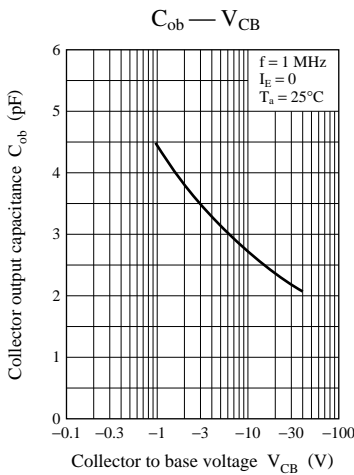
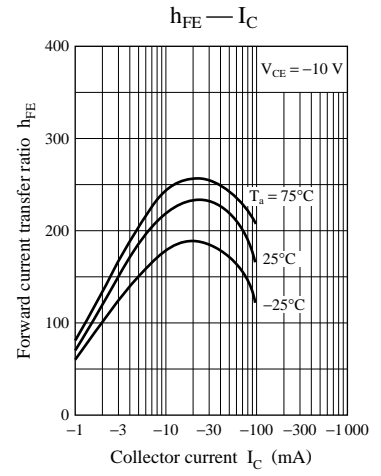
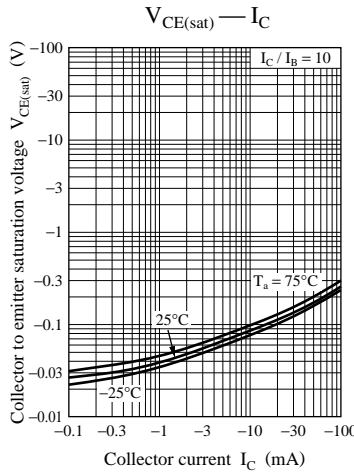
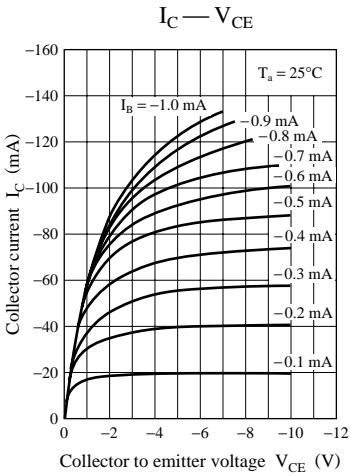


Characteristics charts of UNR2113

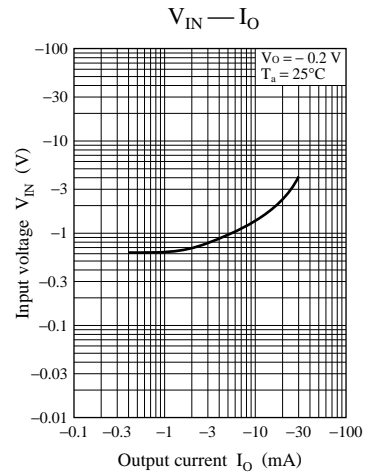
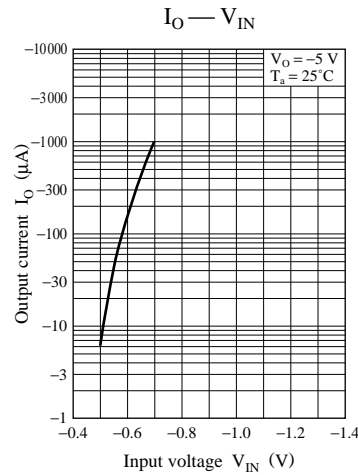
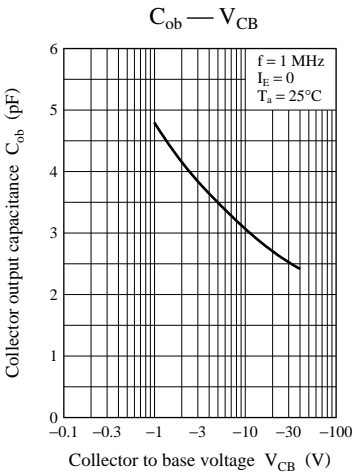
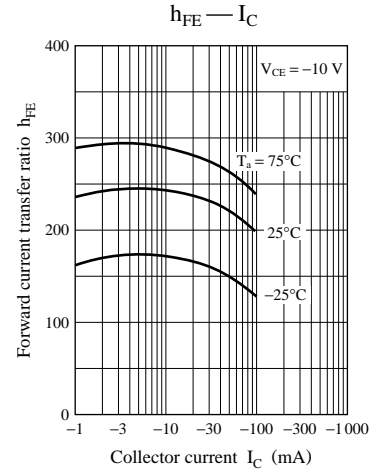
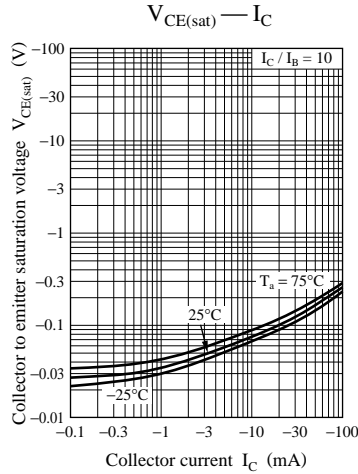
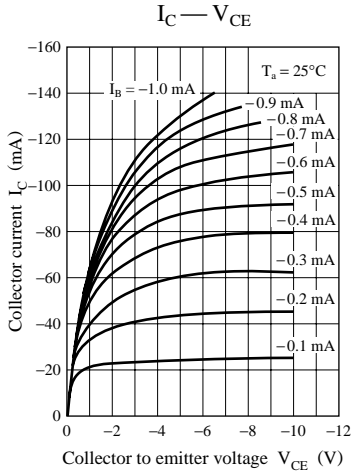




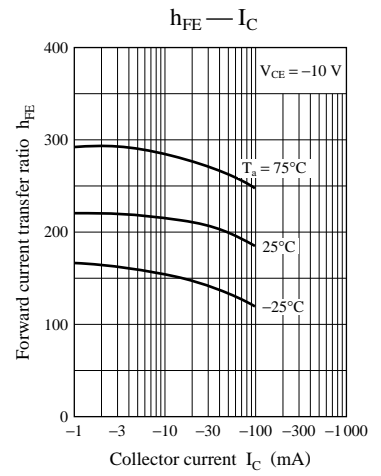
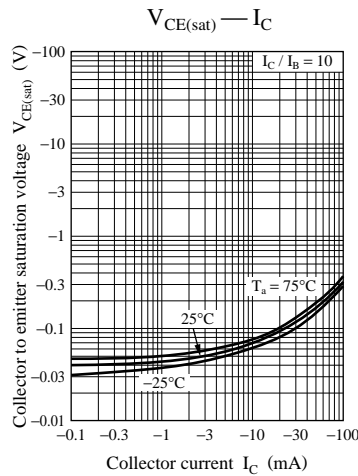
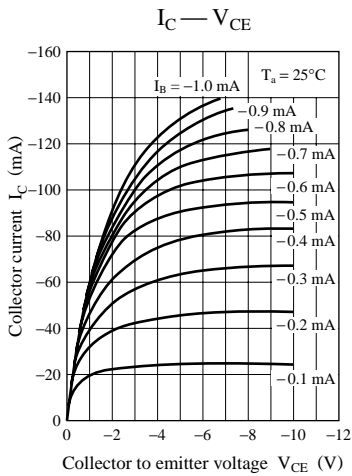
Characteristics charts of UNR2114

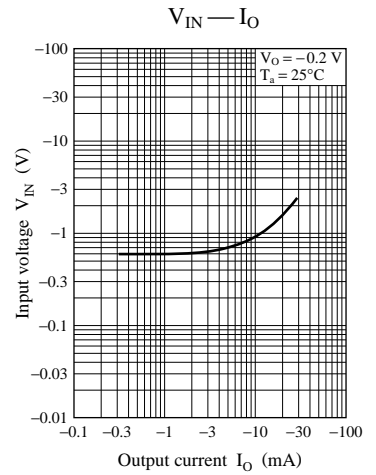
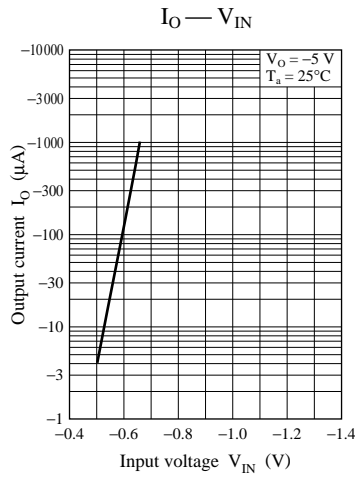
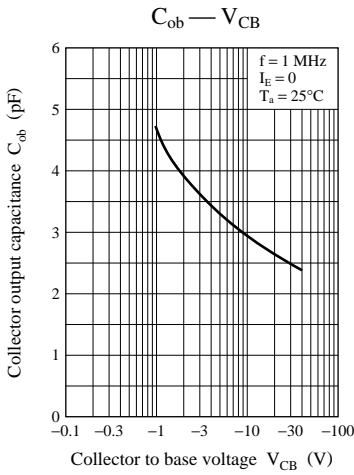


Characteristics charts of UNR2115

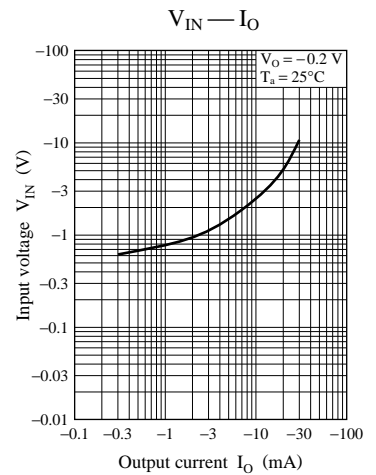
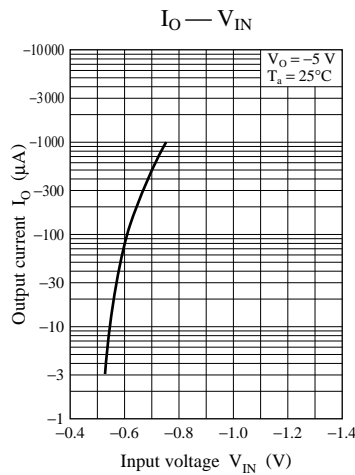
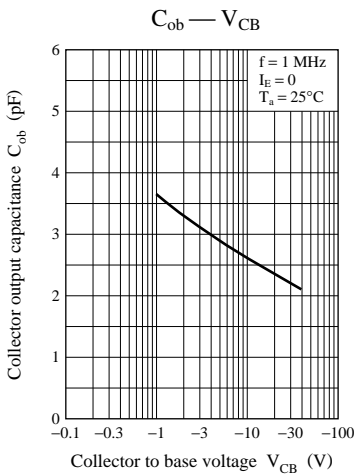
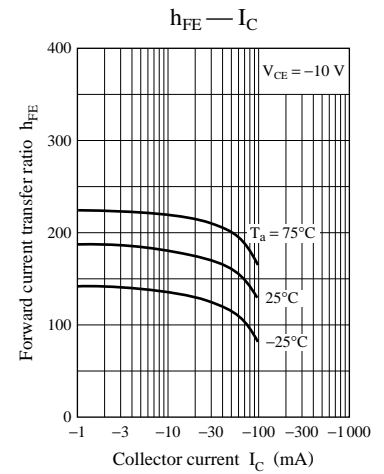
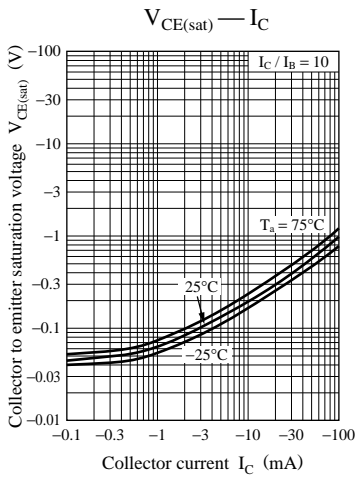
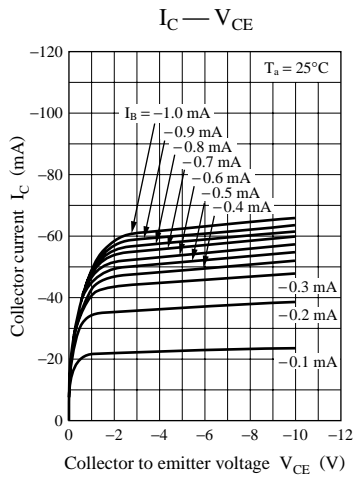


Characteristics charts of UNR2116

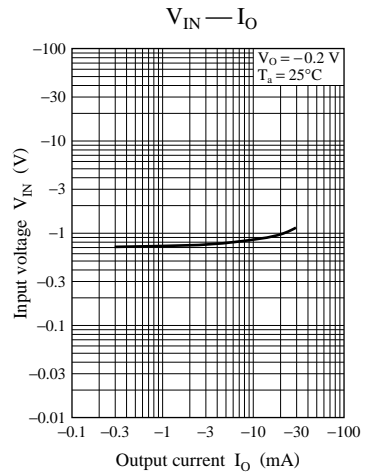
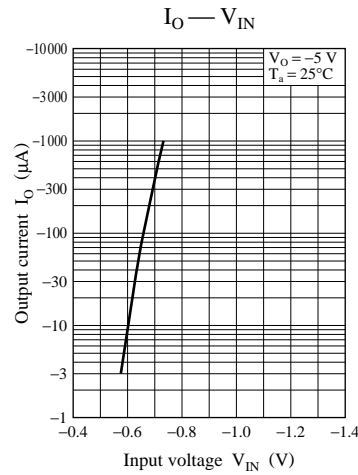
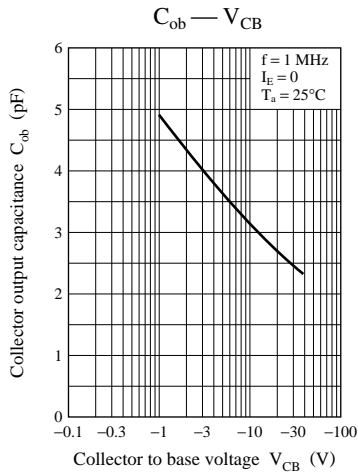
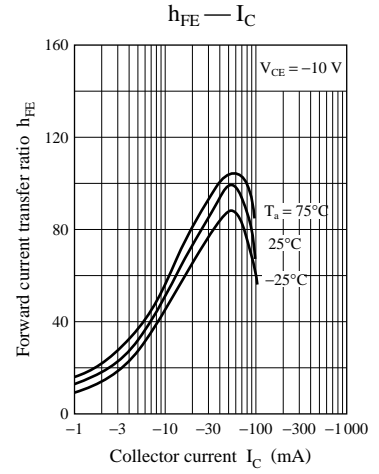
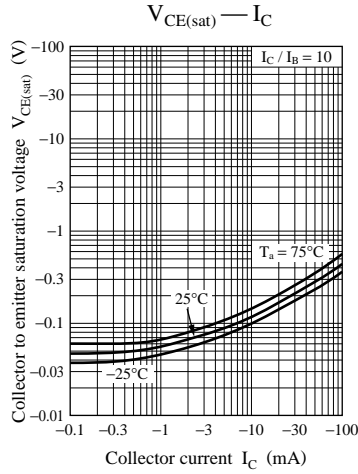
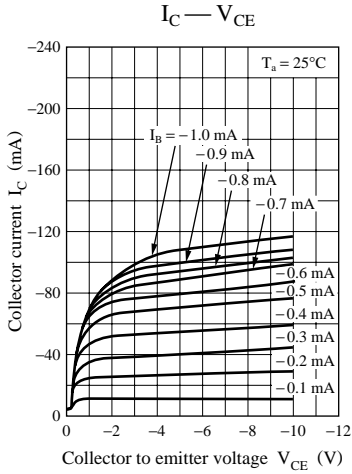




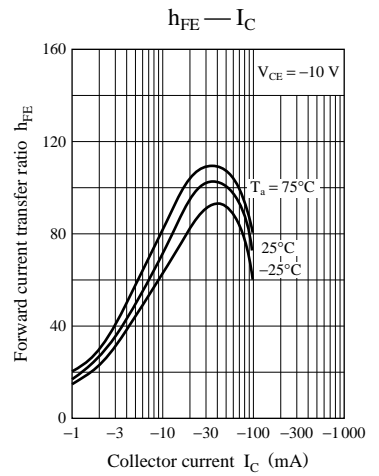
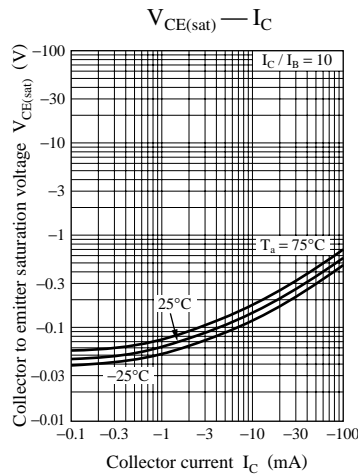
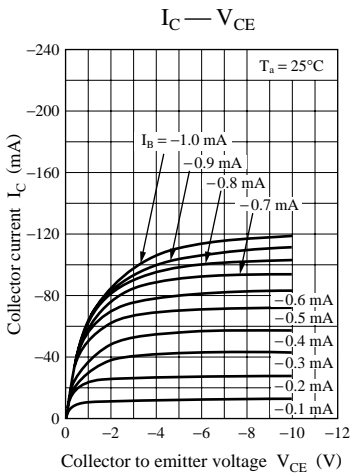
Characteristics charts of UNR2117

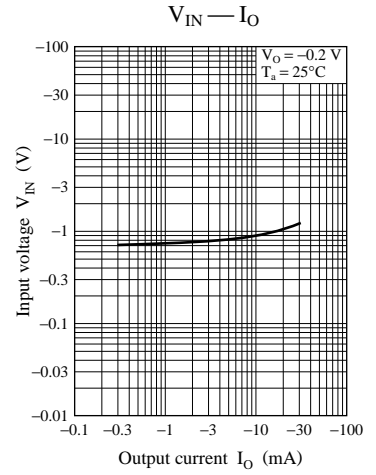
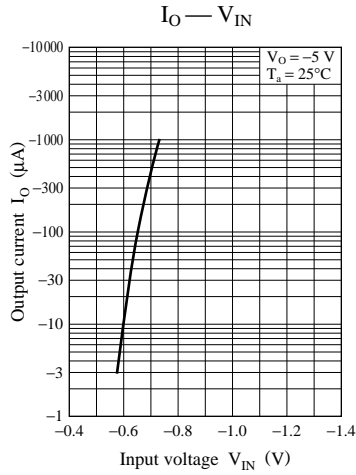
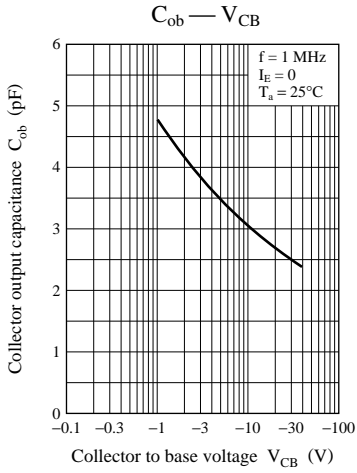


Characteristics charts of UNR2118

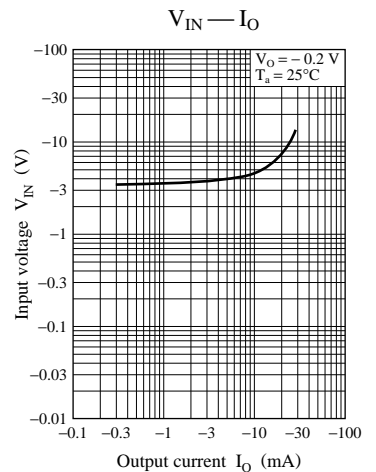
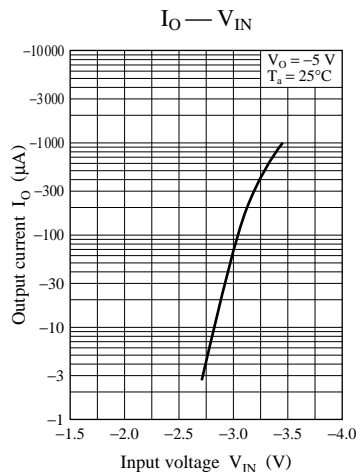
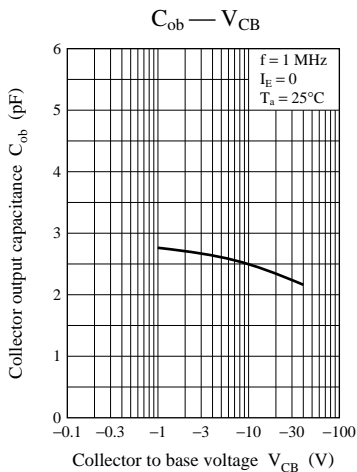
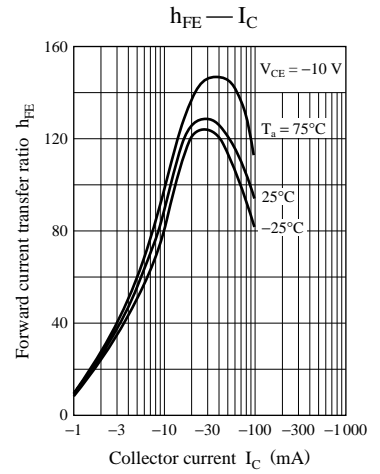
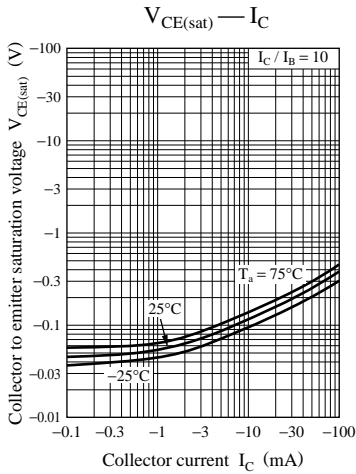
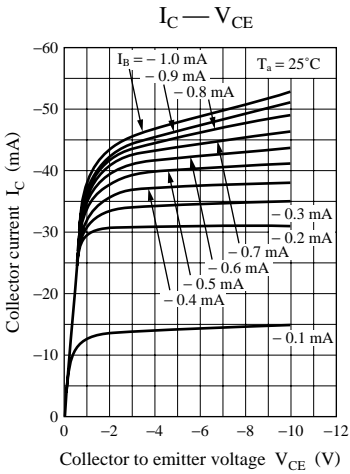


Characteristics charts of UNR2119

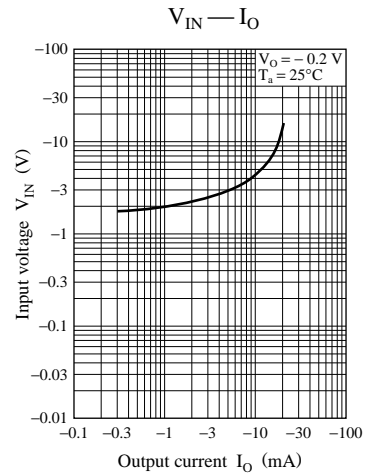
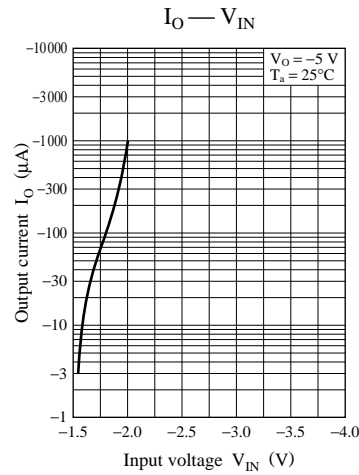
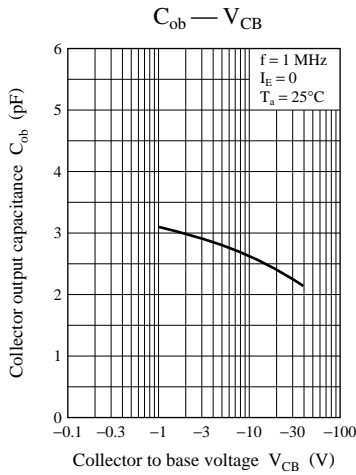
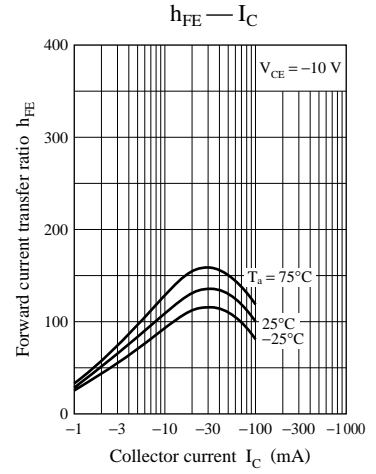
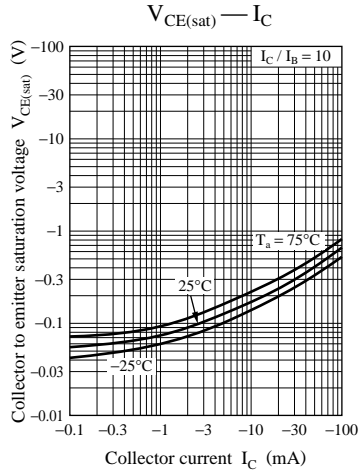
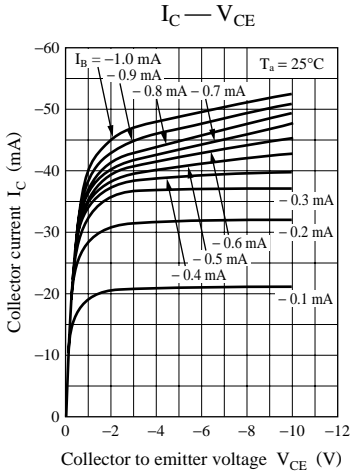




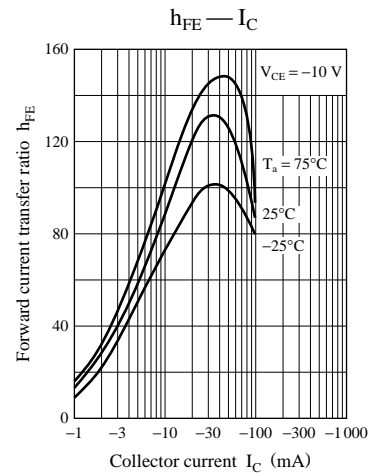
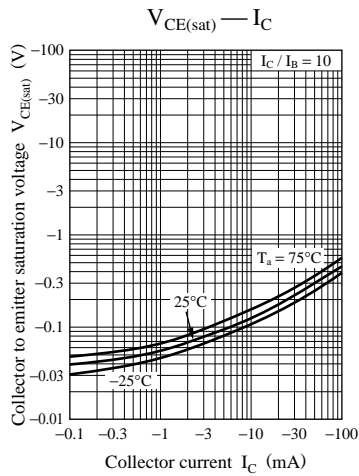
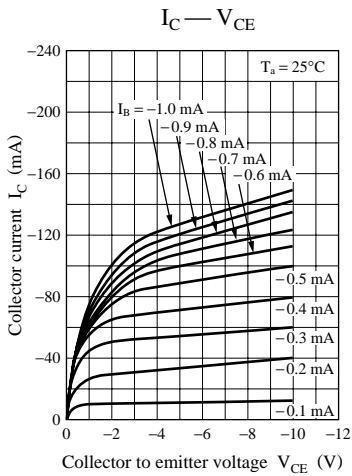
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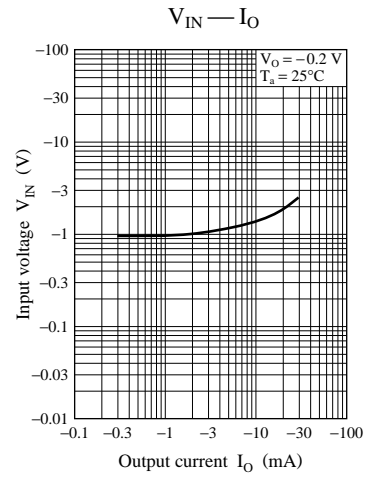
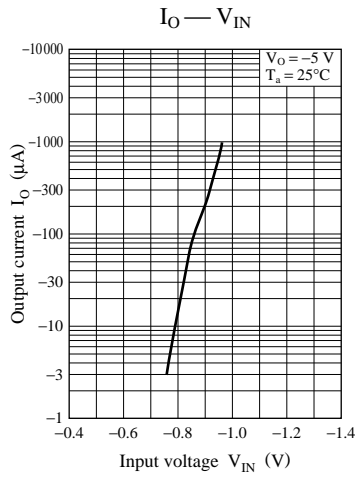
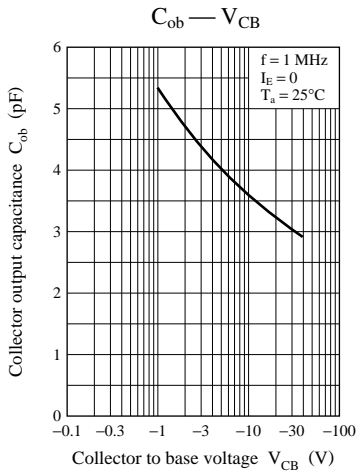


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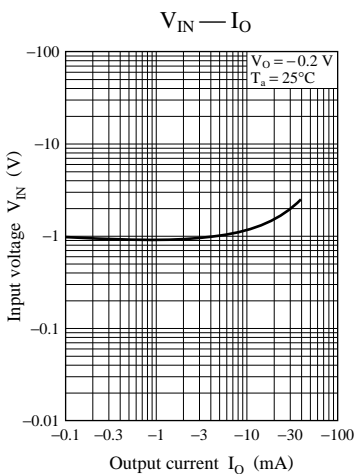
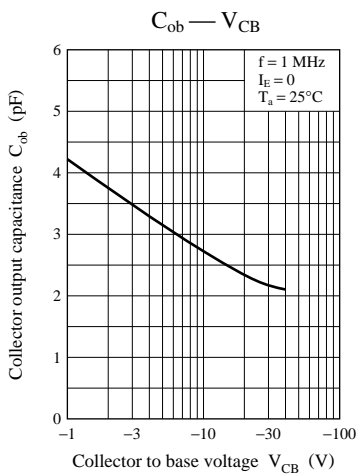
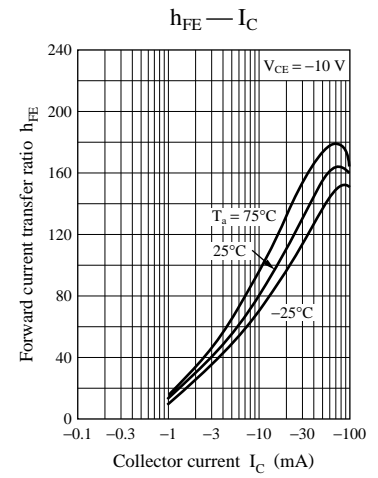
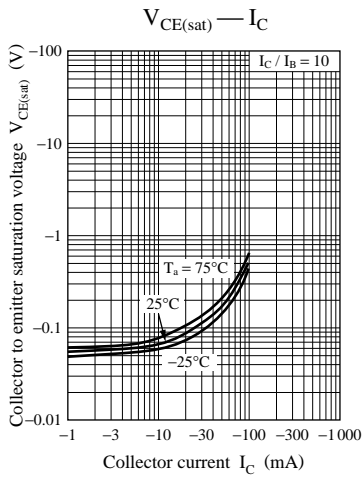
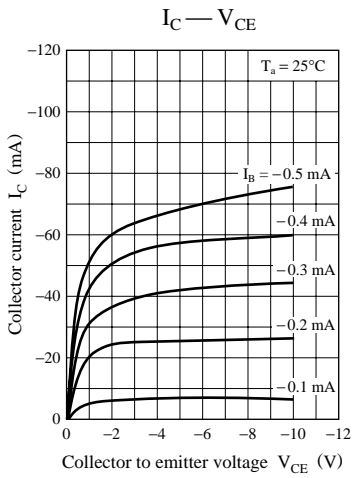


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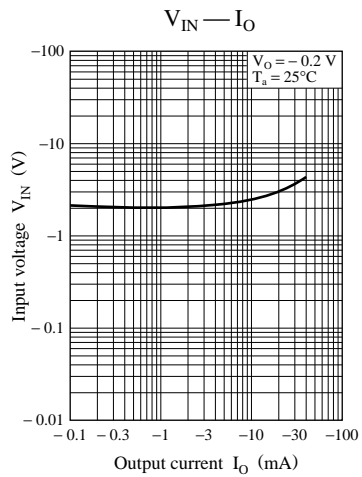
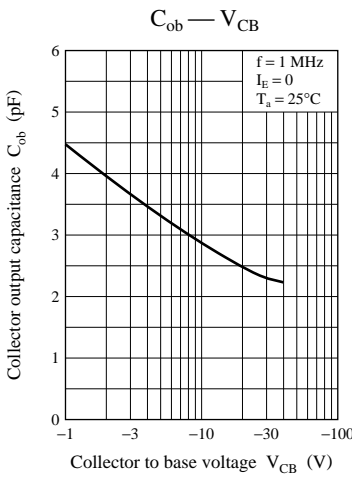
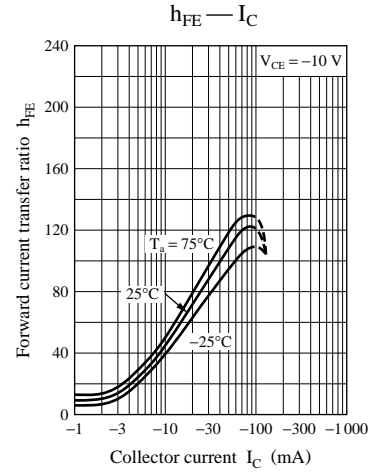
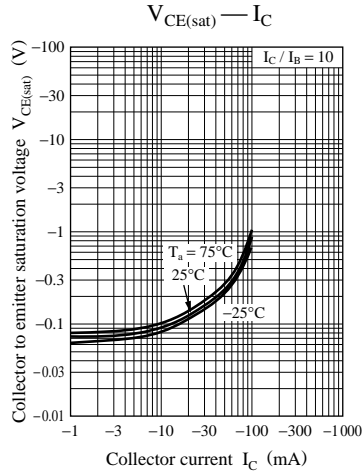
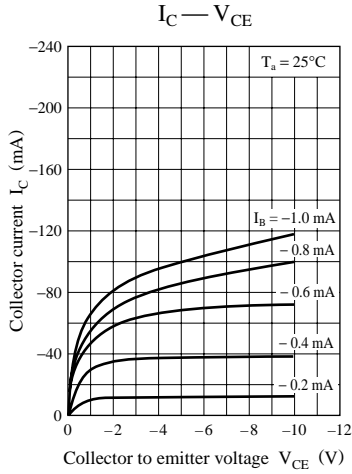




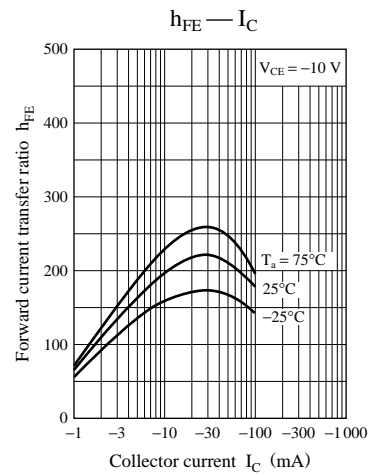
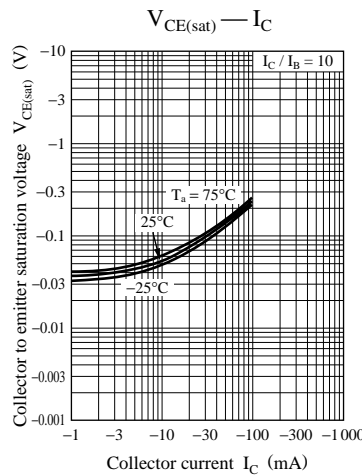
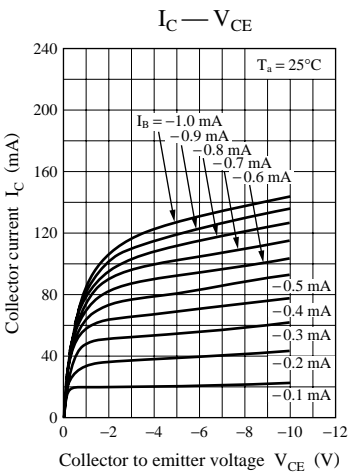
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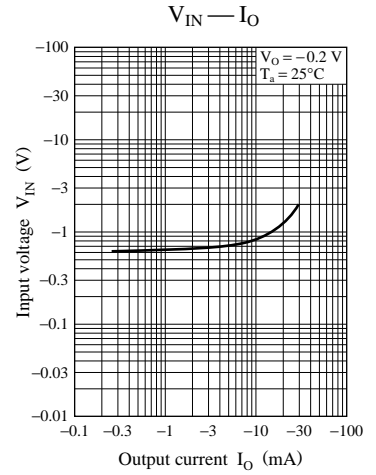
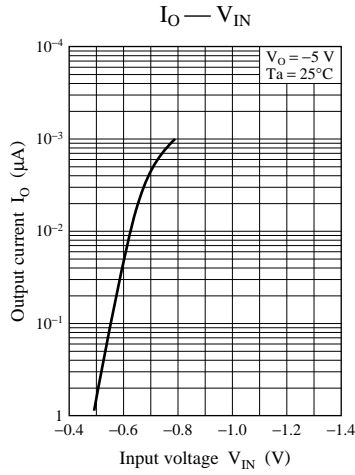
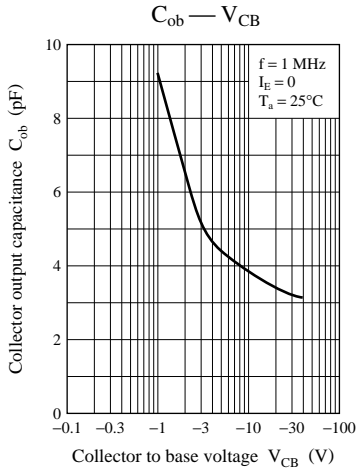


Characteristics charts of UNR211L

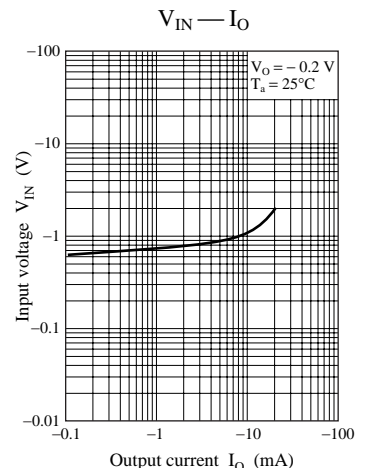
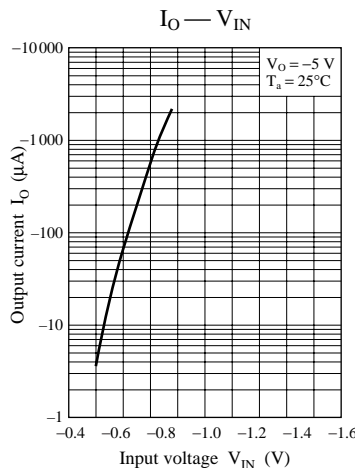
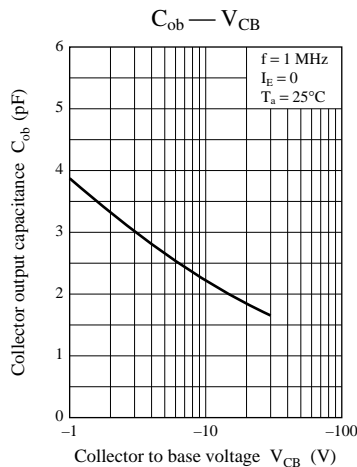
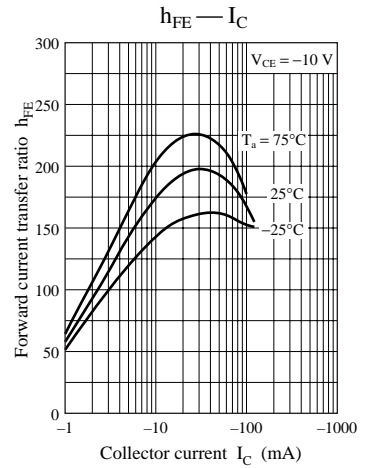
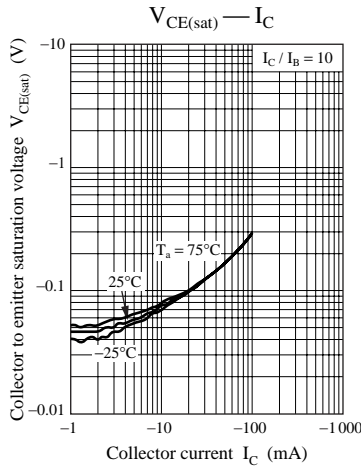
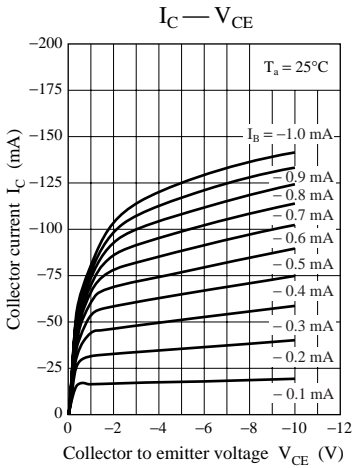


Characteristics charts of UNR211M

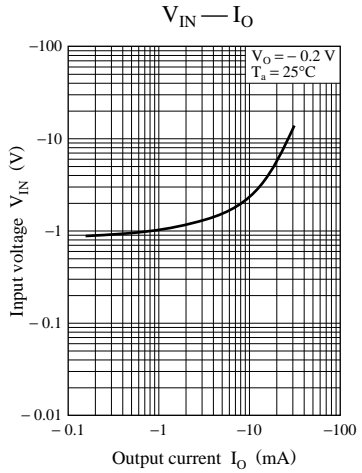
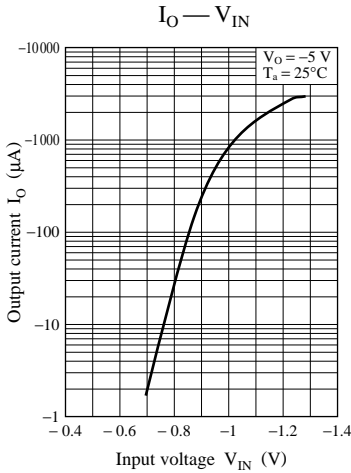
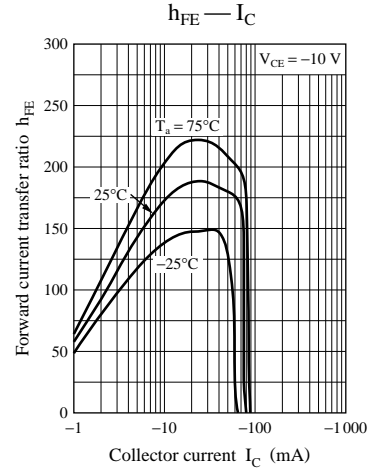
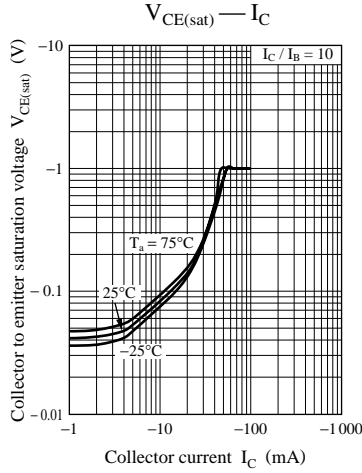
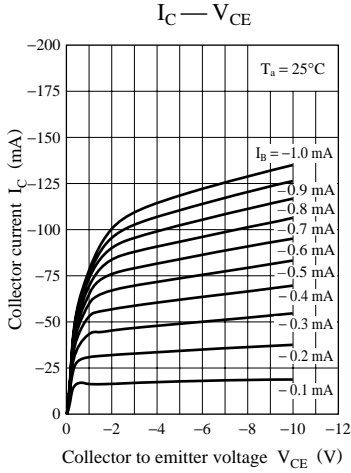




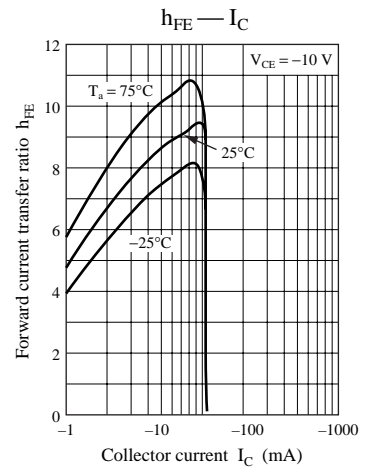
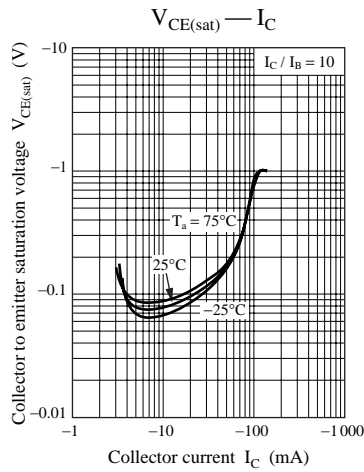
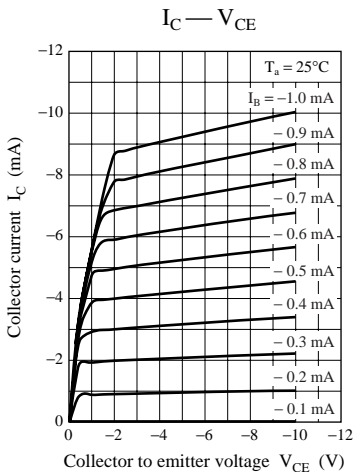
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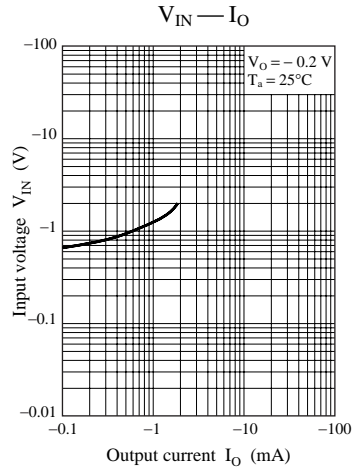
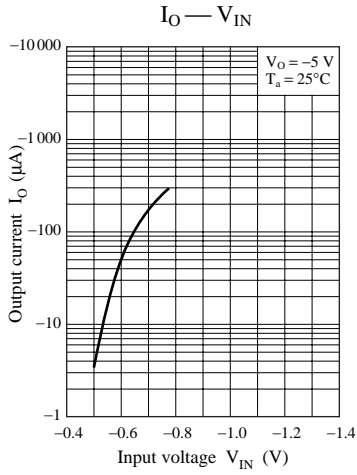


Characteristics charts of UNR211T

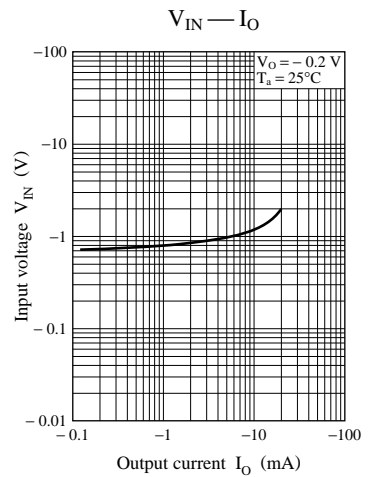
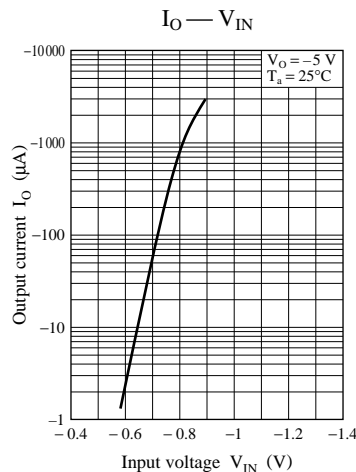
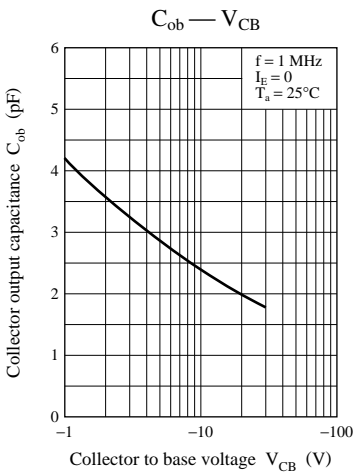
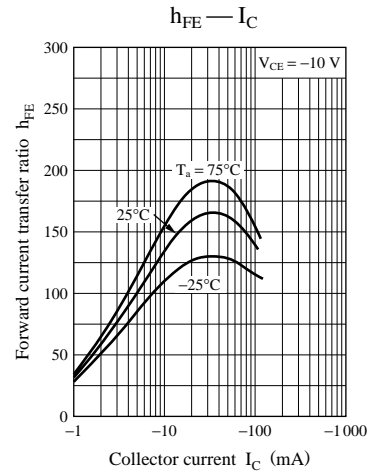
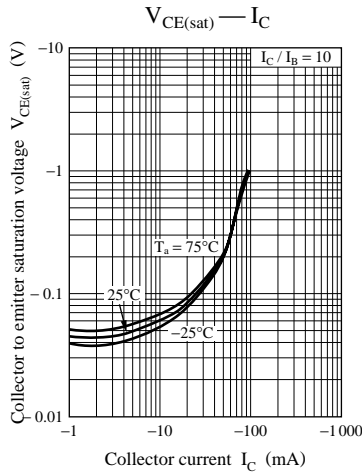
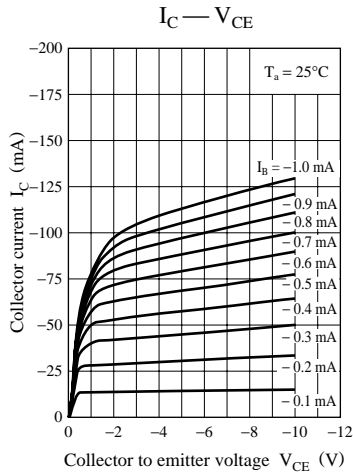


Characteristics charts of UNR211V





Characteristics charts of UNR211Z



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