

UNR411x Series (UN411x Series)

Silicon PNP epitaxial planar type

For digital circuits

■ Features

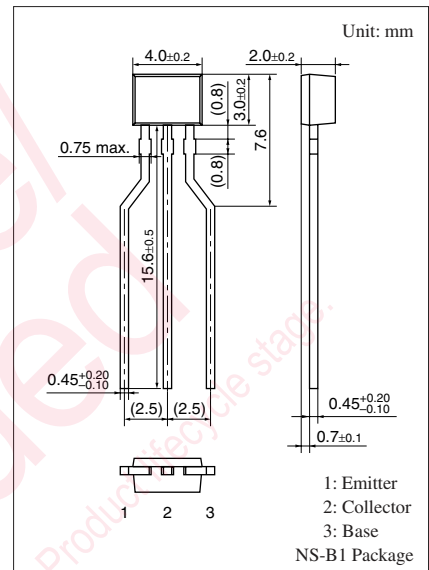
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- New S type package, allowing supply with the radial taping

■ Resistance by Part Number

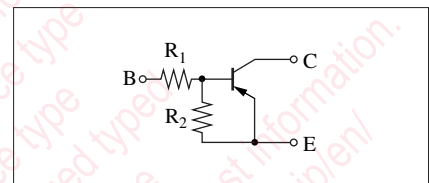
	(R ₁)	(R ₂)
• UNR4110 (UN4110)	47 kΩ	—
• UNR4111 (UN4111)	10 kΩ	10 kΩ
• UNR4112 (UN4112)	22 kΩ	22 kΩ
• UNR4113 (UN4113)	47 kΩ	47 kΩ
• UNR4114 (UN4114)	10 kΩ	47 kΩ
• UNR4115 (UN4115)	10 kΩ	—
• UNR4116 (UN4116)	4.7 kΩ	—
• UNR4117 (UN4117)	22 kΩ	—
• UNR4118 (UN4118)	0.51 kΩ	5.1 kΩ
• UNR4119 (UN4119)	1 kΩ	10 kΩ
• UNR411D (UN411D)	47 kΩ	10 kΩ
• UNR411E (UN411E)	47 kΩ	22 kΩ
• UNR411F (UN411F)	4.7 kΩ	10 kΩ
• UNR411H (UN411H)	2.2 kΩ	10 kΩ
• UNR411L (UN411L)	4.7 kΩ	4.7 kΩ
• UNR411M	2.2 kΩ	47 kΩ
• UNR411N	4.7 kΩ	47 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	300	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}	$I_C = -10 \mu\text{A}, I_E = 0$	-50			V	
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -2 \text{mA}, I_B = 0$	-50			V	
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -50 \text{V}, I_E = 0$			-0.1	μA	
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = -50 \text{V}, I_B = 0$			-0.5	μA	
Emitter-base cutoff current (Collector open)	UNR4110/4115/4116/4117	I_{EBO}				-0.01	
	UNR4113					-0.1	
	UNR4112/4114/411D/411E/411M/411N					-0.2	
	UNR4111					-0.5	
	UNR411F/411H					-1.0	
	UNR4119					-1.5	
	UNR4118/411L					-2.0	
Forward current transfer ratio	UNR4118/411L	h_{FE}	$V_{CE} = -10 \text{V}, I_C = -5 \text{mA}$			20	
	UNR4119/411D/411F/411H					30	
	UNR4111					35	
	UNR4112/411E					60	
	UNR4113/4114/411M					80	
	UNR411N					80	400
	UNR4110*/4115*/4116*/4117*					160	460
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10 \text{mA}, I_B = -0.3 \text{mA}$			-0.25	V	
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	
						$V_{CC} = -5 \text{V}, V_B = -3.5 \text{V}, R_L = 1 \text{k}\Omega$	
						$V_{CC} = -5 \text{V}, V_B = -10 \text{V}, R_L = 1 \text{k}\Omega$	
						$V_{CC} = -5 \text{V}, V_B = -6 \text{V}, R_L = 1 \text{k}\Omega$	
Transition frequency	f_T	$V_{CB} = -10 \text{V}, I_E = 1 \text{mA}, f = 200 \text{MHz}$		80		MHz	
Input resistance	UNR4118	R_1		-30%	0.51	+30%	k Ω
	UNR4119						
	UNR411H/411M						
	UNR4116/411F/411L/411N						
	UNR4111/4114/4115						
	UNR4112/4117						
	UNR4110/4113/411D/411E						

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

2. *: Rank classification

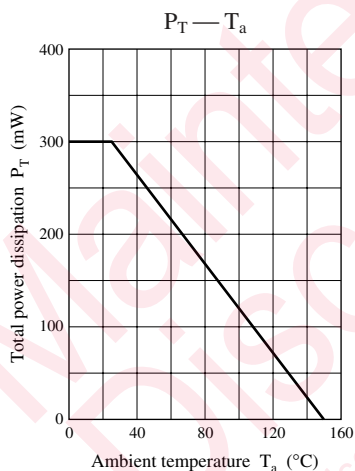
Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

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

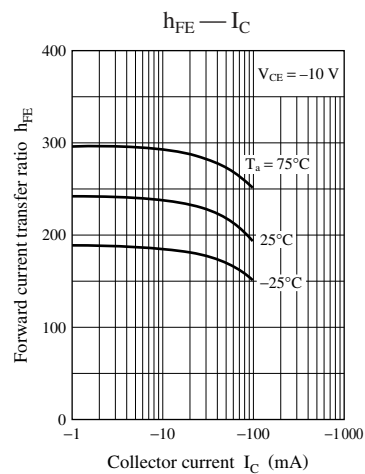
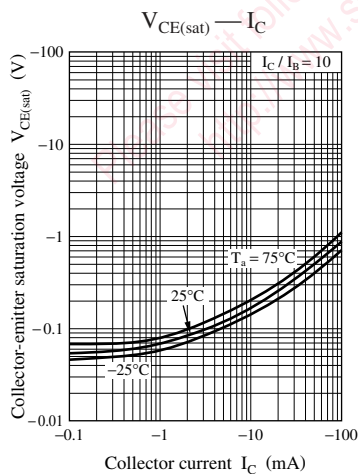
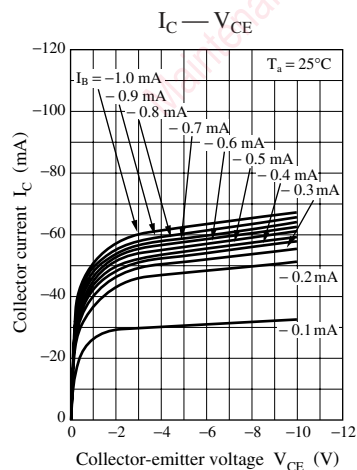
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR411M	R_1/R_2			0.047		—
	UNR411N				0.1		
	UNR4118/4119			0.08	0.10	0.12	
	UNR4114			0.17	0.21	0.25	
	UNR411H			0.17	0.22	0.27	
	UNR411F			0.37	0.47	0.57	
	UNR4111/4112/4113/411L			0.8	1.0	1.2	
	UNR411E			1.70	2.14	2.60	
	UNR411D		3.7	4.7	5.7		

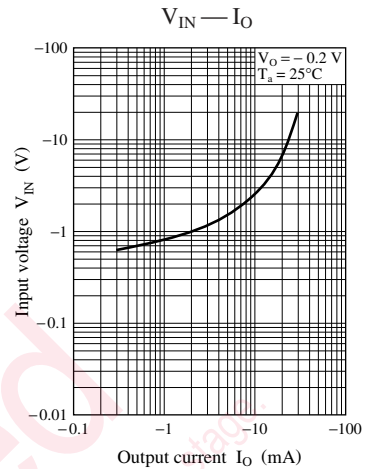
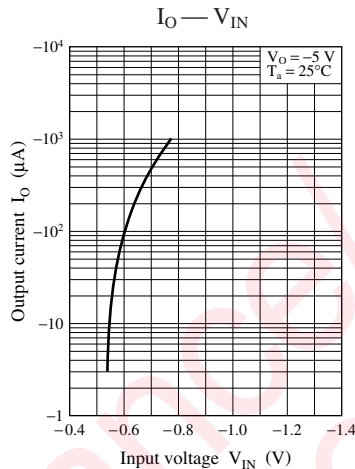
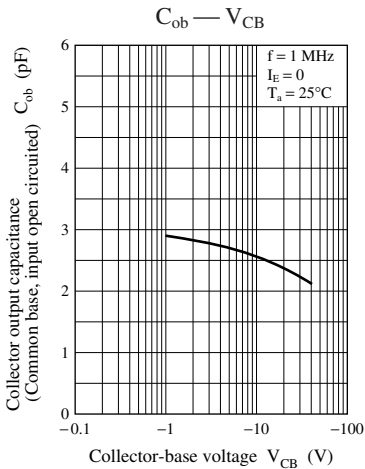
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

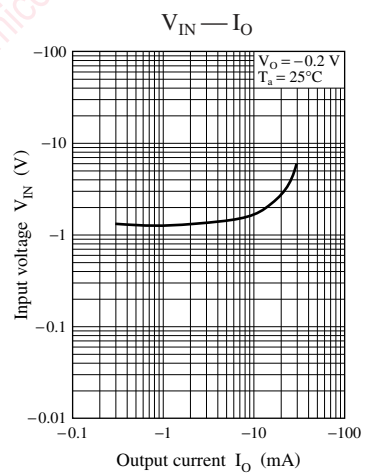
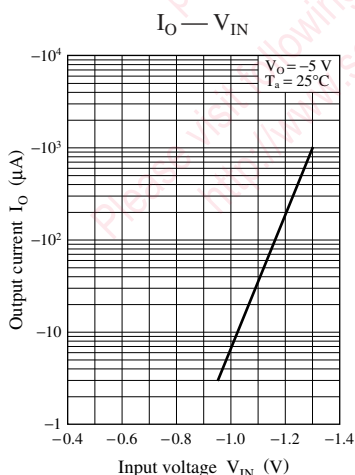
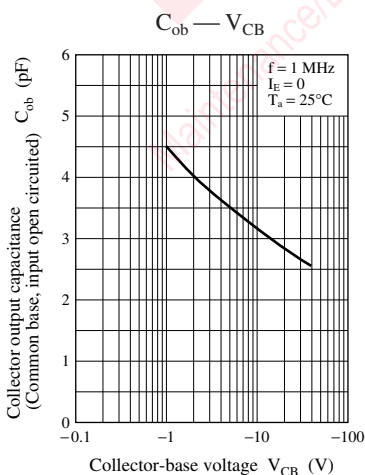
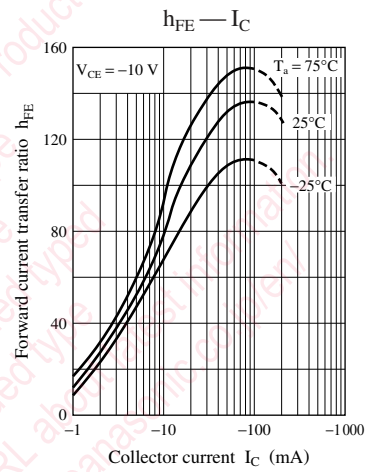
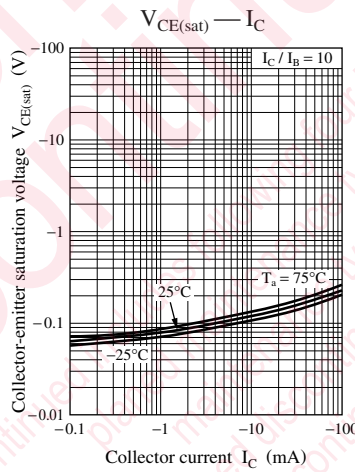
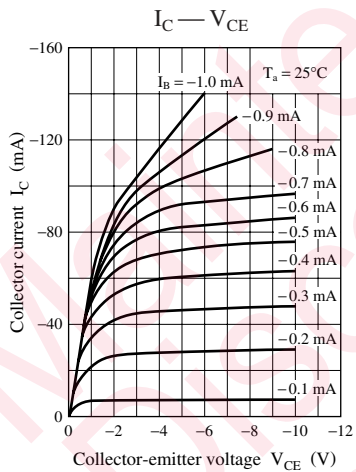


Characteristics charts of UNR4110

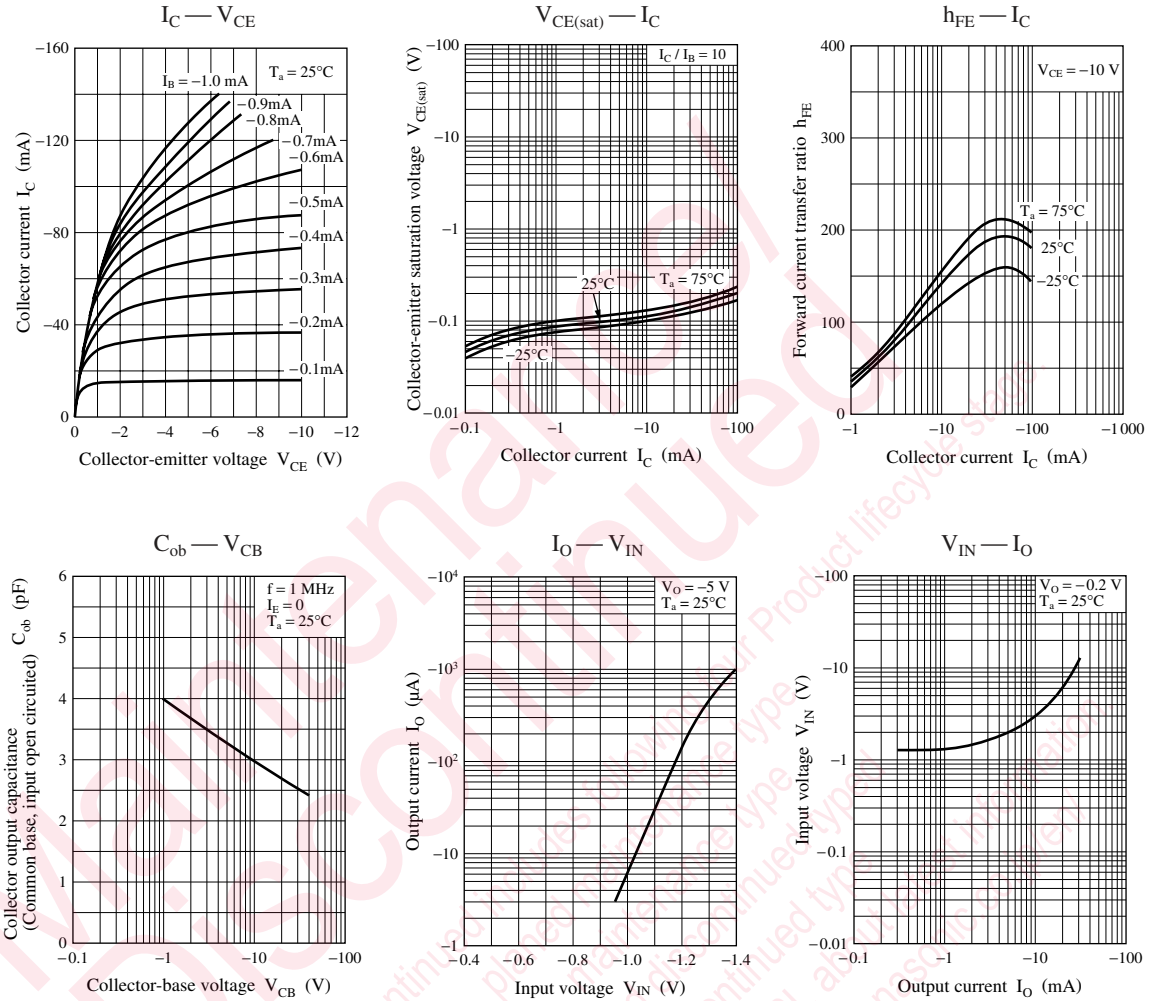




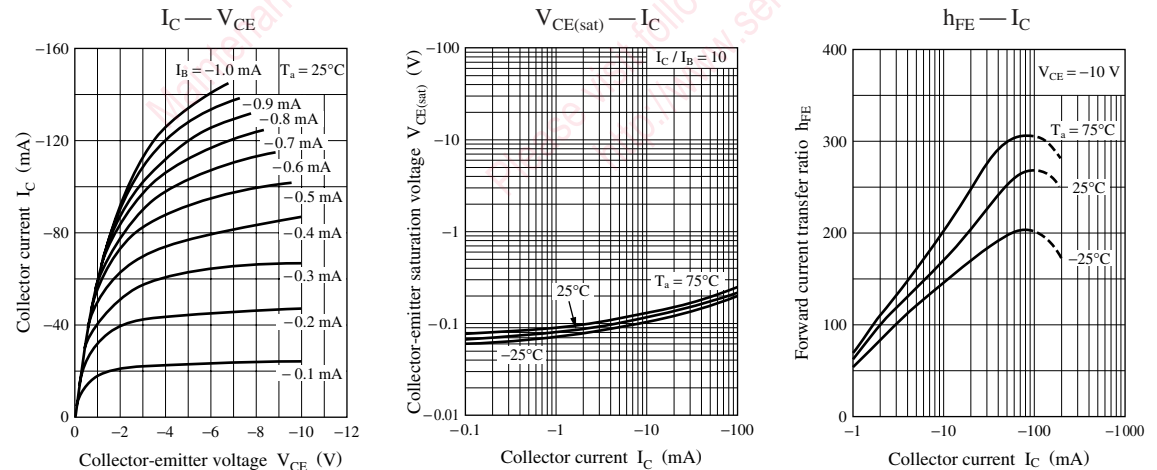
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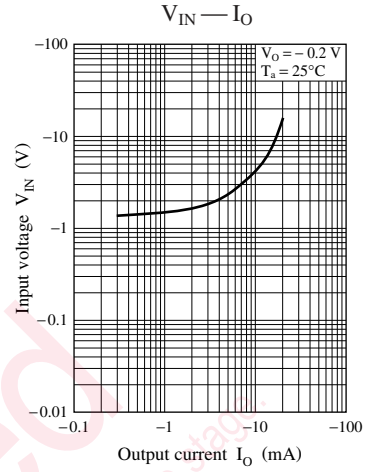
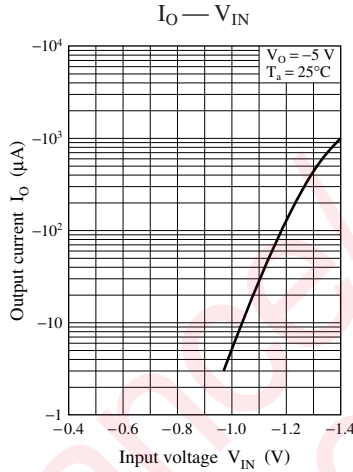
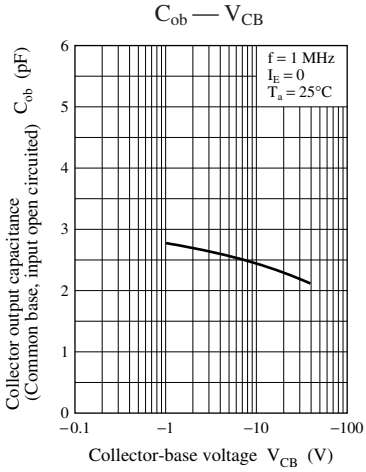


Characteristics charts of UNR4112

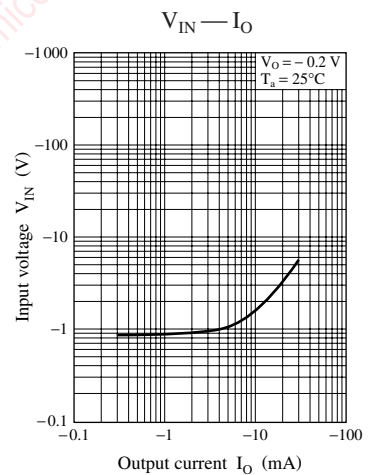
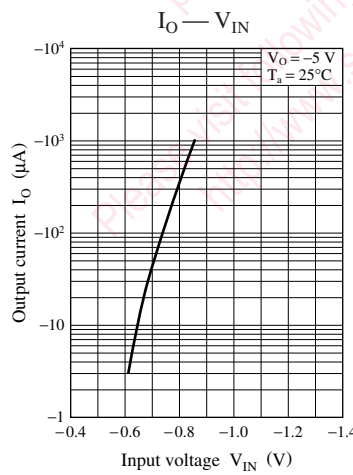
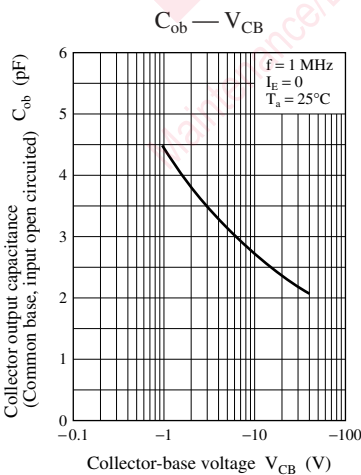
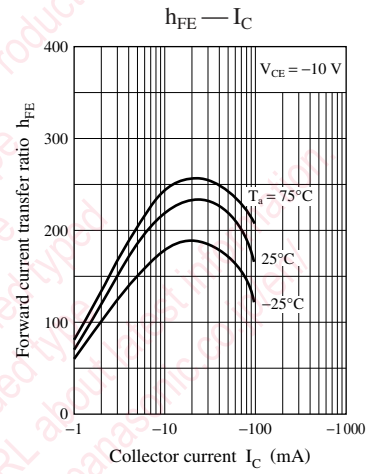
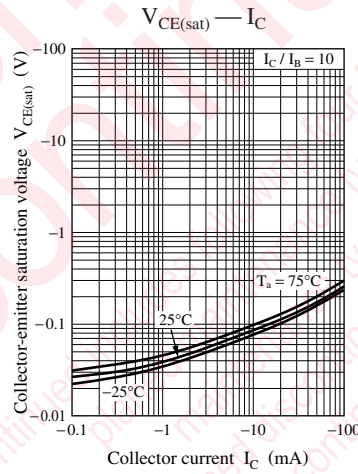
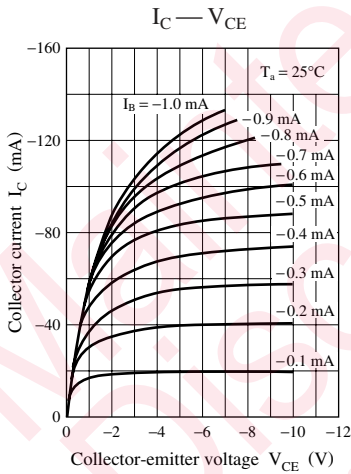


Characteristics charts of UNR4113

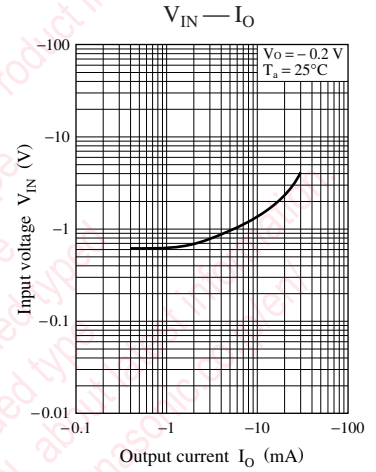
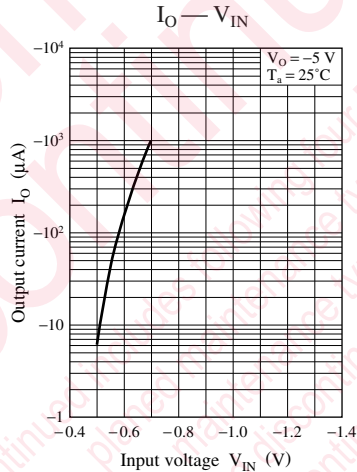
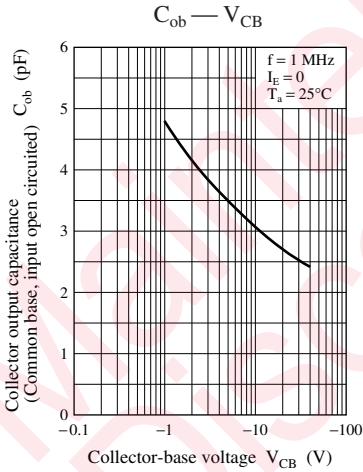
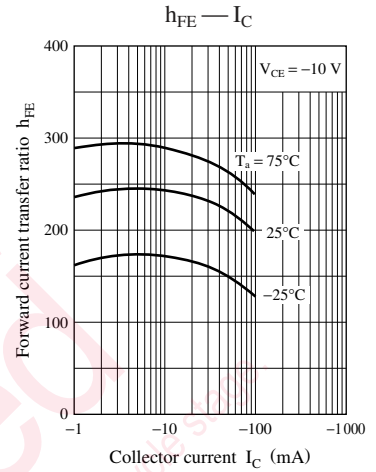
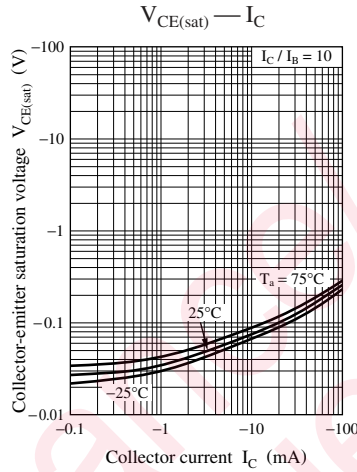
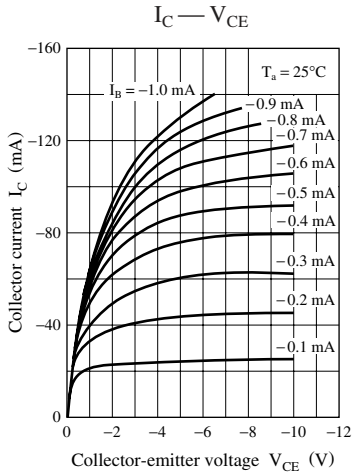




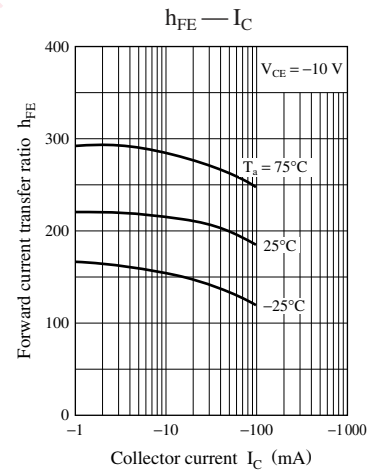
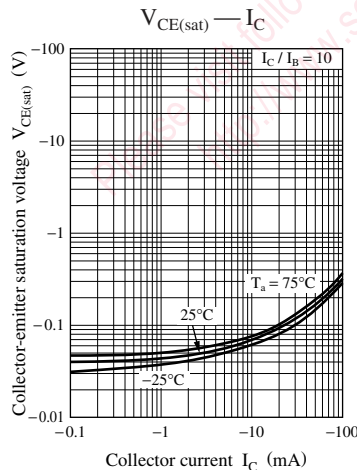
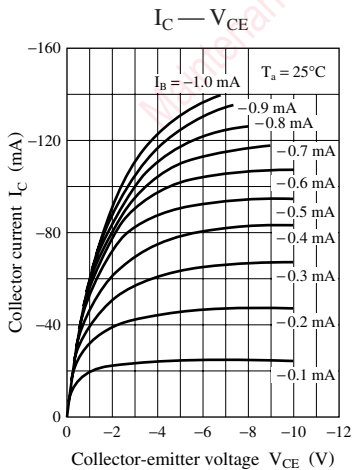
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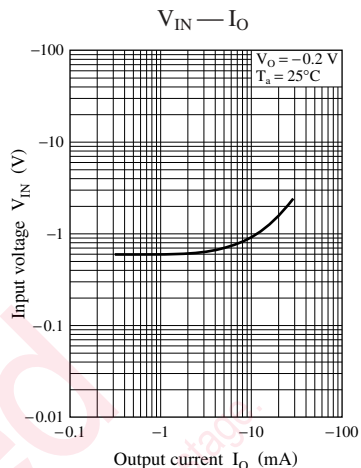
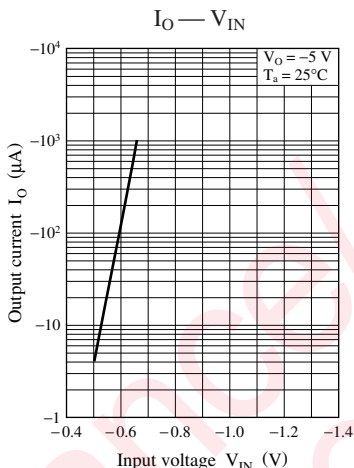
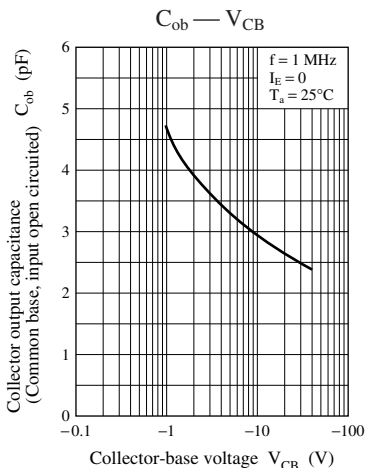


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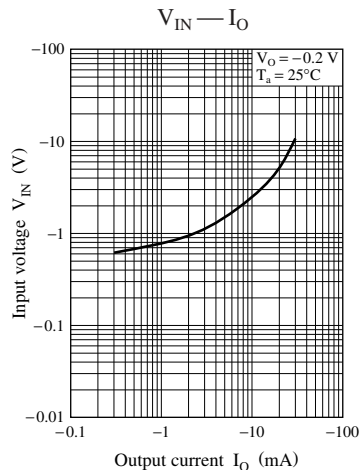
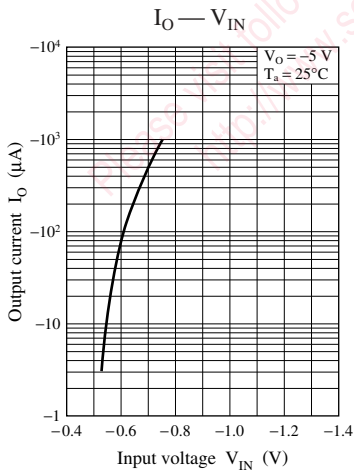
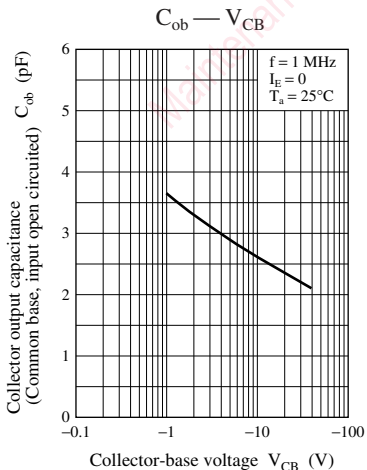
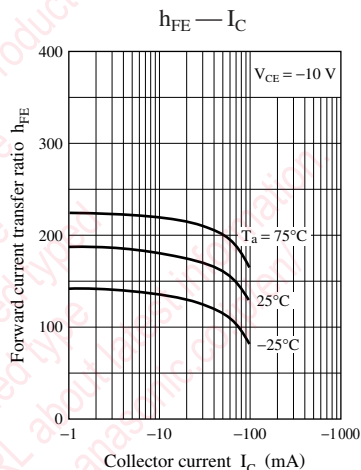
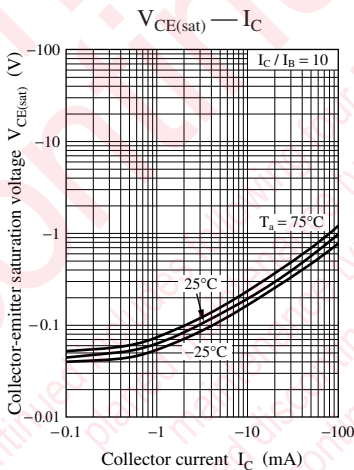
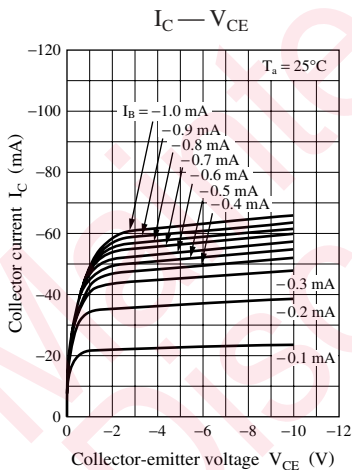


Characteristics charts of UNR4116

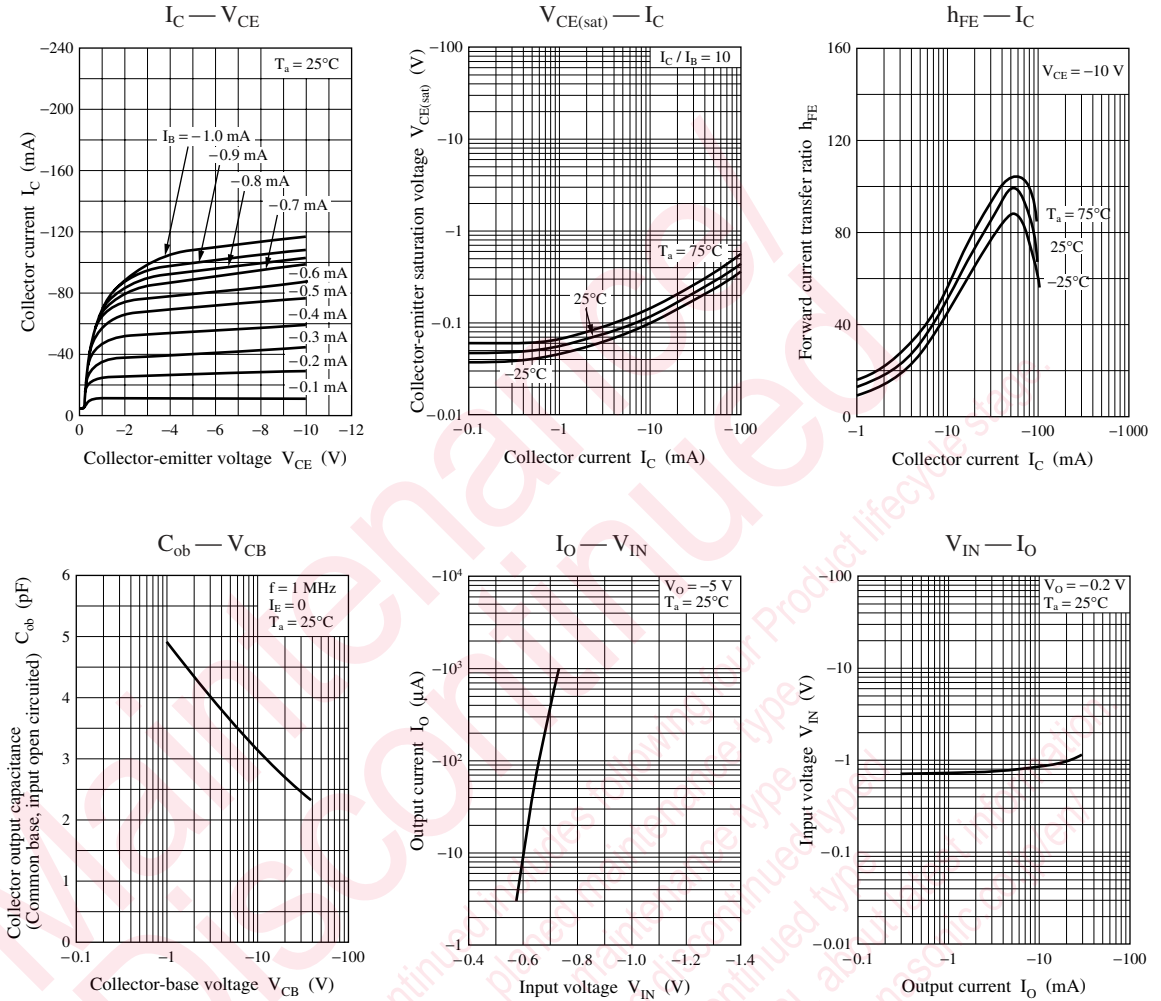




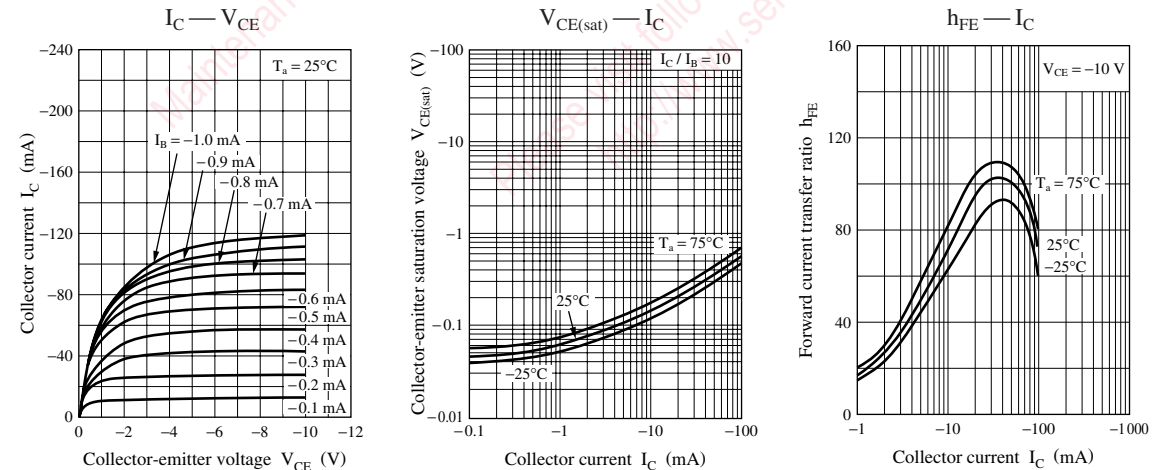
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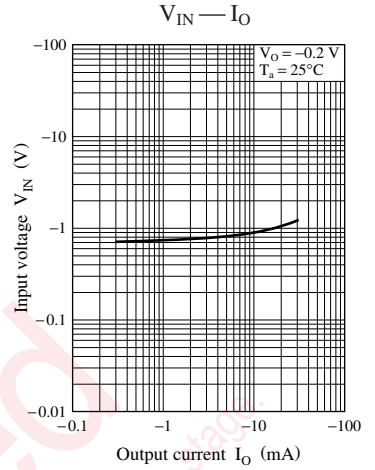
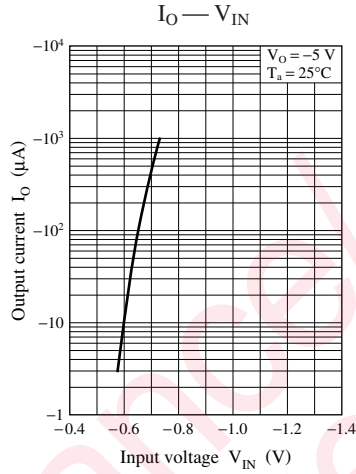
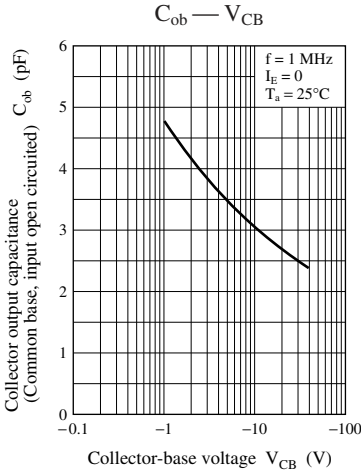


Characteristics charts of UNR4118

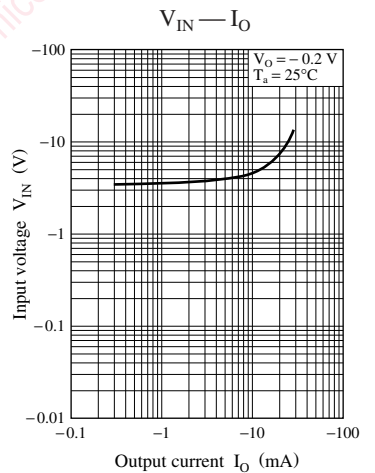
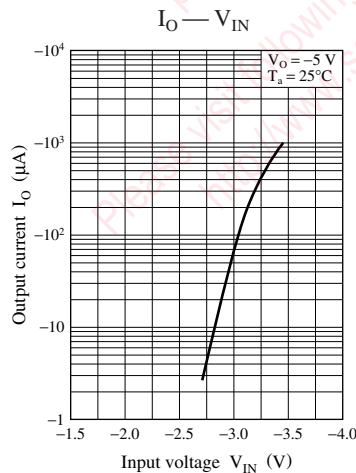
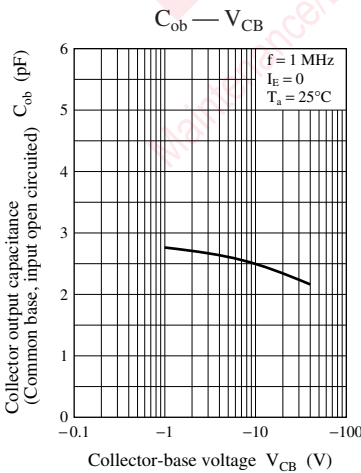
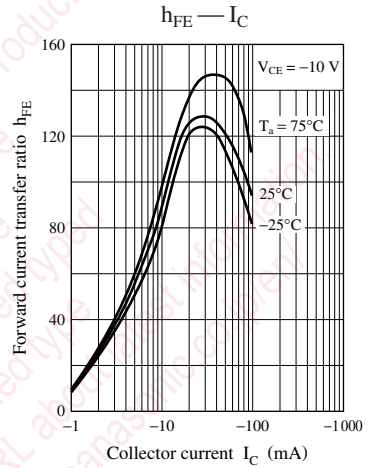
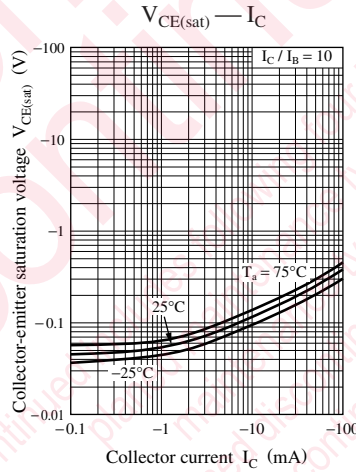
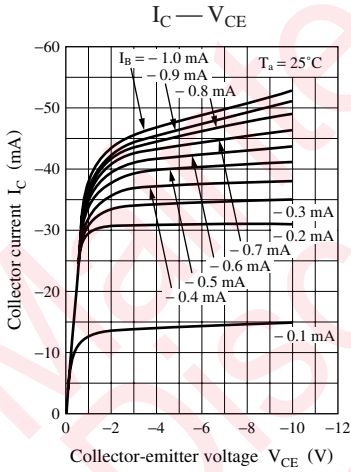


Characteristics charts of UNR4119

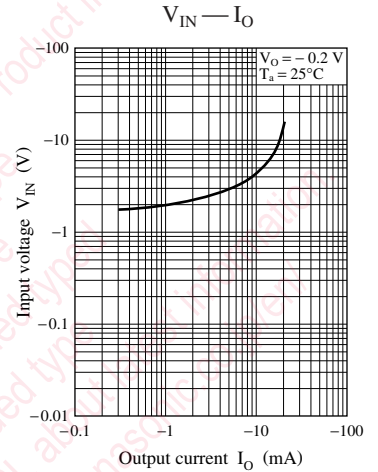
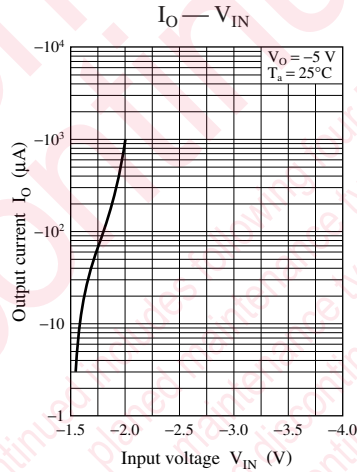
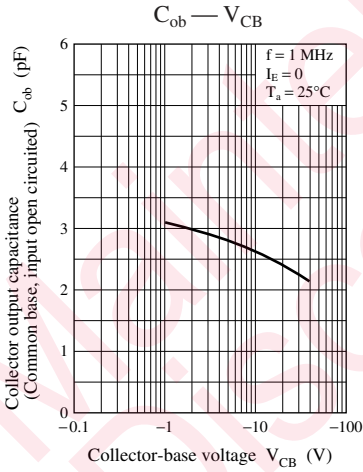
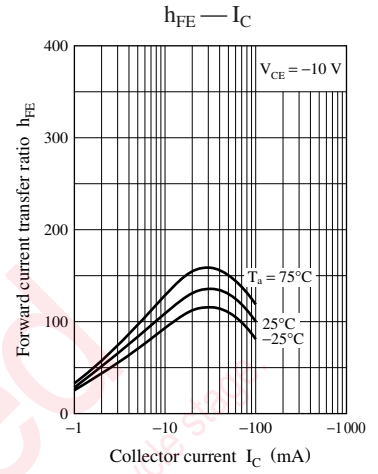
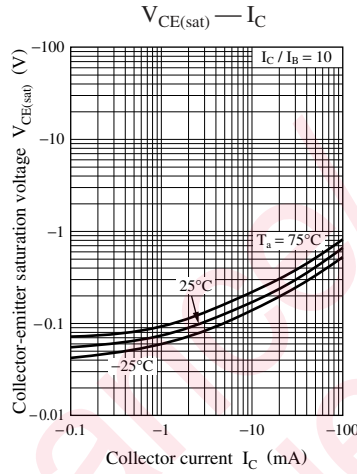
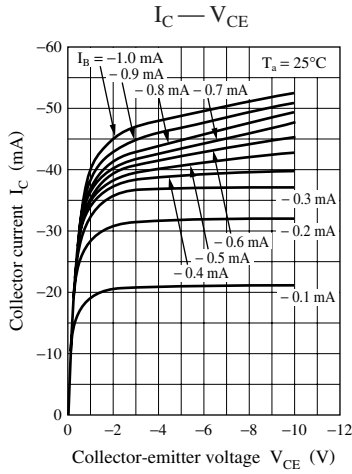




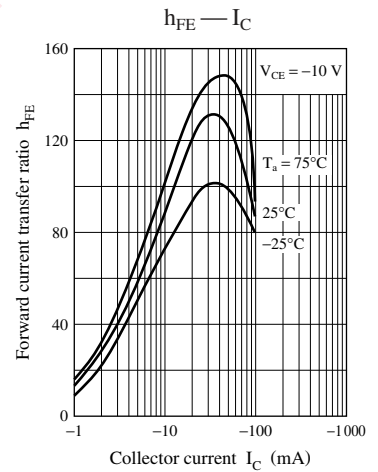
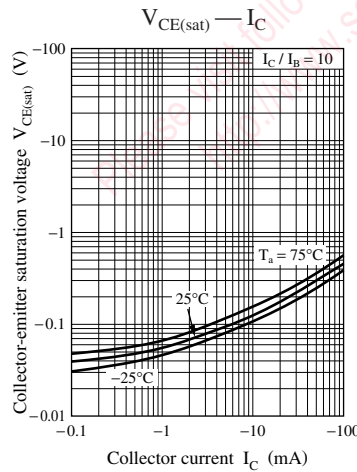
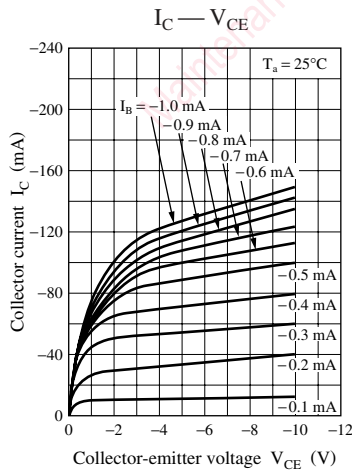
Characteristics charts of UNR411D

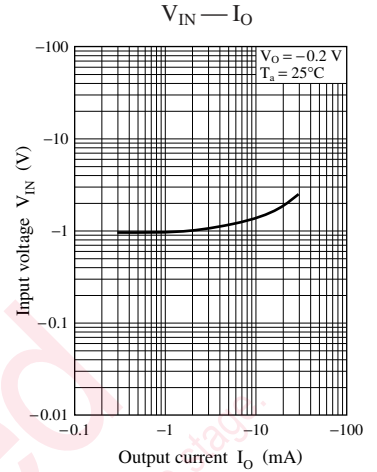
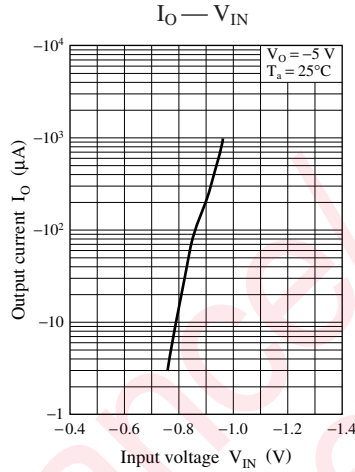
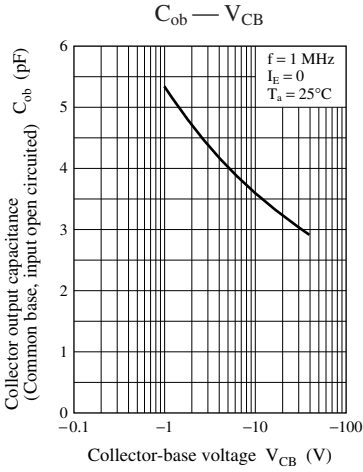


Characteristics charts of UNR411E

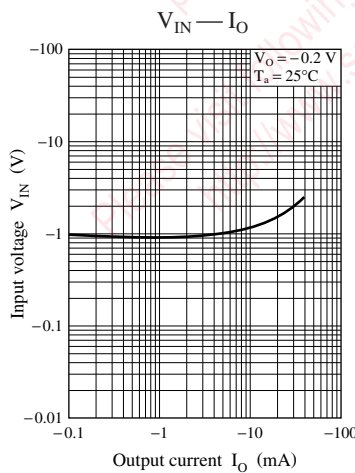
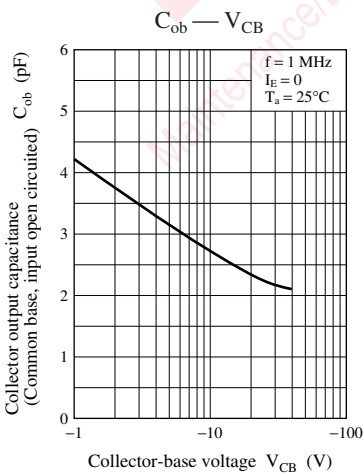
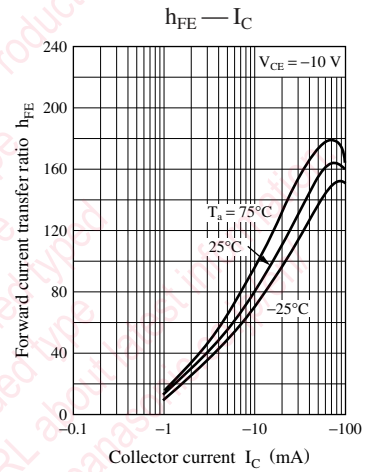
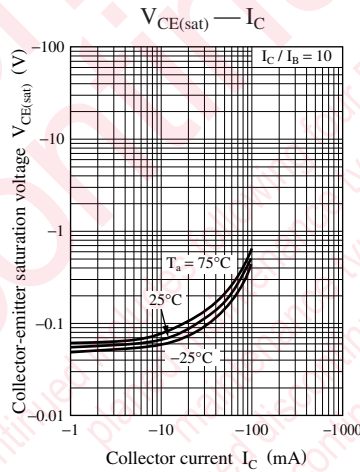
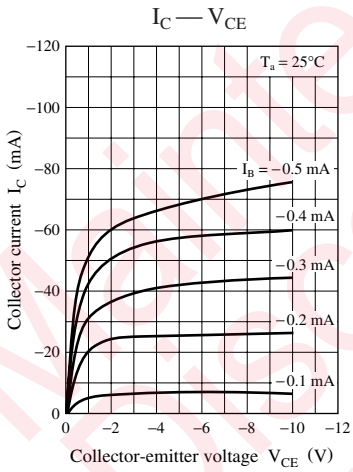


Characteristics charts of UNR411F

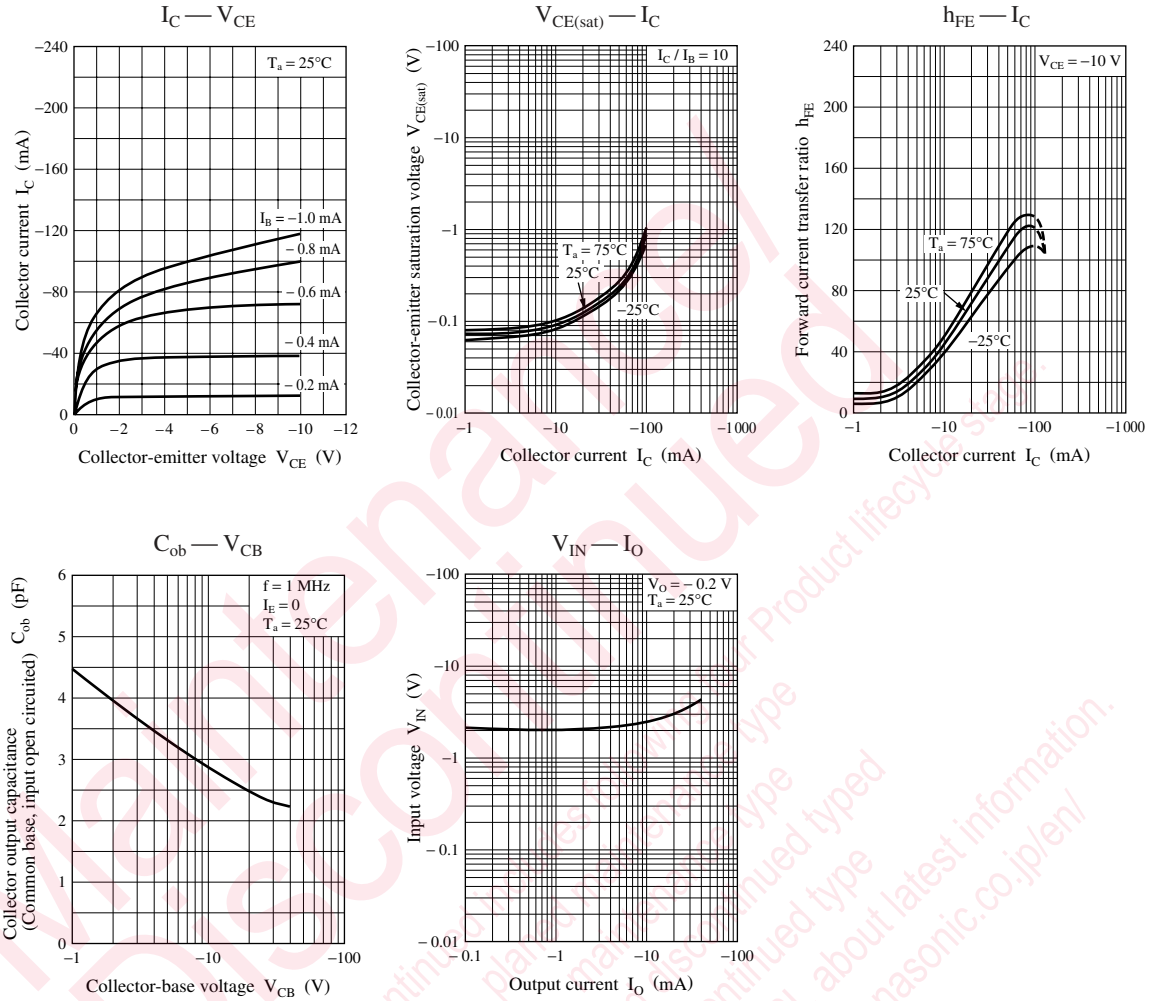




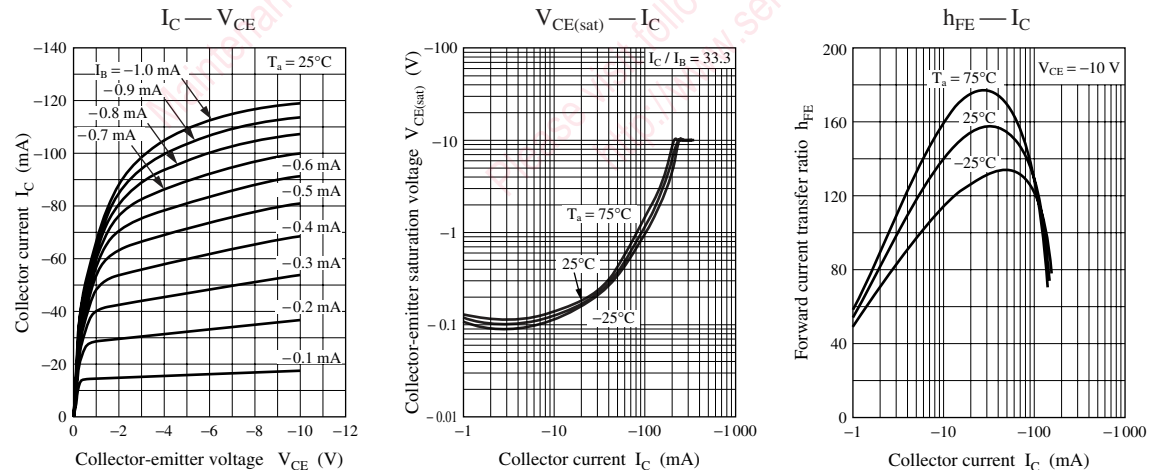
Characteristics charts of UNR411H

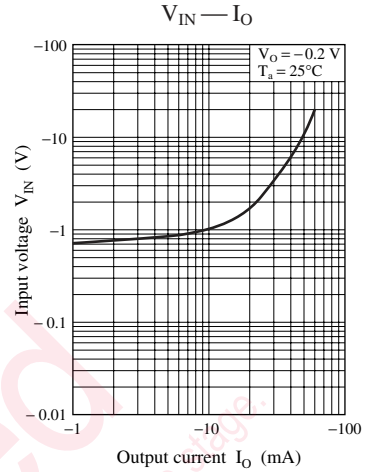
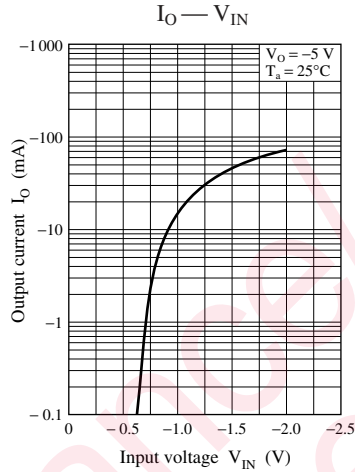
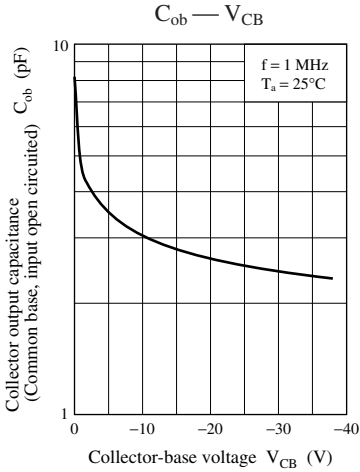


Characteristics charts of UNR411L

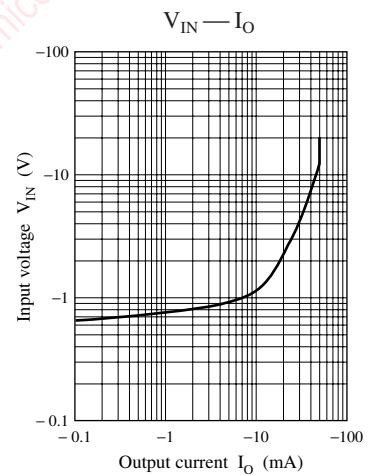
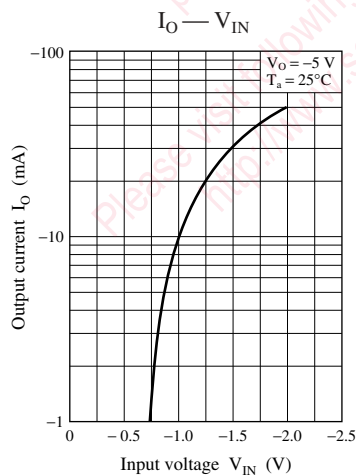
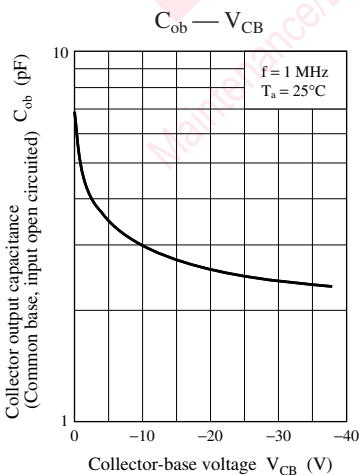
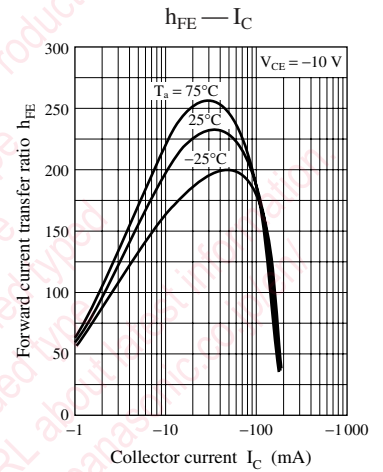
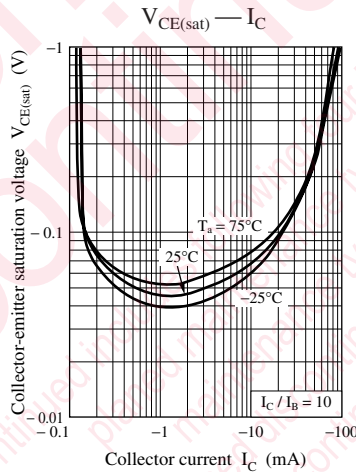
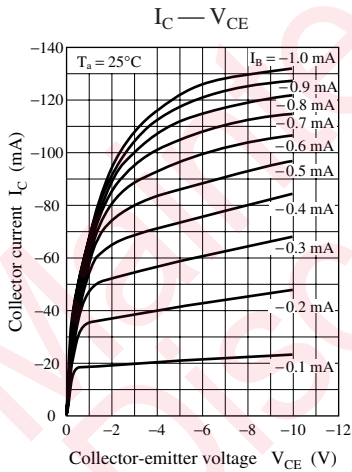


Characteristics charts of UNR411M





Characteristics charts of UNR411N



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