

UNR41XX Series (UN41XX Series)

Silicon PNP epitaxial planar transistor

For digital circuits

■ Features

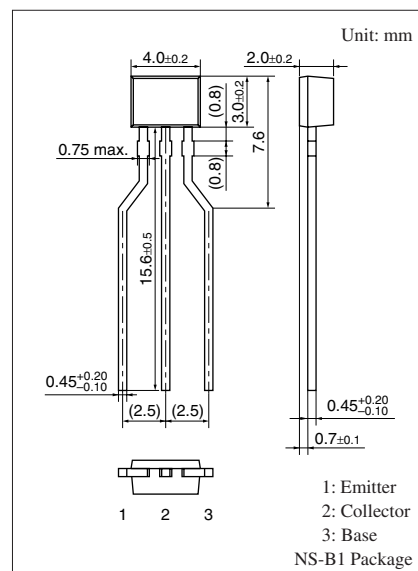
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- New S type package, allowing supply with the radial taping

■ Resistance by Part Number

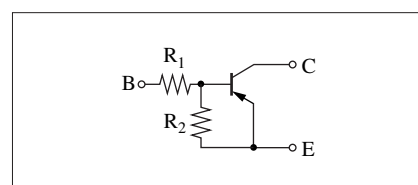
	(R ₁)	(R ₂)
• UNR4110 (UN4110)	47 kΩ	—
• UNR4111 (UN4111)	10 kΩ	10 kΩ
• UNR4112 (UN4112)	22 kΩ	22 kΩ
• UNR4113 (UN4113)	47 kΩ	47 kΩ
• UNR4114 (UN4114)	10 kΩ	47 kΩ
• UNR4115 (UN4115)	10 kΩ	—
• UNR4116 (UN4116)	4.7 kΩ	—
• UNR4117 (UN4117)	22 kΩ	—
• UNR4118 (UN4118)	0.51 kΩ	5.1 kΩ
• UNR4119 (UN4119)	1 kΩ	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 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	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 cutoff current		I_{CBO}	$V_{\text{CB}} = -50 \text{ V}, I_{\text{E}} = 0$			- 0.1	μA
		I_{CEO}	$V_{\text{CE}} = -50 \text{ V}, I_{\text{B}} = 0$			- 0.5	
Emitter cutoff current	UNR4111	I_{EBO}	$V_{\text{EB}} = -6 \text{ V}, I_{\text{C}} = 0$			- 0.5	mA
	UNR4112/4114/411D/411E/411M/411N					- 0.2	
	UNR4113					- 0.1	
	UNR4110/4115/4116/4117					- 0.01	
	UNR411F/411H					-1.0	
	UNR4119					-1.5	
	UNR4118/411L					-2.0	
Collector to base voltage		V_{CBO}	$I_{\text{C}} = -10 \mu\text{A}, I_{\text{E}} = 0$	-50			V
Collector to emitter voltage		V_{CEO}	$I_{\text{C}} = -2 \text{ mA}, I_{\text{B}} = 0$	-50			V
DC current gain	UNR4111	h_{FE}	$V_{\text{CE}} = -10 \text{ V}, I_{\text{C}} = -5 \text{ mA}$	35			
	UNR4112/411E			60			
	UNR4113/4114/411M			80			
	UNR4110*/41115*/4116*/4117*			160		460	
	UNR4118/411L			20			
	UNR4119/411D/411F/411H			30			
	UNR411N			80		400	
Collector to emitter saturation voltage		$V_{\text{CE(sat)}}$	$I_{\text{C}} = -10 \text{ mA}, I_{\text{B}} = -0.3 \text{ mA}$			- 0.25	V
High level output voltage high level		V_{OH}	$V_{\text{CC}} = -5 \text{ V}, V_{\text{B}} = -0.5 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$	-4.9			V
Low level output voltage		V_{OL}	$V_{\text{CC}} = -5 \text{ V}, V_{\text{B}} = -2.5 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$			- 0.2	V
			$V_{\text{CC}} = -5 \text{ V}, V_{\text{B}} = -3.5 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$				
			$V_{\text{CC}} = -5 \text{ V}, V_{\text{B}} = -10 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$				
			$V_{\text{CC}} = -5 \text{ V}, V_{\text{B}} = -6 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$				
Transition frequency		f_{T}	$V_{\text{CB}} = -10 \text{ V}, I_{\text{E}} = 2 \text{ mA}, f = 200 \text{ MHz}$		80		MHz
Input resistance	UNR4118	R_{I}		-30%	0.51	+30%	$\text{k}\Omega$
	UNR4119				1		
	UNR411H/411M				2.2		
	UNR4116/411F/411L/411N				4.7		
	UNR4111/4114/4115				10		
	UNR4112/4117				22		
	UNR4110/4113/411D/411E				47		

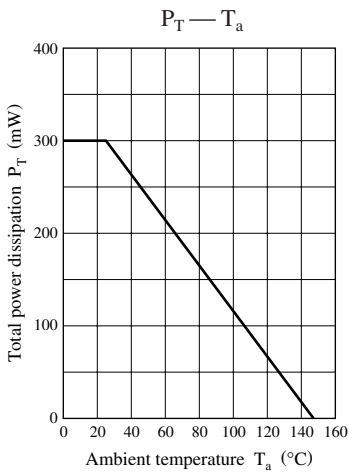
Note) *: h_{FE} rank classification (UNR4110/4115/4116/4117)

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

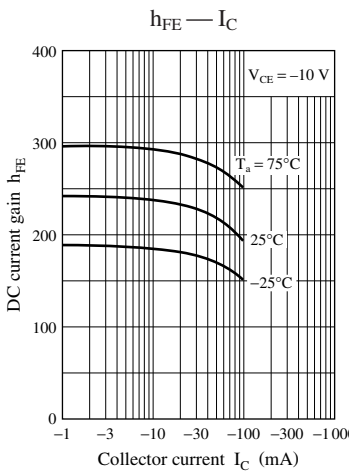
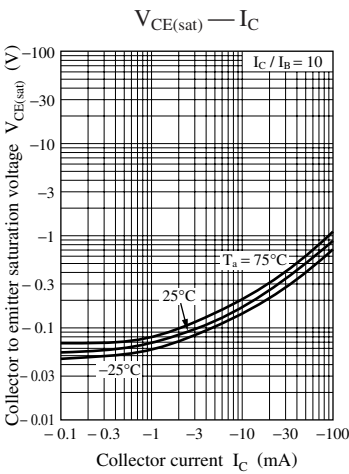
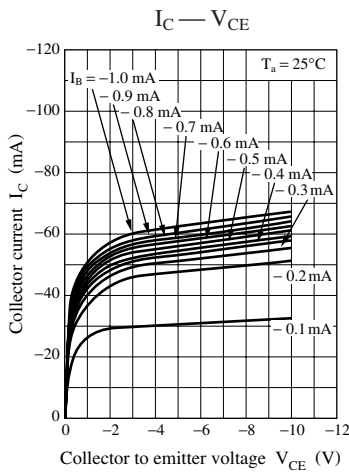
■ Electrical Characteristics (continued) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

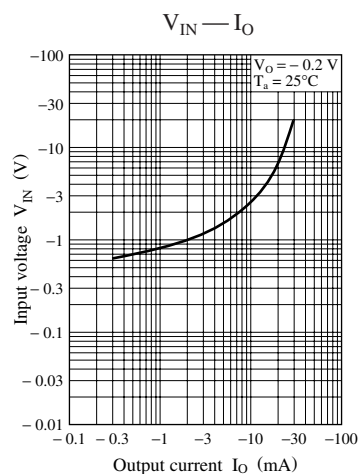
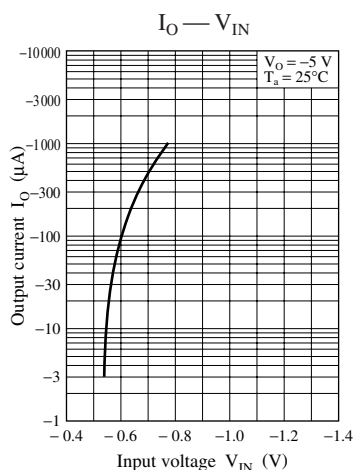
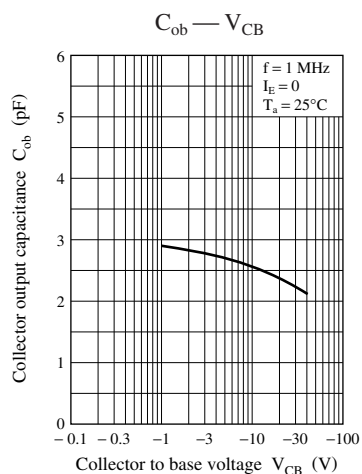
	Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR4111/4112/4113/411L	R_1/R_2		0.8	1.0	1.2	
	UNR4114			0.17	0.21	0.25	
	UNR4118/4119			0.08	0.1	0.12	
	UNR411D			3.7	4.7	5.7	
	UNR411E			1.7	2.14	2.6	
	UNR411F			0.37	0.47	0.57	
	UNR411H			0.17	0.22	0.27	
	UNR411M				0.047		
	UNR411N				0.1		

Common characteristics chart

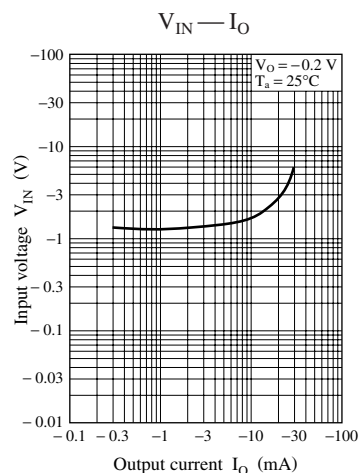
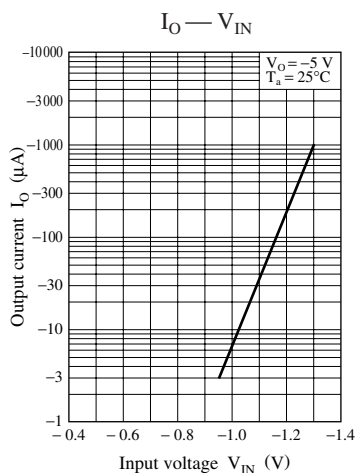
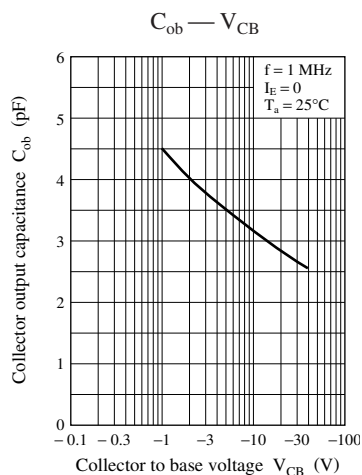
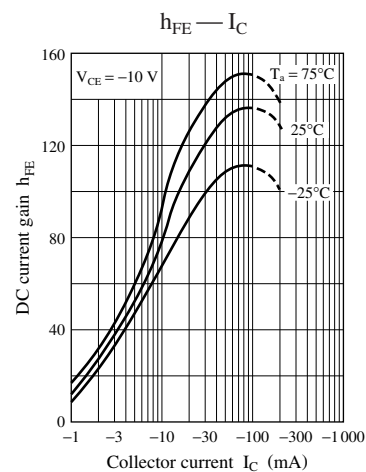
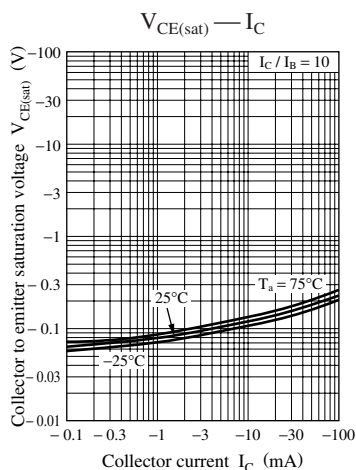
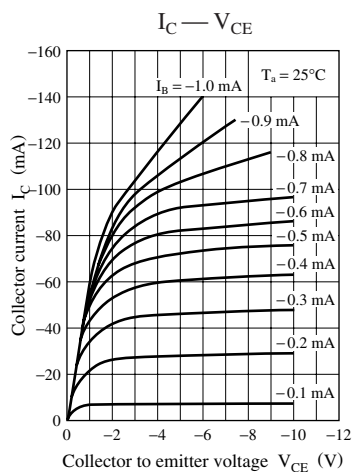


Characteristics charts of UNR4110

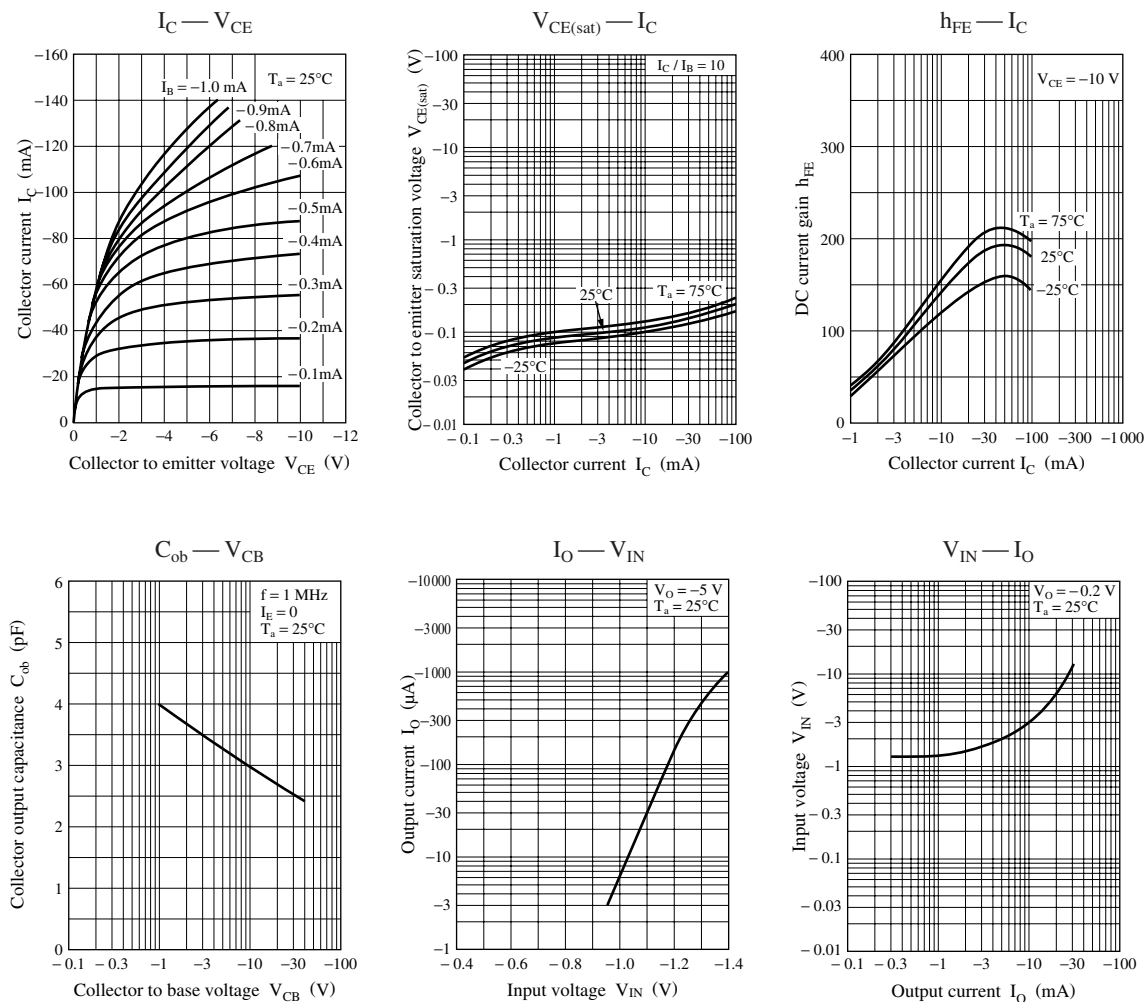




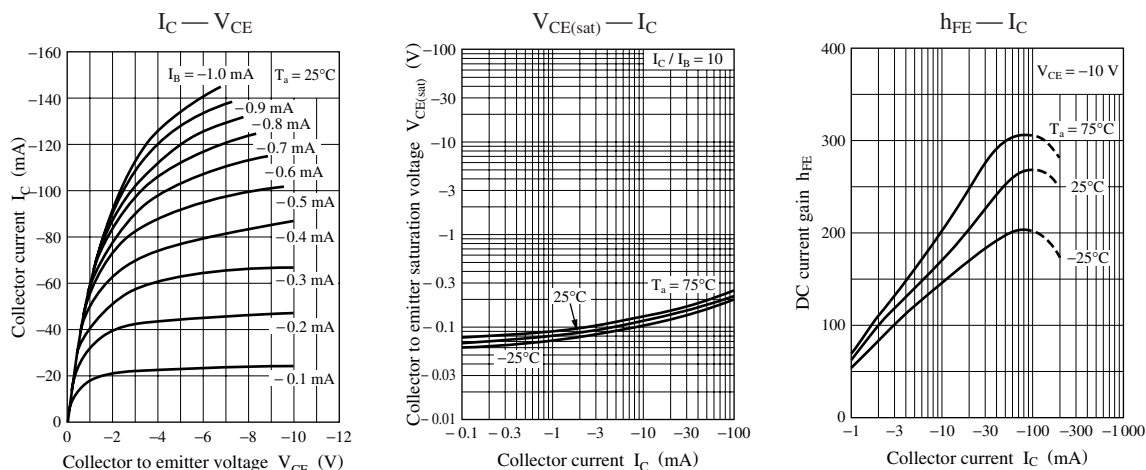
Characteristics charts of UNR4111

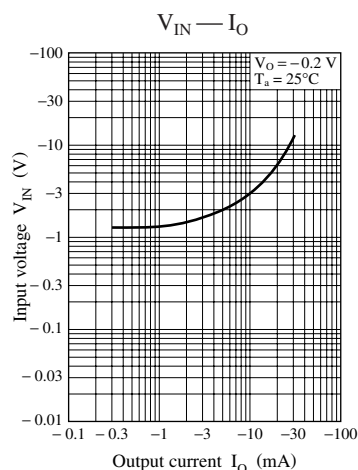
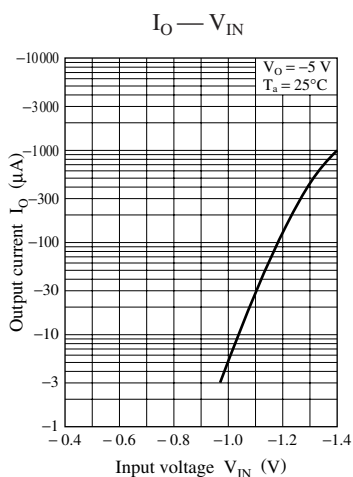
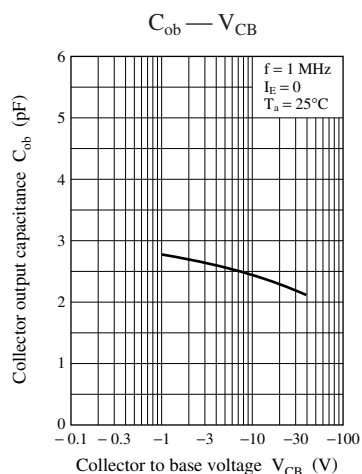


Characteristics charts of UNR4112

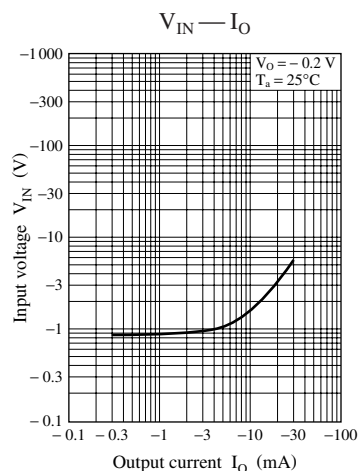
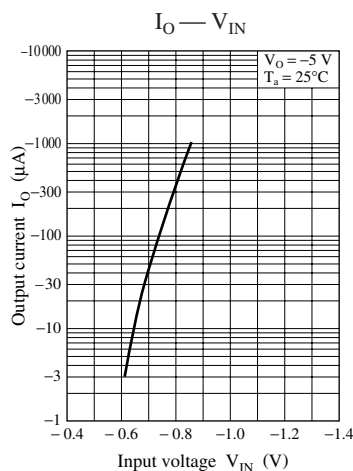
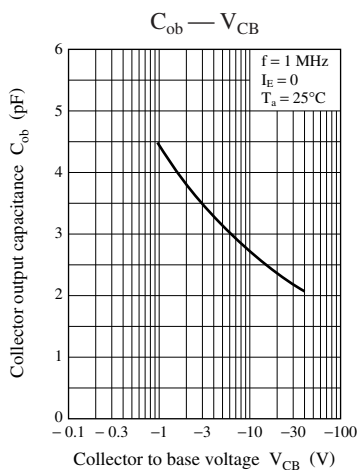
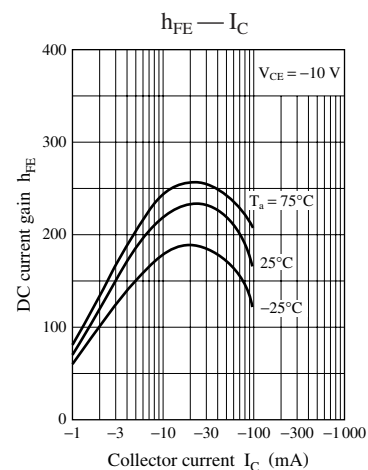
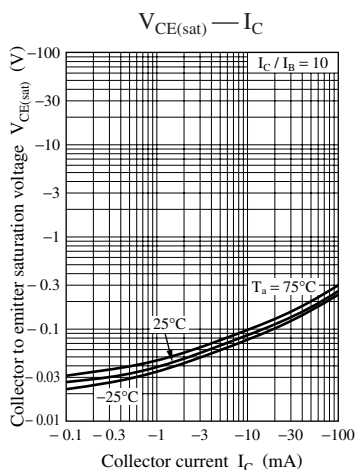
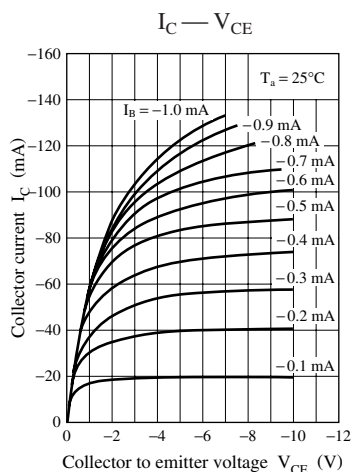


Characteristics charts of UNR4113

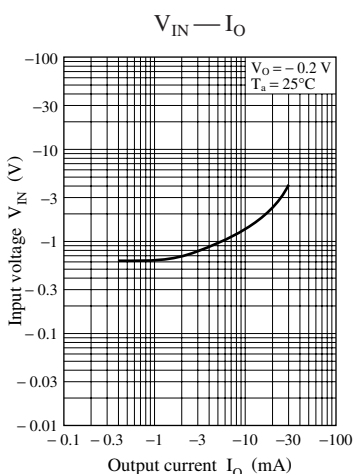
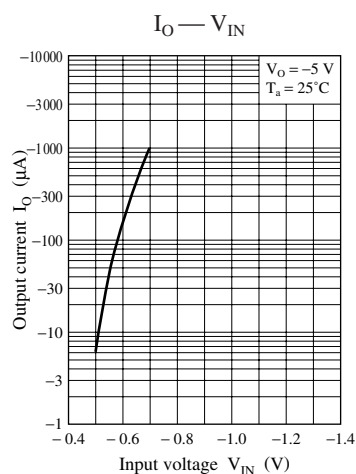
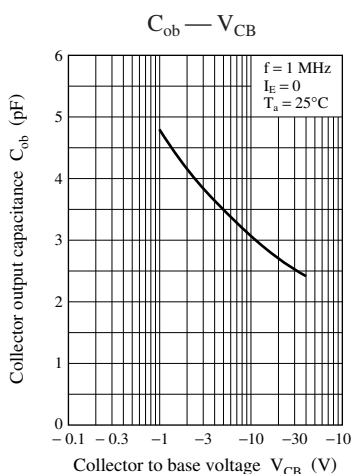
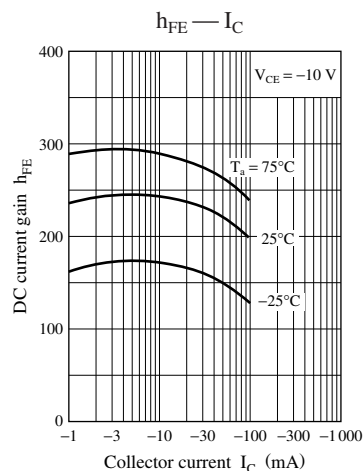
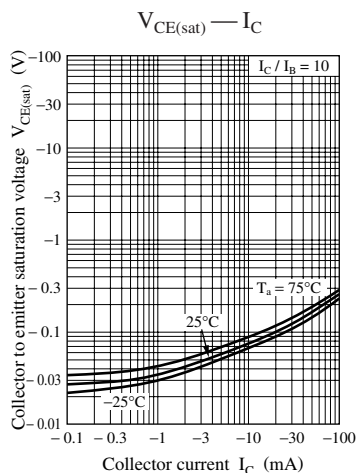
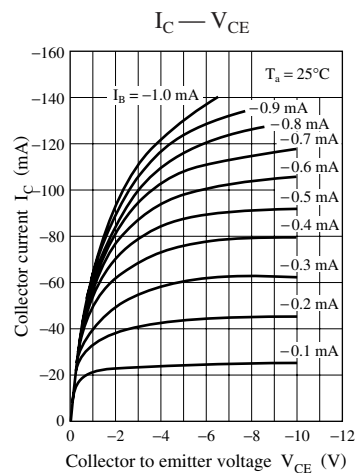




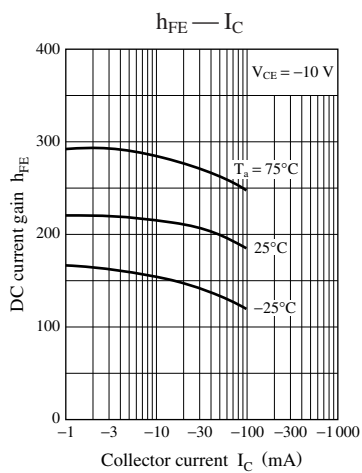
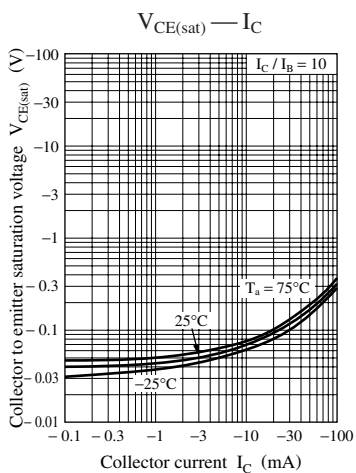
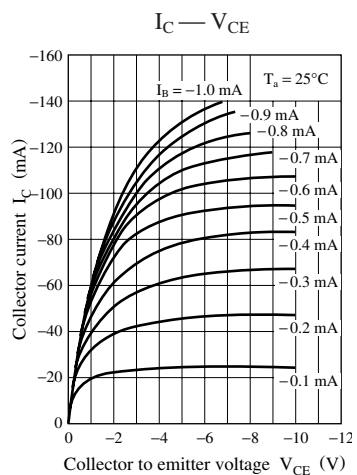
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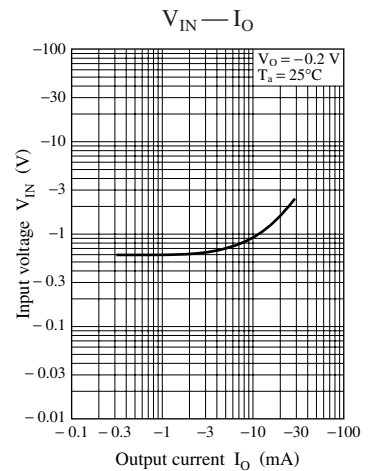
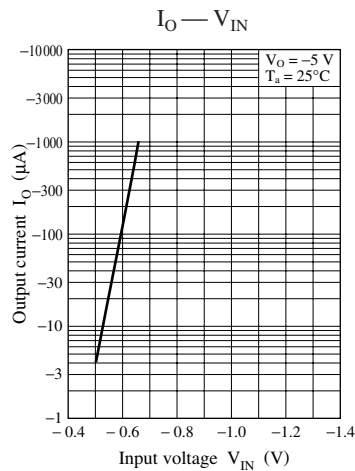
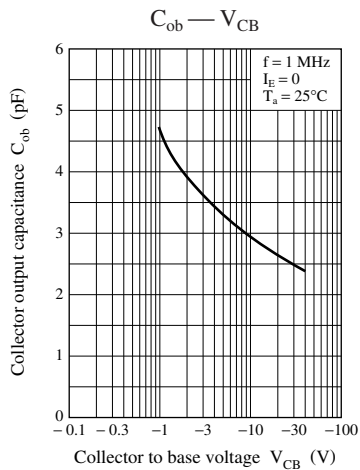


Characteristics charts of UNR4115

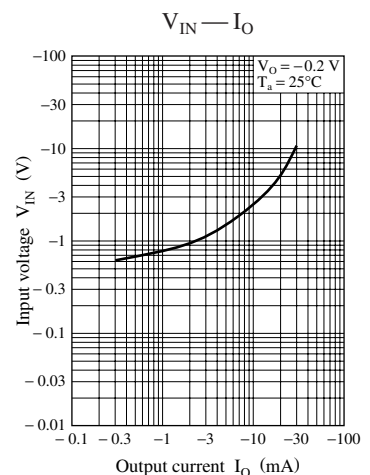
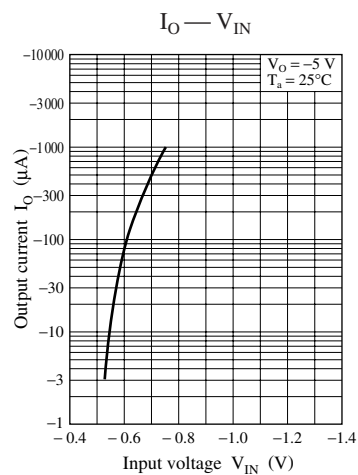
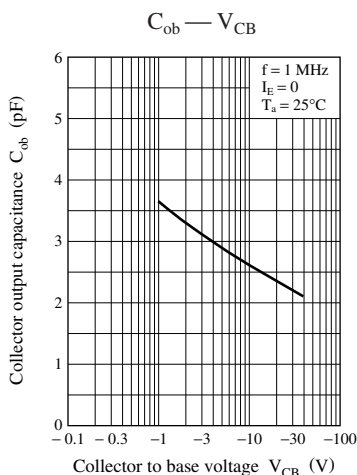
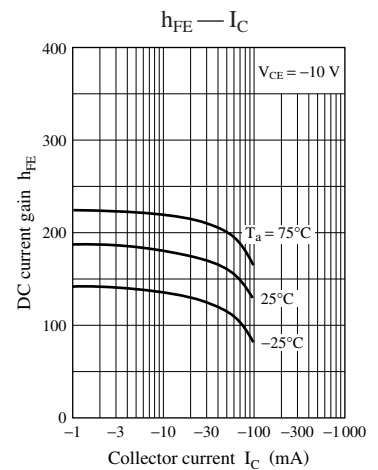
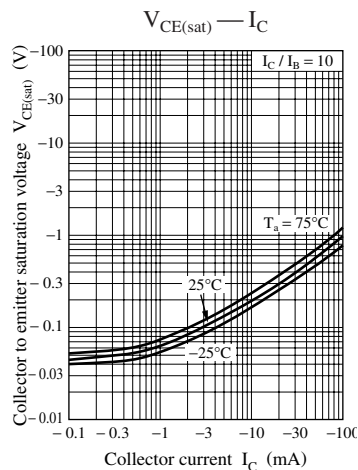
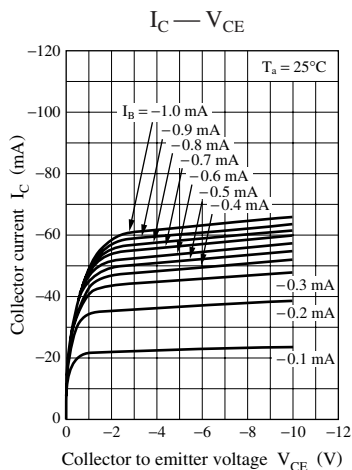


Characteristics charts of UNR4116

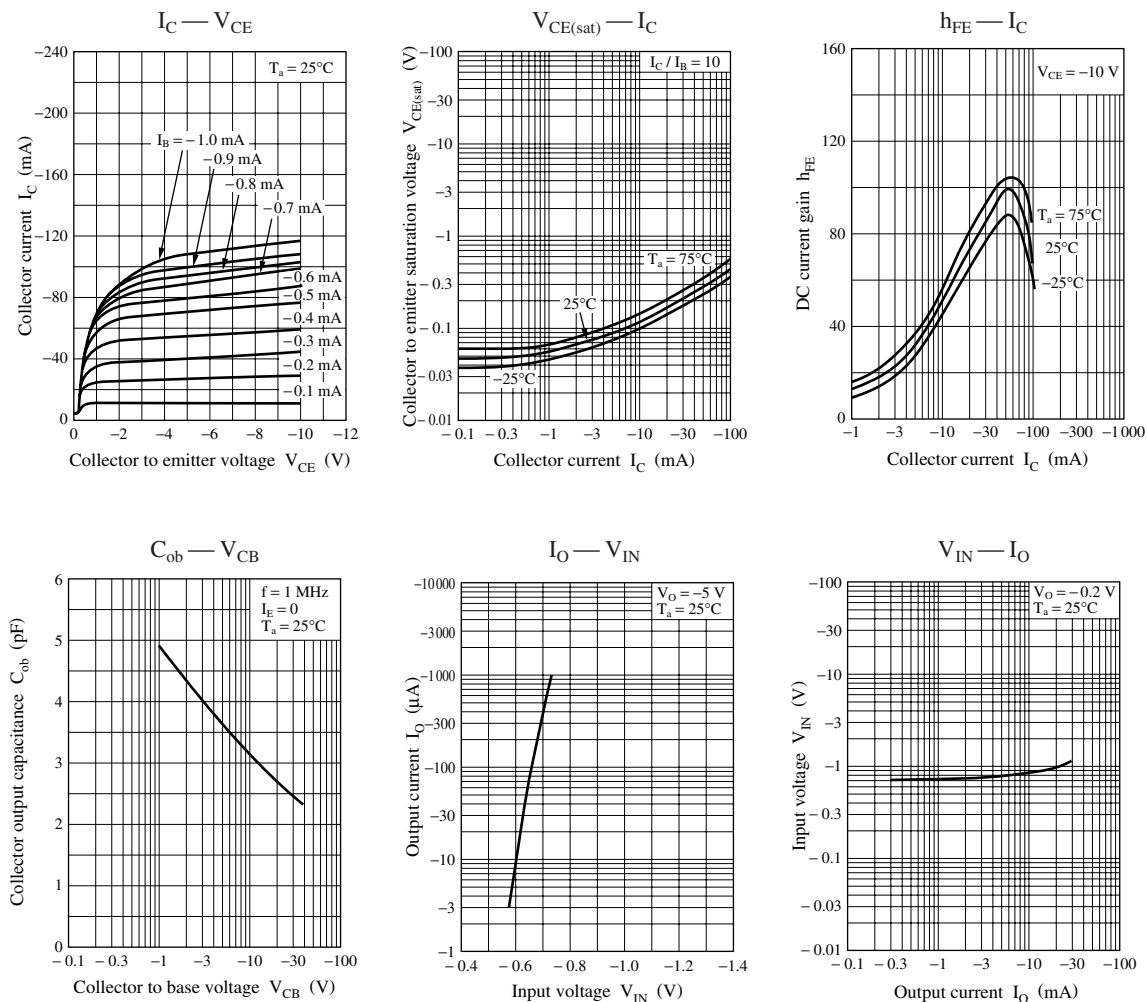




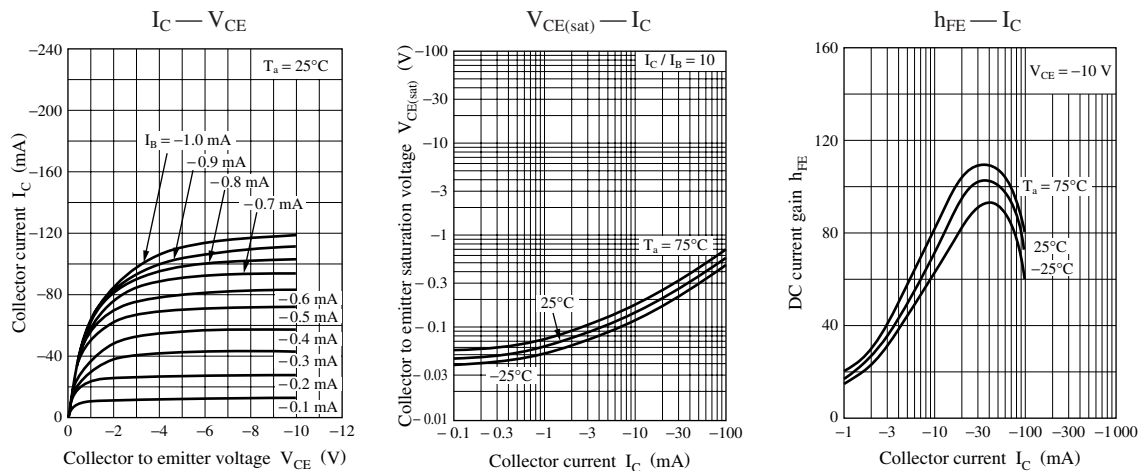
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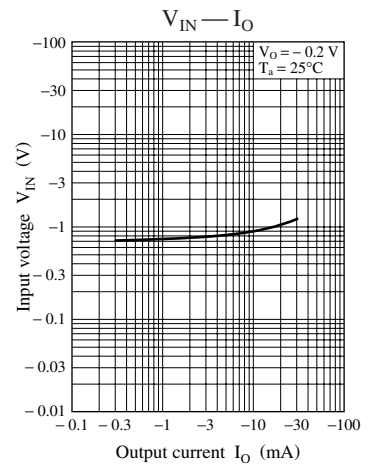
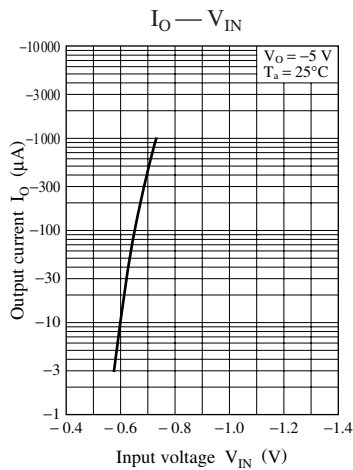
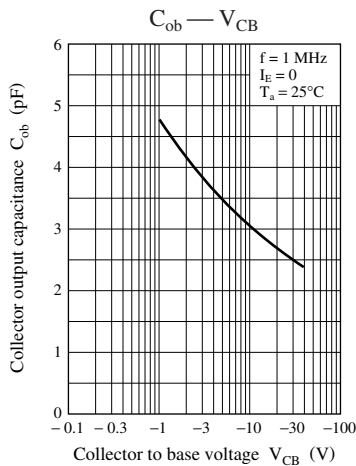


Characteristics charts of UNR4118

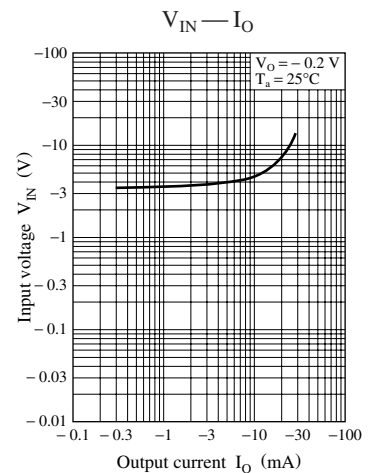
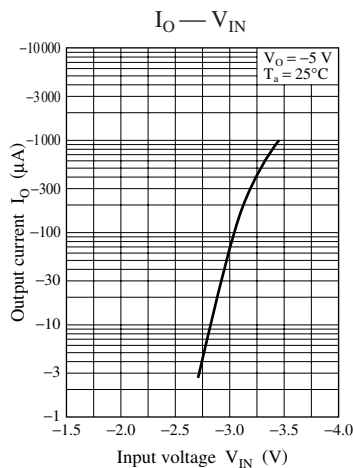
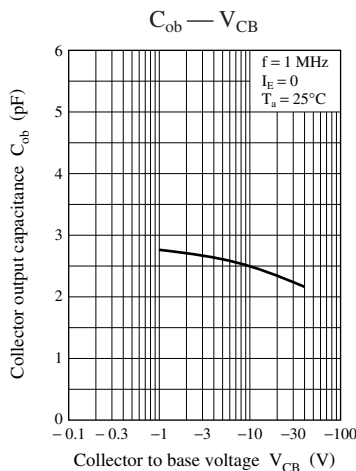
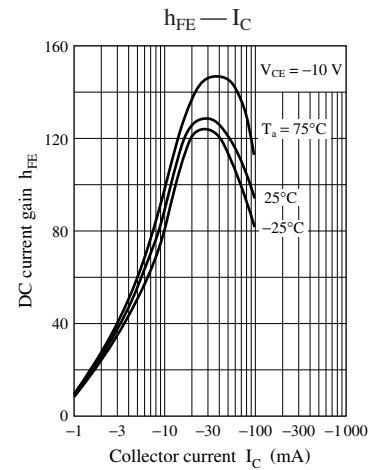
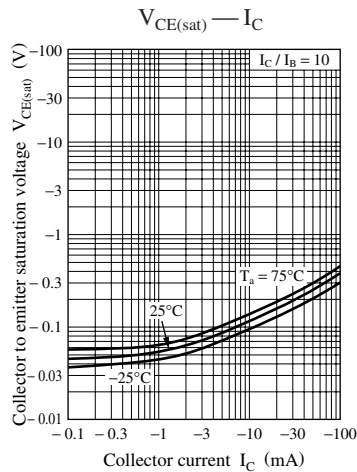
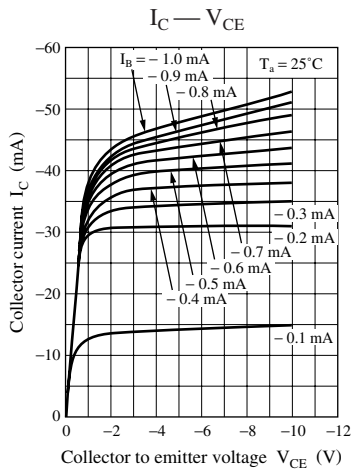


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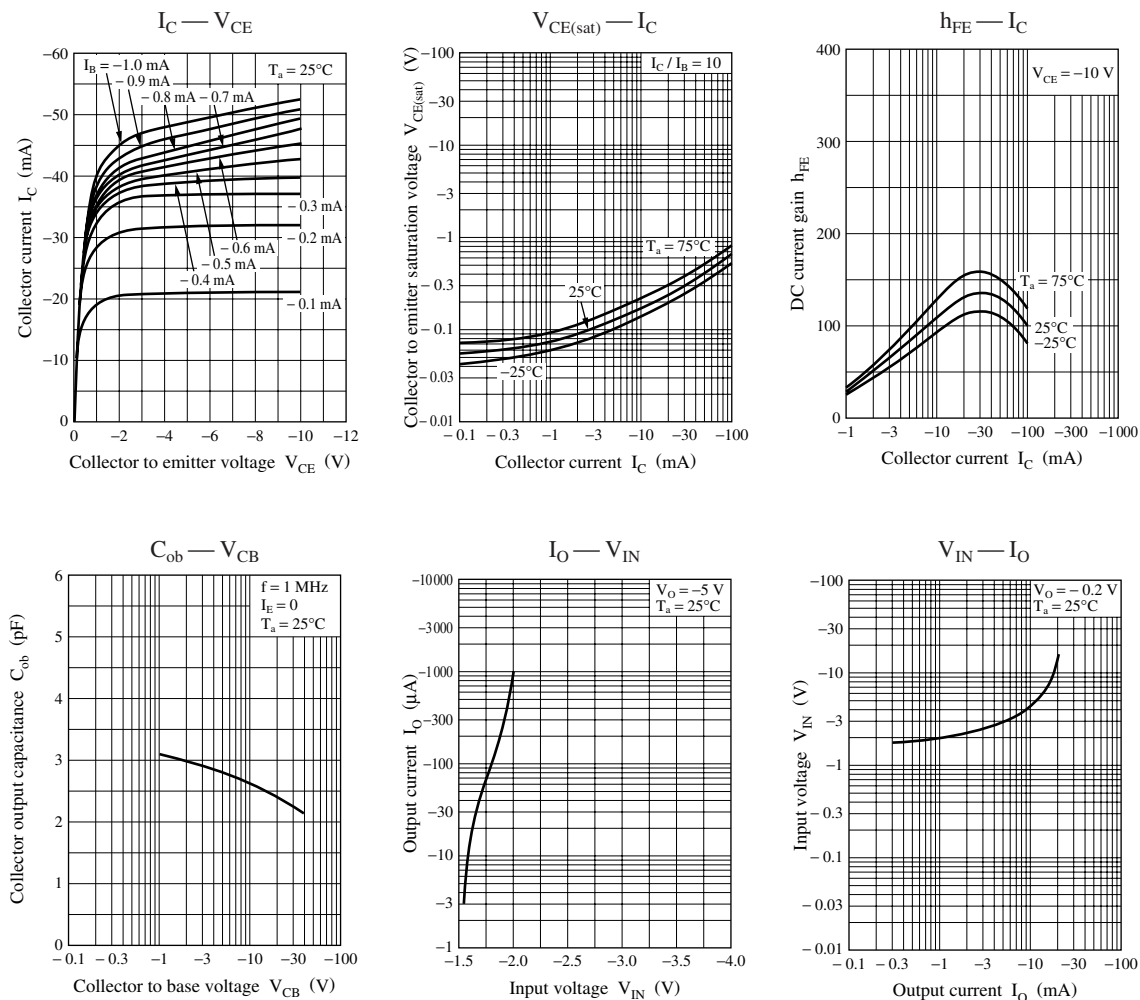




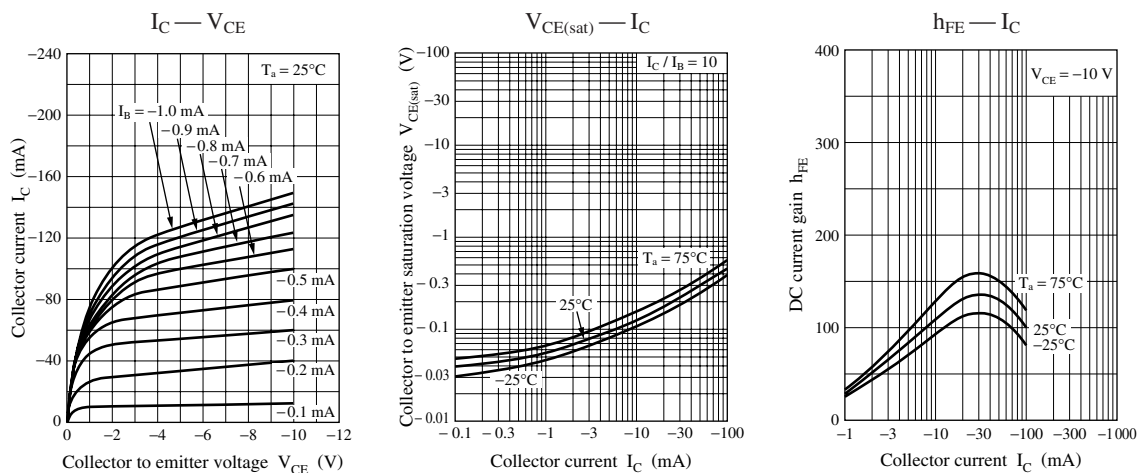
Characteristics charts of UNR411D

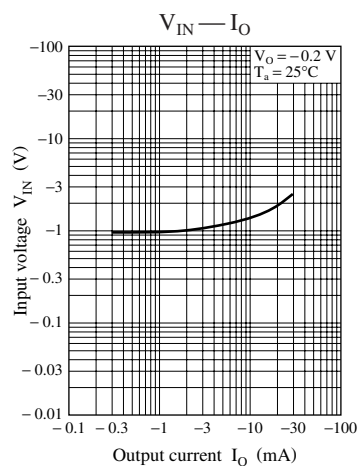
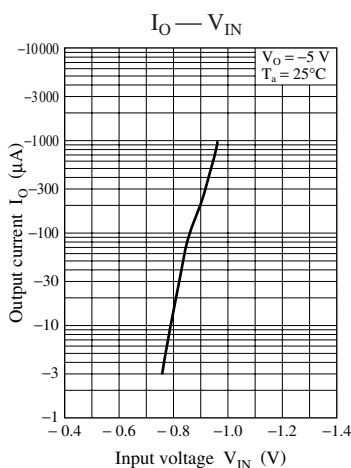
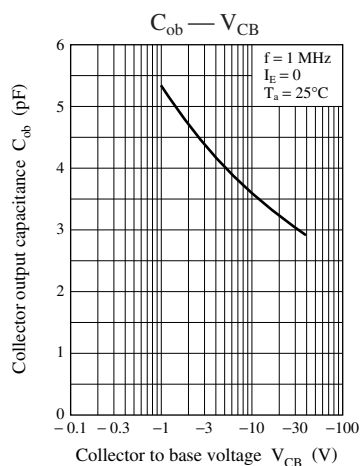


Characteristics charts of UNR411E

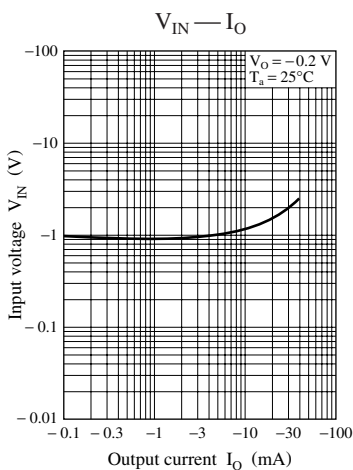
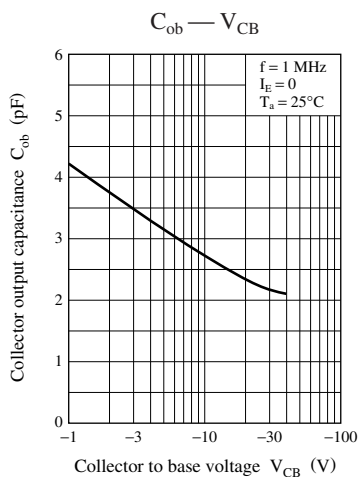
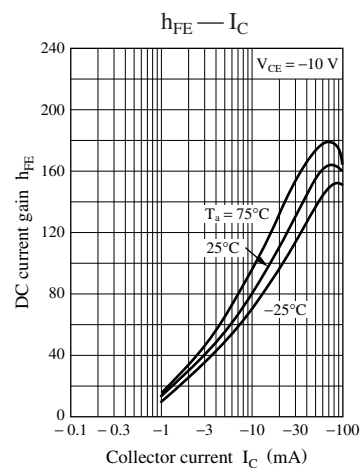
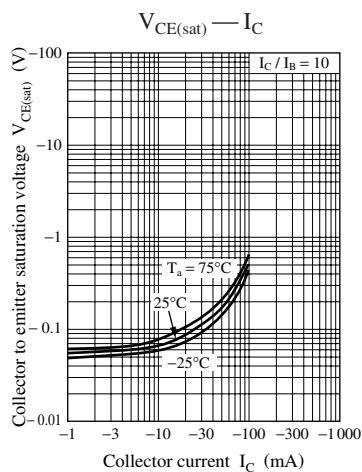
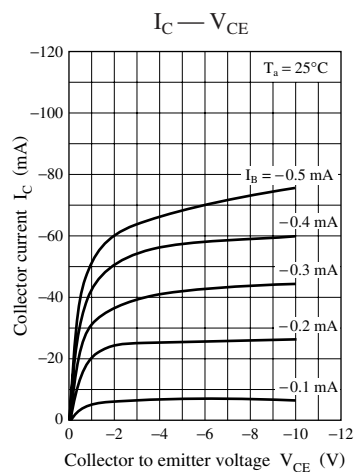


Characteristics charts of UNR411F

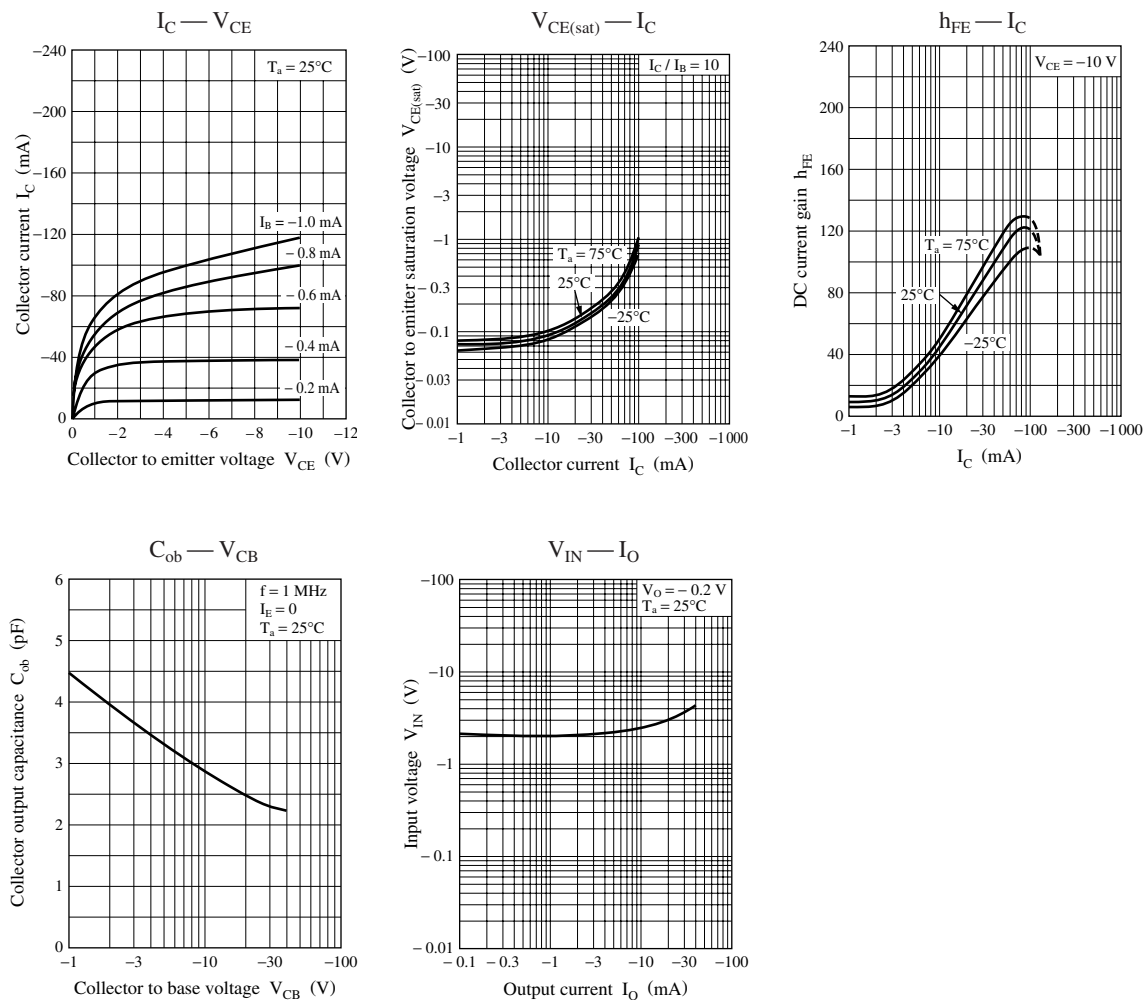




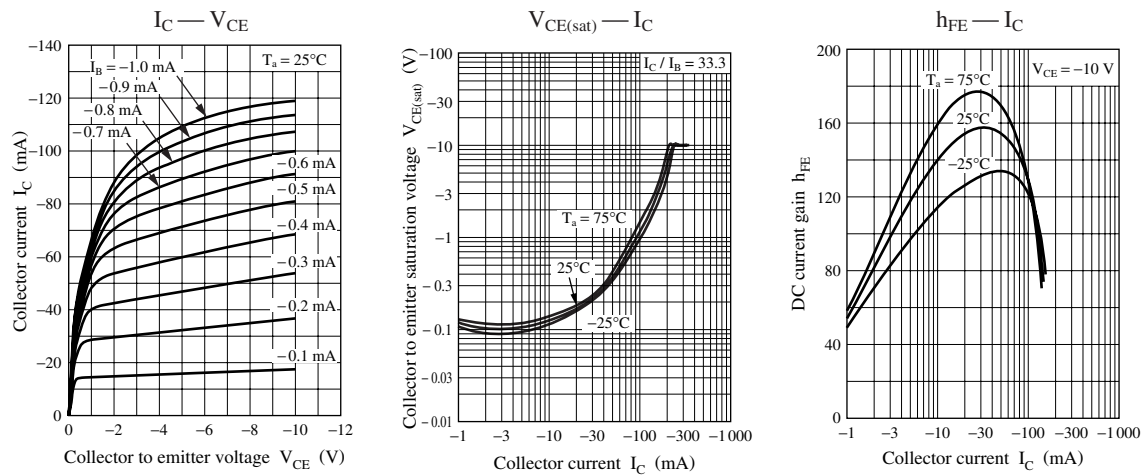
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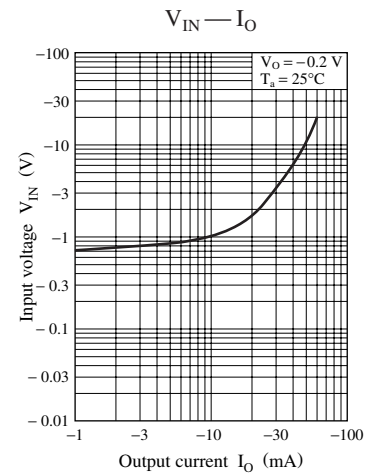
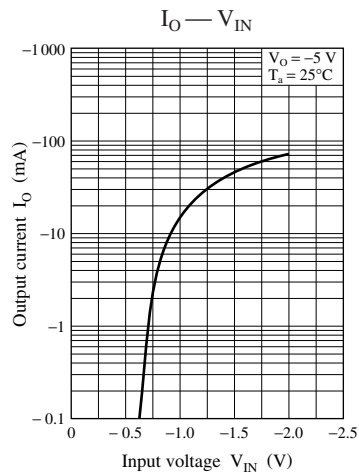
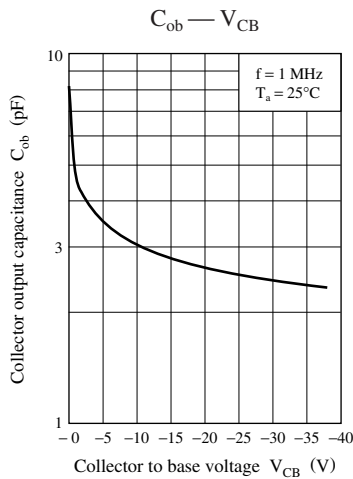


Characteristics charts of UNR411L

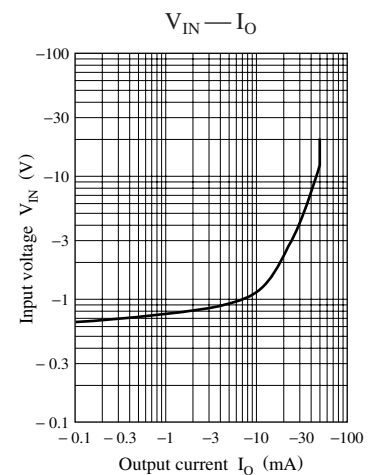
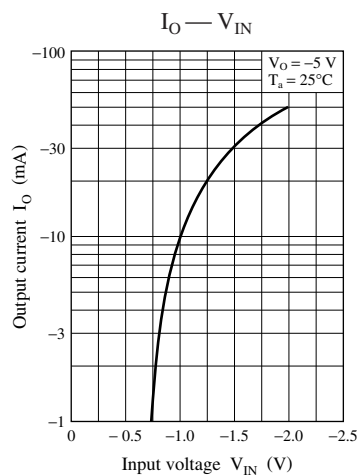
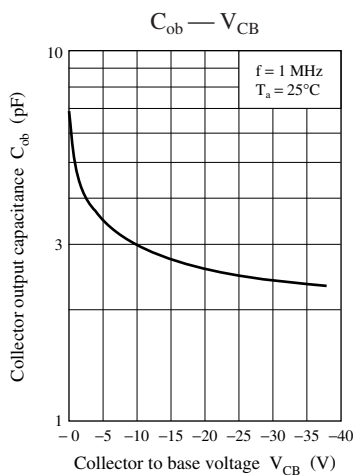
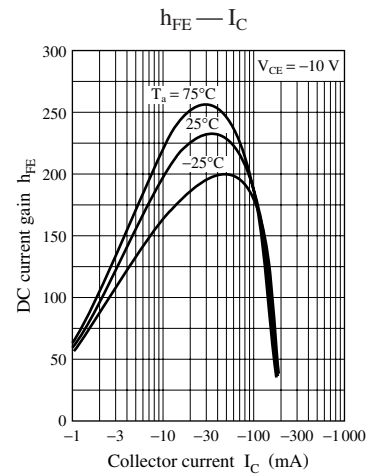
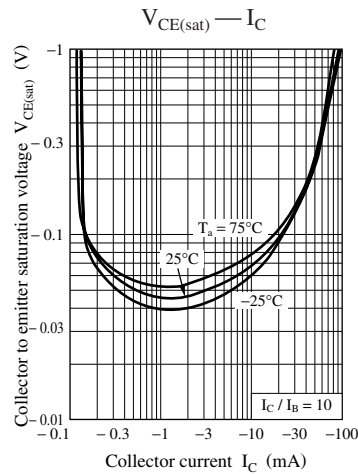
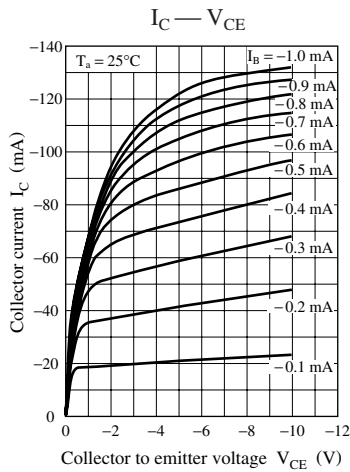


Characteristics charts of UNR411M





Characteristics charts of UNR411N



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