

UNR111x Series (UN111x Series)

Silicon PNP epitaxial planar transistor

For digital circuits

■ Features

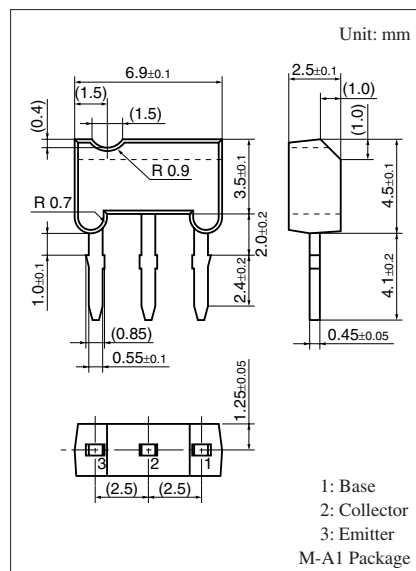
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

■ Resistance by Part Number

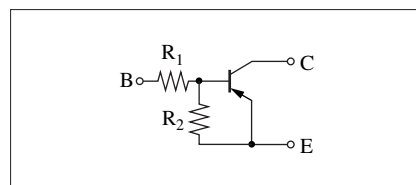
	(R ₁)	(R ₂)
• UNR1110 (UN1110)	47 kΩ	—
• UNR1111 (UN1111)	10 kΩ	10 kΩ
• UNR1112 (UN1112)	22 kΩ	22 kΩ
• UNR1113 (UN1113)	47 kΩ	47 kΩ
• UNR1114 (UN1114)	10 kΩ	47 kΩ
• UNR1115 (UN1115)	10 kΩ	—
• UNR1116 (UN1116)	4.7 kΩ	—
• UNR1117 (UN1117)	22 kΩ	—
• UNR1118 (UN1118)	0.51 kΩ	5.1 kΩ
• UNR1119 (UN1119)	1 kΩ	10 kΩ
• UNR111D (UN111D)	47 kΩ	10 kΩ
• UNR111E (UN111E)	47 kΩ	22 kΩ
• UNR111F (UN111F)	4.7 kΩ	10 kΩ
• UNR111H (UN111H)	2.2 kΩ	10 kΩ
• UNR111L (UN111L)	4.7 kΩ	4.7 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	400	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 $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

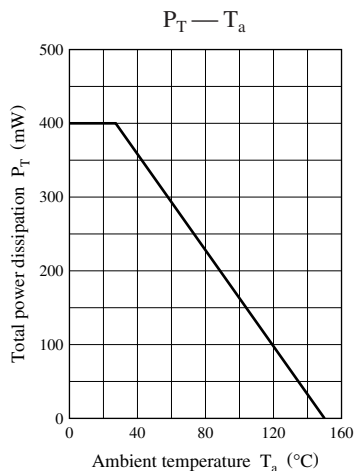
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)		V_{CBO}	$I_C = -10\ \mu\text{A}$, $I_E = 0$	-50			V
Collector-emitter voltage (Base open)		V_{CEO}	$I_C = -2\ \text{mA}$, $I_B = 0$	-50			V
Collector-base cutoff current (Emitter open)		I_{CBO}	$V_{CB} = -50\ \text{V}$, $I_E = 0$			-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)	UNR1111	I_{EBO}	$V_{EB} = -6\ \text{V}$, $I_C = 0$			-0.5	mA
	UNR1112/1114/111D/111E					-0.2	
	UNR1113					-0.1	
	UNR1110/1115/1116/1117					-0.01	
	UNR111F/111H					-1.0	
	UNR1119					-1.5	
	UNR1118/111L					-2.0	
Forward current transfer ratio	UNR1111	h_{FE}	$V_{CE} = -10\ \text{V}$, $I_C = -5\ \text{mA}$	35			—
	UNR1112/111E			60			
	UNR1113/1114			80			
	UNR1110*/1115*/1116*/1117*			160		460	
	UNR1118/111L			20			
	UNR1119/111D/111F/111H			30			
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
	UNR1113		$V_{CC} = -5\ \text{V}$, $V_B = -3.5\ \text{V}$, $R_L = 1\ \text{k}\Omega$				
	UNR111D		$V_{CC} = -5\ \text{V}$, $V_B = -10\ \text{V}$, $R_L = 1\ \text{k}\Omega$				
	UNR111E		$V_{CC} = -5\ \text{V}$, $V_B = -6\ \text{V}$, $R_L = 1\ \text{k}\Omega$				
Transition frequency		f_T	$V_{CB} = -10\ \text{V}$, $I_E = 2\ \text{mA}$, $f = 200\ \text{MHz}$		80		MHz
Input resistance	UNR1111/1114/1115	R_1		-30%	10	+30%	$\text{k}\Omega$
	UNR1112/1117				22		
	UNR1110/1113/111D/111E				47		
	UNR1116/111F/111L				4.7		
	UNR1118				0.51		
	UNR1119				1		
	UNR111H				2.2		
Resistance ratio	UNR1111/1112/1113/111L	R_1/R_2		0.8	1.0	1.2	—
	UNR1114			0.17	0.21	0.25	
	UNR1118/1119			0.08	0.1	0.12	
	UNR111D				4.7		
	UNR111E				2.14		
	UNR111F				0.47		
	UNR111H			0.17	0.22	0.27	

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

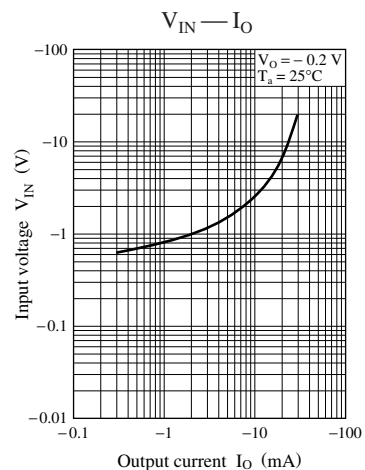
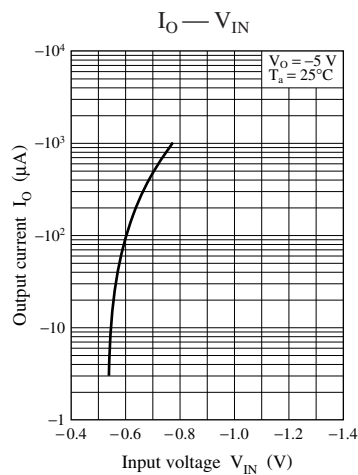
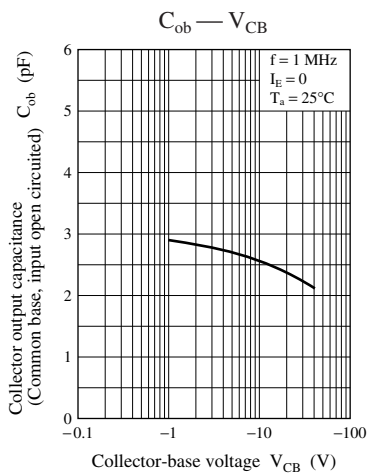
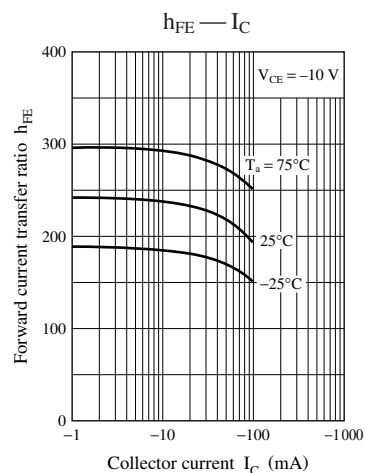
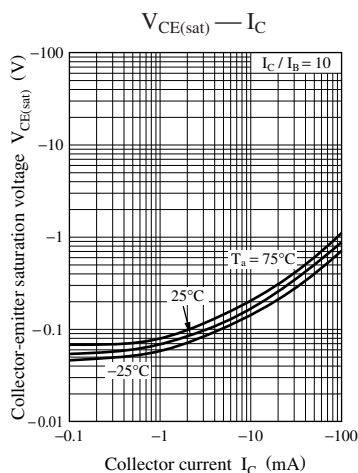
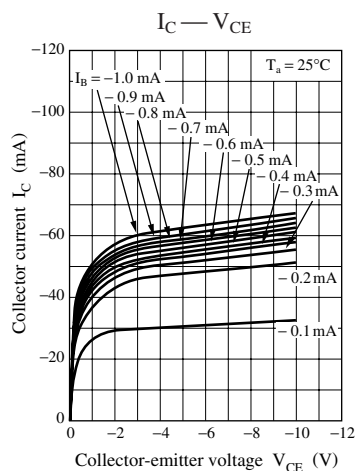
2. *: Rank classification (UNR1110/1115/1116/1117)

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

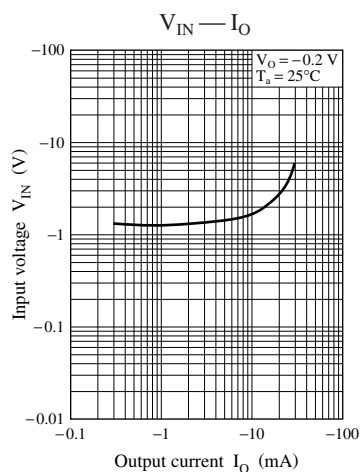
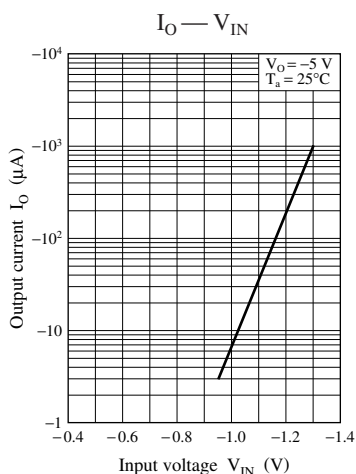
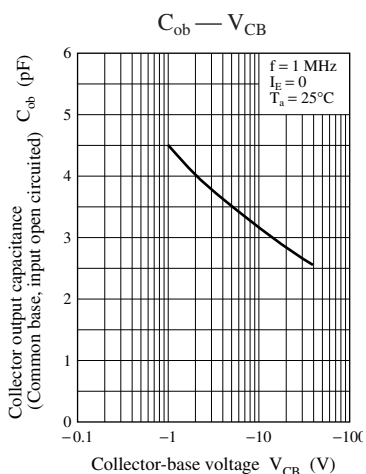
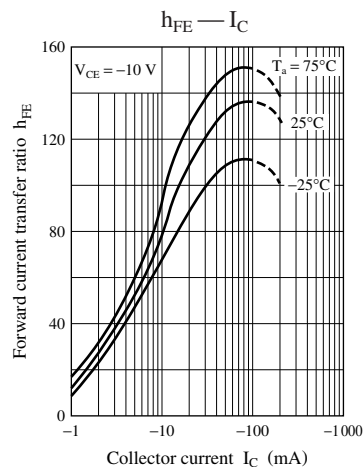
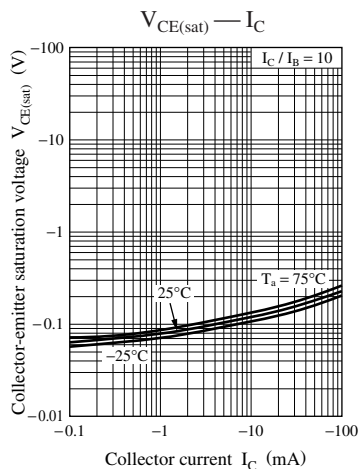
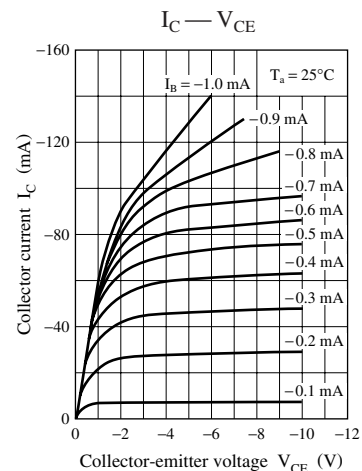
Common characteristics chart



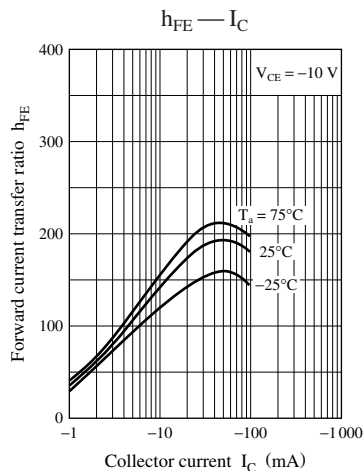
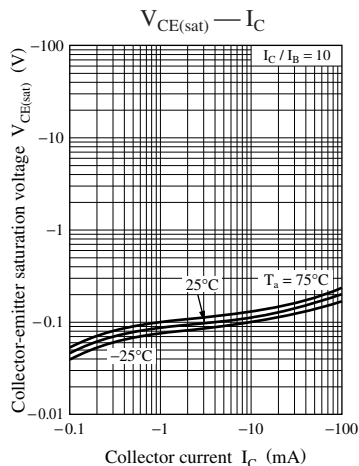
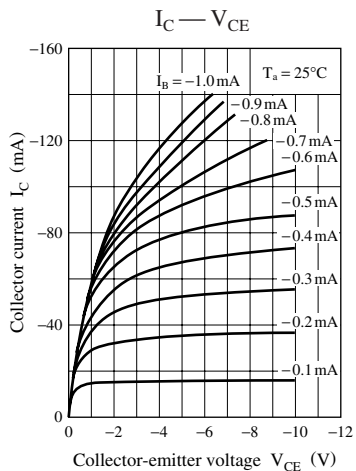
Characteristics charts of UNR1110

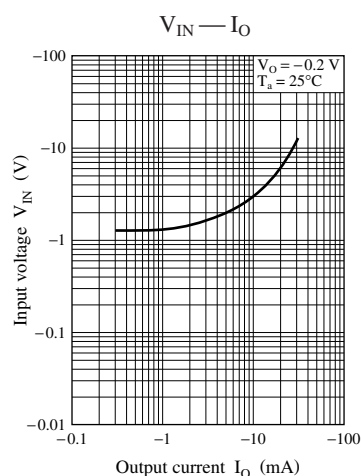
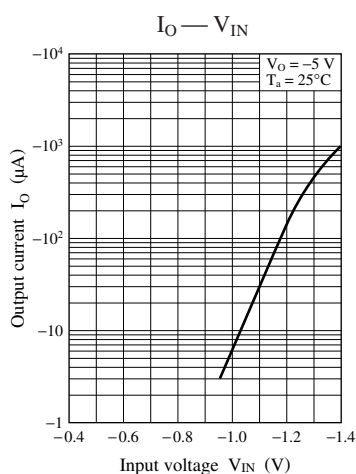
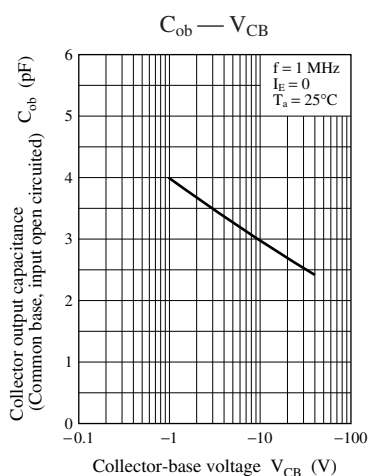


Characteristics charts of UNR1111

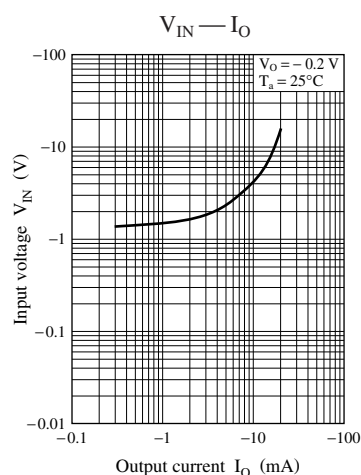
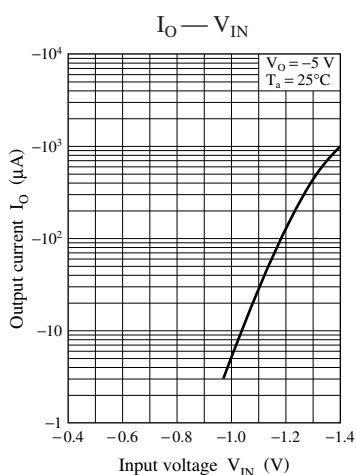
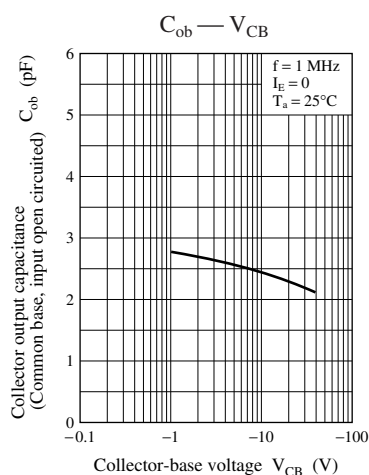
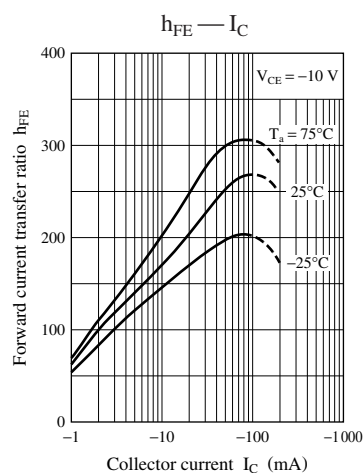
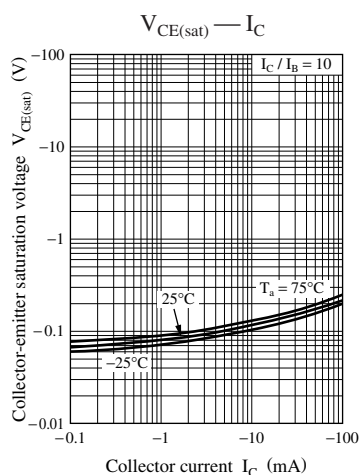
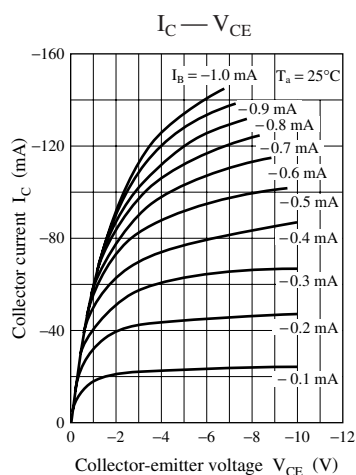


Characteristics charts of UNR1112

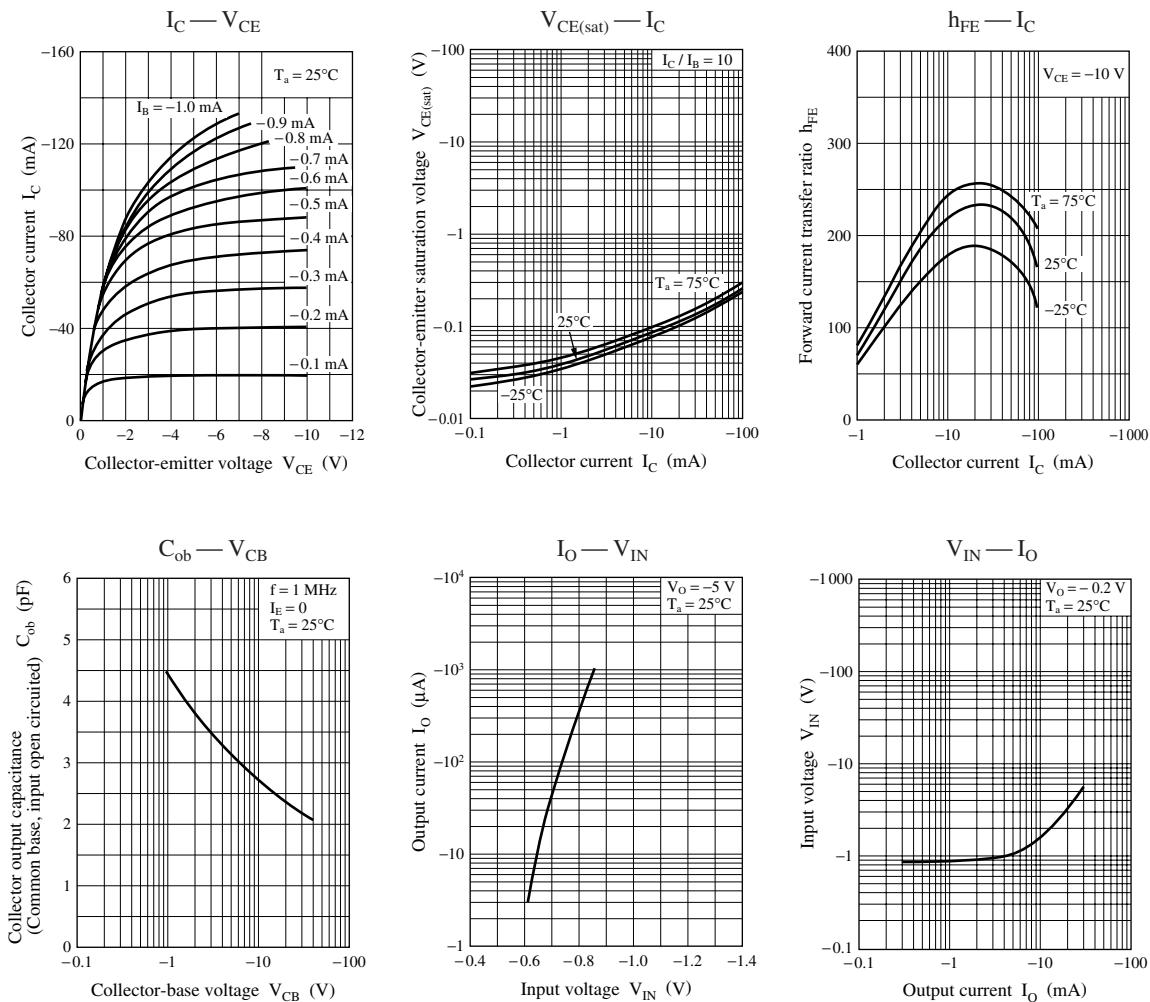




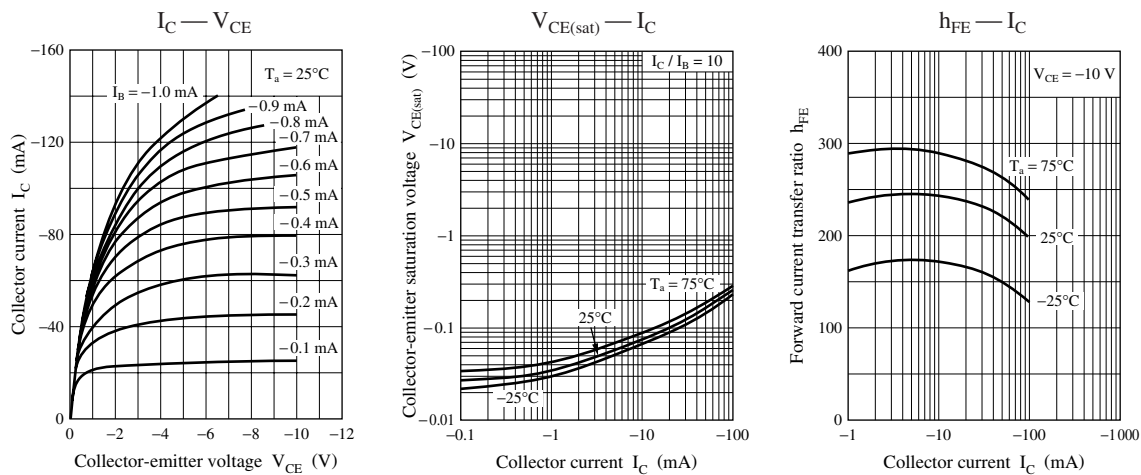
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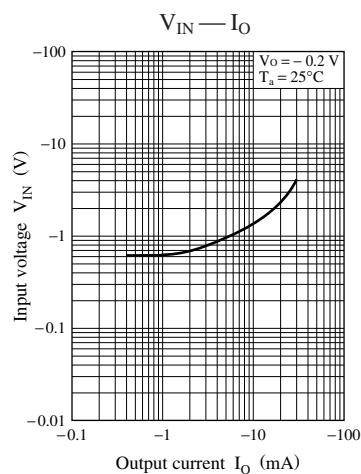
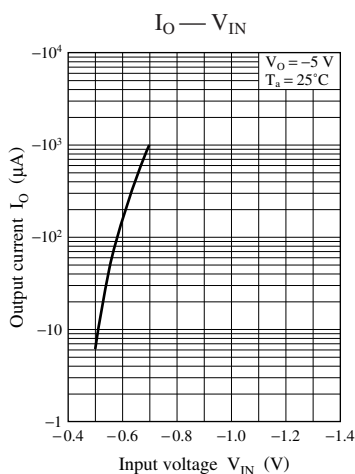
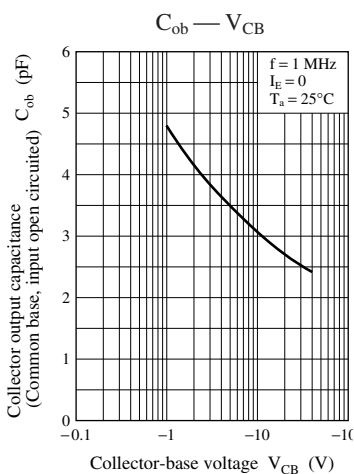


Characteristics charts of UNR1114

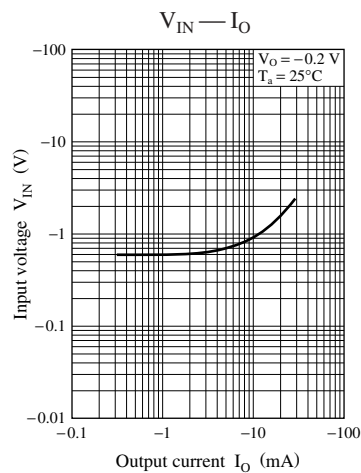
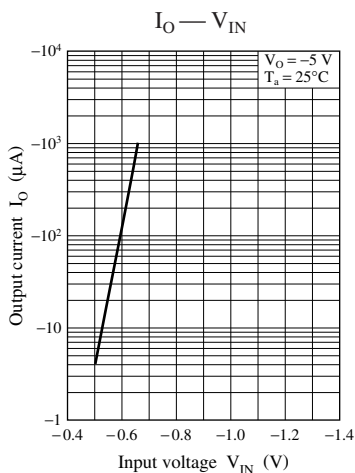
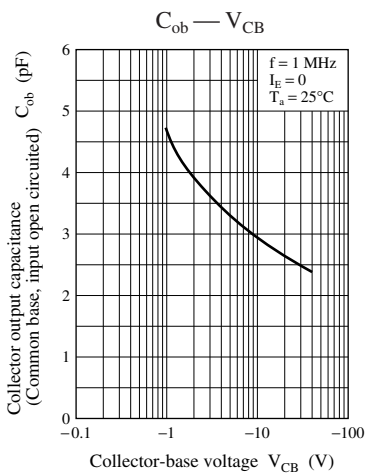
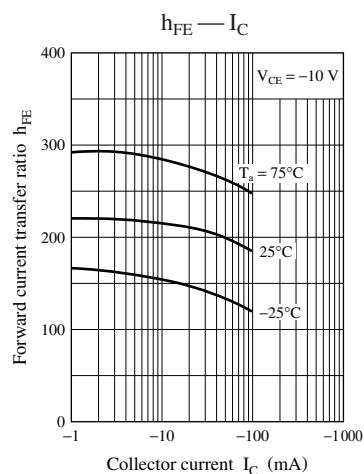
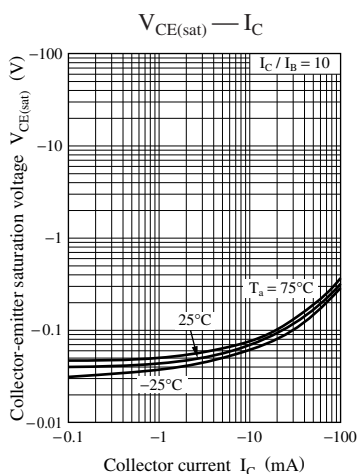
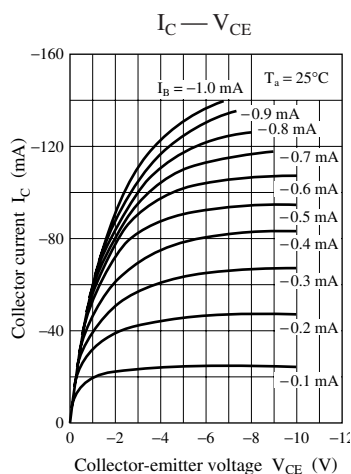


Characteristics charts of UNR1115

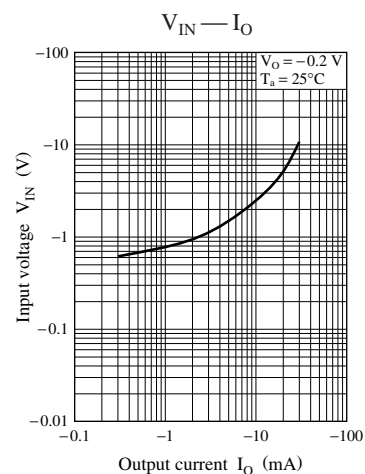
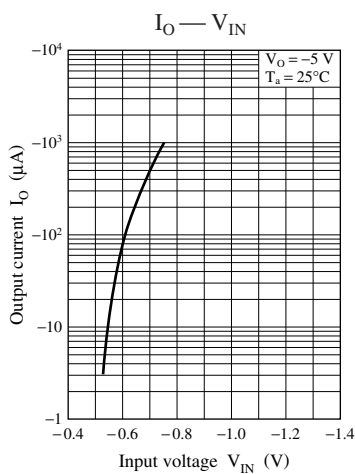
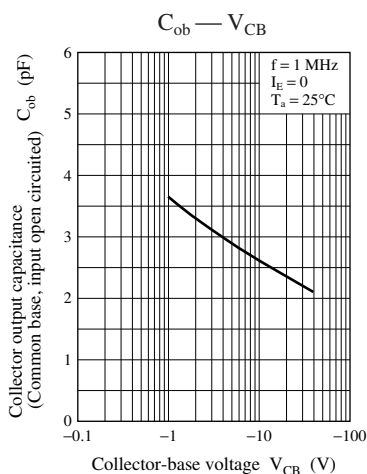
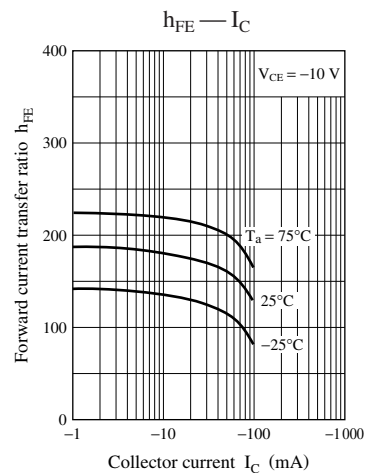
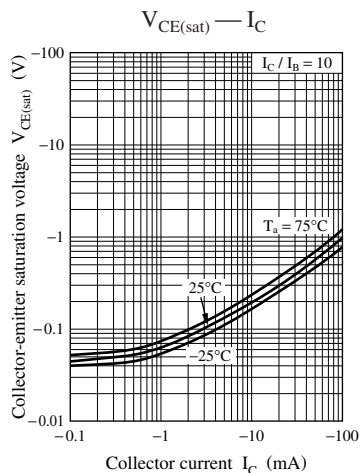
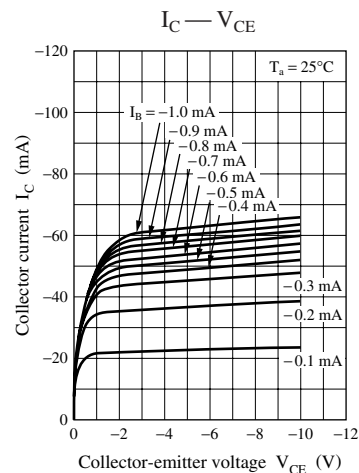




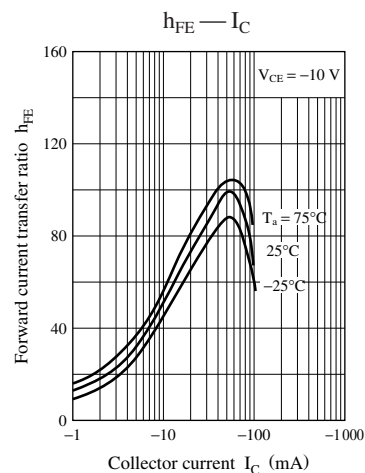
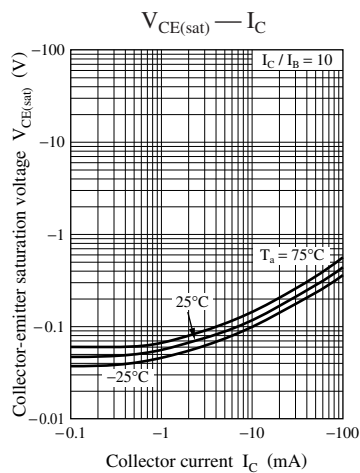
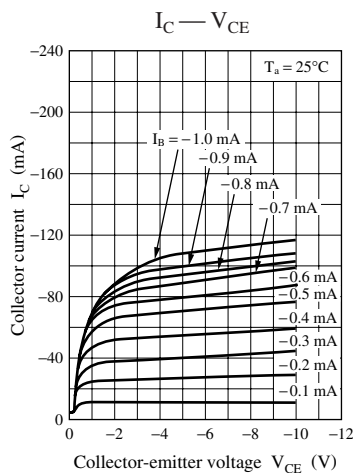
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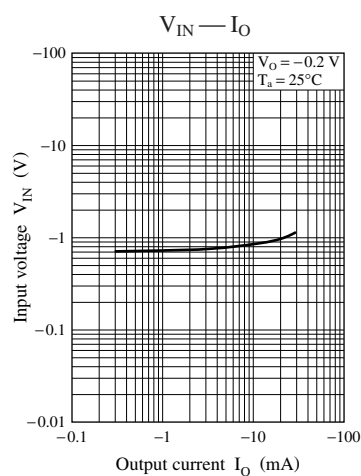
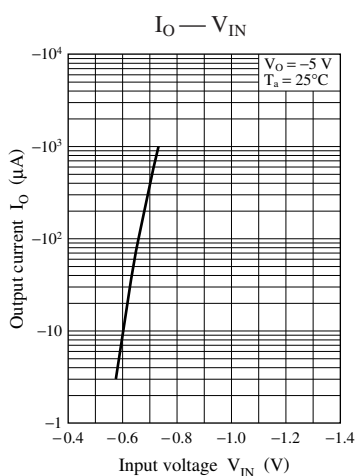
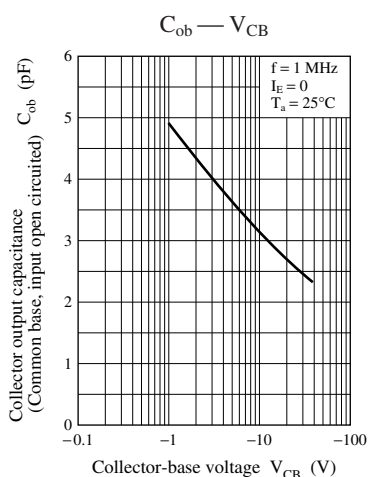


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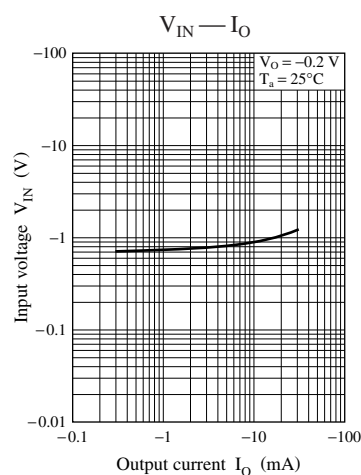
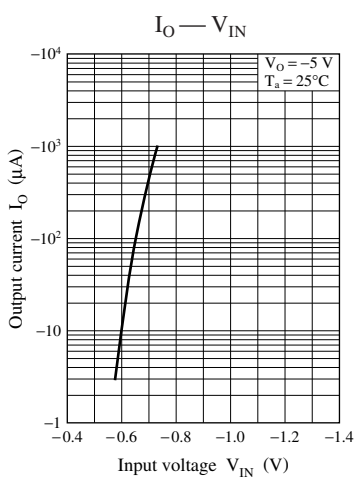
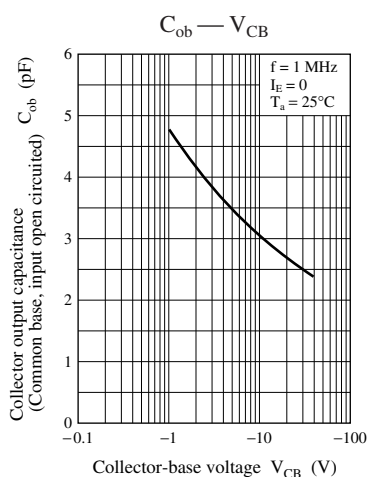
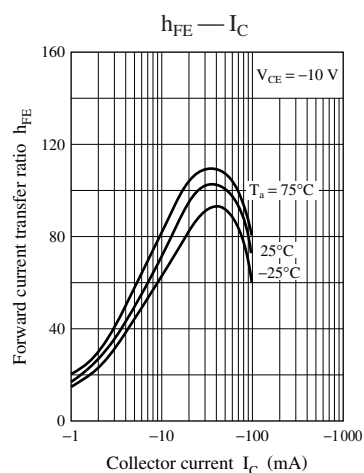
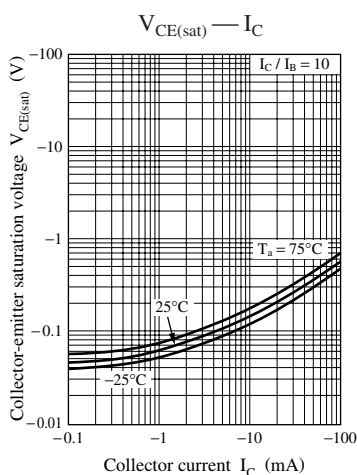
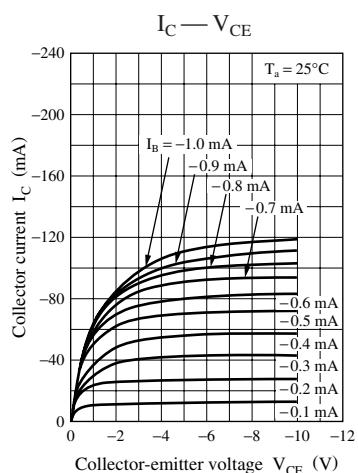


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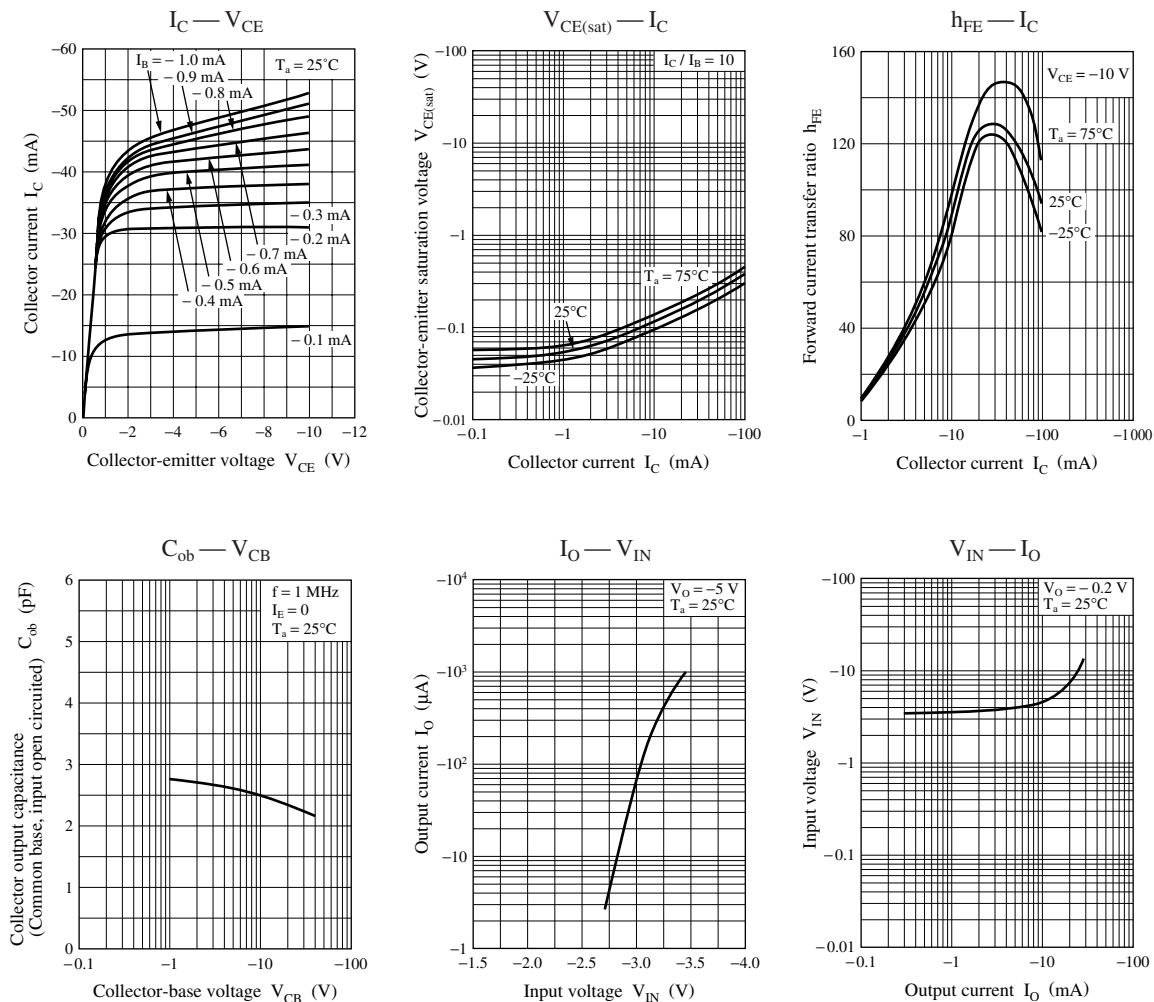




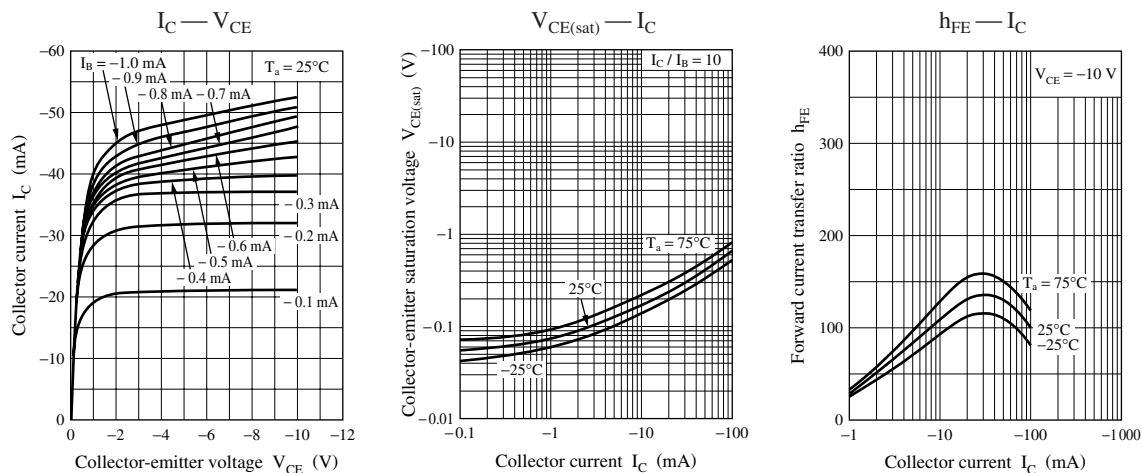
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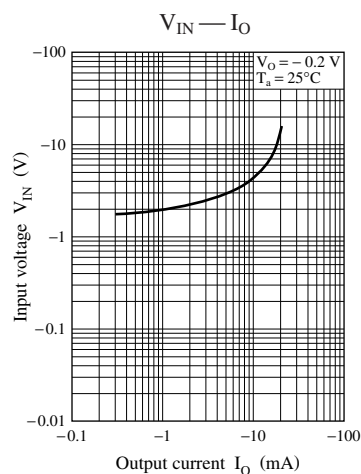
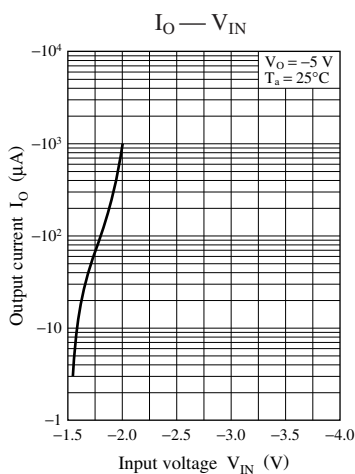
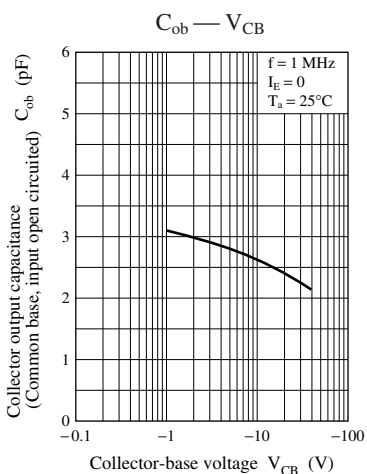


Characteristics charts of UNR111D

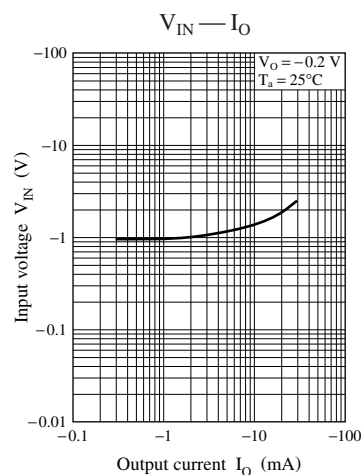
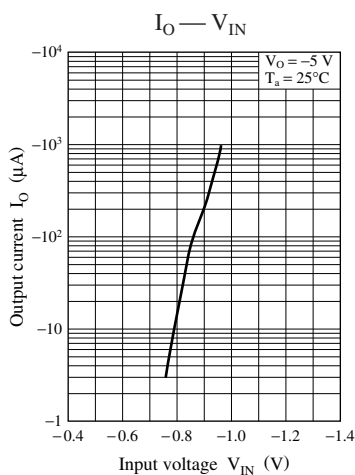
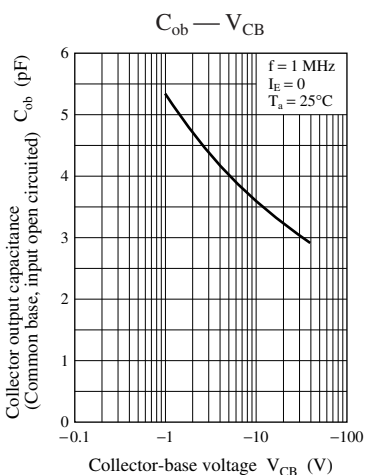
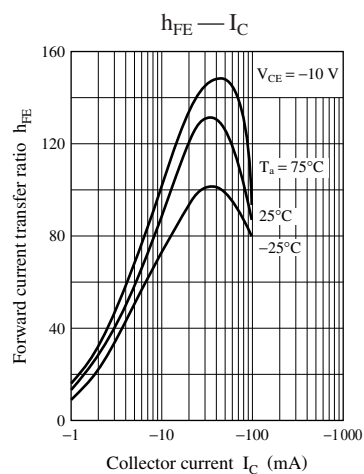
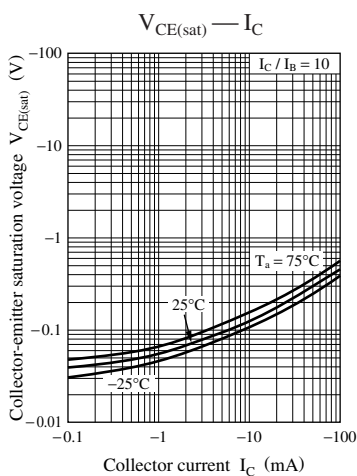
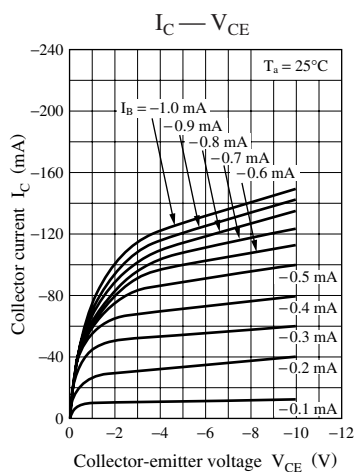


Characteristics charts of UNR111E

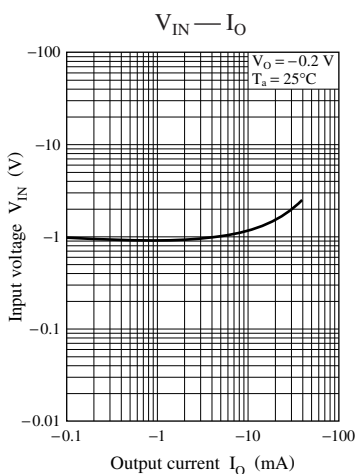
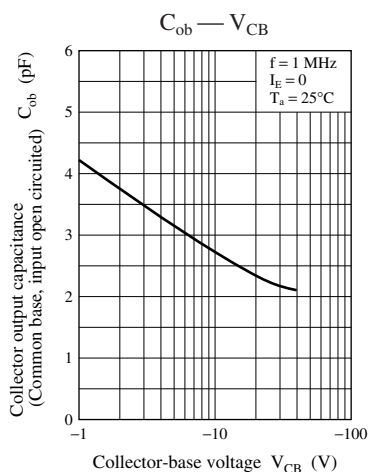
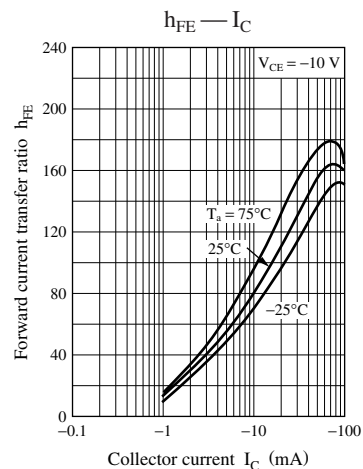
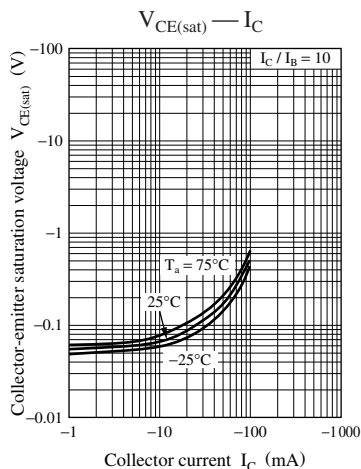
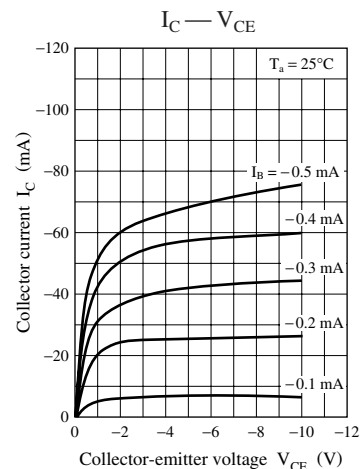




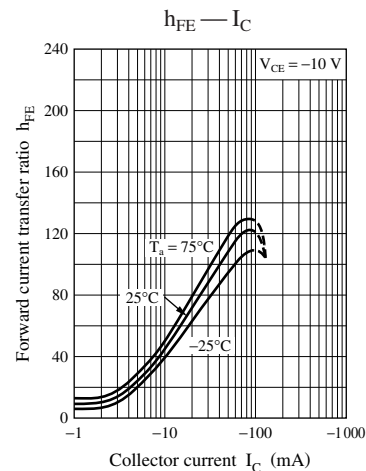
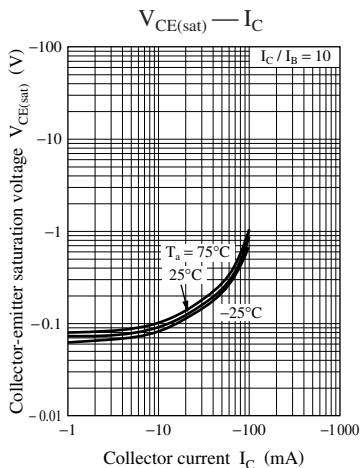
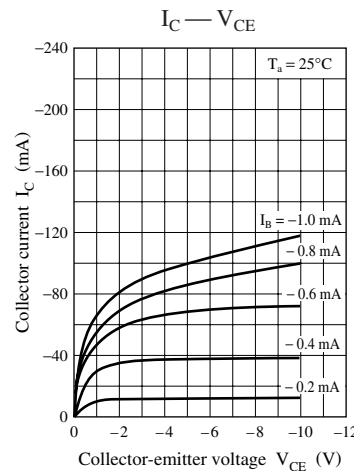
Characteristics charts of UNR111F

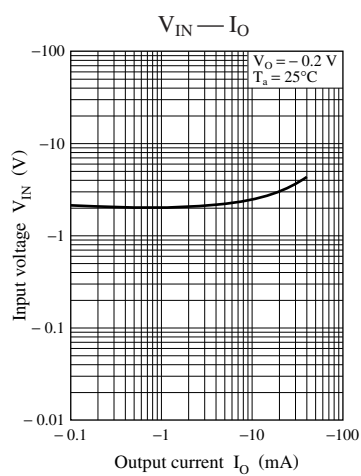
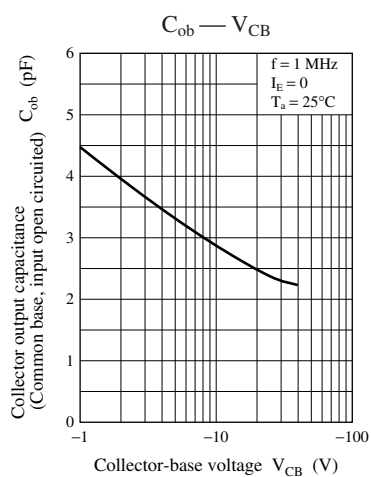


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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