

UNR111x Series (UN111x Series)

Silicon PNP epitaxial planar transistor

For digital circuits

■ Features

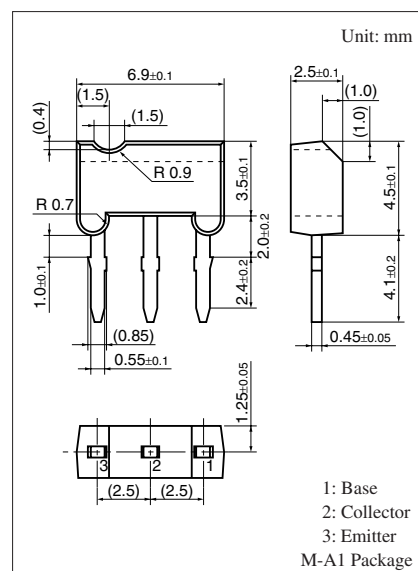
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

■ Resistance by Part Number

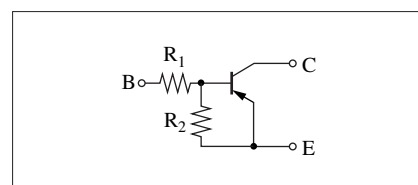
	(R ₁)	(R ₂)
• UNR1110 (UN1110)	47 kΩ	—
• UNR1111 (UN1111)	10 kΩ	10 kΩ
• UNR1112 (UN1112)	22 kΩ	22 kΩ
• UNR1113 (UN1113)	47 kΩ	47 kΩ
• UNR1114 (UN1114)	10 kΩ	47 kΩ
• UNR1115 (UN1115)	10 kΩ	—
• UNR1116 (UN1116)	4.7 kΩ	—
• UNR1117 (UN1117)	22 kΩ	—
• UNR1118 (UN1118)	0.51 kΩ	5.1 kΩ
• UNR1119 (UN1119)	1 kΩ	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 $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

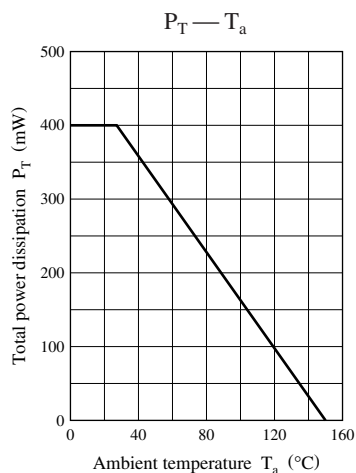
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)		V_{CBO}	$I_C = -10\ \mu\text{A}$, $I_E = 0$	-50			V
Collector-emitter voltage (Base open)		V_{CEO}	$I_C = -2\ \text{mA}$, $I_B = 0$	-50			V
Collector-base cutoff current (Emitter open)		I_{CBO}	$V_{CB} = -50\ \text{V}$, $I_E = 0$			-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.

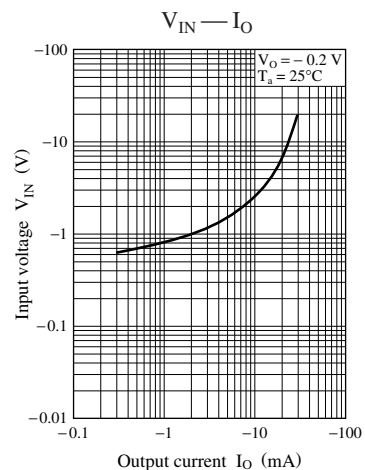
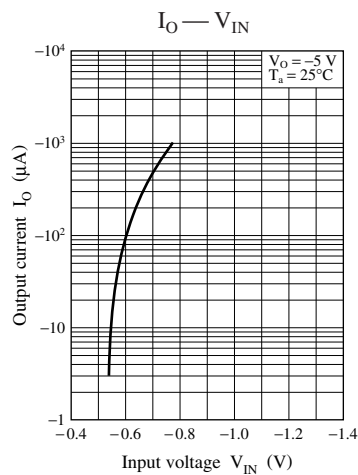
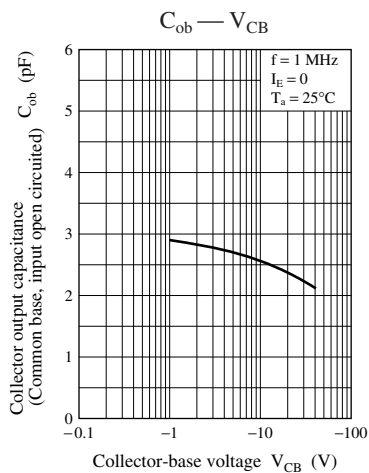
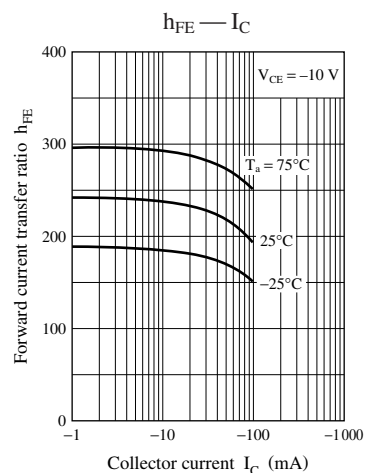
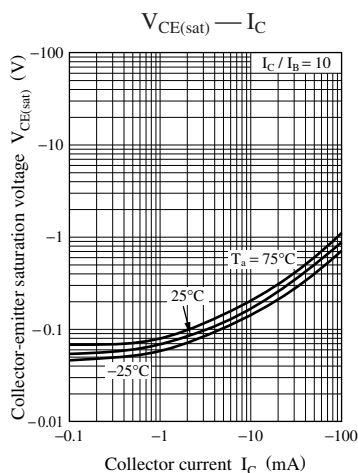
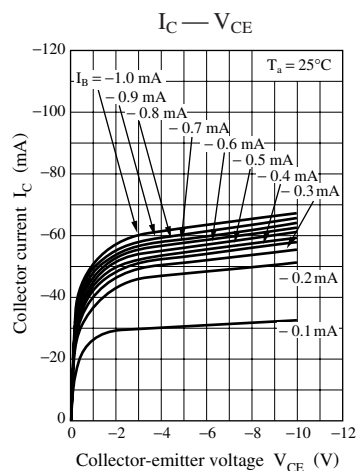
2. *: Rank classification (UNR1110/1115/1116/1117)

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

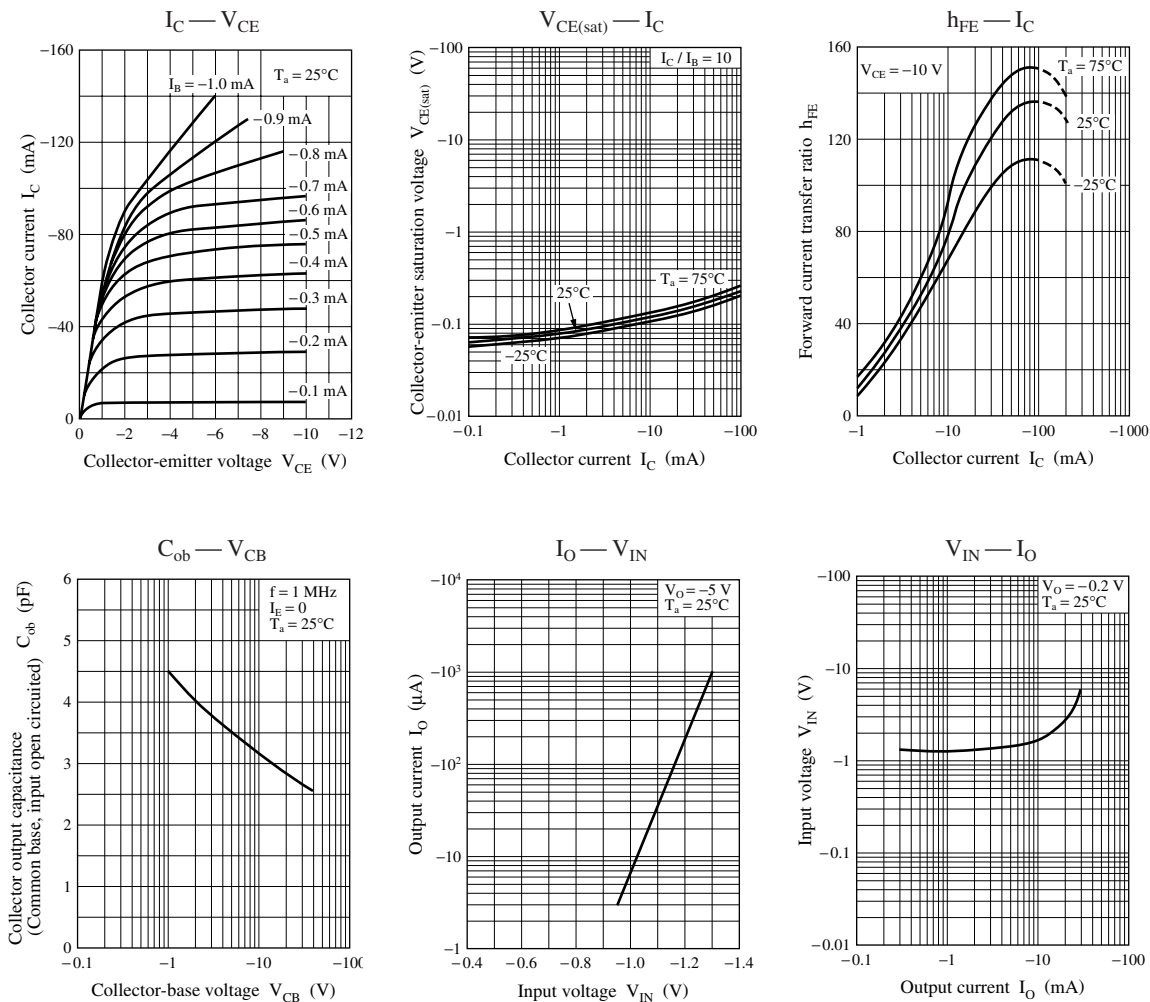
Common characteristics chart



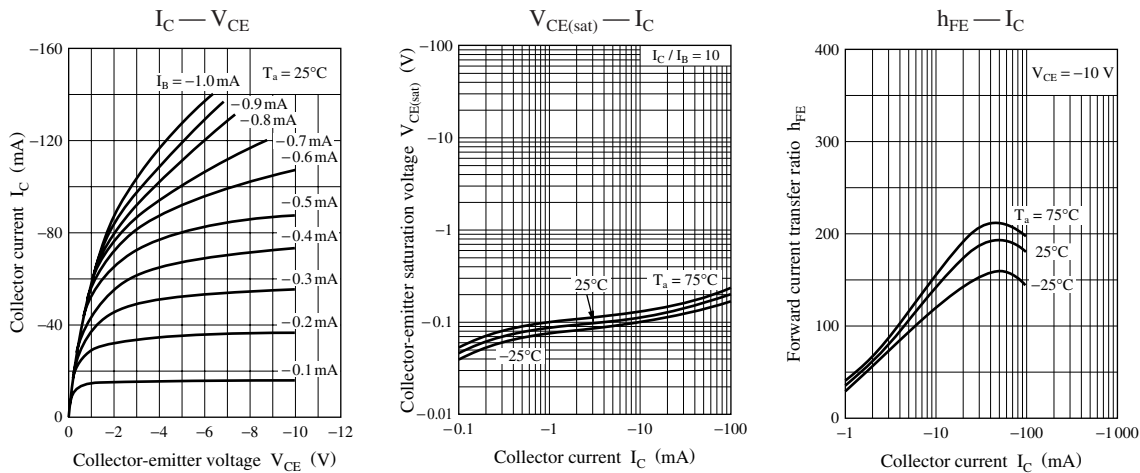
Characteristics charts of UNR1110

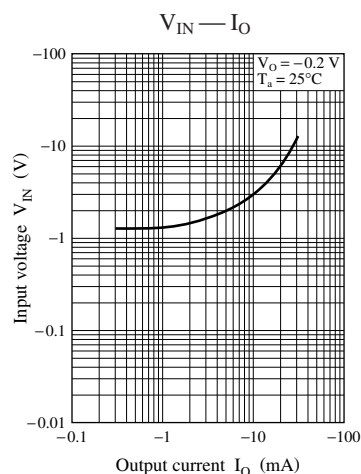
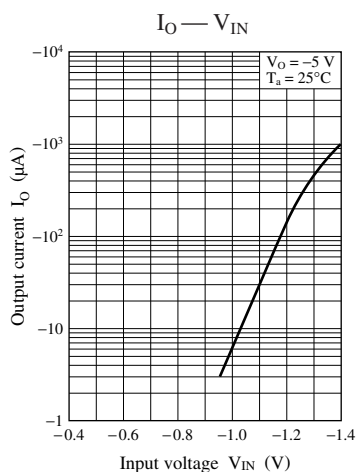
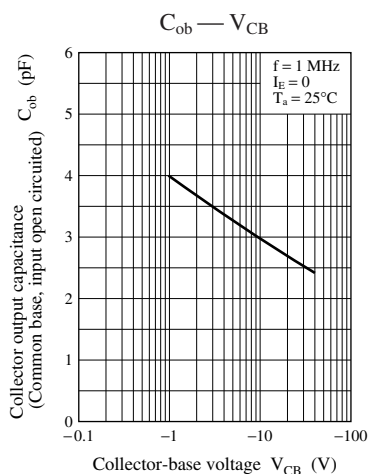


Characteristics charts of UNR1111

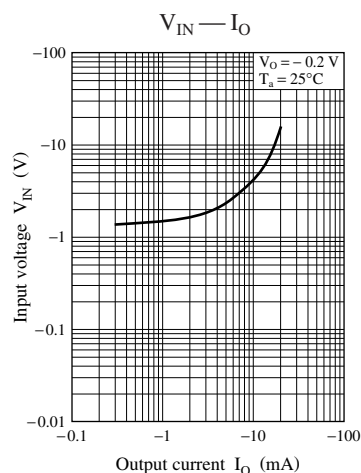
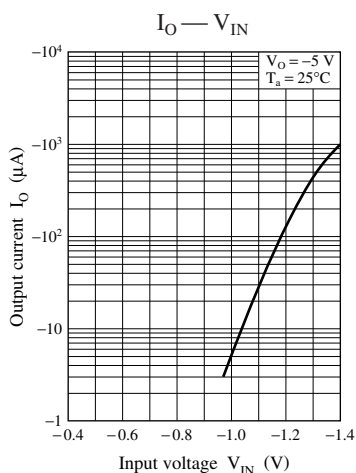
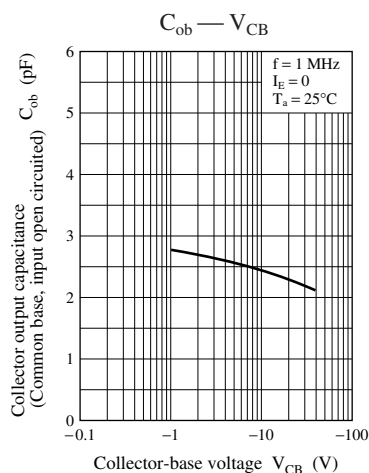
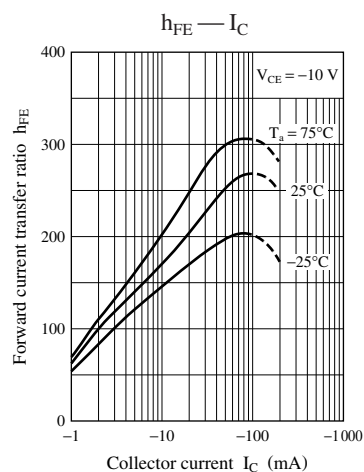
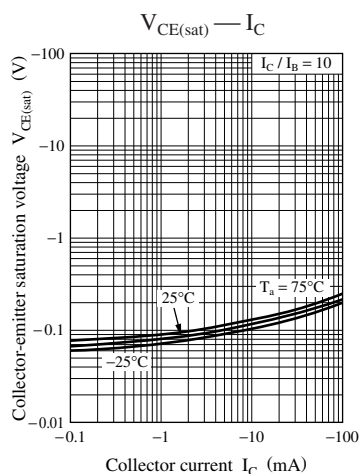
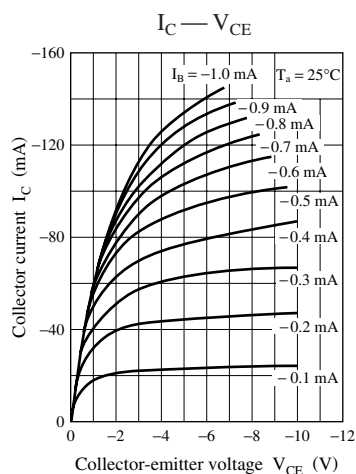


Characteristics charts of UNR1112

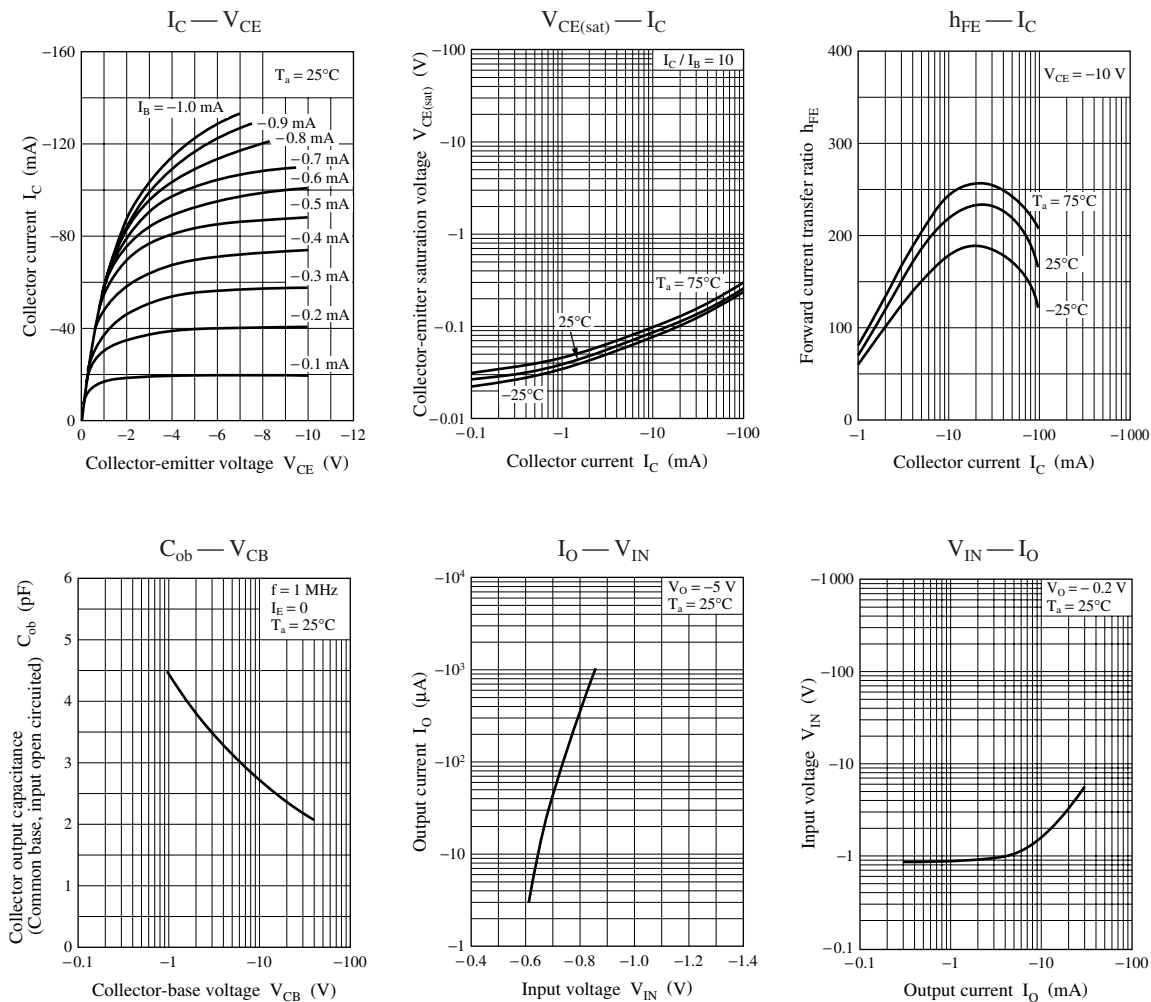




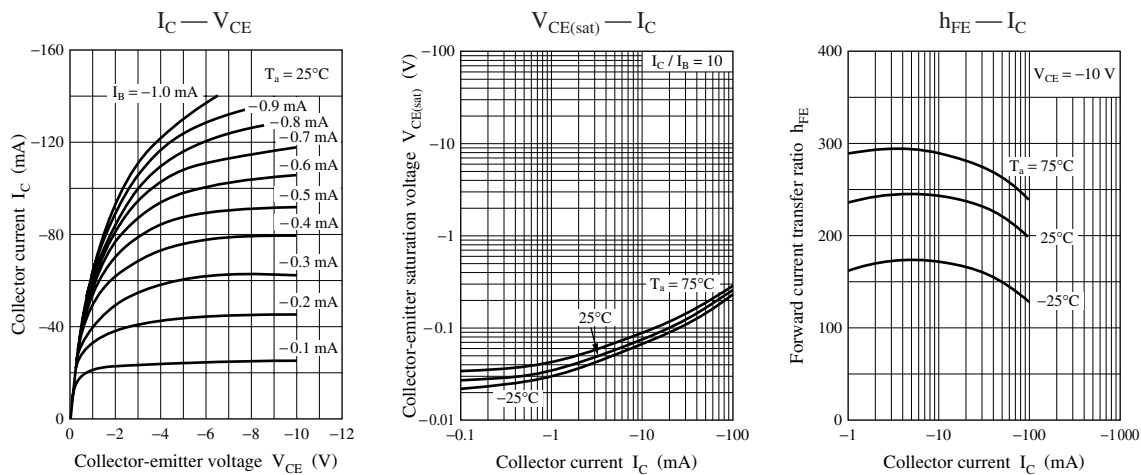
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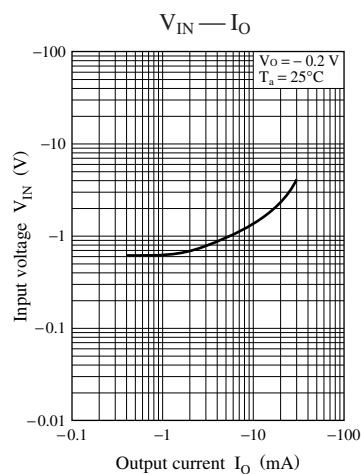
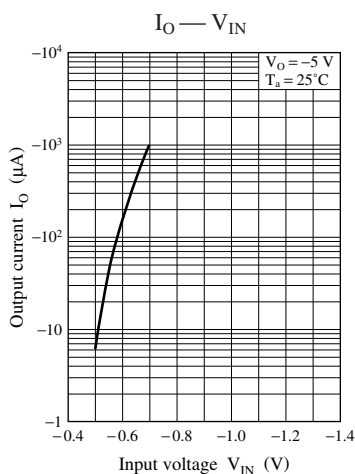
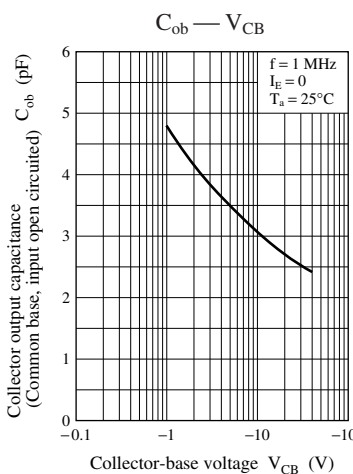


Characteristics charts of UNR1114

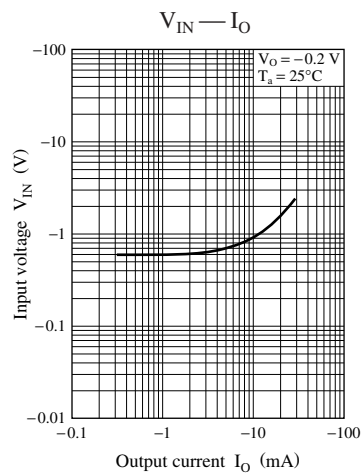
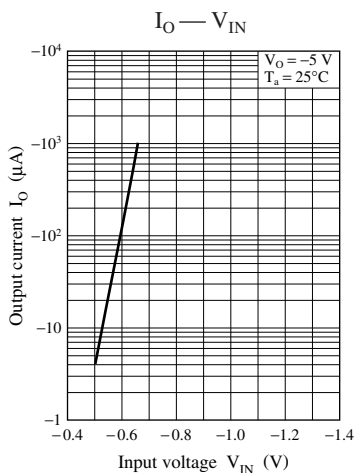
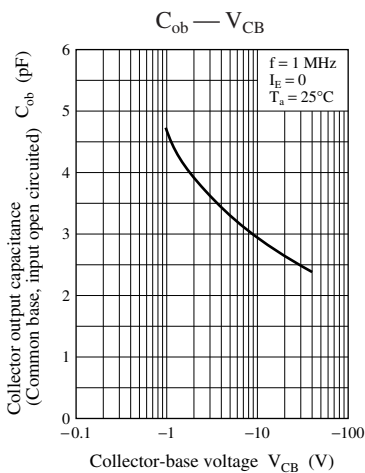
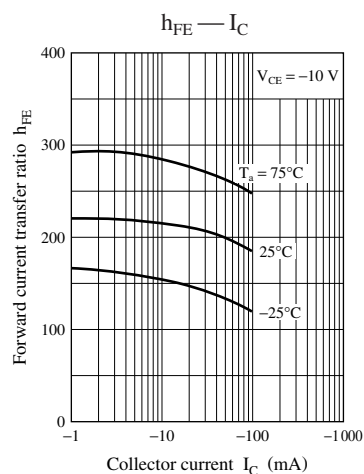
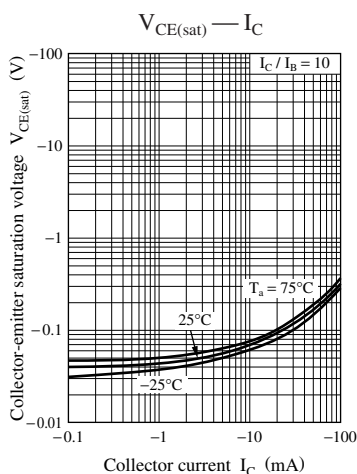
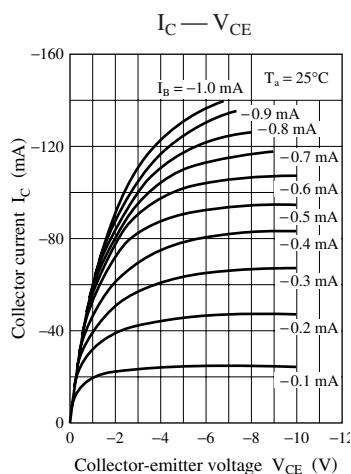


Characteristics charts of UNR1115

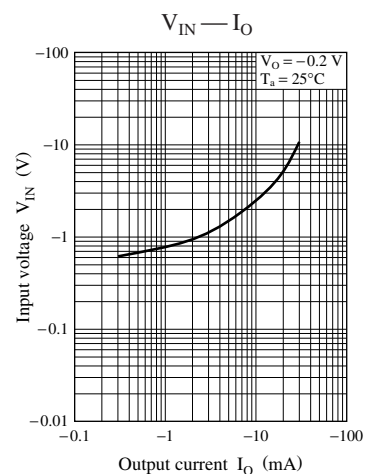
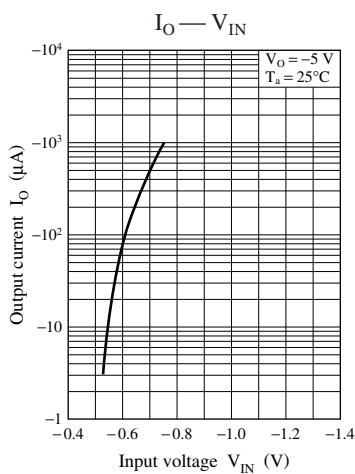
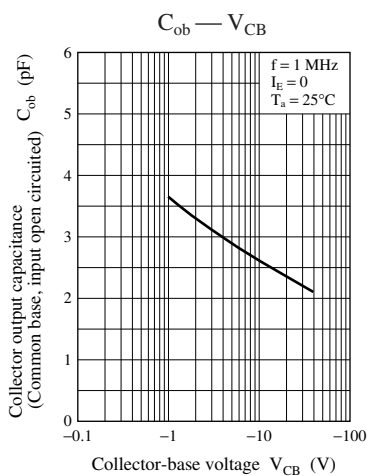
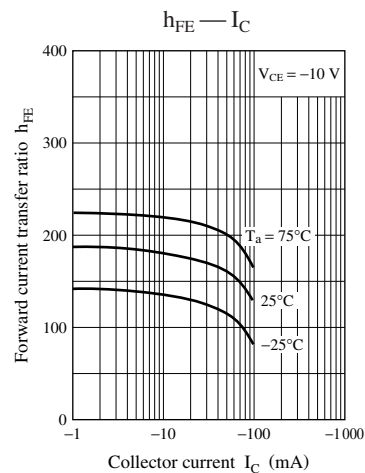
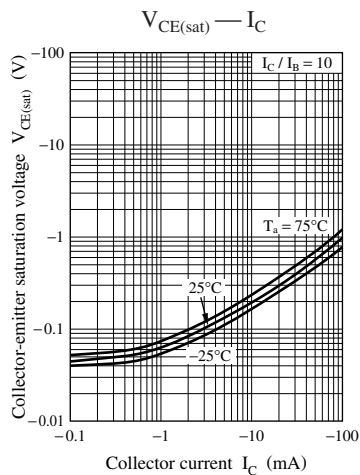
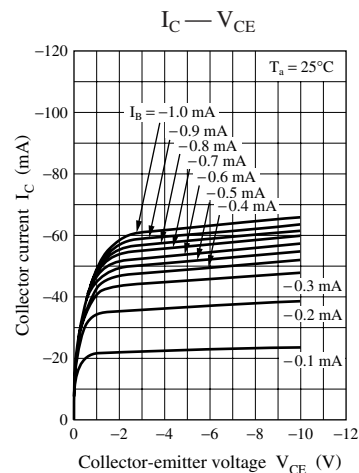




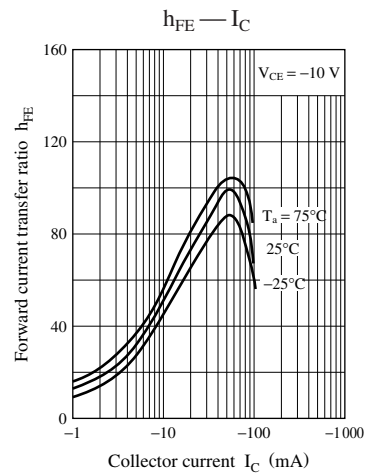
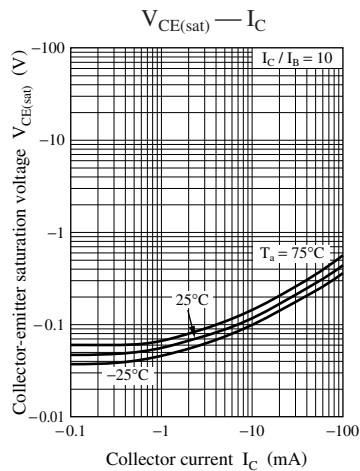
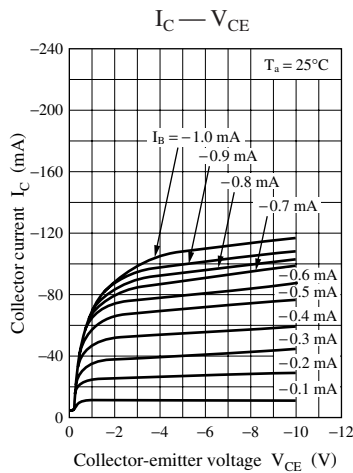
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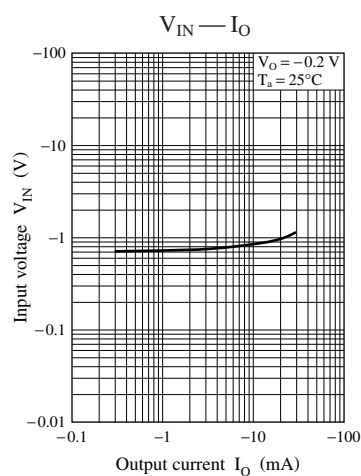
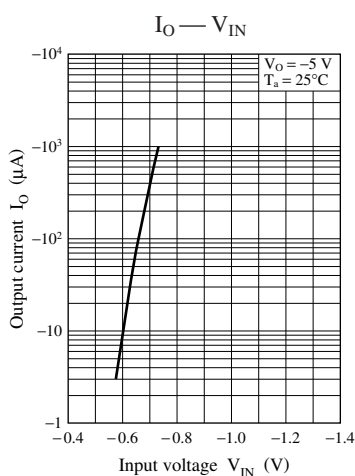
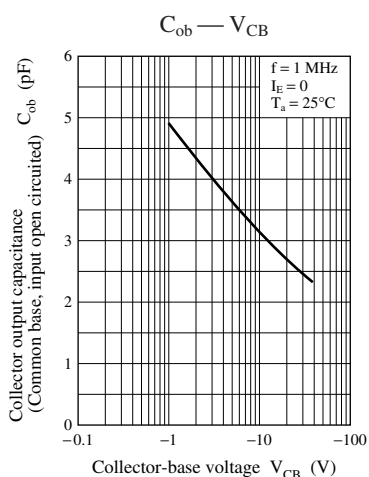


Characteristics charts of UNR1117

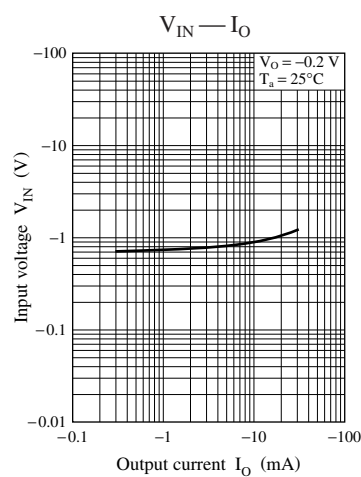
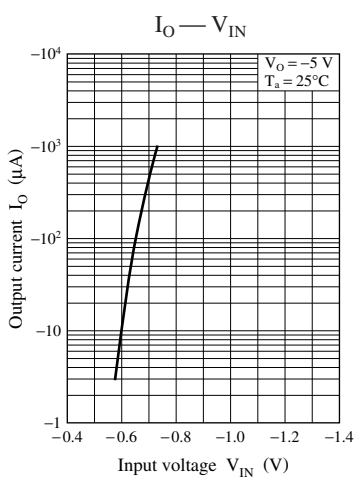
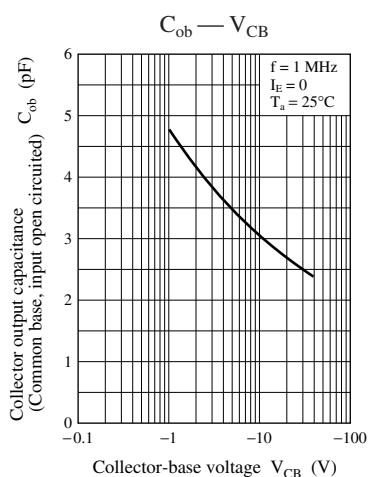
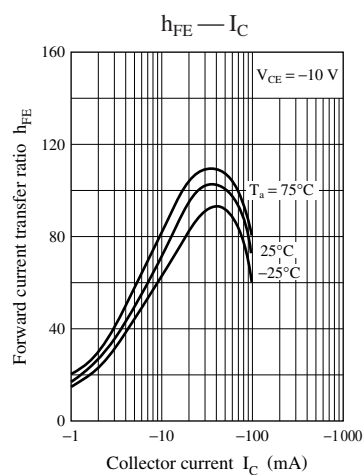
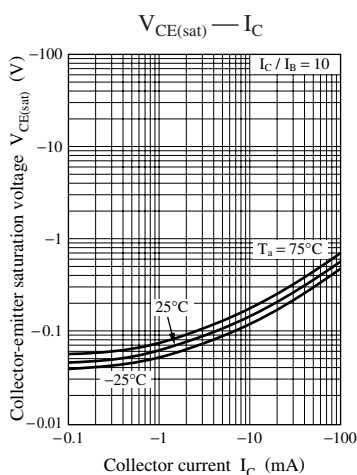
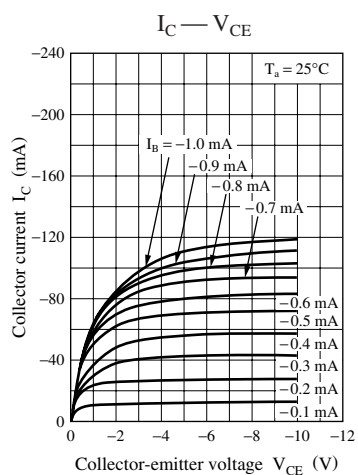


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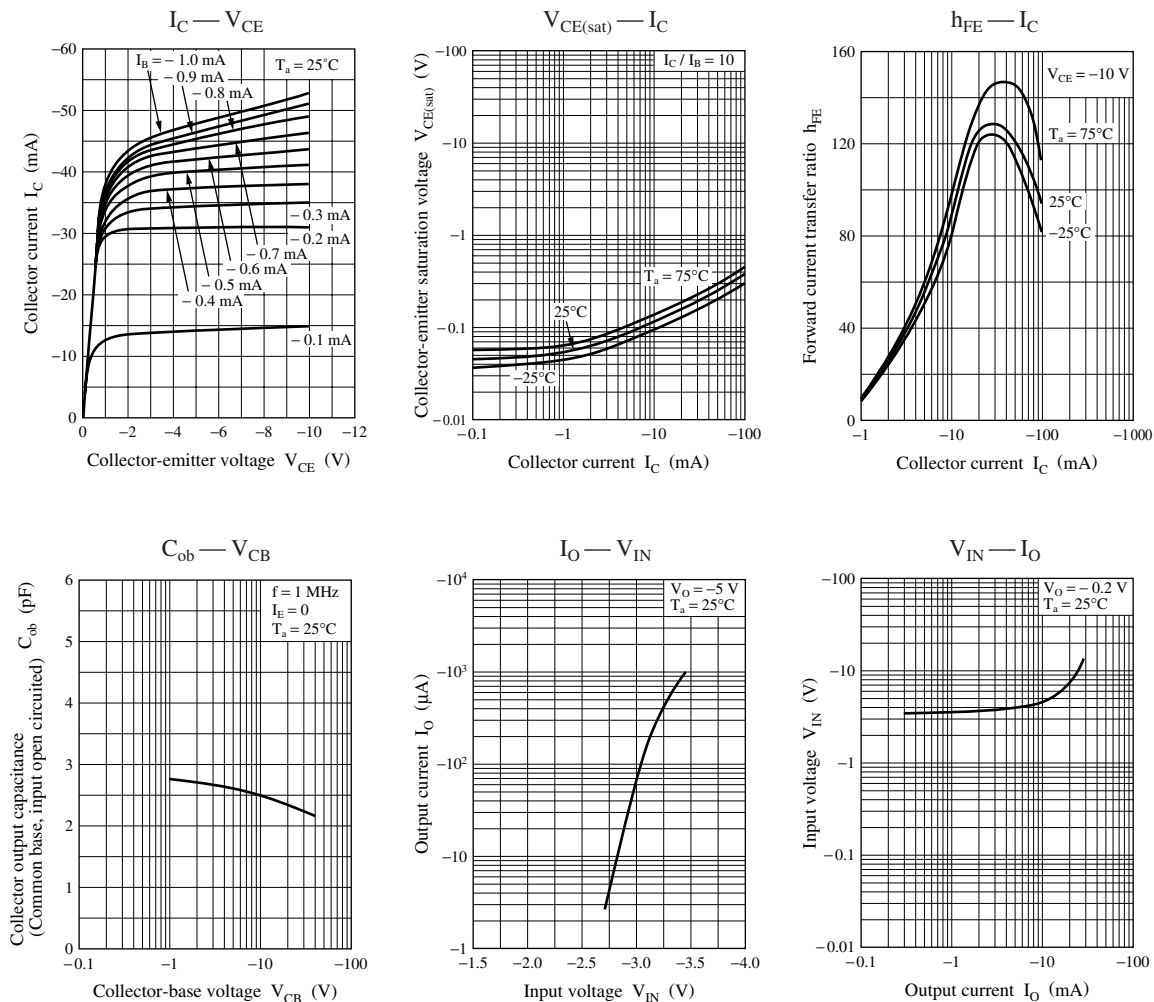




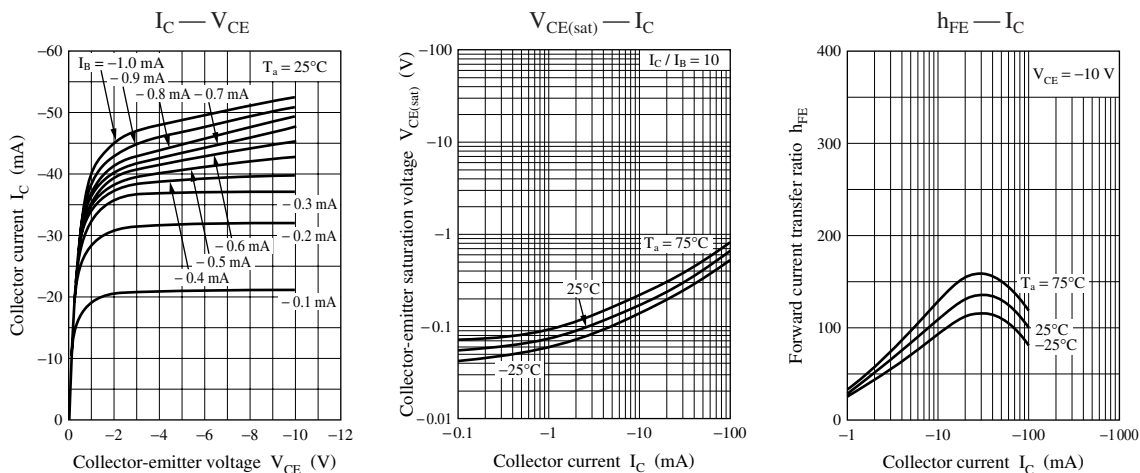
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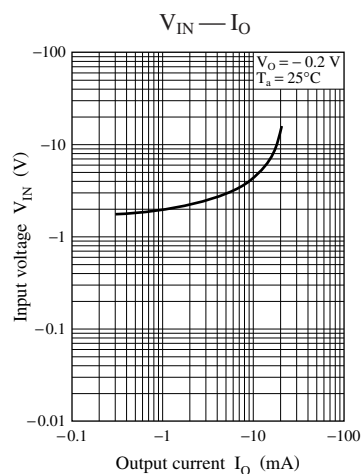
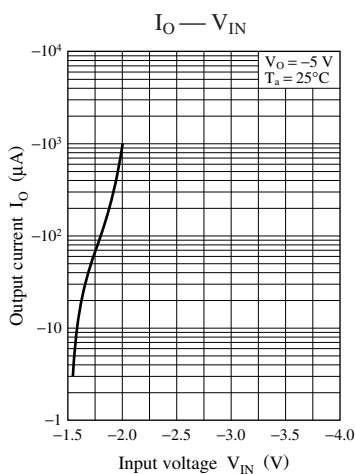
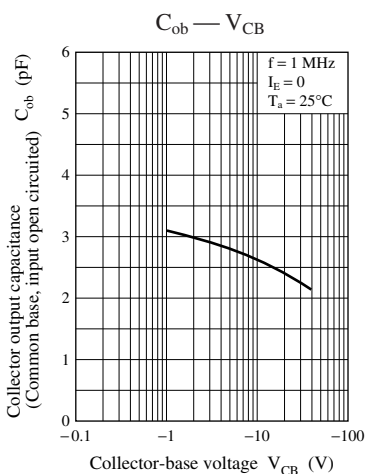


Characteristics charts of UNR111D

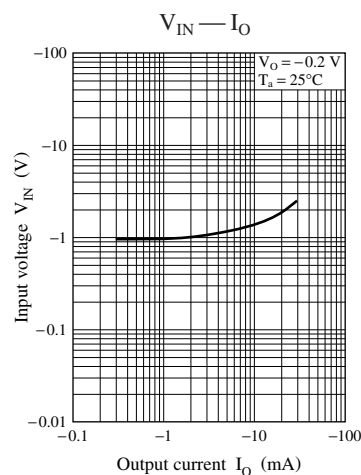
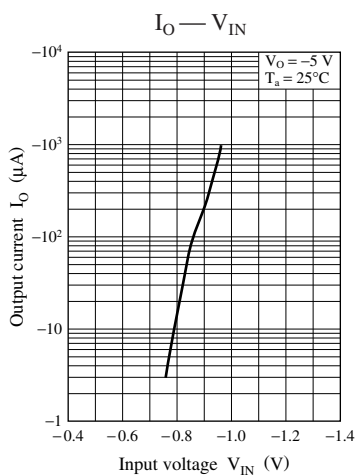
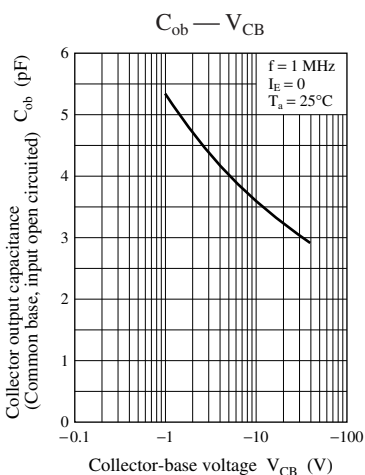
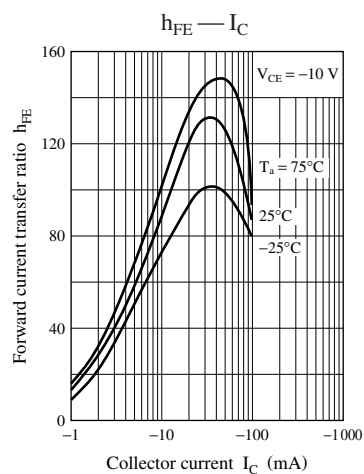
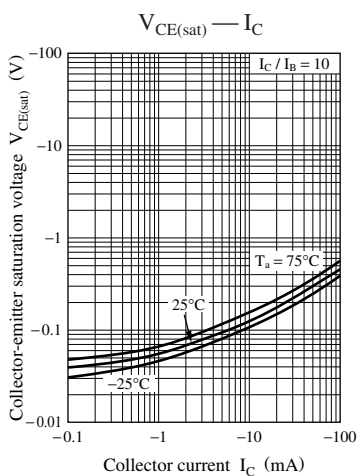
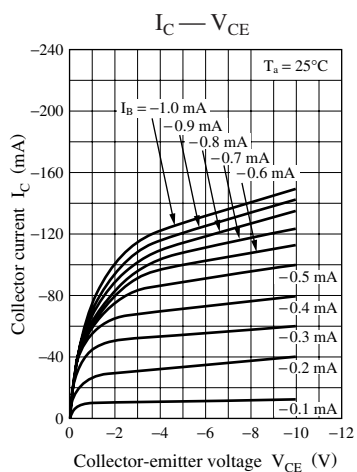


Characteristics charts of UNR111E

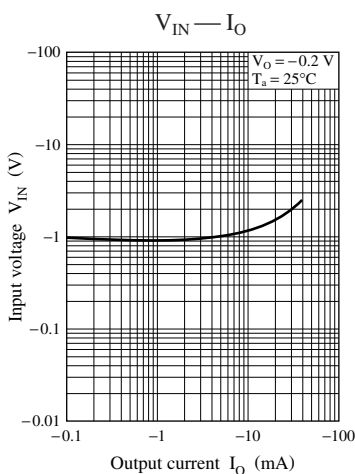
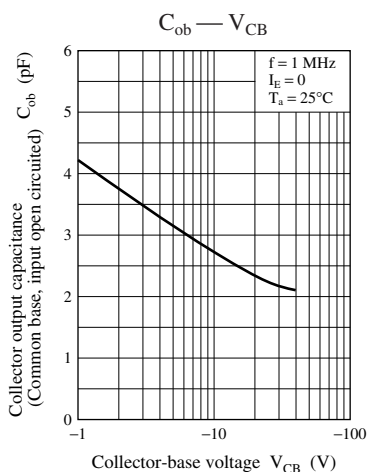
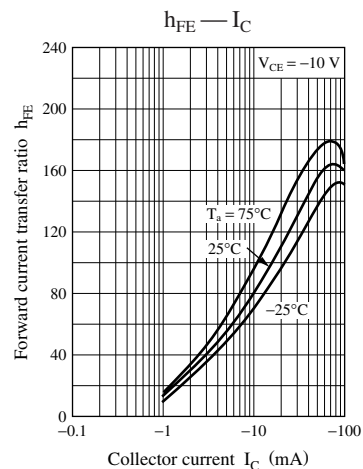
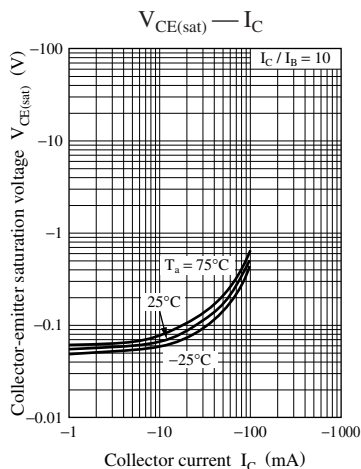
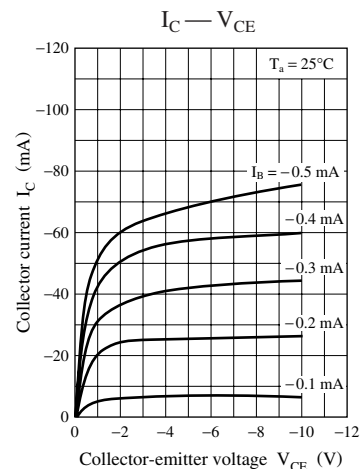




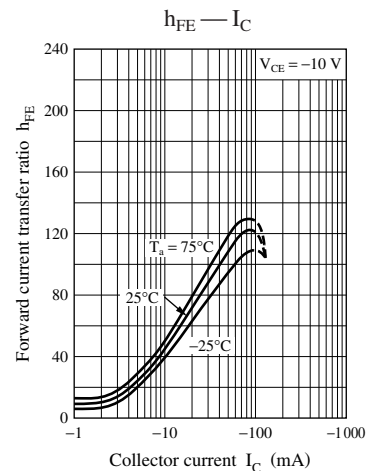
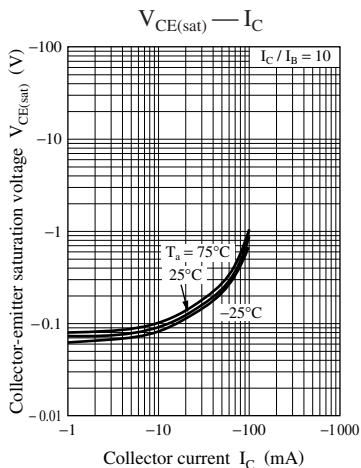
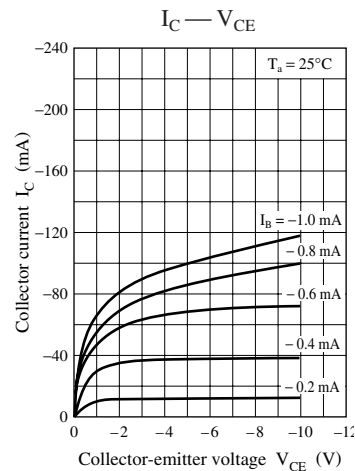
Characteristics charts of UNR111F

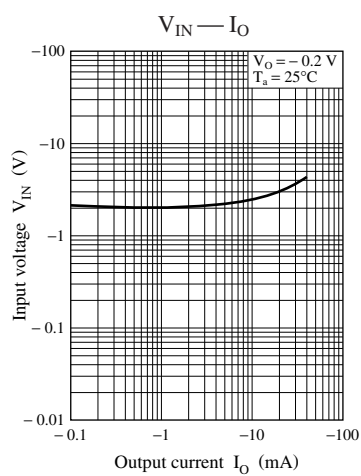
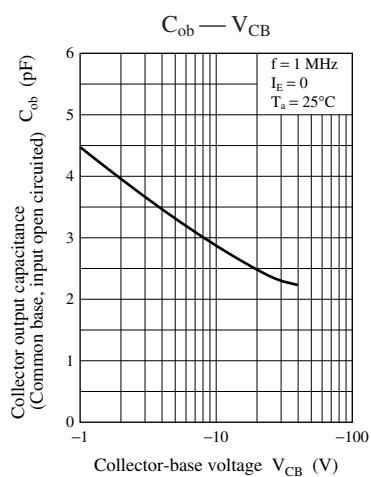


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
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