

UNR111x Series (UN111x Series)

Silicon PNP epitaxial planar transistor

For digital circuits

■ Features

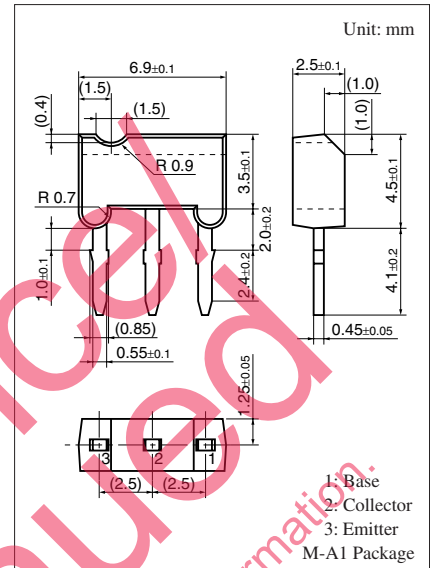
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

■ Resistance by Part Number

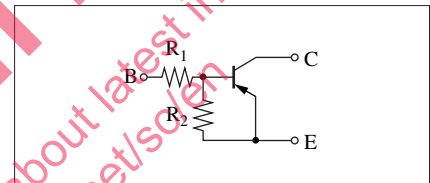
	(R ₁)	(R ₂)
• UNR1110 (UN1110)	47 kΩ	—
• UNR1111 (UN1111)	10 kΩ	10 kΩ
• UNR1112 (UN1112)	22 kΩ	22 kΩ
• UNR1113 (UN1113)	47 kΩ	47 kΩ
• UNR1114 (UN1114)	10 kΩ	47 kΩ
• UNR1115 (UN1115)	10 kΩ	—
• UNR1116 (UN1116)	4.7 kΩ	—
• UNR1117 (UN1117)	22 kΩ	—
• UNR1118 (UN1118)	0.51 kΩ	5.1 kΩ
• UNR1119 (UN1119)	1 kΩ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

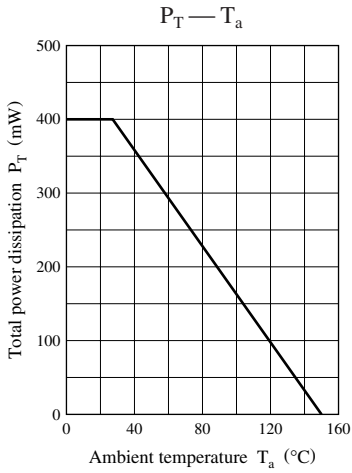
Parameter	Symbol	Conditions	Min	Typ	Max	Unit		
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = -10 \mu\text{A}, I_E = 0$	-50			V		
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -2 \text{mA}, I_B = 0$	-50			V		
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -50 \text{V}, I_E = 0$			-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		
			$V_{CC} = -5 \text{V}, V_B = -3.5 \text{V}, R_L = 1 \text{k}\Omega$					
				$V_{CC} = -5 \text{V}, V_B = -10 \text{V}, R_L = 1 \text{k}\Omega$				
					$V_{CC} = -5 \text{V}, V_B = -6 \text{V}, R_L = 1 \text{k}\Omega$			
Transition frequency	f_T	$V_{CB} = -10 \text{V}, I_E = 2 \text{mA}, f = 200 \text{MHz}$		80		MHz		
Input resistance	UNR1111/1114/1115	R_1		-30%	10	+30%	k Ω	
	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
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.

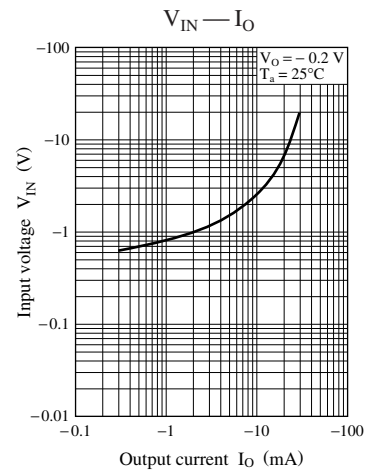
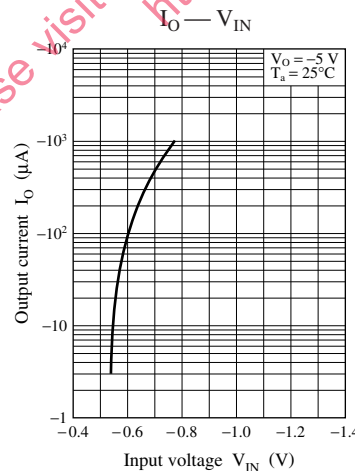
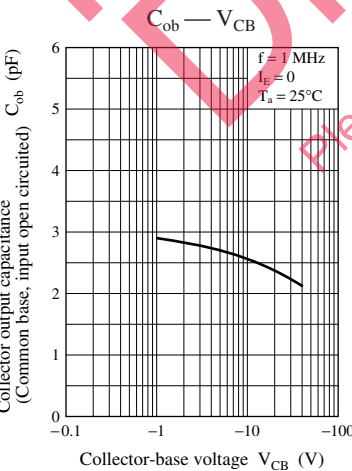
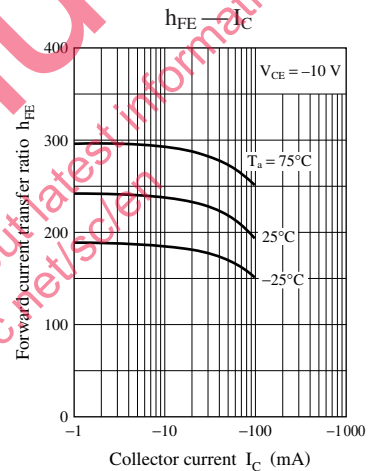
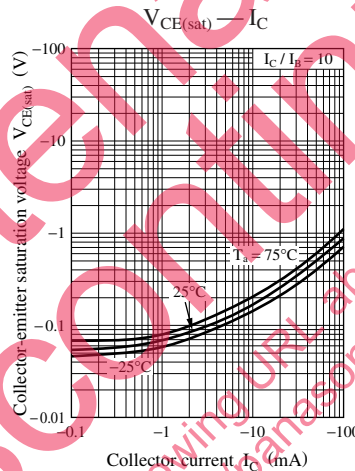
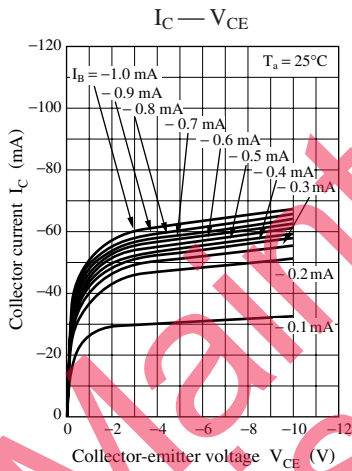
2. *: Rank classification (UNR1110/1115/1116/1117)

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

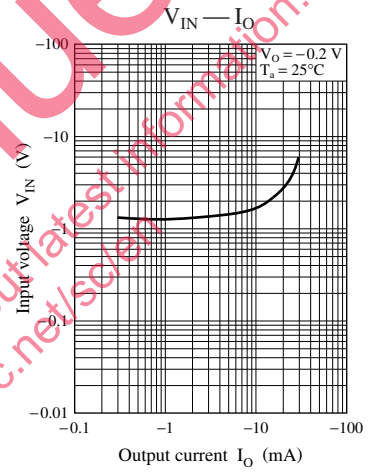
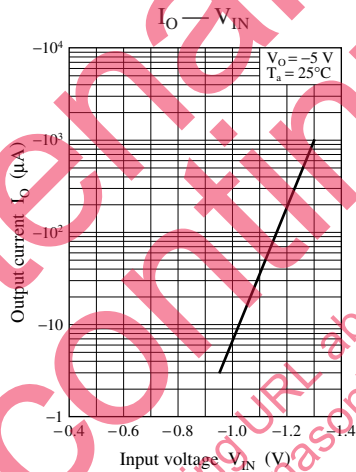
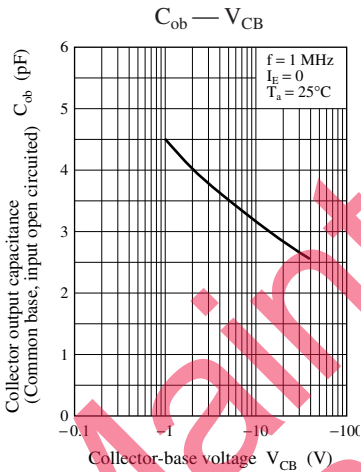
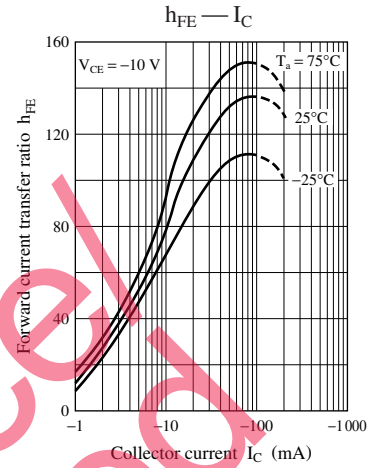
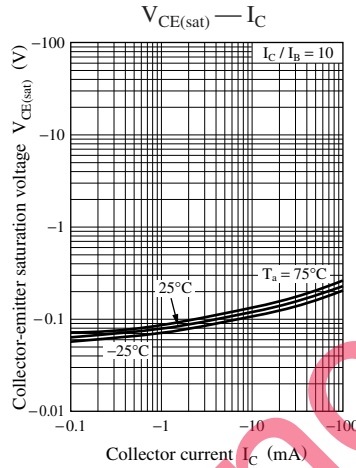
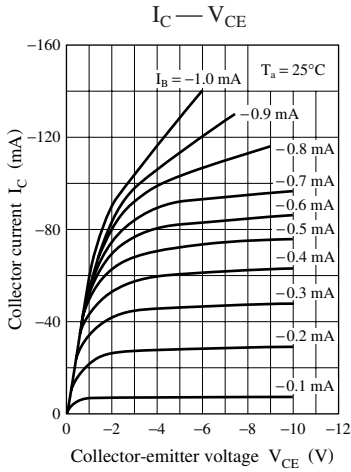
Common characteristics chart



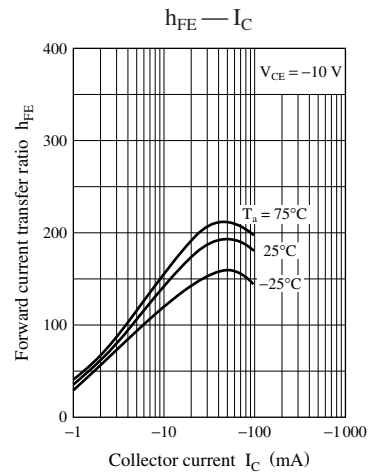
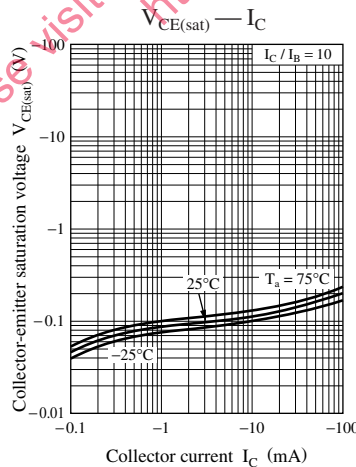
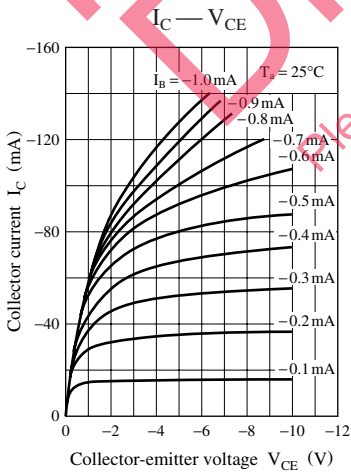
Characteristics charts of UNR1110

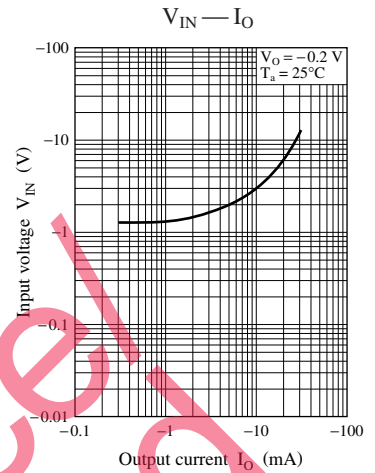
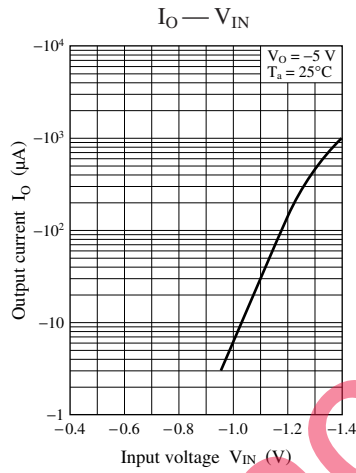
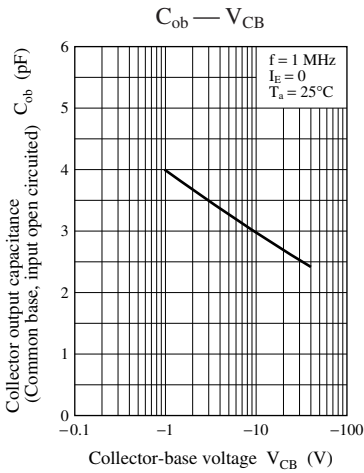


Characteristics charts of UNR1111

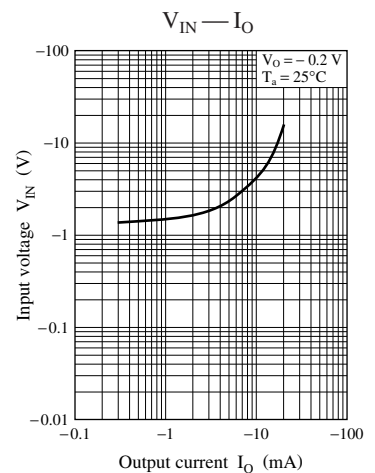
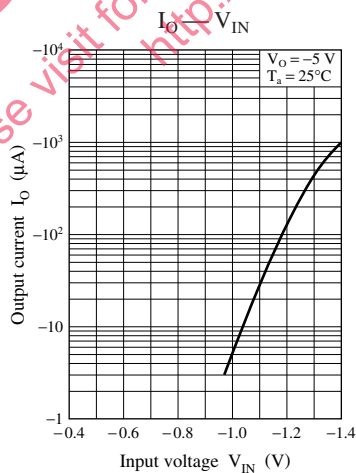
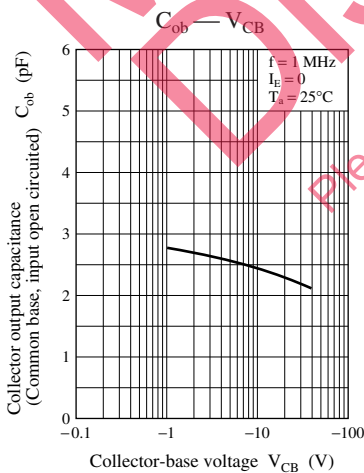
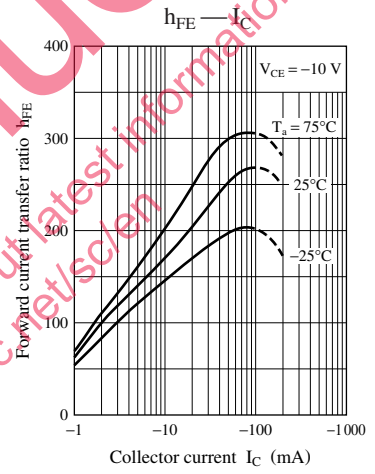
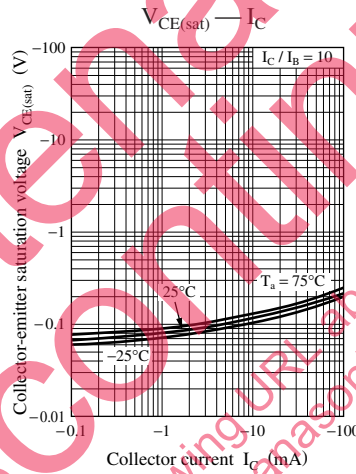
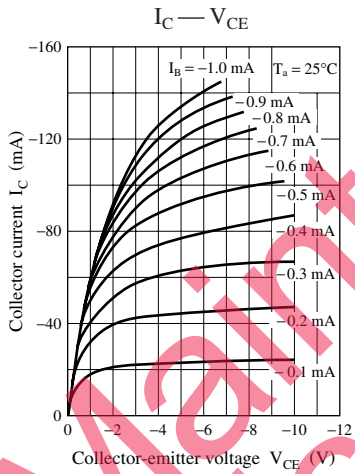


Characteristics charts of UNR1112

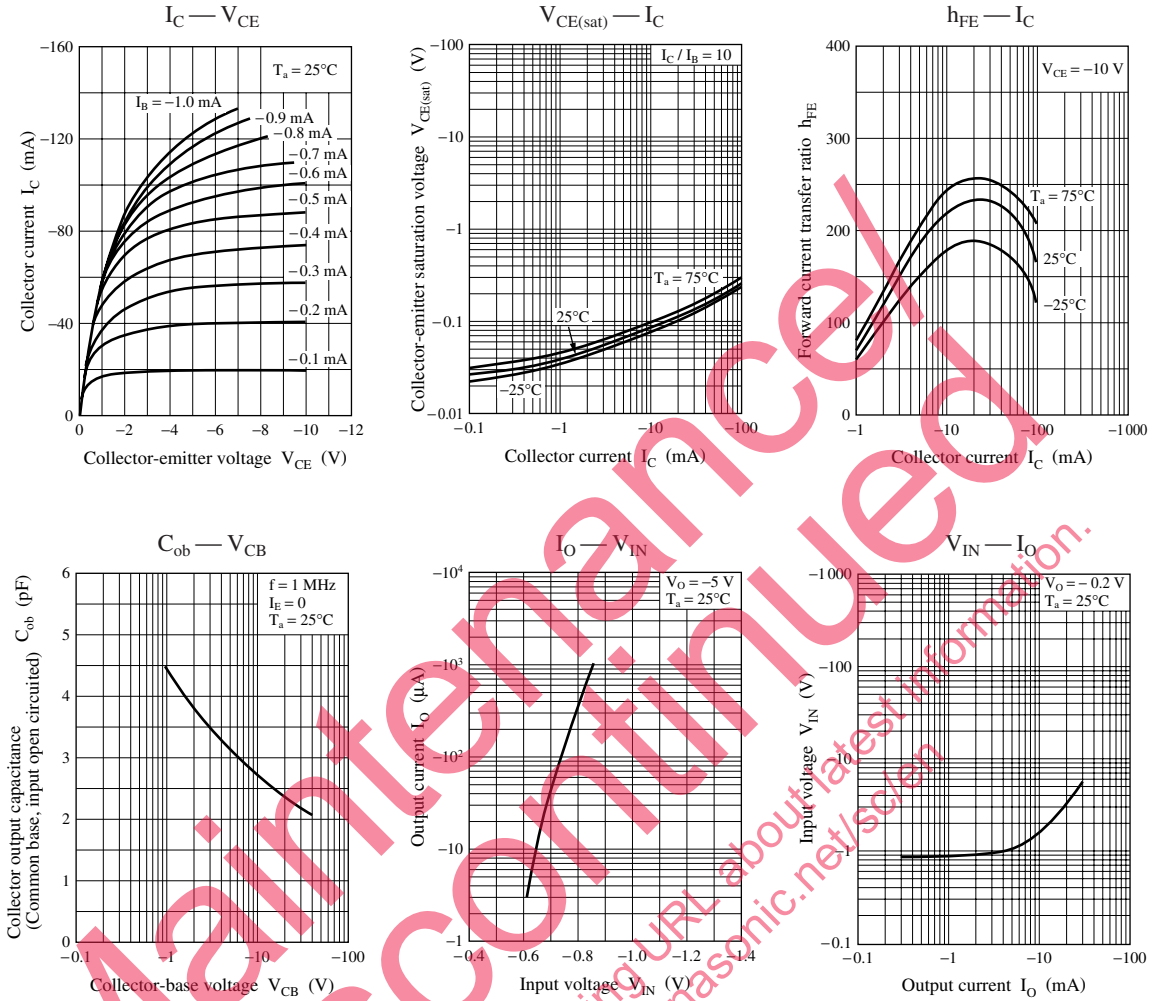




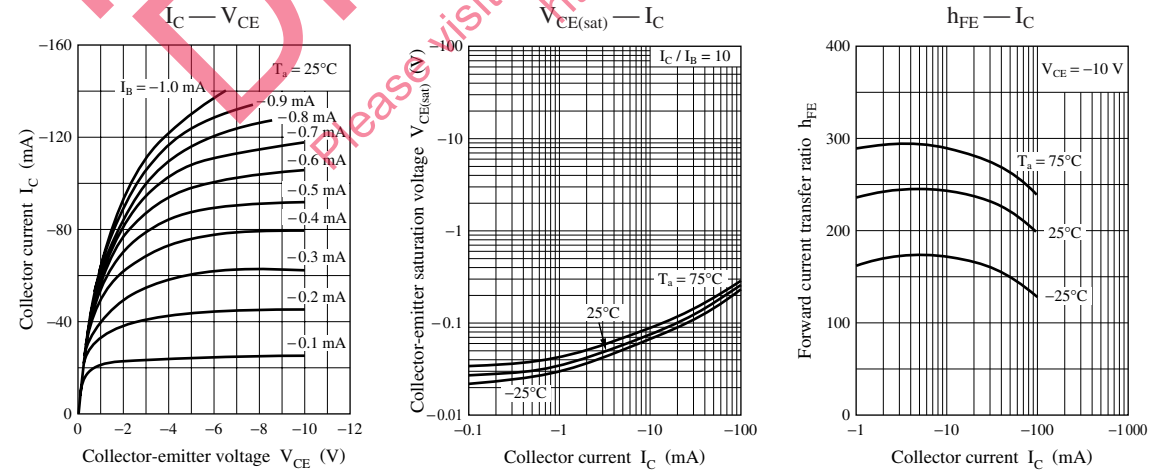
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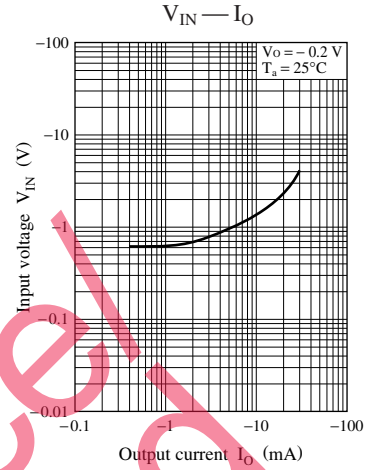
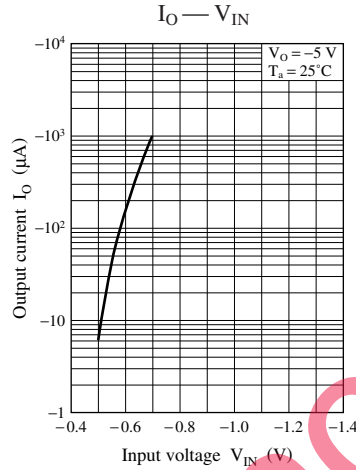
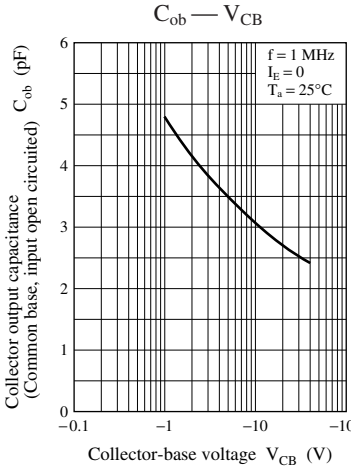


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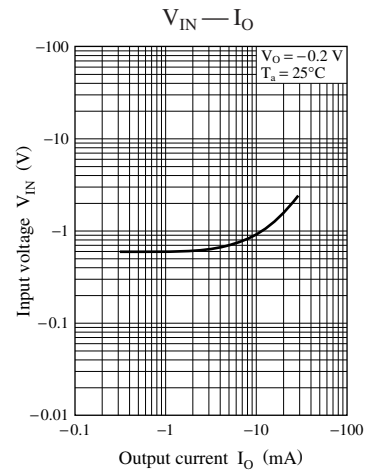
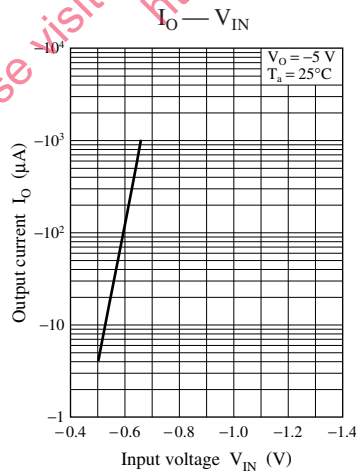
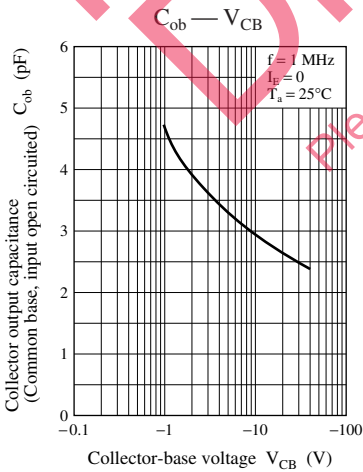
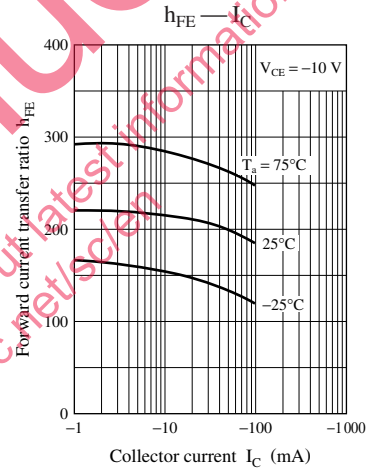
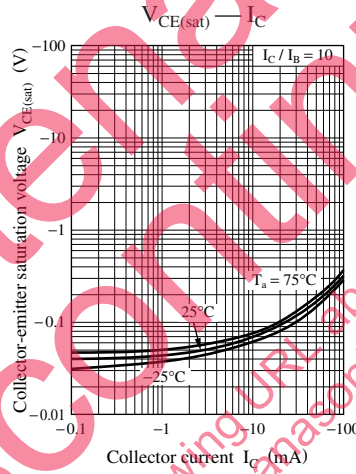
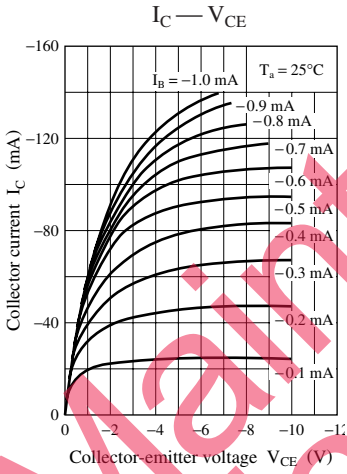


Characteristics charts of UNR1115

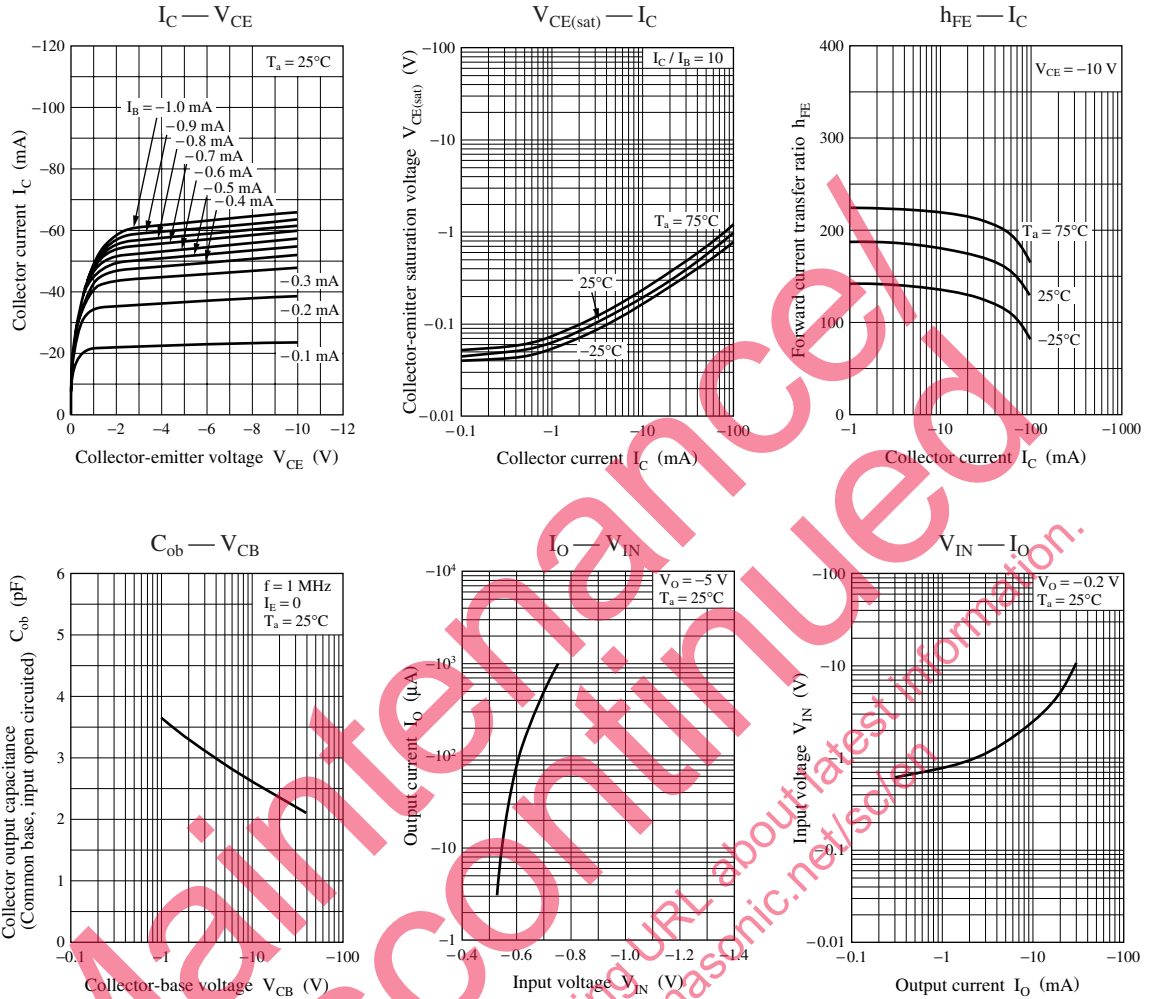




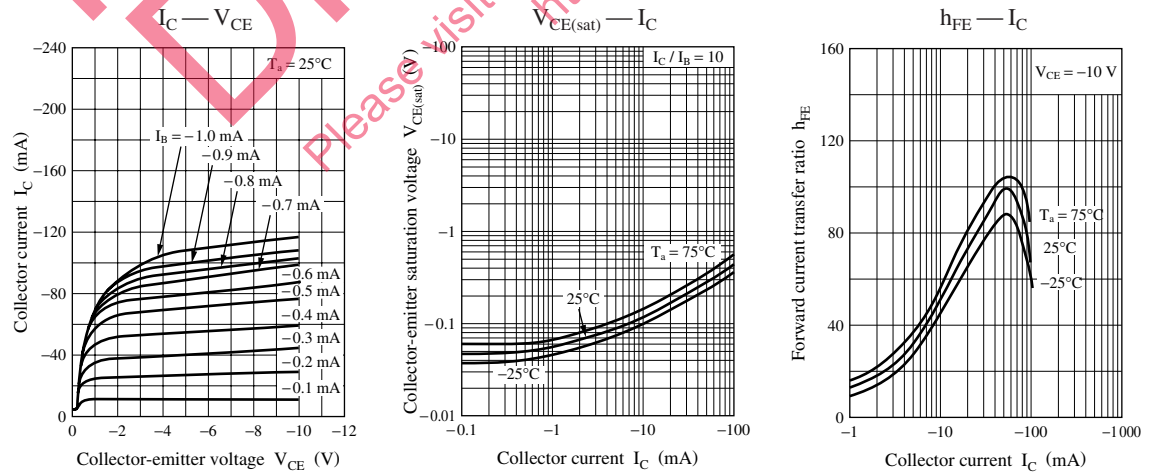
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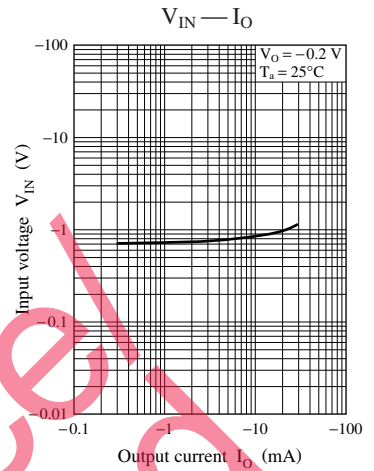
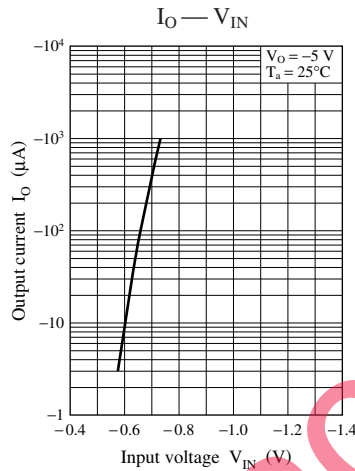
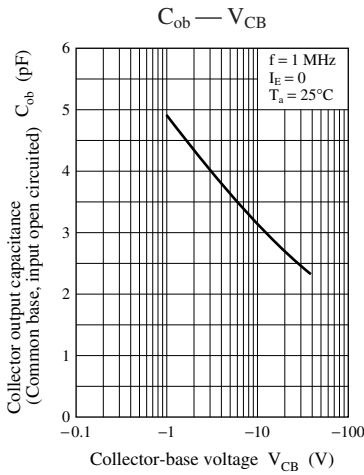


Characteristics charts of UNR1117

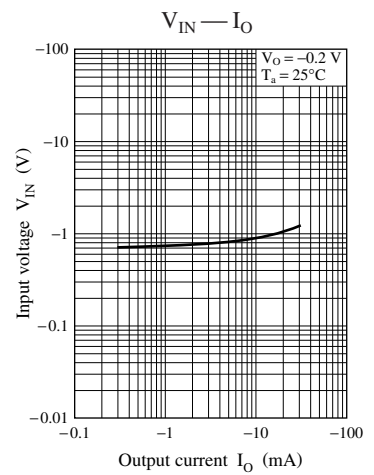
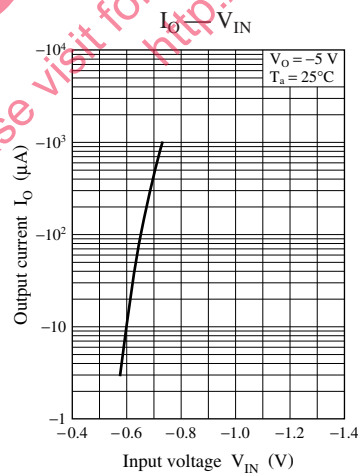
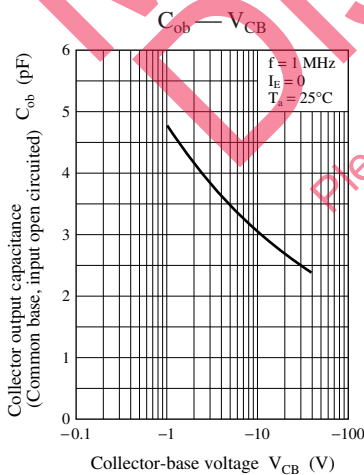
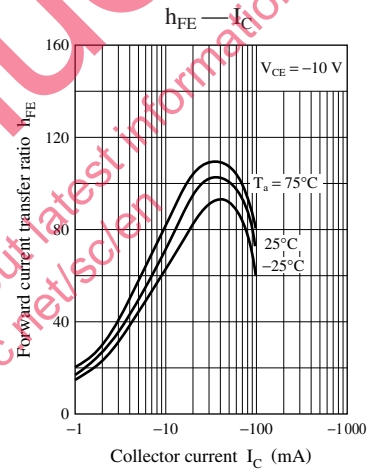
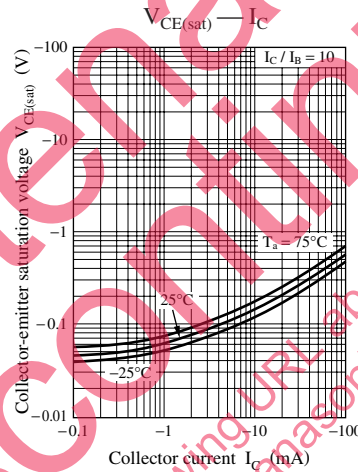
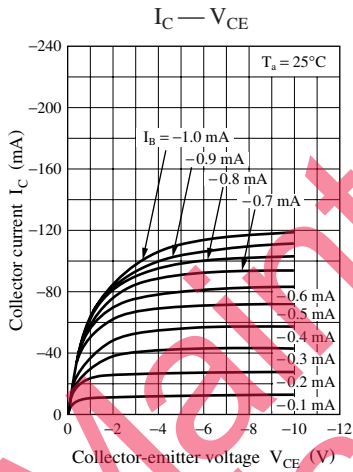


Characteristics charts of UNR1118

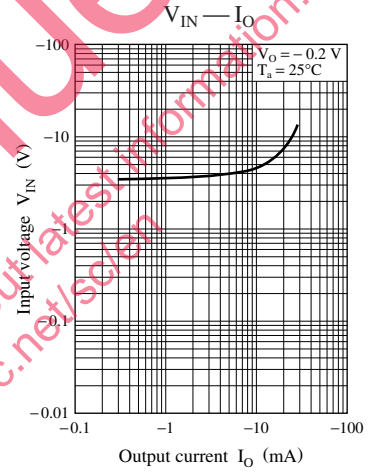
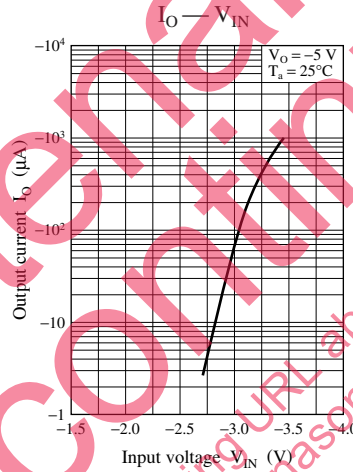
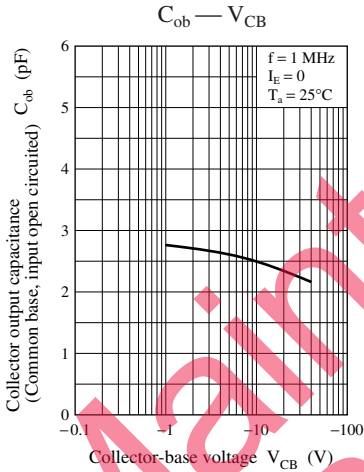
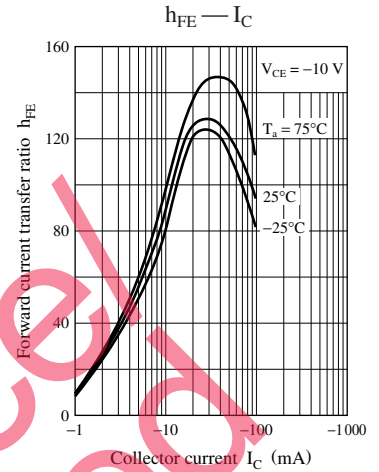
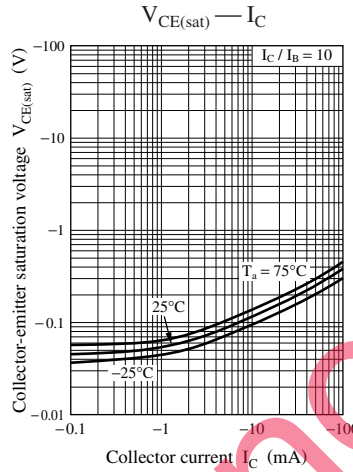
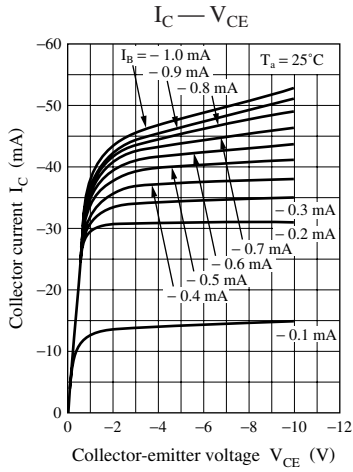




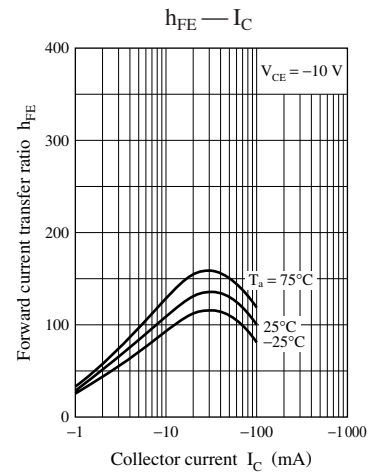
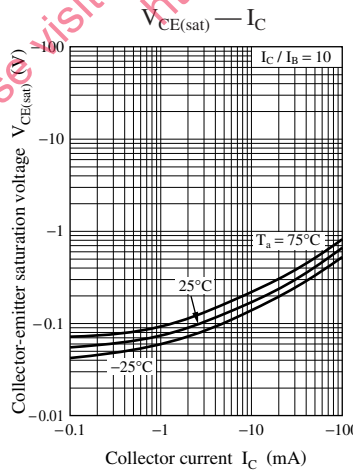
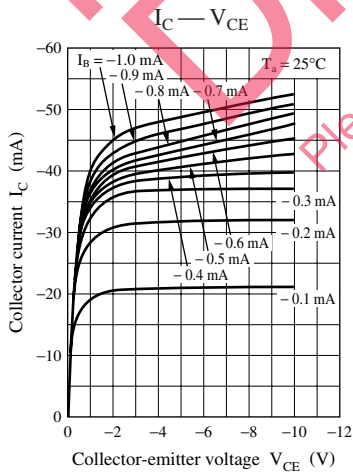
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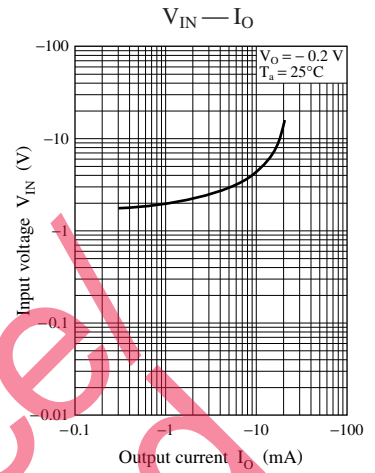
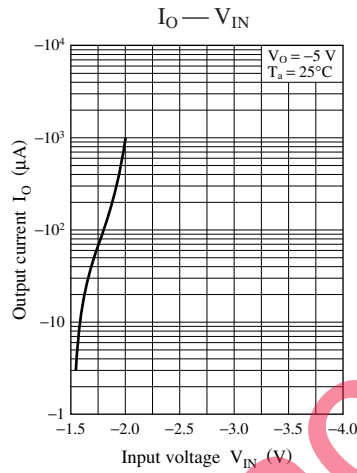
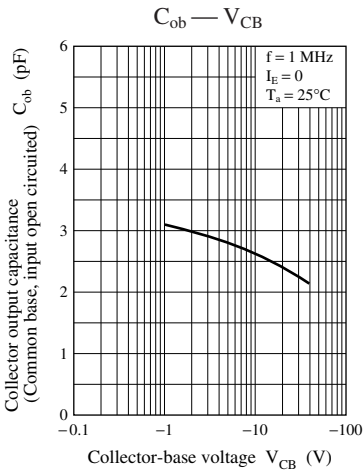


Characteristics charts of UNR111D

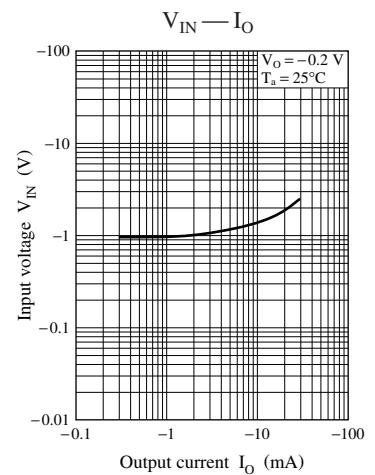
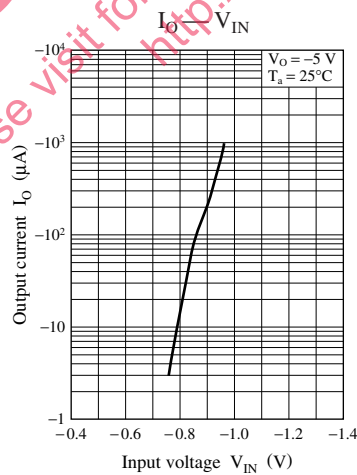
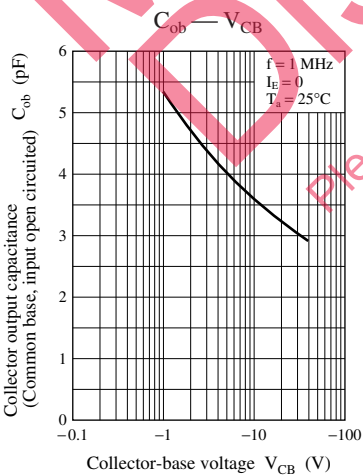
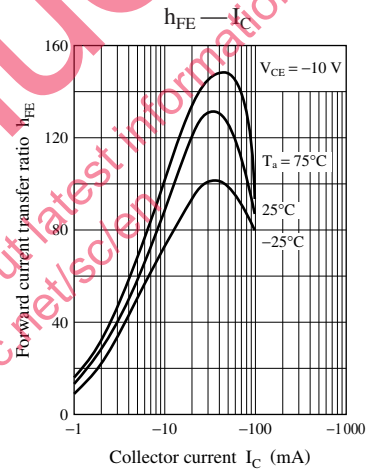
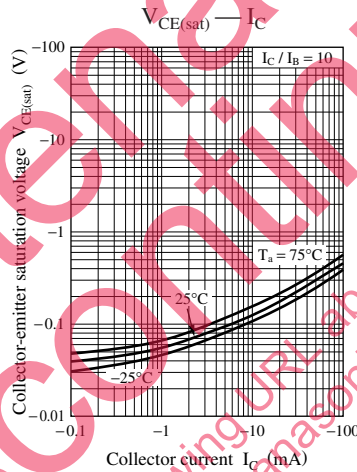
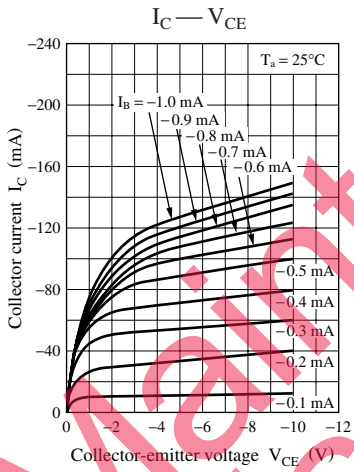


Characteristics charts of UNR111E

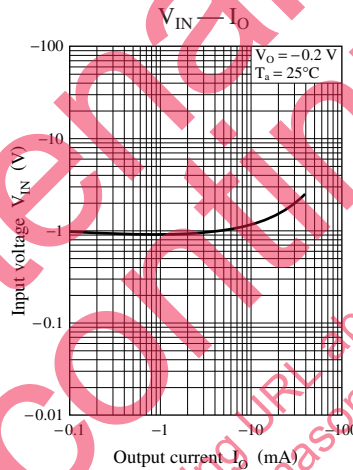
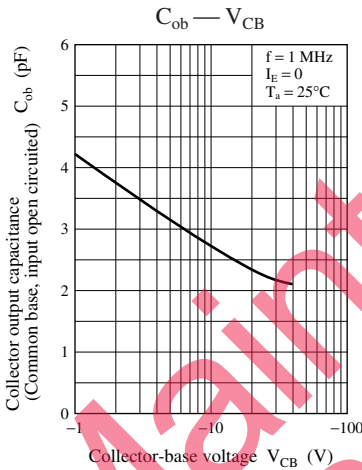
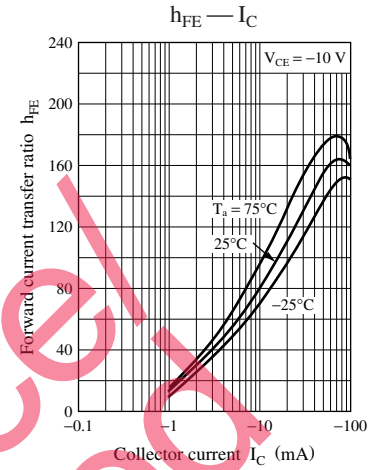
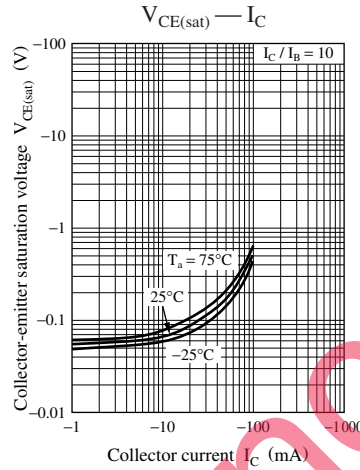
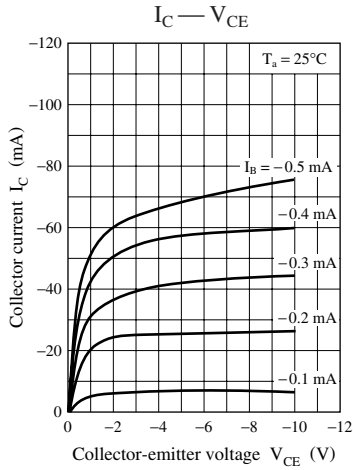




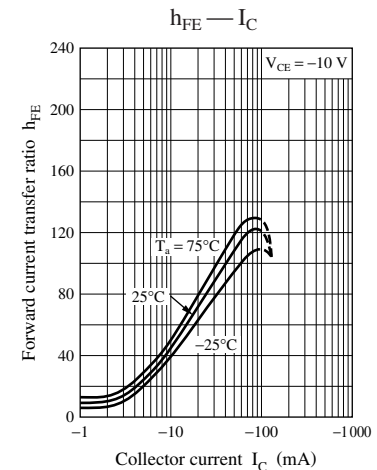
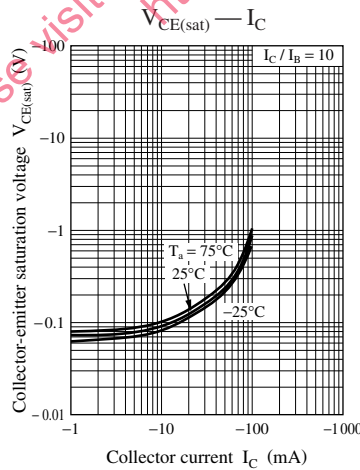
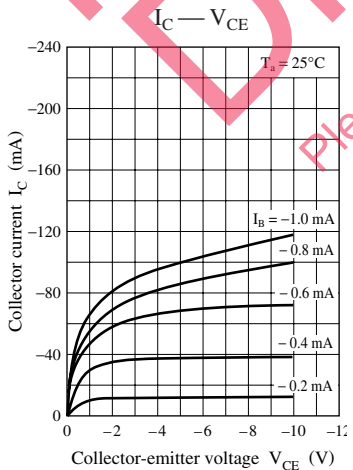
Characteristics charts of UNR111F

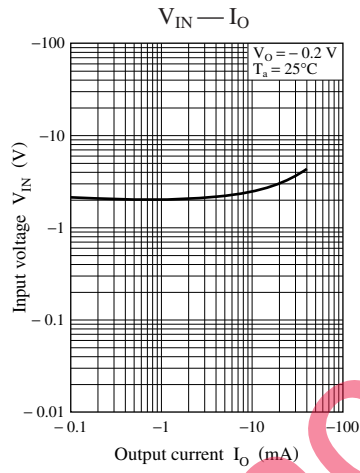
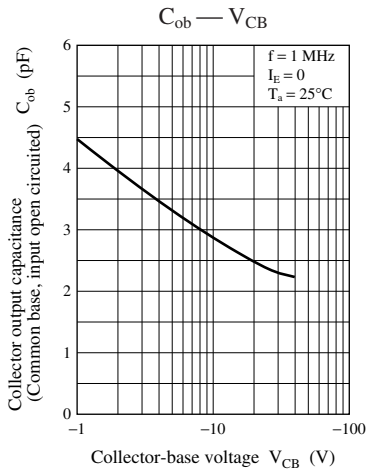


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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