

UNR111x Series (UN111x Series)

Silicon PNP epitaxial planar transistor

For digital circuits

■ Features

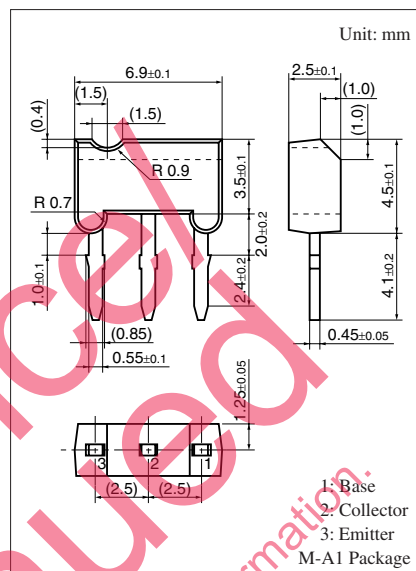
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

■ Resistance by Part Number

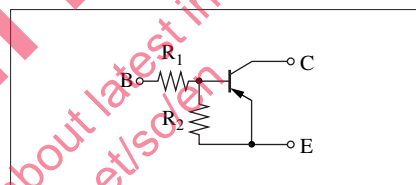
	(R ₁)	(R ₂)
• UNR1110 (UN1110)	47 kΩ	—
• UNR1111 (UN1111)	10 kΩ	10 kΩ
• UNR1112 (UN1112)	22 kΩ	22 kΩ
• UNR1113 (UN1113)	47 kΩ	47 kΩ
• UNR1114 (UN1114)	10 kΩ	47 kΩ
• UNR1115 (UN1115)	10 kΩ	—
• UNR1116 (UN1116)	4.7 kΩ	—
• UNR1117 (UN1117)	22 kΩ	—
• UNR1118 (UN1118)	0.51 kΩ	5.1 kΩ
• UNR1119 (UN1119)	1 kΩ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

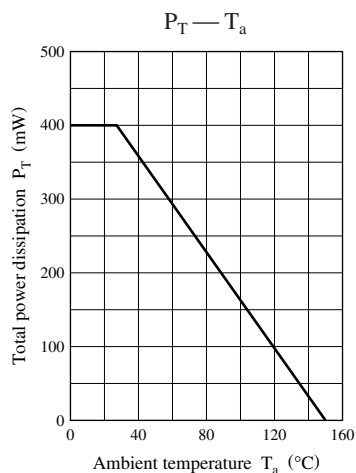
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = -10\ \mu\text{A}$, $I_E = 0$	-50			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -2\ \text{mA}$, $I_B = 0$	-50			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -50\ \text{V}$,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

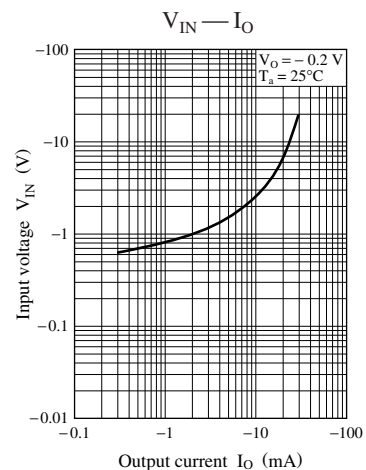
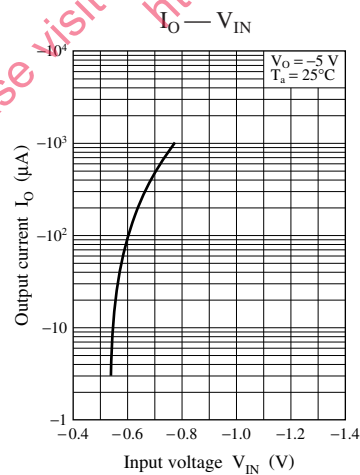
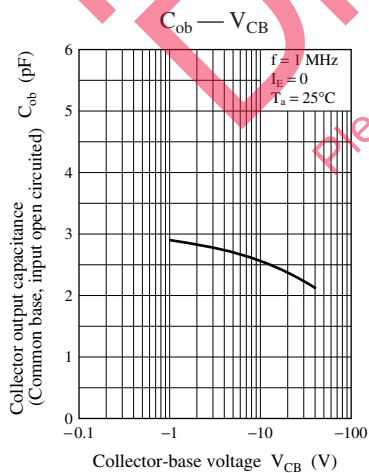
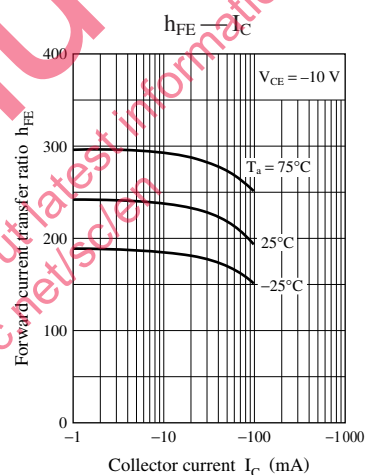
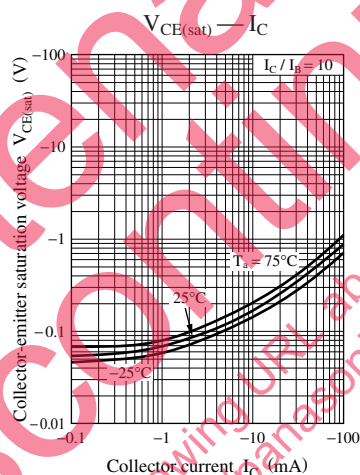
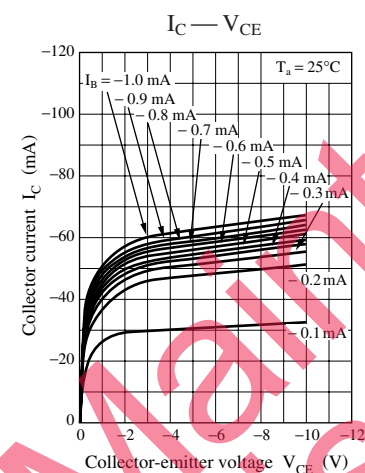
2. *: Rank classification (UNR1110/1115/1116/1117)

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

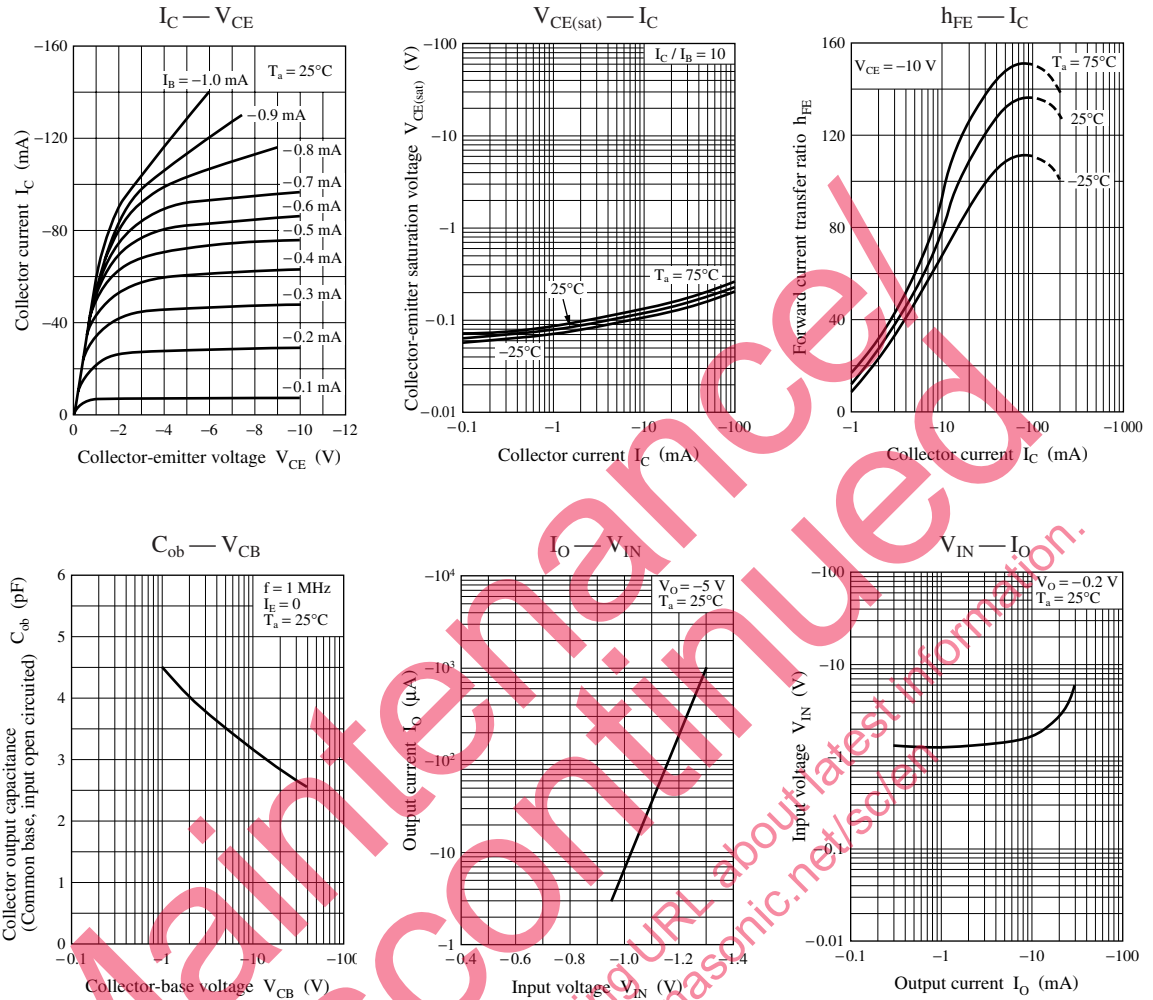
Common characteristics chart



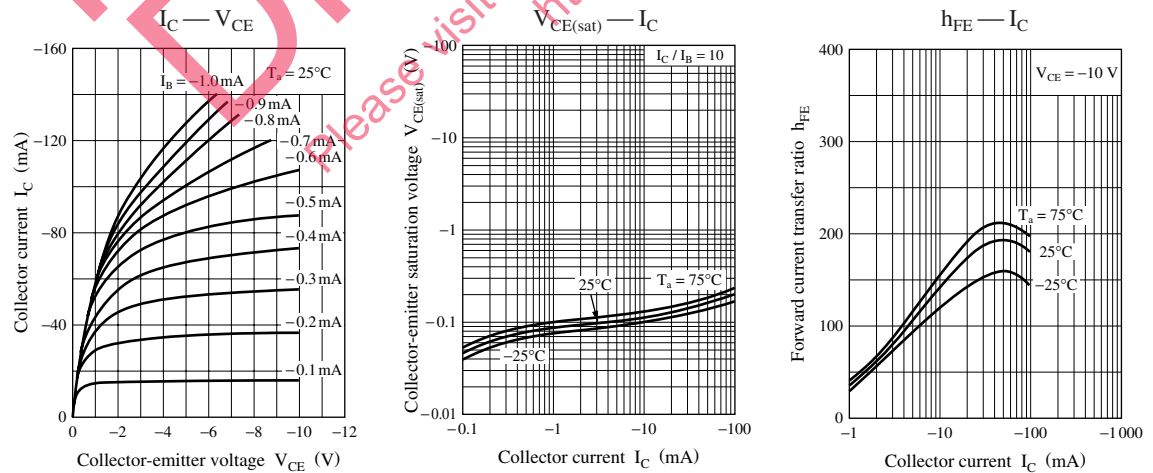
Characteristics charts of UNR1110

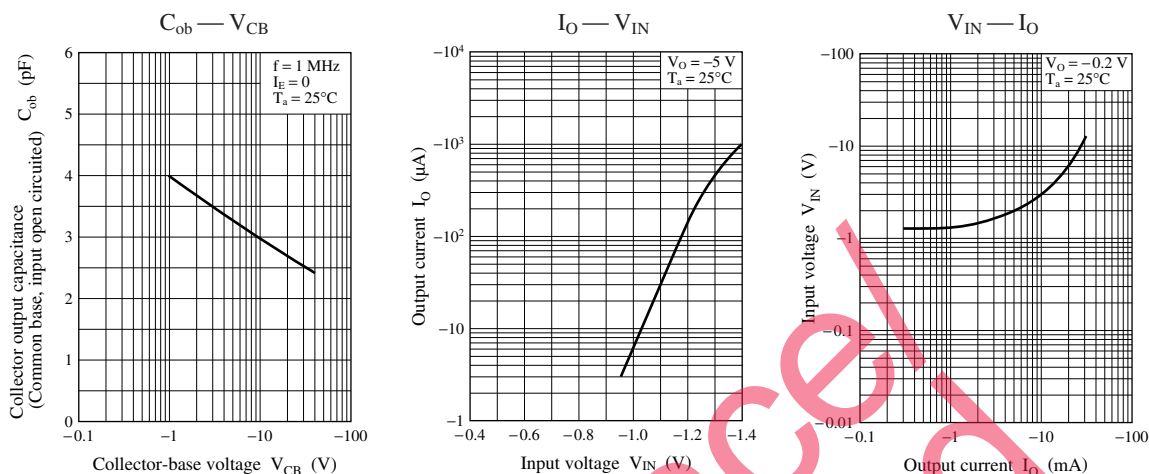


Characteristics charts of UNR1111

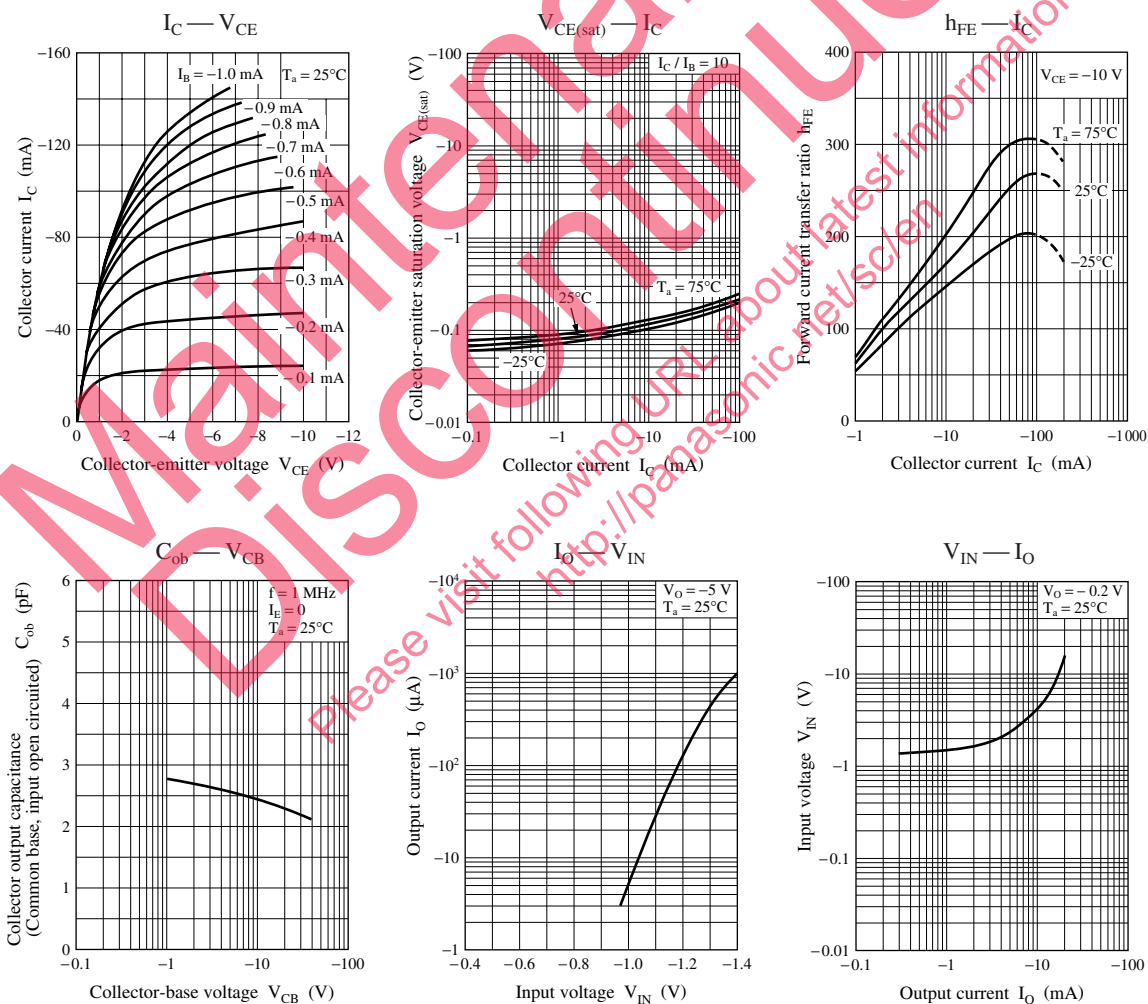


Characteristics charts of UNR1112

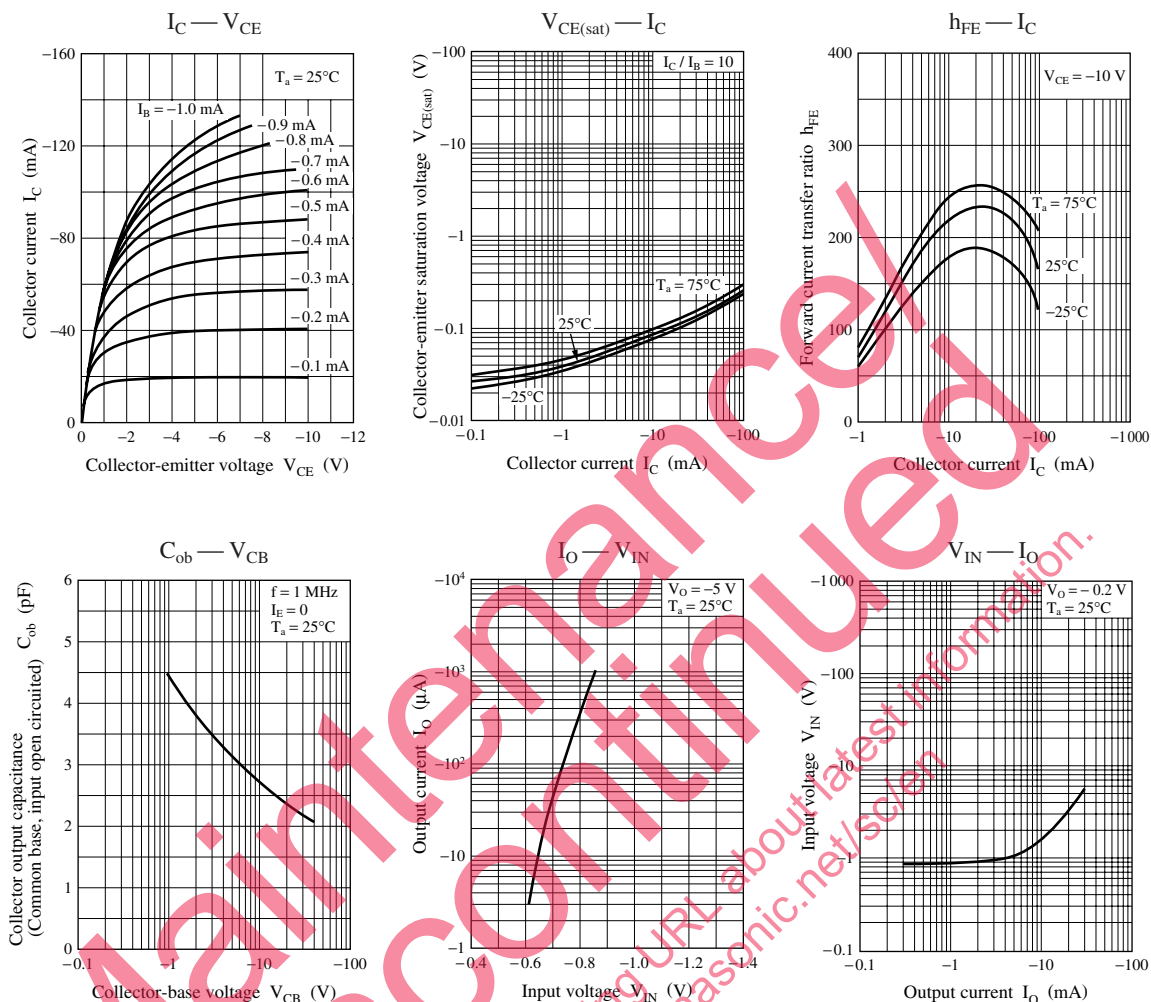




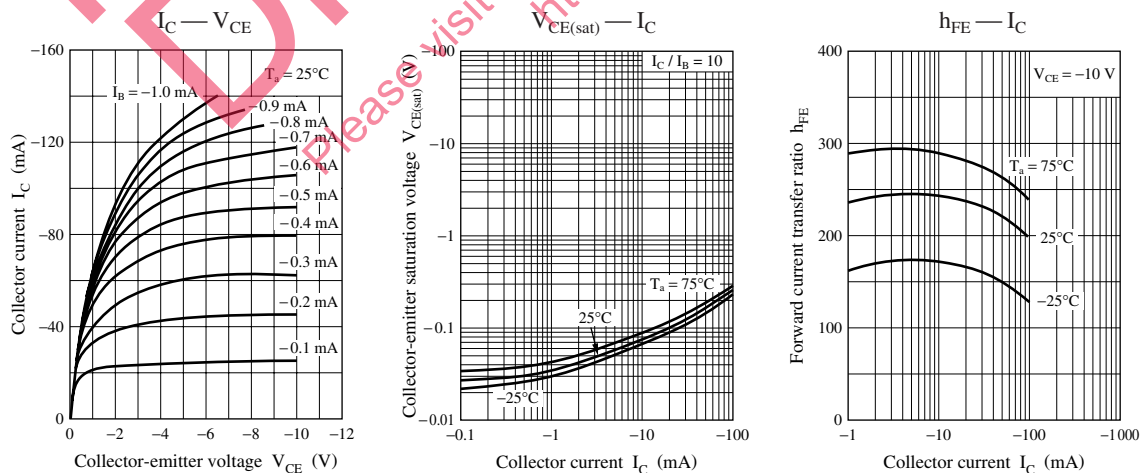
Characteristics charts of UNR1113

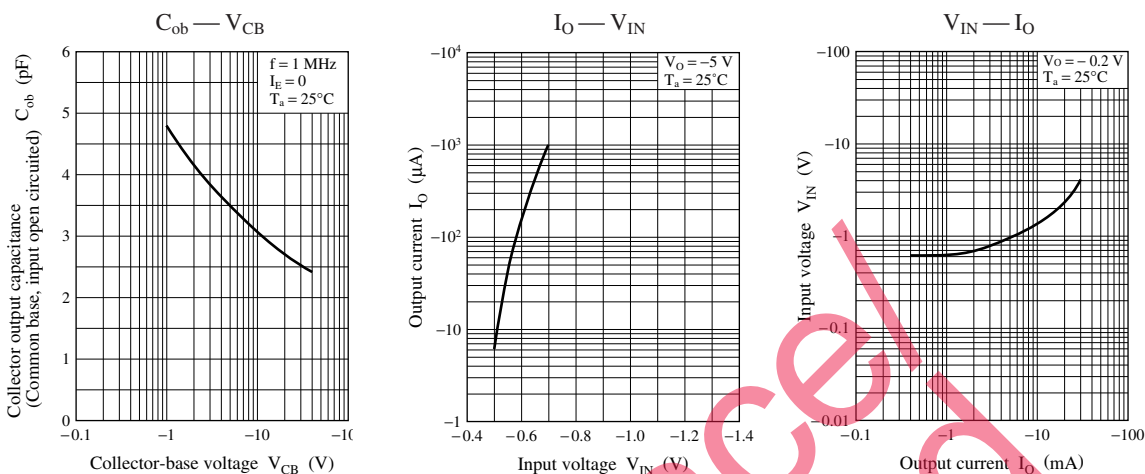


Characteristics charts of UNR1114

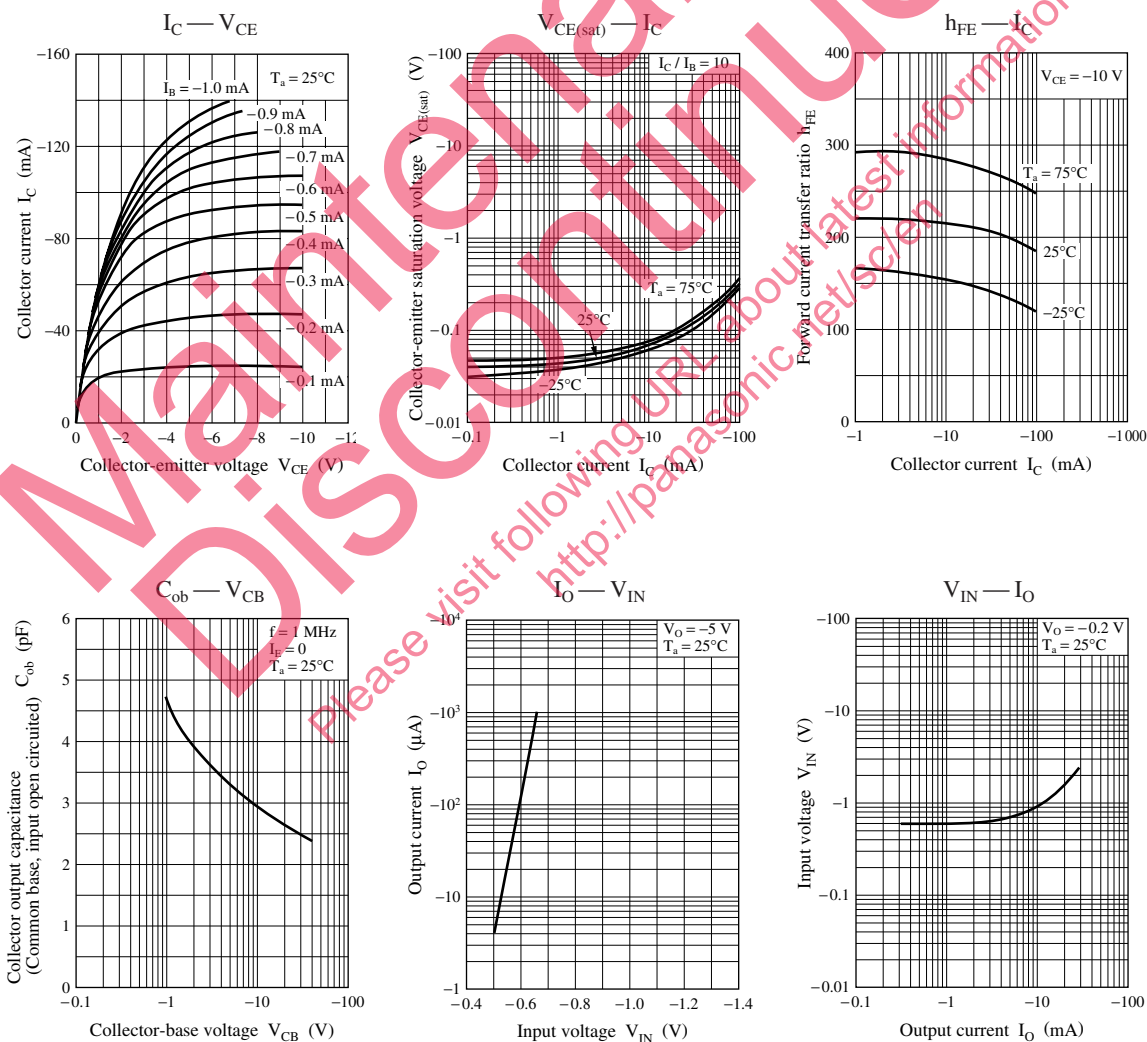


Characteristics charts of UNR1115

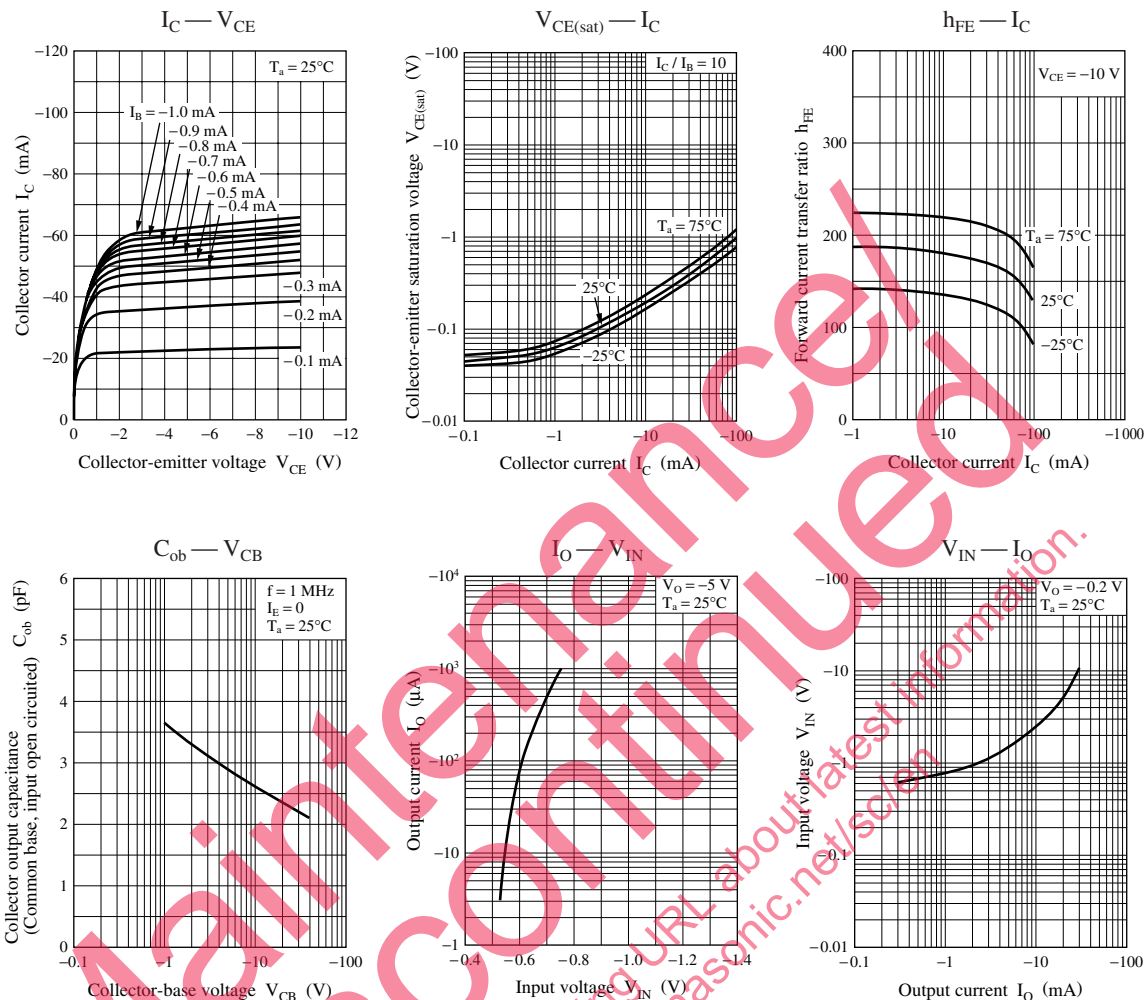




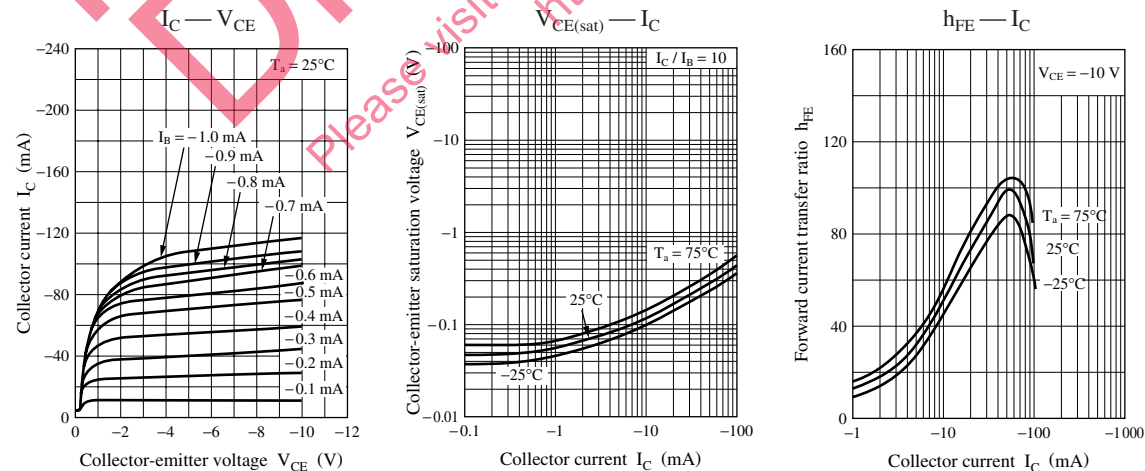
Characteristics charts of UNR1116

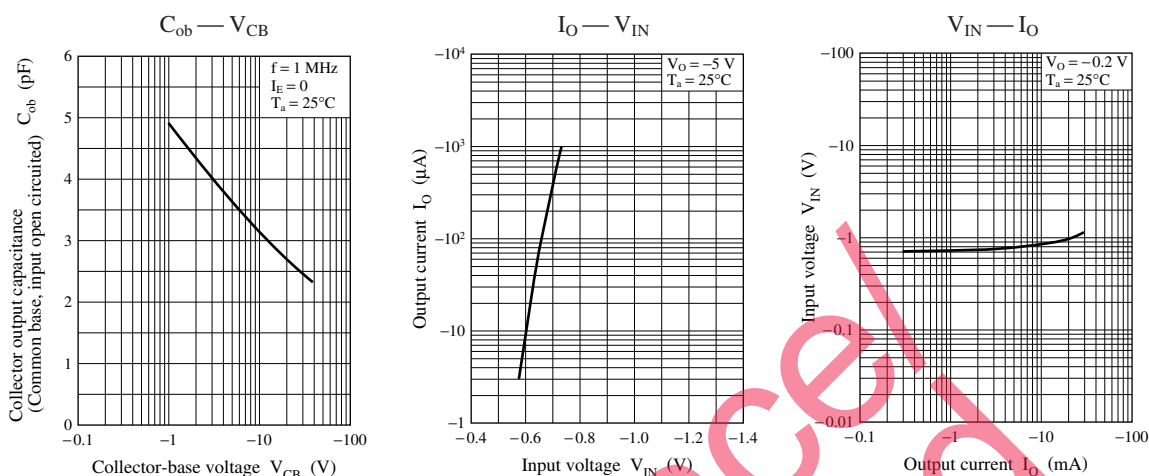


Characteristics charts of UNR1117

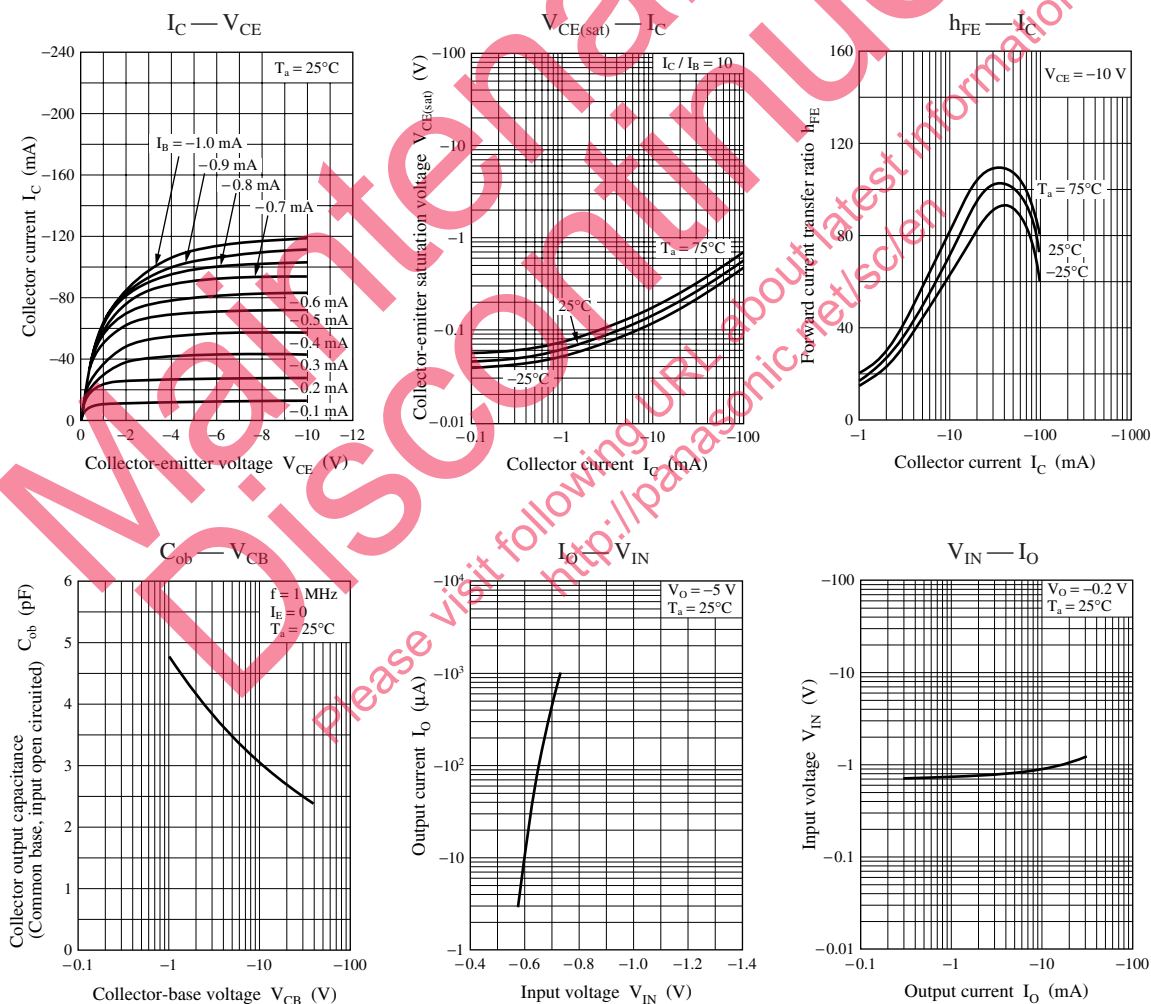


Characteristics charts of UNR1118

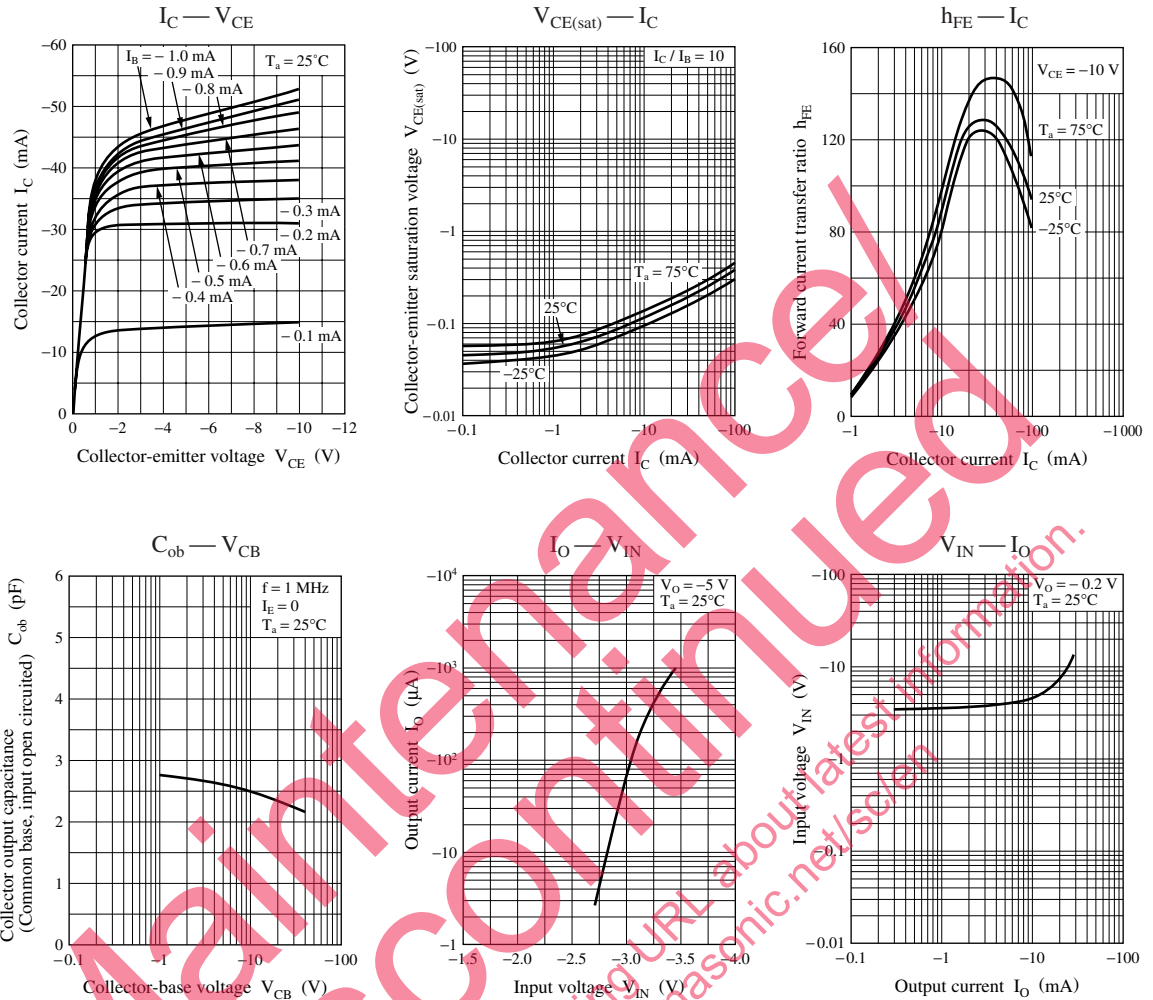




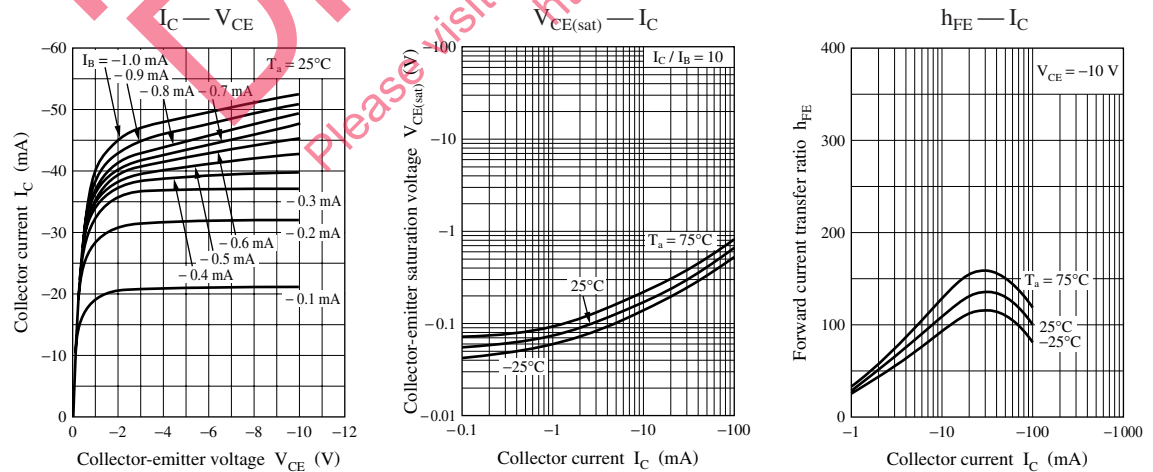
Characteristics charts of UNR1119

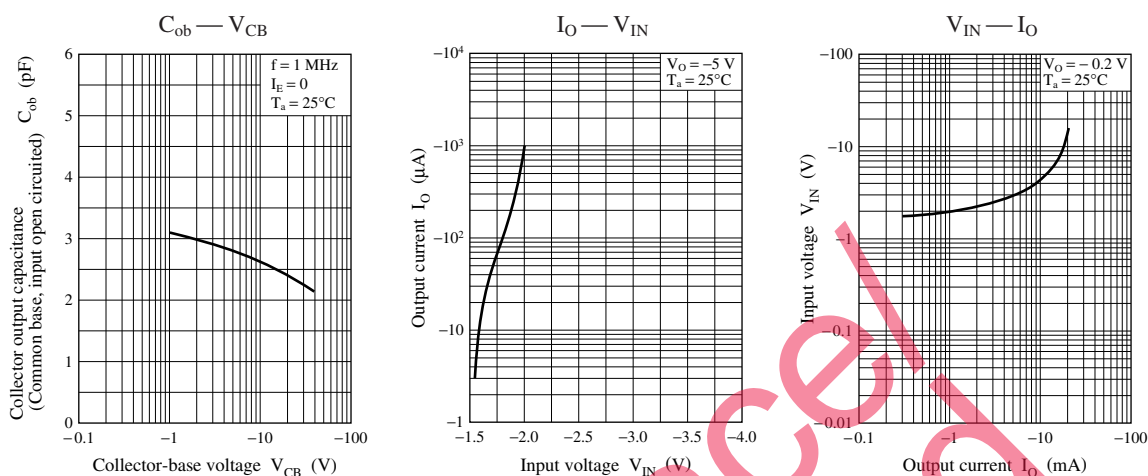


Characteristics charts of UNR111D

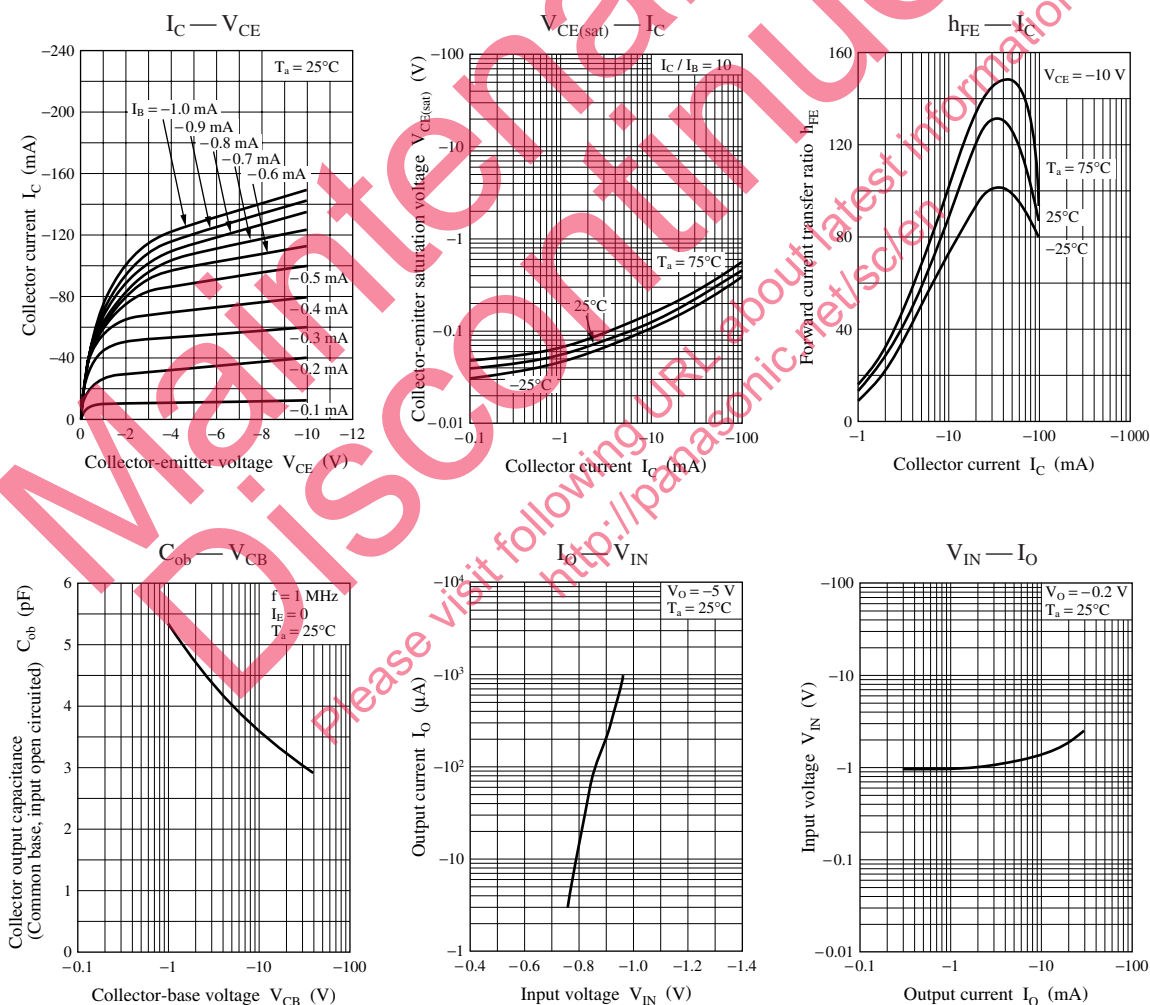


Characteristics charts of UNR111E

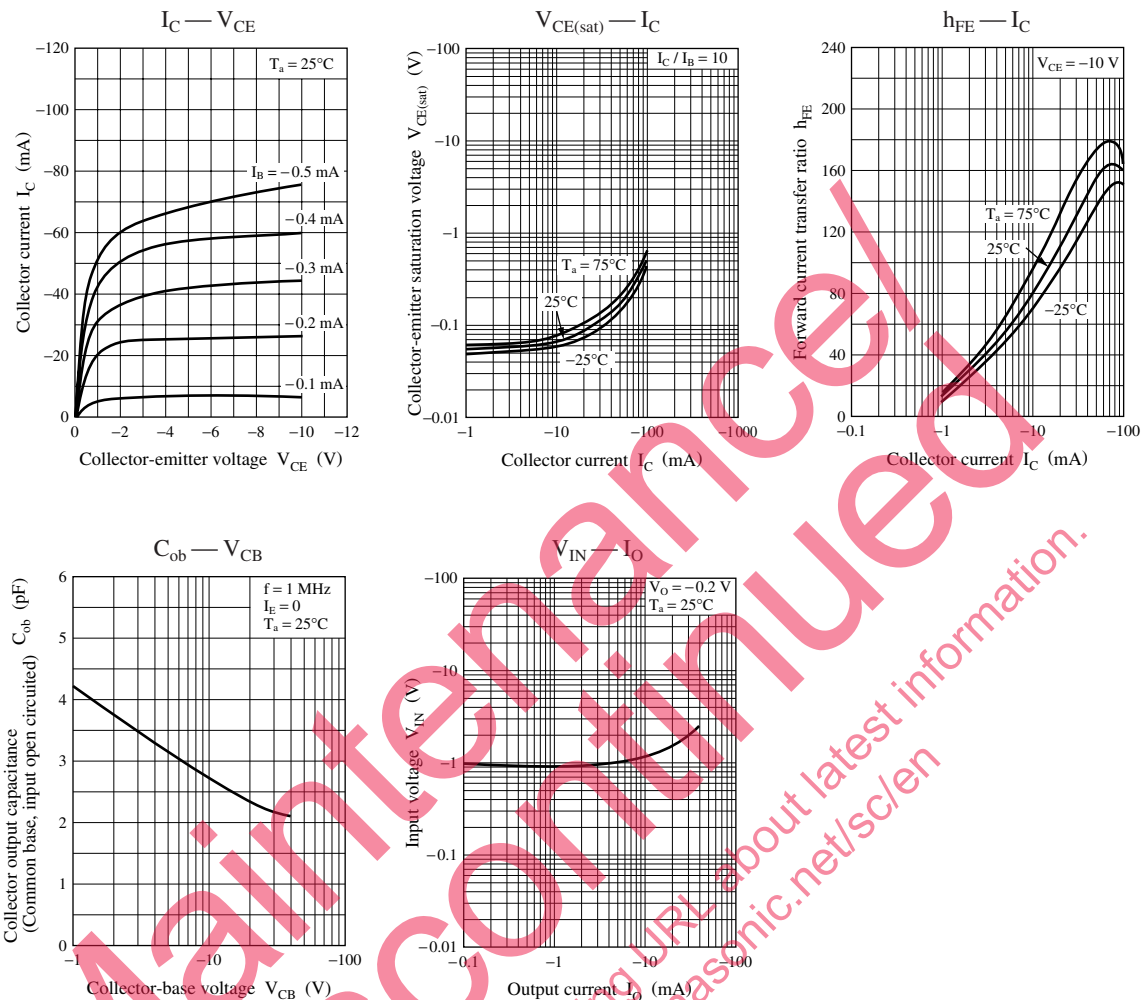




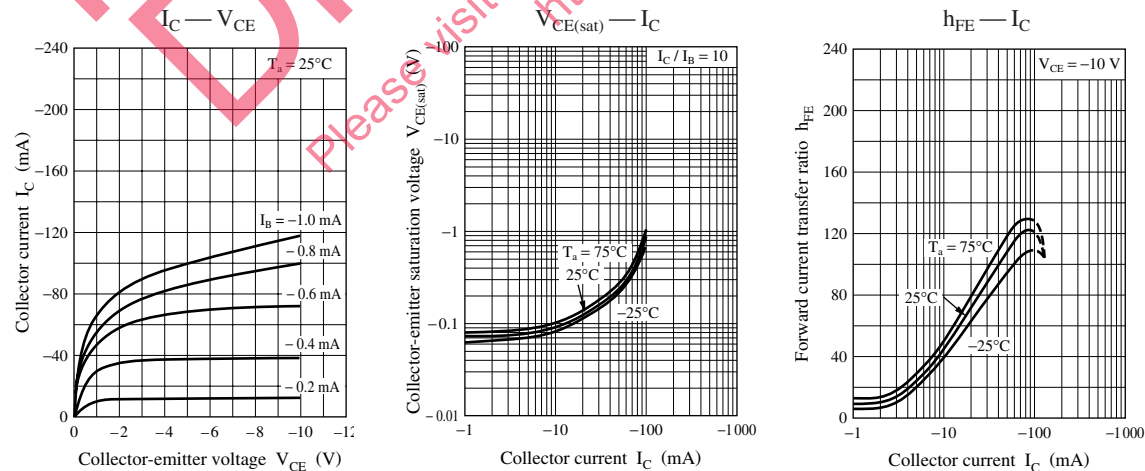
Characteristics charts of UNR111F

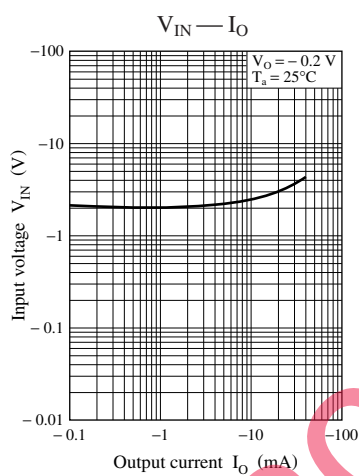
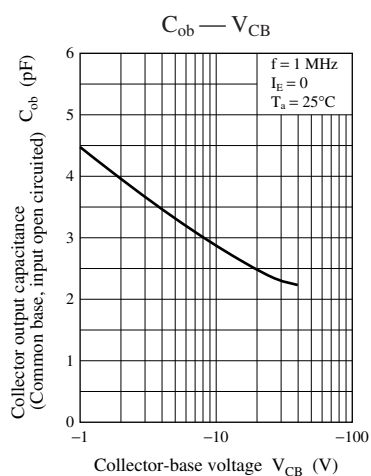


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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