

UNR511x Series (UN511x Series)

Silicon PNP epitaxial planar type

For digital circuits

■ Features

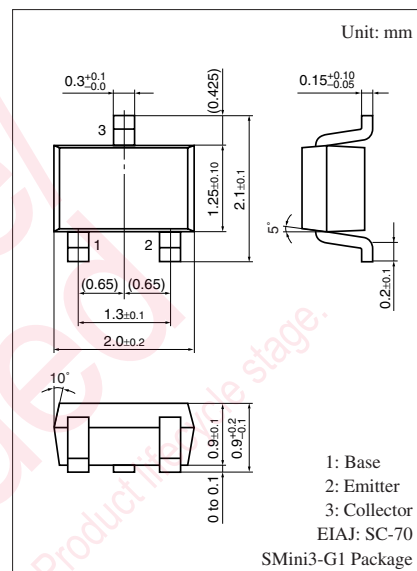
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- S-Mini type package, allowing automatic insertion through the tape/magazine packing

■ Resistance by Part Number

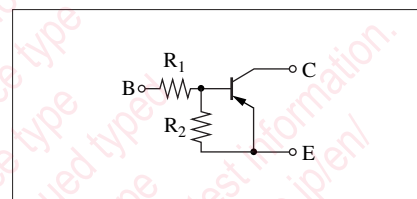
	Marking symbol	(R ₁)	(R ₂)
• UNR5110 (UN5110)	6L	47 kΩ	—
• UNR5111 (UN5111)	6A	10 kΩ	10 kΩ
• UNR5112 (UN5112)	6B	22 kΩ	22 kΩ
• UNR5113 (UN5113)	6C	47 kΩ	47 kΩ
• UNR5114 (UN5114)	6D	10 kΩ	47 kΩ
• UNR5115 (UN5115)	6E	10 kΩ	—
• UNR5116 (UN5116)	6F	4.7 kΩ	—
• UNR5117 (UN5117)	6H	22 kΩ	—
• UNR5118 (UN5118)	6I	0.51 kΩ	5.1 kΩ
• UNR5119 (UN5119)	6K	1 kΩ	10 kΩ
• UNR511D (UN511D)	6M	47 kΩ	10 kΩ
• UNR511E (UN511E)	6N	47 kΩ	22 kΩ
• UNR511F (UN511F)	6O	4.7 kΩ	10 kΩ
• UNR511H (UN511H)	6P	2.2 kΩ	10 kΩ
• UNR511L (UN511L)	6Q	4.7 kΩ	4.7 kΩ
• UNR511M (UN511M)	EI	2.2 kΩ	47 kΩ
• UNR511N (UN511N)	EW	4.7 kΩ	47 kΩ
• UNR511T (UN511T)	EY	22 kΩ	47 kΩ
• UNR511V (UN511V)	FC	2.2 kΩ	2.2 kΩ
• UNR511Z (UN511Z)	FE	4.7 kΩ	22 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	150	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)	UNR5110/5115/5116/5117	I_{EBO}	$V_{EB} = -6\ \text{V}$, $I_C = 0$			-0.01	mA
	UNR5113					-0.1	
	UNR5112/5114/511D/ 511E/511M/511N/511T					-0.2	
	UNR511Z					-0.4	
	UNR5111					-0.5	
	UNR511F/511H					-1.0	
	UNR5119					-1.5	
	UNR5118/511L/511V					-2.0	
Forward current transfer ratio	UNR511V	h_{FE}	$V_{CE} = -10\ \text{V}$, $I_C = -5\ \text{mA}$	6		20	—
	UNR5118/511L			20			
	UNR5119/511D/511F/511H			30			
	UNR5111			35			
	UNR5112/511E			60			
	UNR511Z			60		200	
	UNR5113/5114/511M			80			
	UNR511N/511T			80		400	
	UNR5110*/5115*/5116*/5117*			160		460	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10\ \text{mA}$, $I_B = -0.3\ \text{mA}$			-0.25	V	
UNR511V		$I_C = -10\ \text{mA}$, $I_B = -1.5\ \text{mA}$					
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
UNR5113			$V_{CC} = -5\ \text{V}$, $V_B = -3.5\ \text{V}$, $R_L = 1\ \text{k}\Omega$				
UNR511D			$V_{CC} = -5\ \text{V}$, $V_B = -10\ \text{V}$, $R_L = 1\ \text{k}\Omega$				
UNR511E			$V_{CC} = -5\ \text{V}$, $V_B = -6\ \text{V}$, $R_L = 1\ \text{k}\Omega$				
Transition frequency		f_T	$V_{CB} = -10\ \text{V}$, $I_E = 1\ \text{mA}$, $f = 200\ \text{MHz}$		80		MHz
UNR5116			$V_{CB} = -10\ \text{V}$, $I_E = 2\ \text{mA}$, $f = 200\ \text{MHz}$		150		
Input resistance	UNR5118	R_1		-30%	0.51	+30%	k Ω
	UNR5119				1.0		
	UNR511H/511M/511V				2.2		
	UNR5116/511F/511L 511N/511Z				4.7		
	UNR5111/5114/5115				10		
	UNR5112/5117/511T				22		
	UNR5110/5113/511D/511E				47		
Resistance ratio	UNR511M	R_1/R_2			0.047		—
	UNR511N				0.1		
	UNR5118/5119			0.08	0.10	0.12	
	UNR511Z				0.21		

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

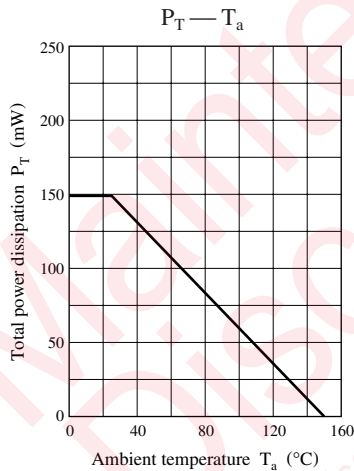
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR5114			0.17	0.21	0.25	
	UNR511H			0.17	0.22	0.27	
	UNR511T				0.47		
	UNR511F			0.37	0.47	0.57	
	UNR511V				1.0		
	UNR5111/5112/5113/511L			0.8	1.0	1.2	
	UNR511E			1.70	2.14	2.60	
	UNR511D			3.7	4.7	5.7	

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

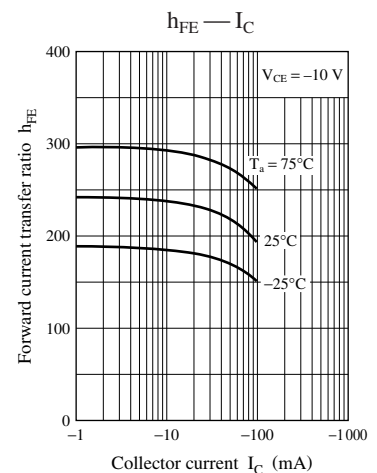
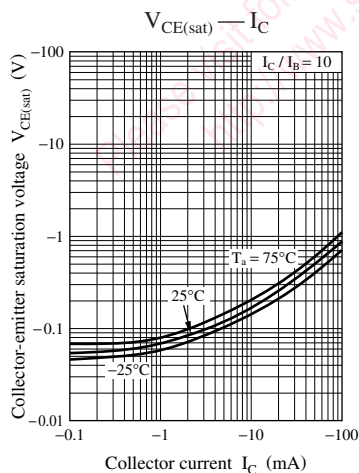
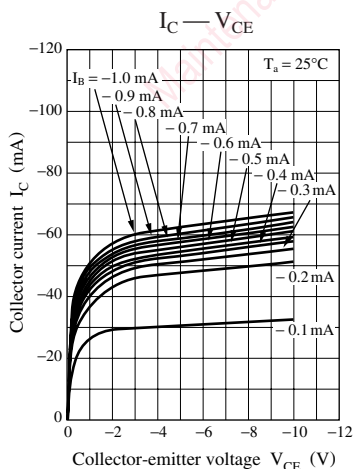
2. *: Rank classification

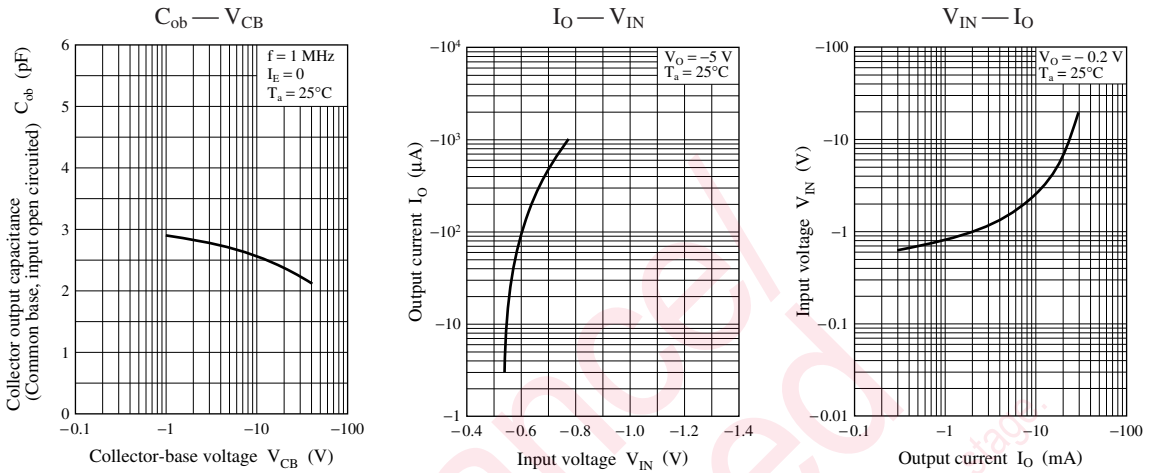
Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

Common characteristics chart

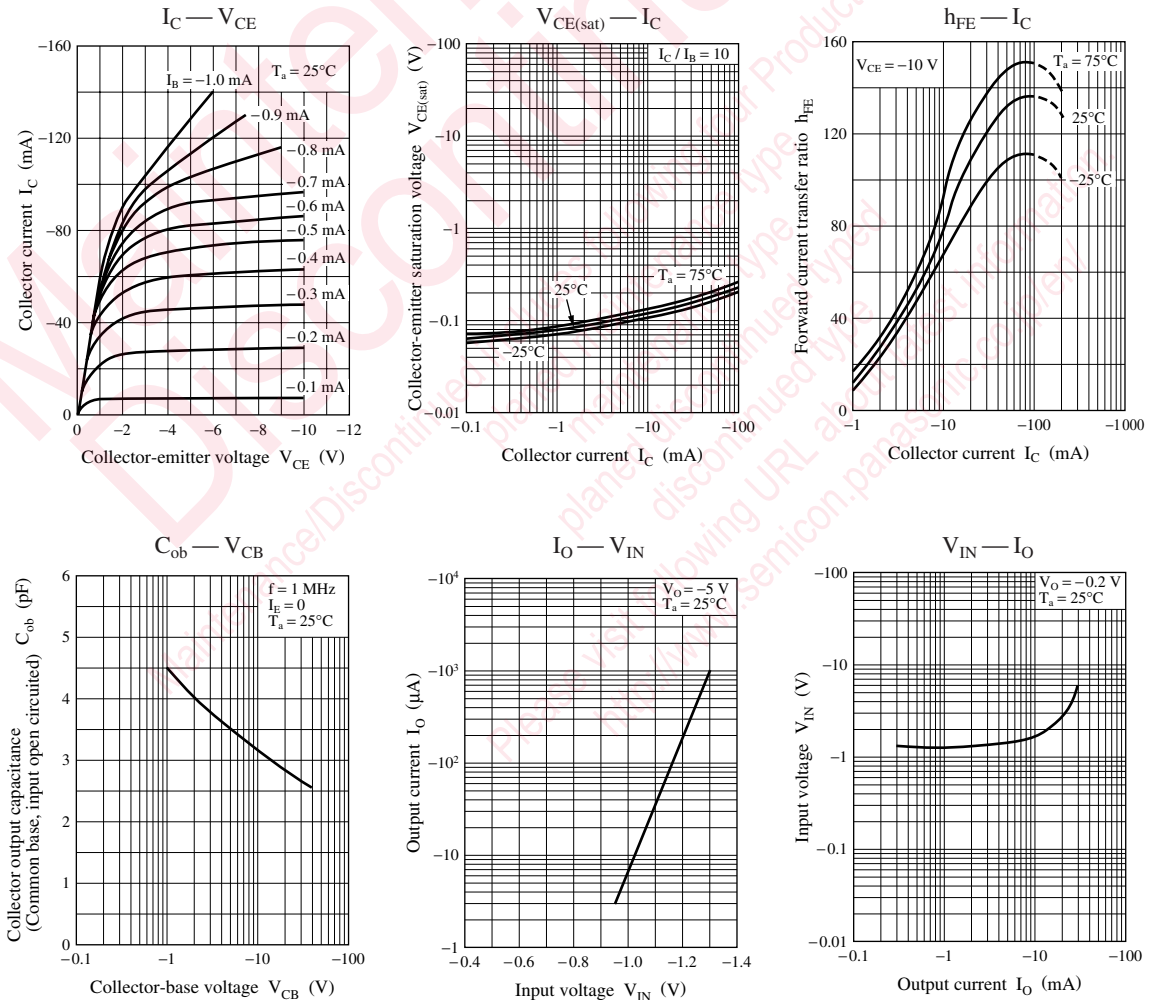


Characteristics charts of UNR5110

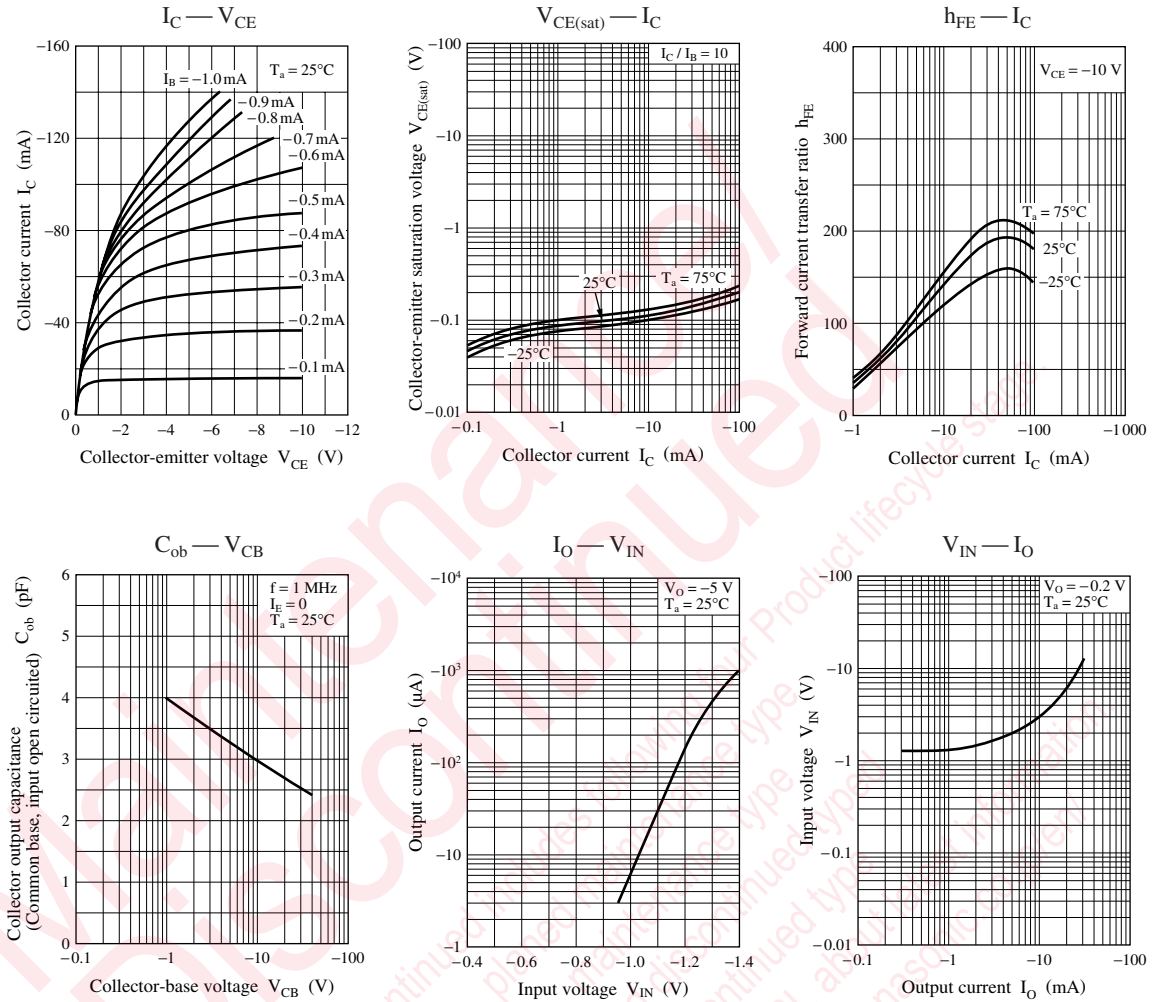




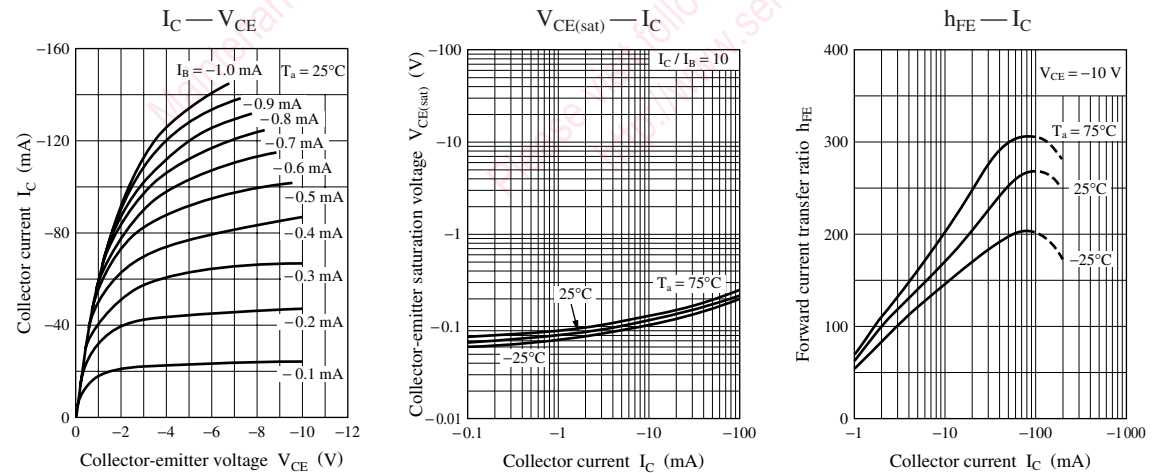
Characteristics charts of UNR5111

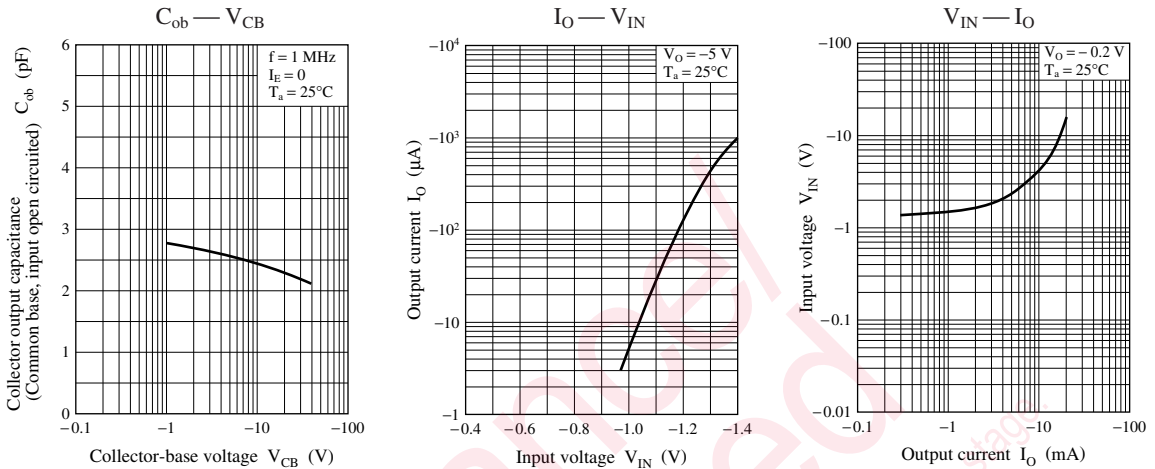


Characteristics charts of UNR5112

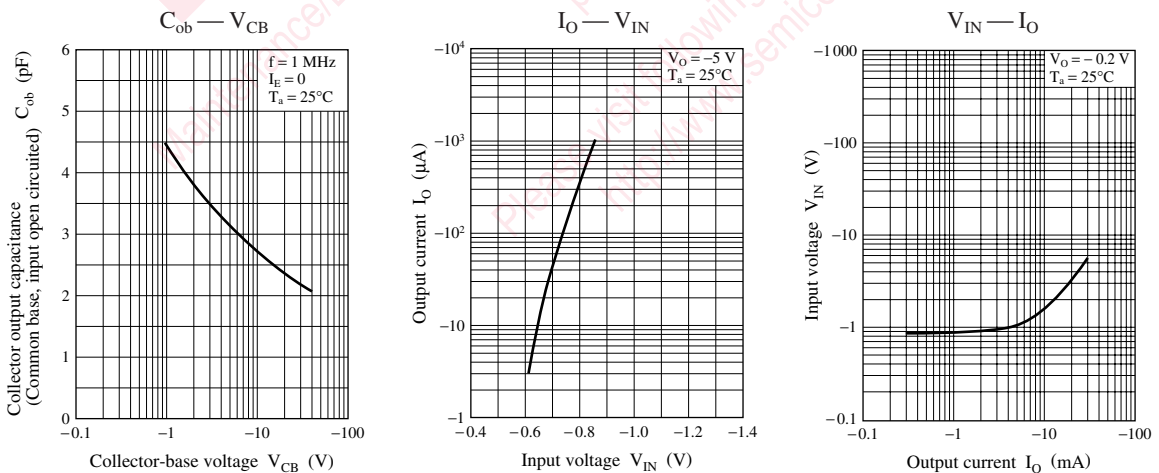
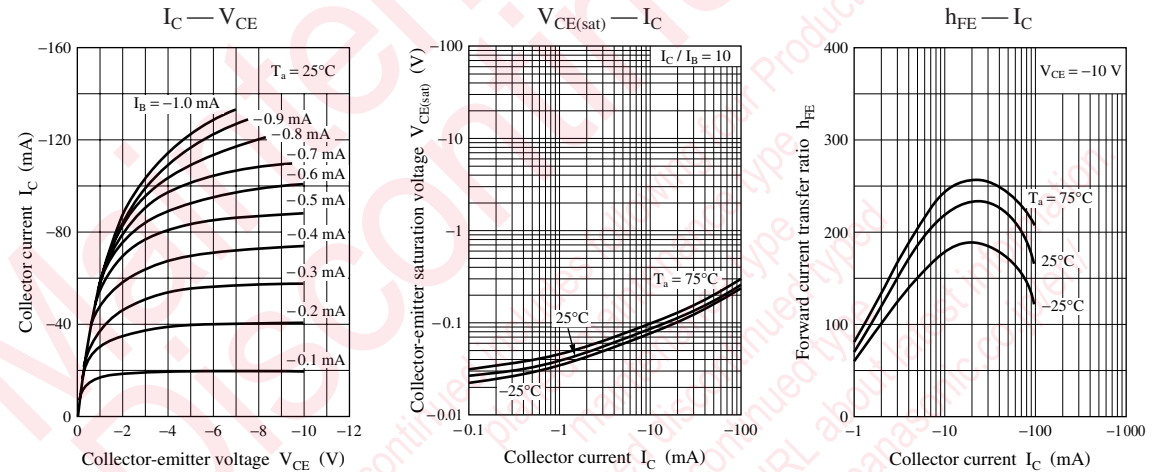


Characteristics charts of UNR5113

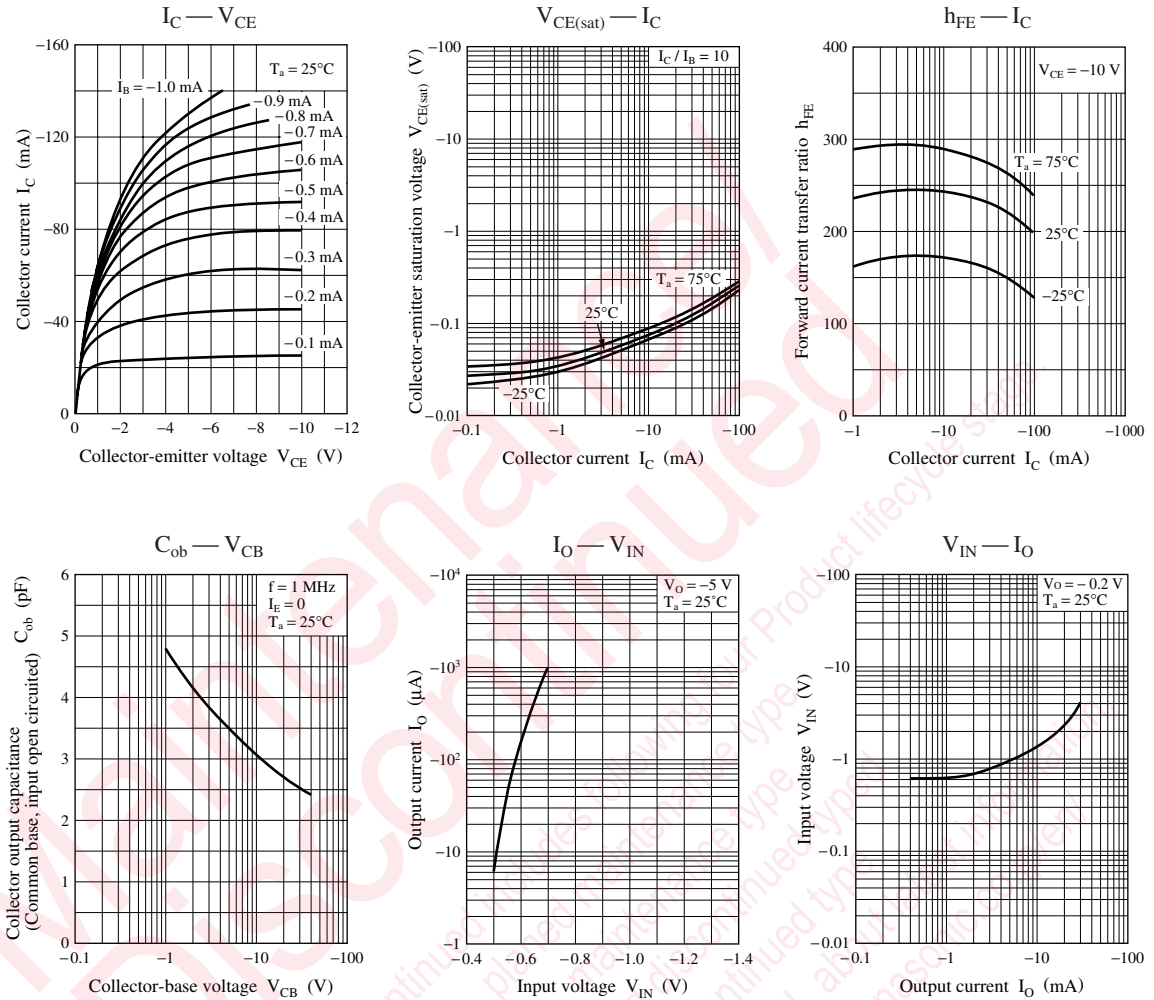




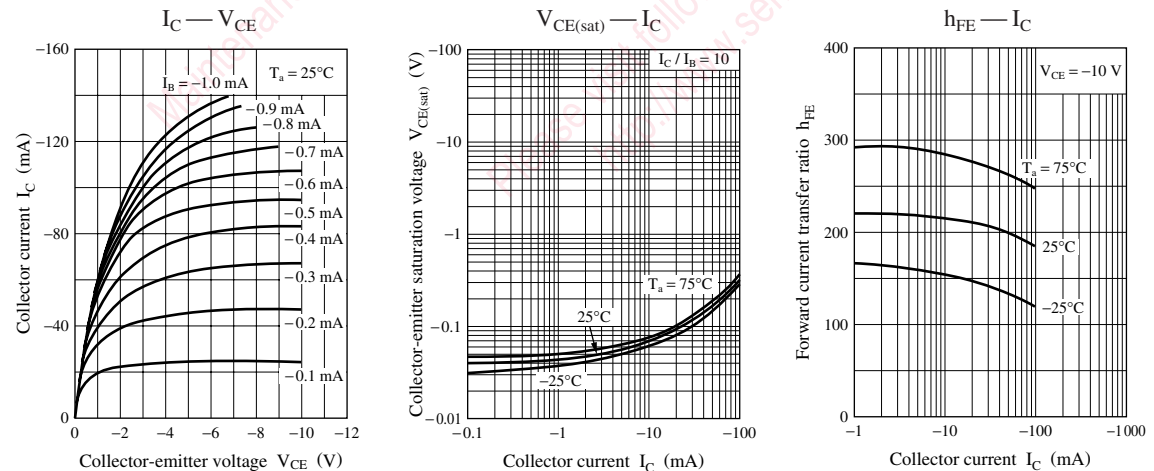
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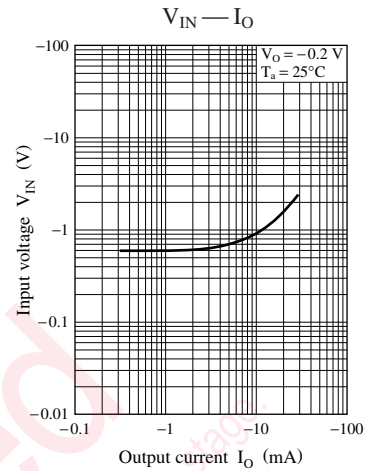
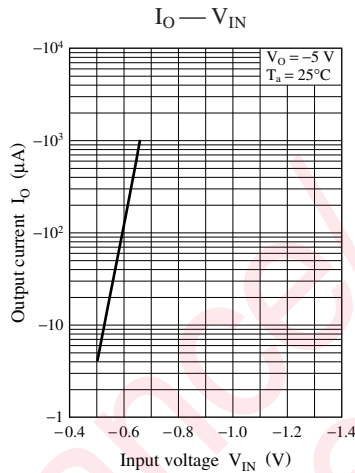
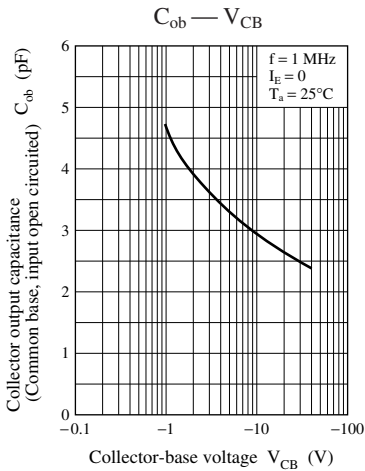


Characteristics charts of UNR5115

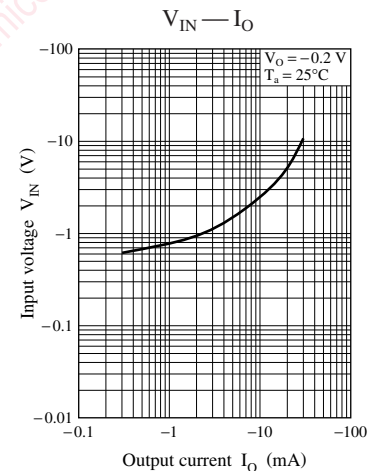
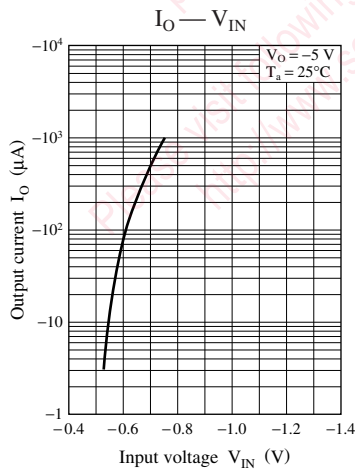
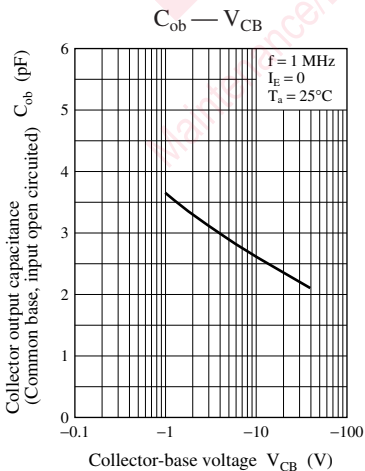
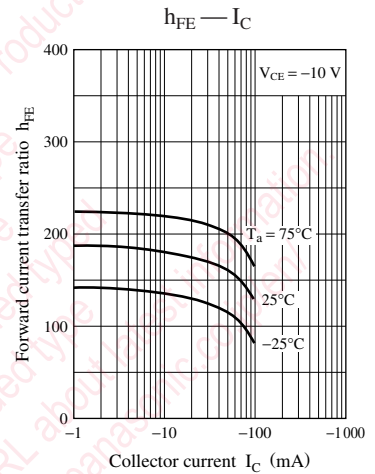
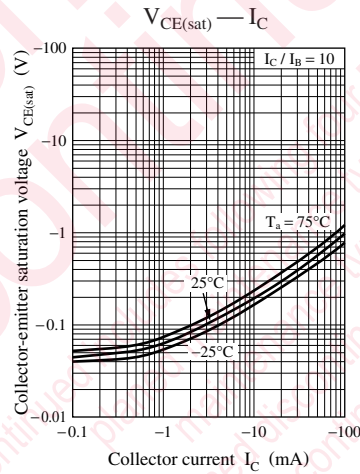
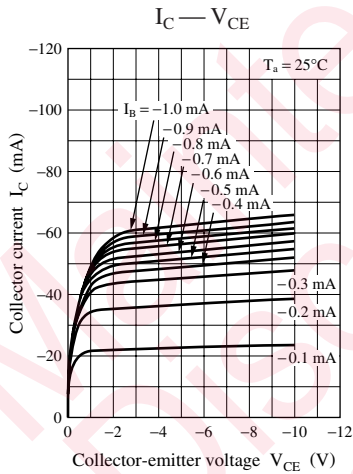


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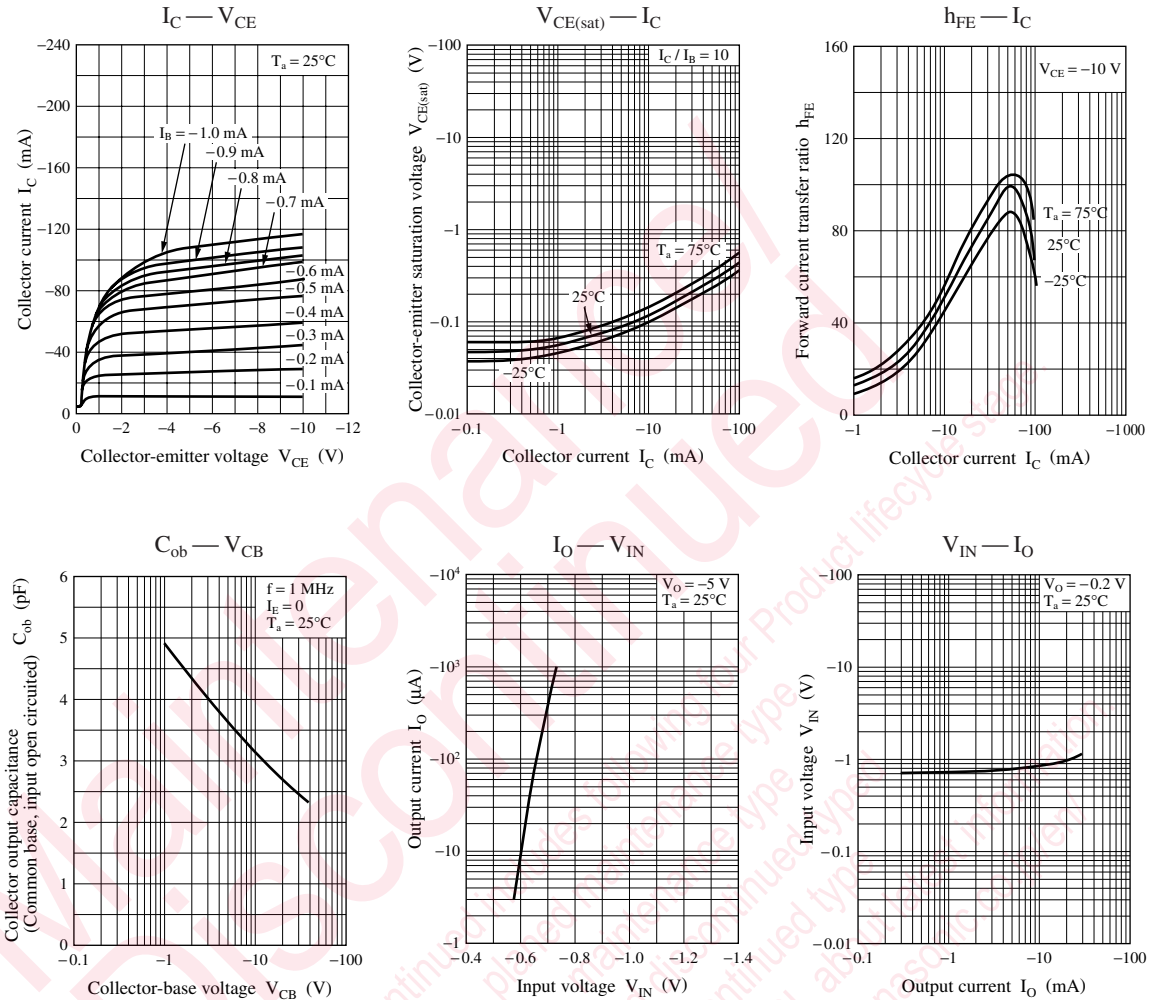




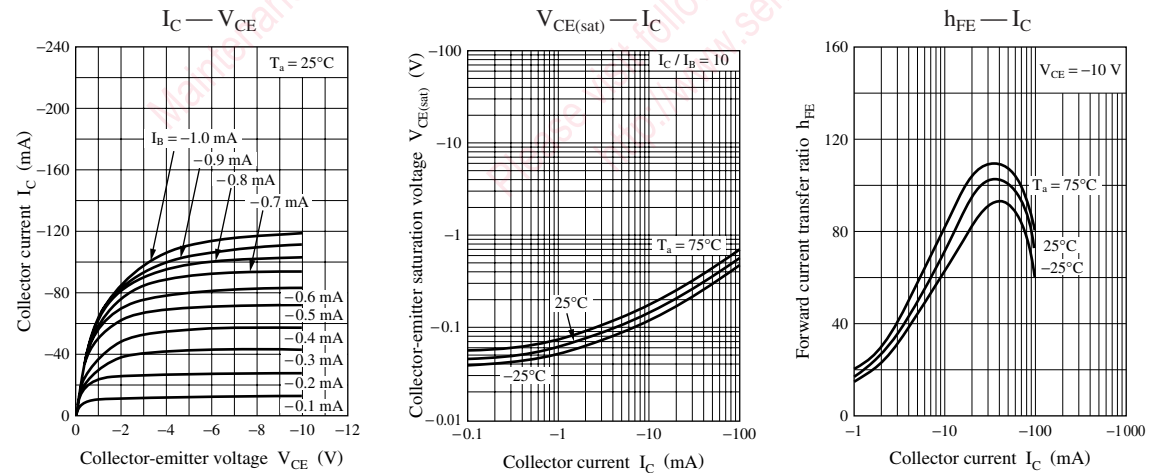
Characteristics charts of UNR5117

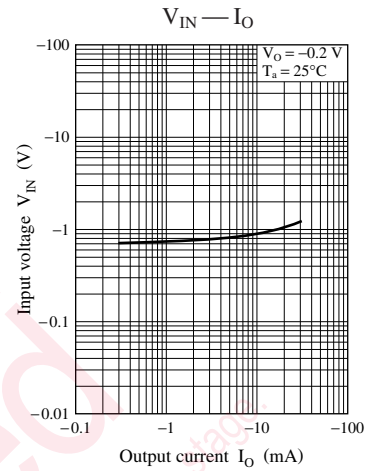
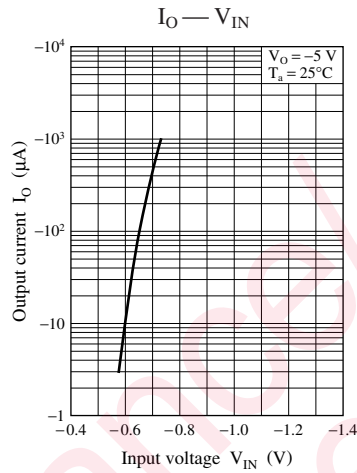
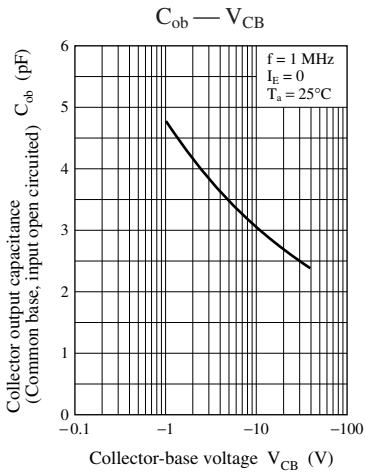


Characteristics charts of UNR5118

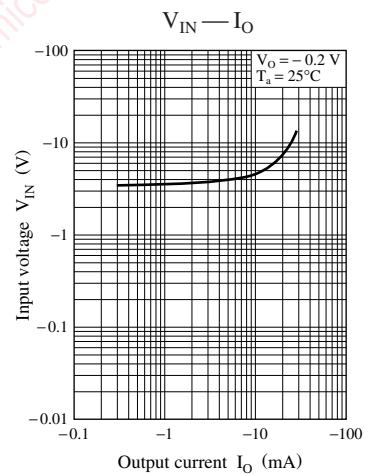
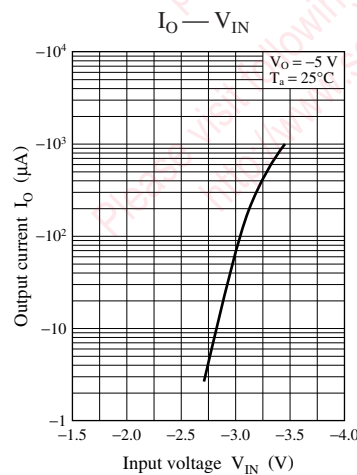
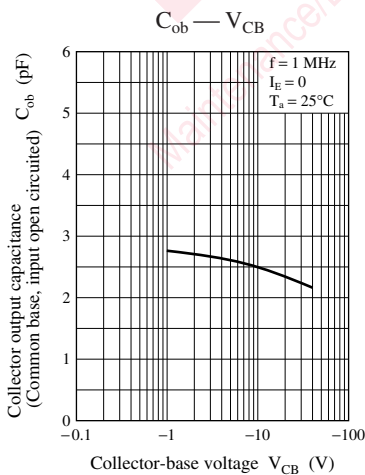
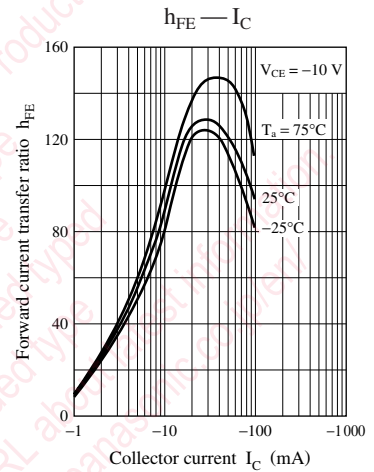
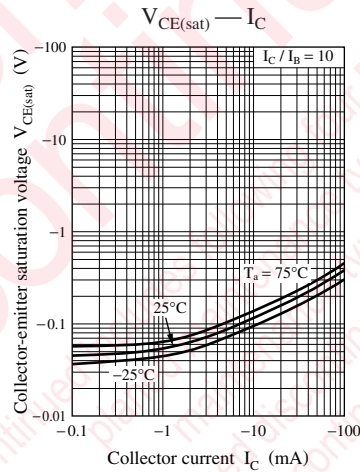
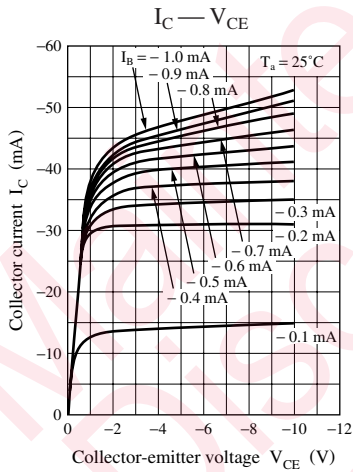


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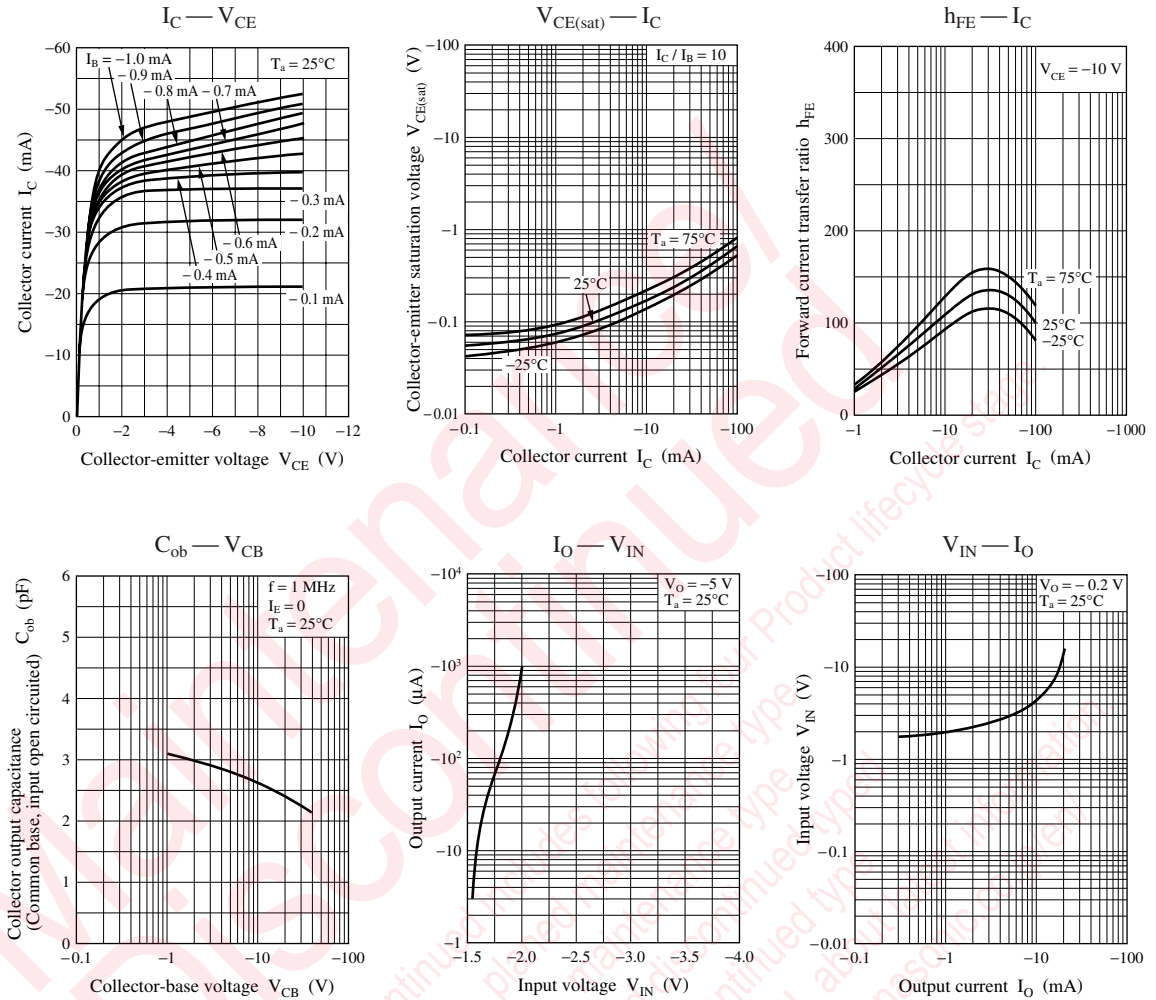




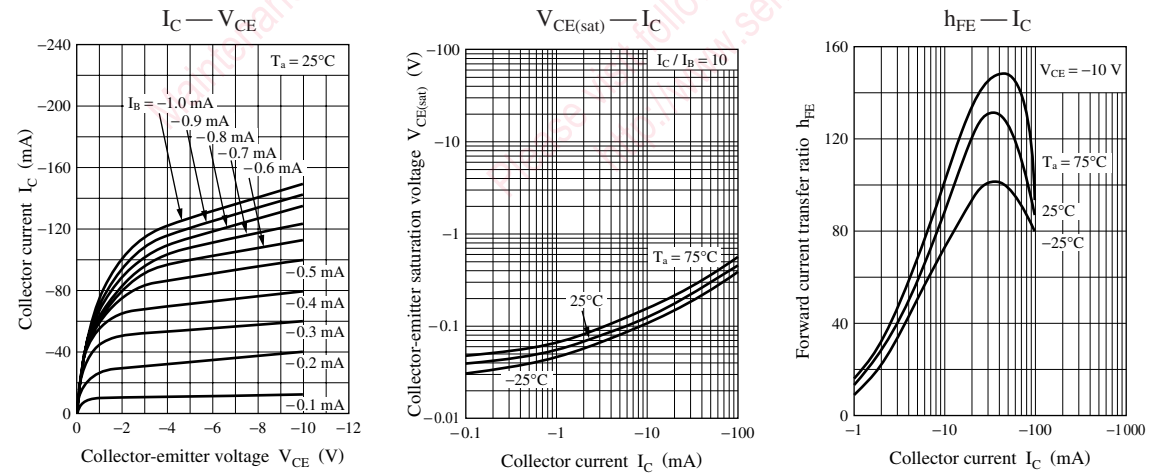
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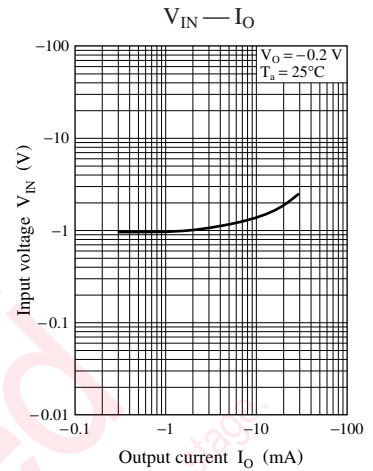
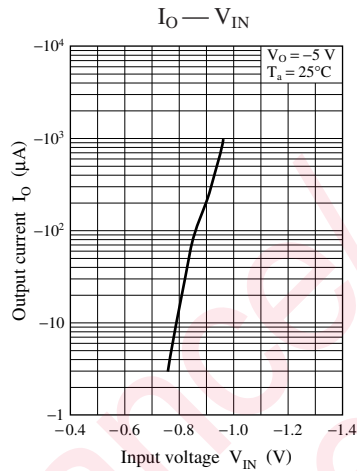
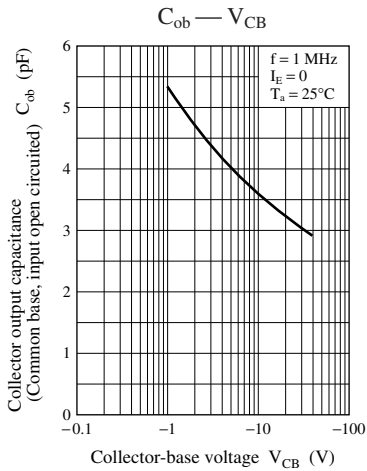


Characteristics charts of UNR511E

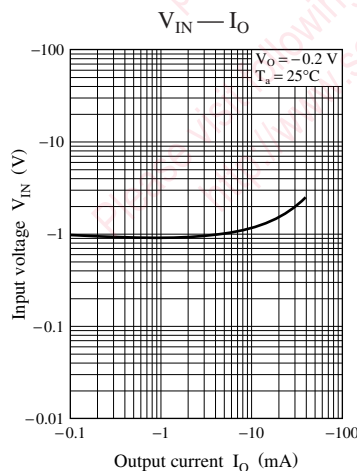
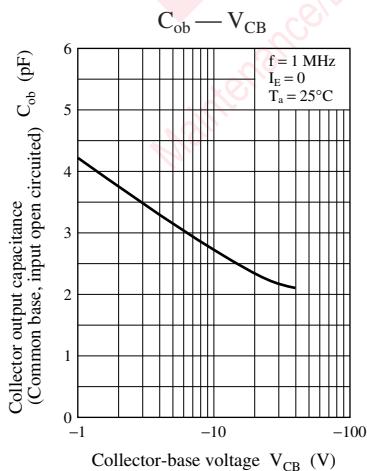
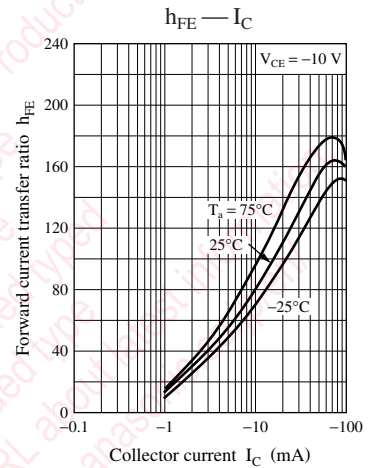
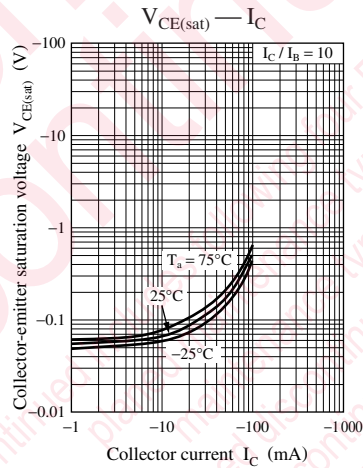
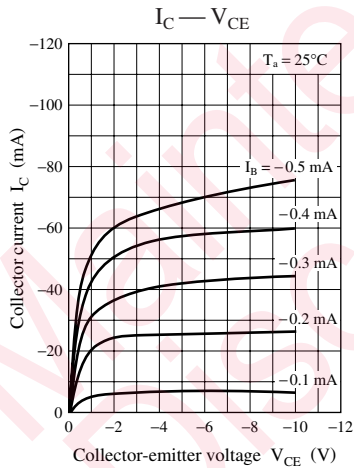


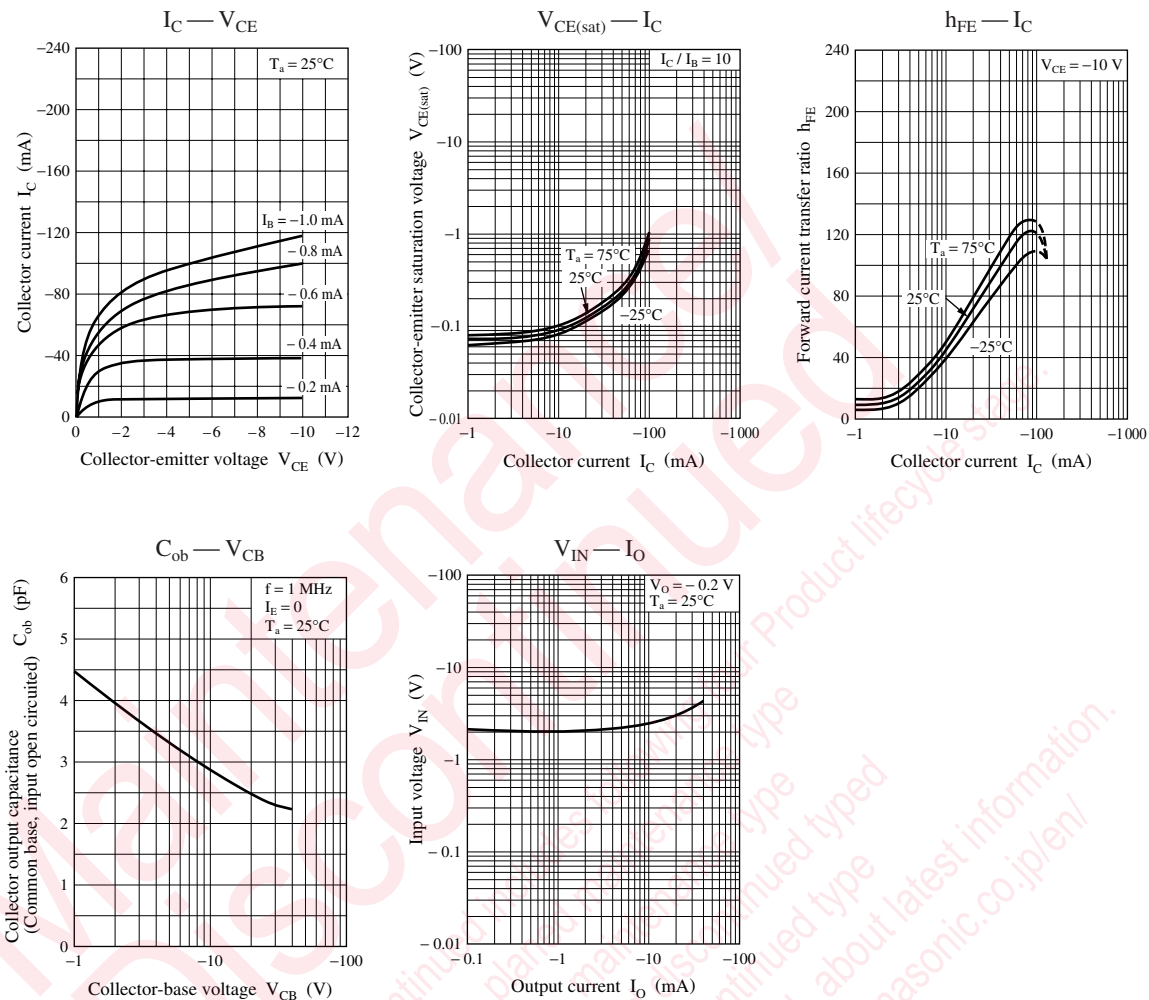
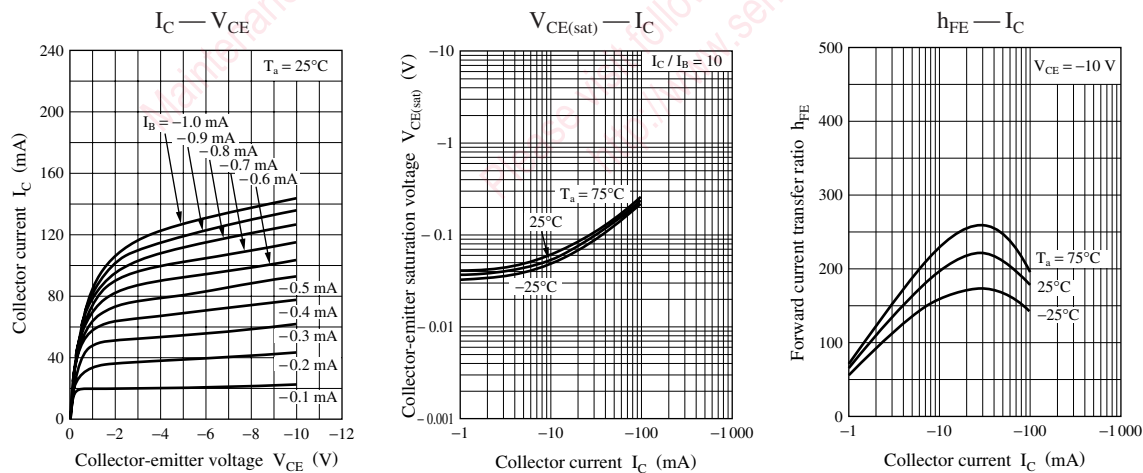
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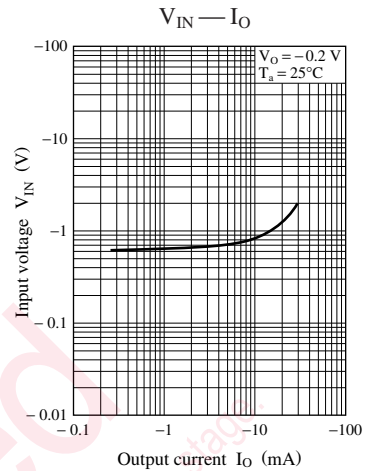
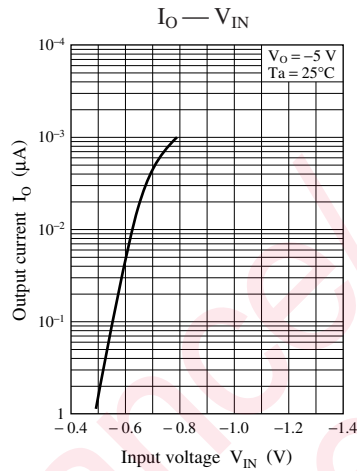
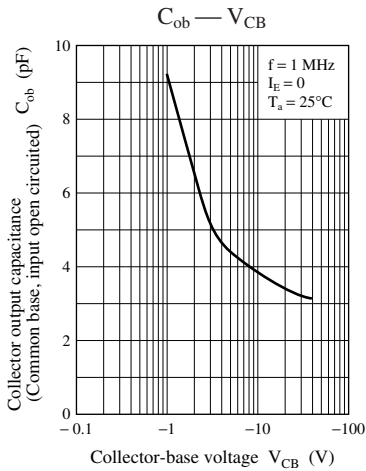




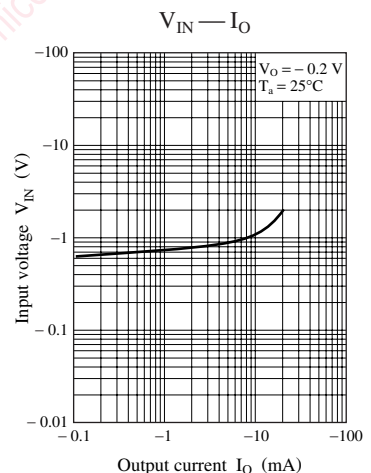
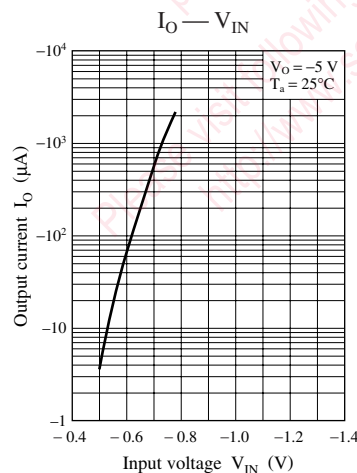
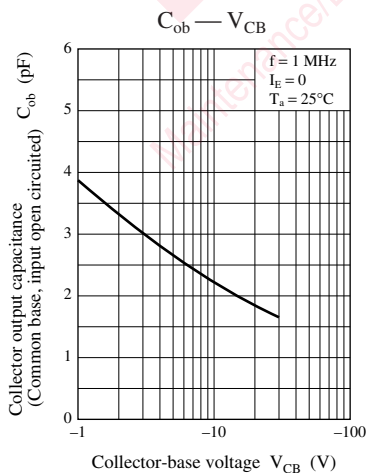
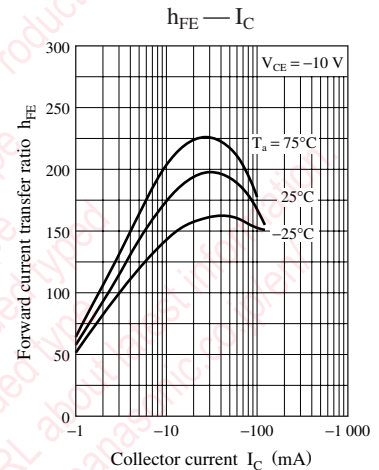
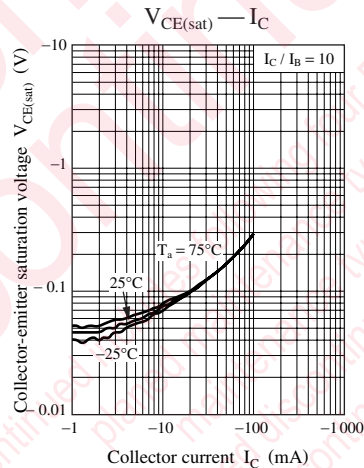
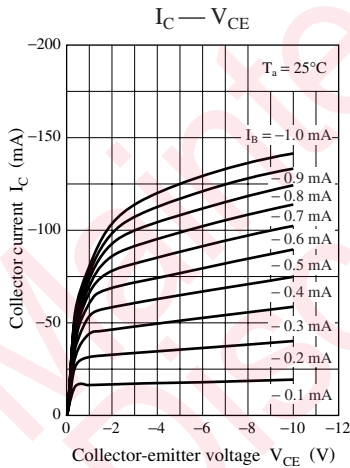
Characteristics charts of UNR511H



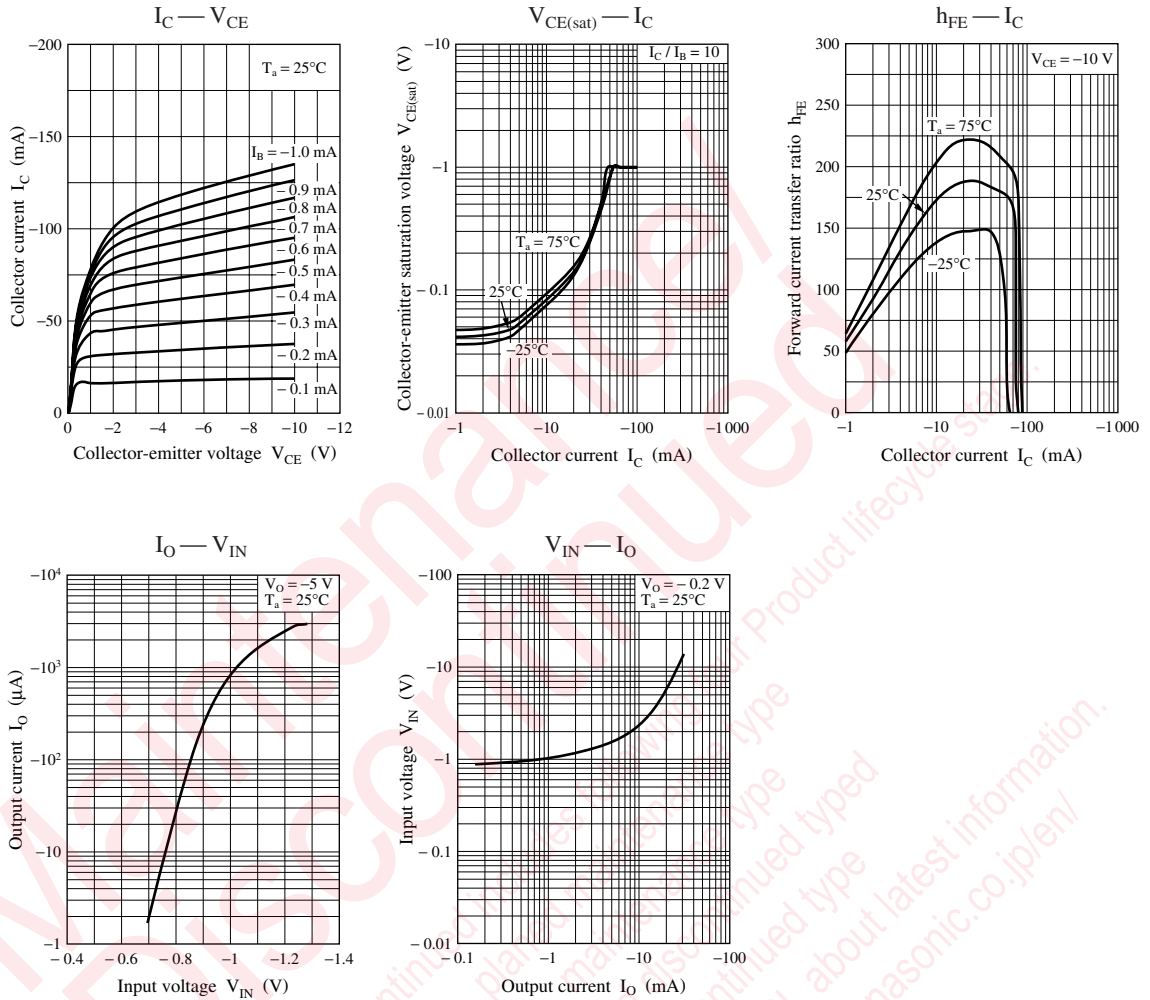
Characteristics charts of UNR511L**Characteristics charts of UNR511M**



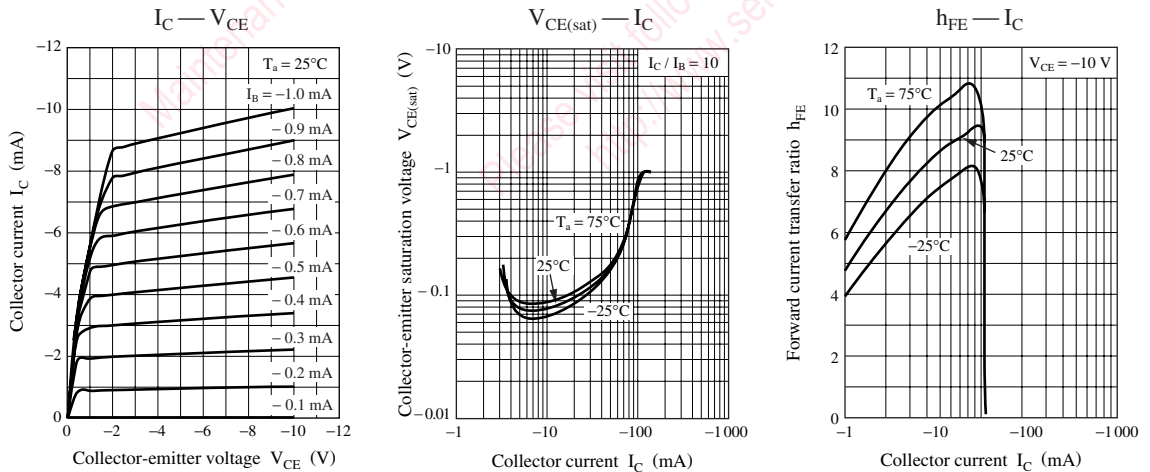
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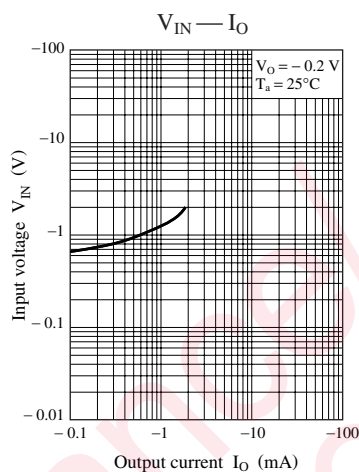
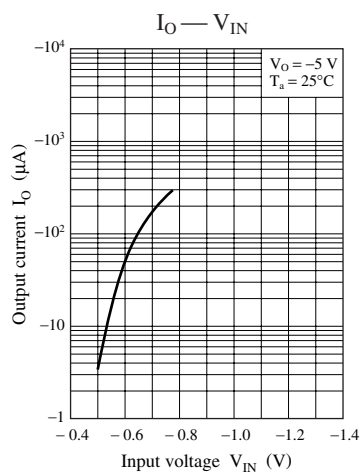


Characteristics charts of UNR511T

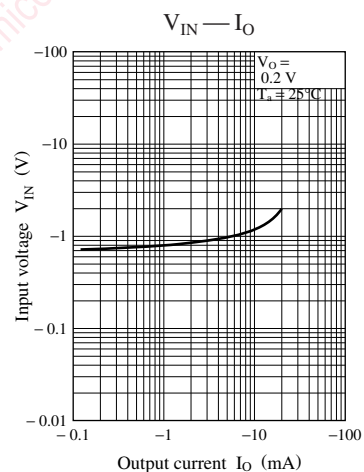
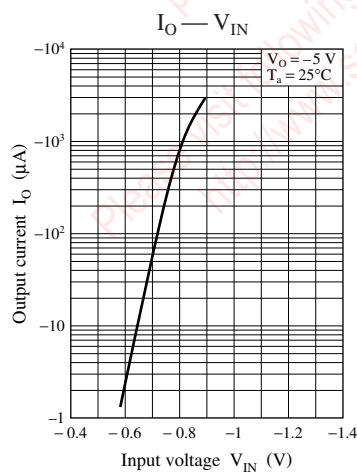
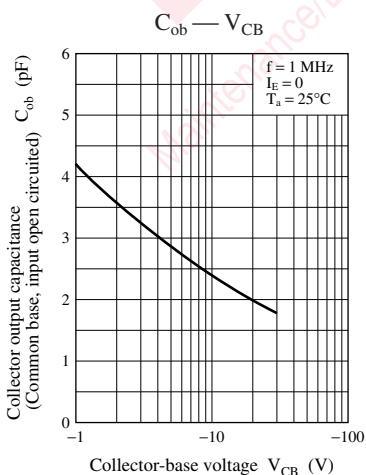
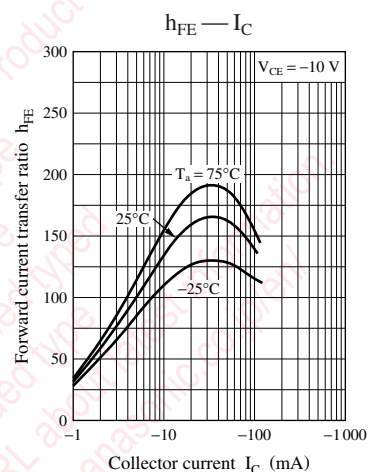
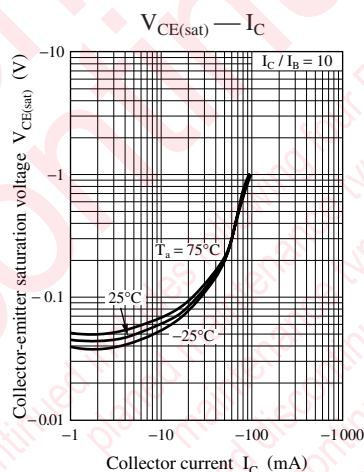
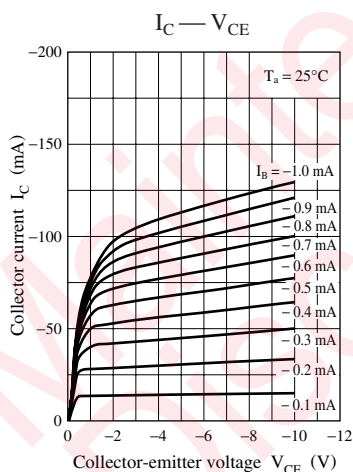


Characteristics charts of UNR511V





Characteristics charts of UNR511Z



Request for your special attention and precautions in using the technical information and semiconductors described in this book

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