

# UNR1111/1112/1113/1114/1115/1116/1117/1118/1119/1110/ 111D/111E/111F/111H/111L

## (UN1111/1112/1113/1114/1115/1116/1117/1118/1119/1110/ 111D/111E/111F/111H/111L)

Silicon PNP epitaxial planer transistor

For digital circuits

### Features

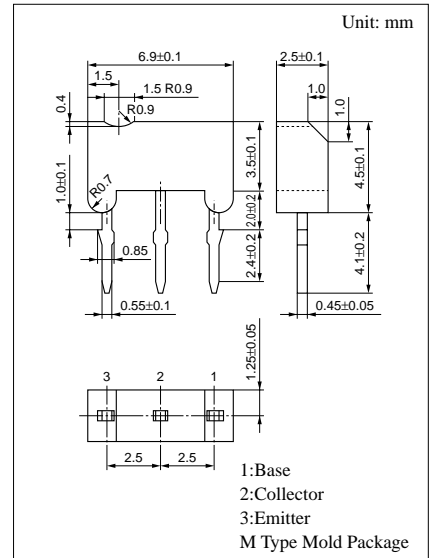
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

### Resistance by Part Number

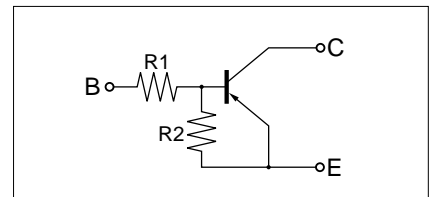
	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR1111	10kΩ	10kΩ
• UNR1112	22kΩ	22kΩ
• UNR1113	47kΩ	47kΩ
• UNR1114	10kΩ	47kΩ
• UNR1115	10kΩ	—
• UNR1116	4.7kΩ	—
• UNR1117	22kΩ	—
• UNR1118	0.51kΩ	5.1kΩ
• UNR1119	1kΩ	10kΩ
• UNR1110	47kΩ	—
• UNR111D	47kΩ	10kΩ
• UNR111E	47kΩ	22kΩ
• UNR111F	4.7kΩ	10kΩ
• UNR111H	2.2kΩ	10kΩ
• UNR111L	4.7kΩ	4.7kΩ

### Absolute Maximum Ratings (T<sub>a</sub>=25°C)

Parameter	Symbol	Rated	Unit
Collector to base voltage	V <sub>CBO</sub>	-50	V
Collector to emitter voltage	V <sub>CEO</sub>	-50	V
Collector current	I <sub>C</sub>	-100	mA
Total power dissipation	P <sub>T</sub>	400	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C



### Internal Connection



Note) The part numbers in the parenthesis show conventional part number.

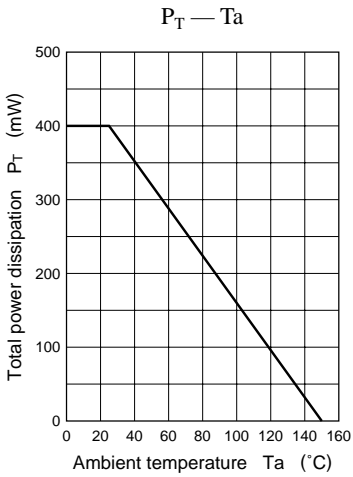
**Electrical Characteristics** (T<sub>a</sub>=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit		
Collector cutoff current		I <sub>CBO</sub>	V <sub>CB</sub> = -50V, I <sub>E</sub> = 0			-0.1	μA		
		I <sub>CEO</sub>	V <sub>CE</sub> = -50V, I <sub>B</sub> = 0			-0.5	μA		
Emitter cutoff current	UNR1111	I <sub>EBO</sub>	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0			-0.5	mA		
	UNR1112/1114/111E/111D					-0.2			
	UNR1113					-0.1			
	UNR1115/1116/1117/1110					-0.01			
	UNR111F/111H					-1.0			
	UNR1119					-1.5			
	UNR1118/111L					-2.0			
Collector to base voltage		V <sub>CBO</sub>	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0	50			V		
Collector to emitter voltage		V <sub>CEO</sub>	I <sub>C</sub> = -2mA, I <sub>B</sub> = 0	50			V		
Forward current transfer ratio	UNR1111	h <sub>FE</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA	35					
	UNR1112/111E			60					
	UNR1113/1114			80					
	UNR1115*/1116*/1117*/1110*			160		460			
	UNR111F/111D/1119/111H			30					
	UNR1118/111L			20					
Collector to emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.3mA			-0.25	V		
Output voltage high level		V <sub>OH</sub>	V <sub>CC</sub> = -5V, V <sub>B</sub> = -0.5V, R <sub>L</sub> = 1kΩ	-4.9			V		
Output voltage low level		V <sub>OL</sub>	V <sub>CC</sub> = -5V, V <sub>B</sub> = -2.5V, R <sub>L</sub> = 1kΩ			-0.2	V		
			V <sub>CC</sub> = -5V, V <sub>B</sub> = -3.5V, R <sub>L</sub> = 1kΩ			-0.2			
			V <sub>CC</sub> = -5V, V <sub>B</sub> = -10V, R <sub>L</sub> = 1kΩ			-0.2			
			V <sub>CC</sub> = -5V, V <sub>B</sub> = -6V, R <sub>L</sub> = 1kΩ			-0.2			
Transition frequency		f <sub>T</sub>	V <sub>CB</sub> = -10V, I <sub>E</sub> = 2mA, f = 200MHz		80		MHz		
Input resistance	UNR1111/1114/1115	R <sub>i</sub>		(-30%)		(±30%)	kΩ		
	UNR1112/1117							10	
	UNR1113/1110/111D/111E							22	
	UNR1116/111F/111L							47	
	UNR1118							4.7	
	UNR1119							0.51	
	UNR111H							1	
Resistance ratio	UNR1111/1112/1113/111L	R <sub>1</sub> /R <sub>2</sub>					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

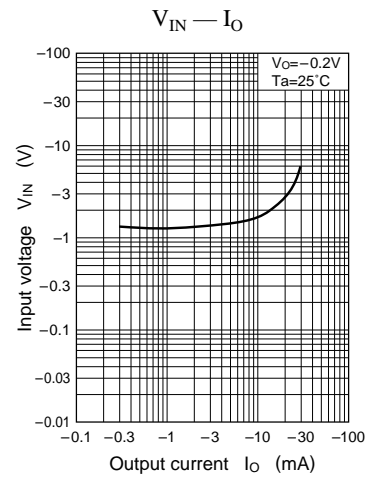
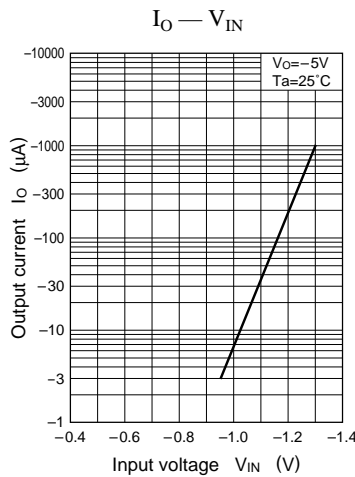
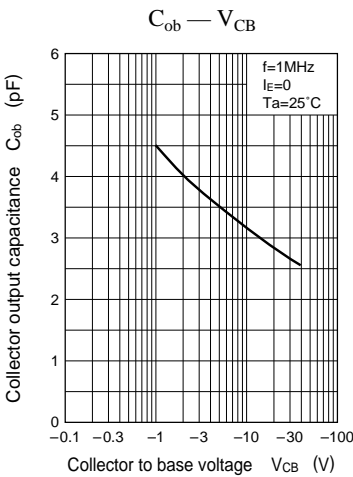
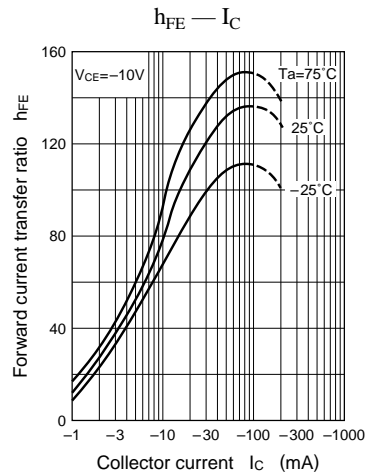
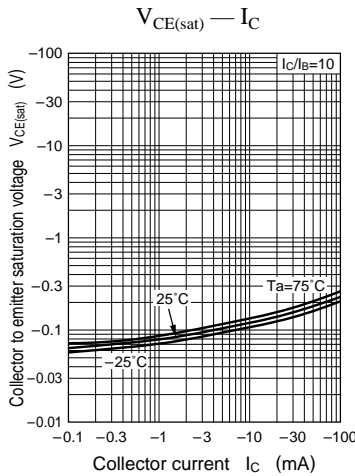
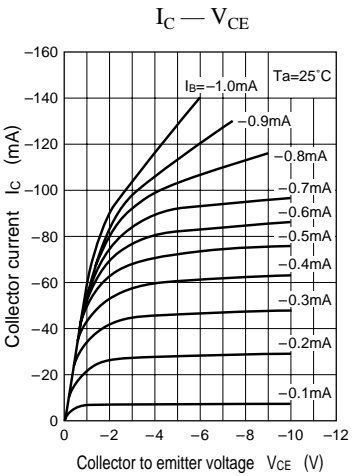
\* h<sub>FE</sub> rank classification (UNR1115/1116/1117/1110)

Rank	Q	R	S
h <sub>FE</sub>	160 to 260	210 to 340	290 to 460

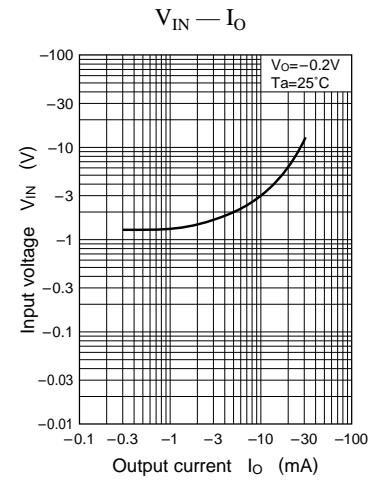
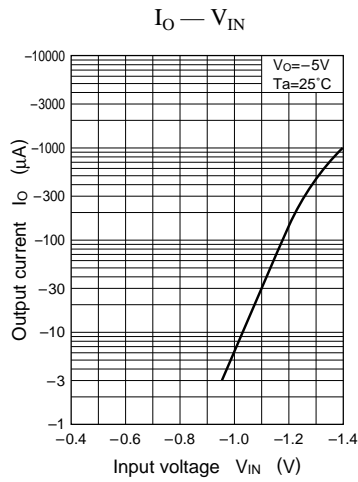
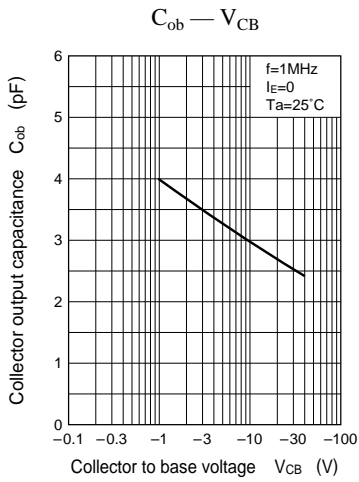
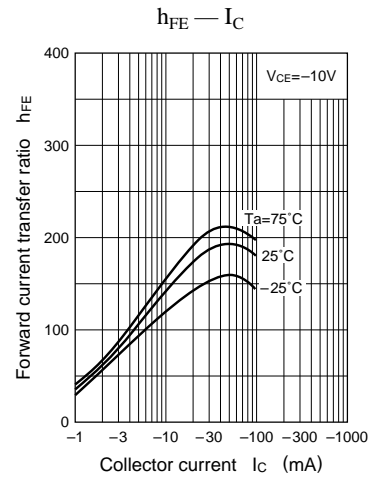
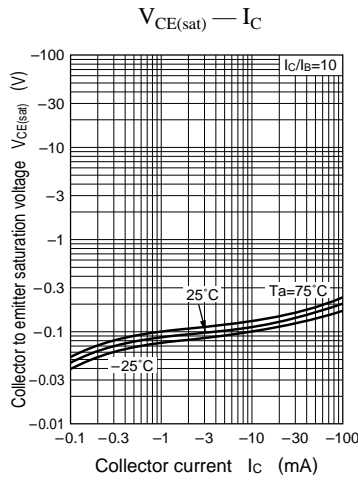
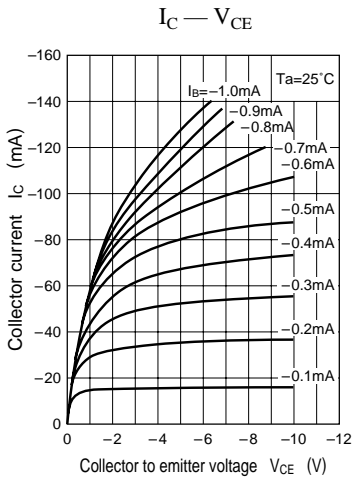
Common characteristics chart



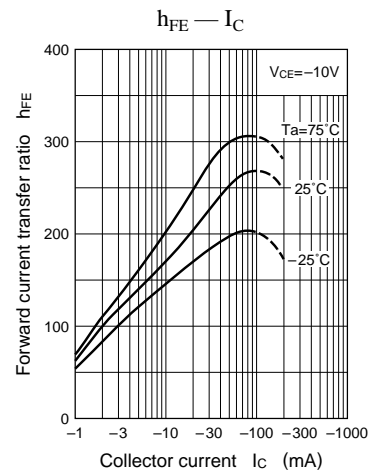
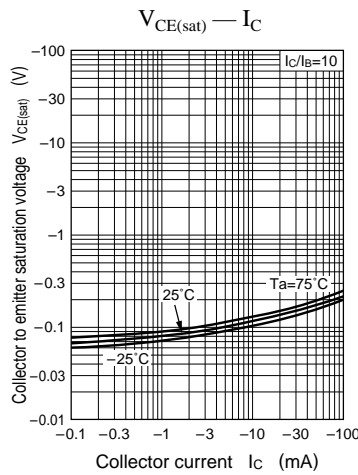
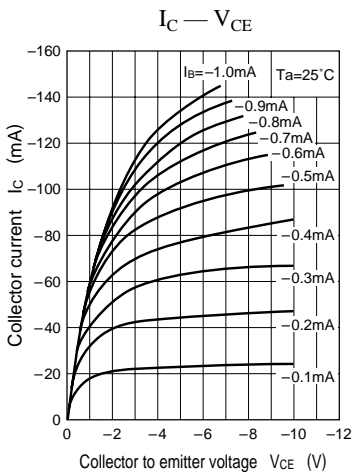
Characteristics charts of UNR1111



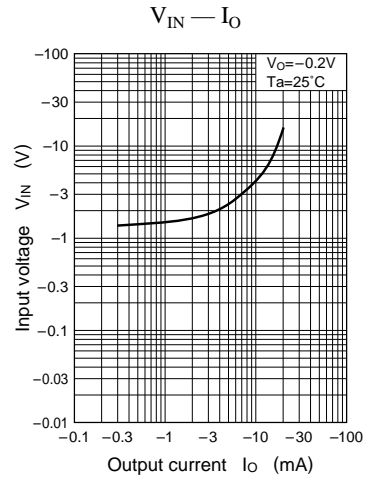
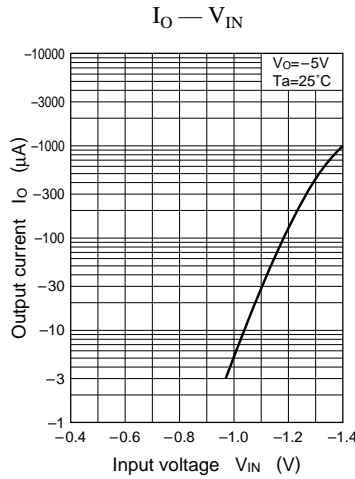
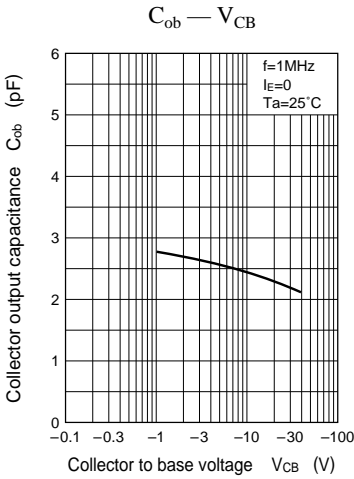
Characteristics charts of UNR1112



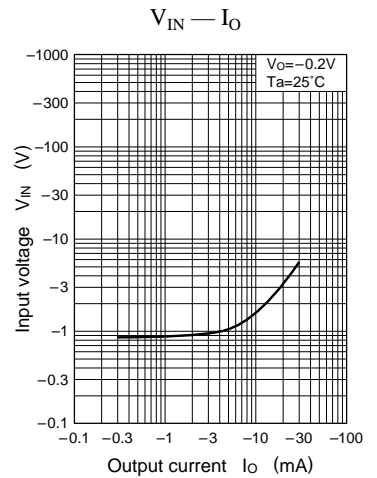
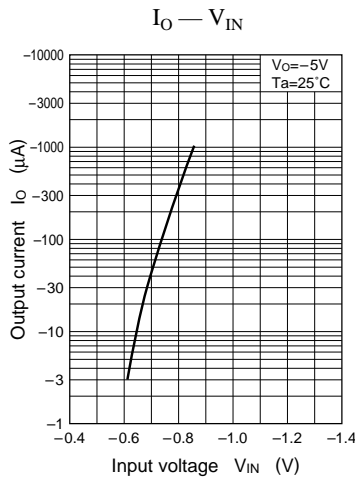
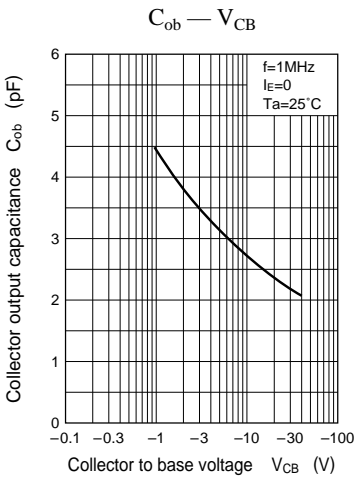
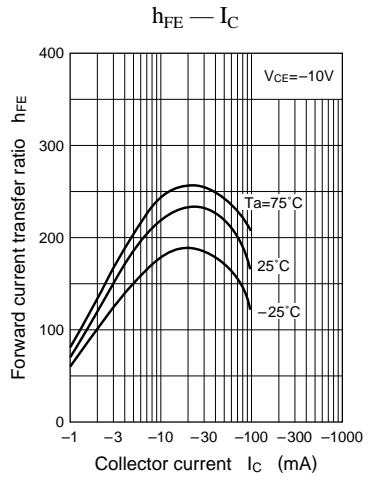
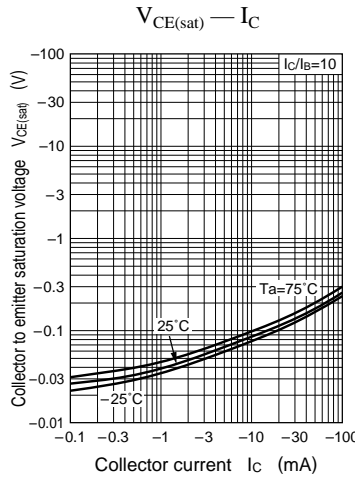
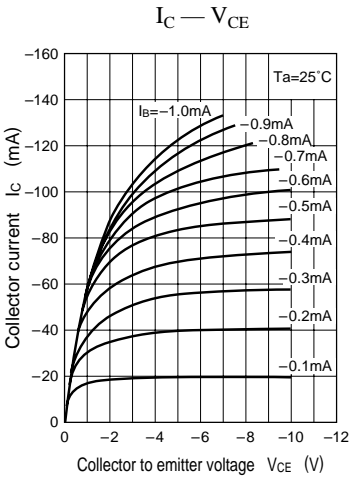
Characteristics charts of UNR1113



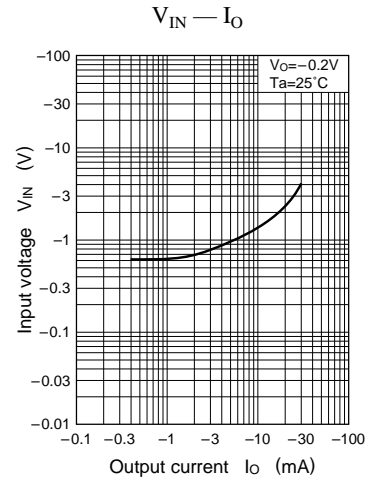
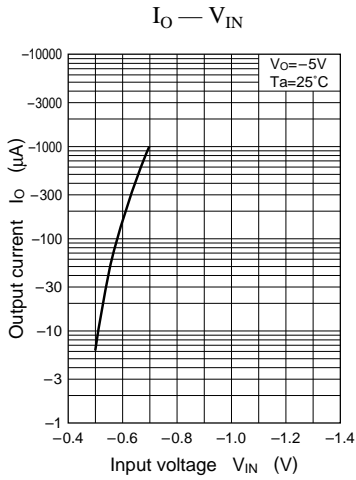
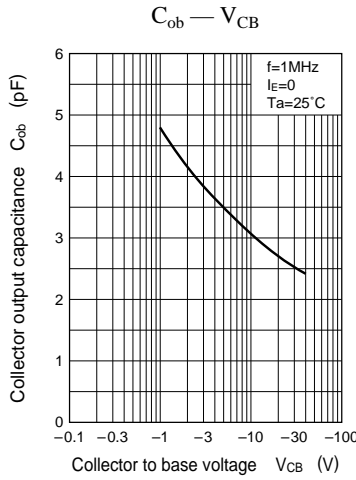
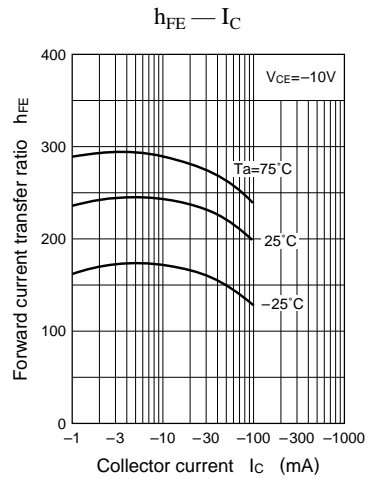
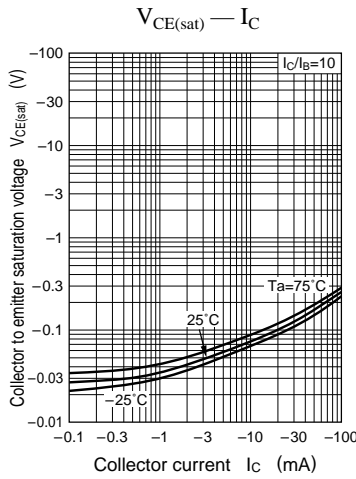
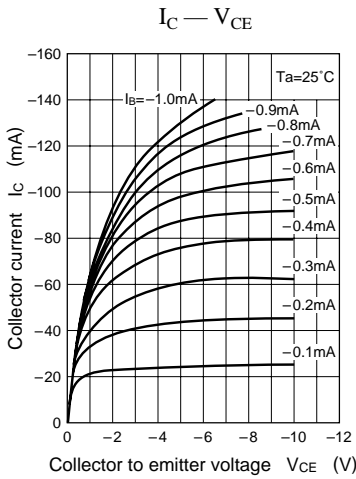
UNR1111/1112/1113/1114/1115/1116/1117/1118/  
 Transistors with built-in Resistor 1119/1110/111D/111E/111F/111H/111L



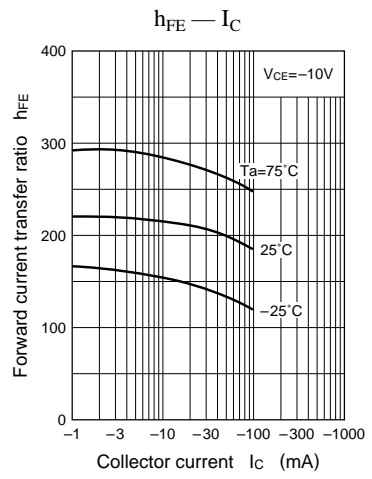
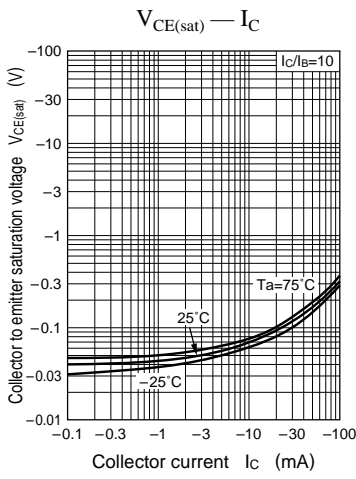
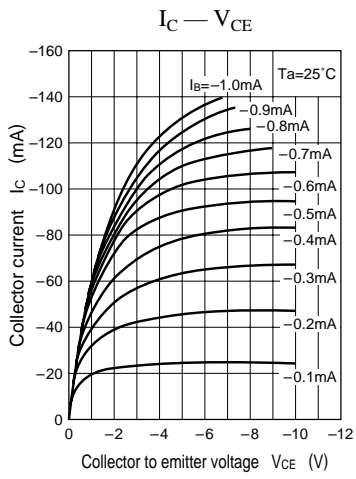
Characteristics charts of UNR1114



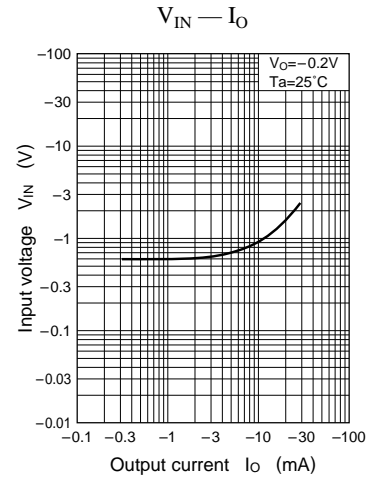
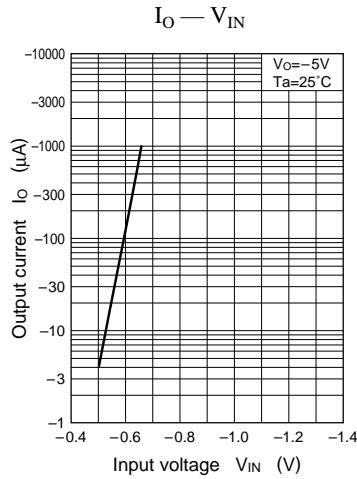
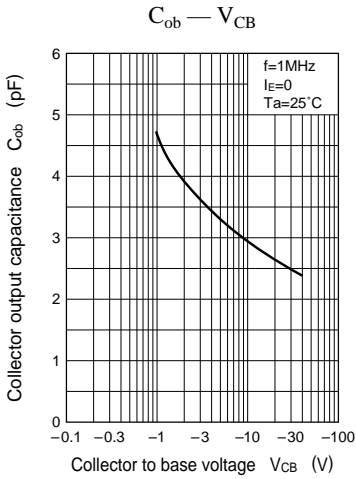
Characteristics charts of UNR1115



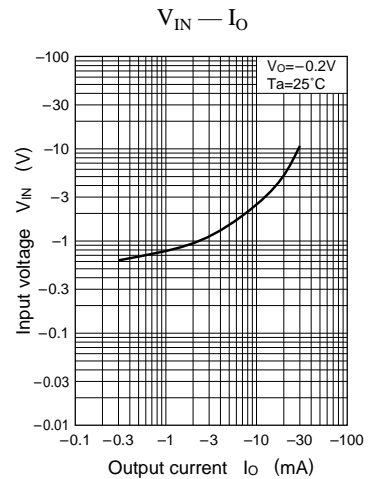
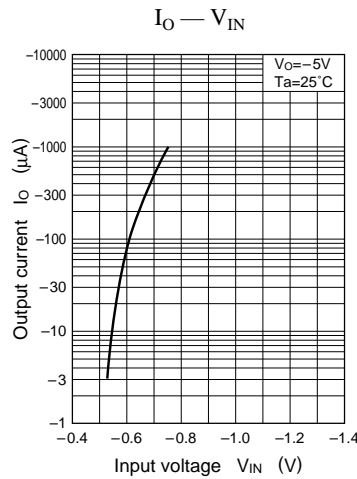
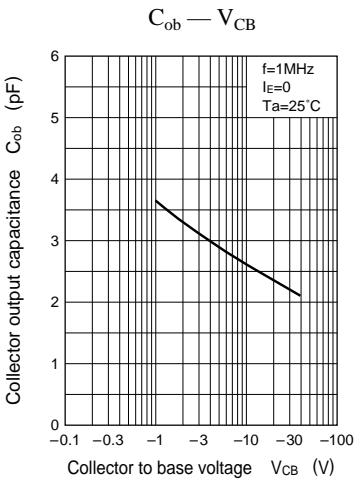
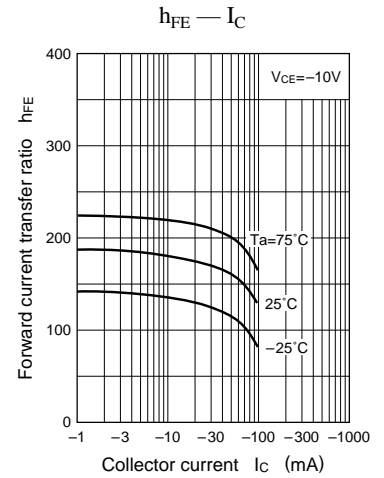
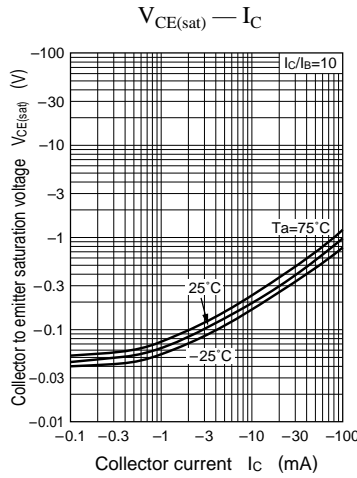
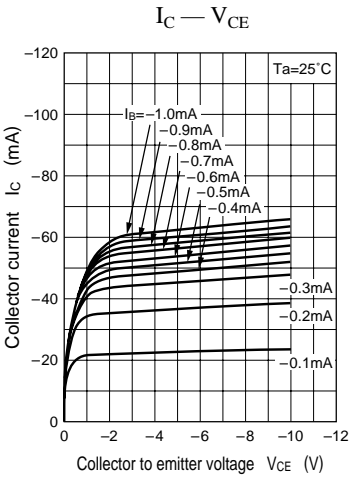
Characteristics charts of UNR1116



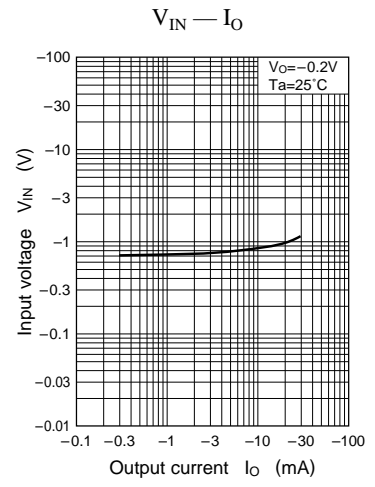
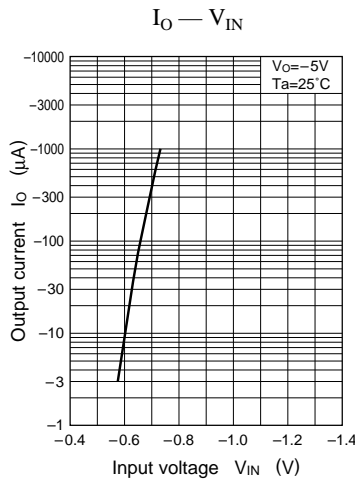
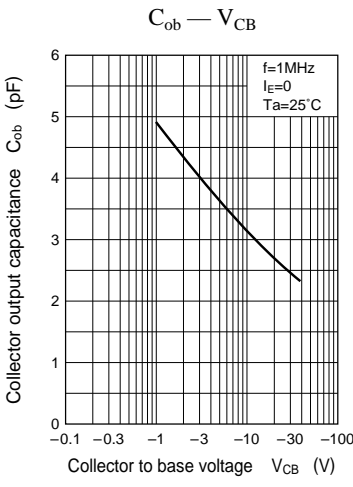
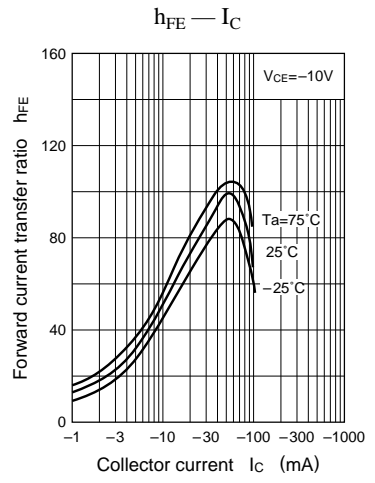
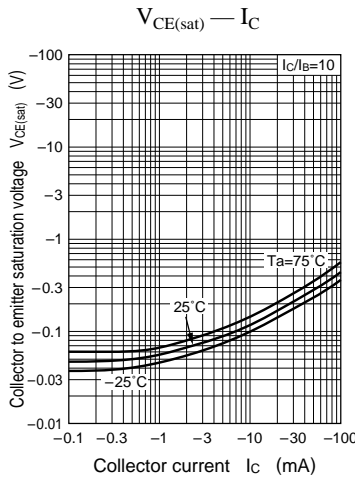
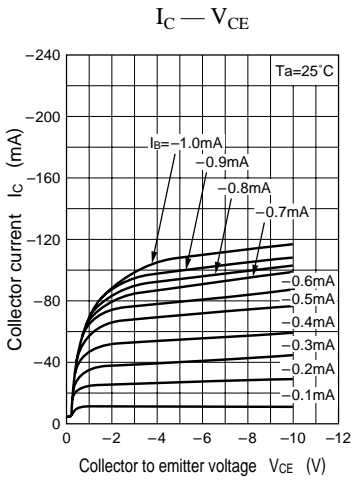
UNR1111/1112/1113/1114/1115/1116/1117/1118/  
 Transistors with built-in Resistor 1119/1110/111D/111E/111F/111H/111L



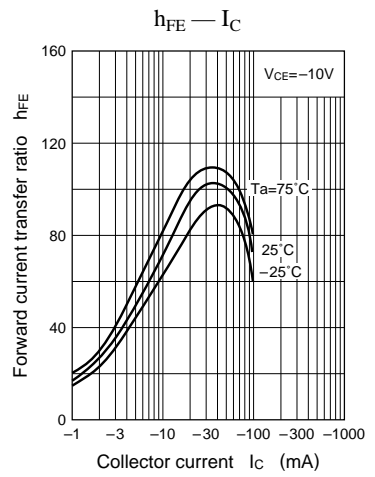
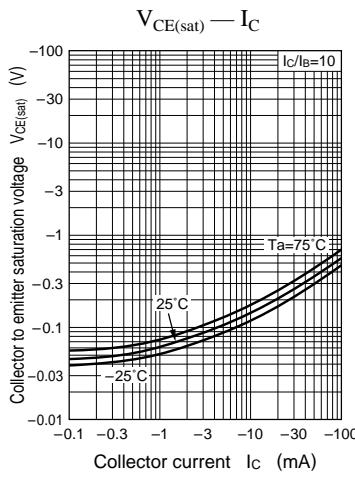
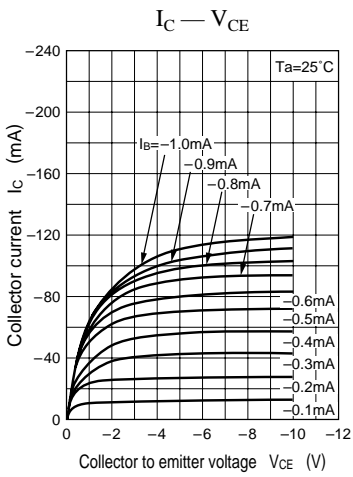
Characteristics charts of UNR1117



Characteristics charts of UNR1118

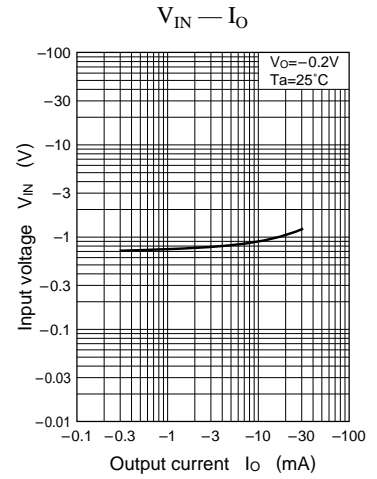
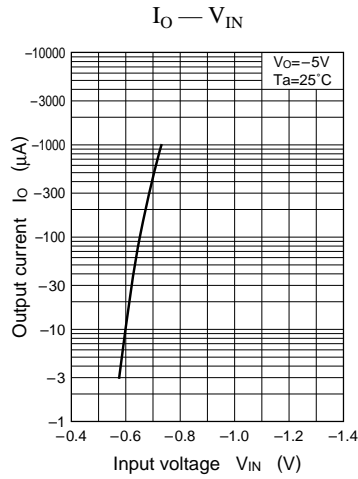
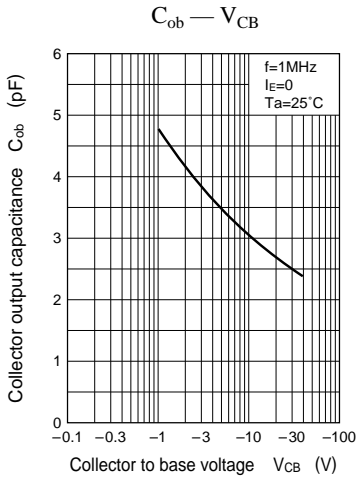


Characteristics charts of UNR1119

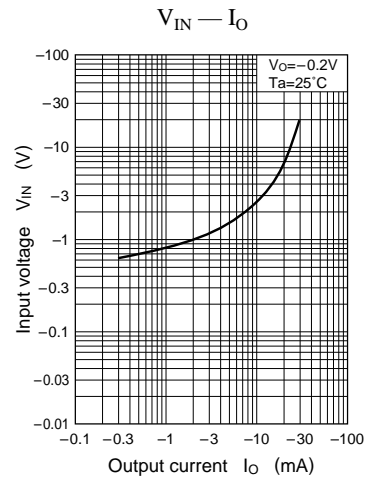
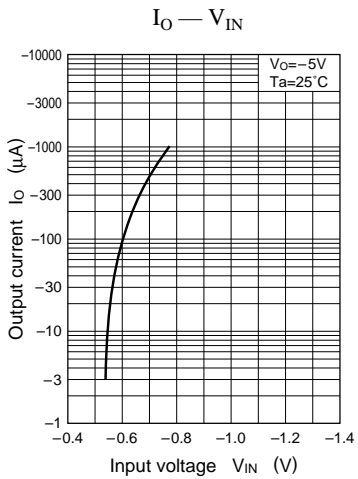
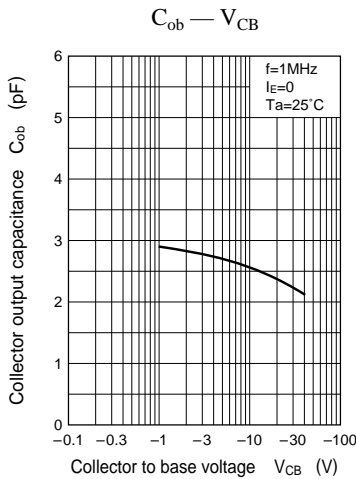
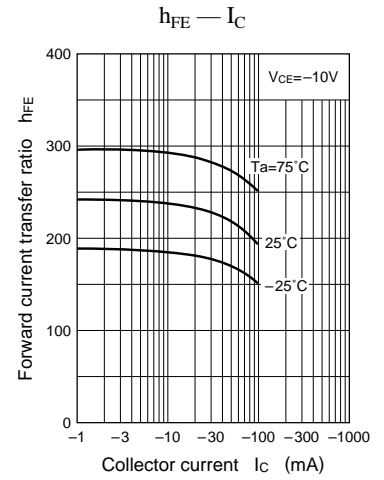
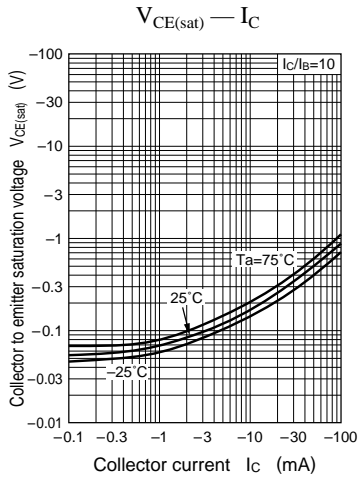
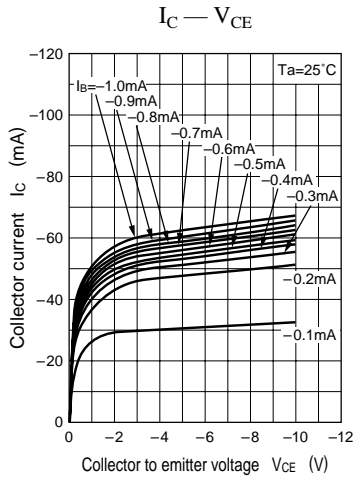




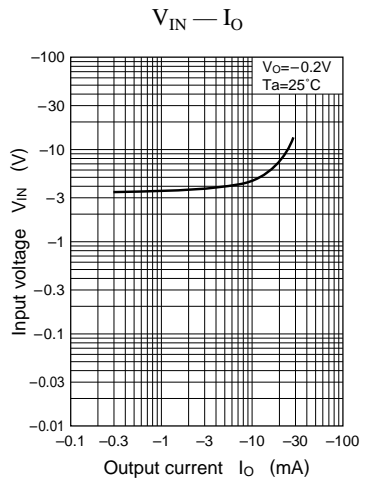
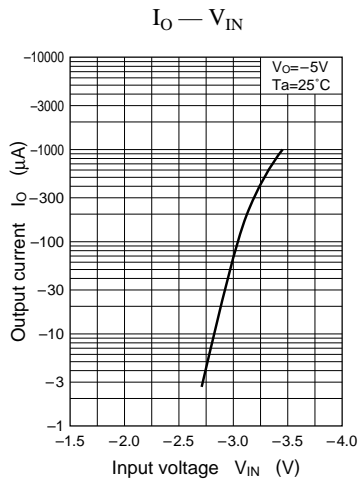
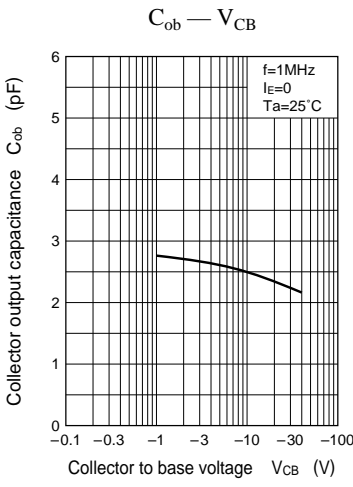
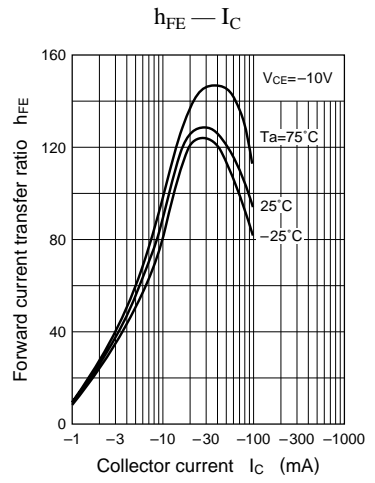
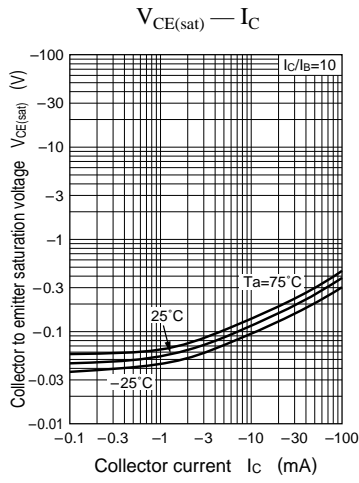
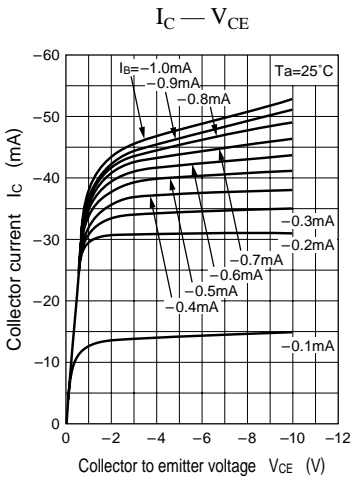
UNR1111/1112/1113/1114/1115/1116/1117/1118/  
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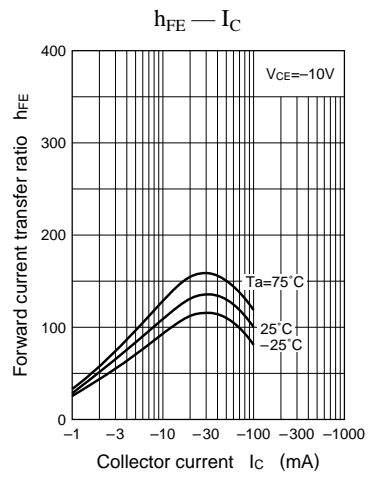
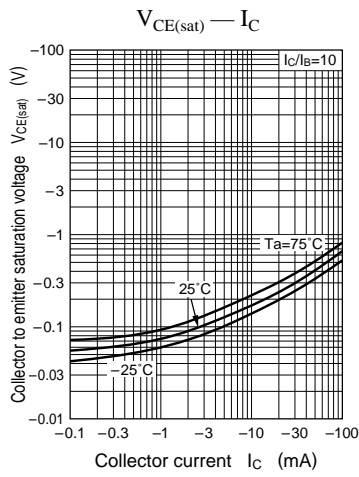
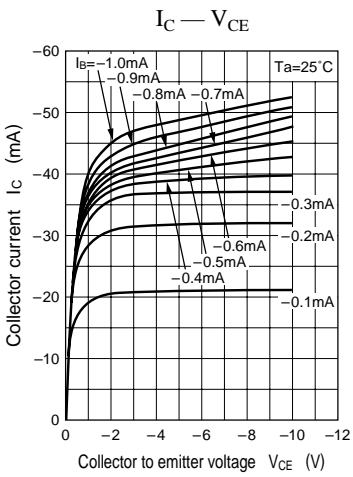
Characteristics charts of UNR1110



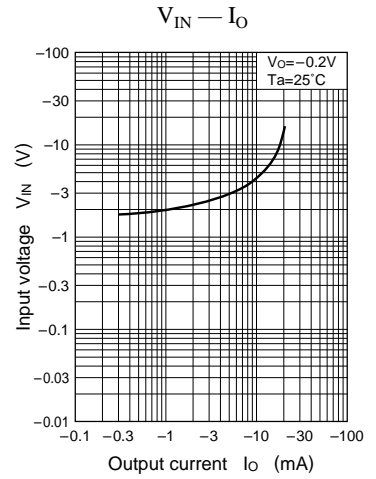
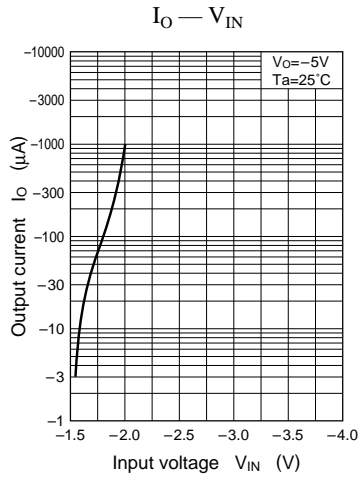
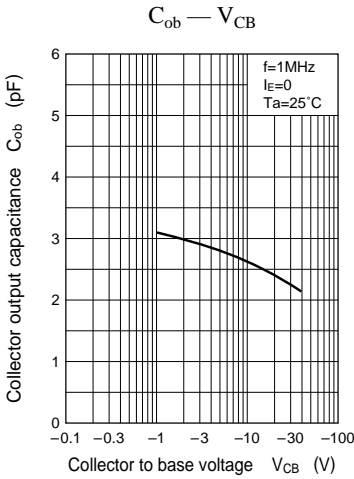
Characteristics charts of UNR111D



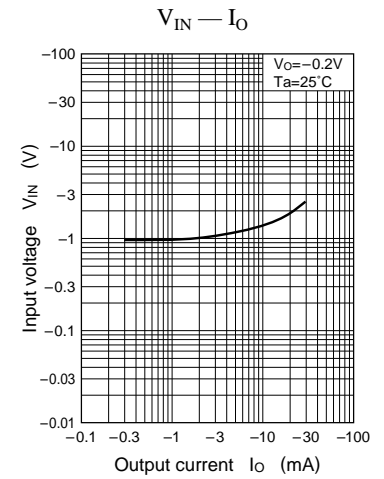
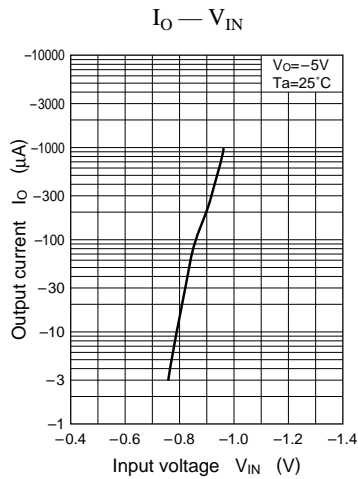
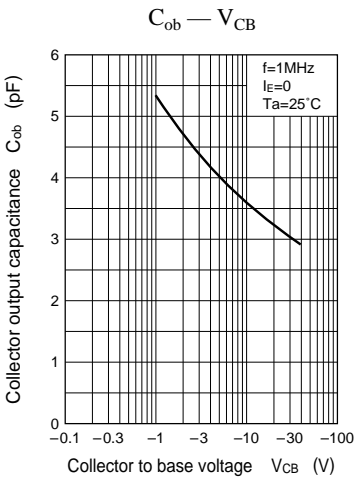
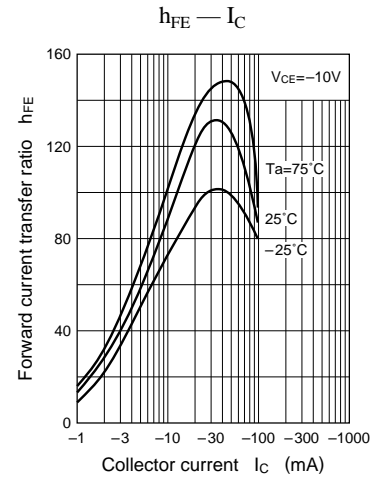
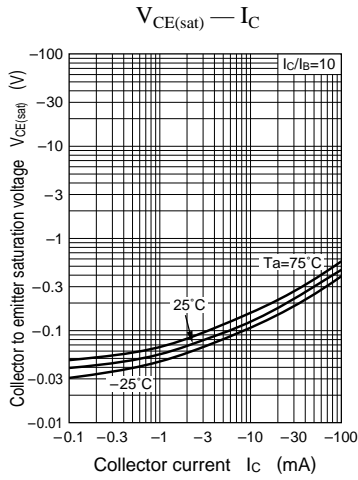
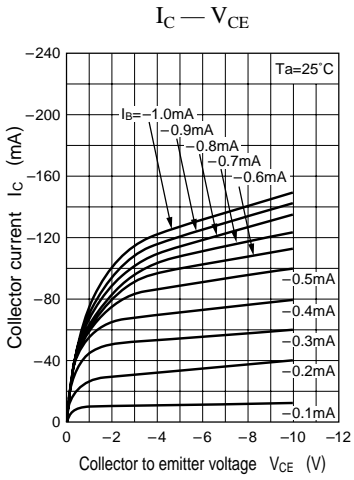
Characteristics charts of UNR111E



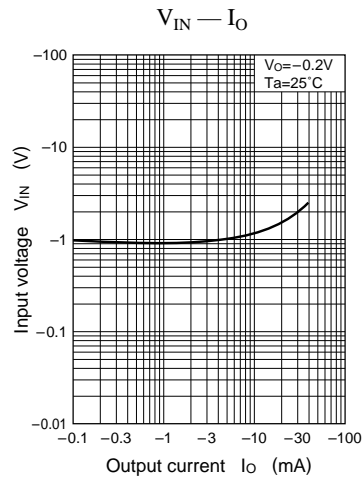
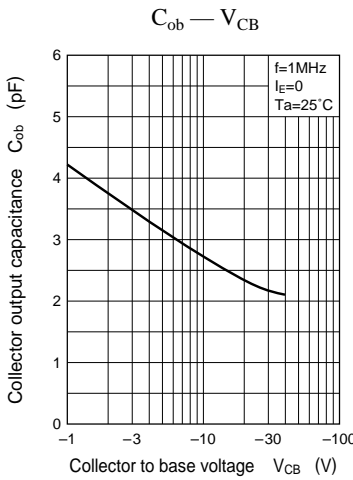
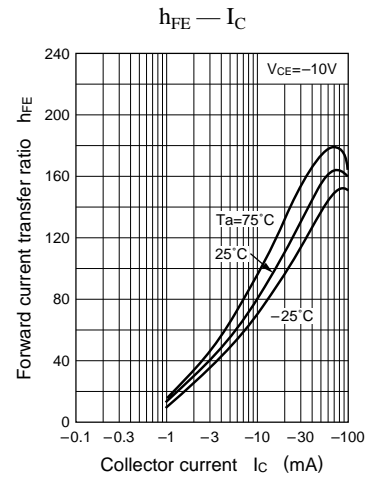
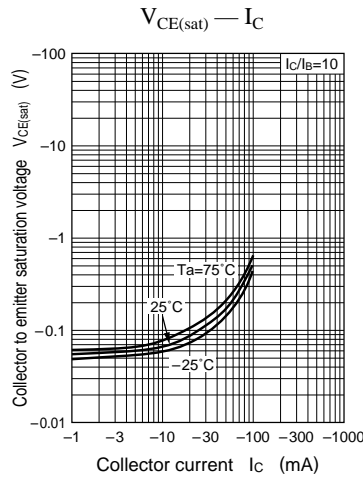
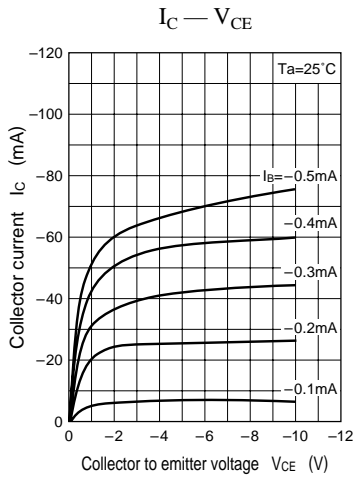
UNR1111/1112/1113/1114/1115/1116/1117/1118/  
 Transistors with built-in Resistor 1119/1110/111D/111E/111F/111H/111L



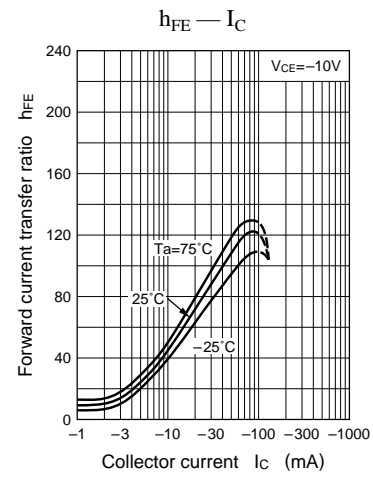
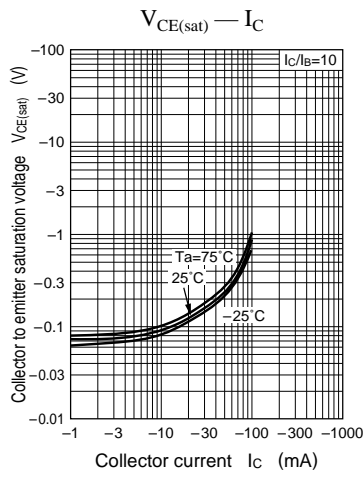
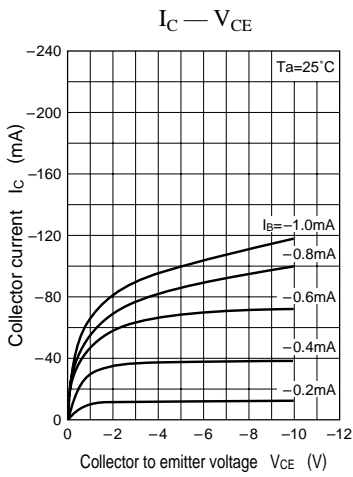
Characteristics charts of UNR111F

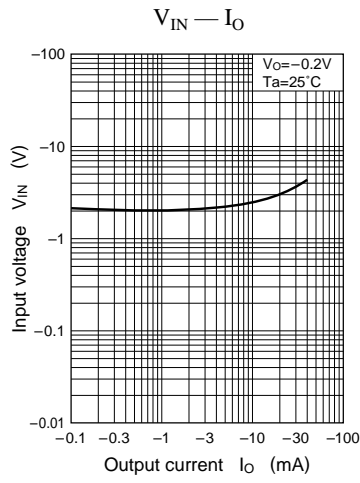
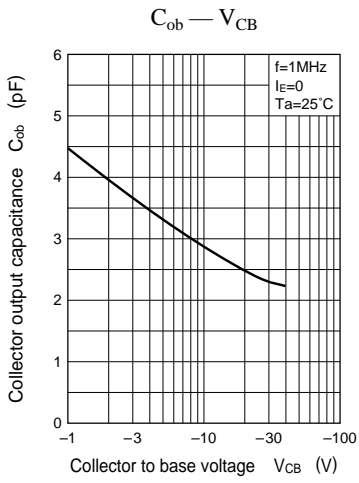


Characteristics charts of UNR111H



Characteristics charts of UNR111L





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