

UNR1211/1212/1213/1214/1215/1216/1217/1218/1219/1210/ 121D/121E/121F/121K/121L

(UN1211/1212/1213/1214/1215/1216/1217/1218/1219/1210/ 121D/121E/121F/121K/121L)

Silicon NPN 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.

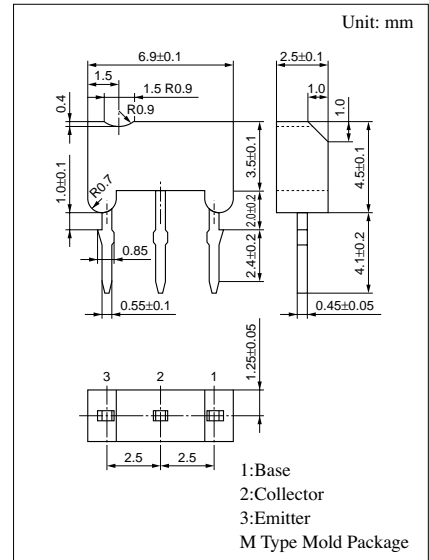
Resistance by Part Number

	(R ₁)	(R ₂)
• UNR1211	10kΩ	10kΩ
• UNR1212	22kΩ	22kΩ
• UNR1213	47kΩ	47kΩ
• UNR1214	10kΩ	47kΩ
• UNR1215	10kΩ	—
• UNR1216	4.7kΩ	—
• UNR1217	22kΩ	—
• UNR1218	0.51kΩ	5.1kΩ
• UNR1219	1kΩ	10kΩ
• UNR1210	47kΩ	—
• UNR121D	47kΩ	10kΩ
• UNR121E	47kΩ	22kΩ
• UNR121F	4.7kΩ	10kΩ
• UNR121K	10kΩ	4.7kΩ
• UNR121L	4.7kΩ	4.7kΩ

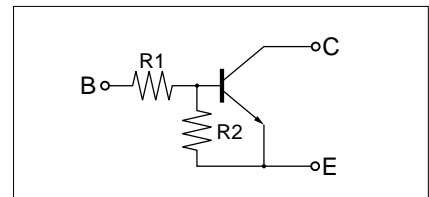
Absolute Maximum Ratings (T_a=25°C)

Parameter	Symbol	Rated	Unit
Collector to base voltage	V _{CBO}	50	V
Collector to emitter voltage	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

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



Internal Connection



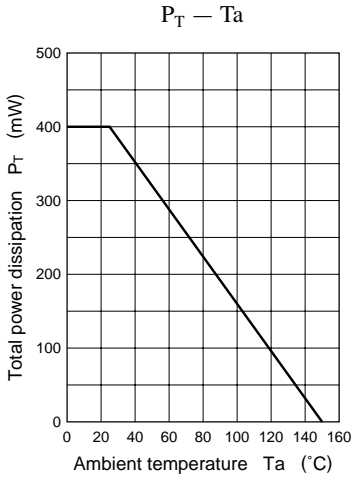
Electrical Characteristics (T_a=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit	
Collector cutoff current		I _{CBO}	V _{CB} = 50V, I _E = 0			0.1	μA	
		I _{CEO}	V _{CE} = 50V, I _B = 0			0.5	μA	
Emitter cutoff current	UNR1211	I _{EBO}	V _{EB} = 6V, I _C = 0			0.5	mA	
	UNR1212/1214/121E/121D					0.2		
	UNR1213					0.1		
	UNR1215/1216/1217/1210					0.01		
	UNR121F/121K					1.0		
	UNR1219					1.5		
	UNR1218/121L					2.0		
Collector to base voltage		V _{CBO}	I _C = 10μA, I _E = 0	50			V	
Collector to emitter voltage		V _{CEO}	I _C = 2mA, I _B = 0	50			V	
Forward current transfer ratio	UNR1211	h _{FE}	V _{CE} = 10V, I _C = 5mA	35			V	
	UNR1212/121E			60				
	UNR1213/1214			80				
	UNR1215*/1216*/1217*/1210*			160		460		
	UNR121F/121D/1219			30				
	UNR1218/121K/121L			20				
Collector to emitter saturation voltage		V _{CE(sat)}	I _C = 10mA, I _B = 0.3mA			0.25	V	
Output voltage high level		V _{OH}	V _{CC} = 5V, V _B = 0.5V, R _L = 1kΩ	4.9			V	
Output voltage low level		V _{OL}	V _{CC} = 5V, V _B = 2.5V, R _L = 1kΩ			0.2	V	
			V _{CC} = 5V, V _B = 3.5V, R _L = 1kΩ			0.2		
			V _{CC} = 5V, V _B = 10V, R _L = 1kΩ			0.2		
			V _{CC} = 5V, V _B = 6V, R _L = 1kΩ			0.2		
Transition frequency		f _T	V _{CB} = 10V, I _E = -2mA, f = 200MHz		80		MHz	
Input resistance	UNR1211/1214/1215/121K	R ₁		(-30%)		10	(+30%)	kΩ
	UNR1212/1217					22		
	UNR1213/121D/121E/1210					47		
	UNR1216/121F/121L					4.7		
	UNR1218					0.51		
	UNR1219					1		
Resistance ratio	UNR1211/1212/1213/121L	R ₁ /R ₂			0.8	1.0	1.2	
	UNR1214				0.17	0.21	0.25	
	UNR1218/1219				0.08	0.1	0.12	
	UNR121D					4.7		
	UNR121E					2.14		
	UNR121F					0.47		
	UNR121K					2.13		

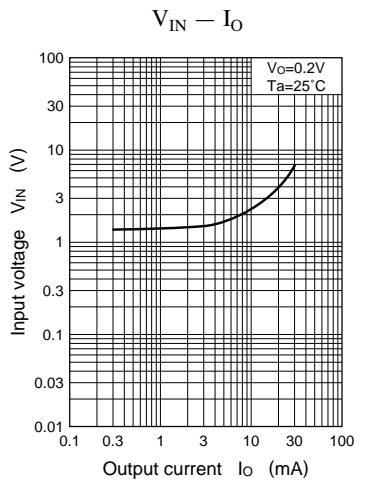
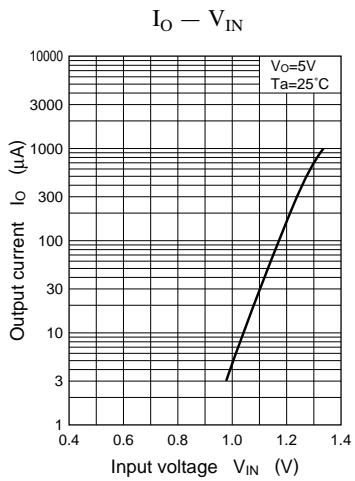
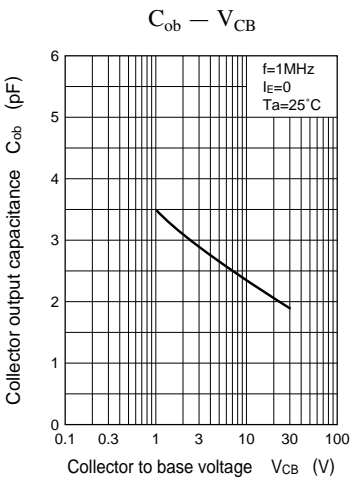
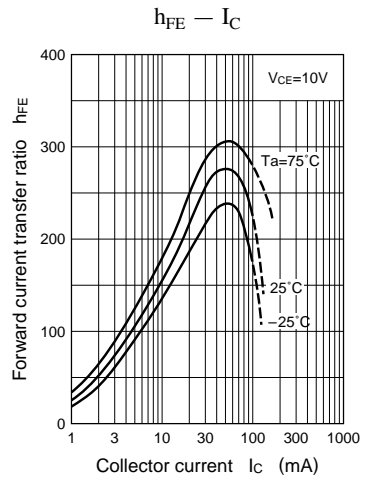
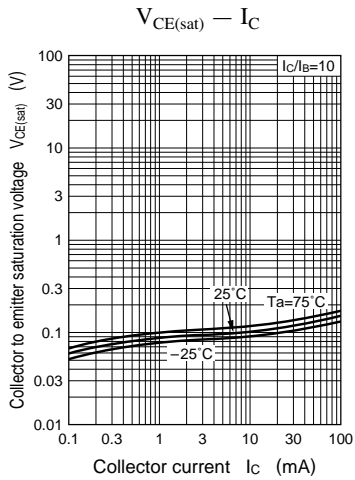
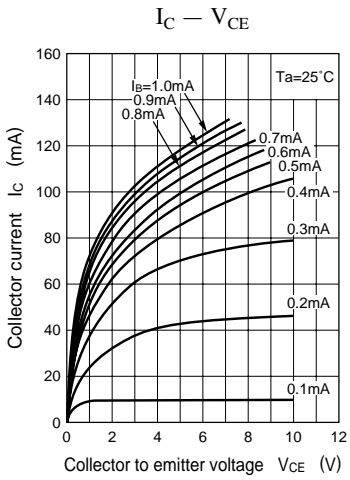
* h_{FE} rank classification (UNR1215/1216/1217/1210)

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

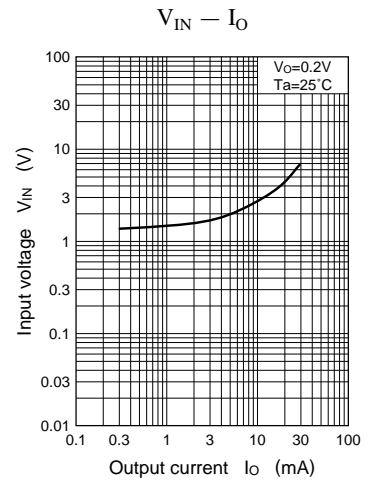
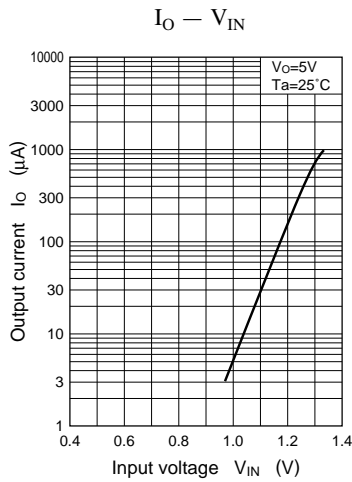
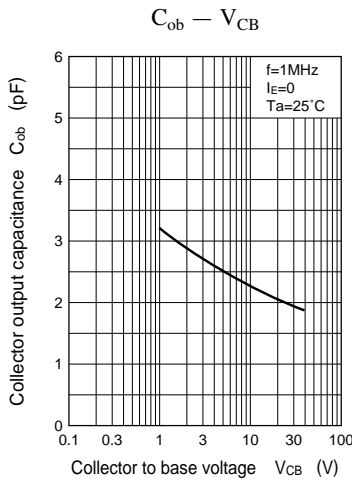
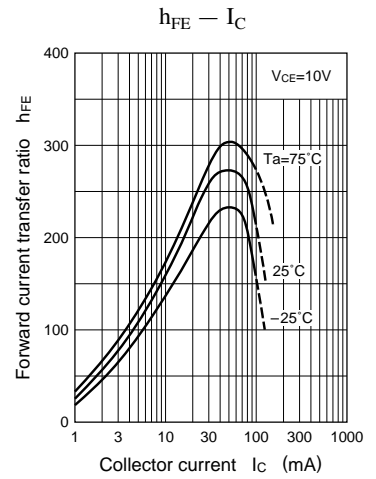
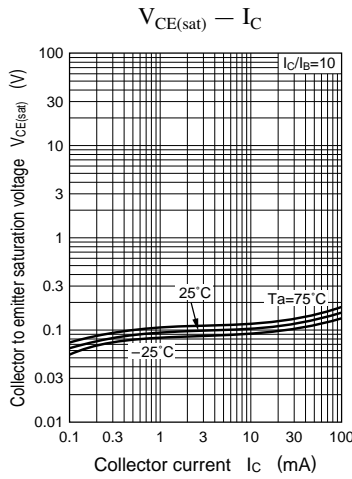
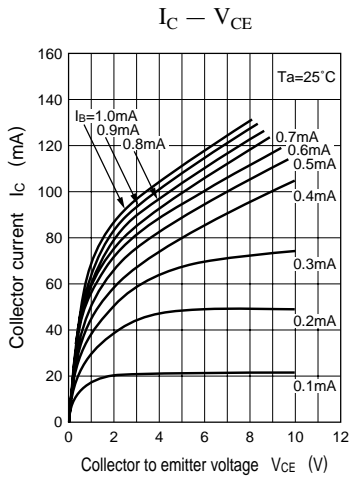
Common characteristics chart



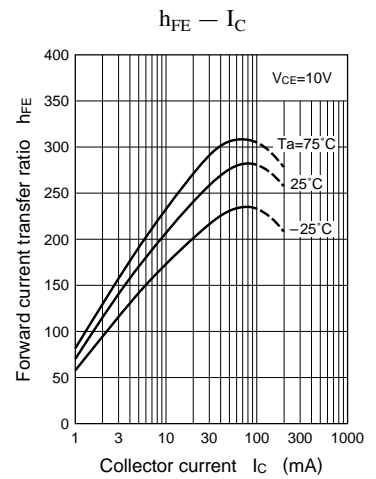
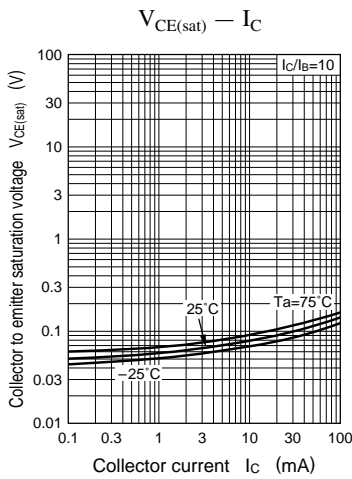
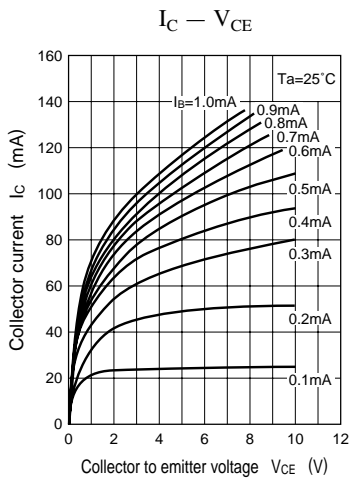
Characteristics charts of UNR1211

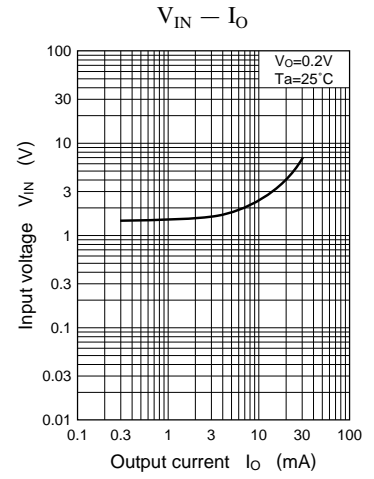
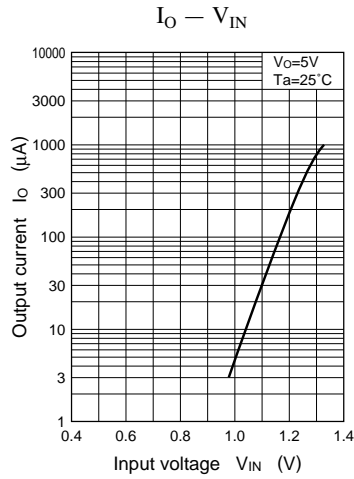
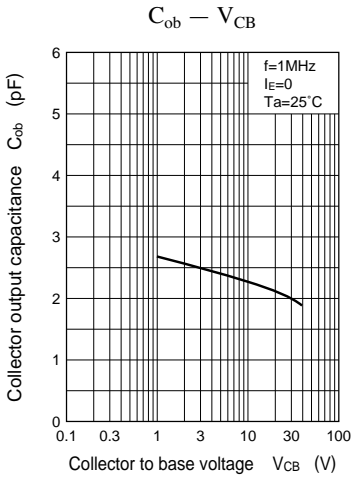


Characteristics charts of UNR1212

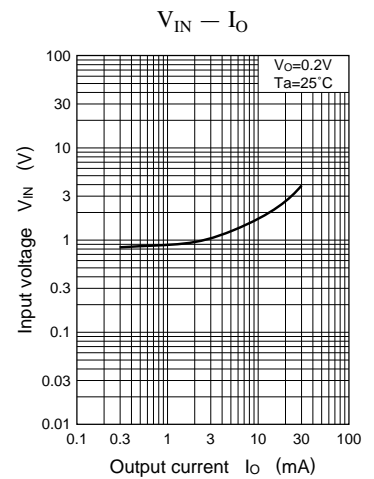
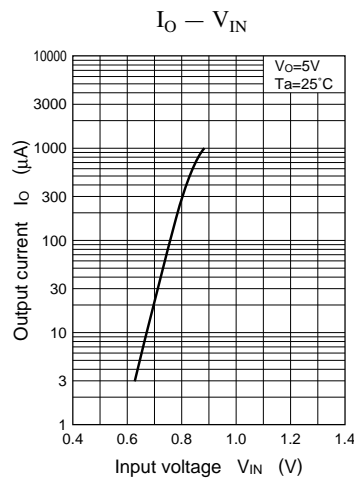
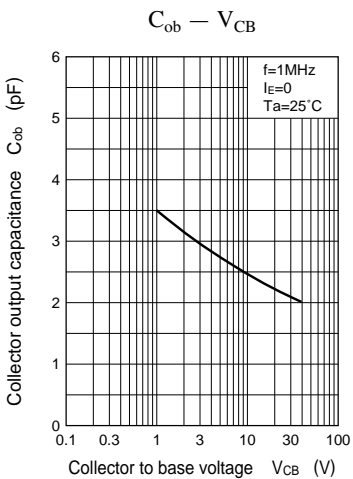
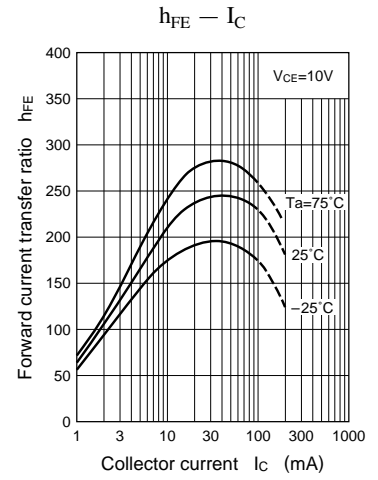
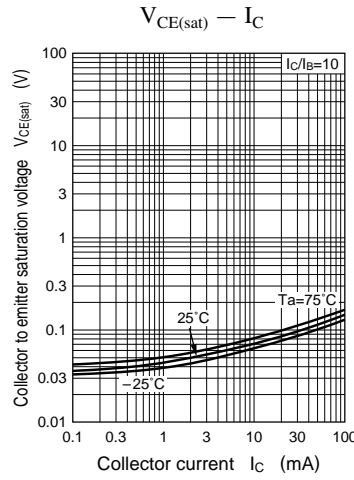
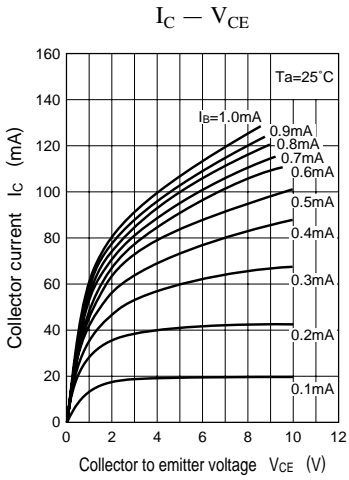


Characteristics charts of UNR1213

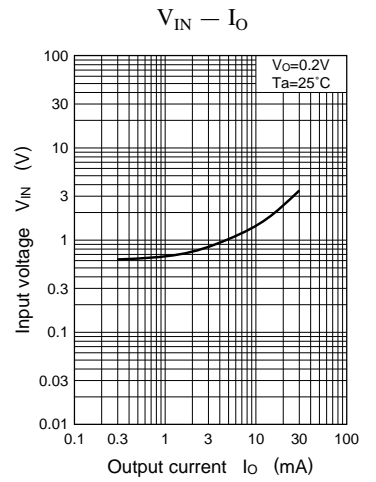
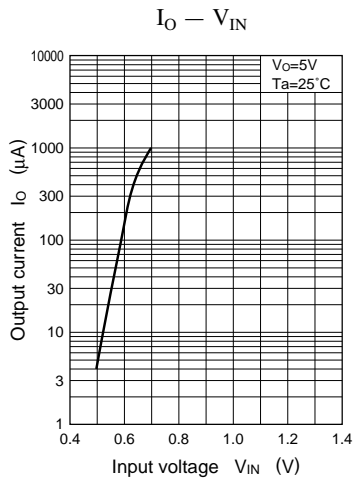
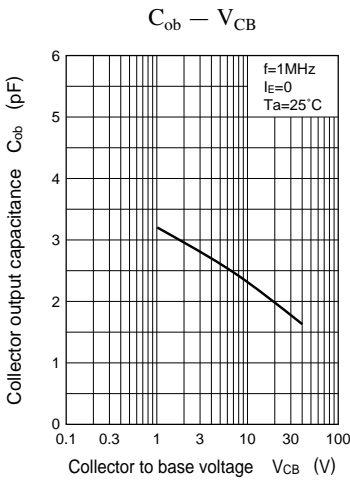
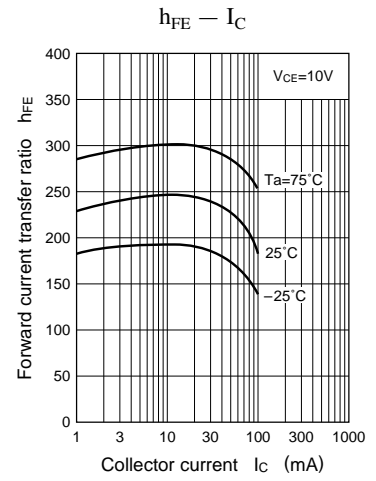
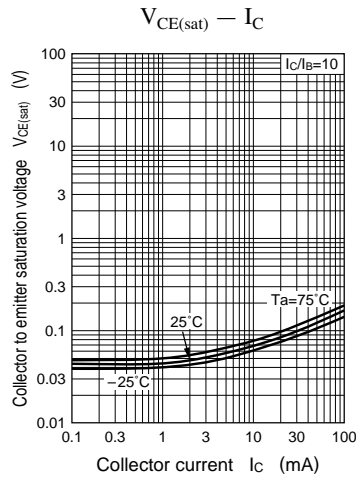
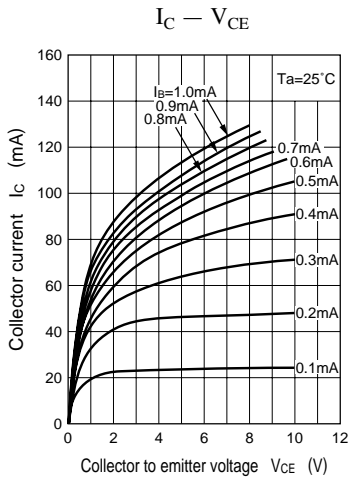




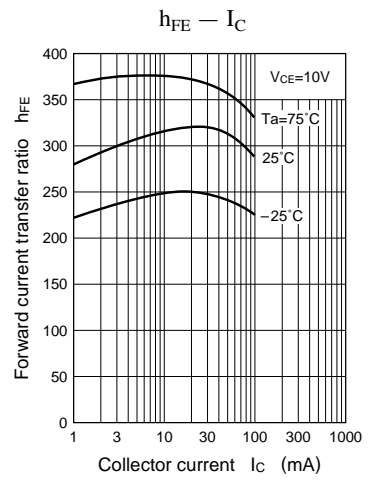
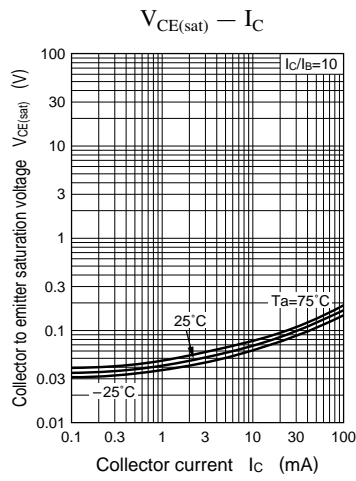
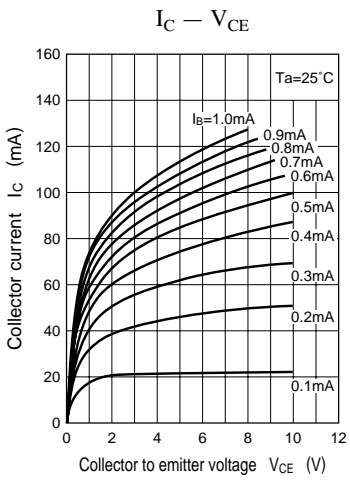
Characteristics charts of UNR1214



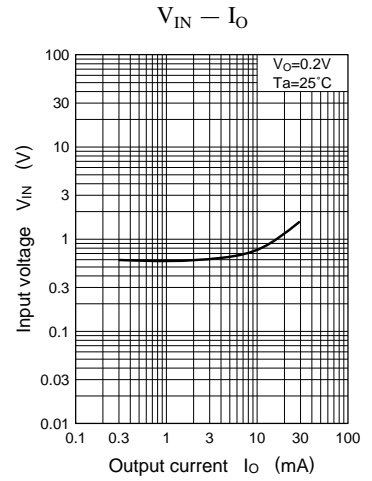
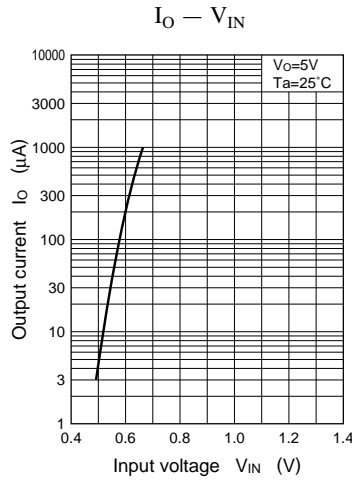
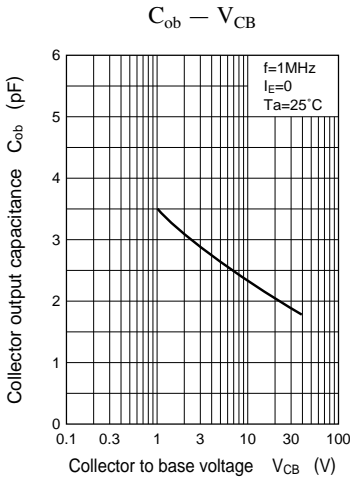
Characteristics charts of UNR1215



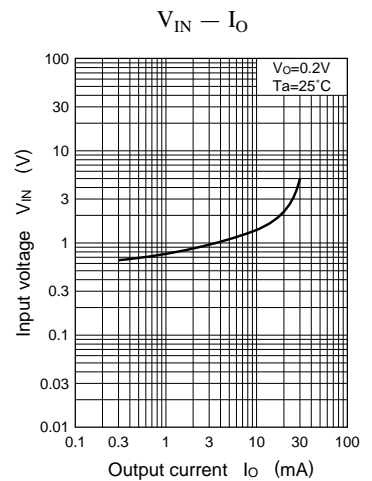
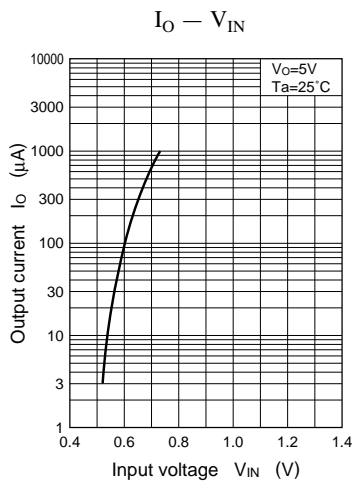
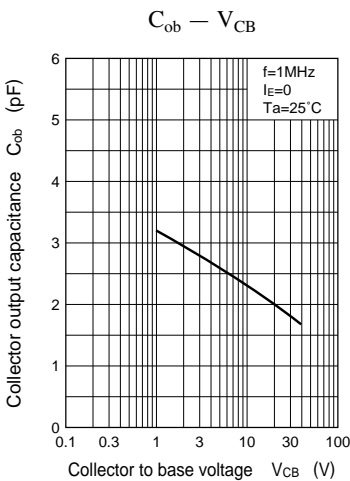
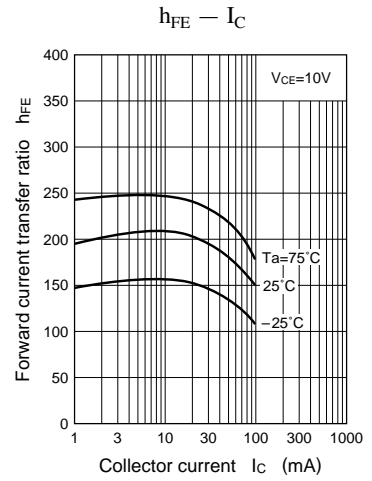
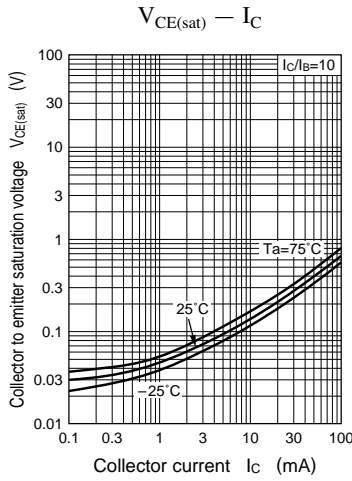
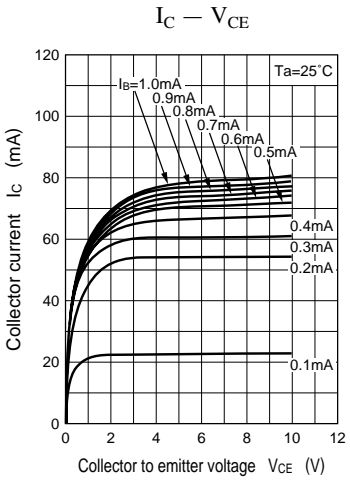
Characteristics charts of UNR1216



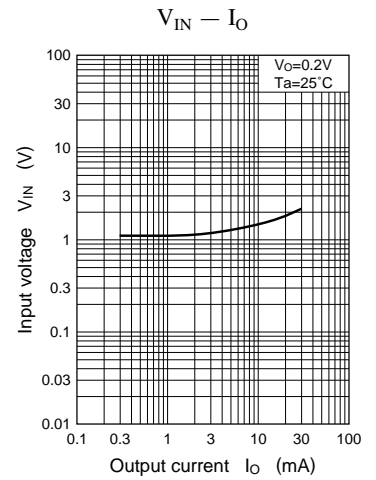
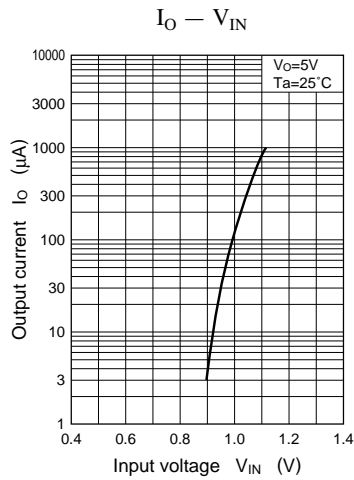
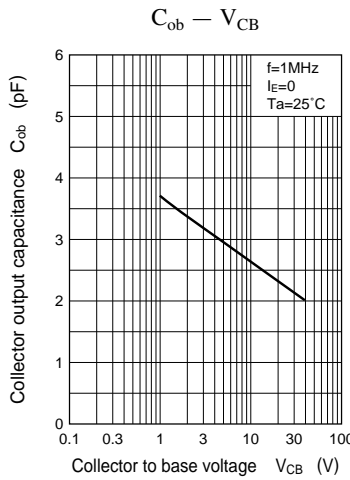
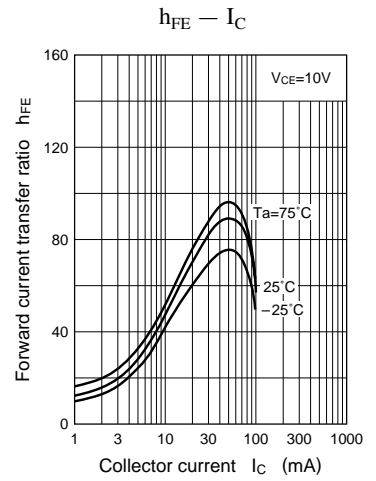
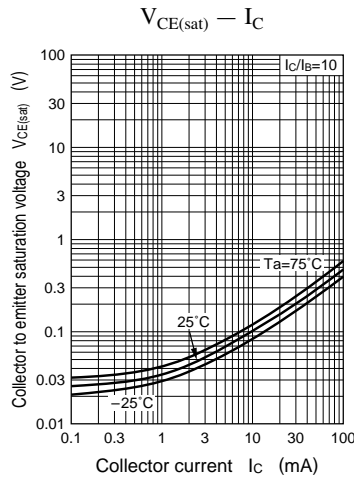
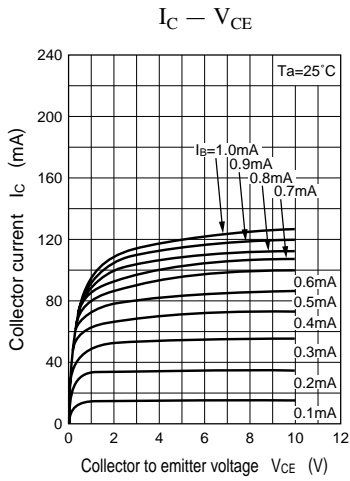
UNR1211/1212/1213/1214/1215/1216/1217/1218/
 Transistors with built-in Resistor 1219/1210/121D/121E/121F/121K/121L



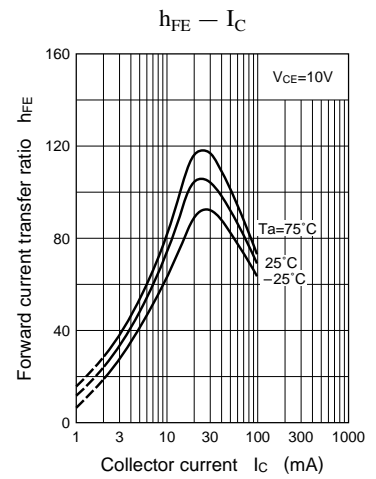
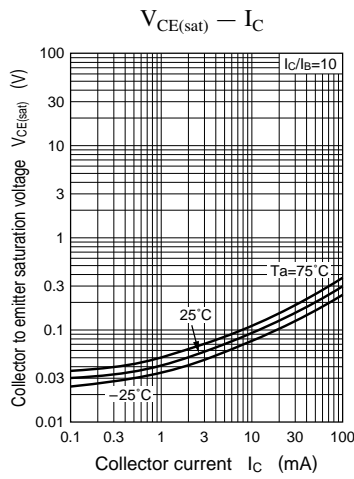
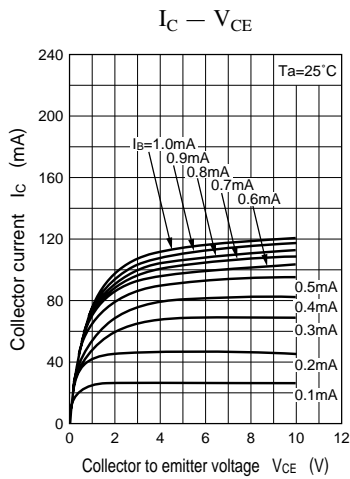
Characteristics charts of UNR1217

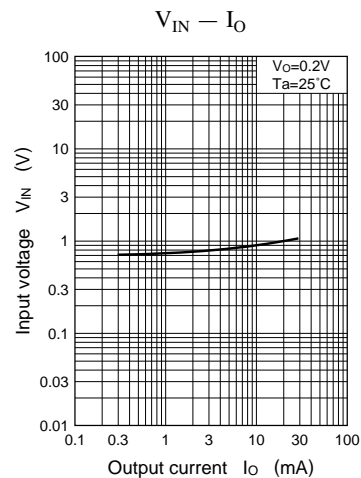
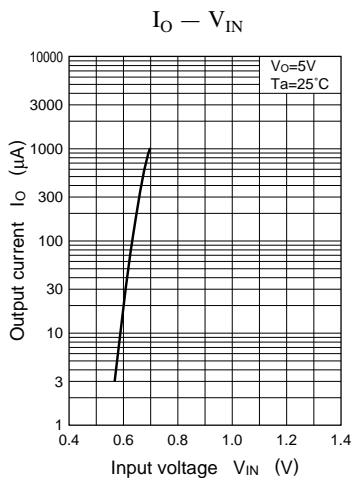
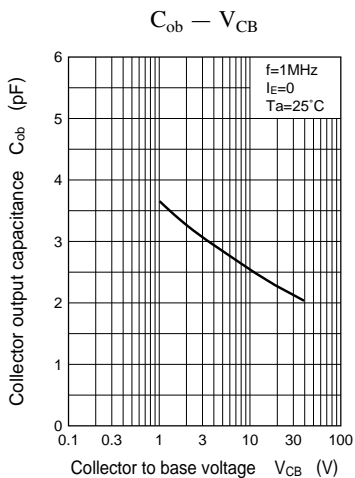


Characteristics charts of UNR1218

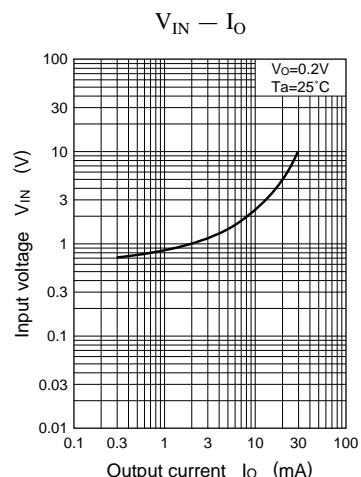
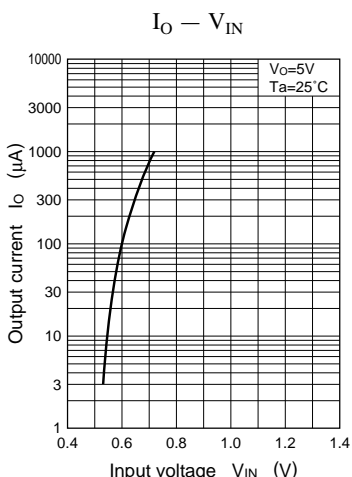
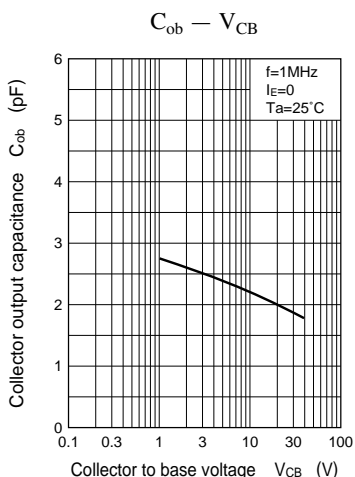
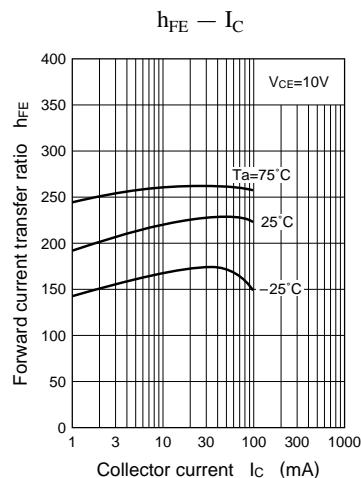
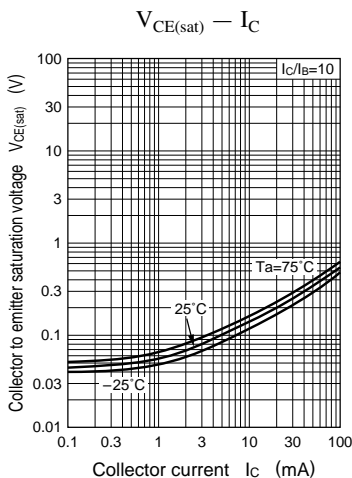
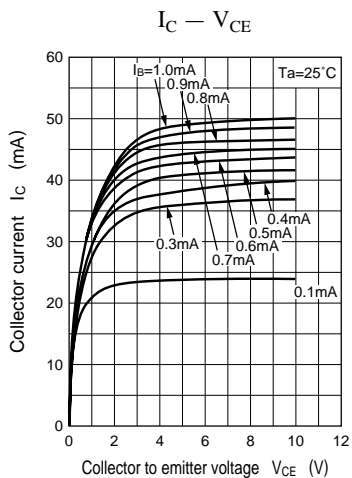


Characteristics charts of UNR1219

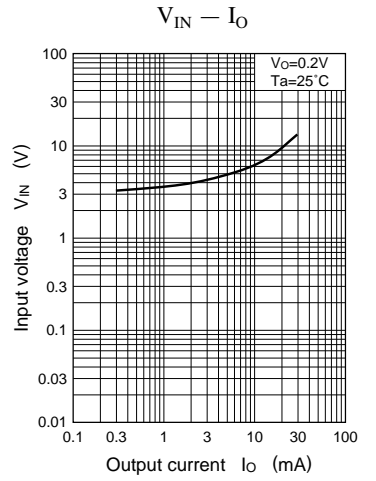
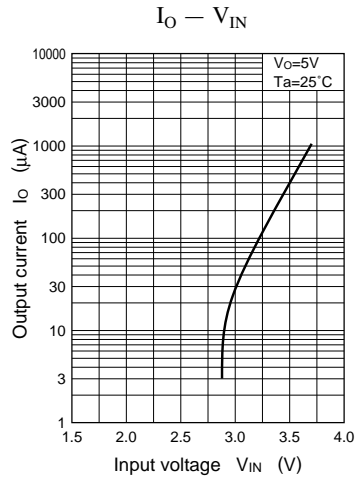
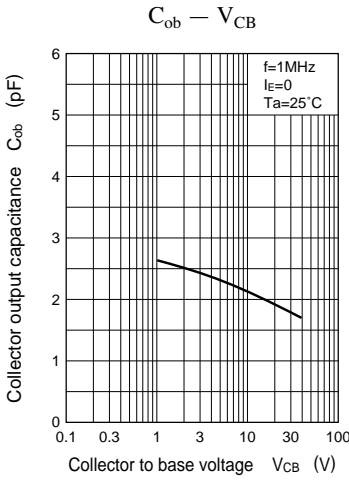
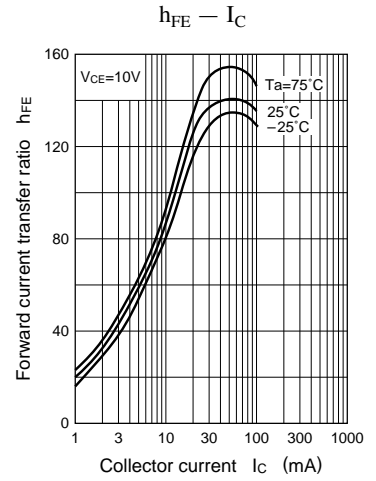
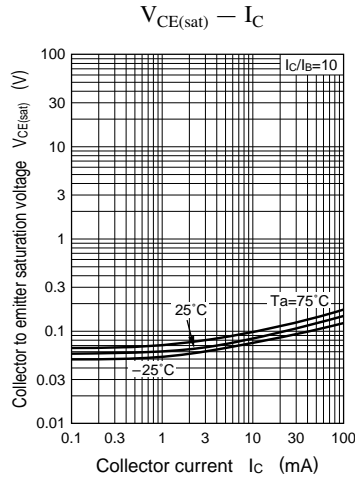
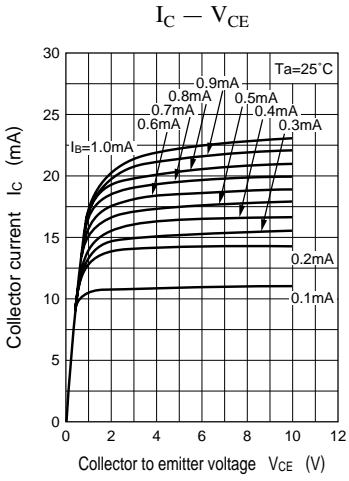




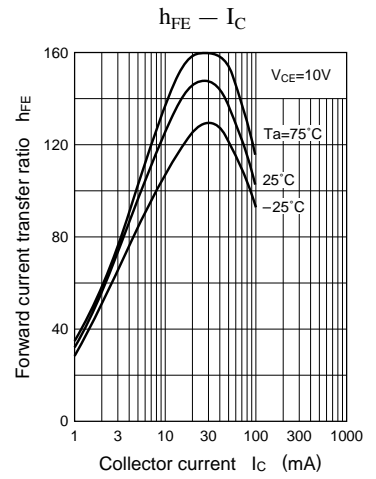
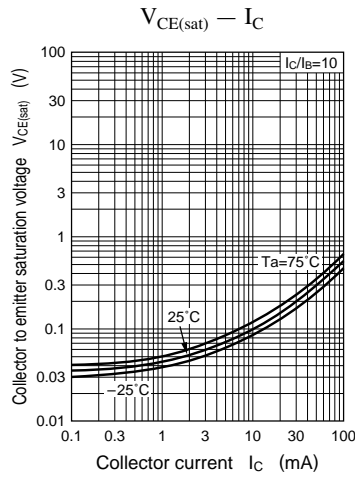
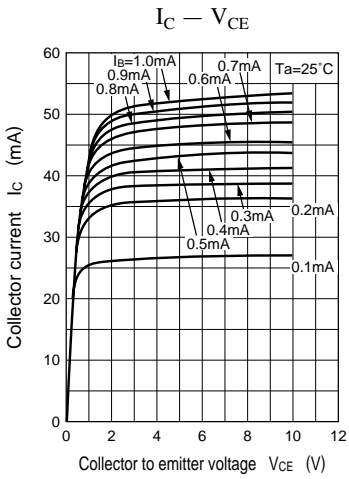
Characteristics charts of UNR1210



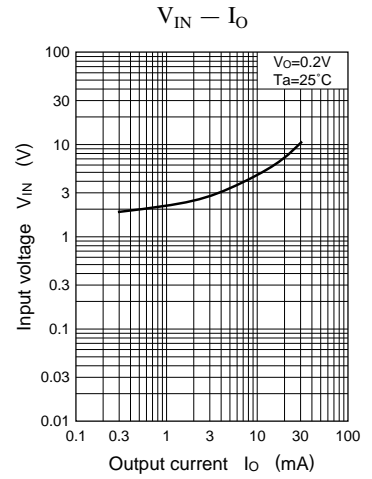
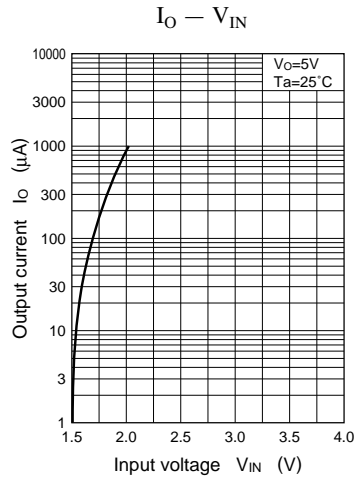
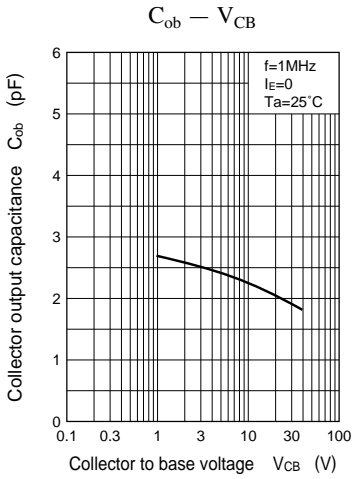
Characteristics charts of UNR121D



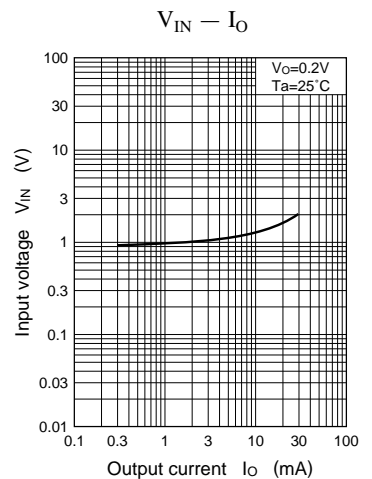
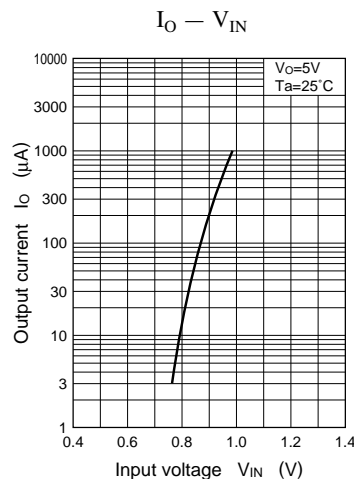
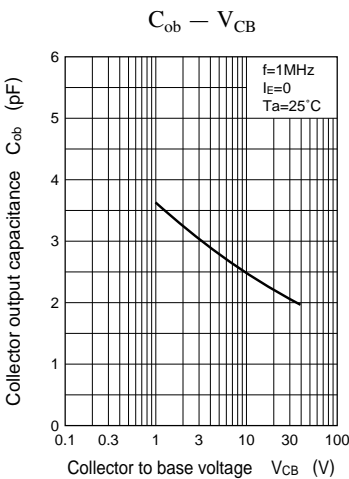
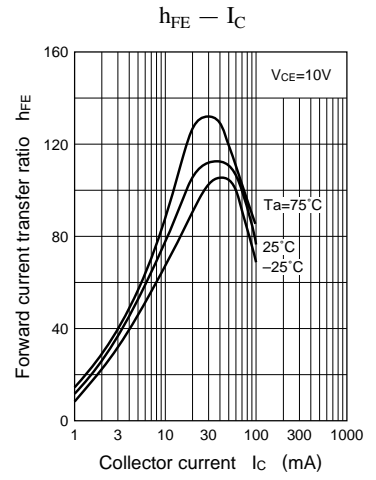
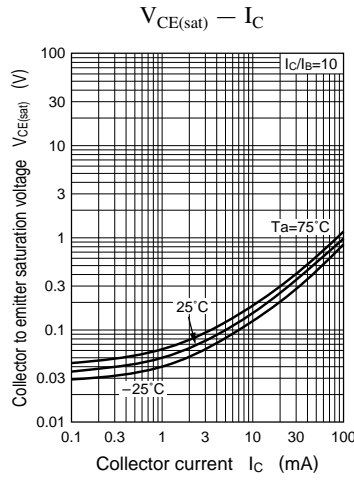
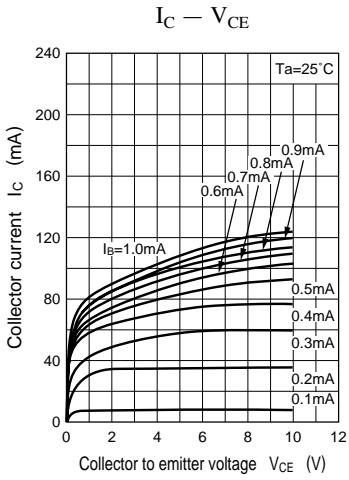
Characteristics charts of UNR121E



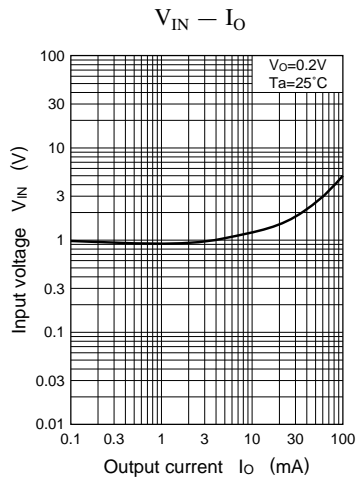
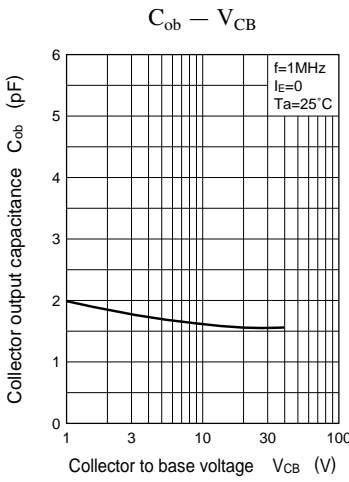
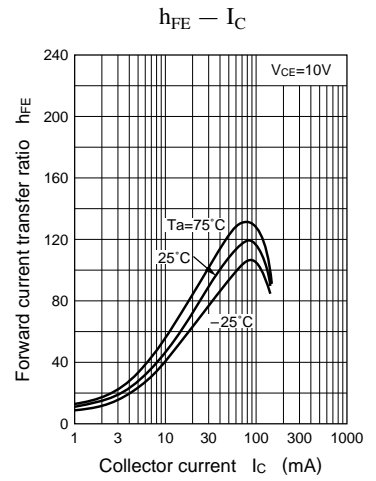
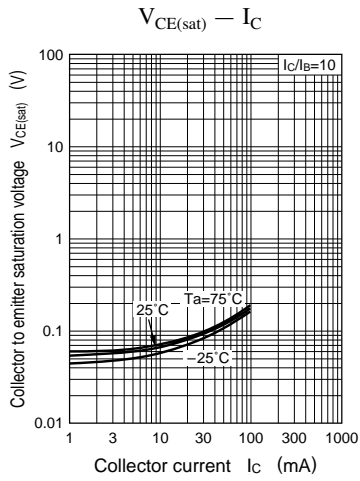
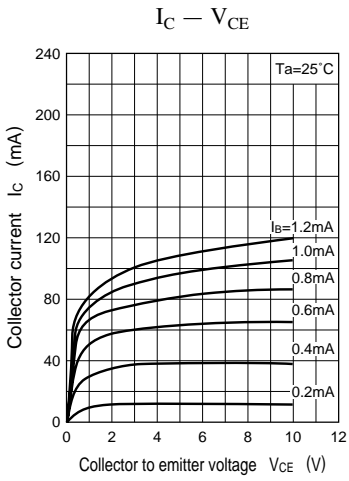
UNR1211/1212/1213/1214/1215/1216/1217/1218/
 Transistors with built-in Resistor 1219/1210/121D/121E/121F/121K/121L



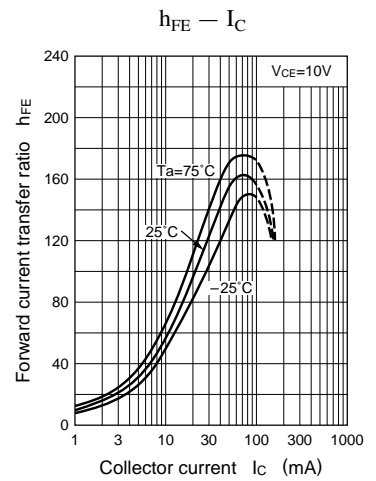
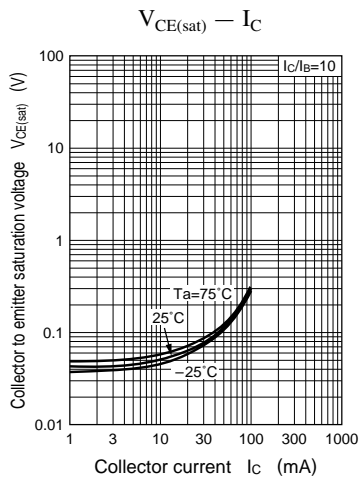
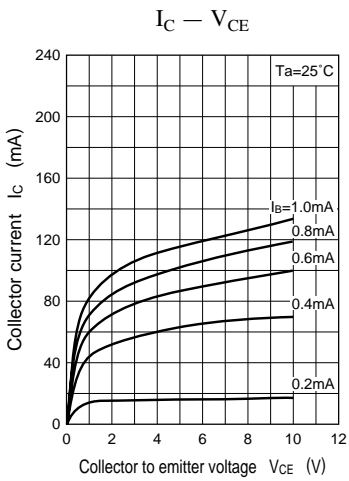
Characteristics charts of UNR121F

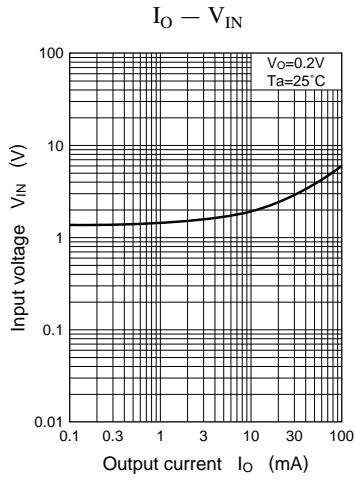
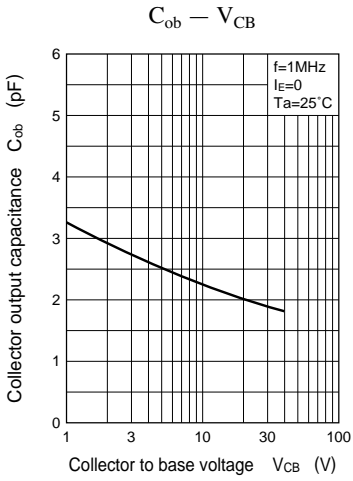


Characteristics charts of UNR121K



Characteristics charts of UNR121L





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