

UNR4211/4212/4213/4214/4215/4216/4217/ 4218/4219/4210/421D/421E/421F/421K/421L (UN4211/4212/4213/4214/4215/4216/4217/4218/4219/ 4210/421D/421E/421F/421K/421L)

Silicon NPN epitaxial planer transistor

For digital circuits

Features

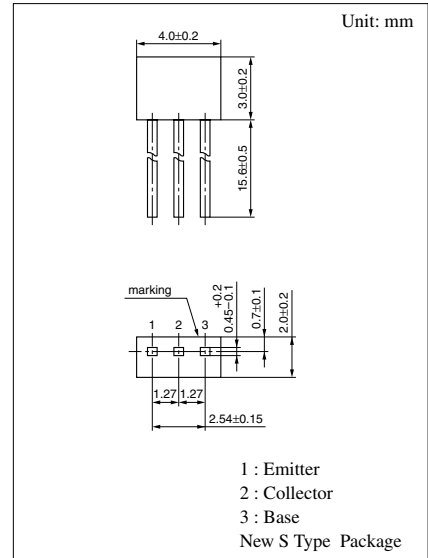
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- New S type package, allowing supply with the radial taping.

Resistance by Part Number

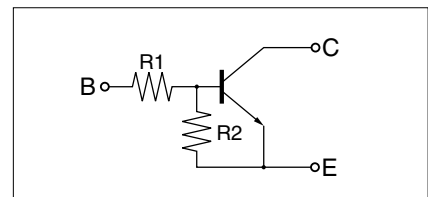
	(R ₁)	(R ₂)
• UNR4211	10kΩ	10kΩ
• UNR4212	22kΩ	22kΩ
• UNR4213	47kΩ	47kΩ
• UNR4214	10kΩ	47kΩ
• UNR4215	10kΩ	—
• UNR4216	4.7kΩ	—
• UNR4217	22kΩ	—
• UNR4218	0.51kΩ	5.1kΩ
• UNR4219	1kΩ	10kΩ
• UNR4210	47kΩ	—
• UNR421D	47kΩ	10kΩ
• UNR421E	47kΩ	22kΩ
• UNR421F	4.7kΩ	10kΩ
• UNR421K	10kΩ	4.7kΩ
• UNR421L	4.7kΩ	4.7kΩ

Absolute Maximum Ratings (T_a=25°C)

Parameter	Symbol	Ratings	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	300	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.

**UNR4211/4212/4213/4214/4215/4216/4217/
Transistors with built-in Resistor 4218/4219/4210/421D/421E/421F/421K/421L**

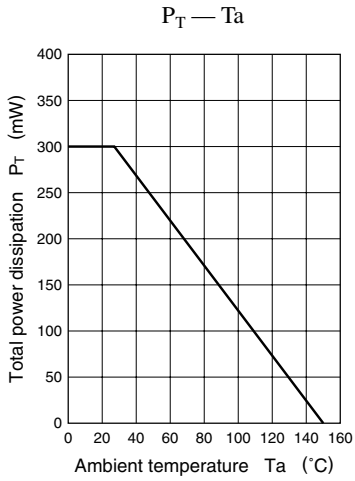
Electrical Characteristics (Ta=25°C)

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	UNR4211	I _{EBO}	V _{EB} = 6V, I _C = 0			0.5	mA	
	UNR4212/4214/421E/421D					0.2		
	UNR4213					0.1		
	UNR4215/4216/4217/4210					0.01		
	UNR421F/421K					1.0		
	UNR4219					1.5		
	UNR4218/421L					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	UNR4211	h _{FE}	V _{CE} = 10V, I _C = 5mA	35				
	UNR4212/421E			60				
	UNR4213/4214			80				
	UNR4215*/4216*/4217*/4210*			160		460		
	UNR421F/421D/4219			30				
	UNR4218/421K/421L			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	
			UNR4213/421K	V _{CC} = 5V, V _B = 3.5V, R _L = 1kΩ				0.2
			UNR421D	V _{CC} = 5V, V _B = 10V, R _L = 1kΩ				0.2
			UNR421E	V _{CC} = 5V, V _B = 6V, R _L = 1kΩ				0.2
Transition frequency		f _T	V _{CB} = 10V, I _E = -2mA, f = 200MHz		150		MHz	
Input resistance	UNR4211/4214/4215/421K	R _i		(-30%)		10	(+30%)	kΩ
	UNR4212/4217					22		
	UNR4213/421D/421E/4210					47		
	UNR4216/421F/421L					4.7		
	UNR4218					0.51		
	UNR4219					1		
Resistance ratio	UNR4211/4212/4213/421L	R ₁ /R ₂				0.8	1.0	1.2
	UNR4214					0.17	0.21	0.25
	UNR4218/4219					0.08	0.1	0.12
	UNR421D					3.7	4.7	5.7
	UNR421E					1.7	2.14	2.6
	UNR421F					0.37	0.47	0.57
	UNR421K					1.7	2.13	2.6

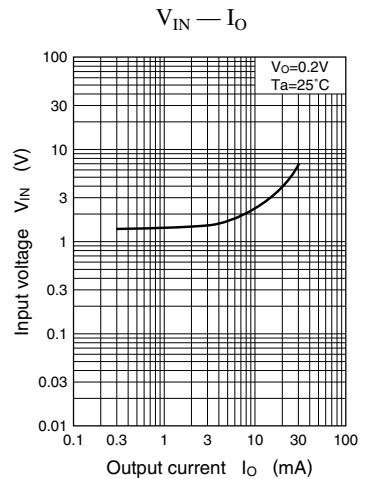
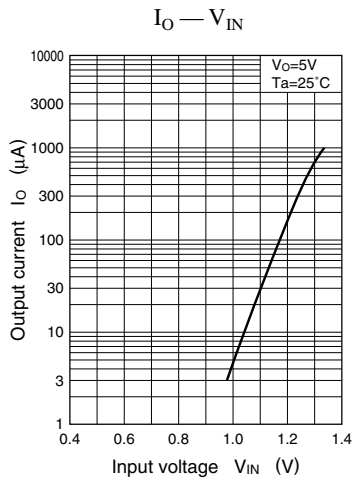
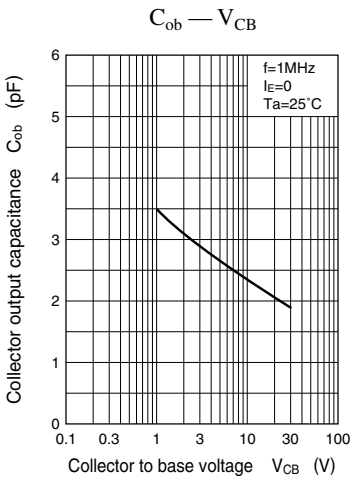
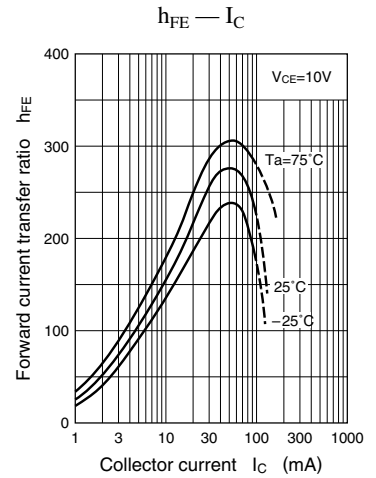
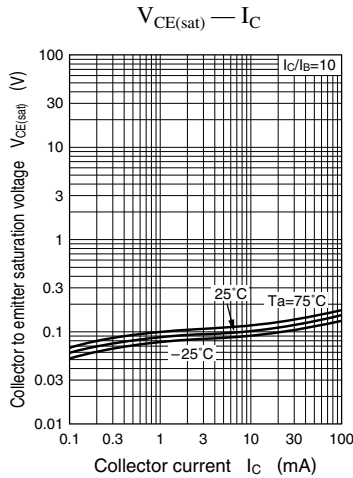
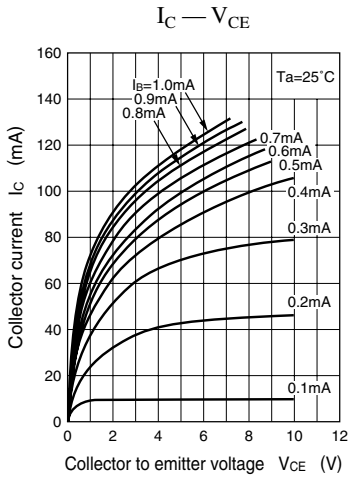
* h_{FE} rank classification (UNR4215/4216/4217/4210)

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

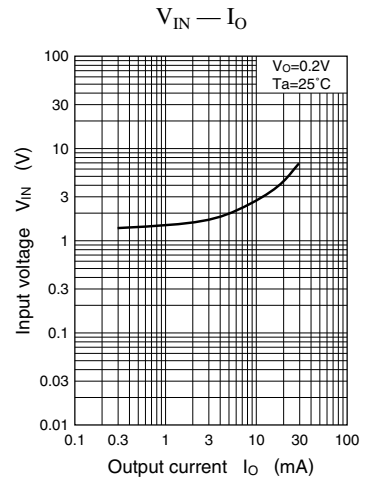
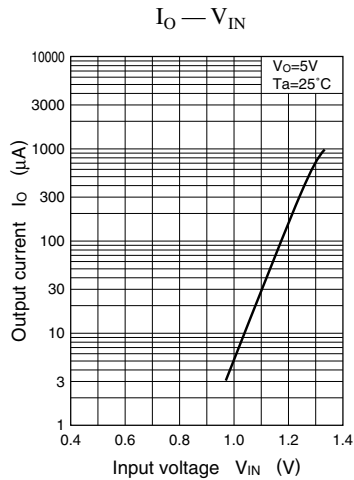
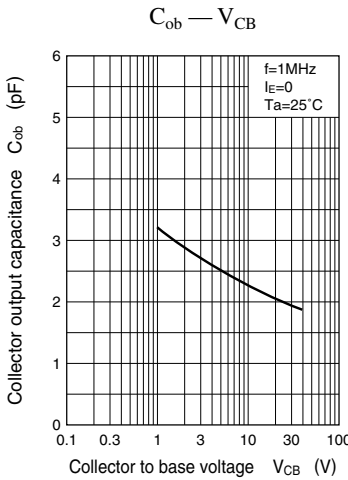
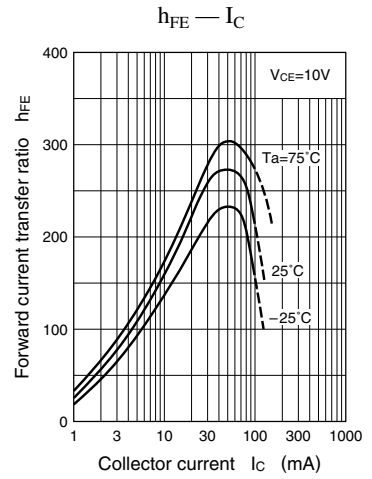
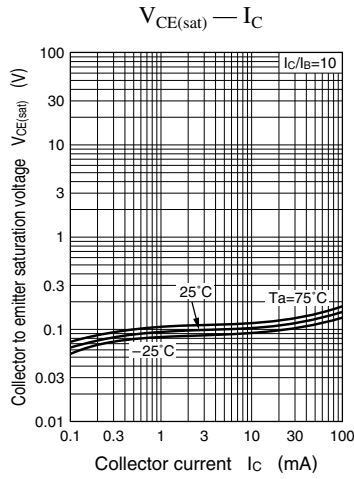
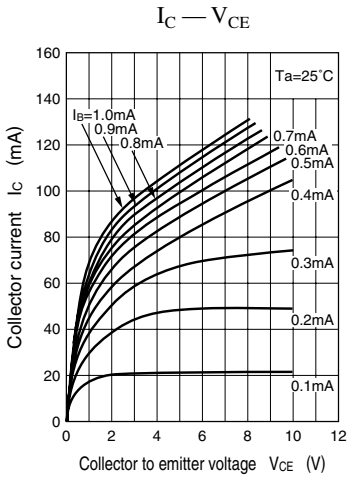
Common characteristics chart



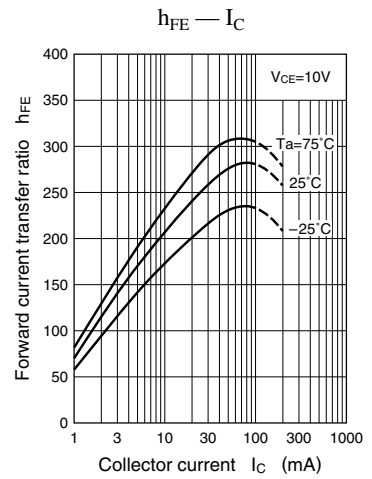
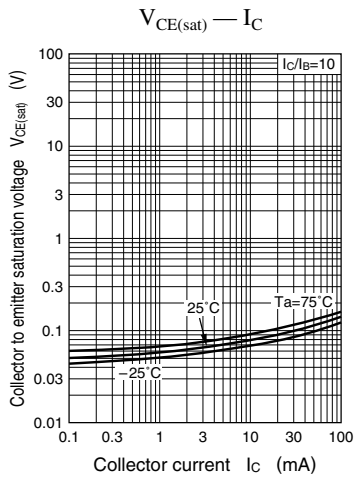
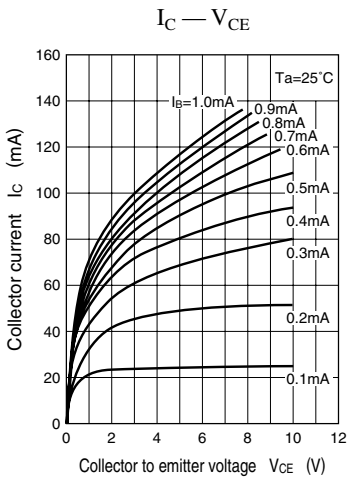
Characteristics charts of UNR4211



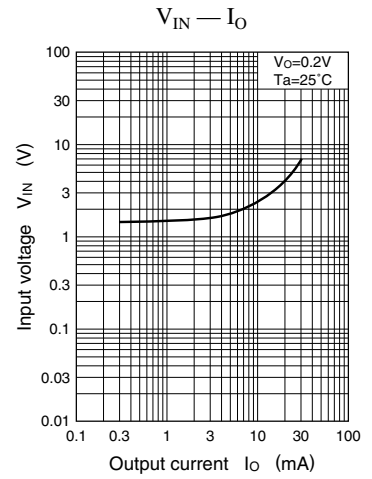
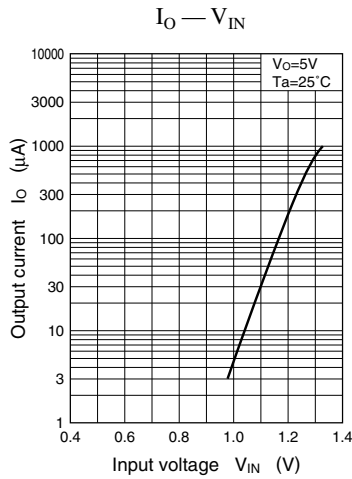
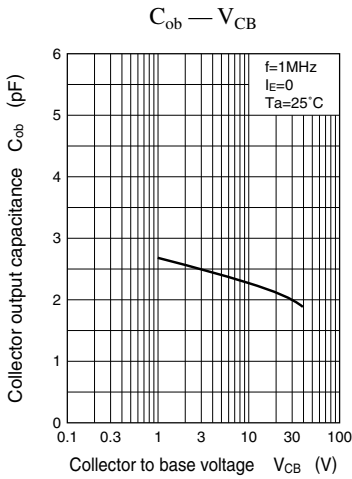
Characteristics charts of UNR4212



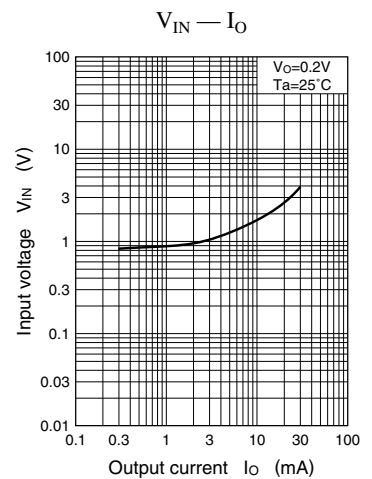
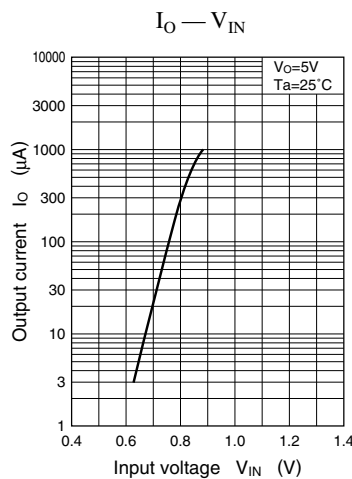
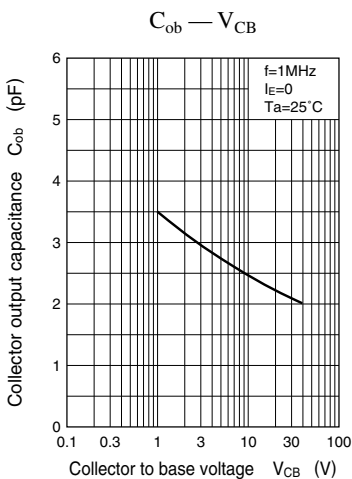
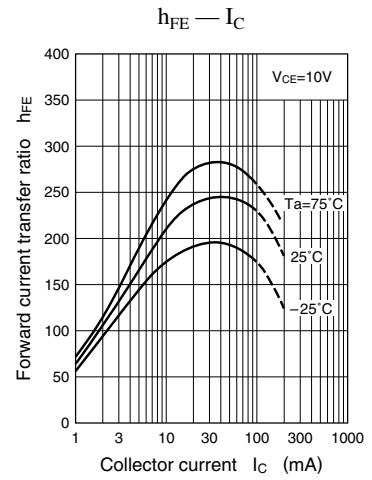
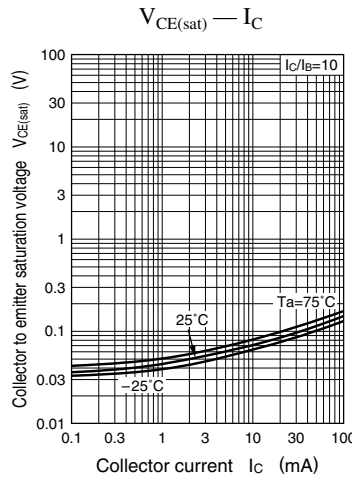
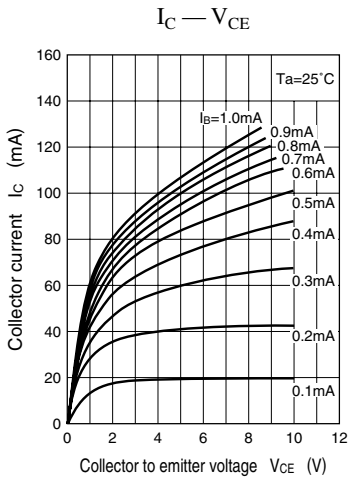
Characteristics charts of UNR4213



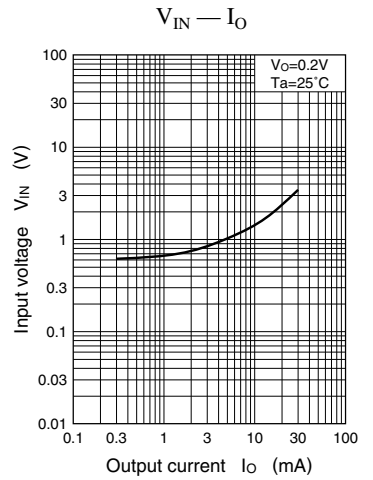
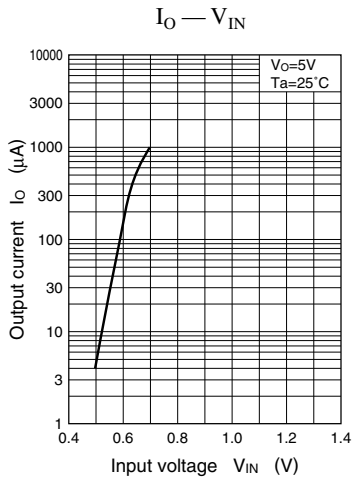
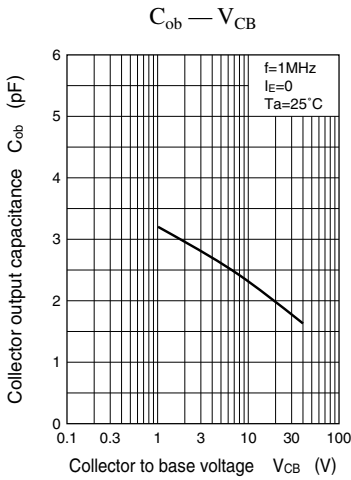
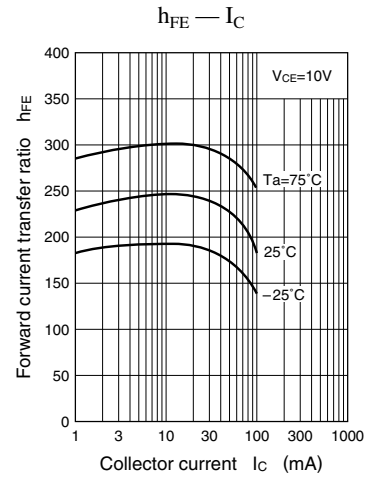
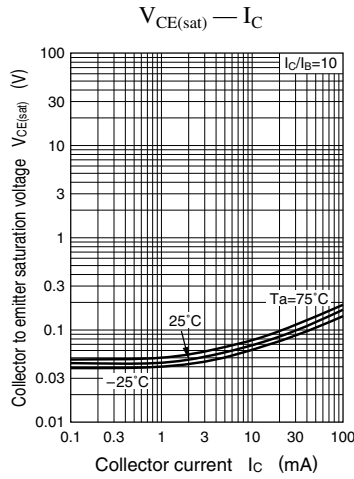
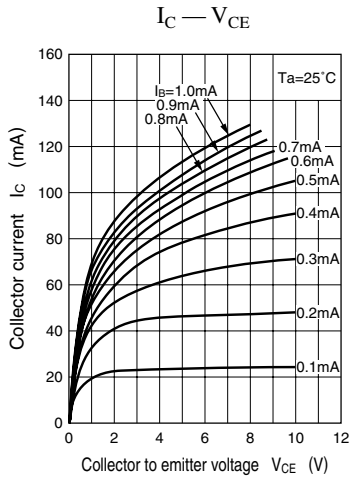
Transistors with built-in Resistor UNR4211/4212/4213/4214/4215/4216/4217/
4218/4219/4210/421D/421E/421F/421K/421L



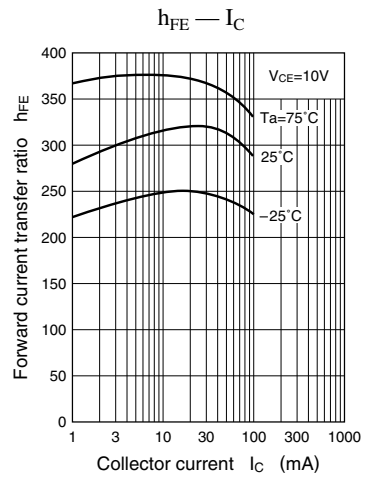
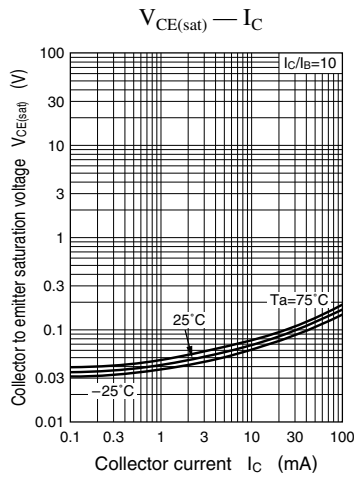
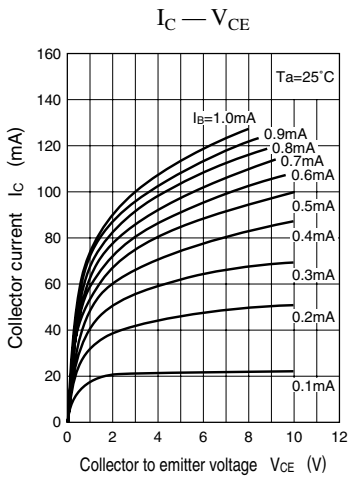
Characteristics charts of UNR4214

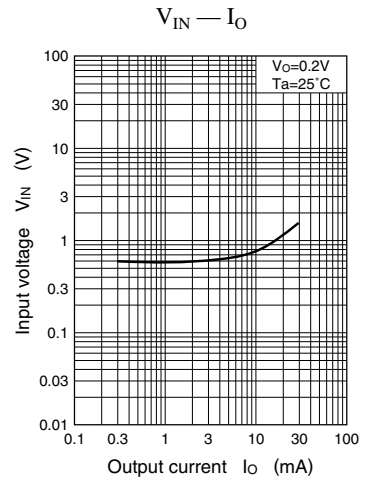
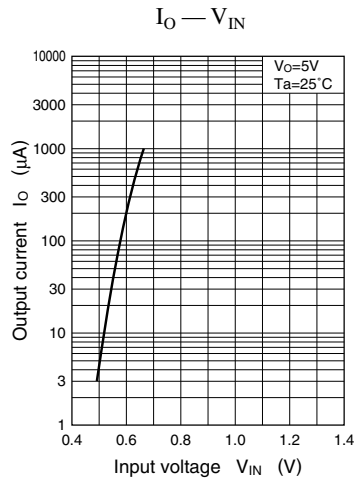
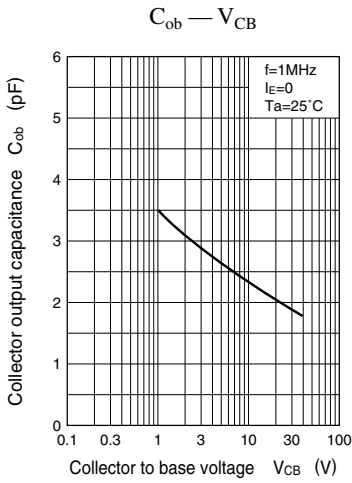


Characteristics charts of UNR4215

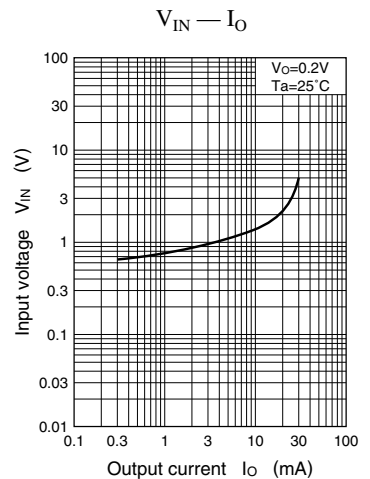
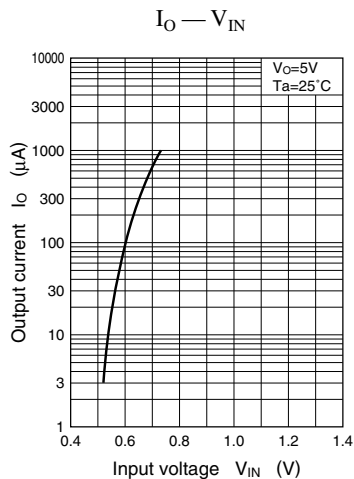
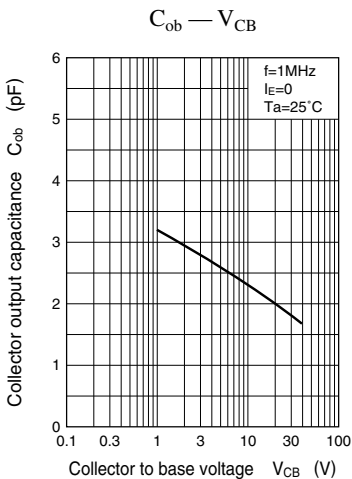
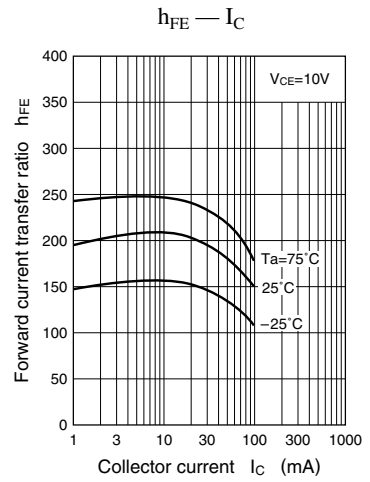
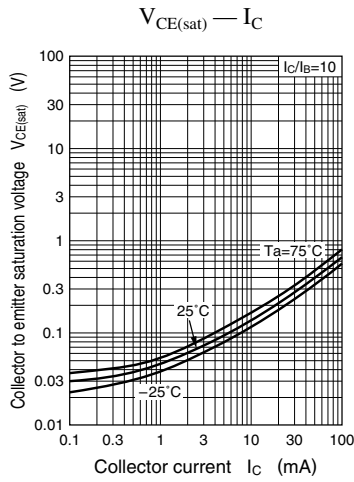
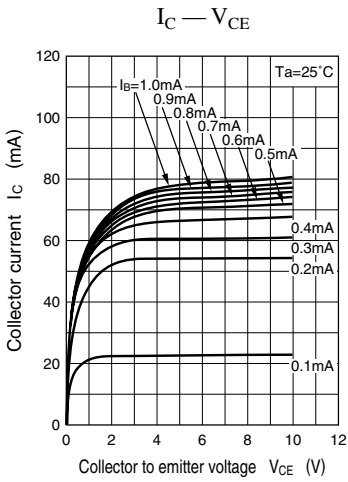


Characteristics charts of UNR4216

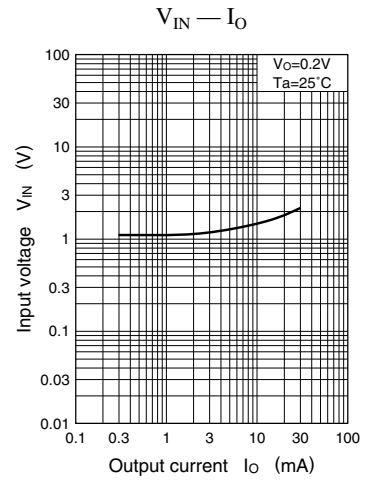
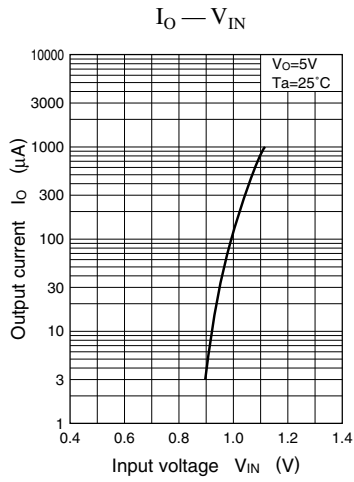
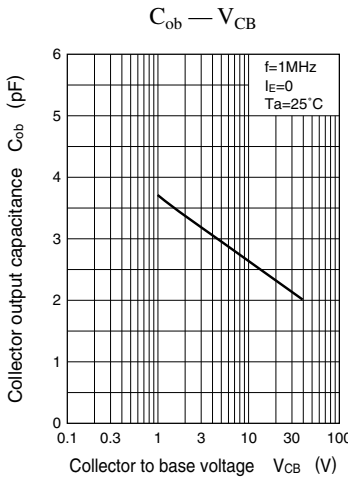
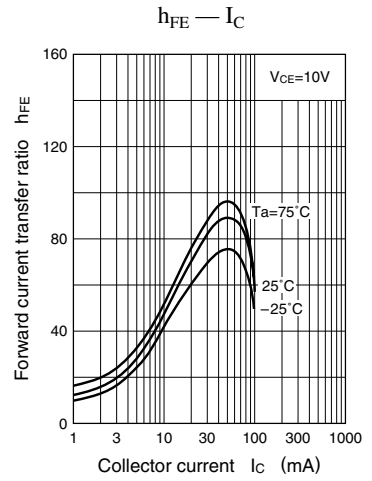
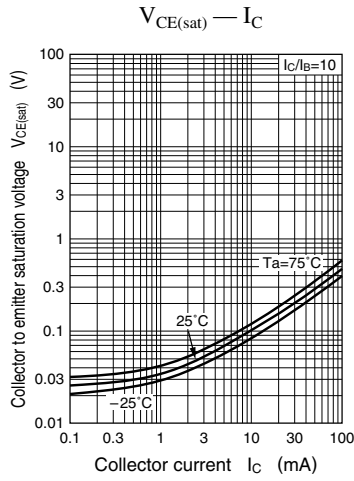
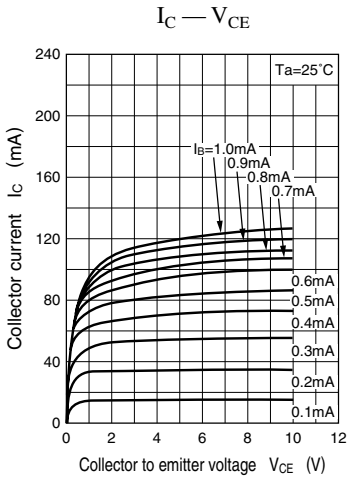




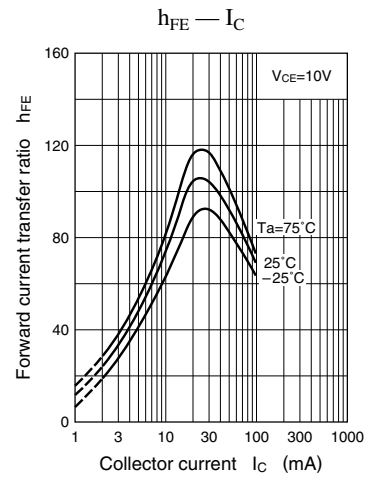
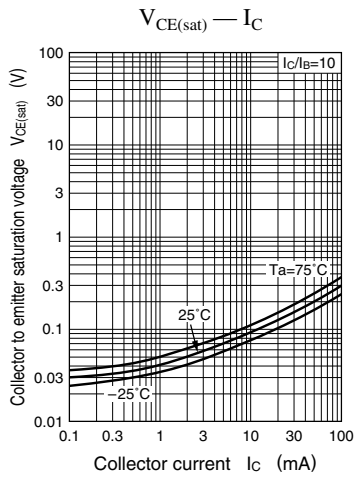
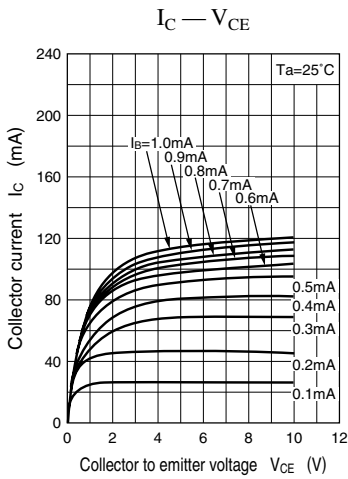
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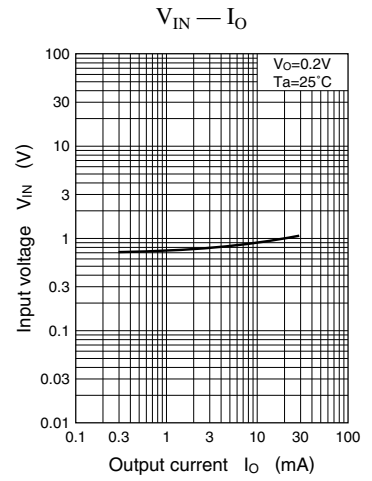
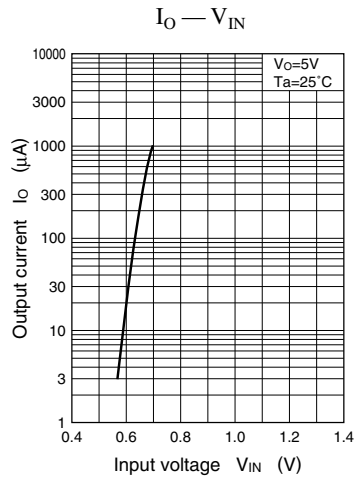
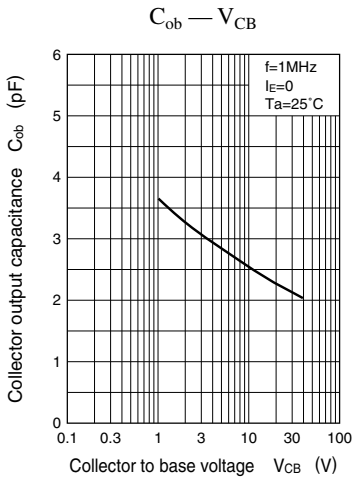


Characteristics charts of UNR4218

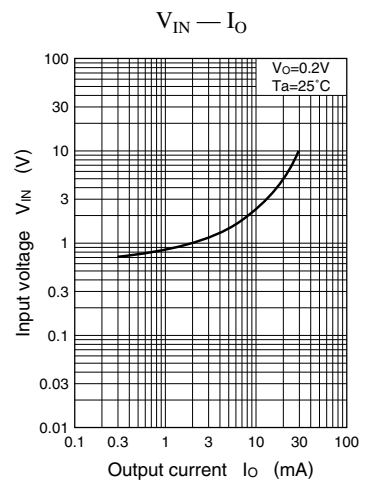
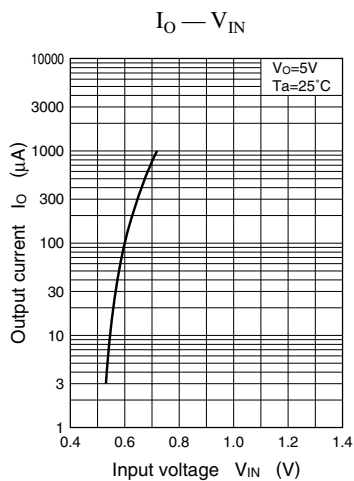
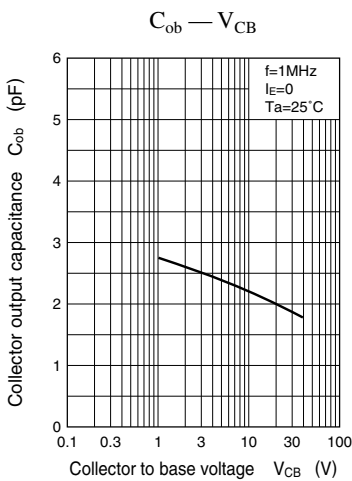
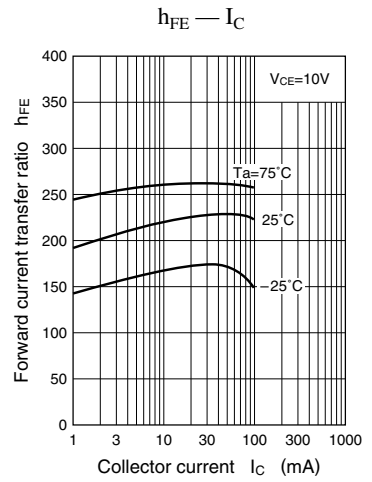
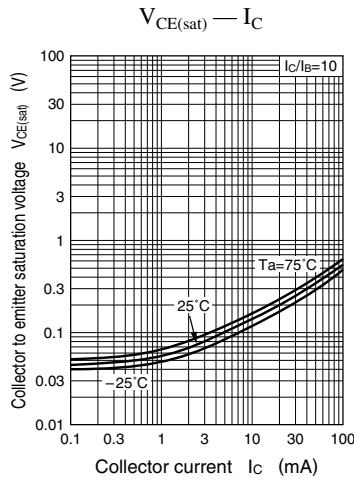
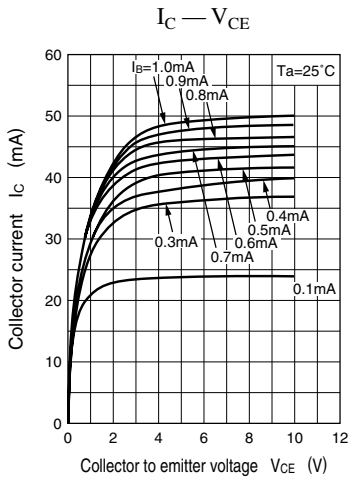


Characteristics charts of UNR4219

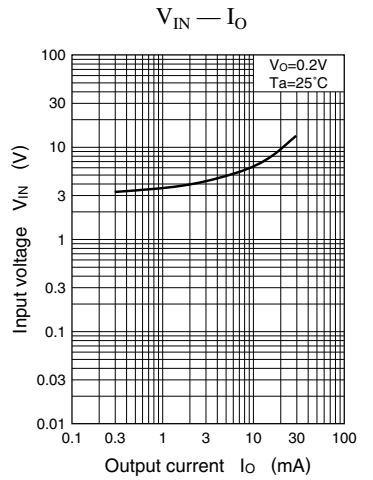
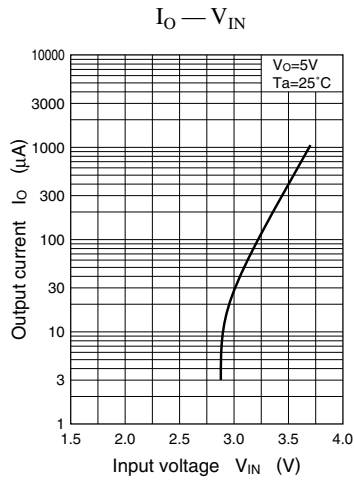
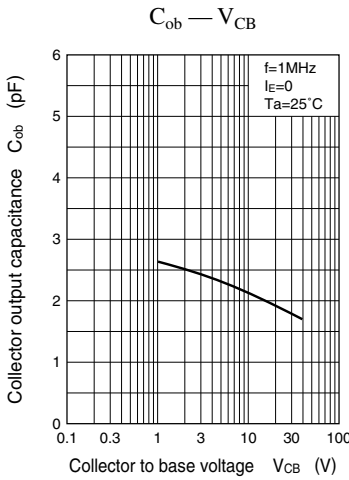
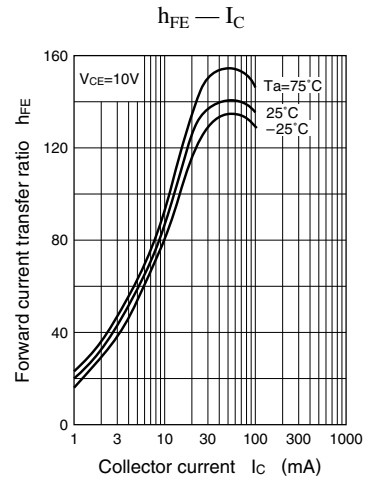
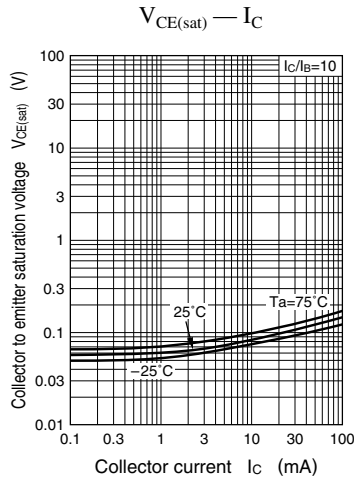
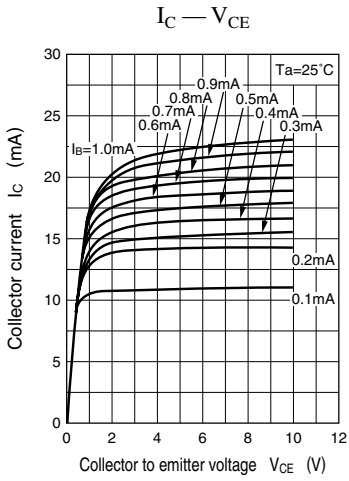




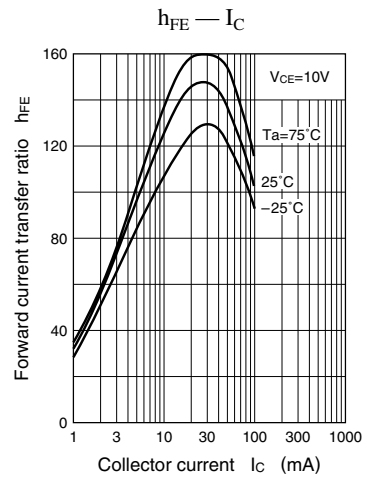
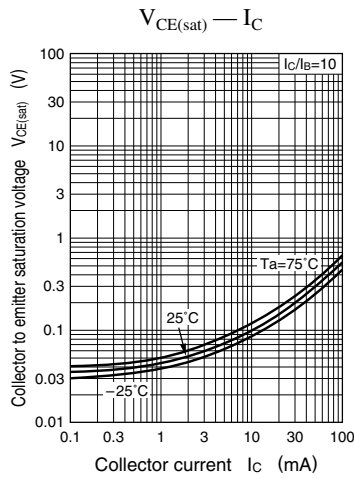
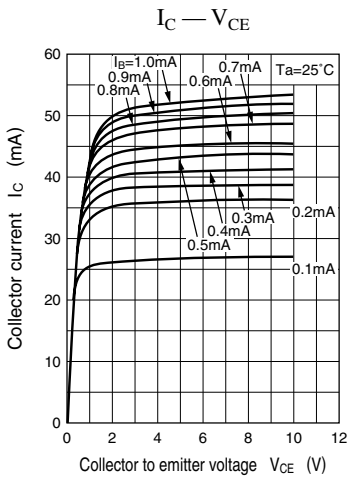
Characteristics charts of UNR4210

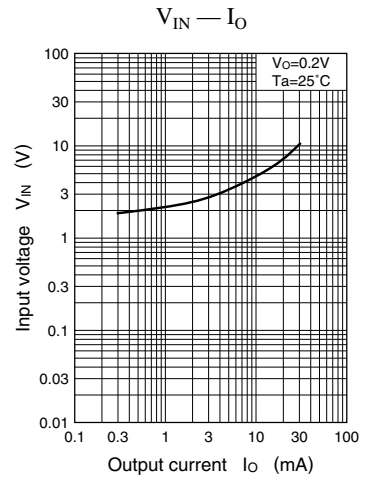
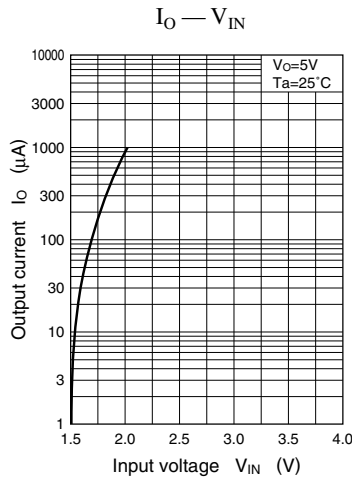
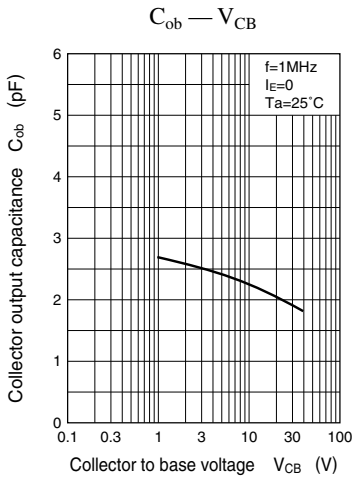


Characteristics charts of UNR421D

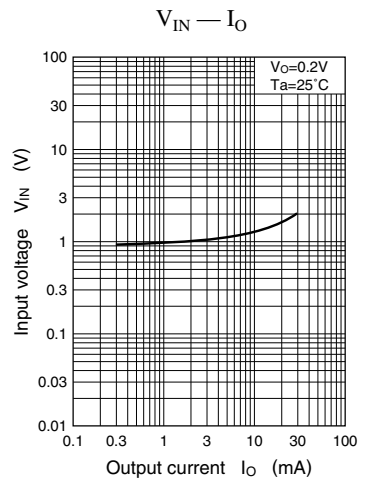
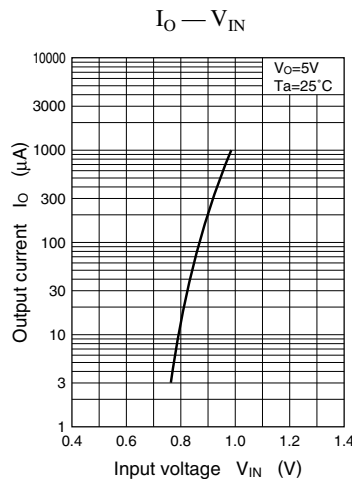
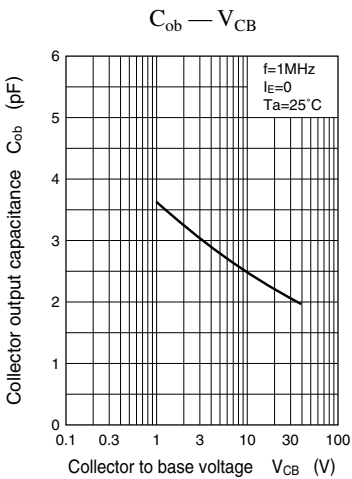
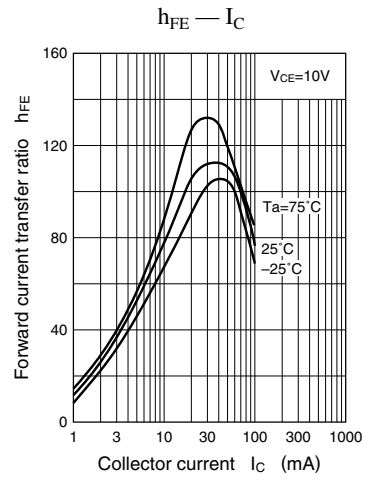
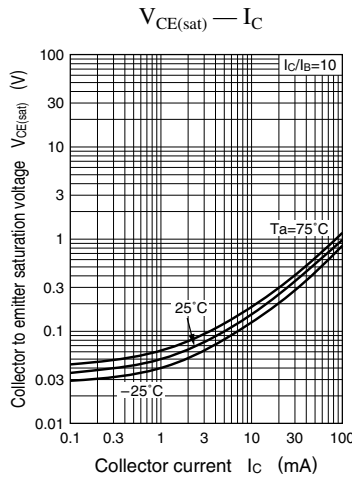
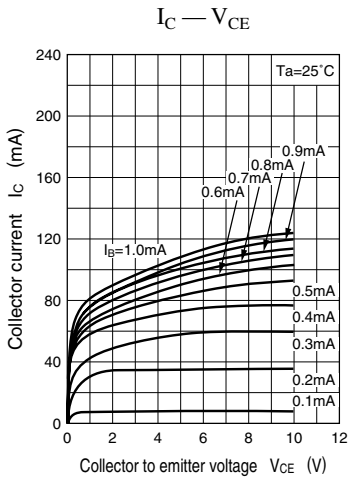


Characteristics charts of UNR421E

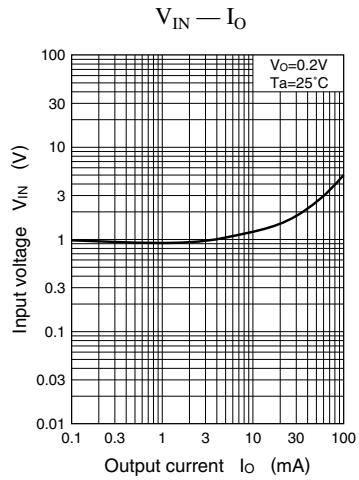
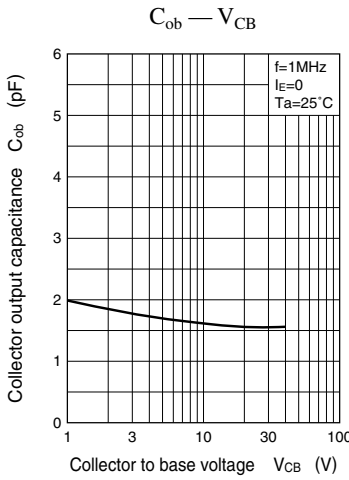
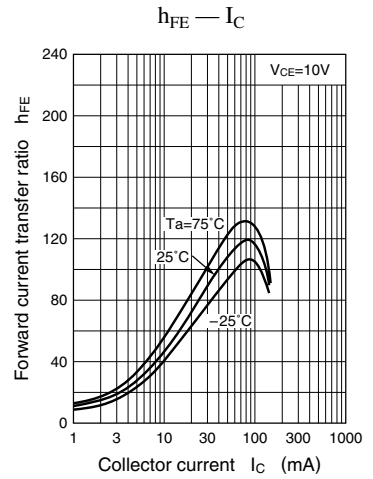
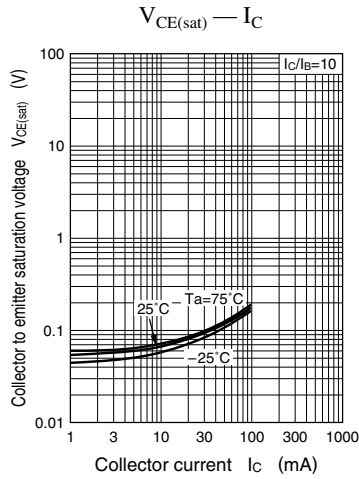
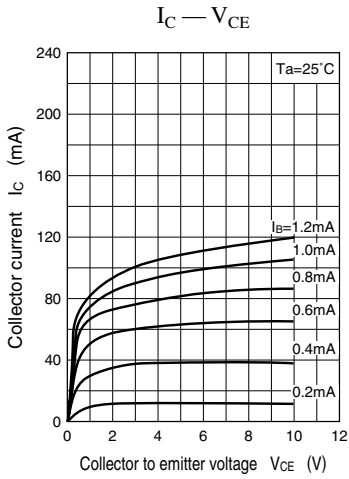




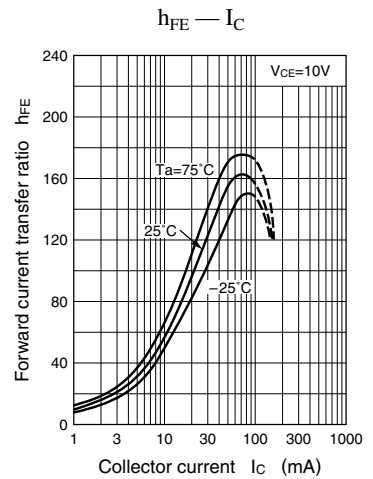
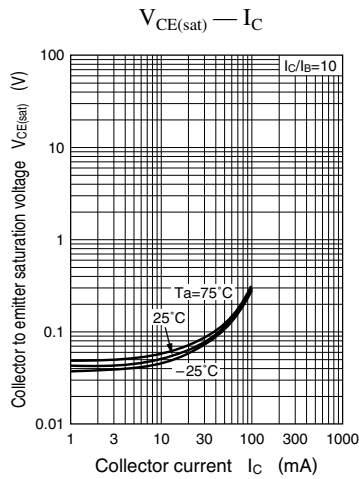
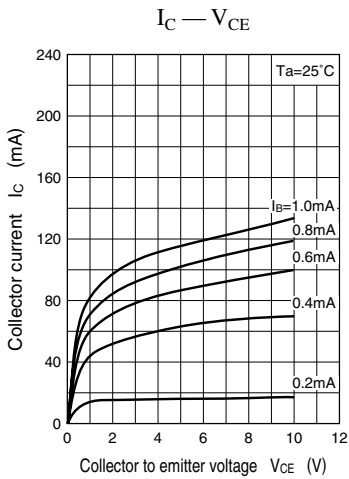
Characteristics charts of UNR421F

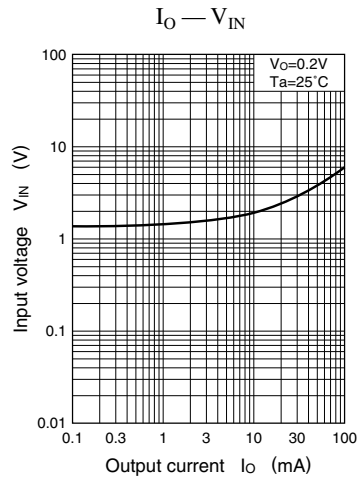
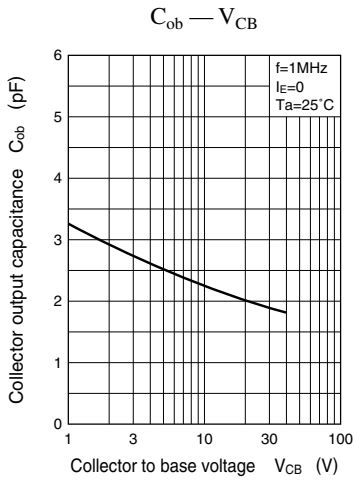


Characteristics charts of UNR421K



Characteristics charts of UNR421L





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