

# UNR921xJ Series (UN921xJ Series)

Silicon NPN epitaxial planar type

For digital circuits

## ■ Features

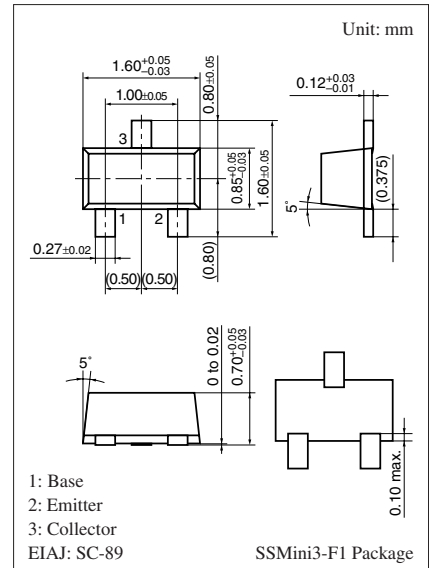
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- SS-Mini type package, allowing automatic insertion through tape packing.

## ■ Resistance by Part Number

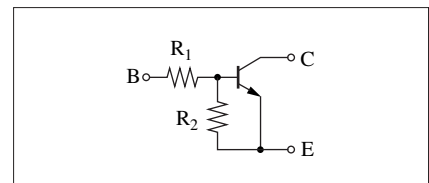
	Marking Symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR9210J (UN9210J)	8L	47 kΩ	—
• UNR9211J (UN9211J)	8A	10 kΩ	10 kΩ
• UNR9212J (UN9212J)	8B	22 kΩ	22 kΩ
• UNR9213J (UN9213J)	8C	47 kΩ	47 kΩ
• UNR9214J (UN9214J)	8D	10 kΩ	47 kΩ
• UNR9215J (UN9215J)	8E	10 kΩ	—
• UNR9216J (UN9216J)	8F	4.7 kΩ	—
• UNR9217J (UN9217J)	8H	22 kΩ	—
• UNR9218J (UN9218J)	8I	0.51 kΩ	5.1 kΩ
• UNR9219J (UN9219J)	8K	1 kΩ	10 kΩ
• UNR921AJ	8X	100 kΩ	100 kΩ
• UNR921BJ	8Y	100 kΩ	—
• UNR921CJ	8Z	—	47 kΩ
• UNR921DJ (UN921DJ)	8M	47 kΩ	10 kΩ
• UNR921EJ (UN921EJ)	8N	47 kΩ	22 kΩ
• UNR921FJ (UN921FJ)	8O	4.7 kΩ	10 kΩ
• UNR921KJ (UN921KJ)	8P	10 kΩ	4.7 kΩ
• UNR921LJ (UN921LJ)	8Q	4.7 kΩ	4.7 kΩ
• UNR921MJ	EL	2.2 kΩ	47 kΩ
• UNR921NJ	EX	4.7 kΩ	47 kΩ
• UNR921TJ (UN921TJ)	EZ	22 kΩ	47 kΩ
• UNR921VJ	FD	2.2 kΩ	2.2 kΩ

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

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	50	V
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	50	V
Collector current	I <sub>C</sub>	100	mA
Total power dissipation	P <sub>T</sub>	125	mW
Junction temperature	T <sub>j</sub>	125	°C
Storage temperature	T <sub>stg</sub>	-55 to +125	°C



## Internal Connection



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

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

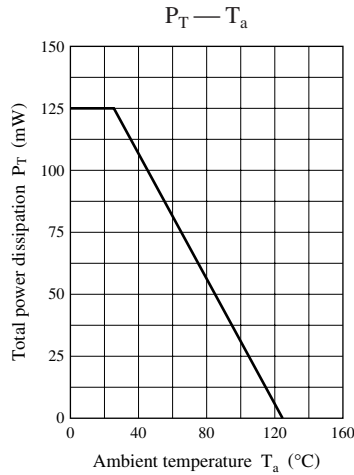
Parameter		Symbol	Conditions	Min	Typ	Max	Unit		
Collector-base voltage (Emitter open)		$V_{CBO}$	$I_C = 10 \mu\text{A}, I_E = 0$	50			V		
Collector-emitter voltage (Base open)		$V_{CEO}$	$I_C = 2 \text{ mA}, I_B = 0$	50			V		
Collector-base cut-off current (Emitter open)		$I_{CBO}$	$V_{CB} = 50 \text{ V}, I_E = 0$			0.1	$\mu\text{A}$		
Collector-emitter cut-off current (Base open)		$I_{CEO}$	$V_{CE} = 50 \text{ V}, I_B = 0$			0.5	$\mu\text{A}$		
Emitter-base cut-off current (Collector open)	UNR9210J/9215J/ 9216J/9217J/921BJ	$I_{EBO}$	$V_{EB} = 6 \text{ V}, I_C = 0$			0.01	mA		
	UNR9213J/921AJ					0.1			
	UNR9212J/9214J/921DJ/ 921EJ/921MJ/921NJ/921TJ					0.2			
	UNR9211J					0.5			
	UNR921FJ/921KJ					1.0			
	UNR9219J					1.5			
	UNR9218J/921CJ/921LJ/921VJ					2.0			
Forward current transfer ratio	UNR921VJ	$h_{FE}$	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$	6		20	—		
	UNR9218J/921KJ/921LJ			20					
	UNR9219J/921DJ/921FJ			30					
	UNR9211J			35					
	UNR9212J/921EJ			60					
	UNR9213J/9214J/921AJ/ 921CJ/921MJ			80					
	UNR921NJ/921TJ			80	400				
	UNR9210J/9215J/9216J/ 9217J/921BJ			160	460				
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		
				UNR9213J/921BJ/921KJ	$V_{CC} = 5 \text{ V}, V_B = 3.5 \text{ V}, R_L = 1 \text{ k}\Omega$				
				UNR921DJ	$V_{CC} = 5 \text{ V}, V_B = 10 \text{ V}, R_L = 1 \text{ k}\Omega$				
				UNR921EJ	$V_{CC} = 5 \text{ V}, V_B = 6 \text{ V}, R_L = 1 \text{ k}\Omega$				
				UNR921AJ	$V_{CC} = 5 \text{ V}, V_B = 5 \text{ V}, R_L = 1 \text{ k}\Omega$				
Transition frequency		$f_T$	$V_{CB} = 10 \text{ V}, I_E = -2 \text{ mA}, f = 200 \text{ MHz}$		150		MHz		
Input resistance	UNR9218J	$R_1$		-30%	0.51	+30%	k $\Omega$		
	UNR9219J				1				
	UNR921MJ/921VJ				2.2				
	UNR9216J/921FJ/921LJ/921NJ				4.7				
	UNR9211J/9214J/9215J/921KJ				10				
	UNR9212J/9217J/921TJ				22				
	UNR9210J/9213J/921DJ/921EJ				47				
	UNR921AJ/921BJ				100				

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

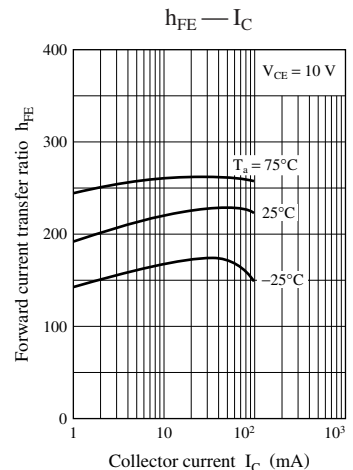
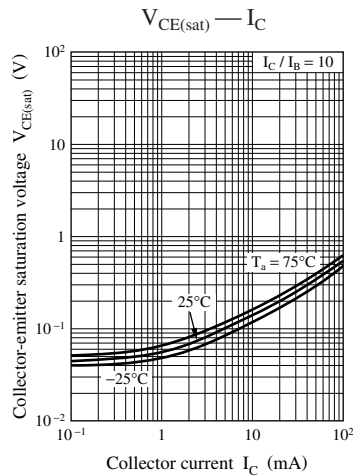
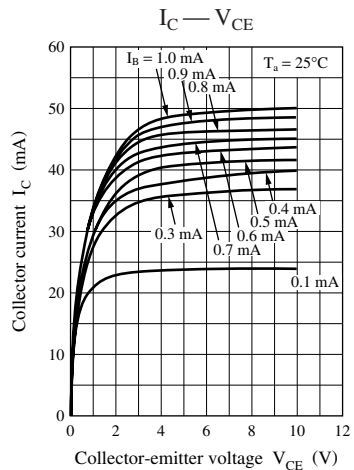
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Emitter-base resistance		UNR921CJ	$R_2$	-30%	47	+30%	k $\Omega$
Resistance ratio	UNR921MJ	$R_1/R_2$			0.047		—
	UNR921NJ				0.1		
	UNR9218J/9219J			0.08	0.10	0.12	
	UNR9214J			0.17	0.21	0.25	
	UNR921TJ				0.47		
	UNR921FJ			0.37	0.47	0.57	
	UNR921AJ/921VJ				1.0		
	UNR9211J/9212J/9213J/921LJ			0.8	1.0	1.2	
	UNR921KJ			1.70	2.13	2.60	
	UNR921EJ			1.70	2.14	2.60	
UNR921DJ		3.7	4.7	5.7			

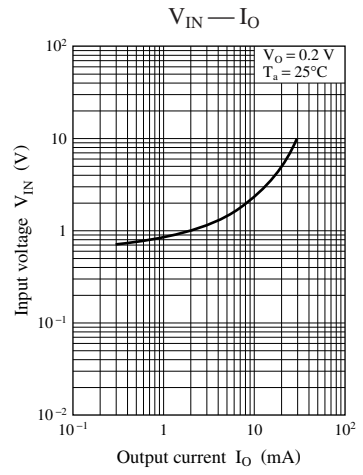
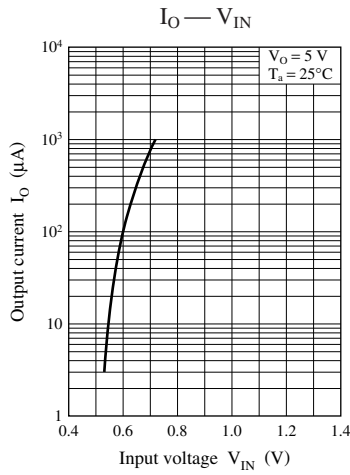
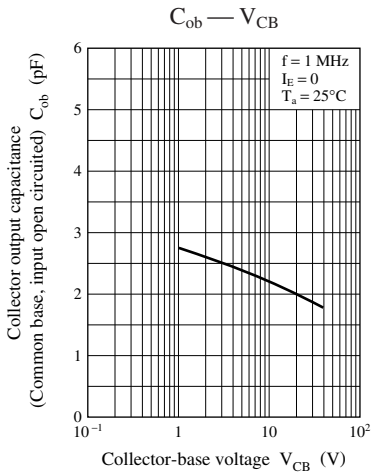
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

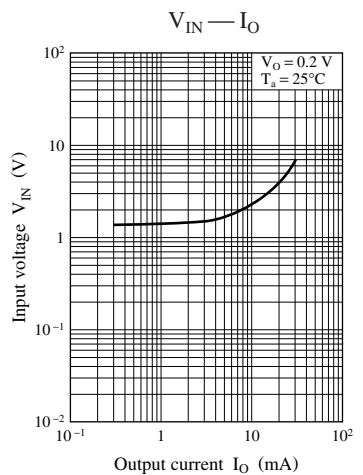
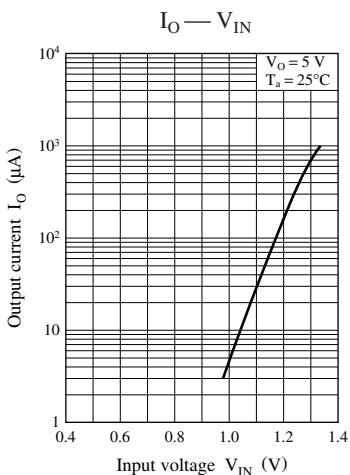
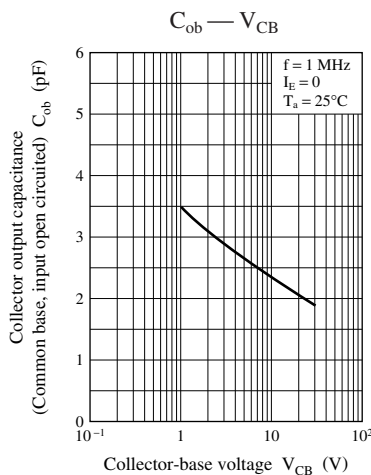
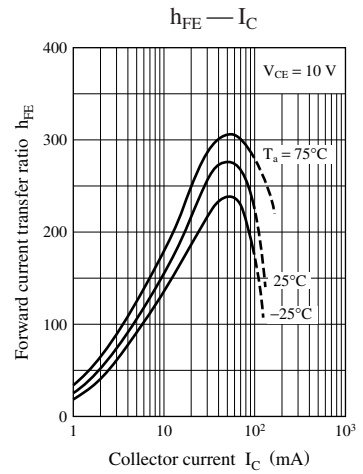
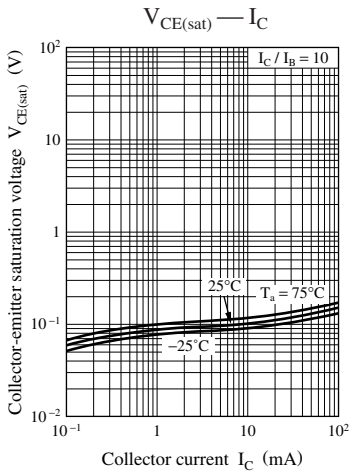
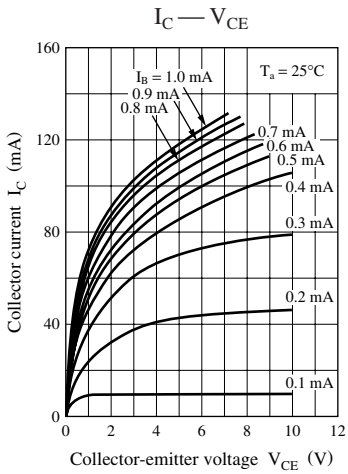


Characteristics charts of UNR9210J

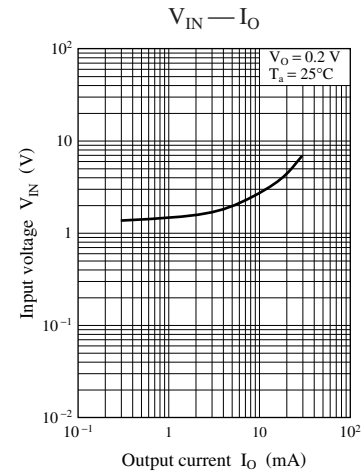
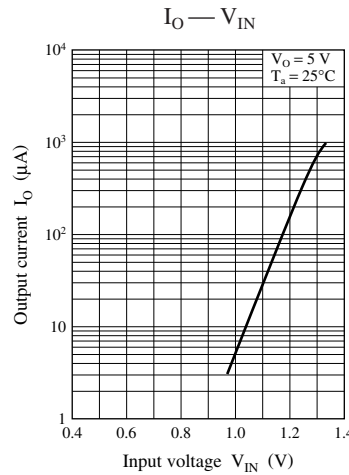
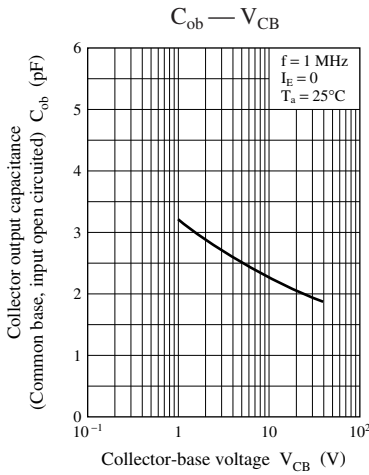
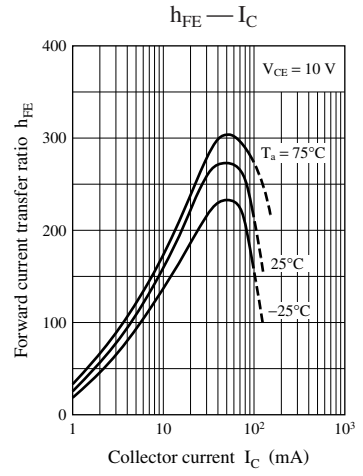
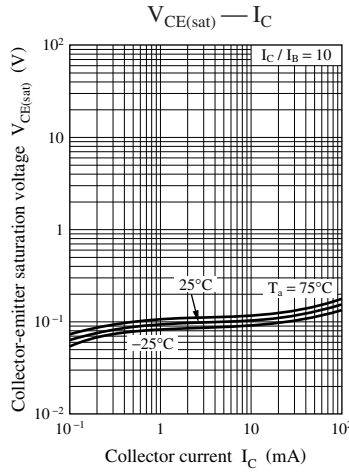
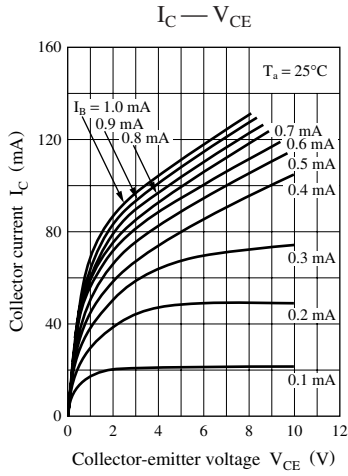




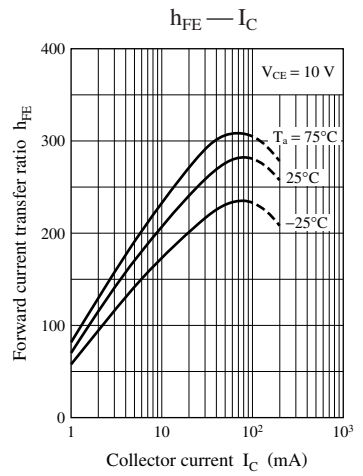
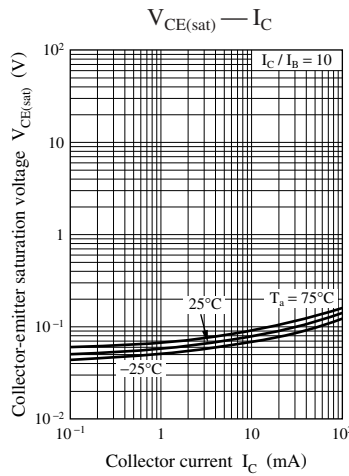
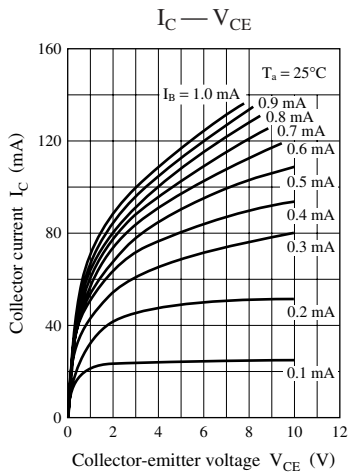
Characteristics charts of UNR9211J

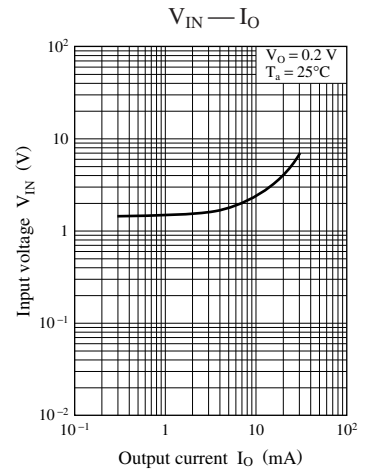
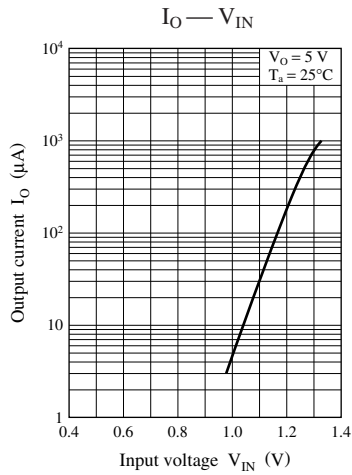
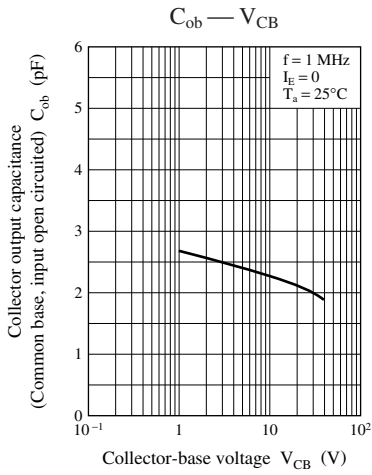


Characteristics charts of UNR9212J

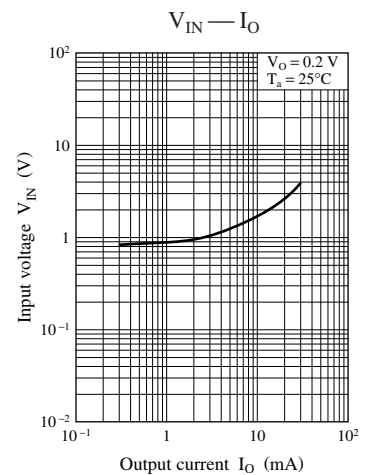
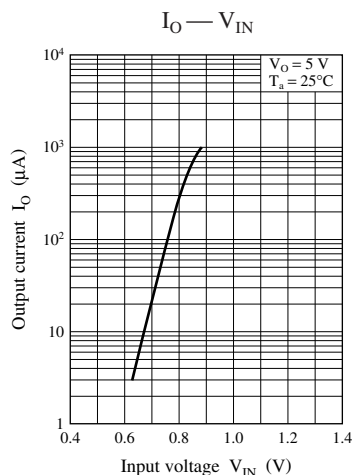
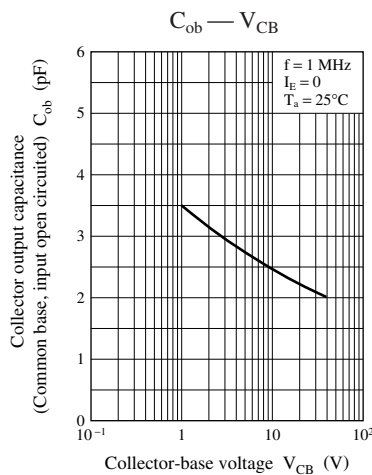
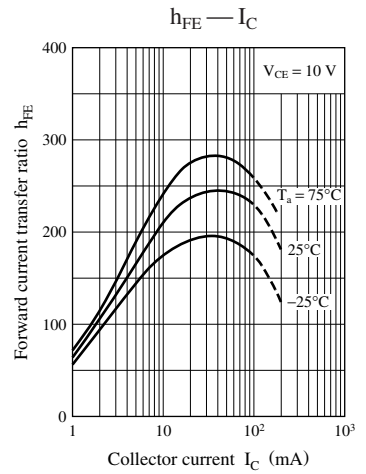
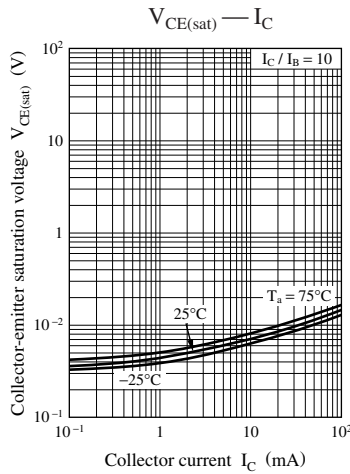
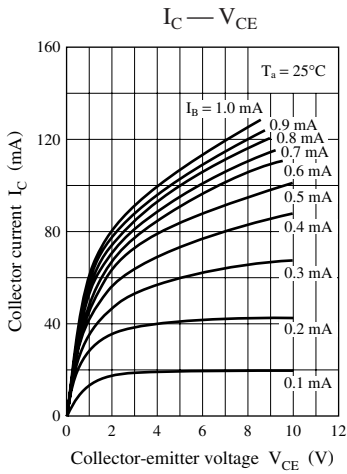


Characteristics charts of UNR9213J

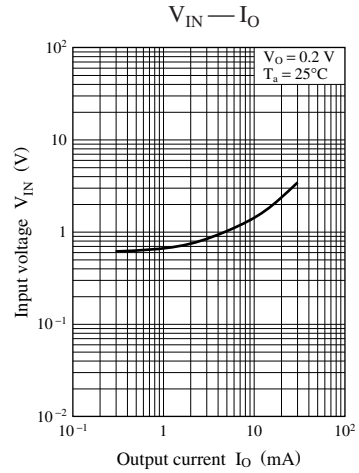
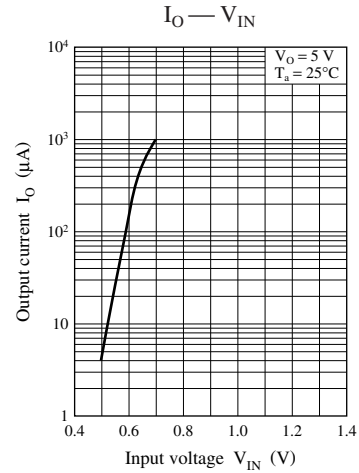
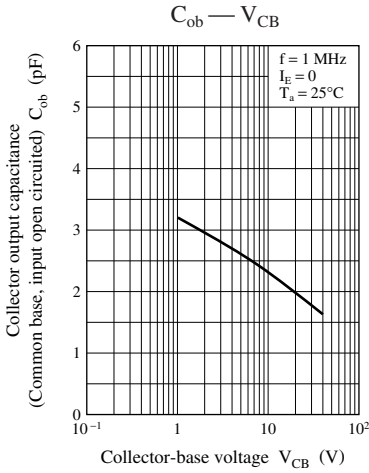
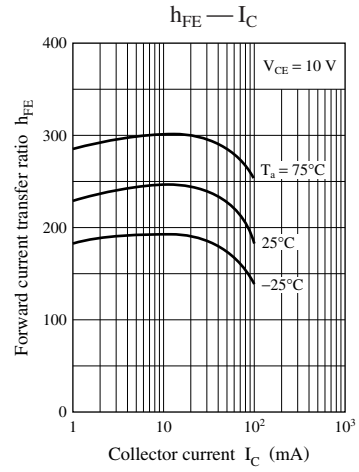
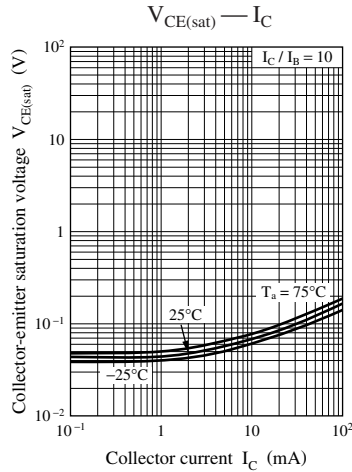
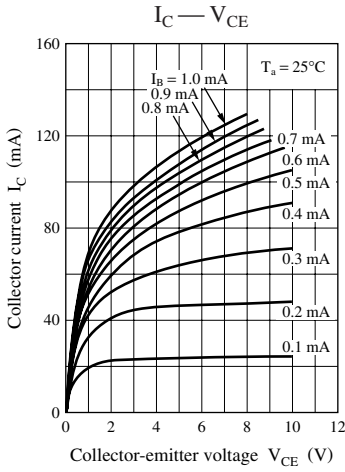




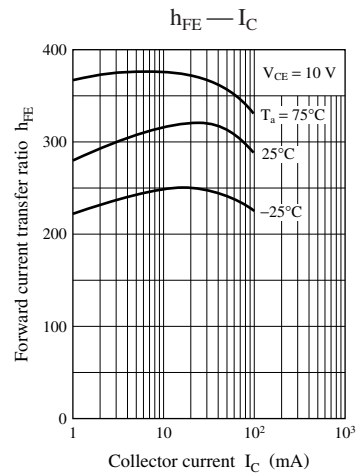
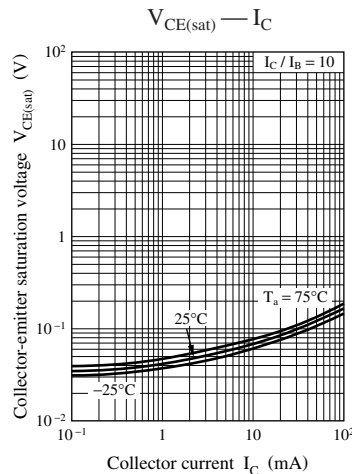
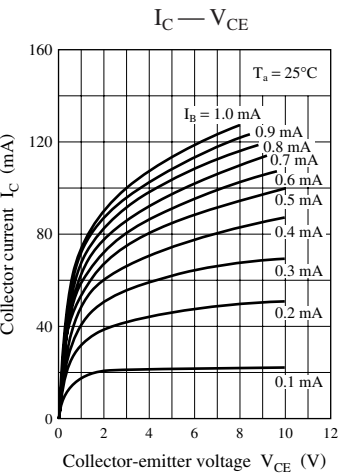
Characteristics charts of UNR9214J

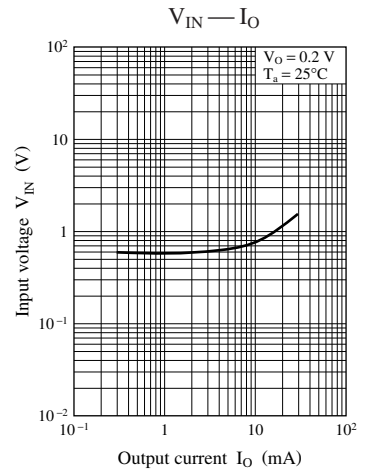
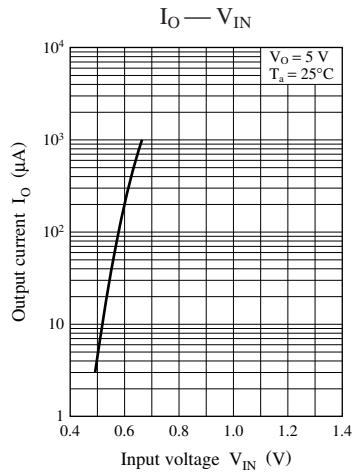
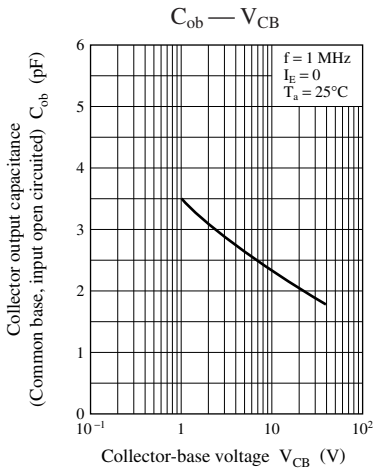


Characteristics charts of UNR9215J

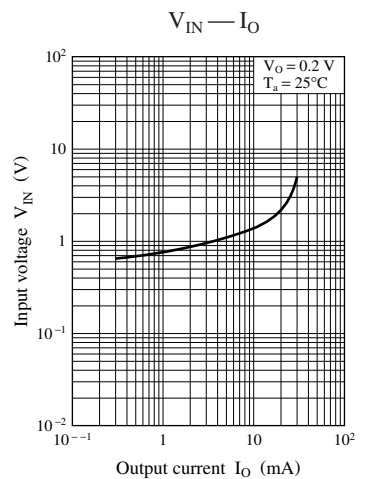
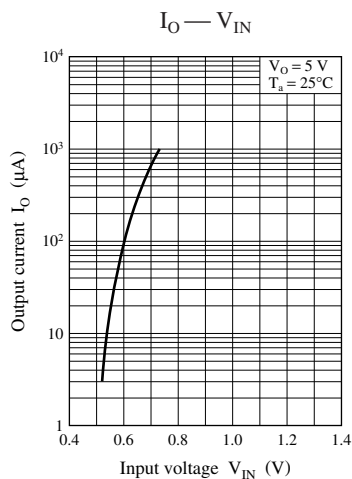
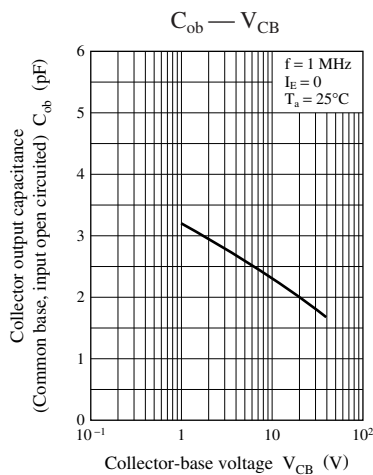
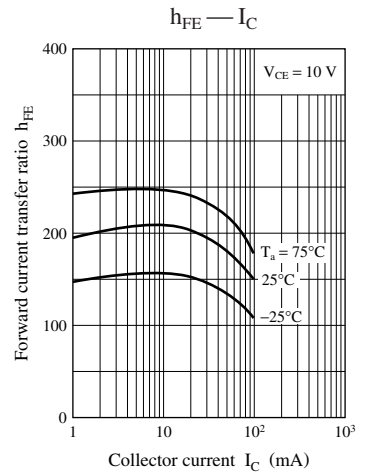
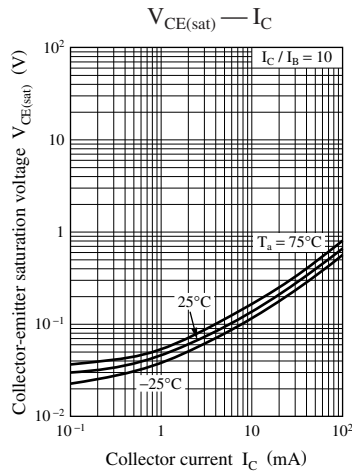
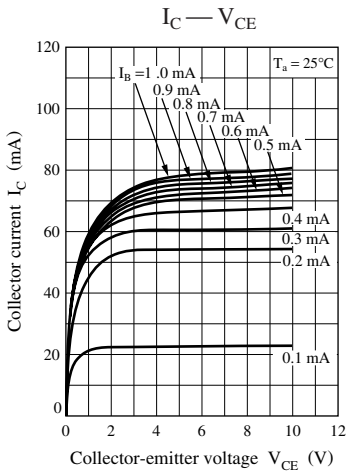


Characteristics charts of UNR9216J



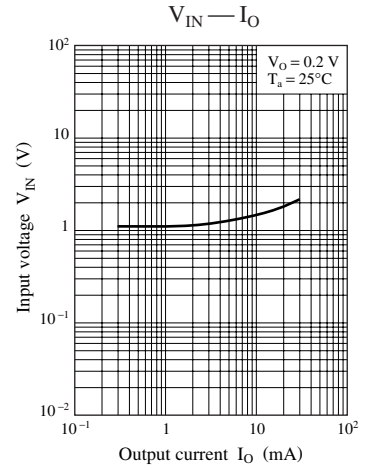
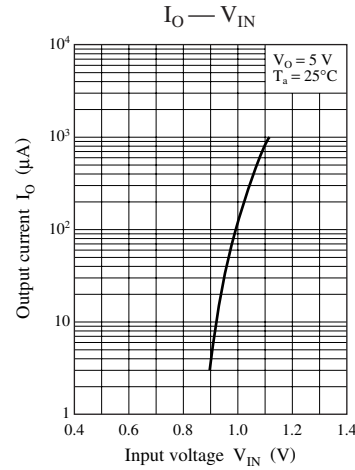
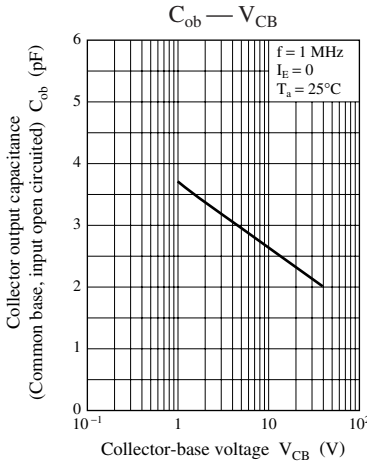
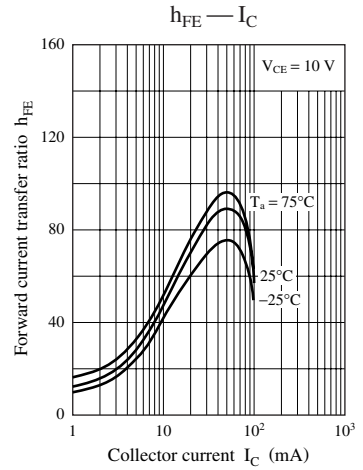
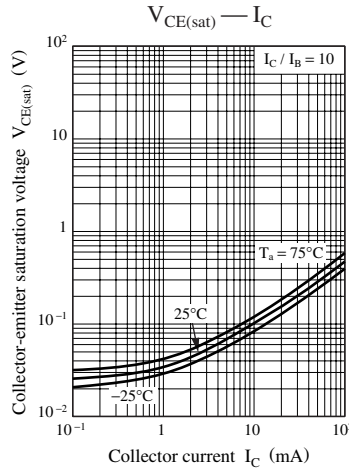
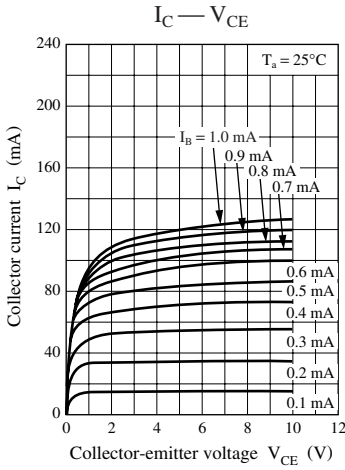


Characteristics charts of UNR9217J

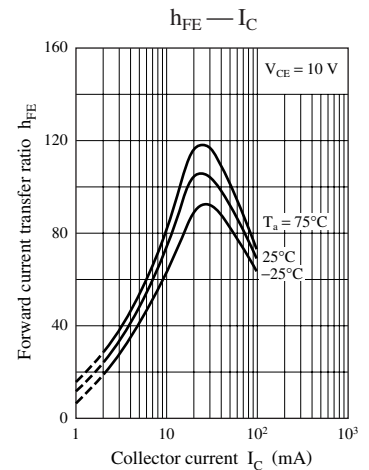
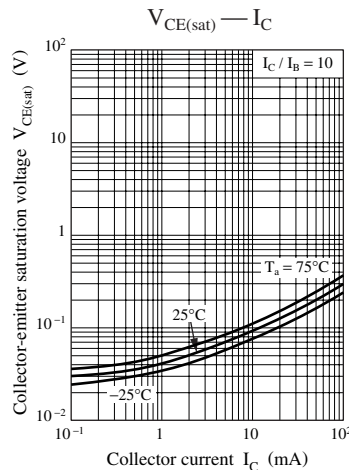
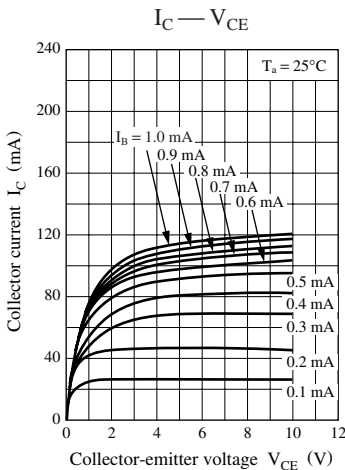


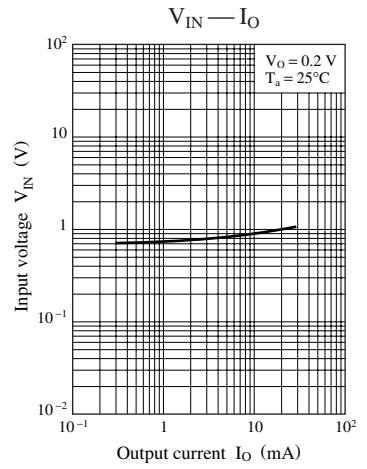
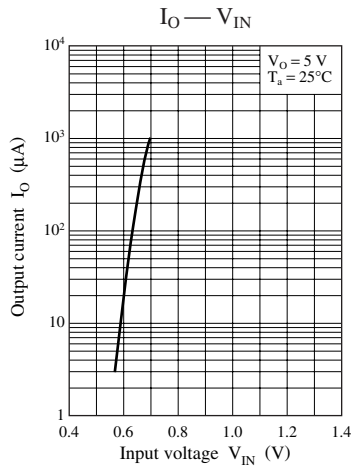
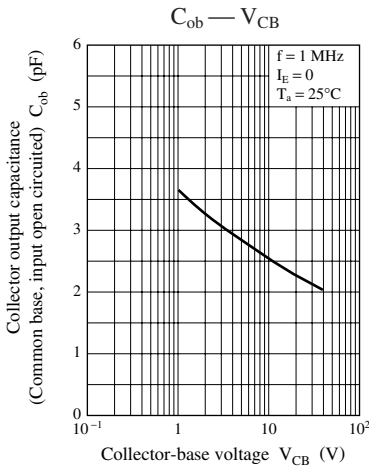


Characteristics charts of UNR9218J

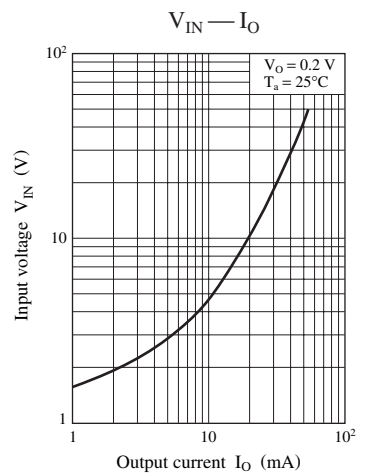
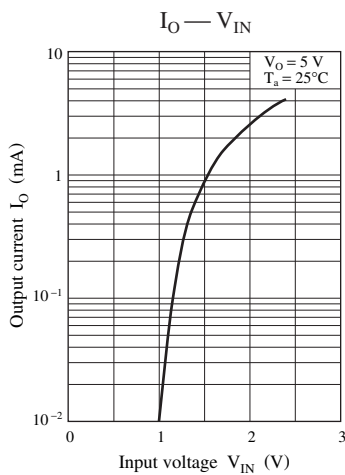
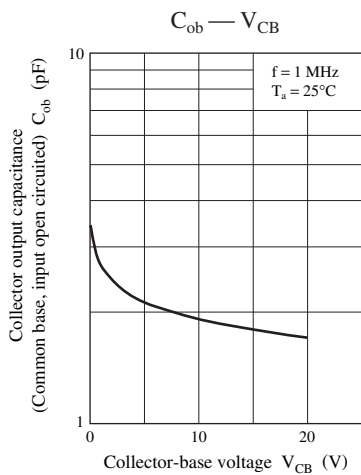
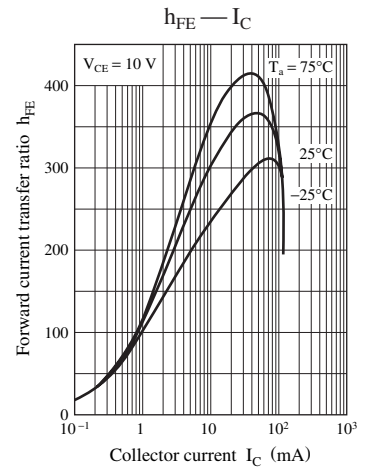
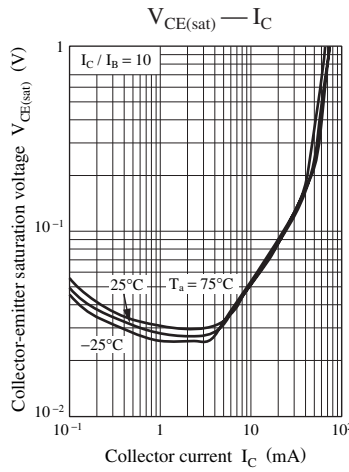
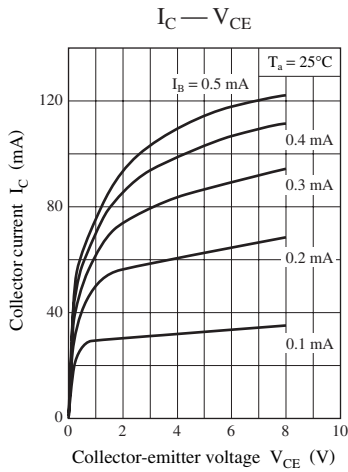


Characteristics charts of UNR9219J

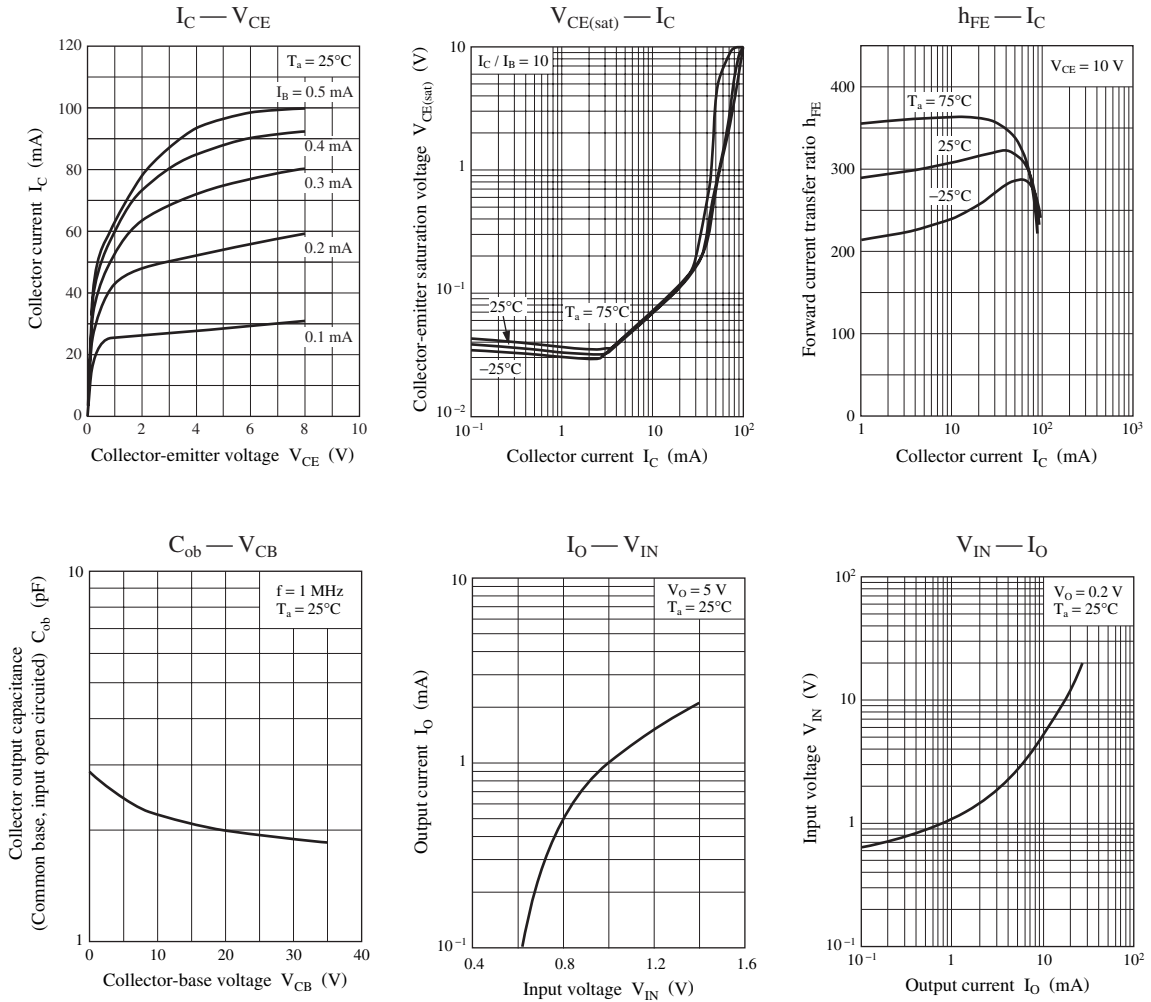




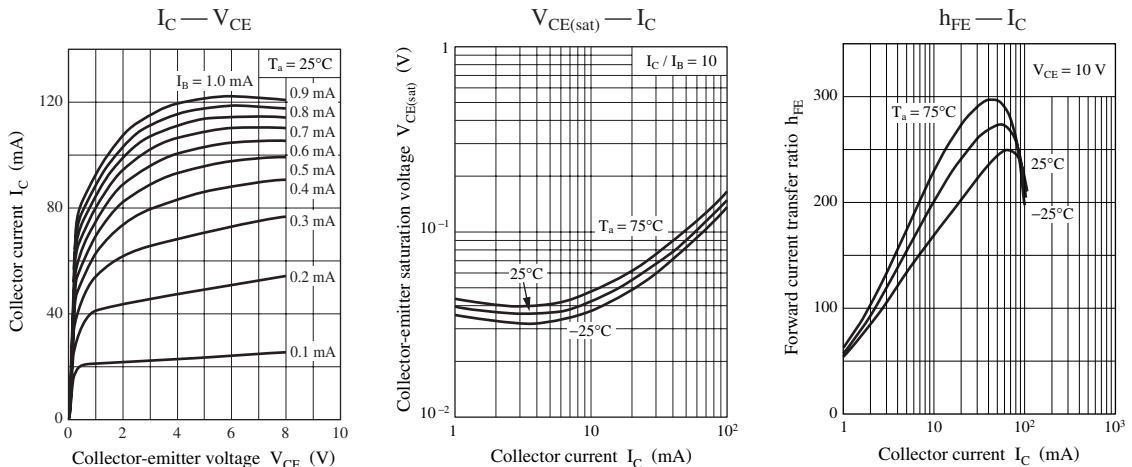
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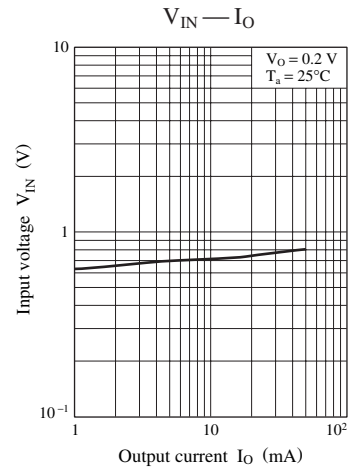
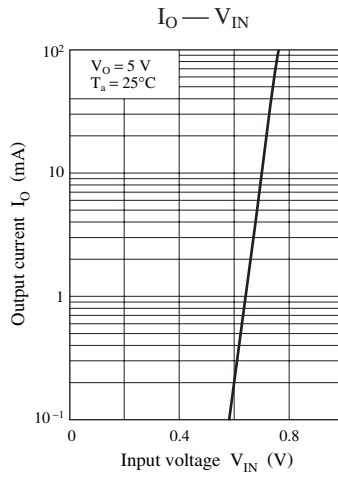
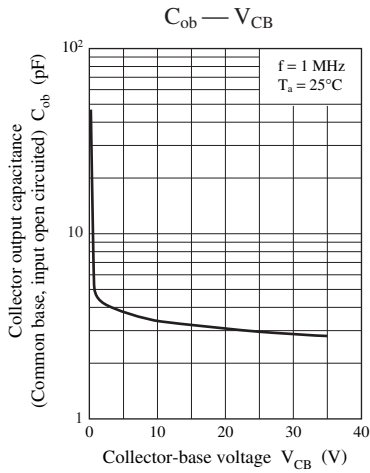


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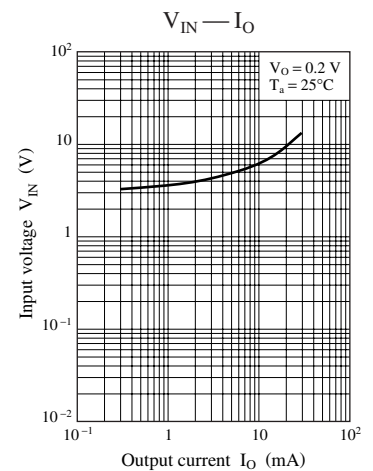
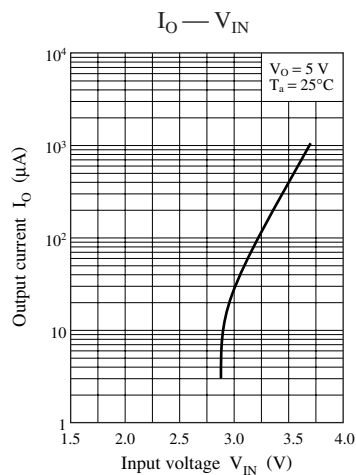
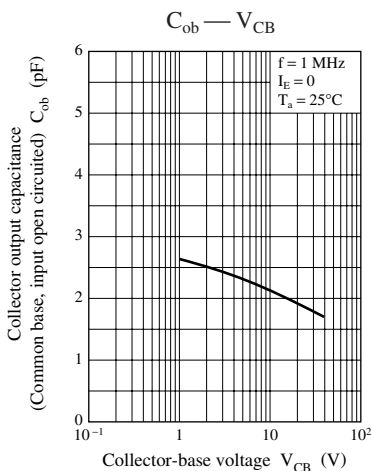
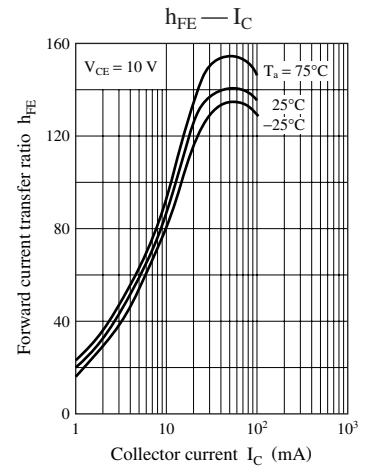
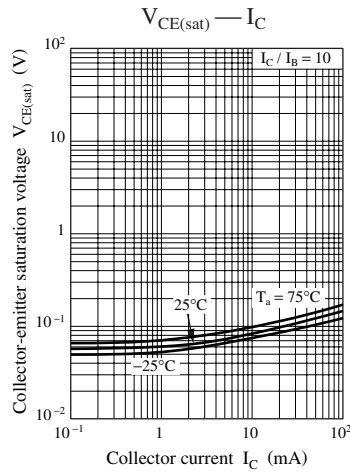
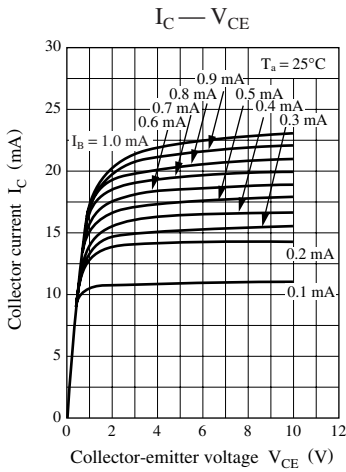


Characteristics charts of UNR921CJ

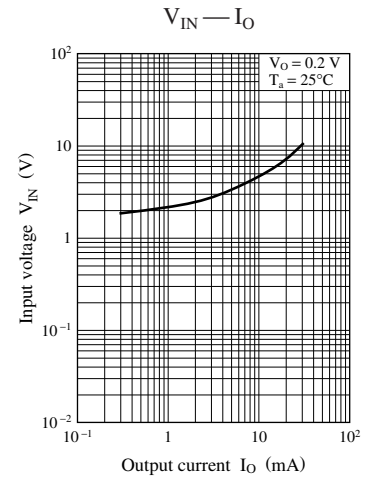
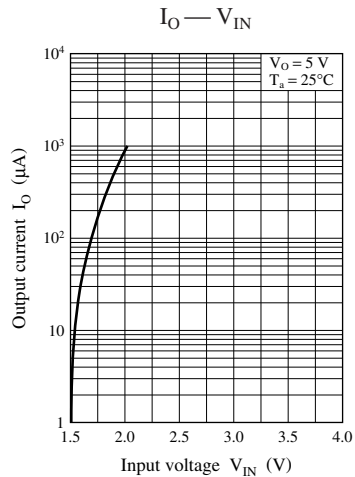
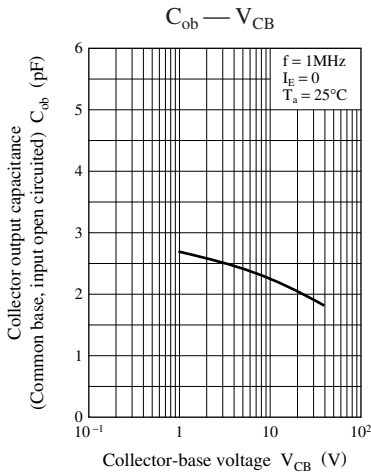
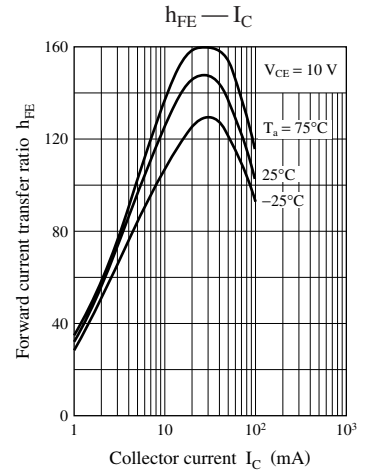
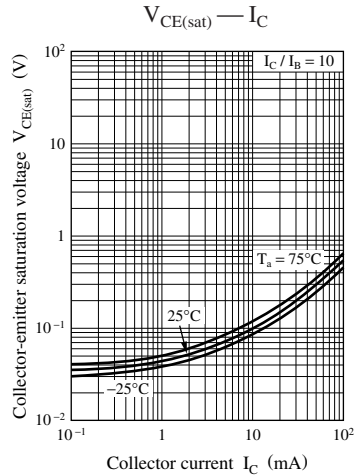
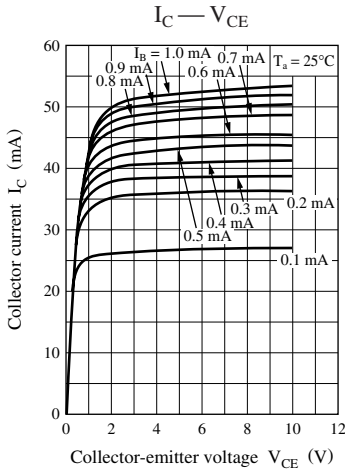




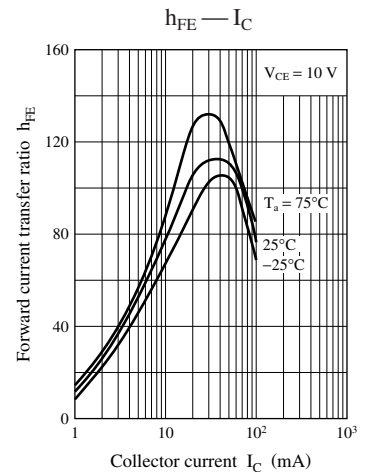
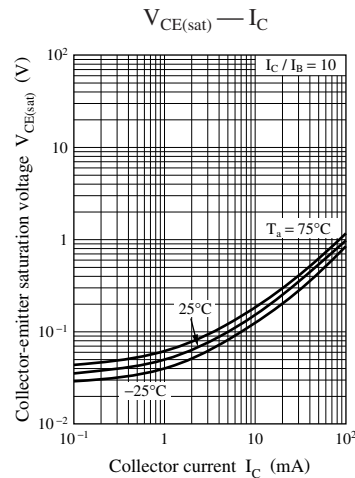
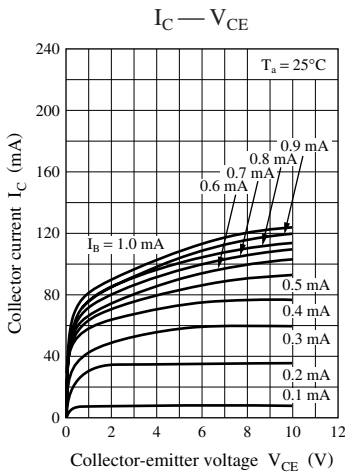
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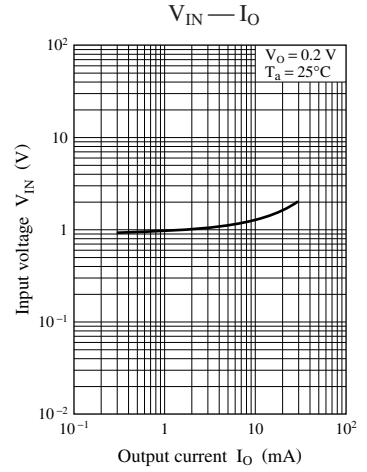
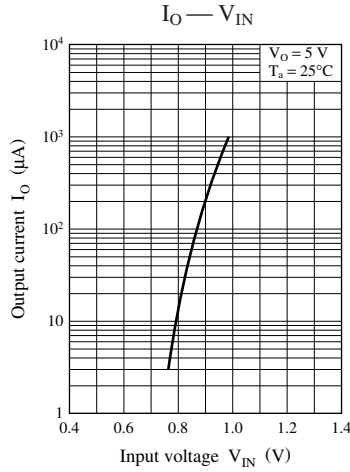
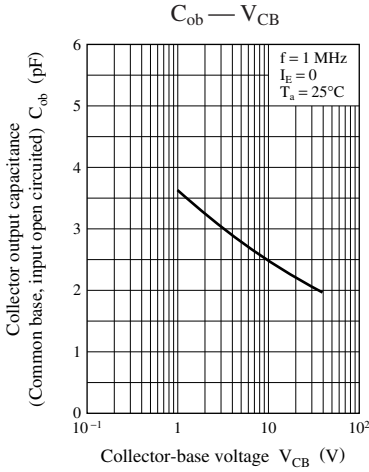


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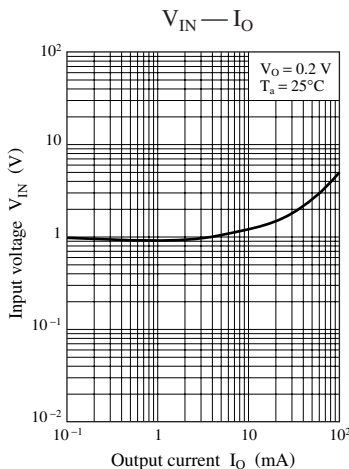
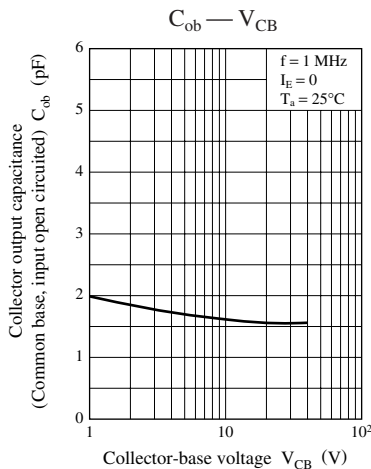
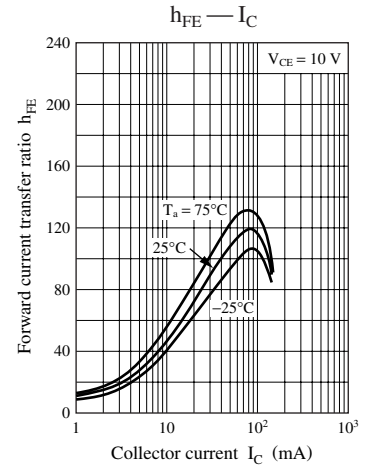
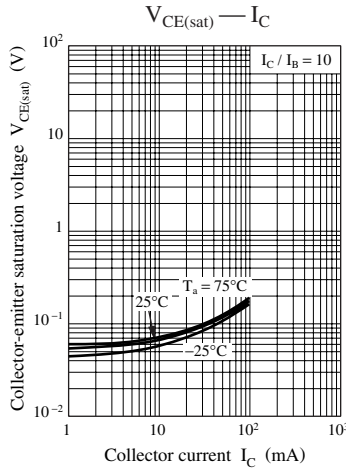
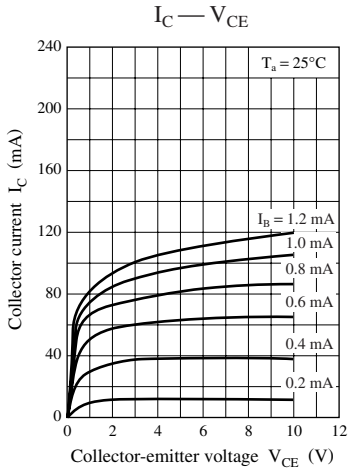


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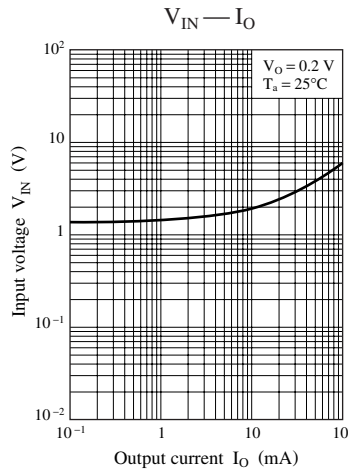
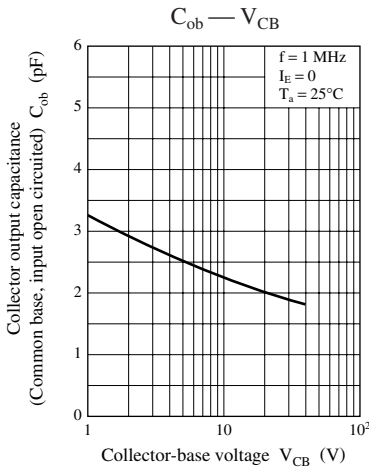
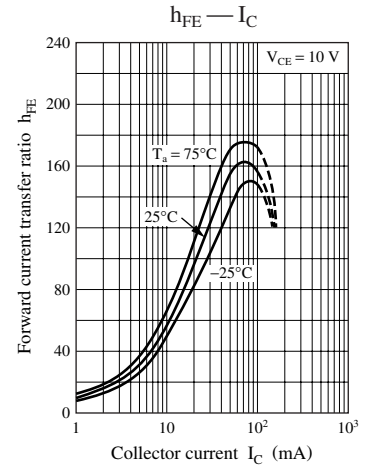
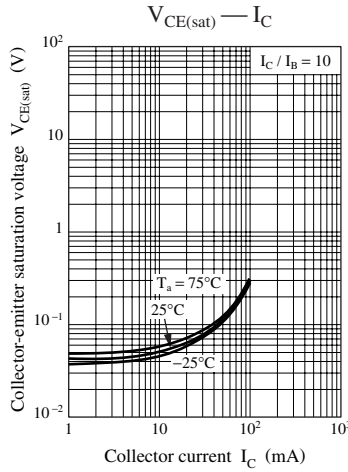
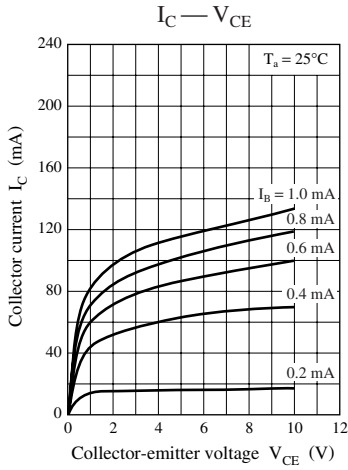




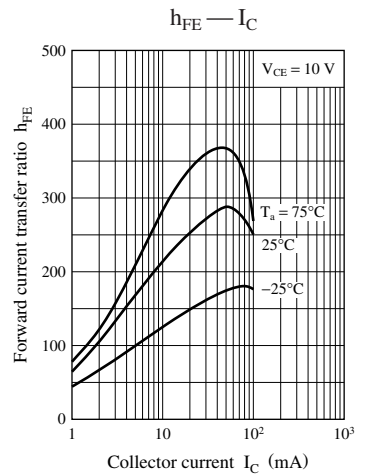
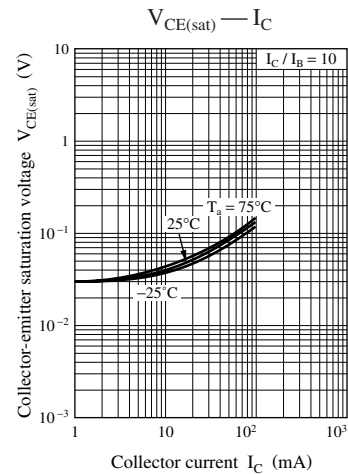
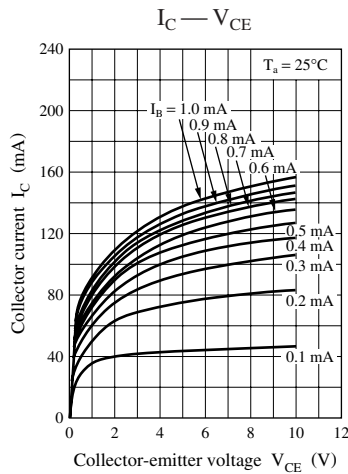
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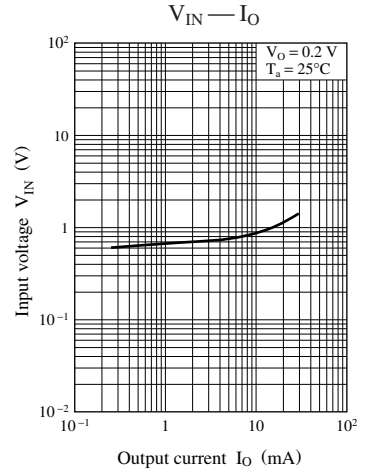
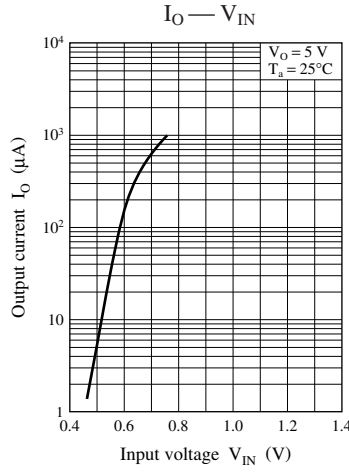
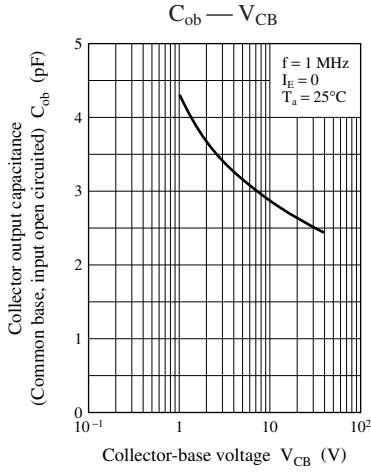


Characteristics charts of UNR921LJ

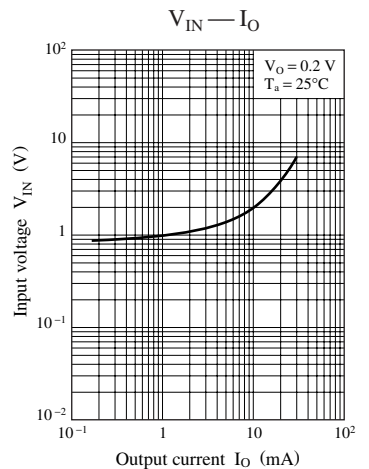
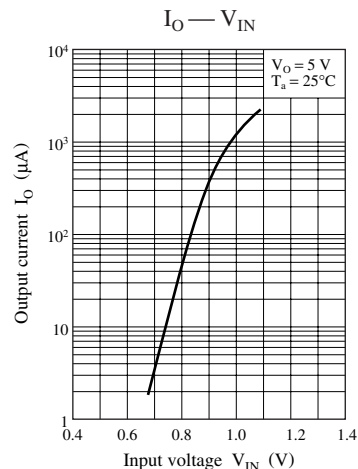
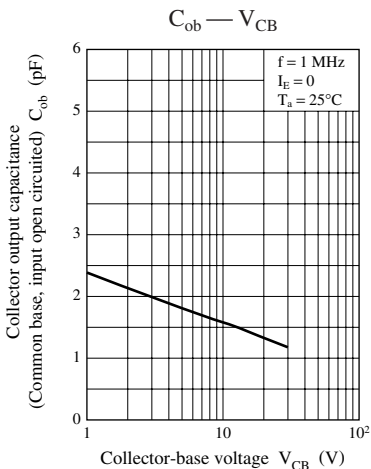
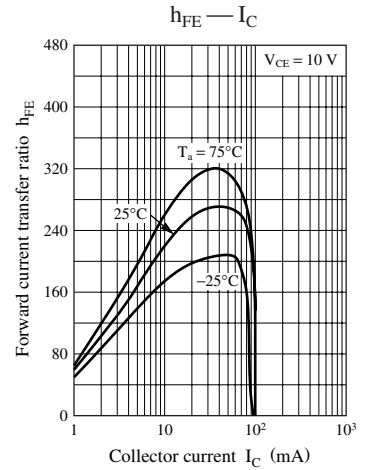
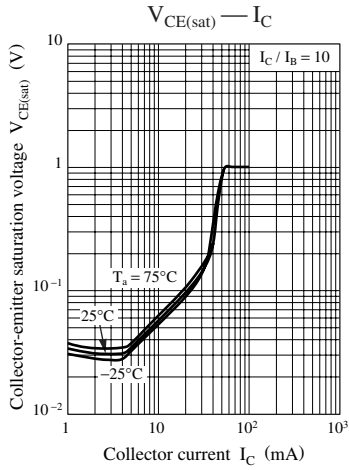
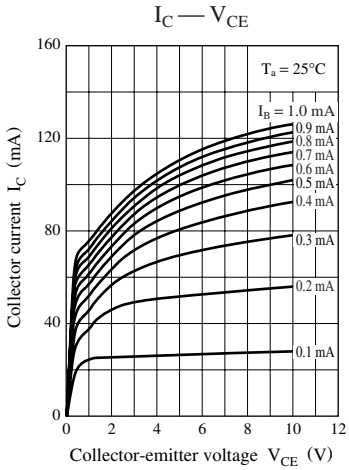


Characteristics charts of UNR921MJ



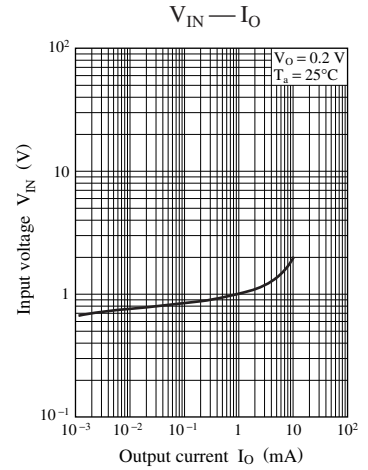
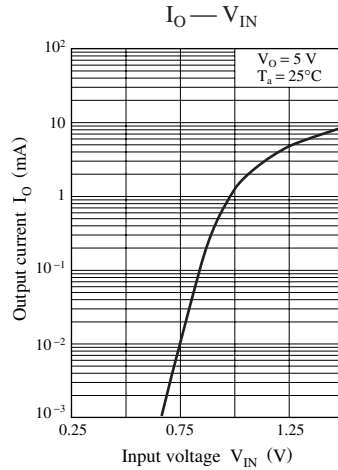
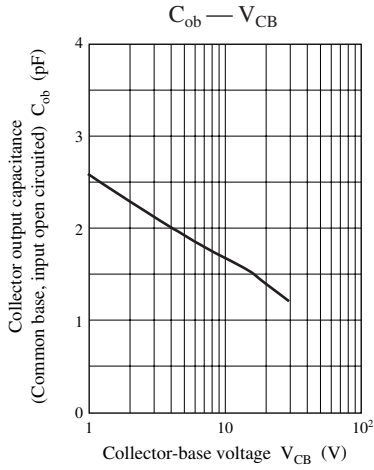
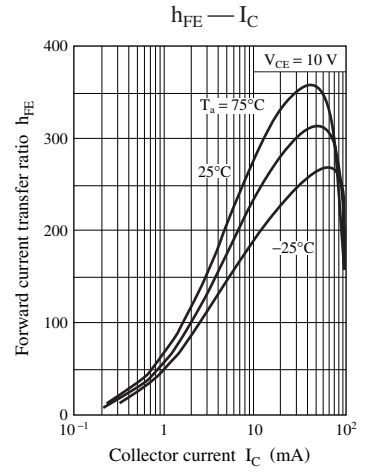
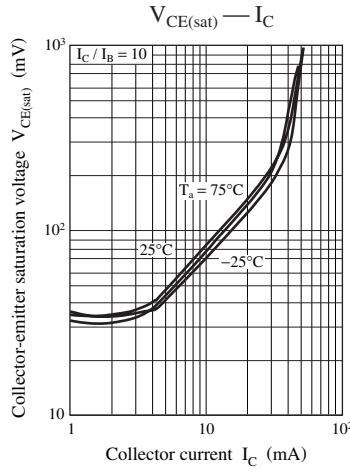
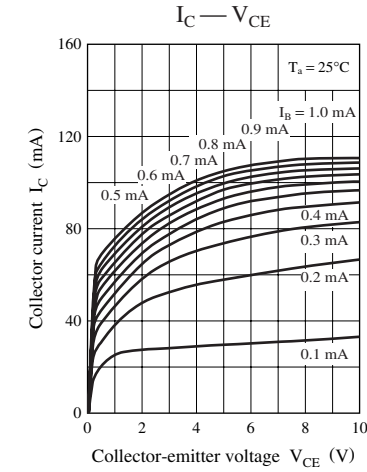


Characteristics charts of UNR921NJ

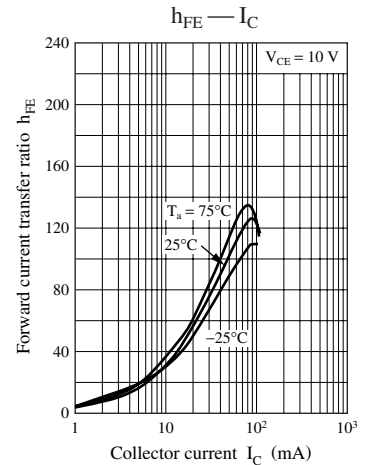
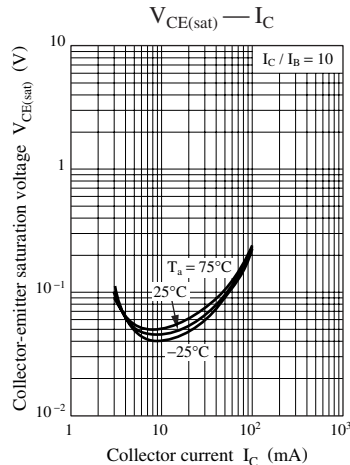
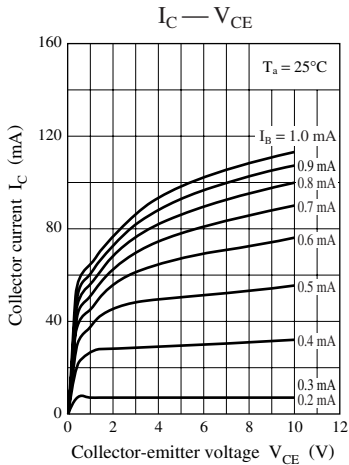


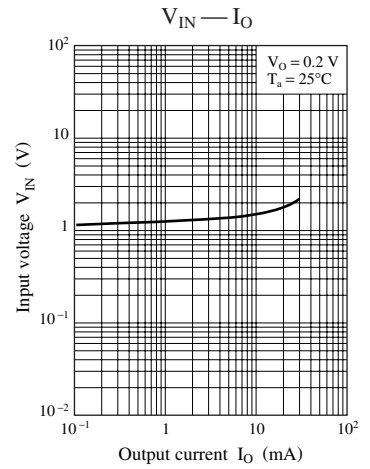
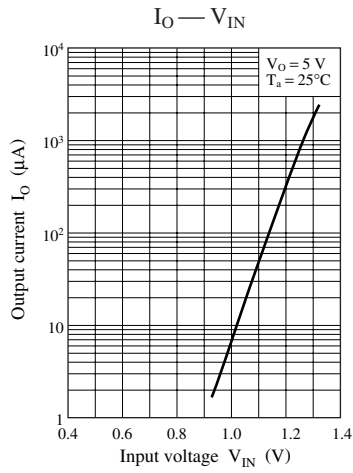
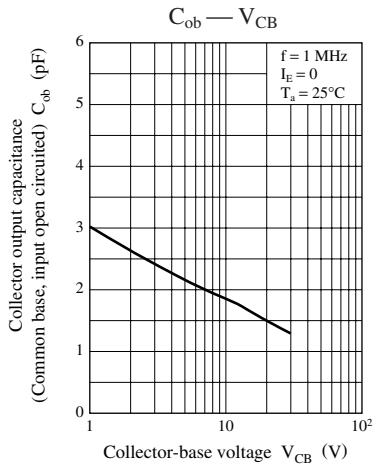


Characteristics charts of UNR921TJ



Characteristics charts of UNR921VJ





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