

# UNR92XXJ Series (UN92XXJ Series)

## Silicon NPN epitaxial planer type

For digital circuit

### ■ Features

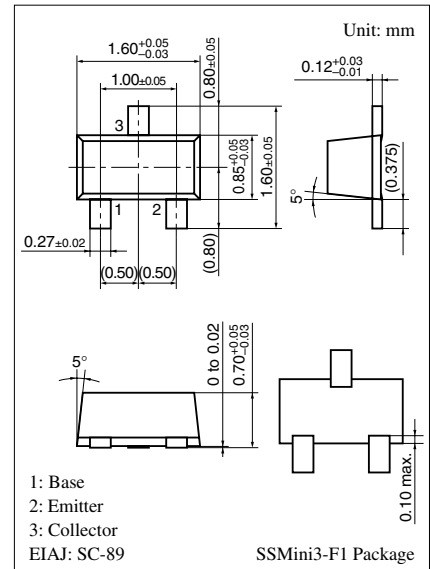
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- SS-mini type package, allowing automatic insertion through tape packing.

### ■ Resistance by Part Number

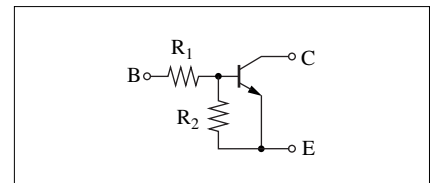
	Marking symbol (R <sub>1</sub> )	(R <sub>2</sub> )
• UNR9210J (UN9210J)	8L	47 kΩ —
• UNR9211J (UN9211J)	8A	10 kΩ 10 kΩ
• UNR9212J (UN9212J)	8B	22 kΩ 22 kΩ
• UNR9213J (UN9213J)	8C	47 kΩ 47 kΩ
• UNR9214J (UN9214J)	8D	10 kΩ 47 kΩ
• UNR9215J (UN9215J)	8E	10 kΩ —
• UNR9216J (UN9216J)	8F	4.7 kΩ —
• UNR9217J (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 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>	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 number in the parenthesis shows conventional part number.

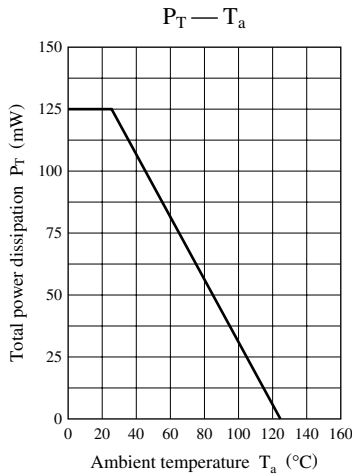
**■ Electrical Characteristics**  $T_a = 25^\circ\text{C}$ 

Parameter		Symbol	Conditions	Min	Typ	Max	Unit	
Collector cutoff current		$I_{CBO}$	$V_{CB} = 50\text{ V}, I_E = 0$			0.1	$\mu\text{A}$	
		$I_{CEO}$	$V_{CE} = 50\text{ V}, I_B = 0$			0.5		
Emitter cutoff current	UNR9211J	$I_{EBO}$	$V_{EB} = 6\text{ V}, I_C = 0$			0.5	mA	
	UNR9212J/9214J/921DJ/ 921EJ/921MJ/921NJ/921TJ					0.2		
	UNR9213J/921AJ					0.1		
	UNR9215J/9216J/9217J/ 9210J/921BJ					0.01		
	UNR921FJ/921KJ					1.0		
	UNR9219J					1.5		
	UNR9218J/921LJ/921CJ/921VJ					2.0		
Collector to base voltage		$V_{CBO}$	$I_C = 10\ \mu\text{A}, I_E = 0$	50			V	
Collector to emitter voltage		$V_{CEO}$	$I_C = 2\text{ mA}, I_B = 0$	50			V	
Forward current transfer ratio	UNR9211J	$h_{FE}$	$V_{CE} = 10\text{ V}, I_C = 5\text{ mA}$	35				
	UNR9212J/921EJ			60				
	UNR9213J/9214J/921AJ/ 921CJ/921MJ			80				
	UNR9215J/9216J/9217J/ 9210J/921BJ			160		460		
	UNR9218J/921KJ/921LJ			20				
	UNR9219J/921DJ/921FJ			30				
	UNR921NJ/921TJ			80		400		
	UNR921VJ			6		20		
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = 10\text{ mA}, I_B = 0.3\text{ mA}$			0.25	V	
High-level output voltage		$V_{OH}$	$V_{CC} = 5\text{ V}, V_B = 0.5\text{ V}, R_L = 1\text{ k}\Omega$	4.9			V	
Low-level output voltage		$V_{OL}$	$V_{CC} = 5\text{ V}, V_B = 2.5\text{ V}, R_L = 1\text{ k}\Omega$			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			
	UNR9213J/9210J/921DJ/921EJ				47			
	UNR921AJ/921BJ				100			

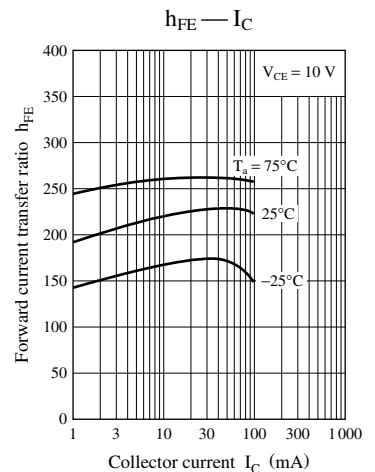
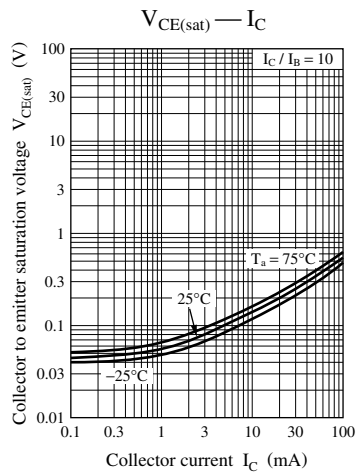
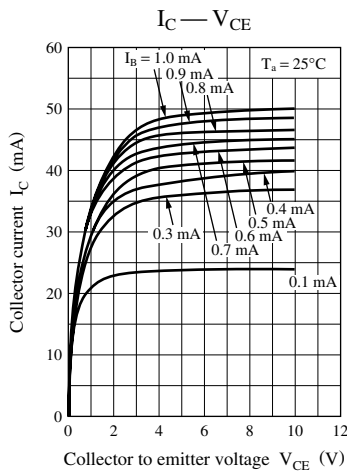
■ Electrical Characteristics (continued)  $T_a = 25^\circ\text{C}$

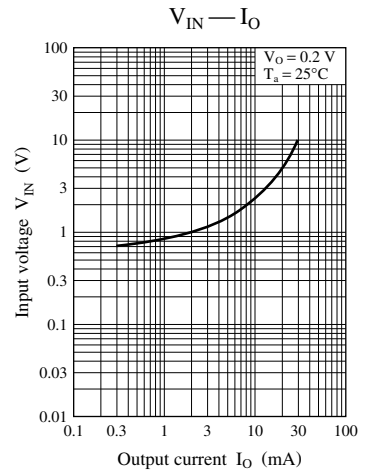
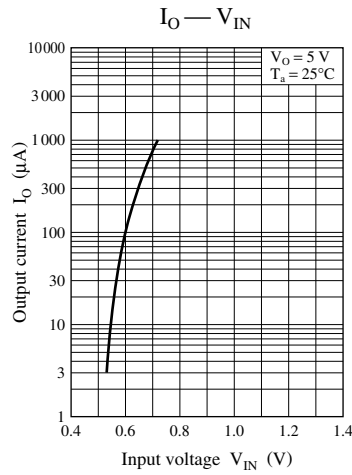
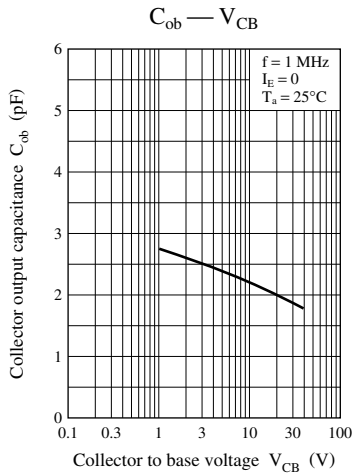
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR9211J/9212J/9213J/921LJ	$R_1/R_2$		0.8	1.0	1.2	
	UNR9214J			0.17	0.21	0.25	
	UNR9218J/9219J			0.08	0.1	0.12	
	UNR921DJ			3.7	4.7	5.7	
	UNR921EJ			1.7	2.14	2.6	
	UNR921FJ			0.37	0.47	0.57	
	UNR921KJ			1.7	2.13	2.6	
	UNR921MJ				0.047		
	UNR921NJ				0.1		
	UNR921TJ				0.47		
	UNR921AJ/921VJ				1.0		
Resistance between emitter to base	UNR921CJ	$R_2$		-30%	47	+30%	$\text{k}\Omega$

Common characteristics chart

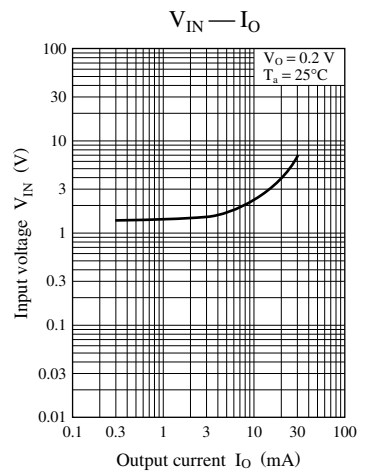
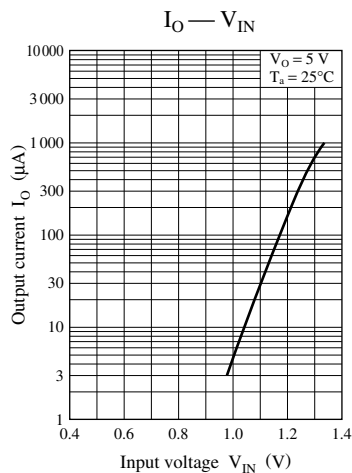
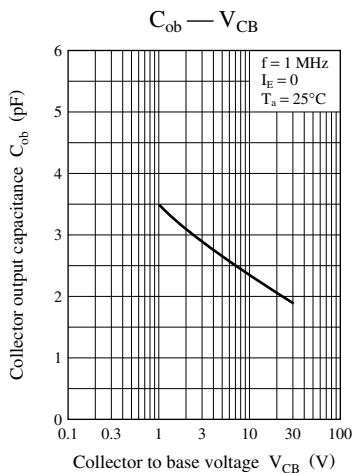
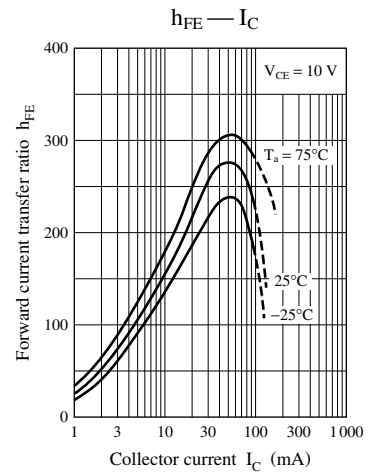
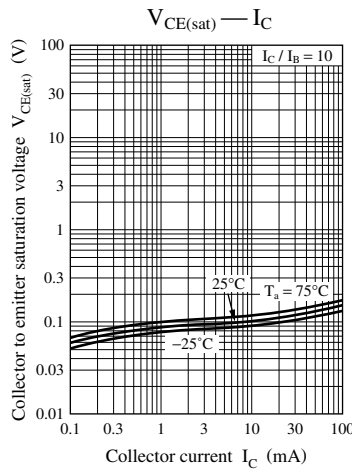
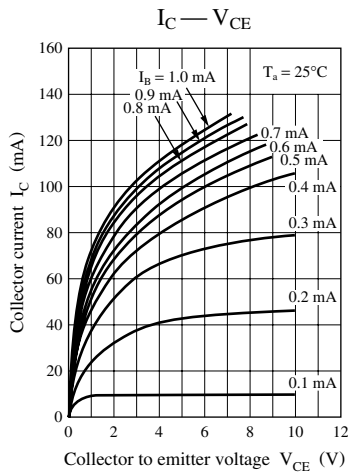


Characteristics chart of UNR9210J

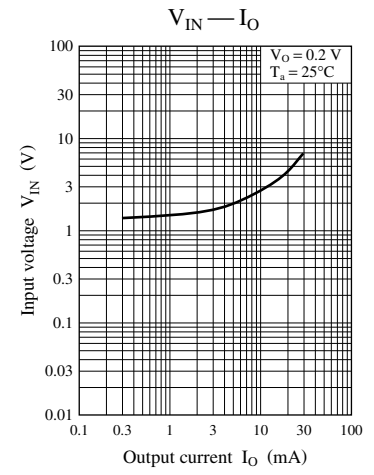
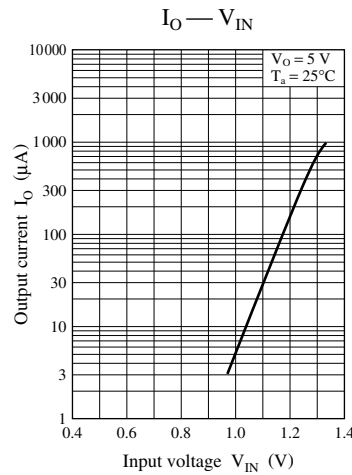
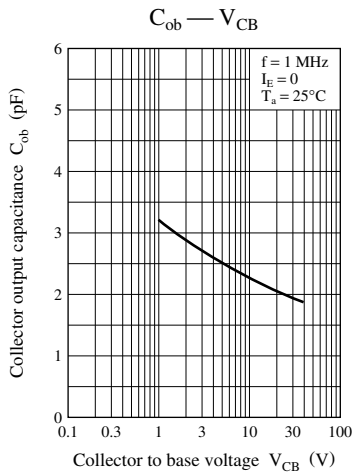
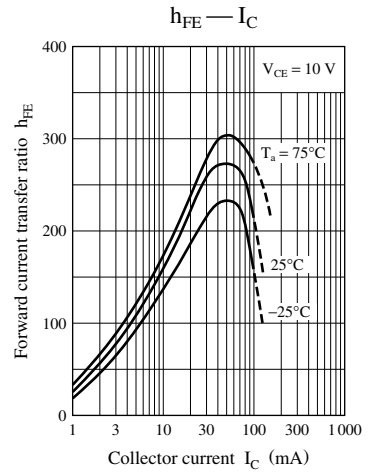
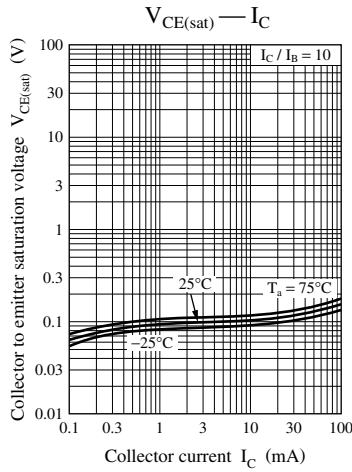
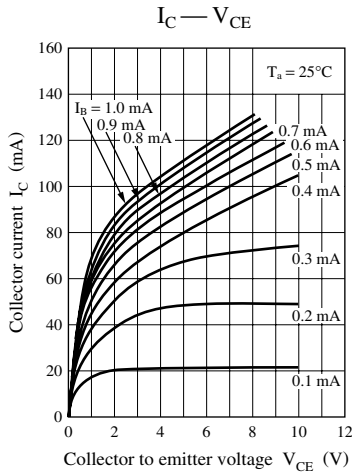




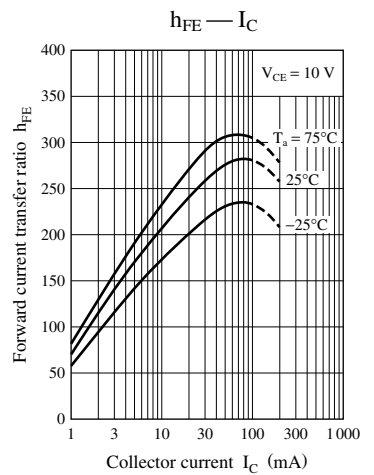
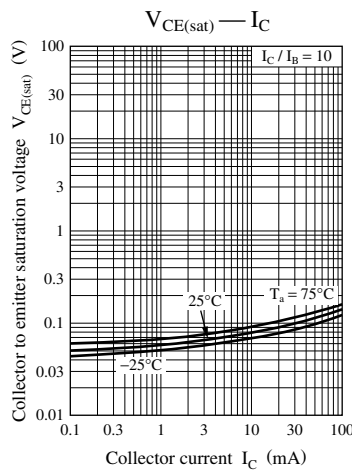
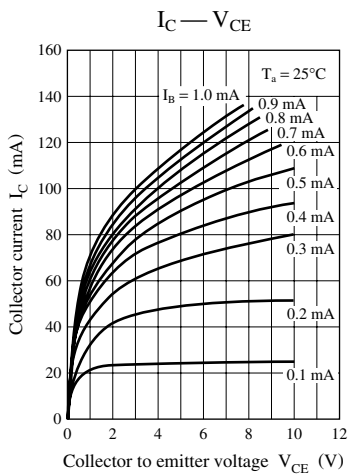
Characteristics chart of UNR9211J

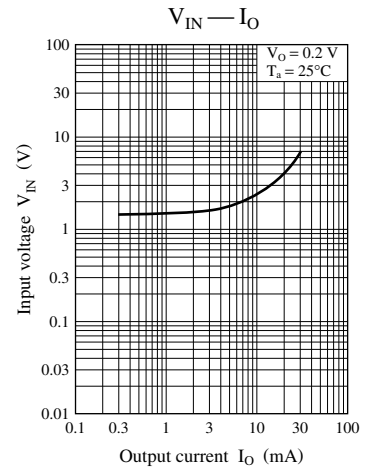
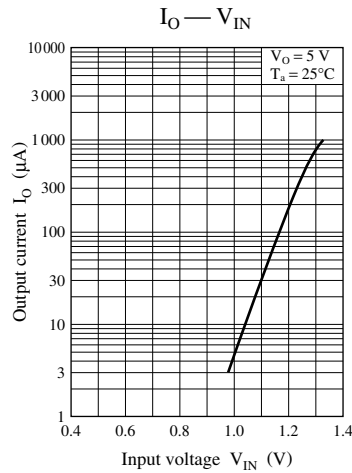
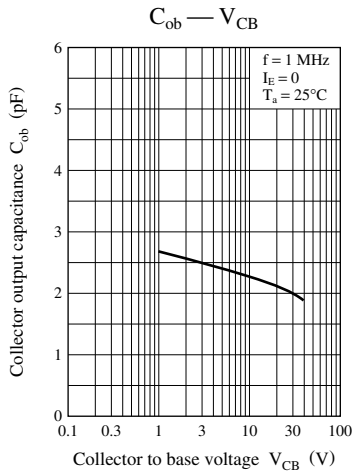


Characteristics chart of UNR9212J

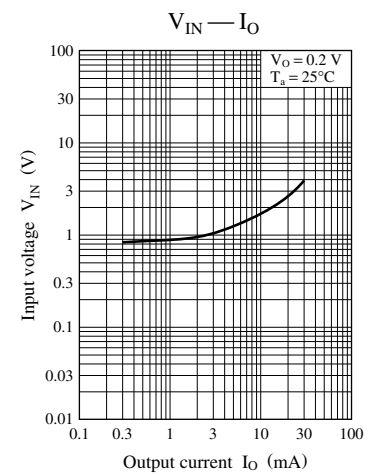
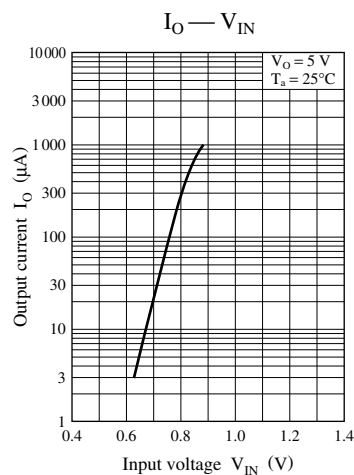
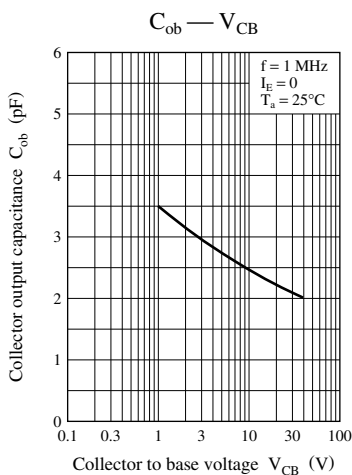
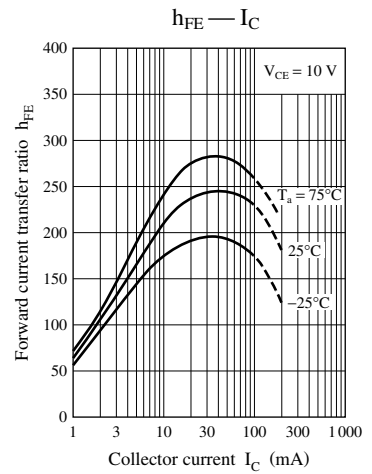
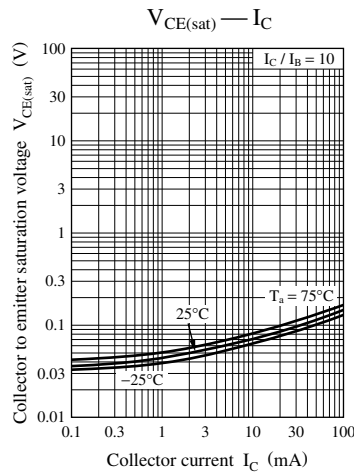
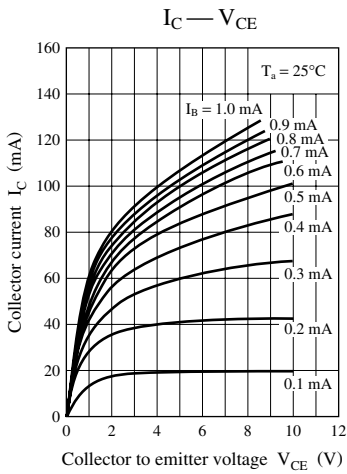


Characteristics chart of UNR9213J

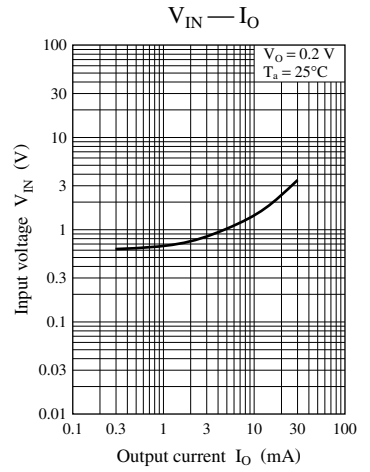
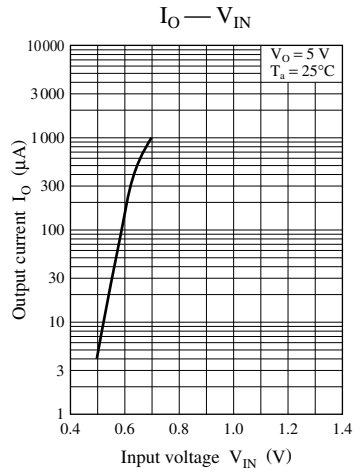
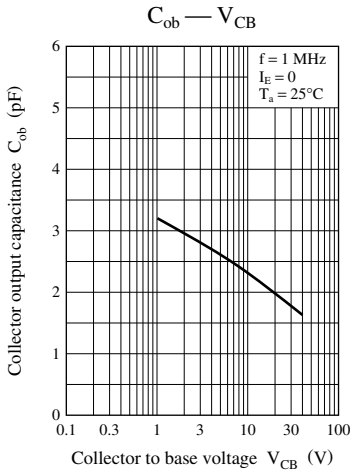
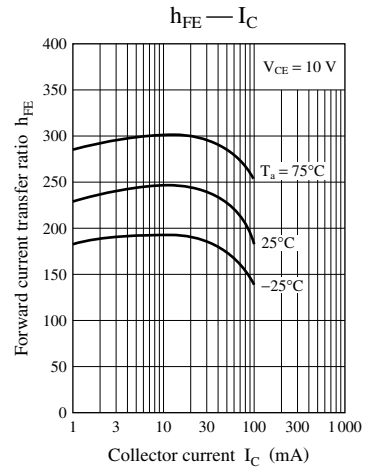
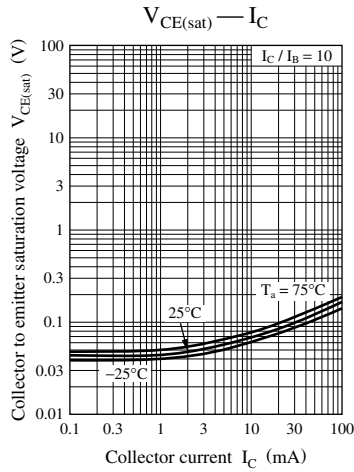
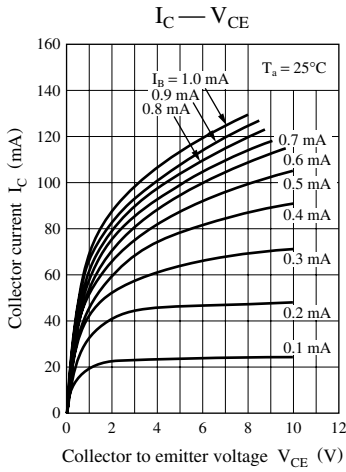




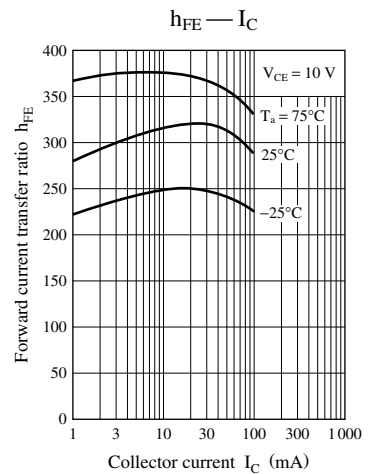
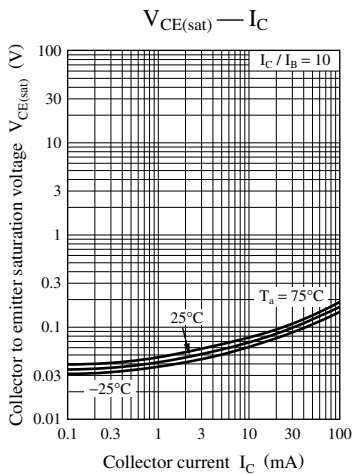
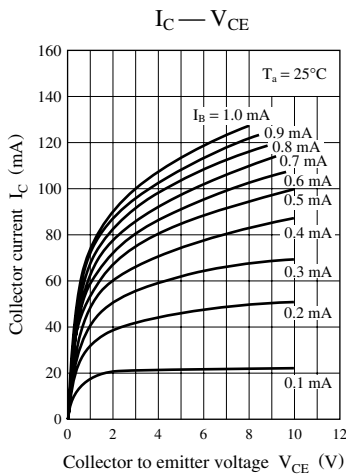
Characteristics chart of UNR9214J

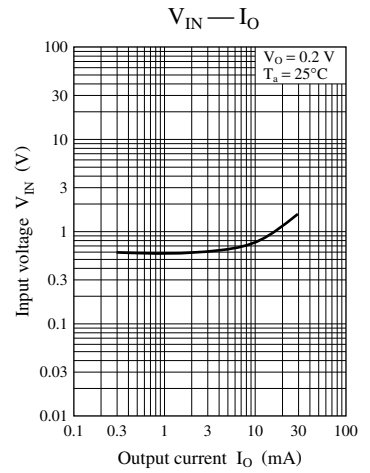
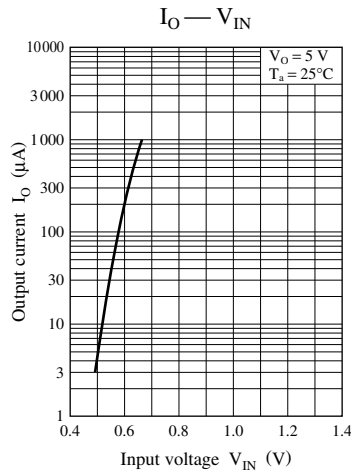
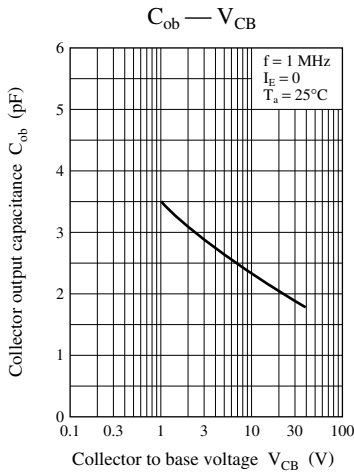


Characteristics chart of UNR9215J

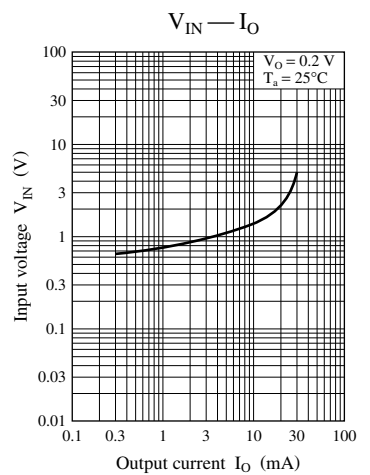
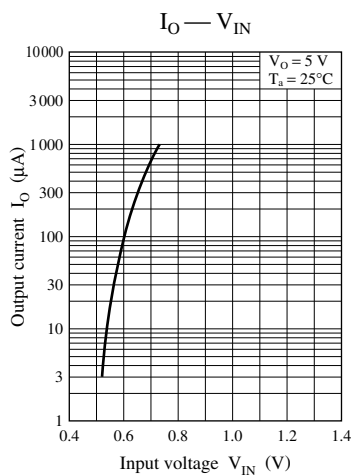
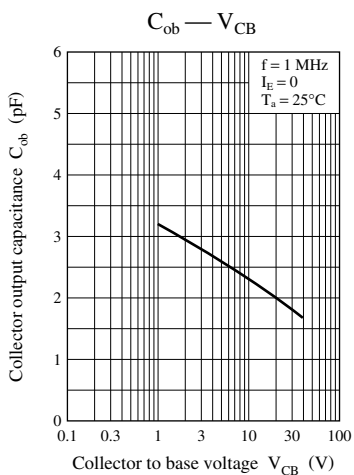
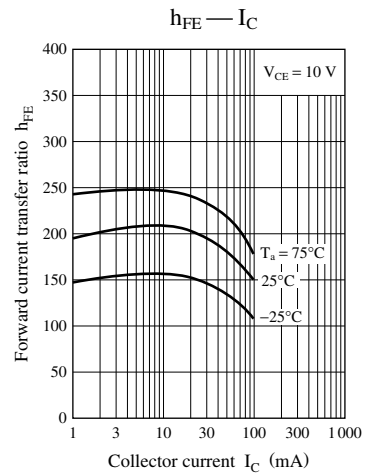
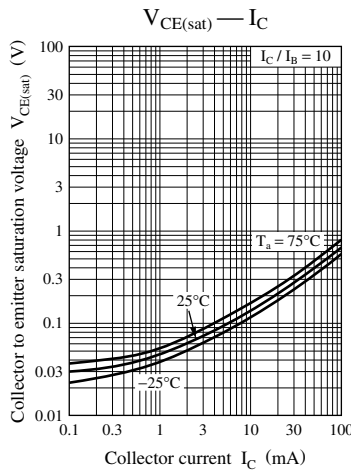
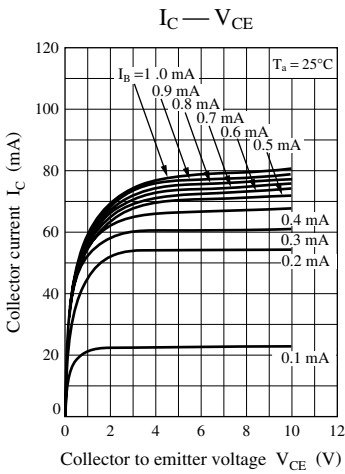


Characteristics chart of UNR9216J



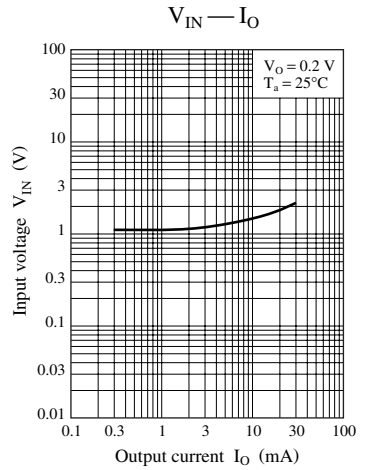
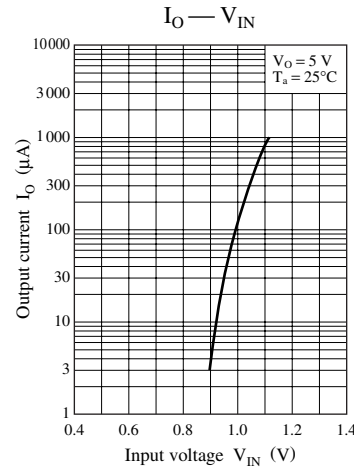
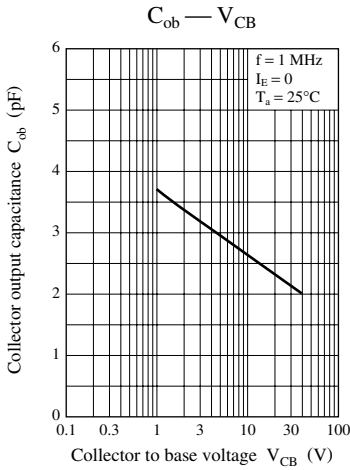
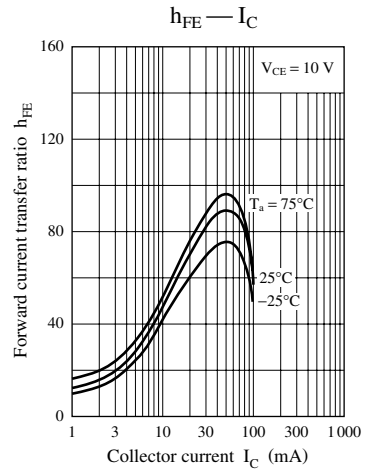
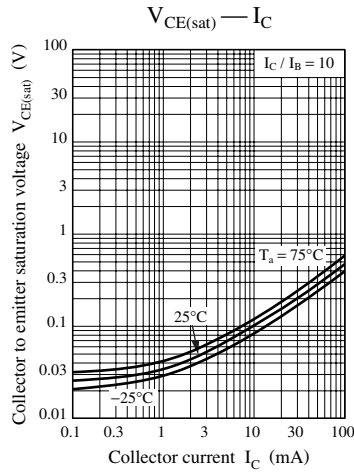
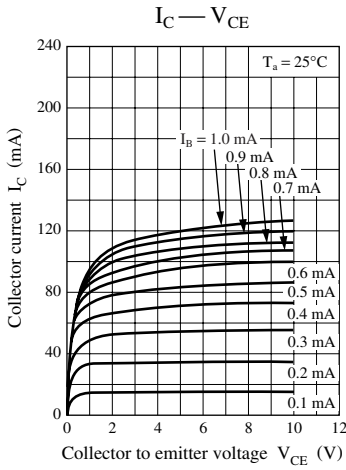


Characteristics chart of UNR9217J

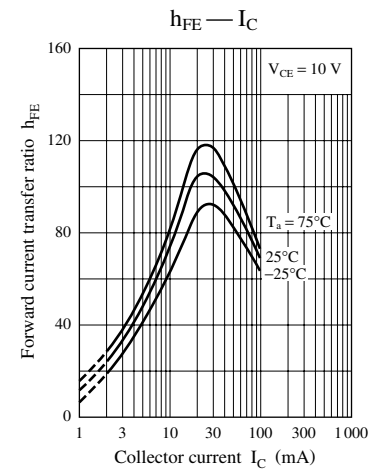
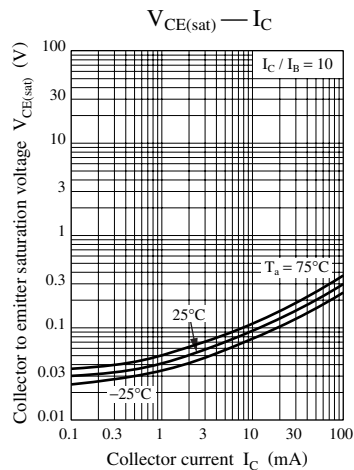
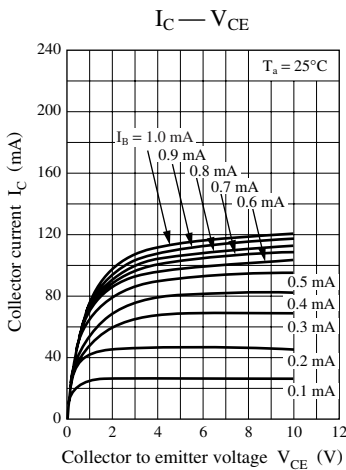


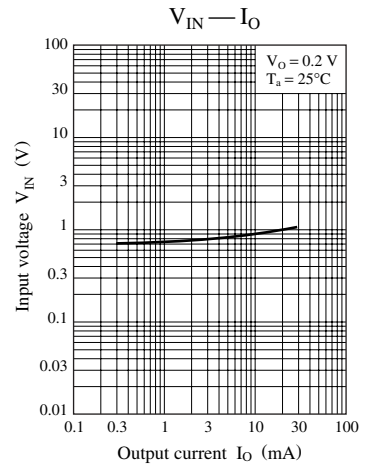
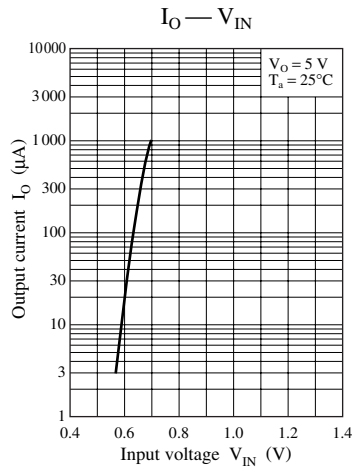
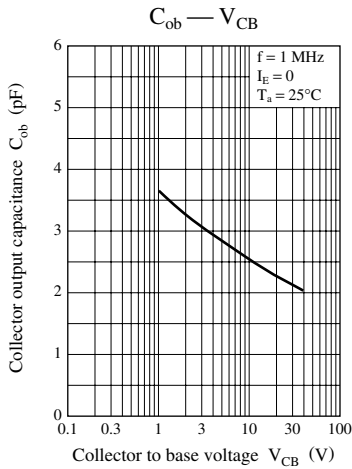


Characteristics chart of UNR9218J

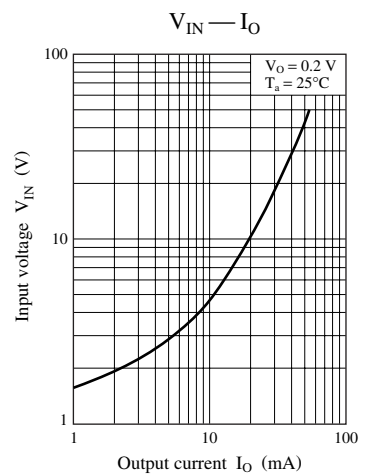
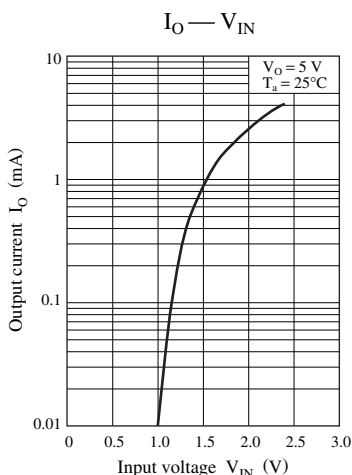
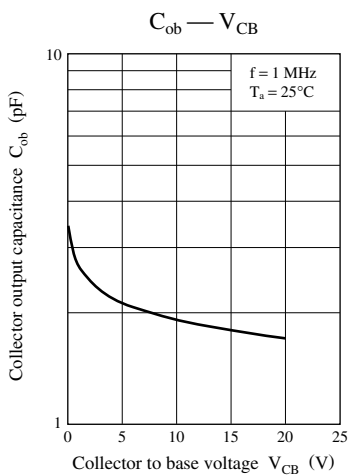
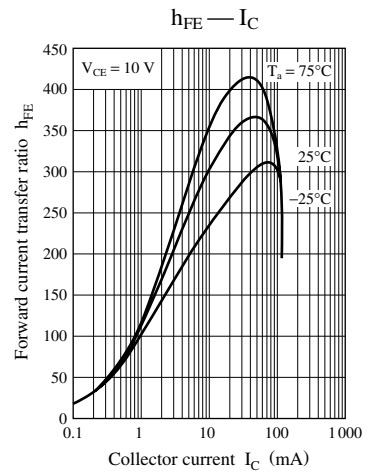
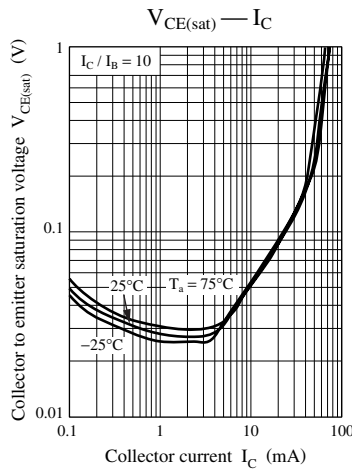
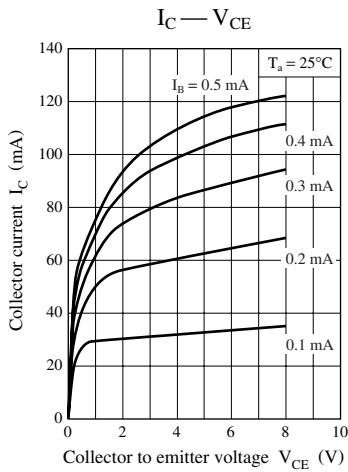


Characteristics chart of UNR9219J

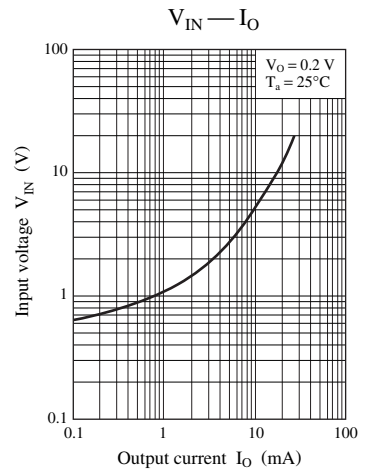
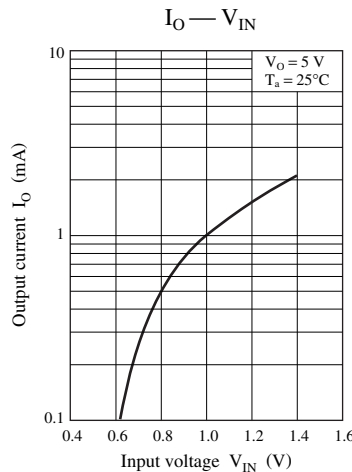
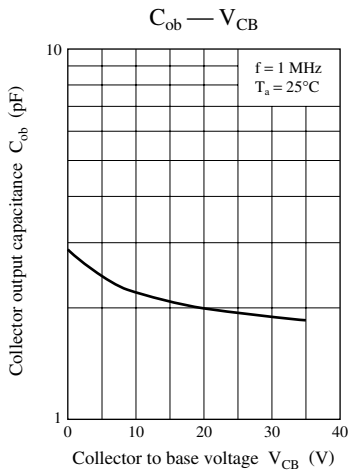
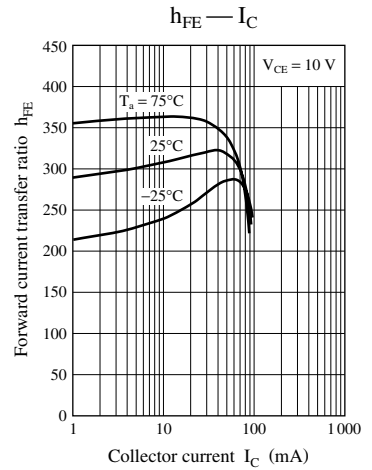
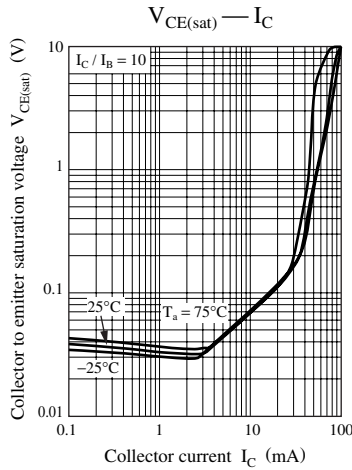
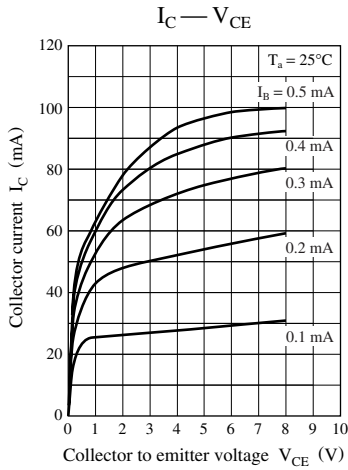




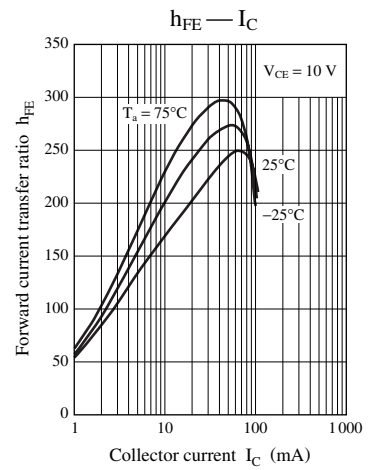
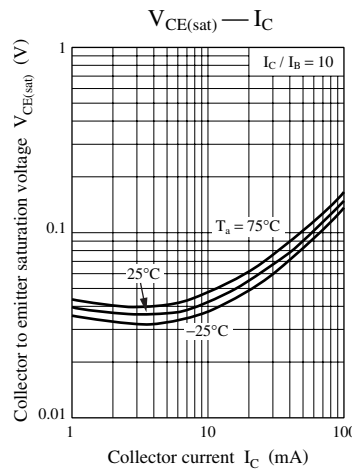
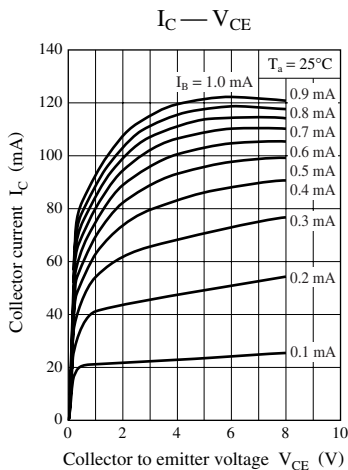
Characteristics chart of UNR921AJ

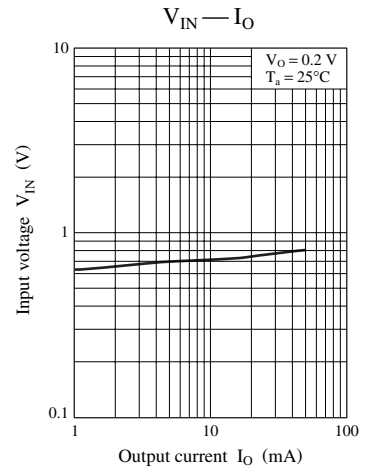
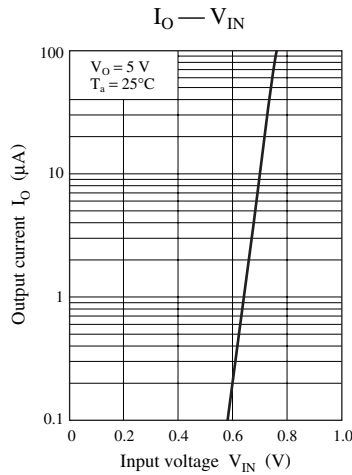
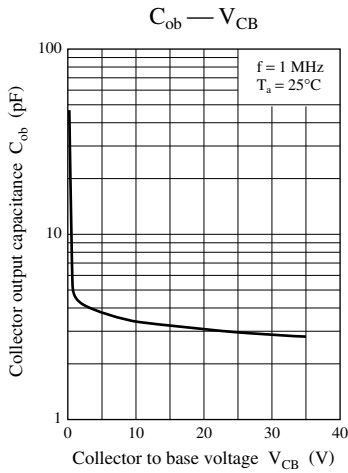


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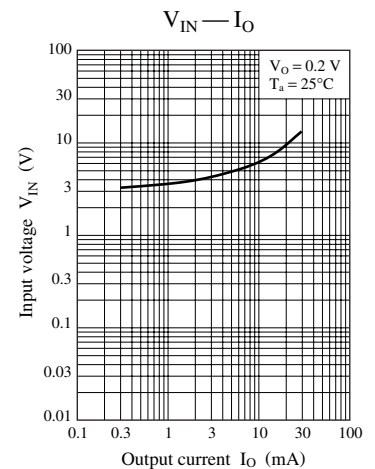
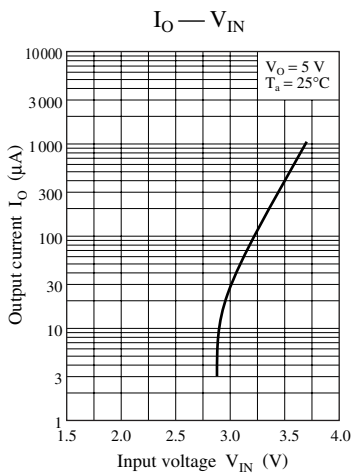
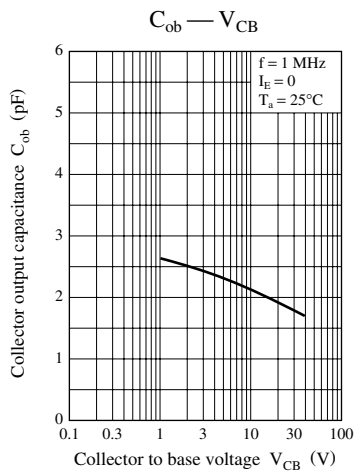
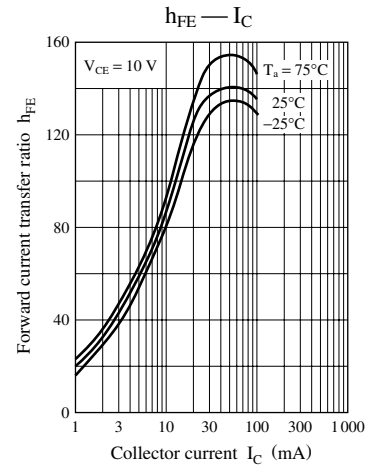
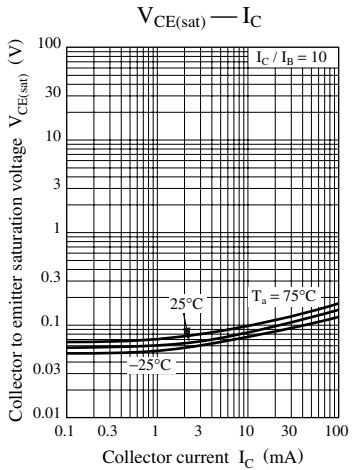
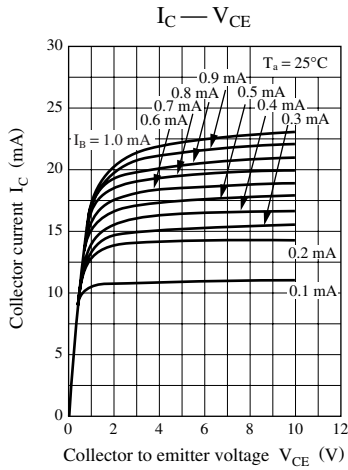


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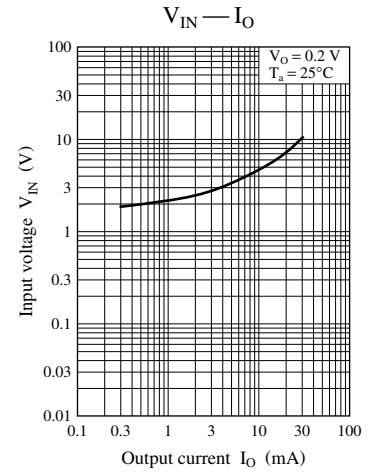
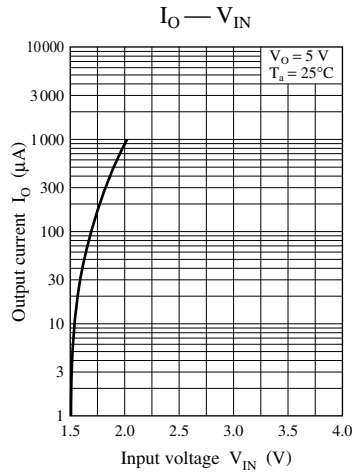
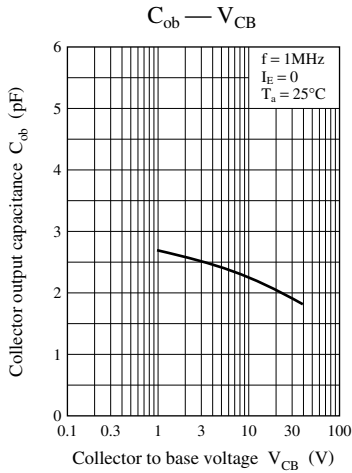
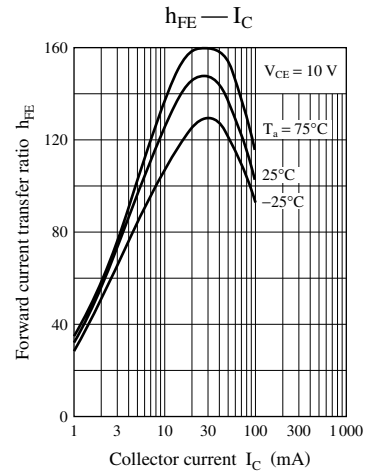
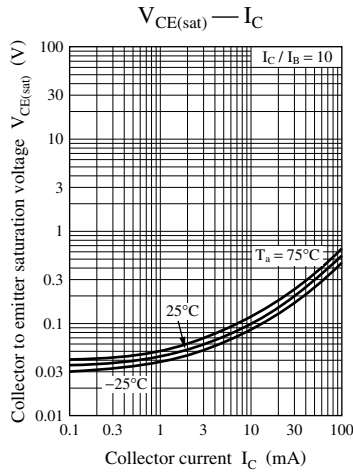
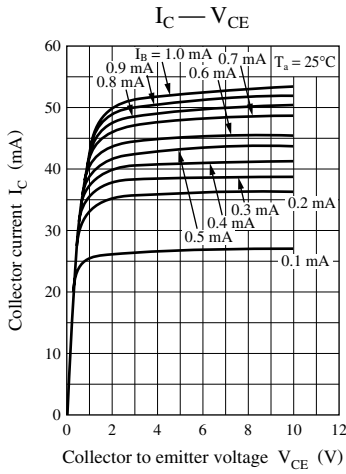




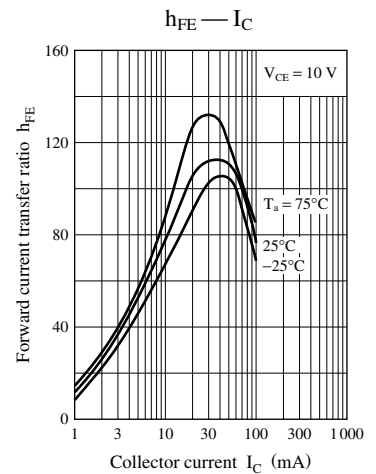
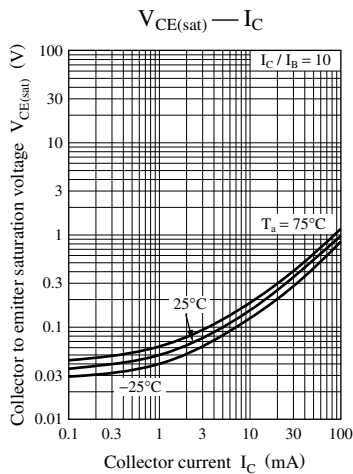
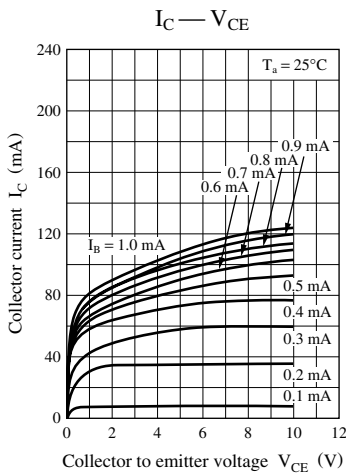
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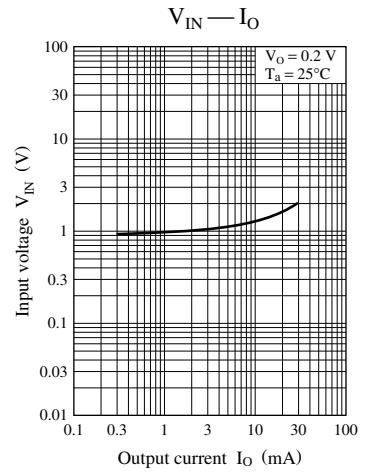
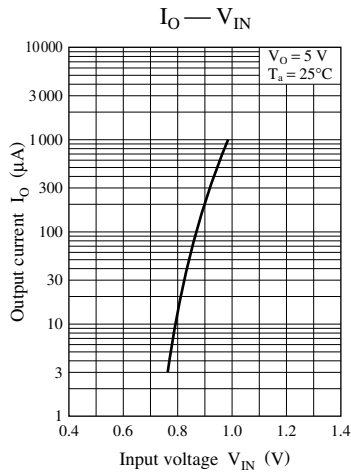
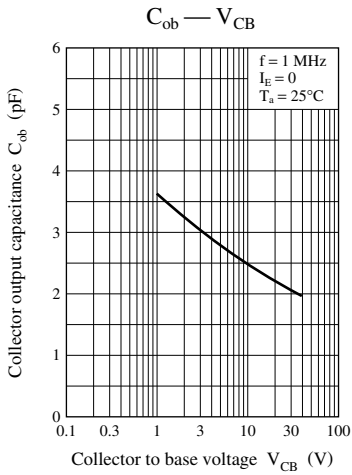


Characteristics chart of UNR921EJ

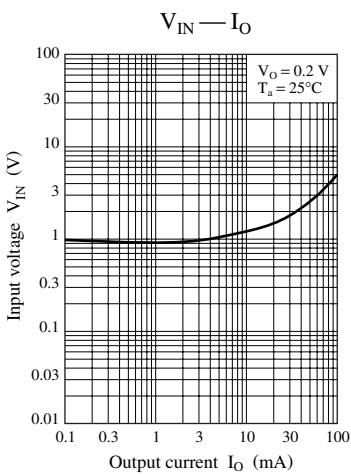
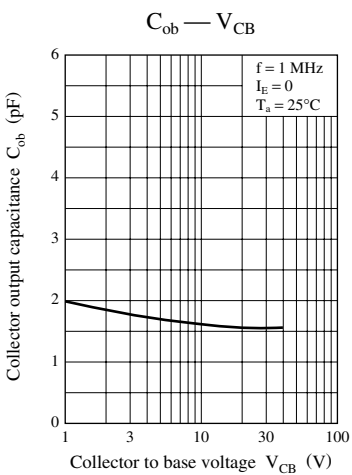
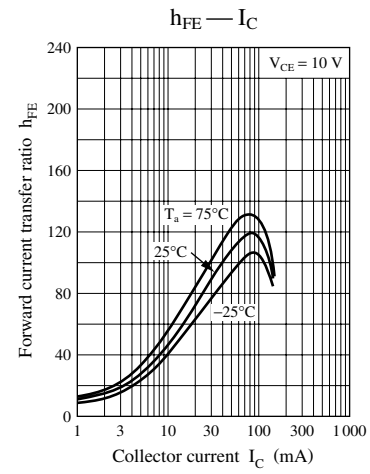
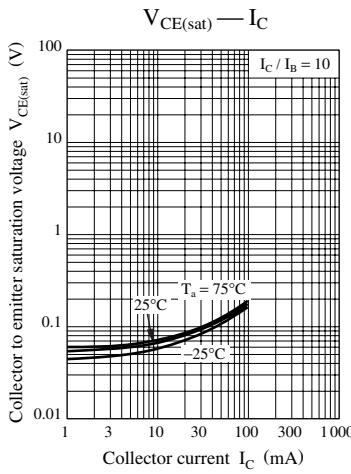
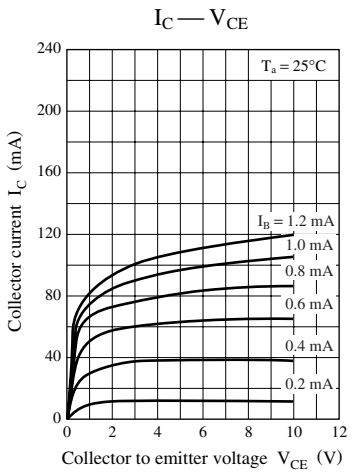


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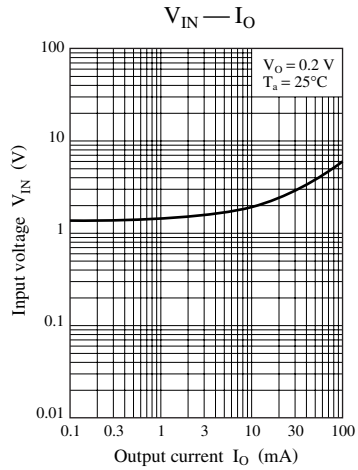
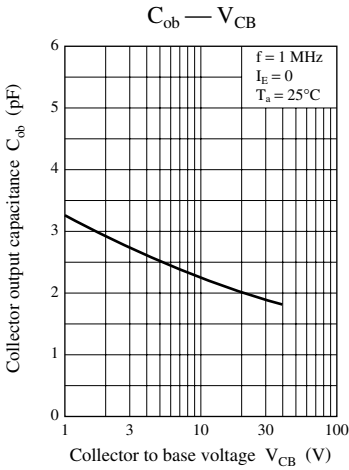
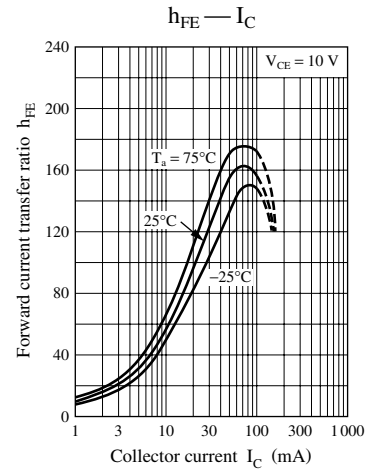
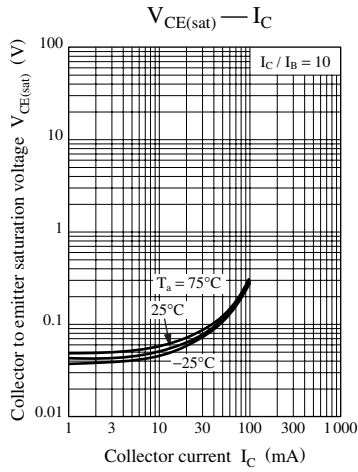
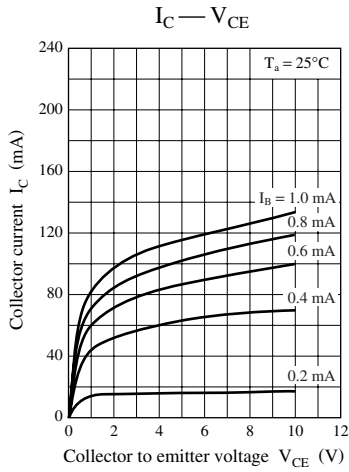




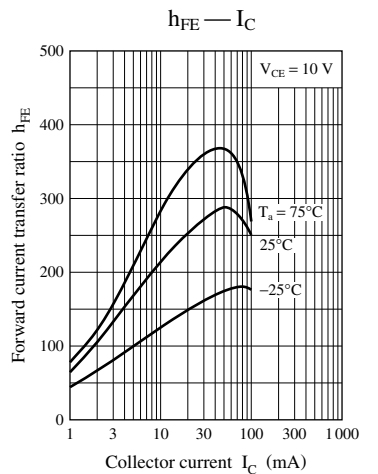
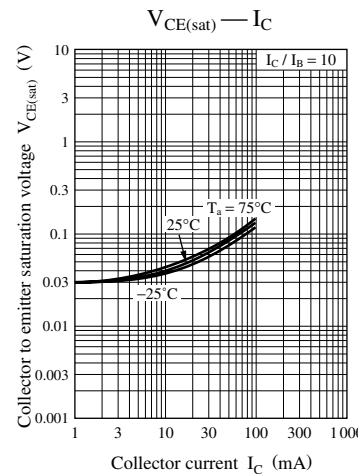
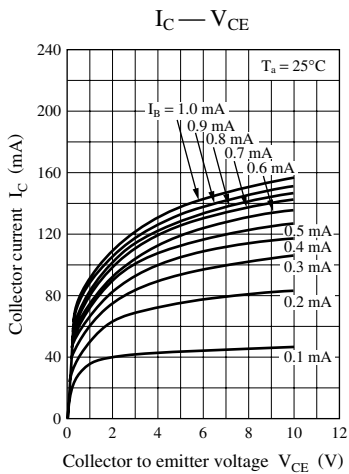
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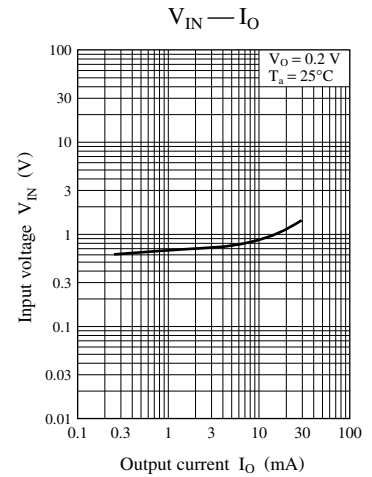
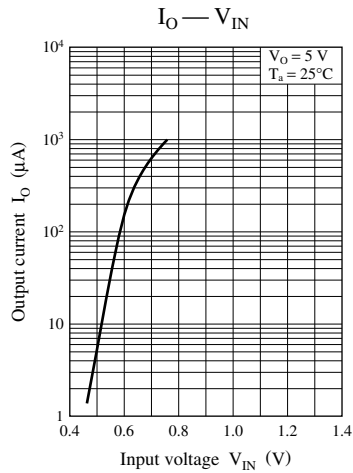
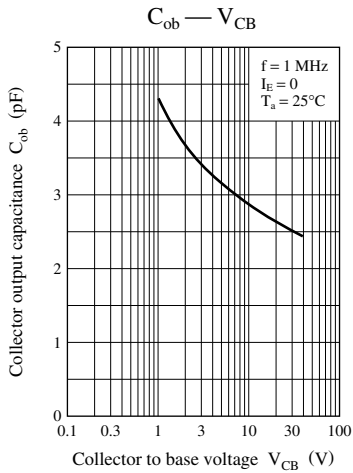


Characteristics chart of UNR921LJ

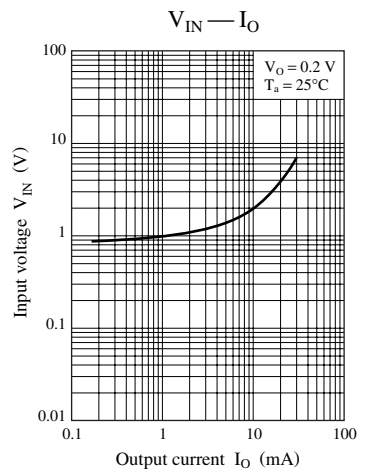
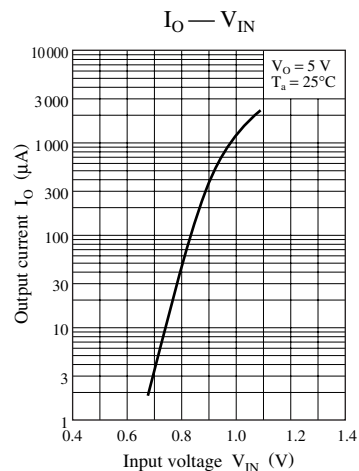
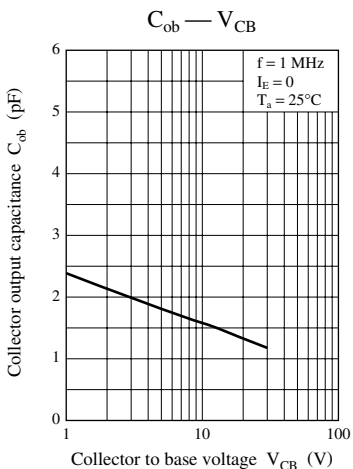
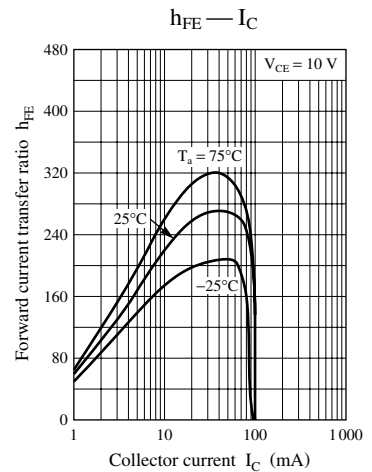
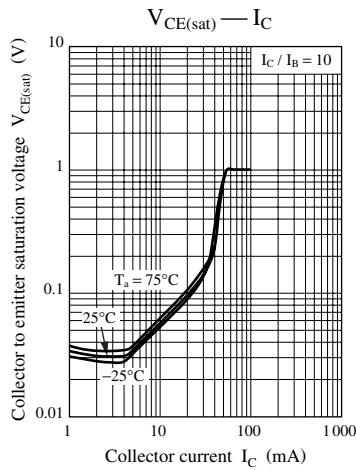
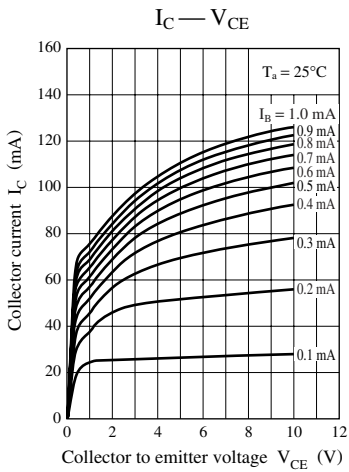


Characteristics chart of UNR921MJ



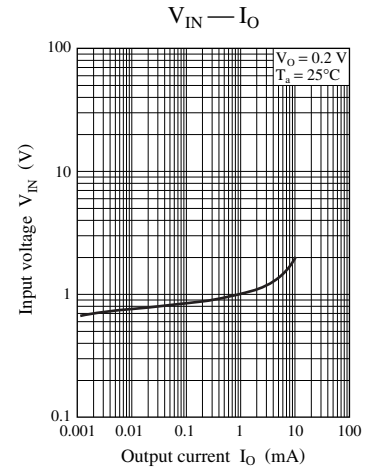
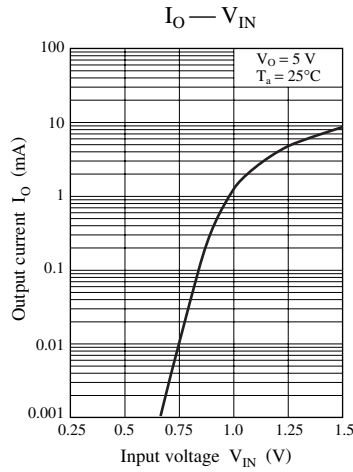
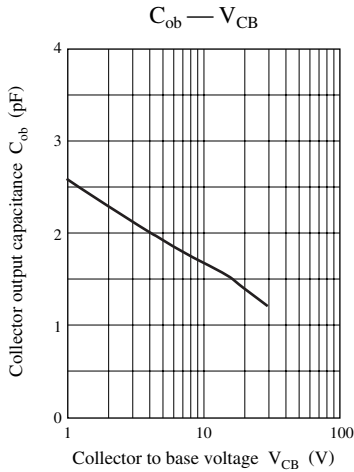
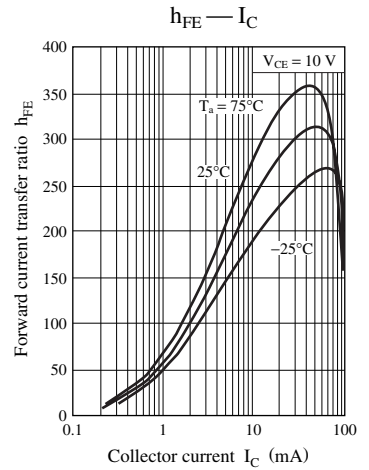
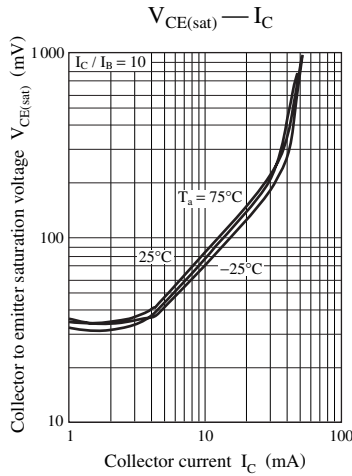
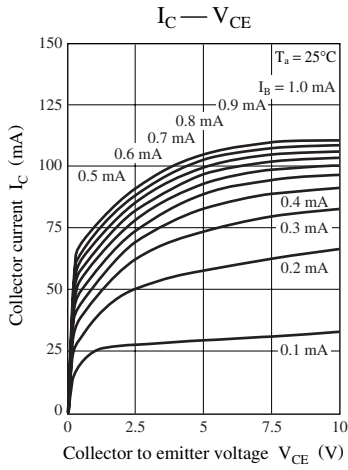


Characteristics chart of UNR921NJ





Characteristics chart of UNR921TJ



Characteristics chart of UNR921VJ

