

# UNR921xJ Series (UN921xJ Series)

Silicon NPN epitaxial planar type

For digital circuits

### ■ Features

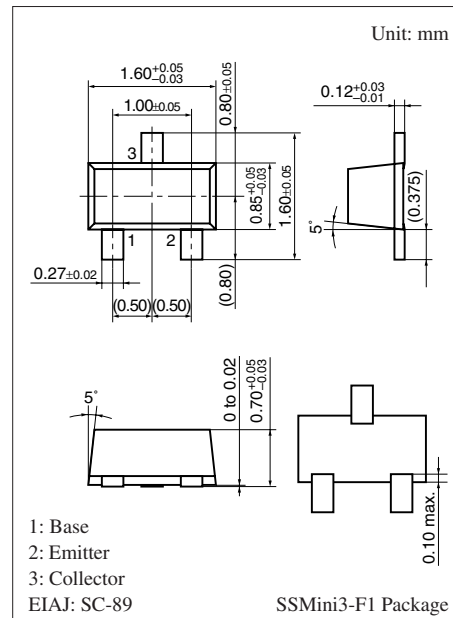
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- SS-Mini type package, allowing automatic insertion through tape packing.

### ■ Resistance by Part Number

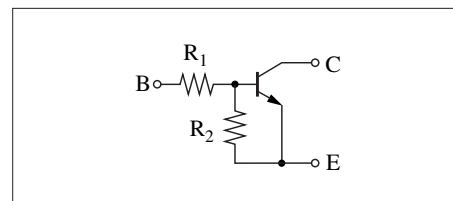
	Marking	Symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR9210J (UN9210J)	8L		47 kΩ	—
• UNR9211J (UN9211J)	8A		10 kΩ	10 kΩ
• UNR9212J (UN9212J)	8B		22 kΩ	22 kΩ
• UNR9213J (UN9213J)	8C		47 kΩ	47 kΩ
• UNR9214J (UN9214J)	8D		10 kΩ	47 kΩ
• UNR9215J (UN9215J)	8E		10 kΩ	—
• UNR9216J (UN9216J)	8F		4.7 kΩ	—
• 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  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

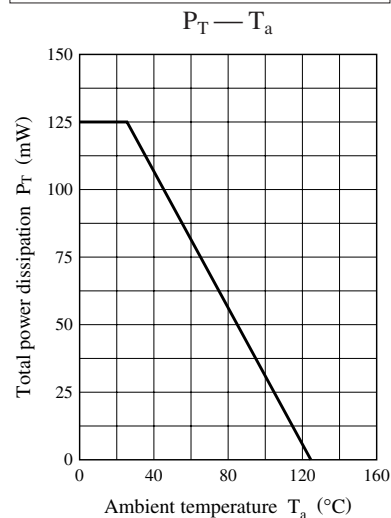
Parameter		Symbol	Conditions	Min	Typ	Max	Unit		
Collector-base voltage (Emitter open)		$V_{CBO}$	$I_C = 10 \mu\text{A}, I_E = 0$	50			V		
Collector-emitter voltage (Base open)		$V_{CEO}$	$I_C = 2 \text{ mA}, I_B = 0$	50			V		
Collector-base cut-off current (Emitter open)		$I_{CBO}$	$V_{CB} = 50 \text{ V}, I_E = 0$			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)  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

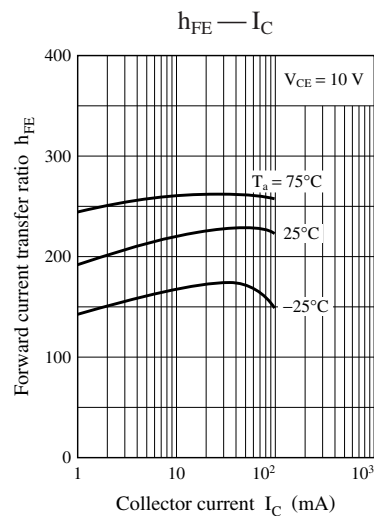
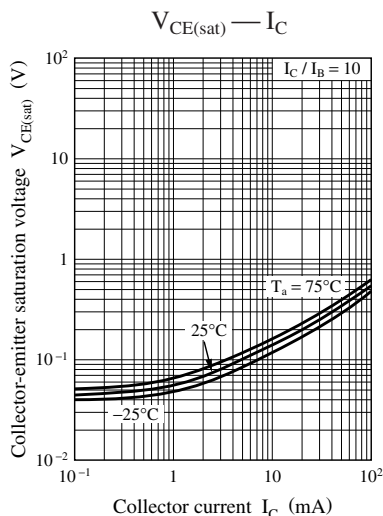
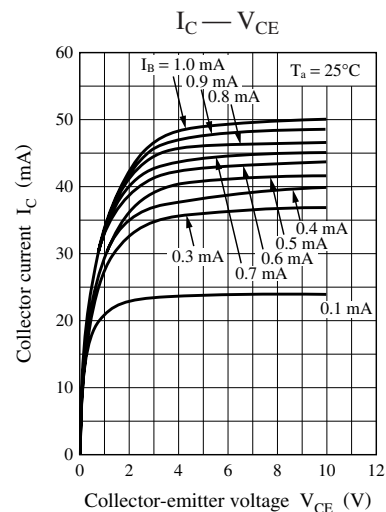
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Emitter-base resistance	UNR921CJ	$R_2$		-30%	47	+30%	$k\Omega$
Resistance ratio	UNR921MJ	$R_1/R_2$			0.047		—
	UNR921NJ				0.1		
	UNR9218J/9219J			0.08	0.10	0.12	
	UNR9214J			0.17	0.21	0.25	
	UNR921TJ				0.47		
	UNR921FJ			0.37	0.47	0.57	
	UNR921AJ/921VJ				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	

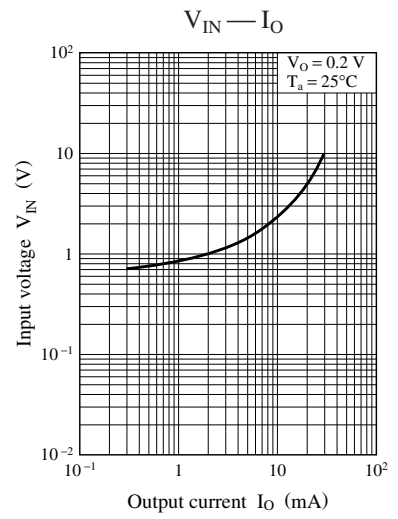
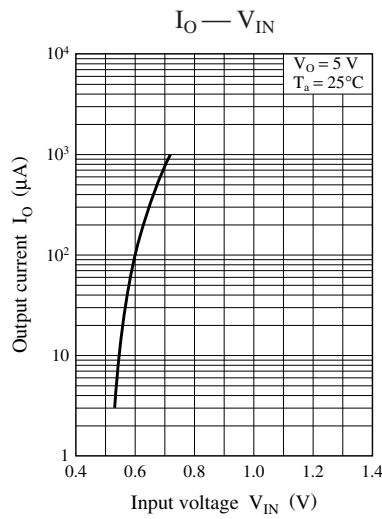
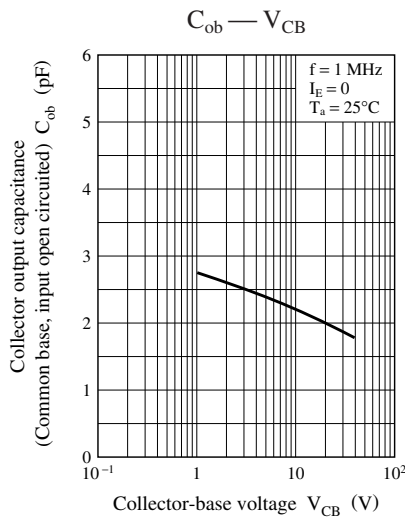
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

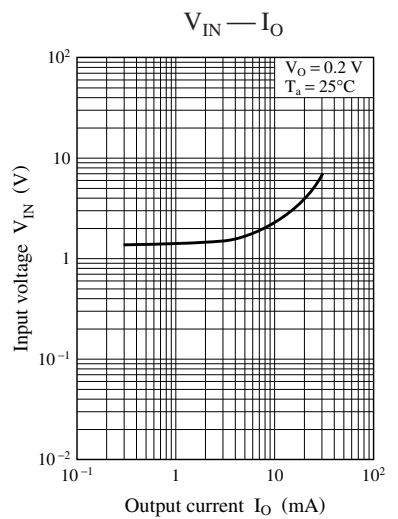
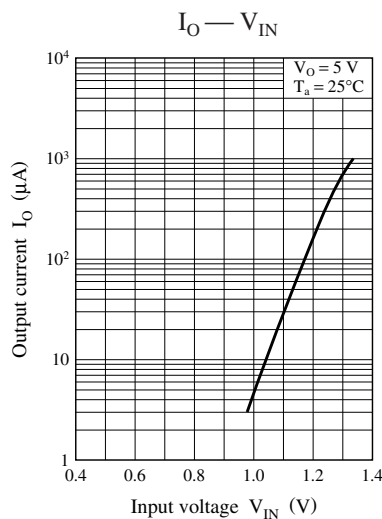
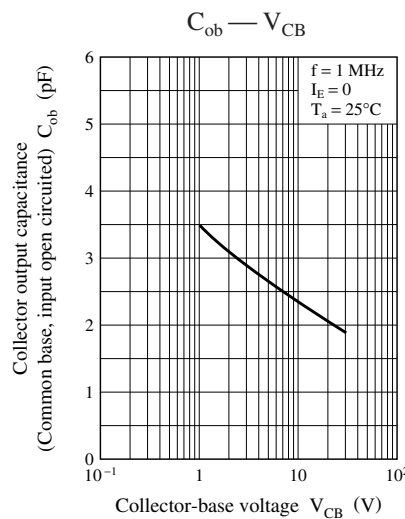
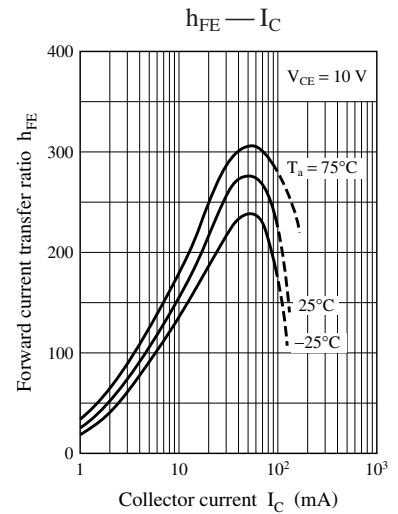
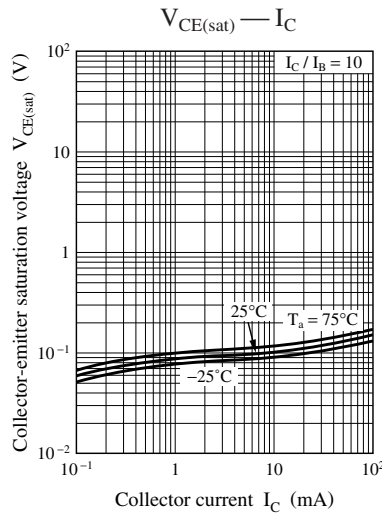
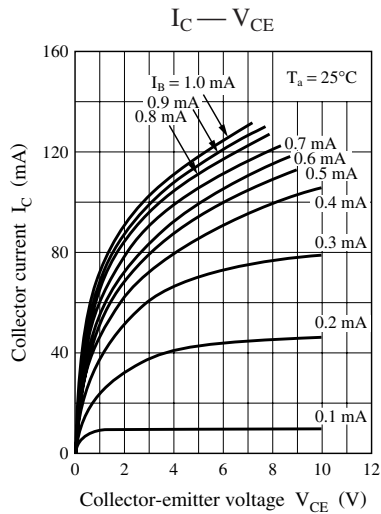


Characteristics charts of UNR9210J

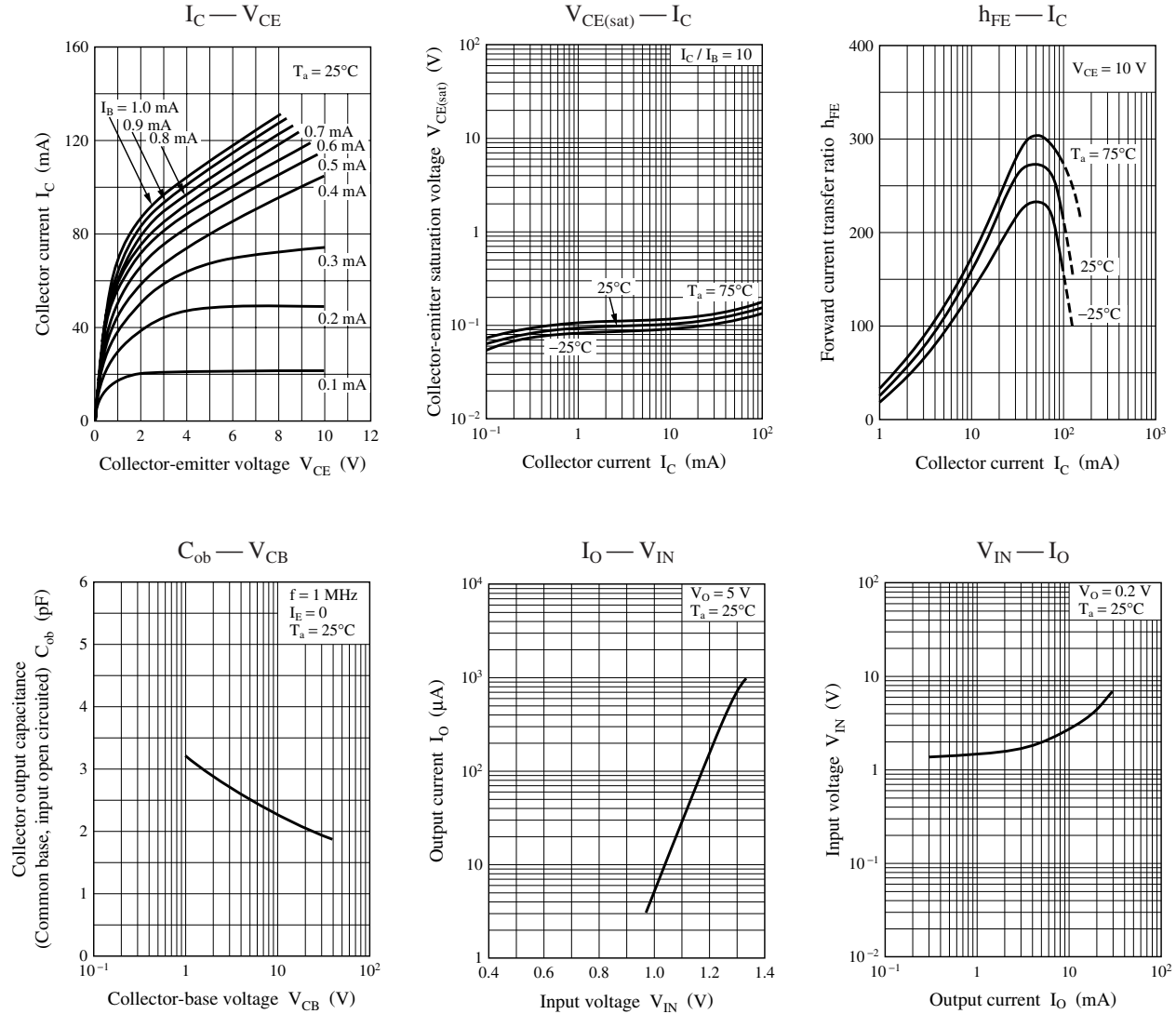




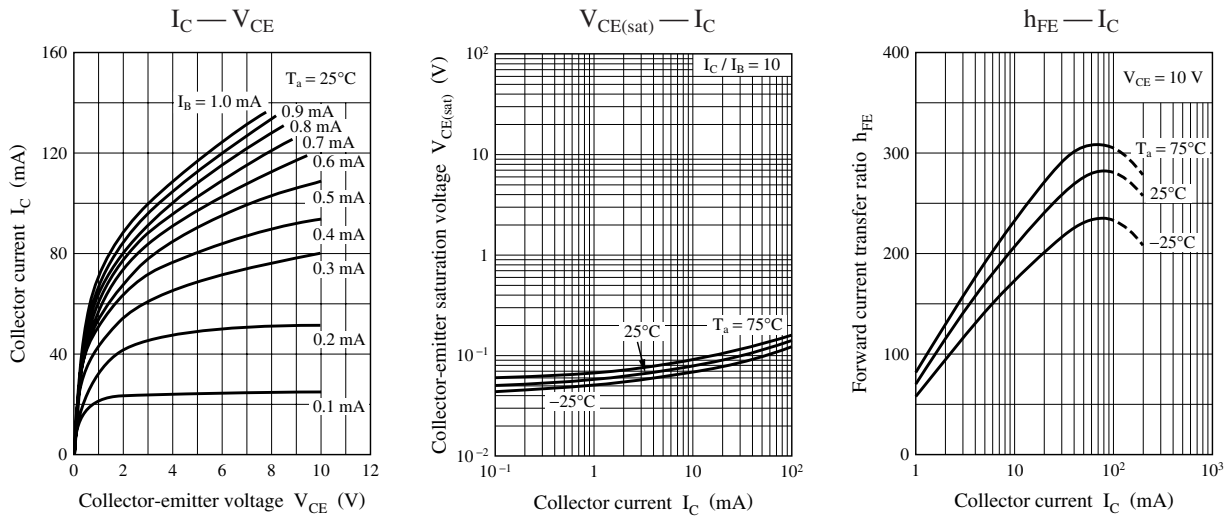
Characteristics charts of UNR9211J

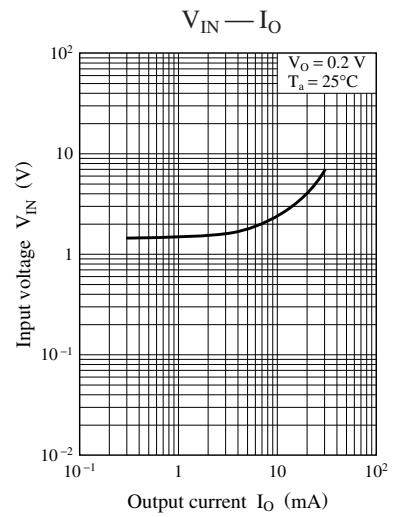
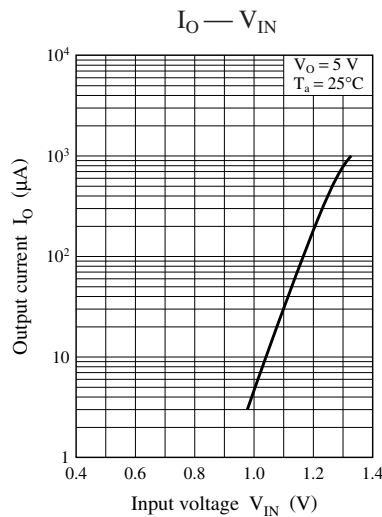
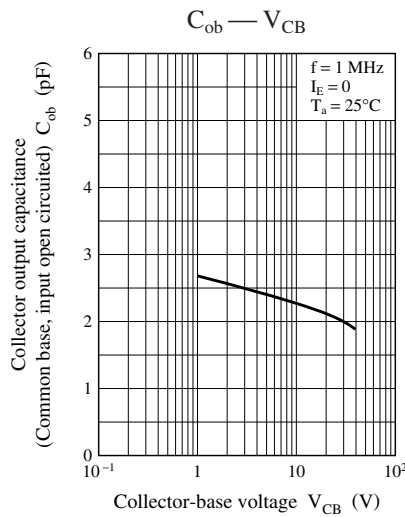


Characteristics charts of UNR9212J

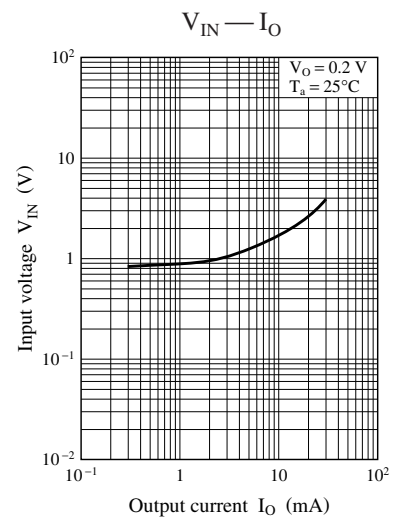
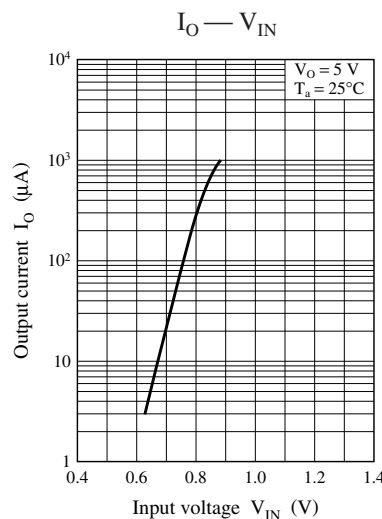
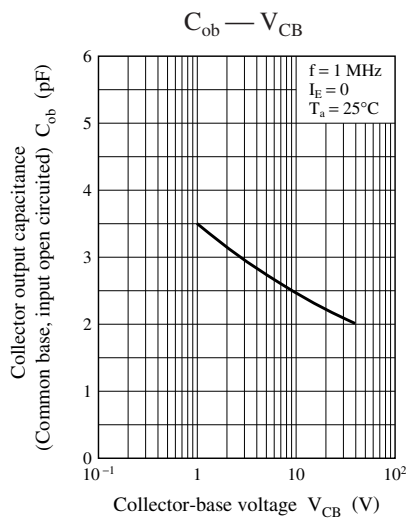
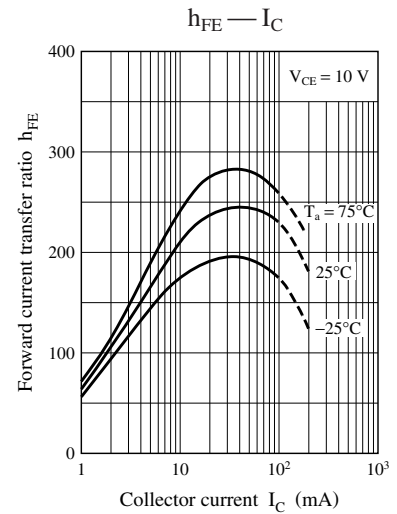
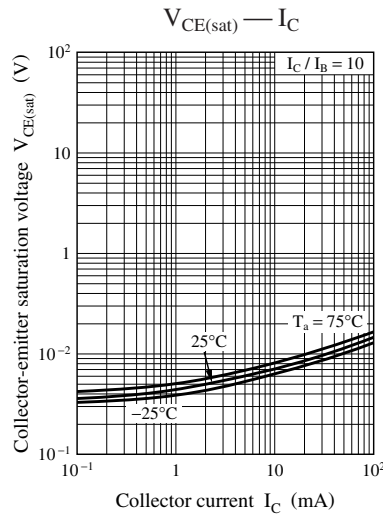
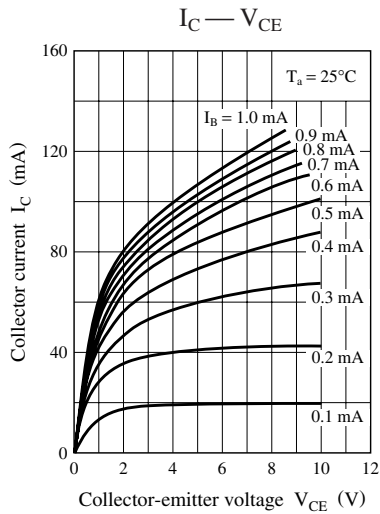


Characteristics charts of UNR9213J

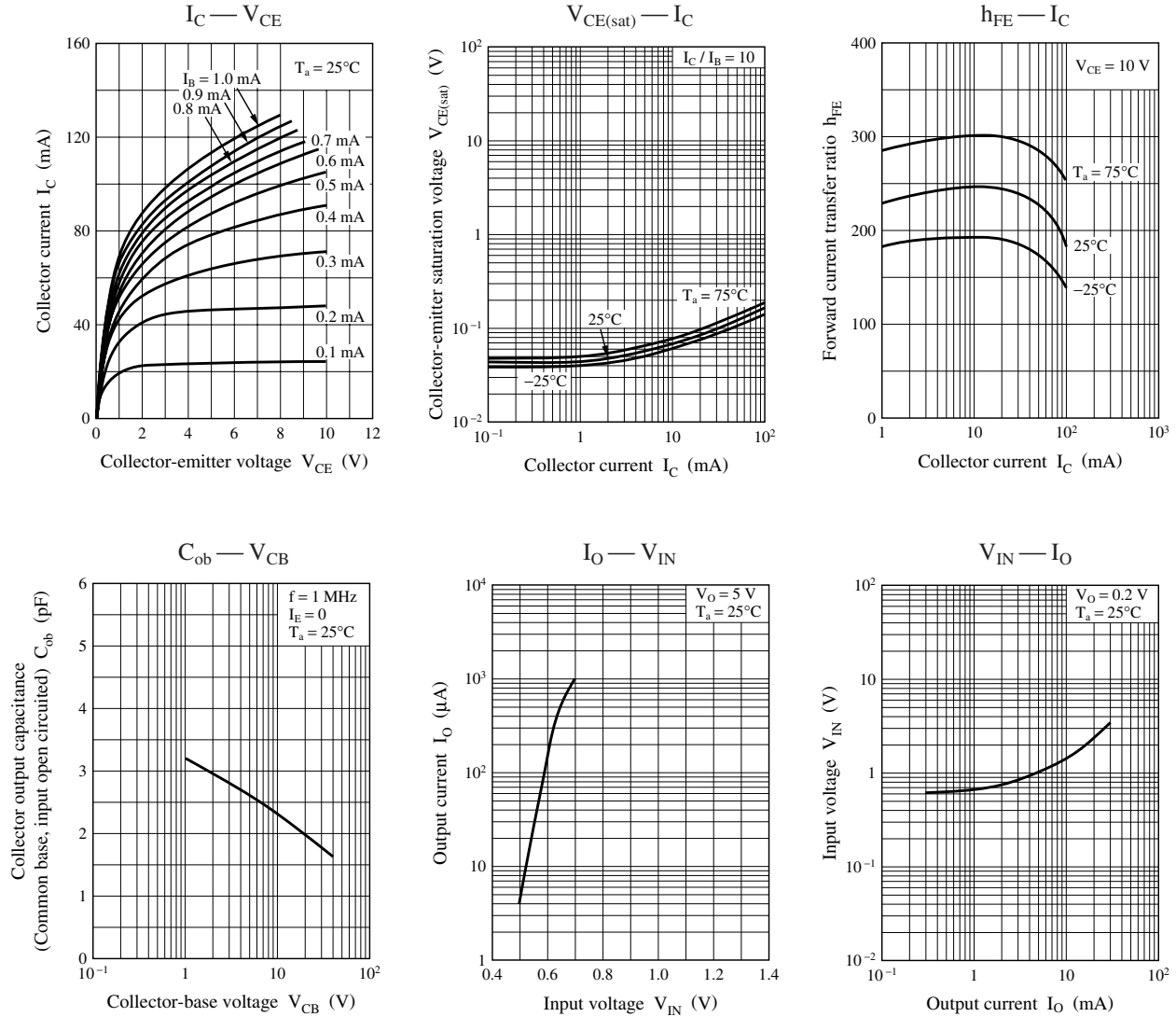




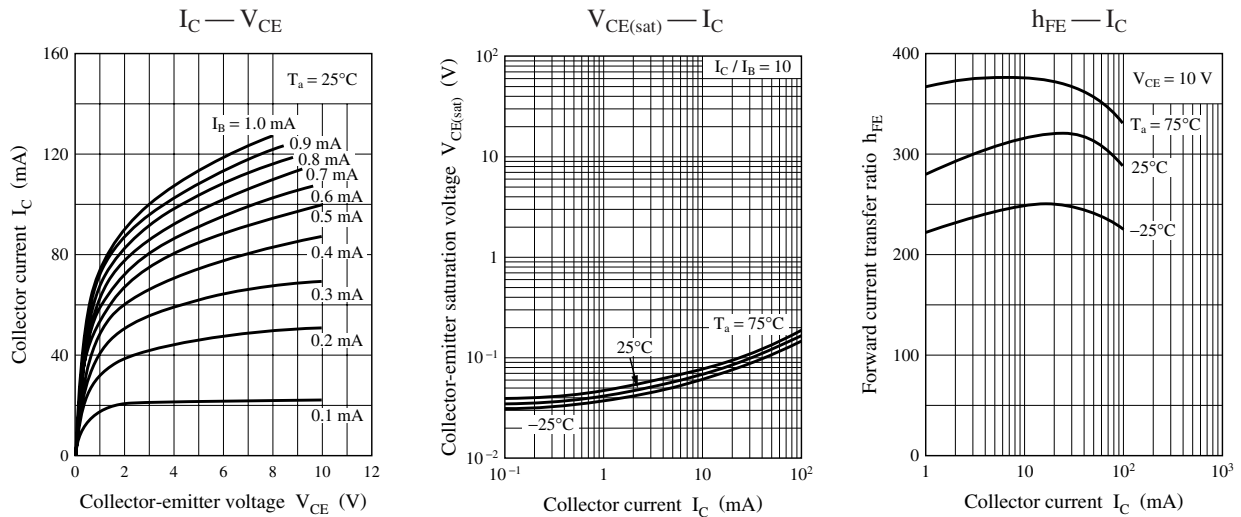
Characteristics charts of UNR9214J

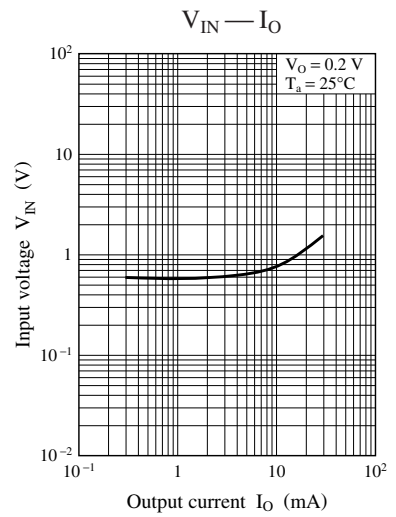
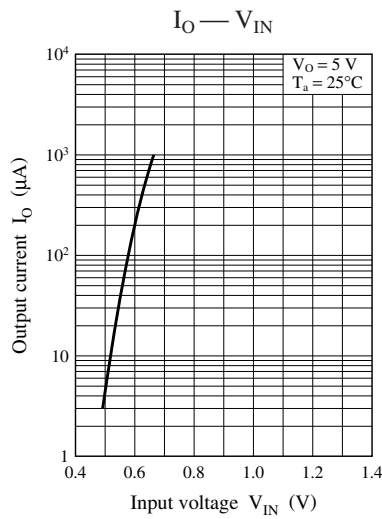
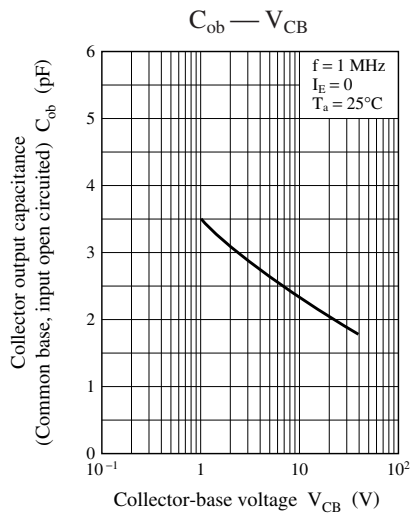


Characteristics charts of UNR9215J

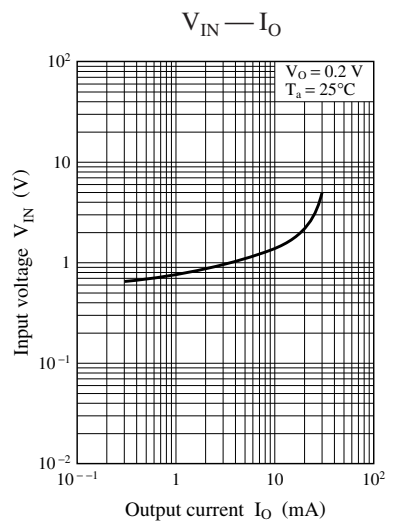
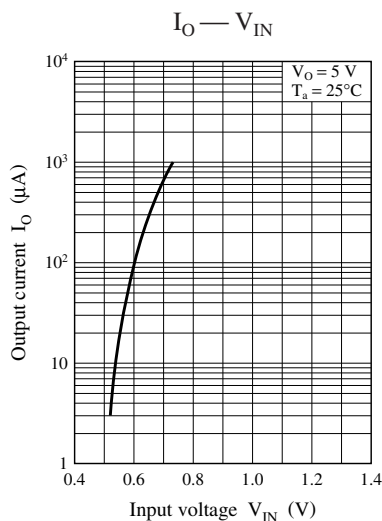
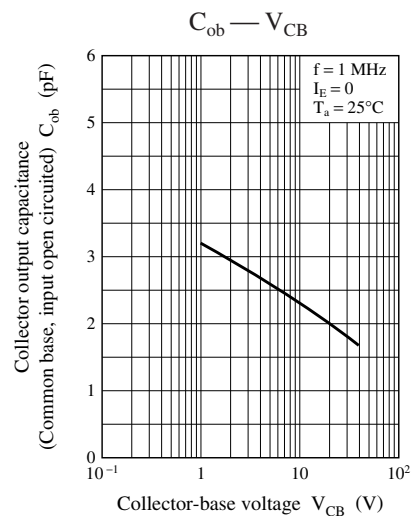
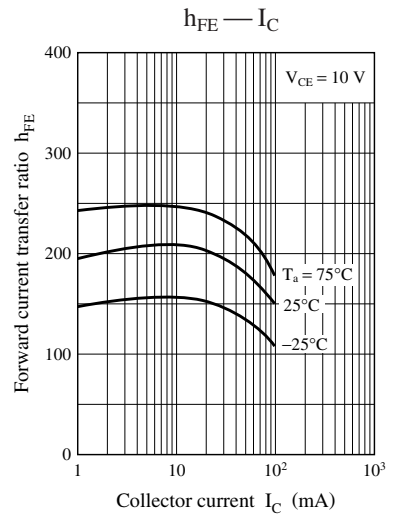
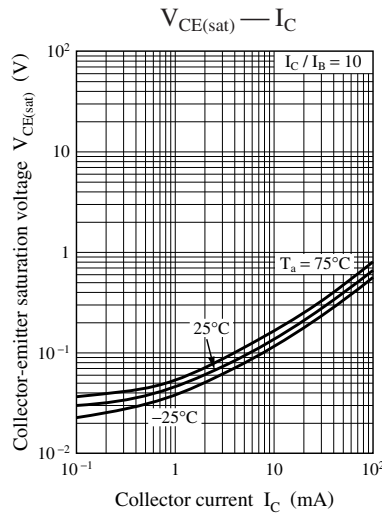
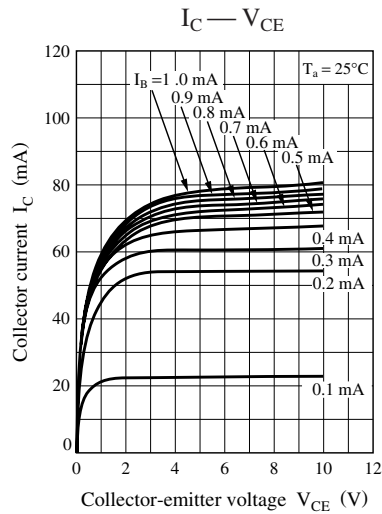


Characteristics charts of UNR9216J



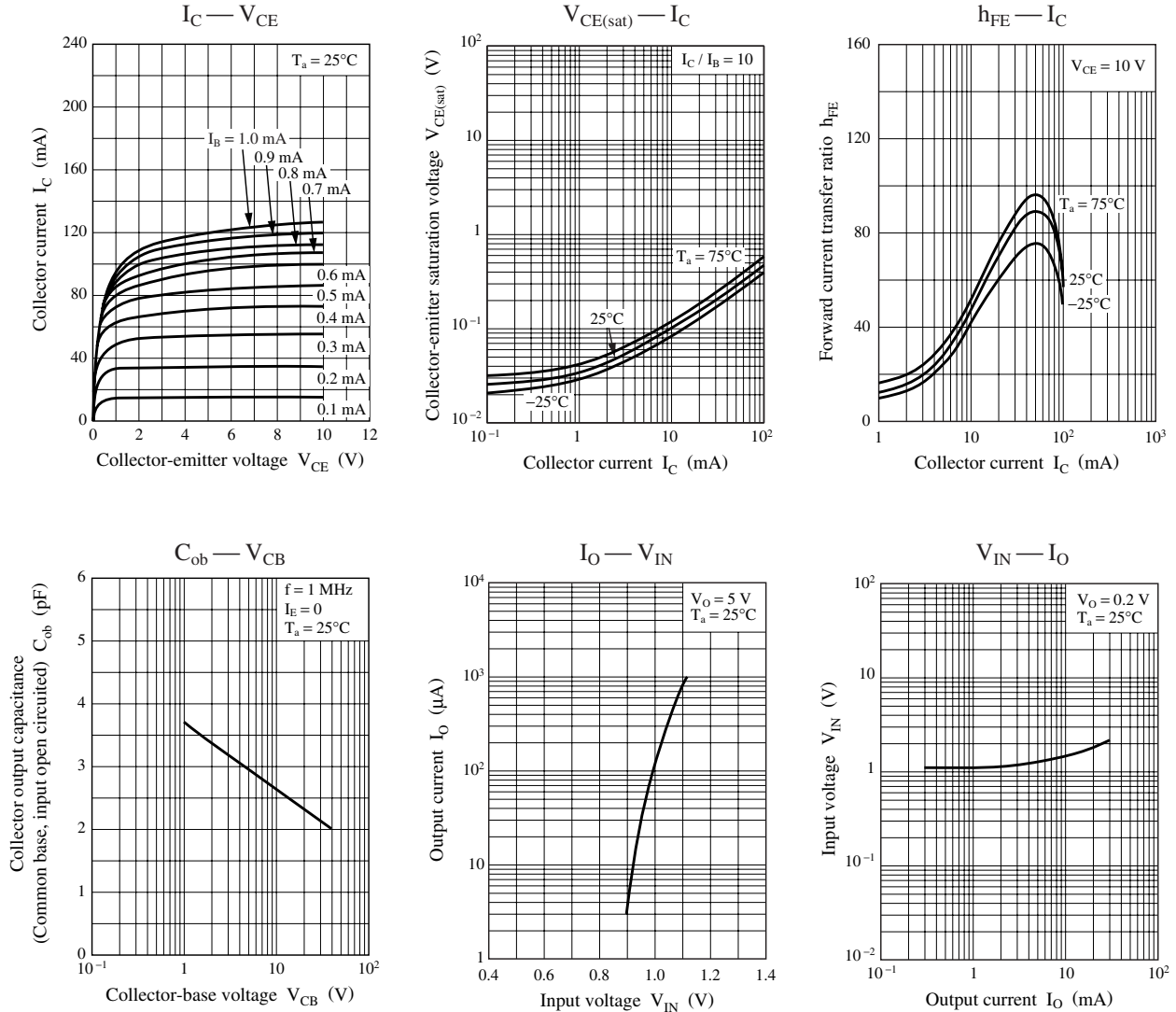


Characteristics charts of UNR9217J

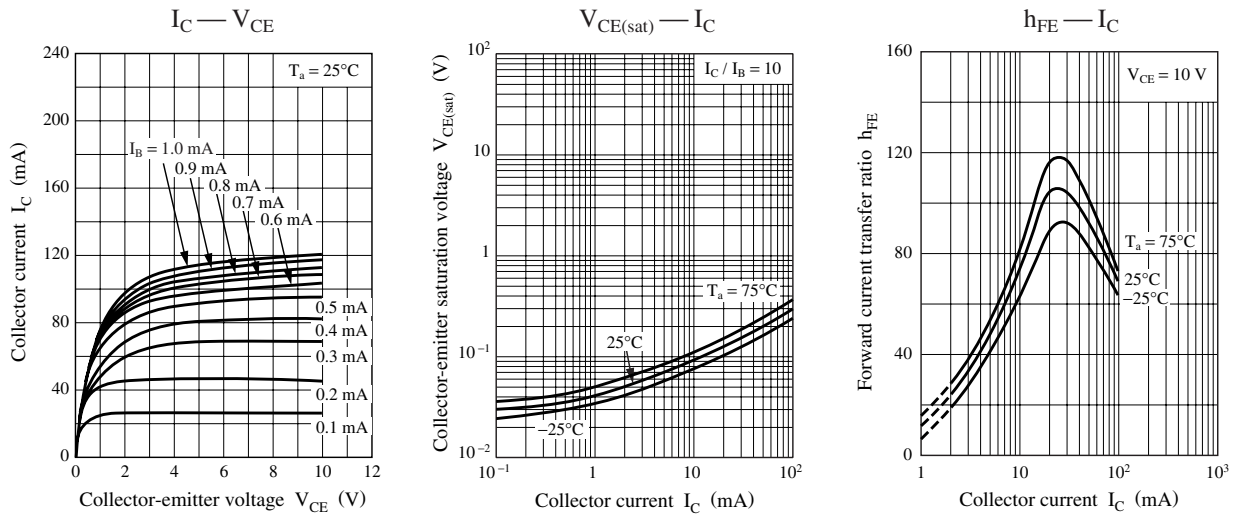


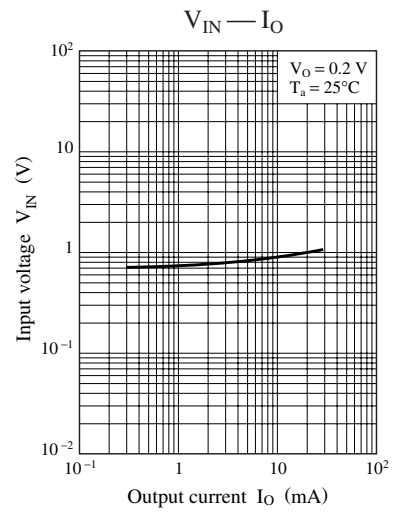
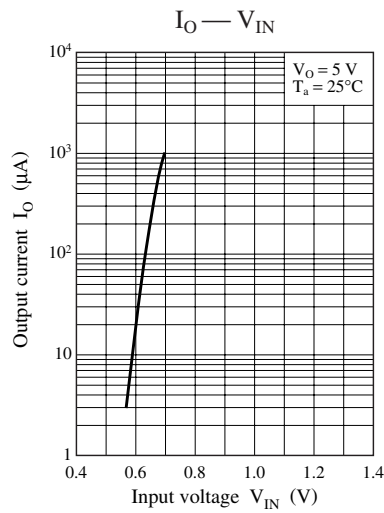
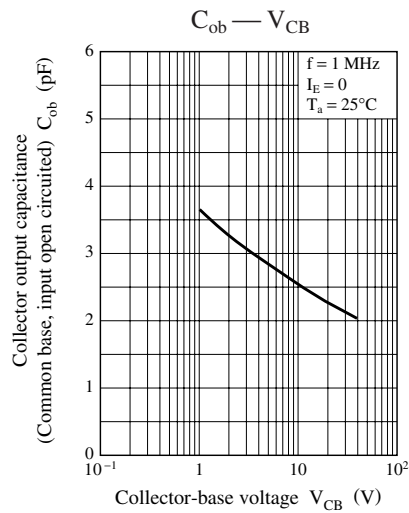


Characteristics charts of UNR9218J

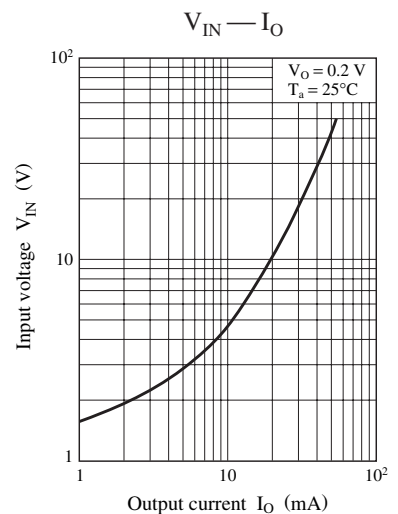
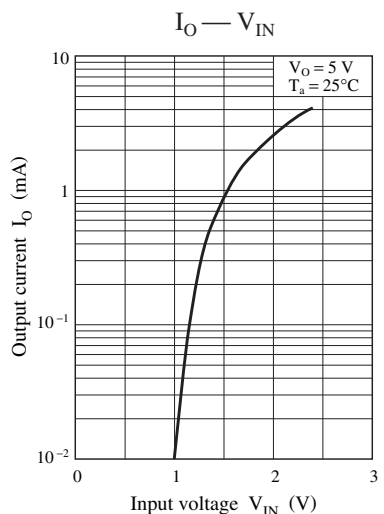
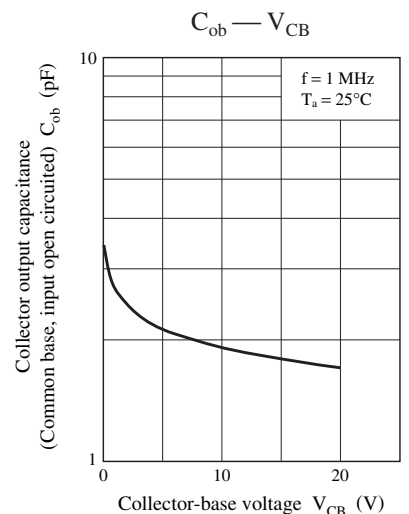
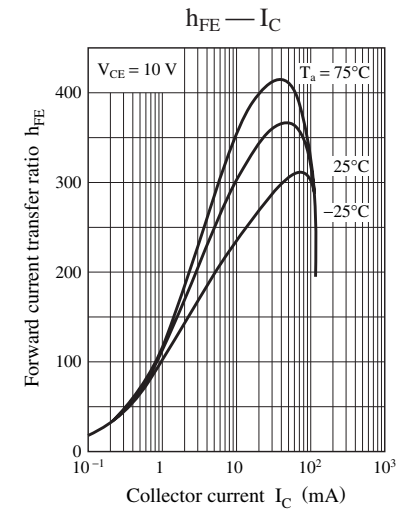
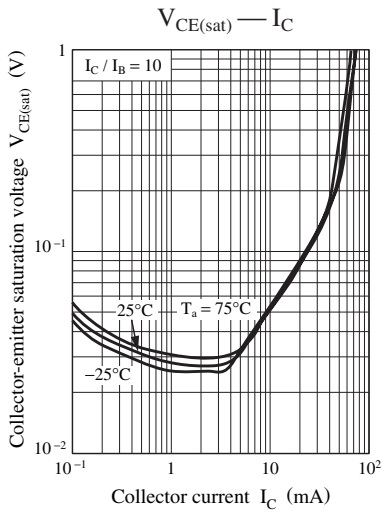
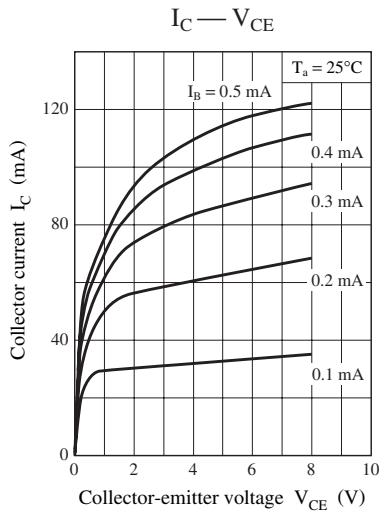


Characteristics charts of UNR9219J

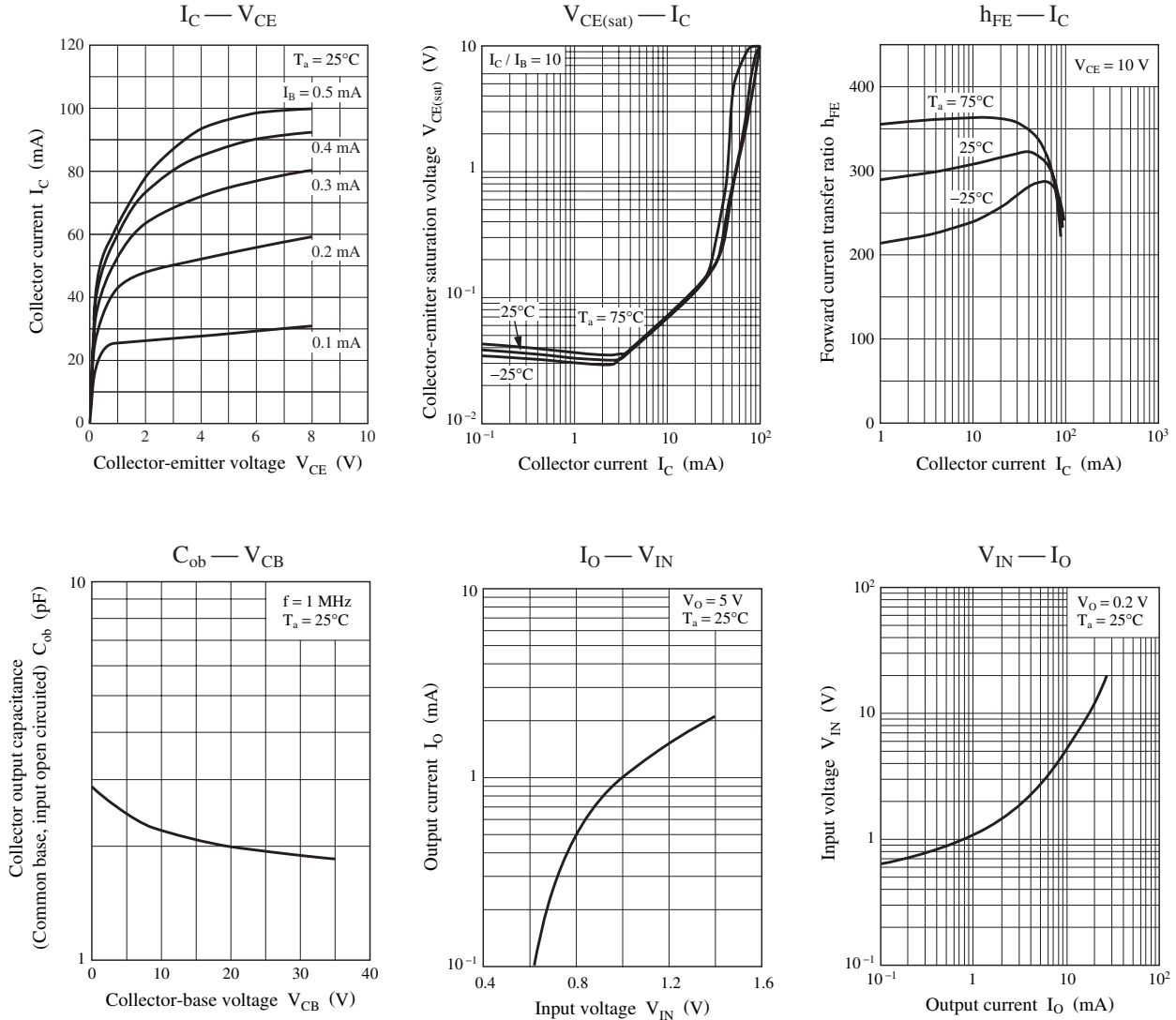




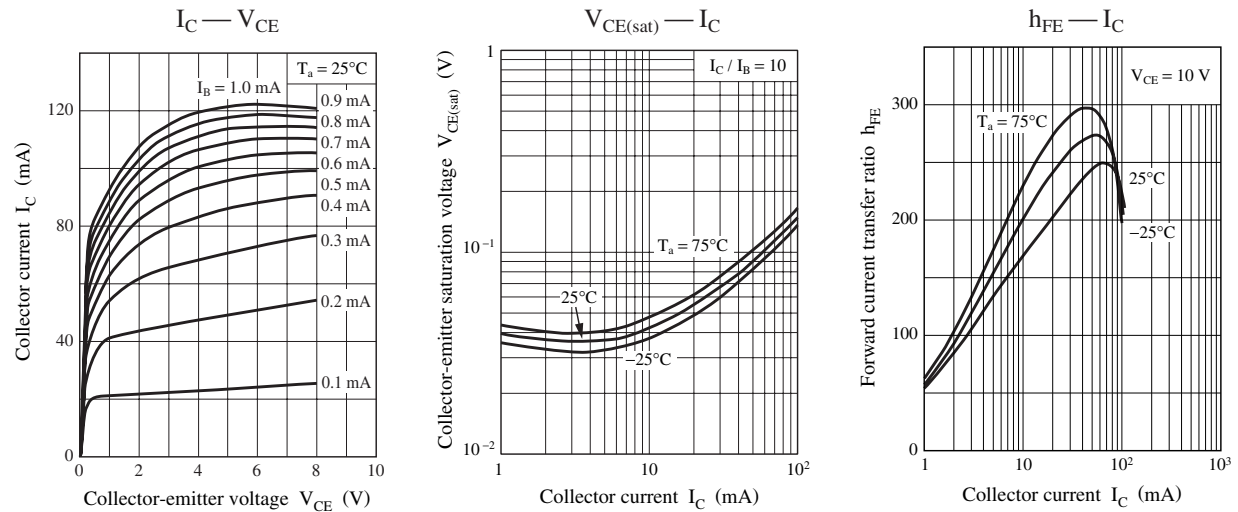
Characteristics charts of UNR921AJ

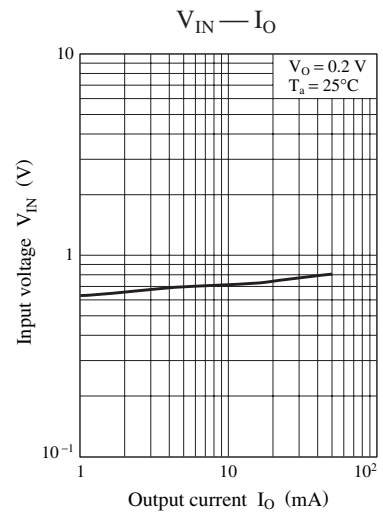
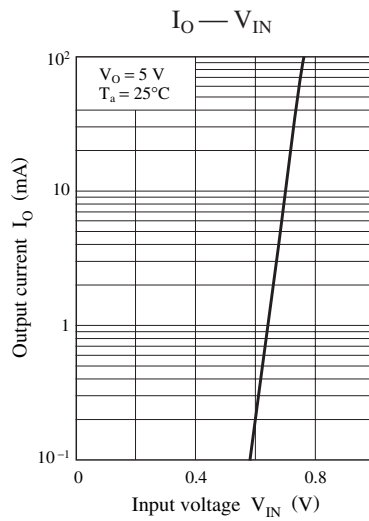
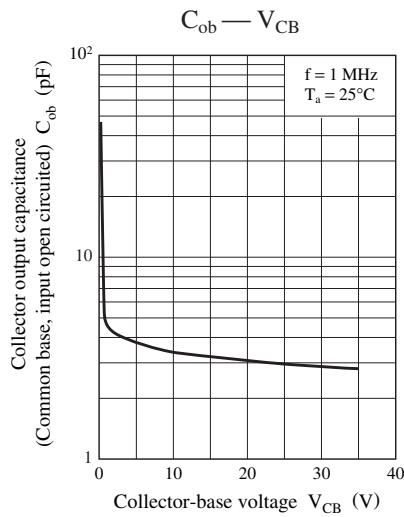


Characteristics charts of UNR921BJ

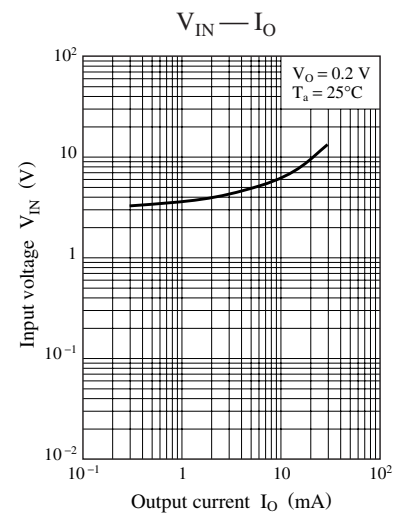
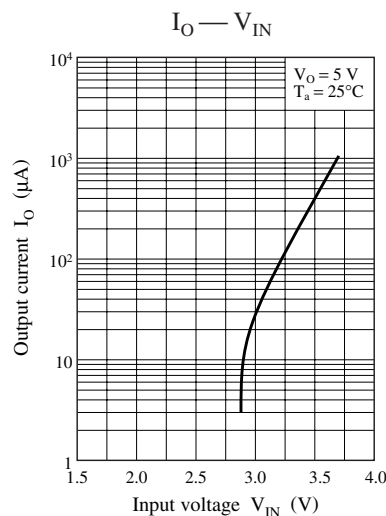
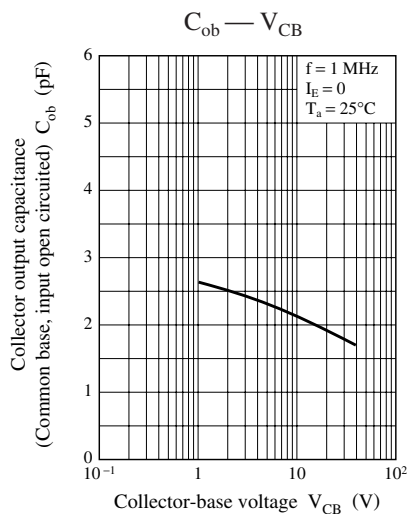
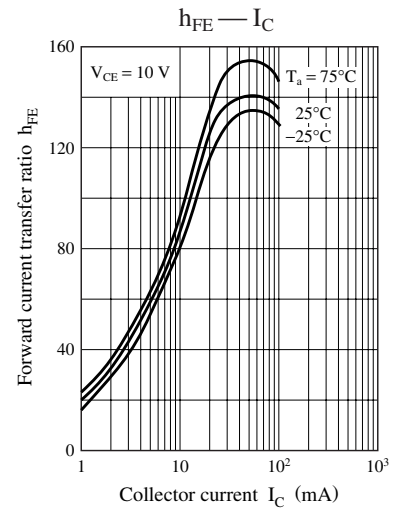
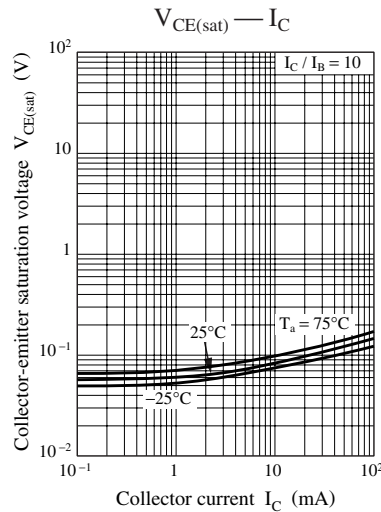
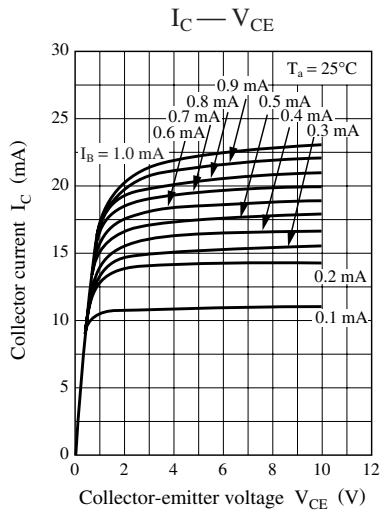


Characteristics charts of UNR921CJ

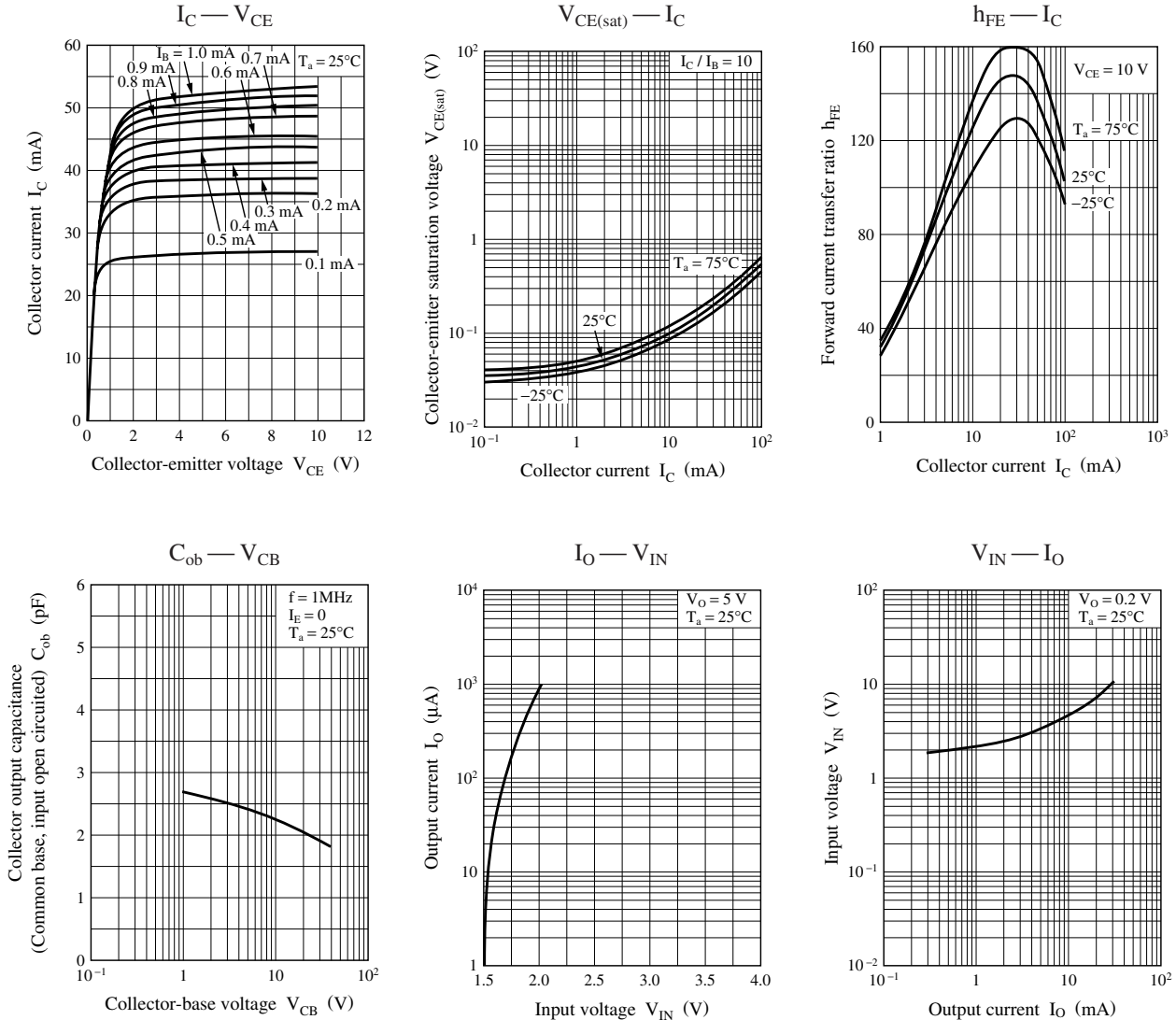




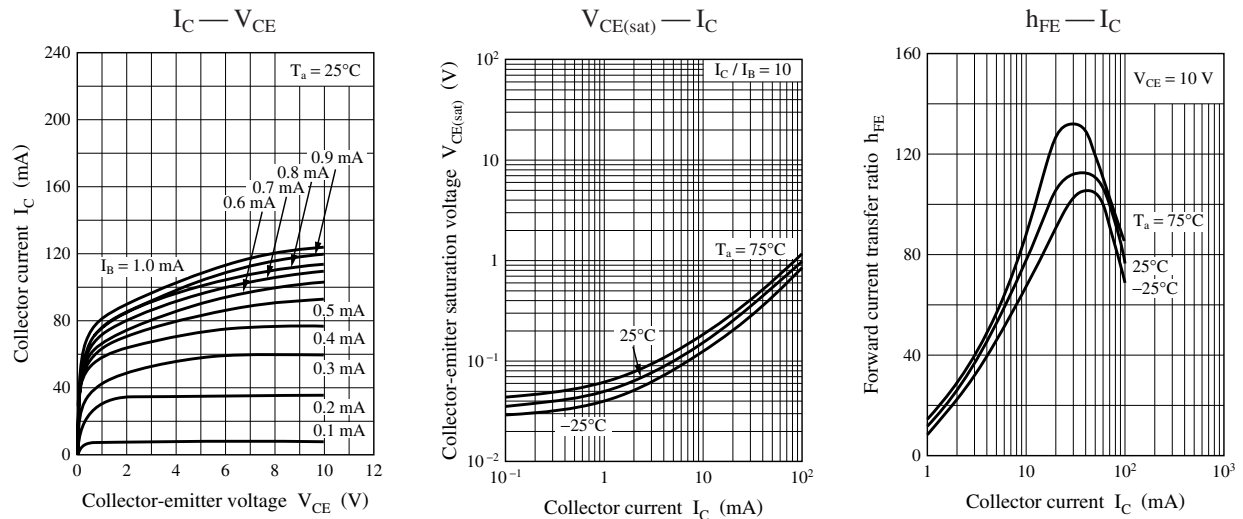
Characteristics charts of UNR921DJ

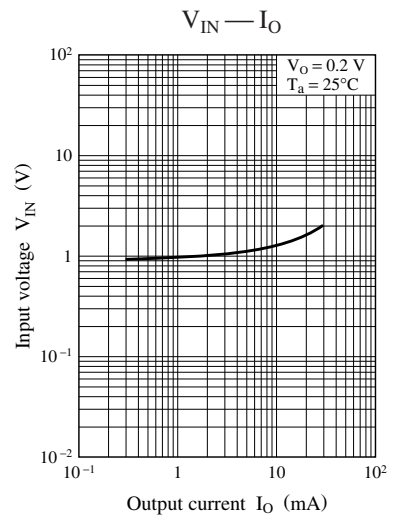
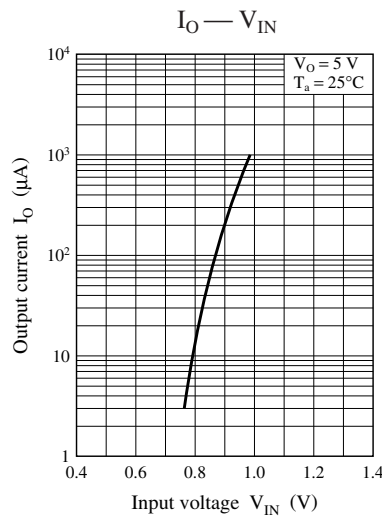
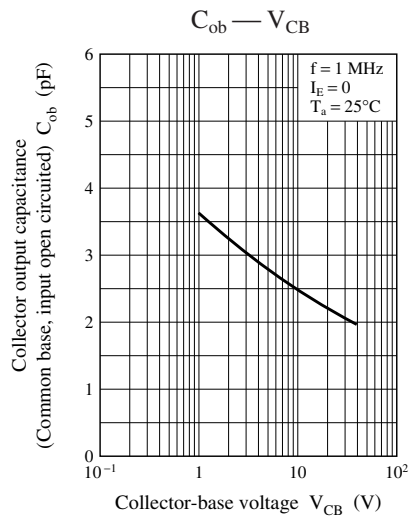


Characteristics charts of UNR921EJ

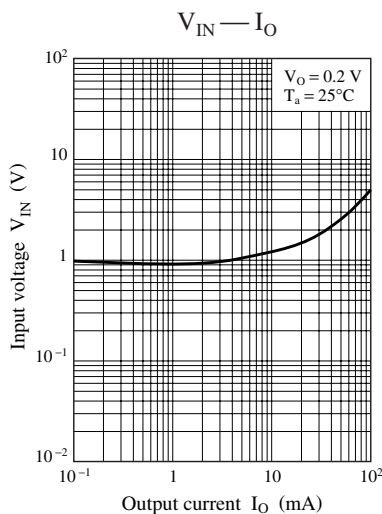
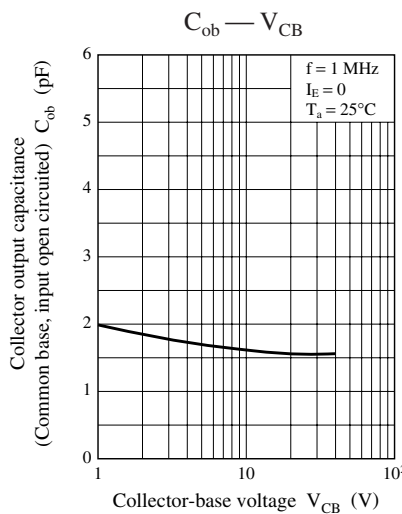
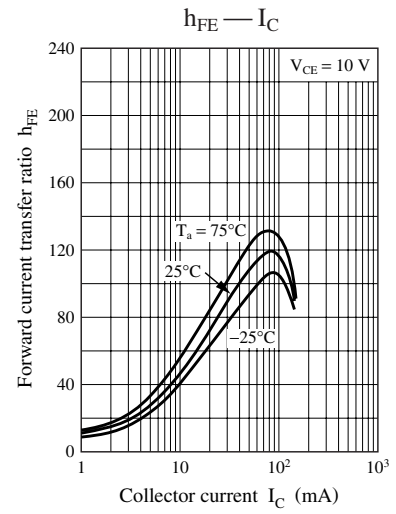
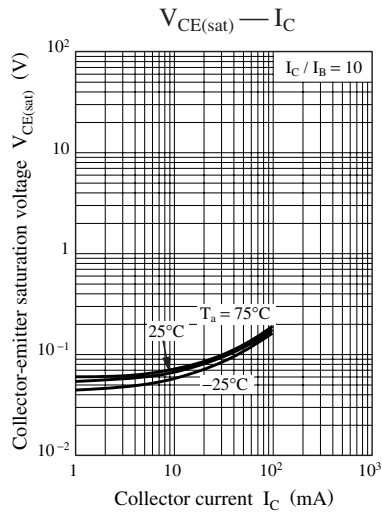
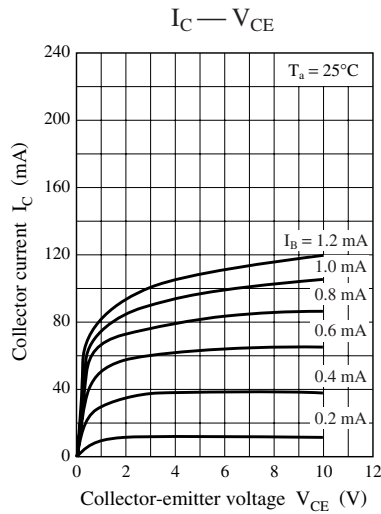


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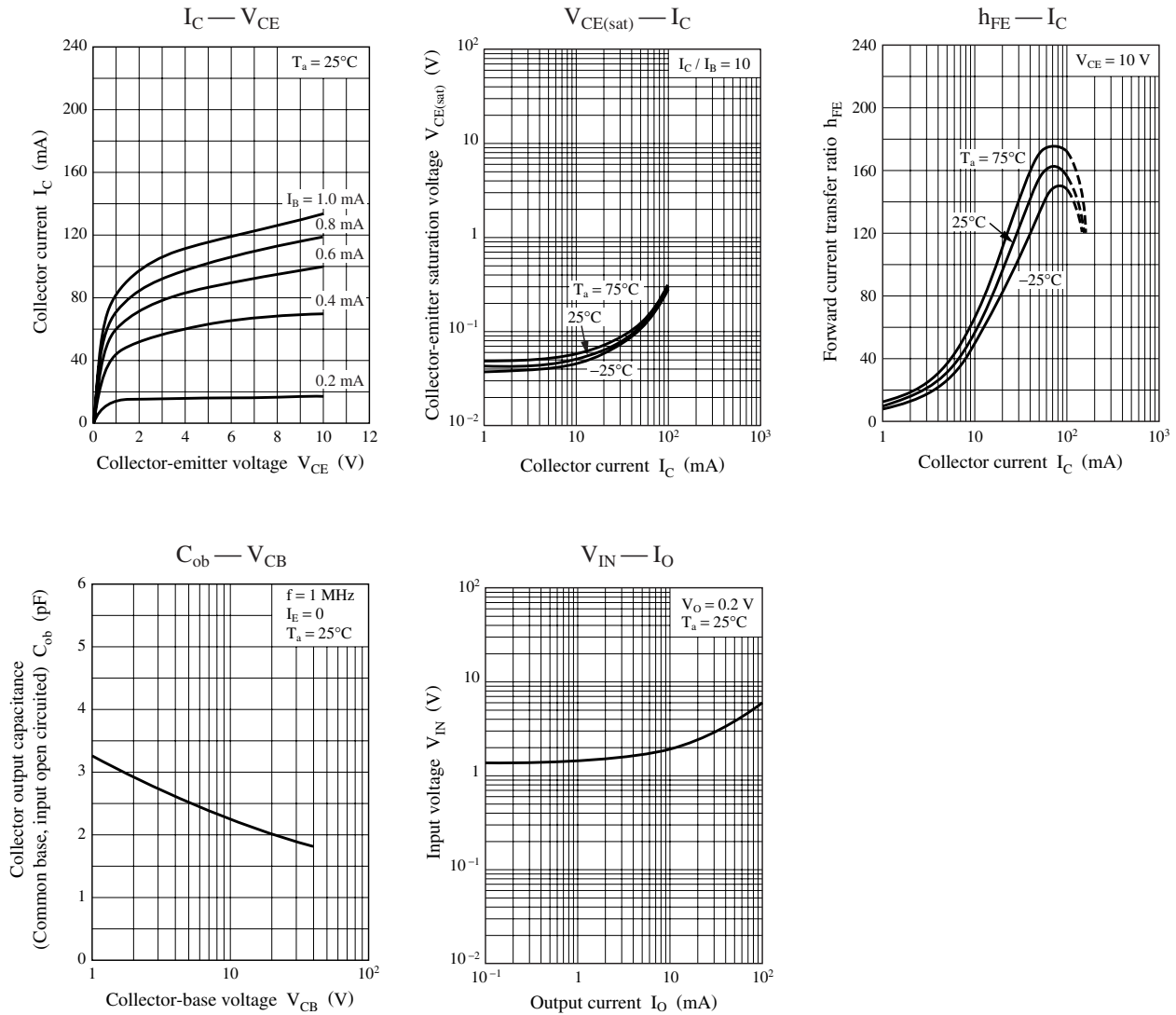




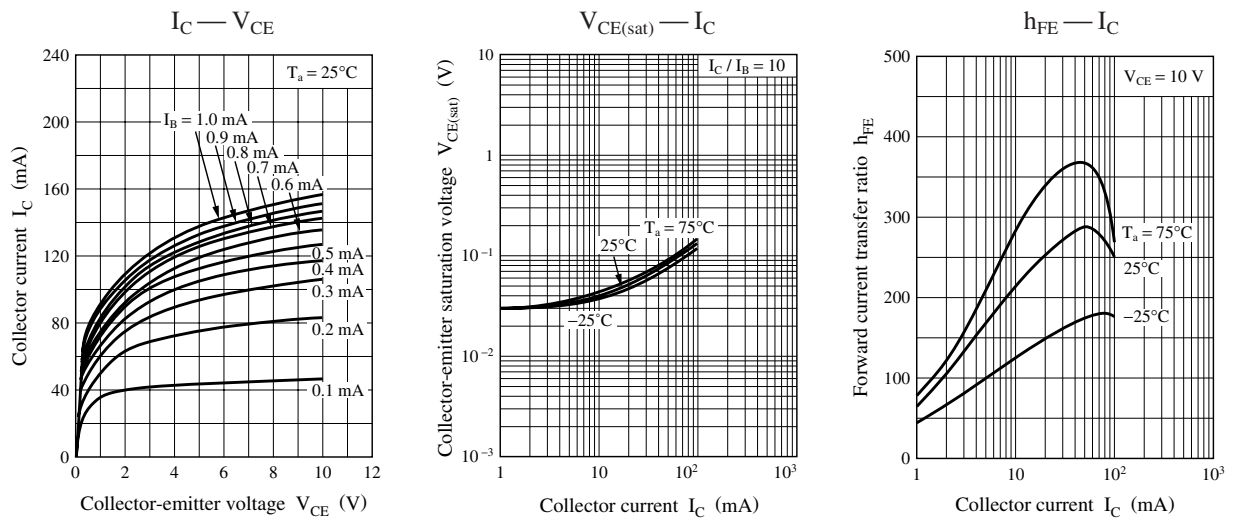
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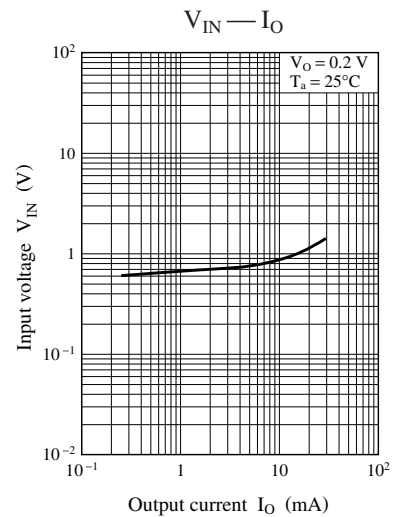
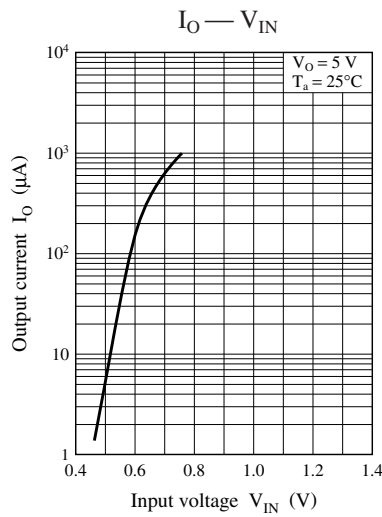
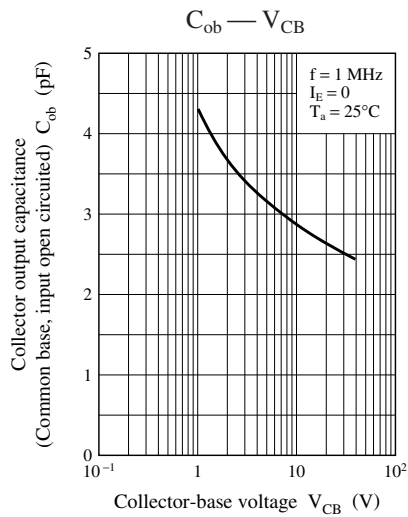


Characteristics charts of UNR921LJ

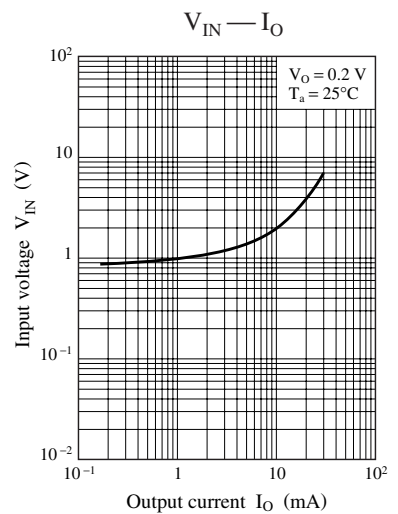
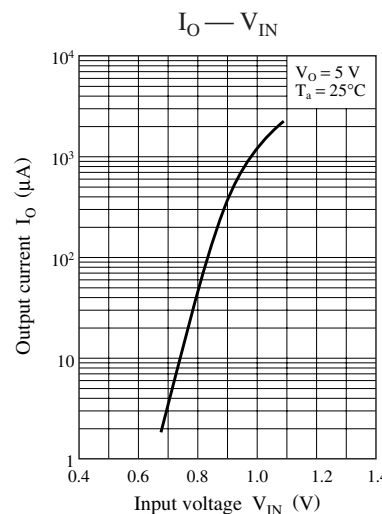
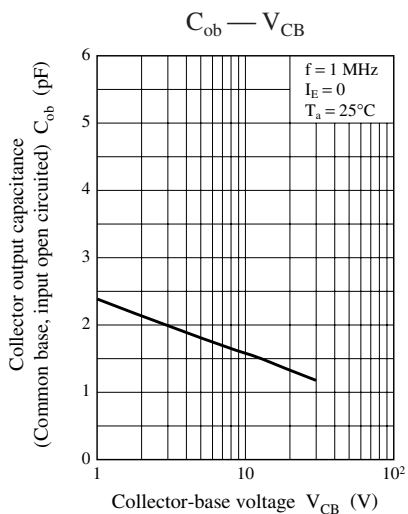
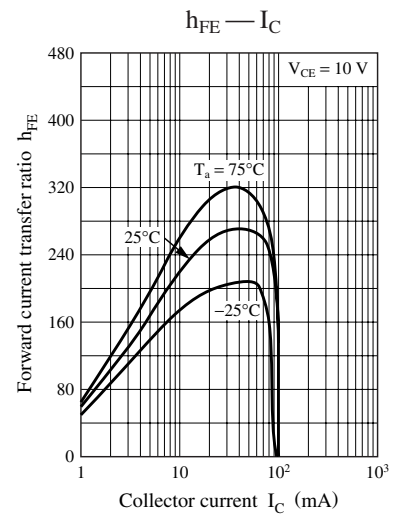
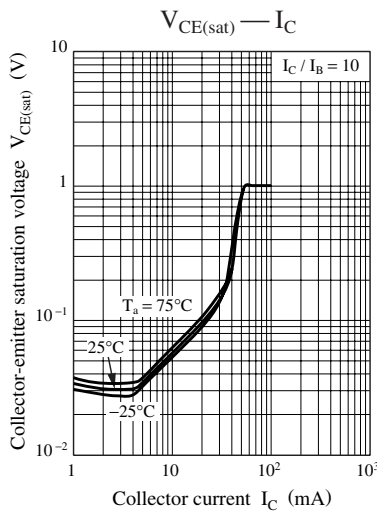
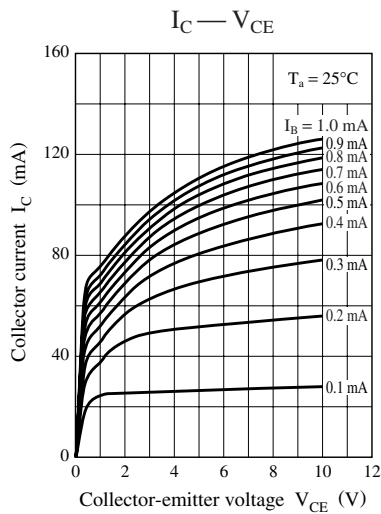


Characteristics charts of UNR921MJ



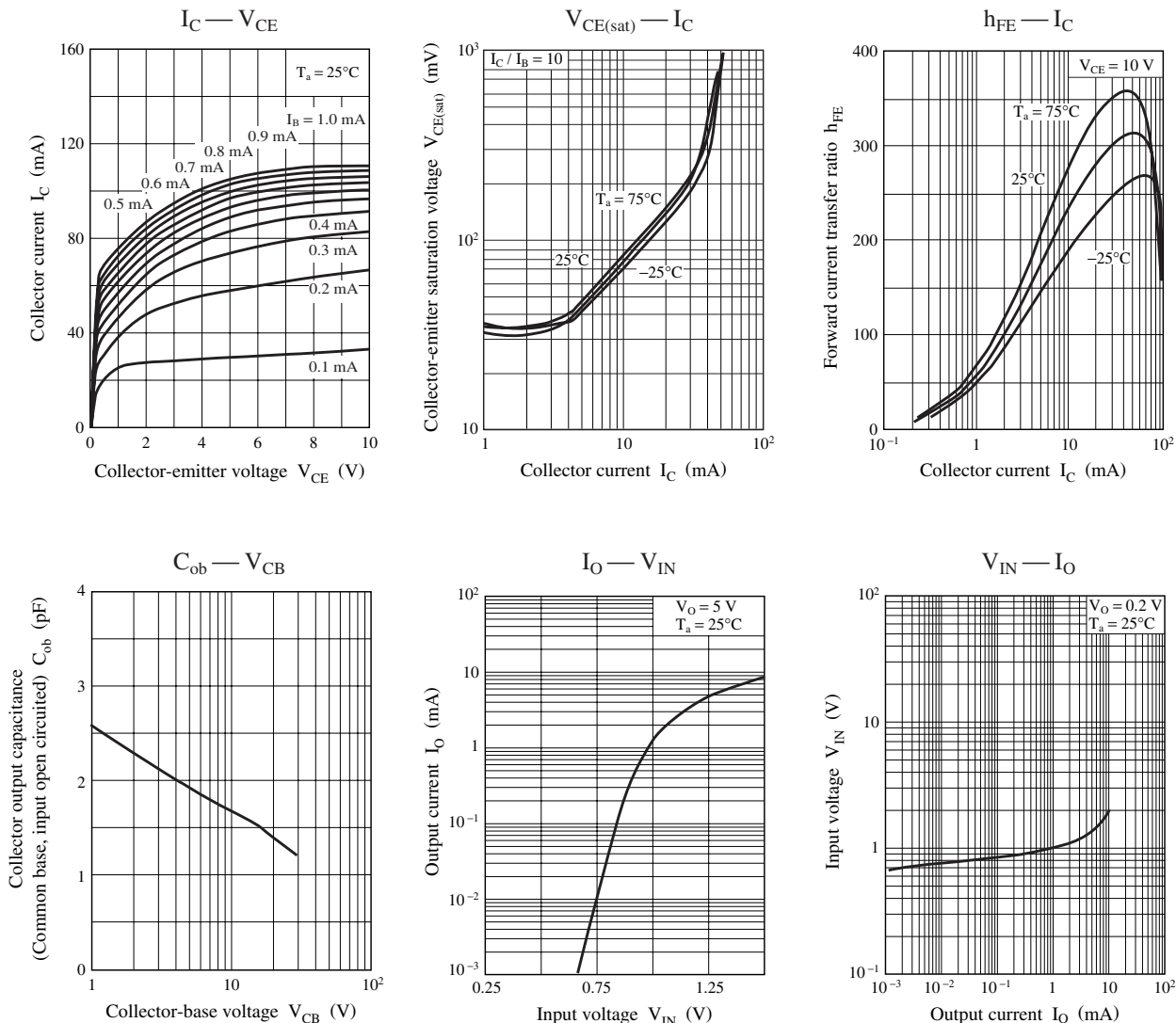


Characteristics charts of UNR921NJ

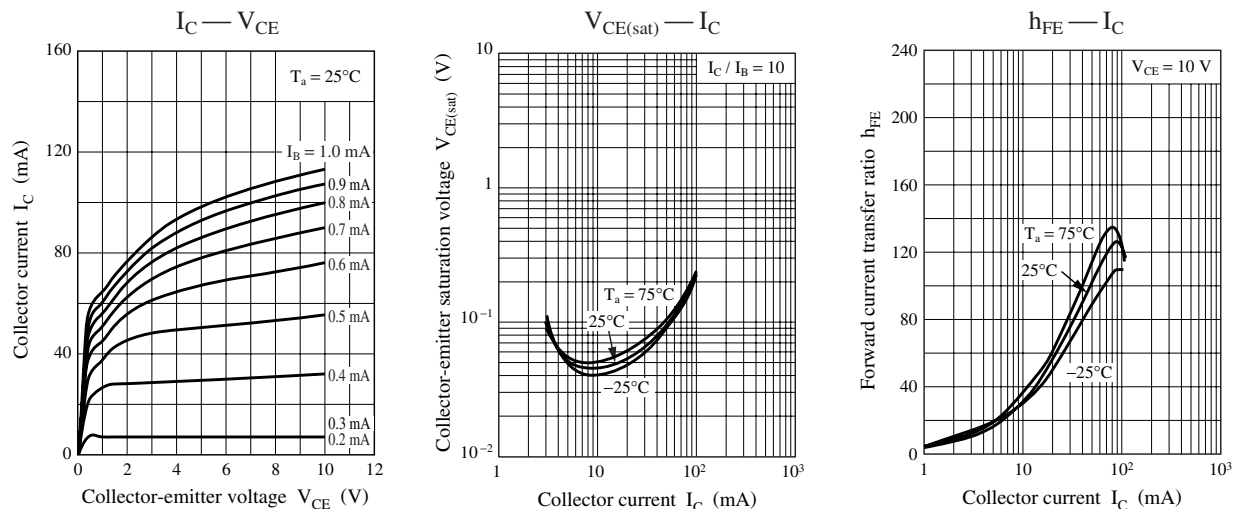


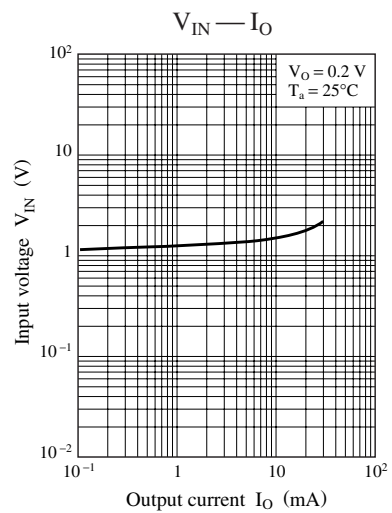
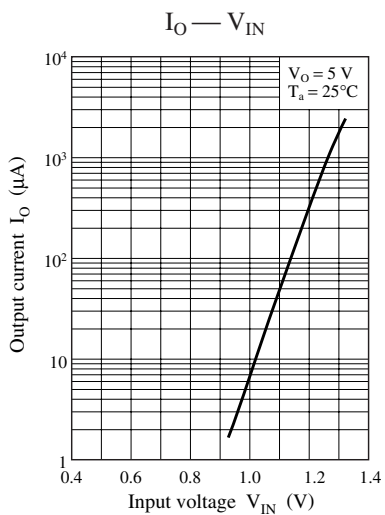
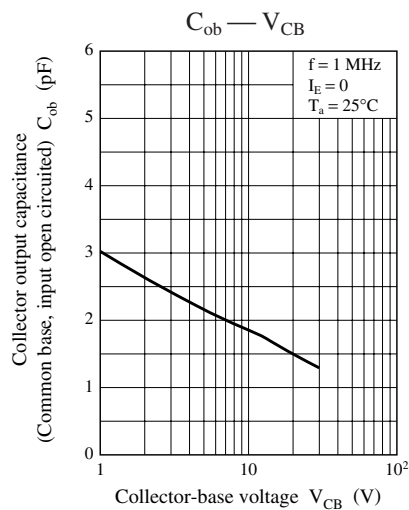


Characteristics charts of UNR921TJ



Characteristics charts of UNR921VJ





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