

UNR921xJ Series (UN921xJ Series)

Silicon NPN epitaxial planar type

For digital circuits

■ Features

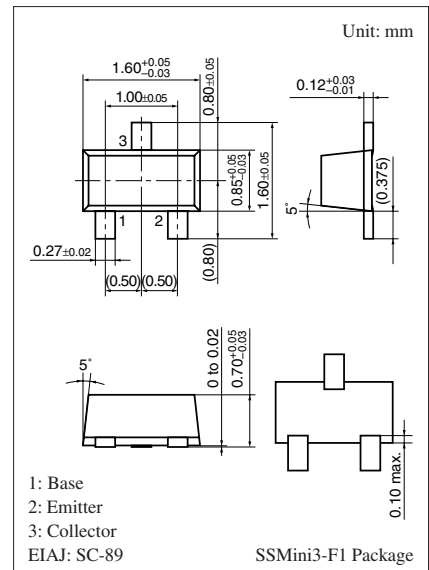
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- SS-Mini type package, allowing automatic insertion through tape packing.

■ Resistance by Part Number

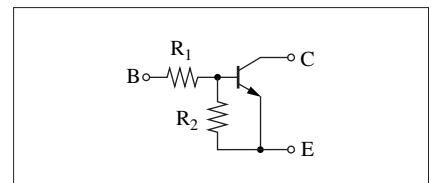
	Marking Symbol	(R ₁)	(R ₂)
• UNR9210J (UN9210J)	8L	47 kΩ	—
• UNR9211J (UN9211J)	8A	10 kΩ	10 kΩ
• UNR9212J (UN9212J)	8B	22 kΩ	22 kΩ
• UNR9213J (UN9213J)	8C	47 kΩ	47 kΩ
• UNR9214J (UN9214J)	8D	10 kΩ	47 kΩ
• UNR9215J (UN9215J)	8E	10 kΩ	—
• UNR9216J (UN9216J)	8F	4.7 kΩ	—
• UNR9217J (UN9217J)	8H	22 kΩ	—
• 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_a = 25°C

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V _{CBO}	50	V
Collector-emitter voltage (Base open)	V _{CEO}	50	V
Collector current	I _C	100	mA
Total power dissipation	P _T	125	mW
Junction temperature	T _j	125	°C
Storage temperature	T _{stg}	-55 to +125	°C



Internal Connection



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

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

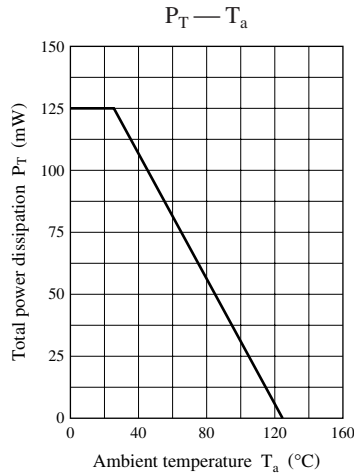
Parameter		Symbol	Conditions	Min	Typ	Max	Unit		
Collector-base voltage (Emitter open)		V_{CBO}	$I_C = 10 \mu\text{A}, I_E = 0$	50			V		
Collector-emitter voltage (Base open)		V_{CEO}	$I_C = 2 \text{ mA}, I_B = 0$	50			V		
Collector-base cut-off current (Emitter open)		I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$			0.1	μA		
Collector-emitter cut-off current (Base open)		I_{CEO}	$V_{CE} = 50 \text{ V}, I_B = 0$			0.5	μA		
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 Ω		
	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) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

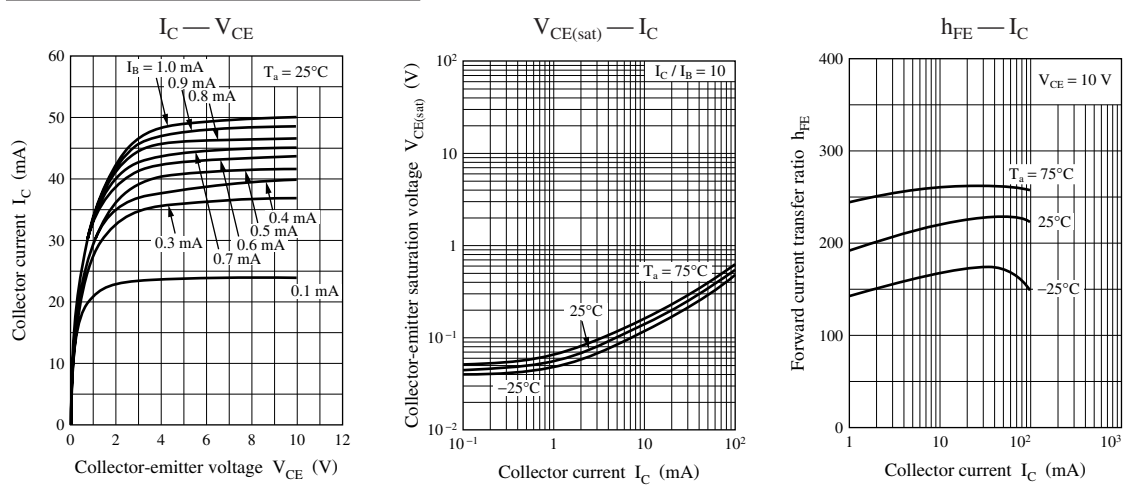
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Emitter-base resistance		UNR921CJ	R_2	-30%	47	+30%	k Ω
Resistance ratio	UNR921MJ	R_1/R_2			0.047		—
	UNR921NJ				0.1		
	UNR9218J/9219J			0.08	0.10	0.12	
	UNR9214J			0.17	0.21	0.25	
	UNR921TJ				0.47		
	UNR921FJ			0.37	0.47	0.57	
	UNR921AJ/921VJ				1.0		
	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			

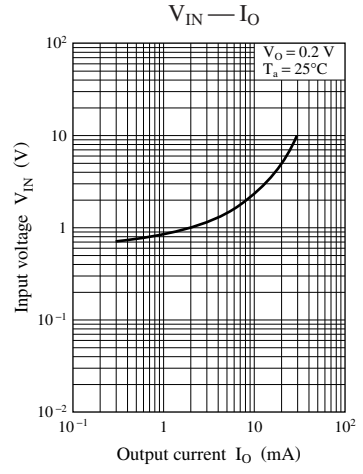
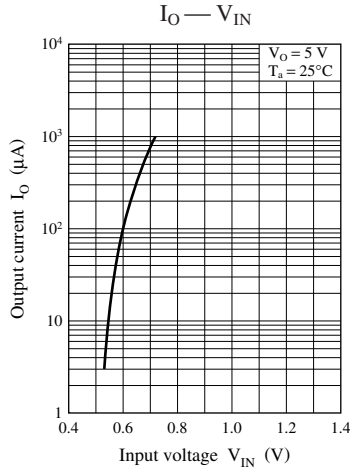
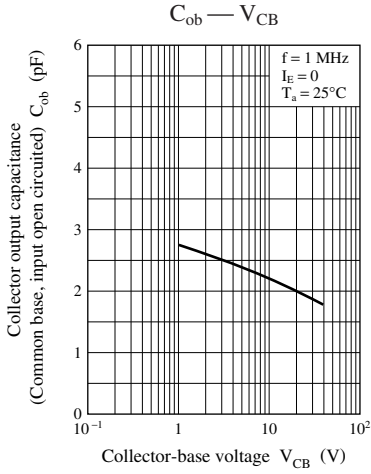
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

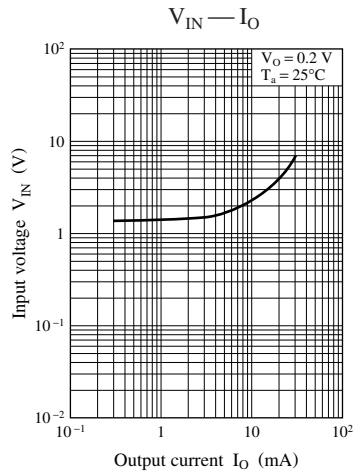
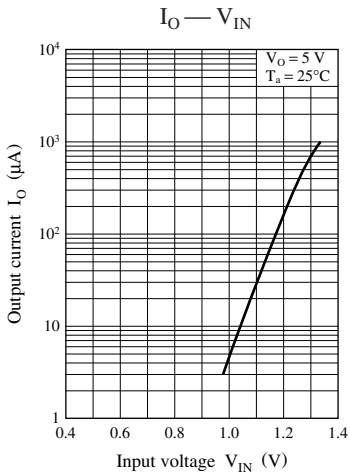
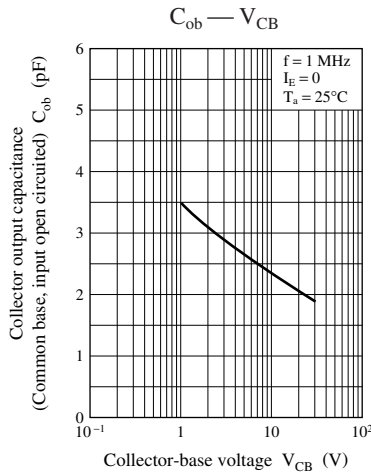
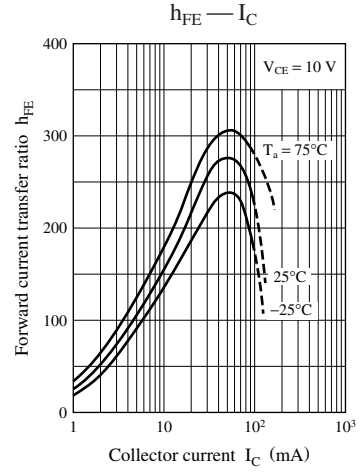
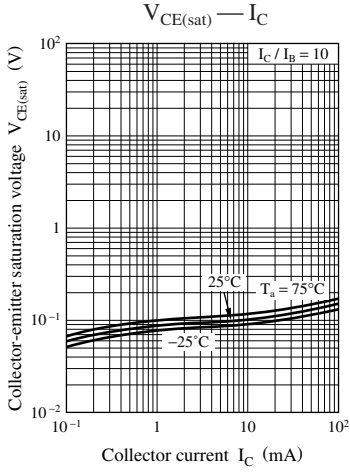
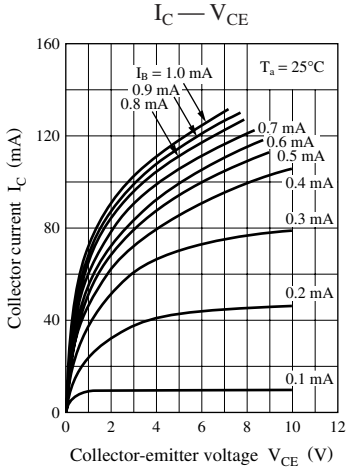


Characteristics charts of UNR9210J

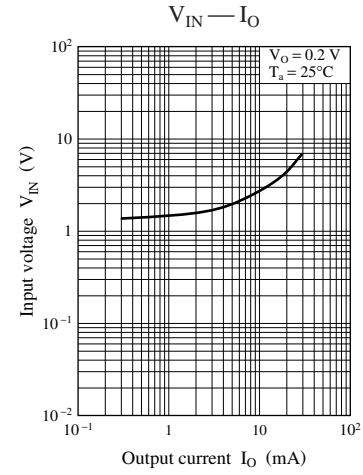
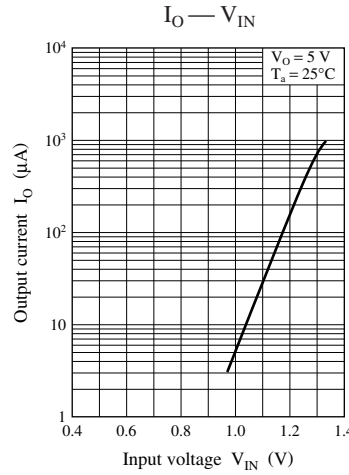
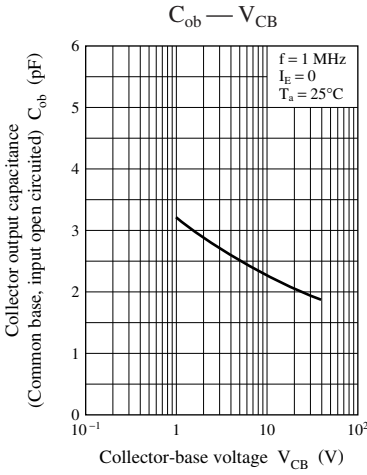
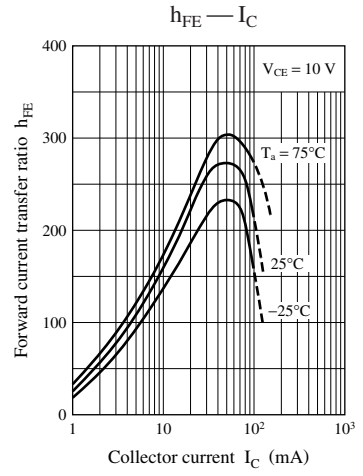
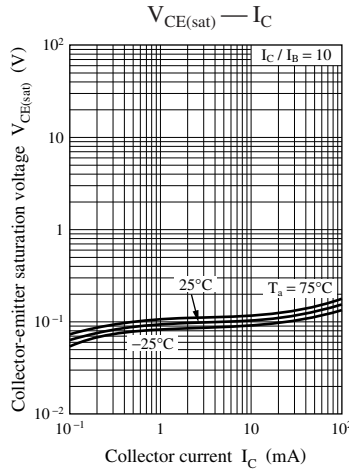
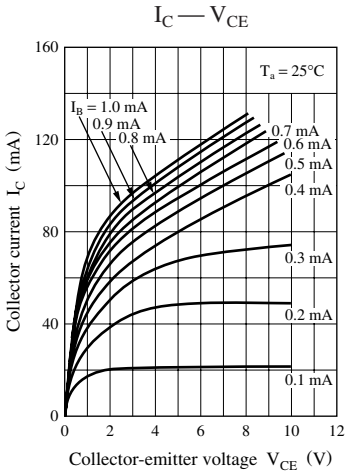




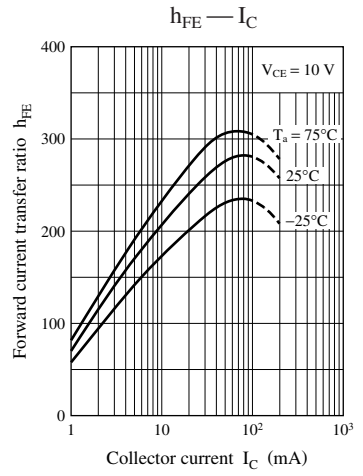
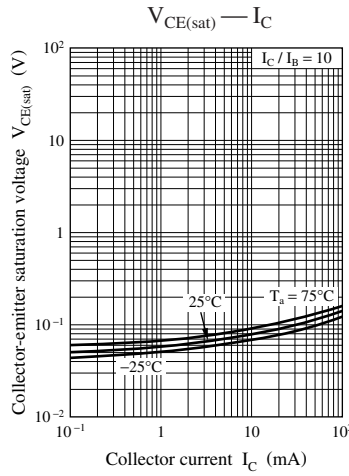
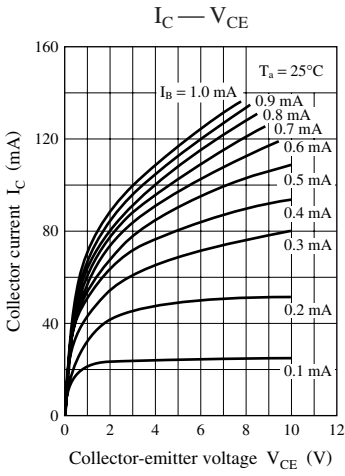
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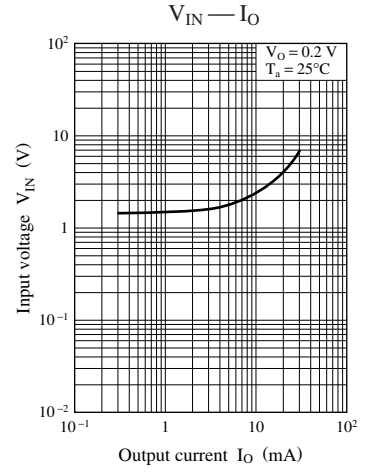
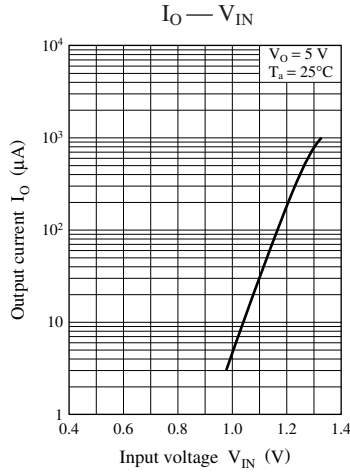
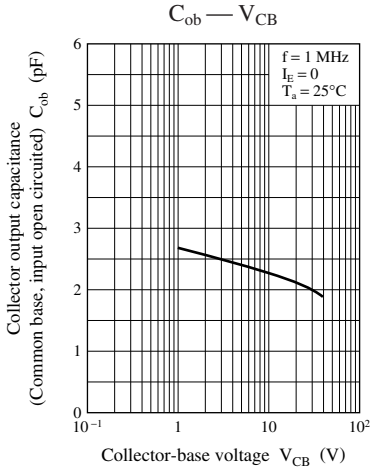


Characteristics charts of UNR9212J

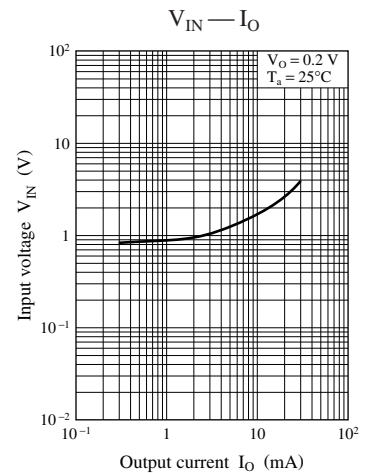
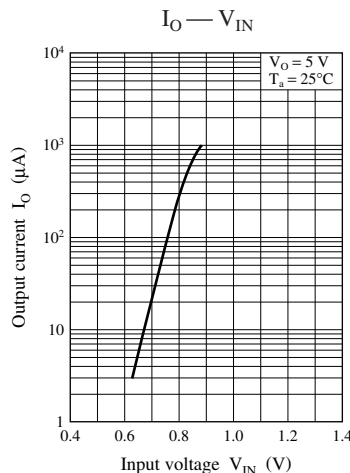
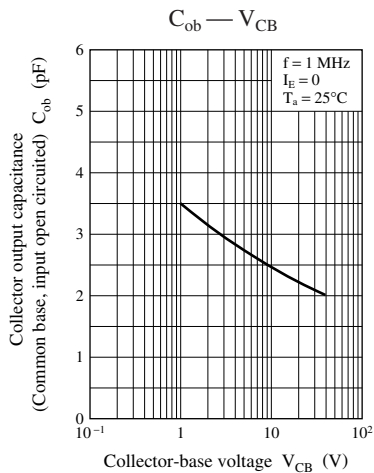
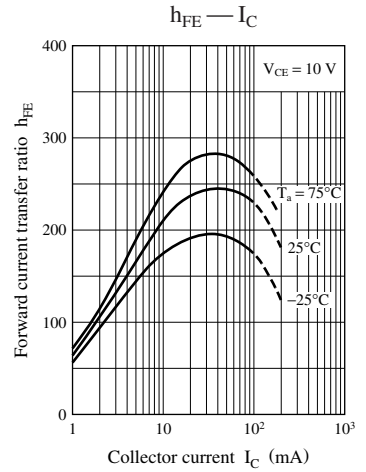
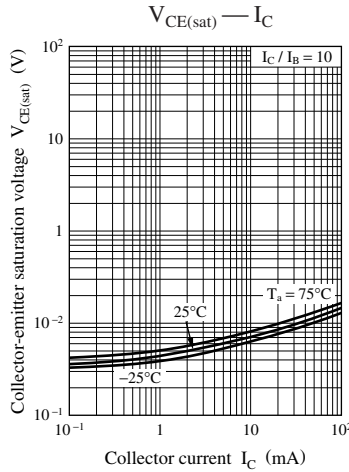
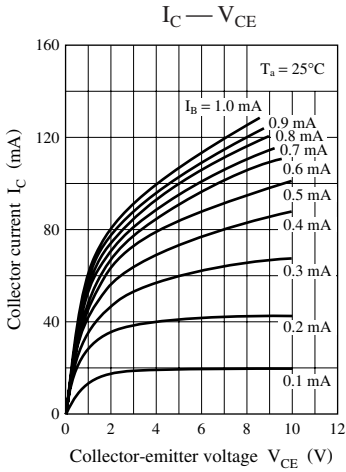


Characteristics charts of UNR9213J

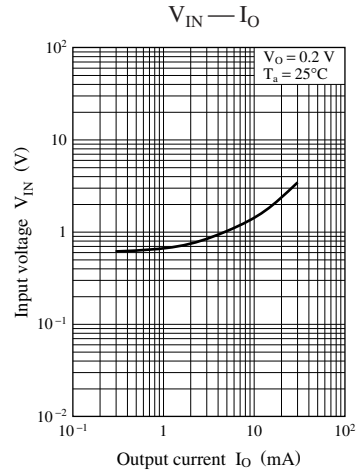
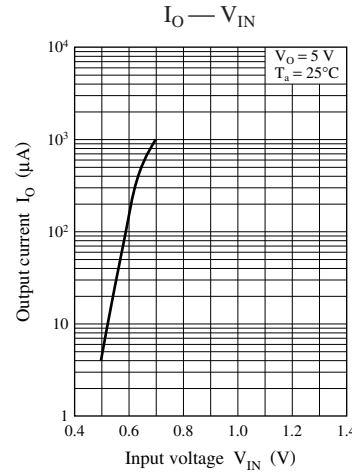
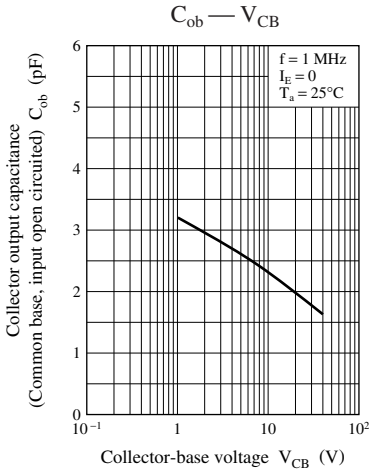
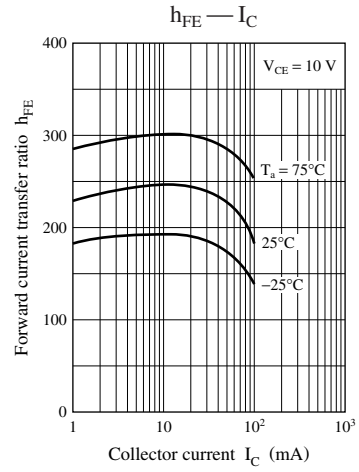
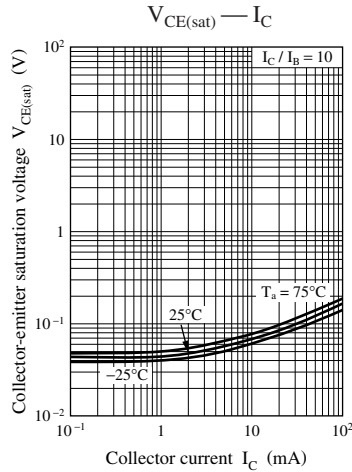
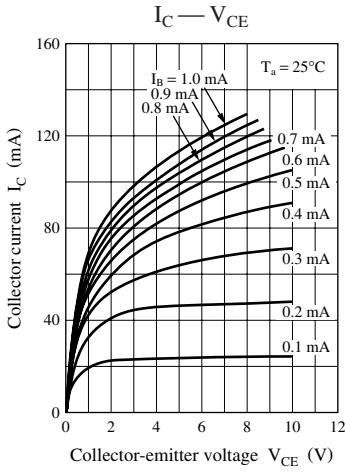




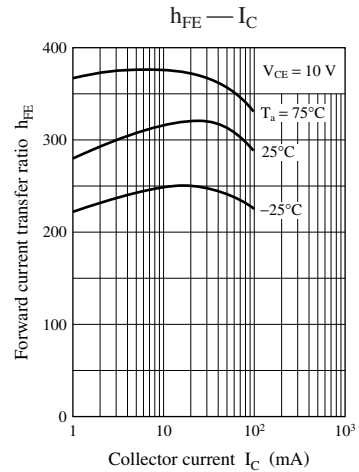
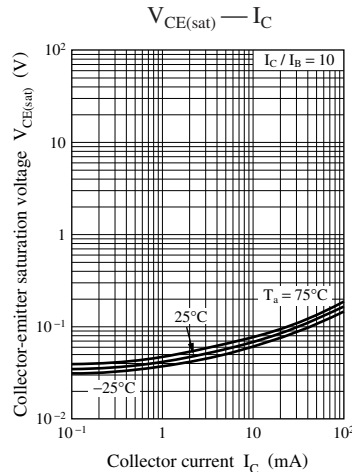
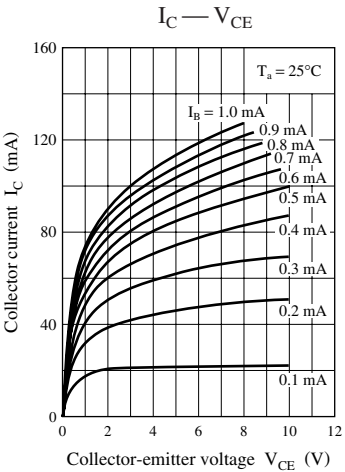
Characteristics charts of UNR9214J

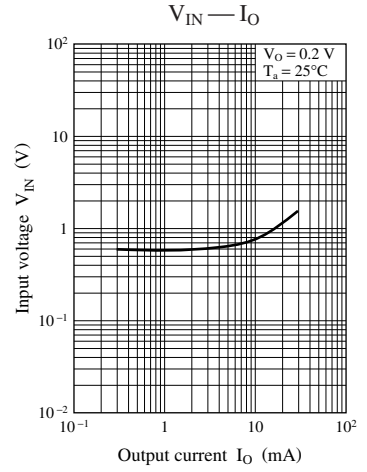
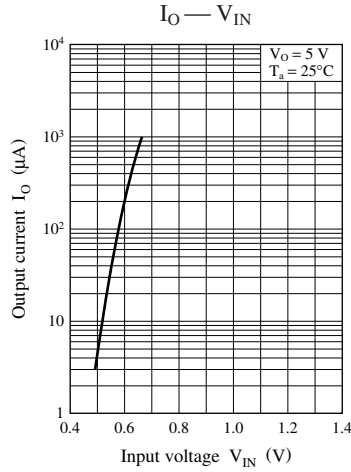
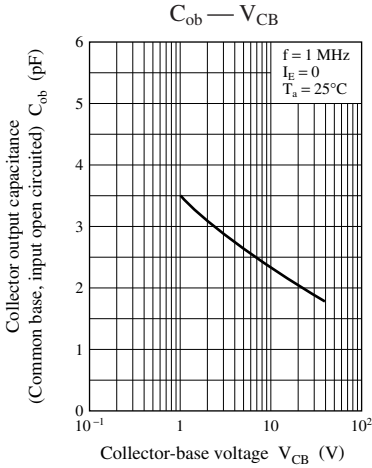


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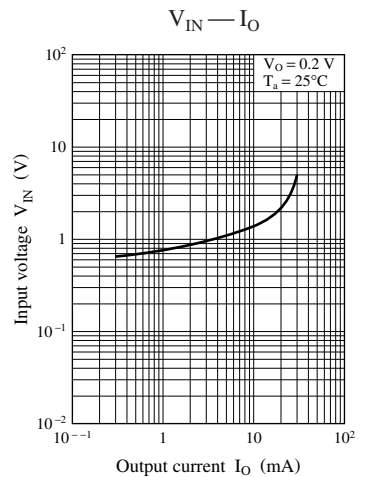
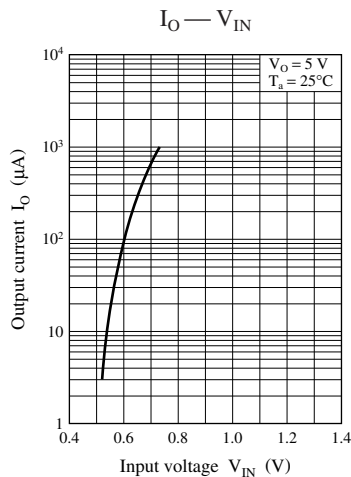
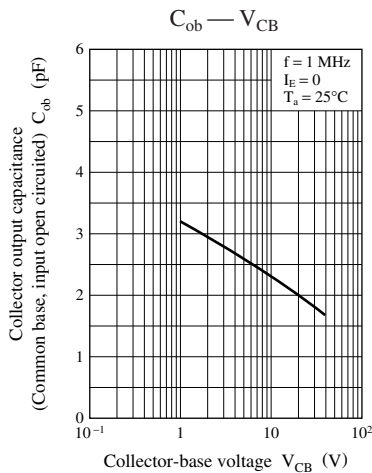
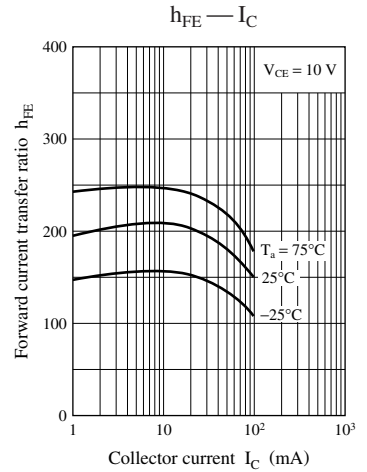
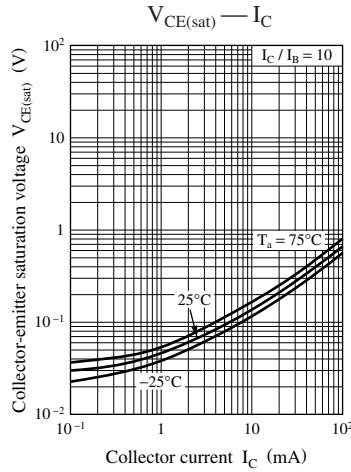
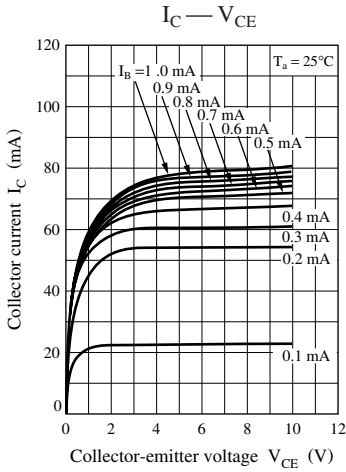


Characteristics charts of UNR9216J

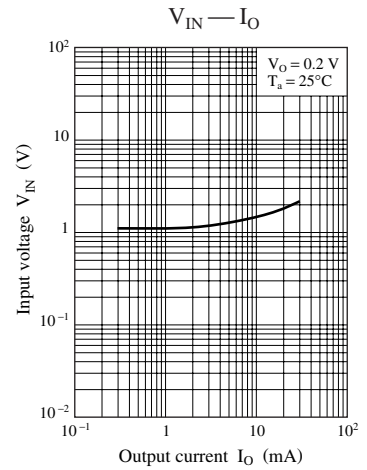
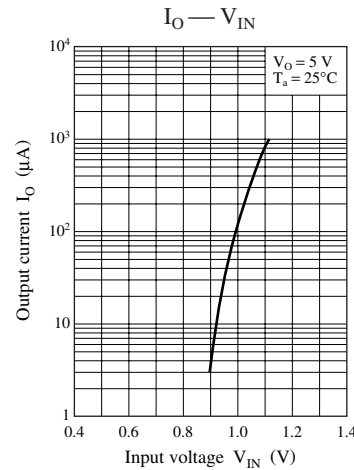
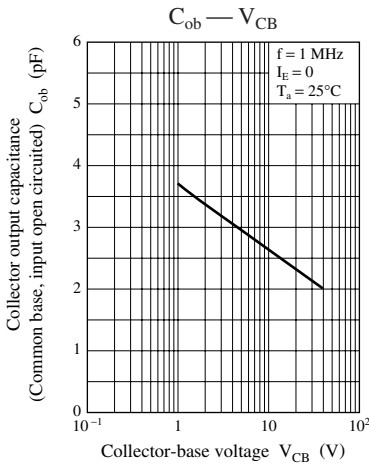
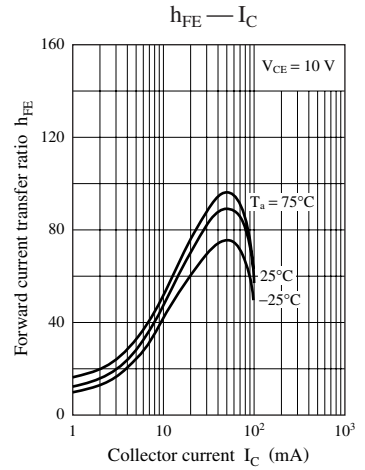
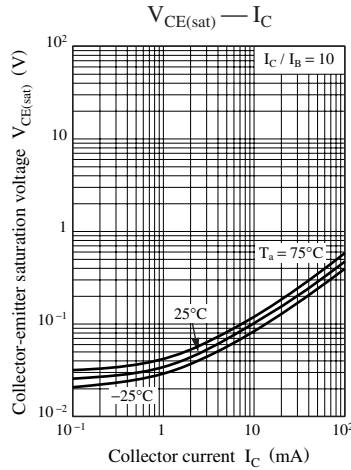
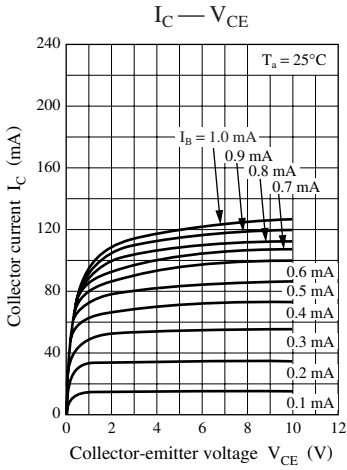




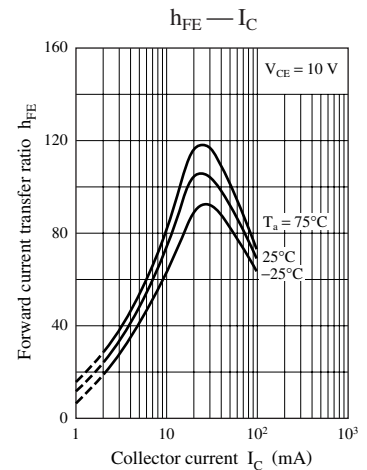
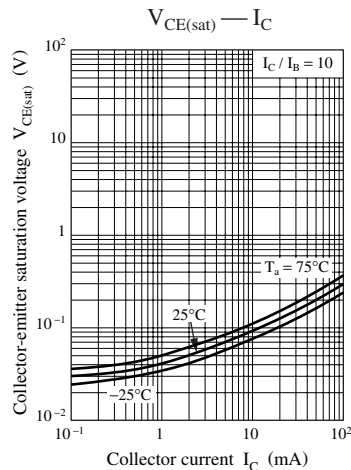
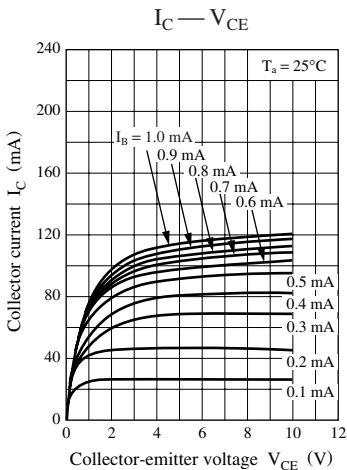
Characteristics charts of UNR9217J

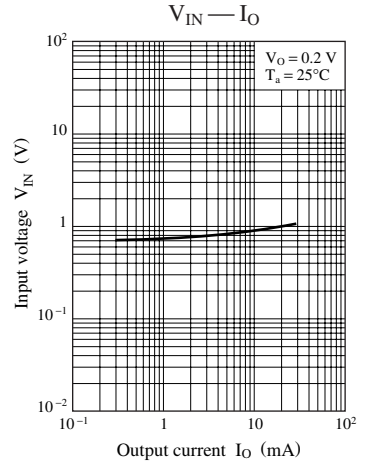
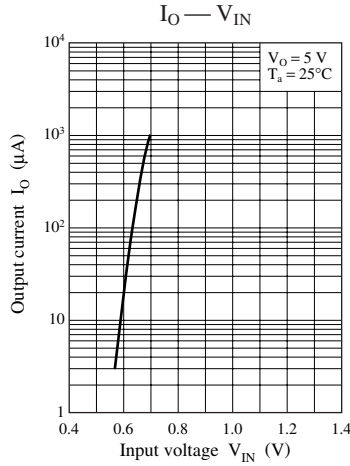
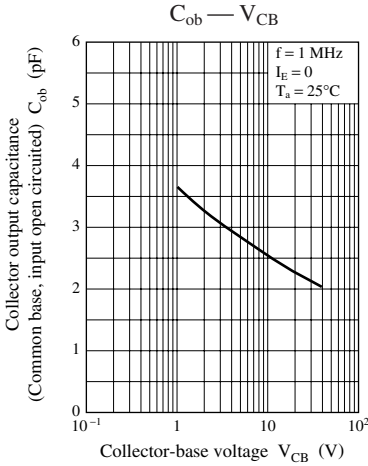


Characteristics charts of UNR9218J

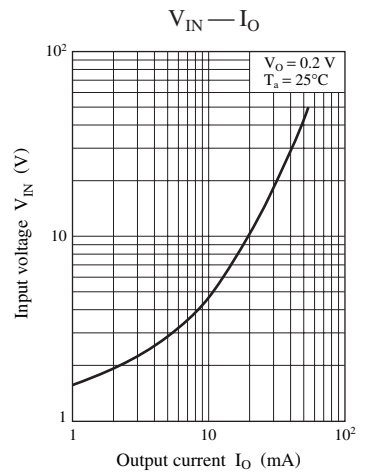
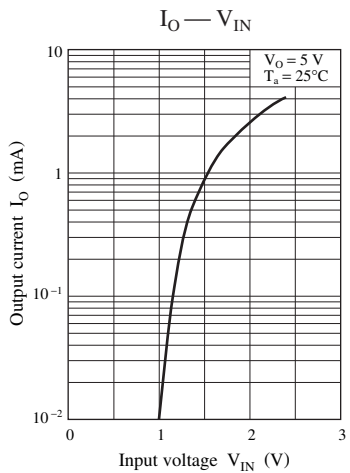
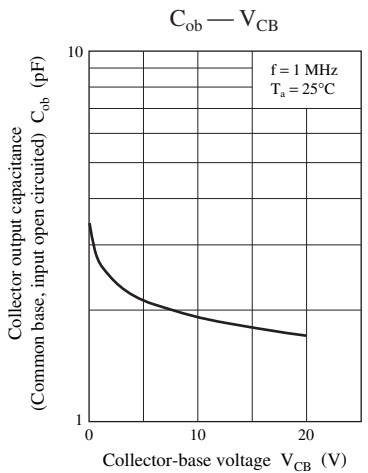
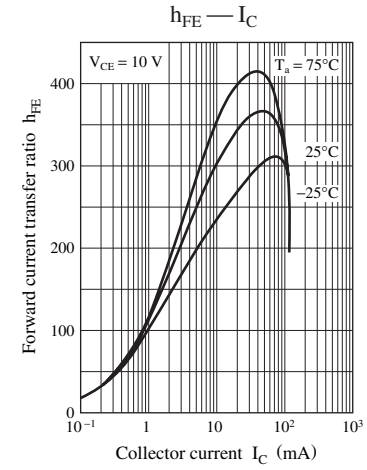
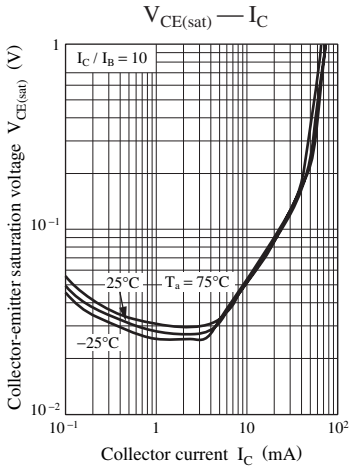
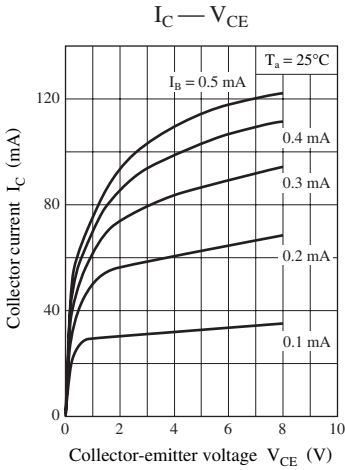


Characteristics charts of UNR9219J

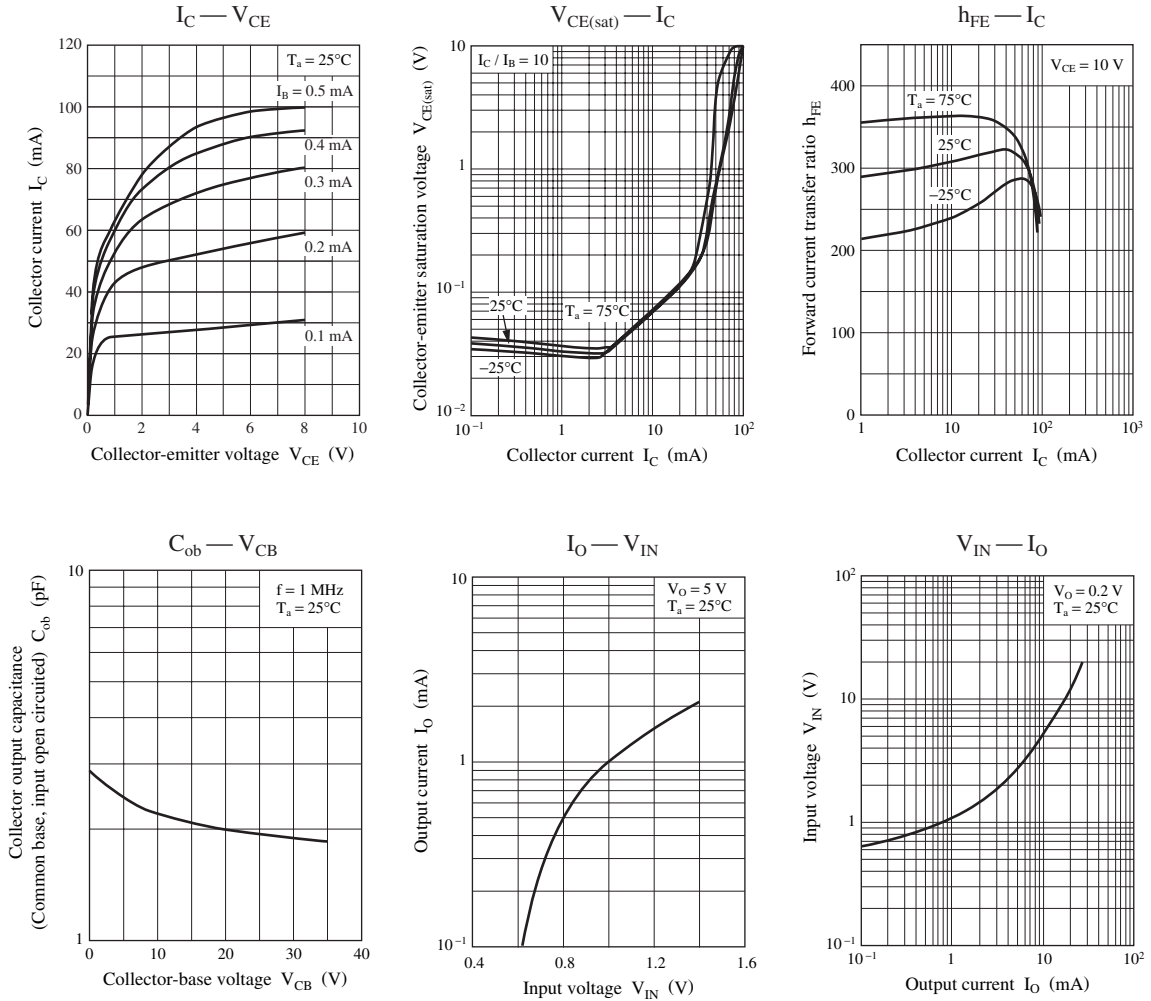




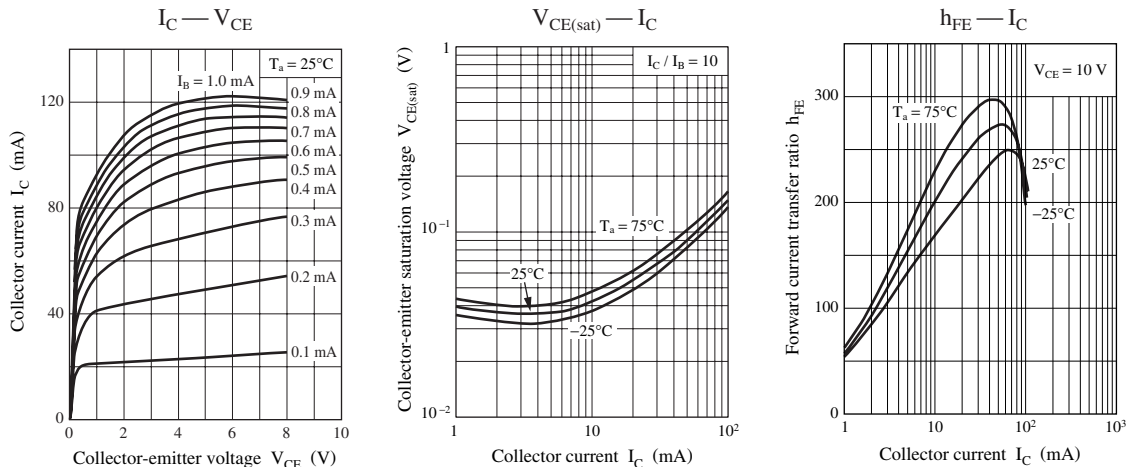
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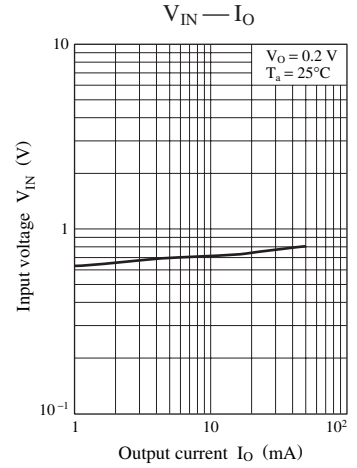
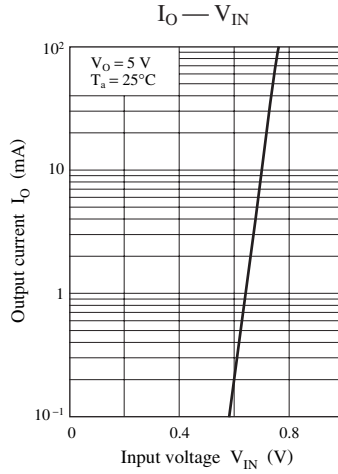
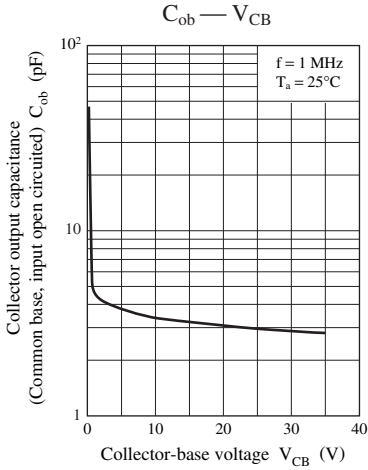


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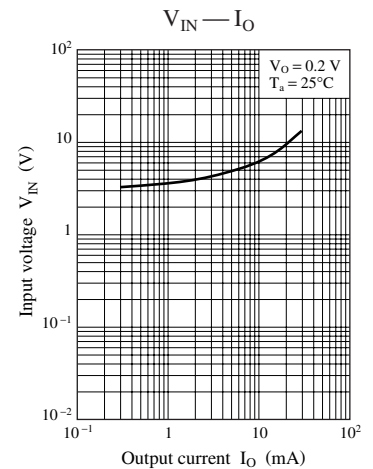
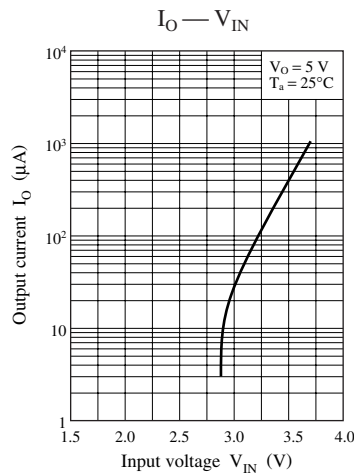
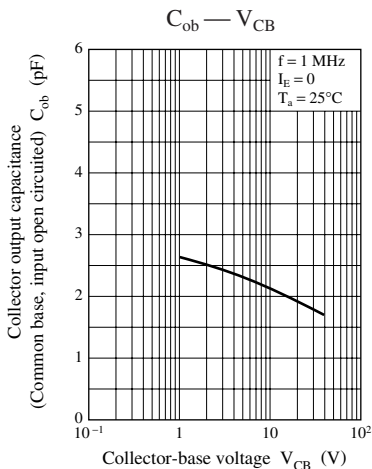
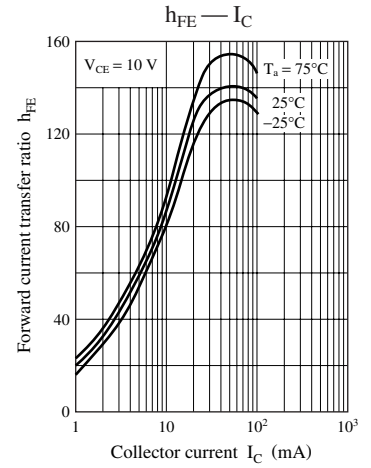
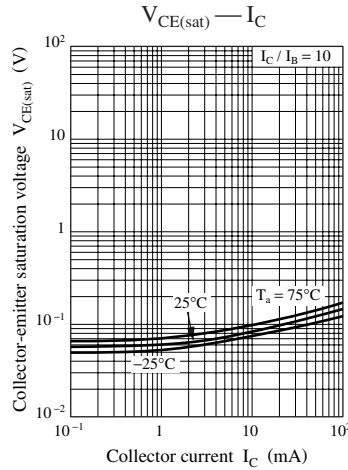
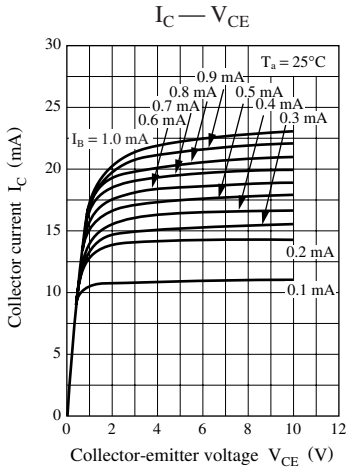


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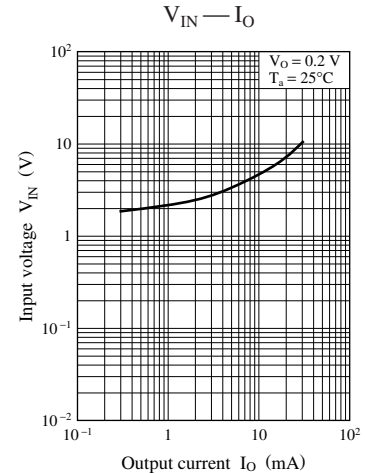
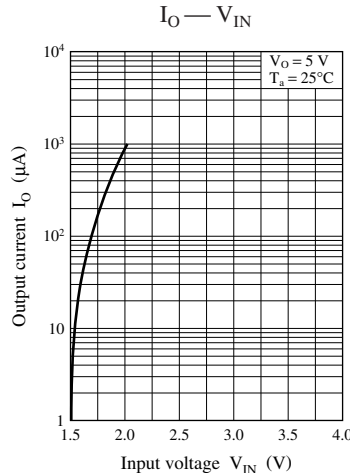
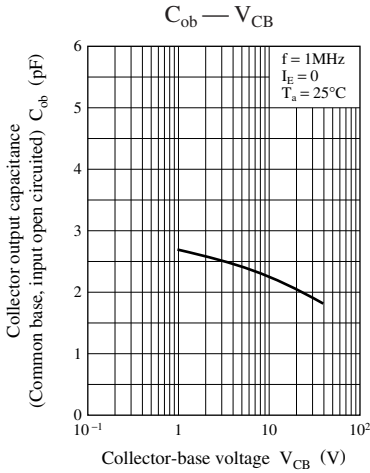
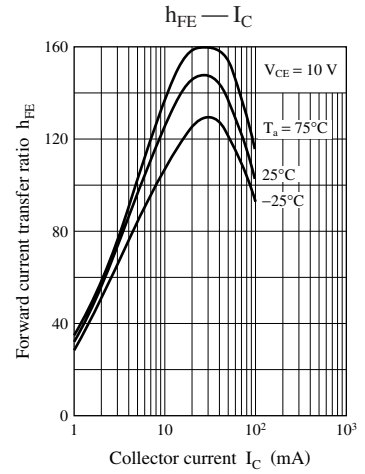
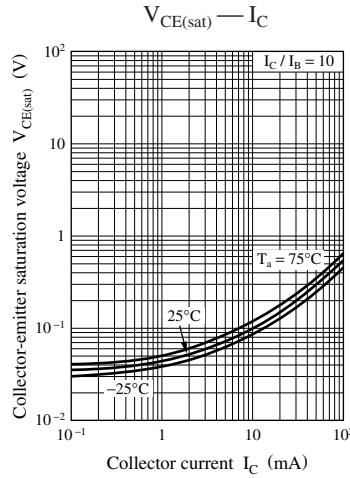
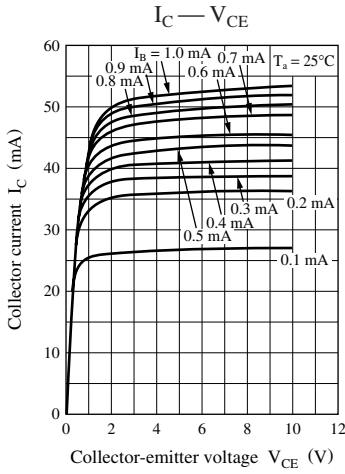




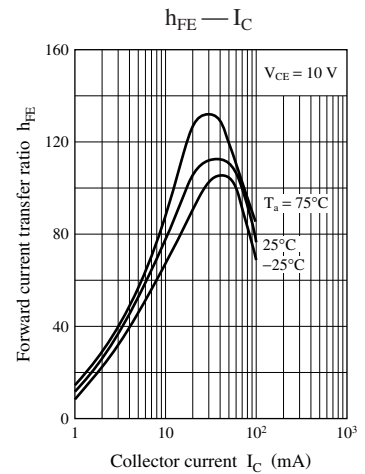
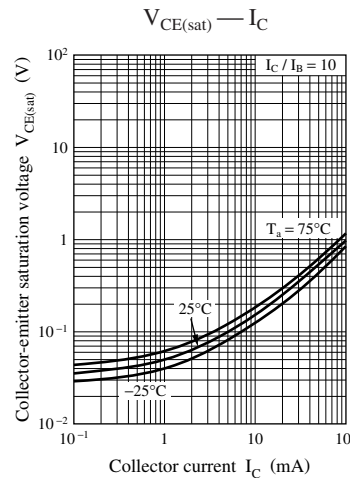
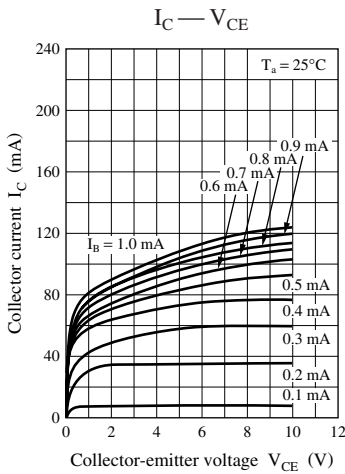
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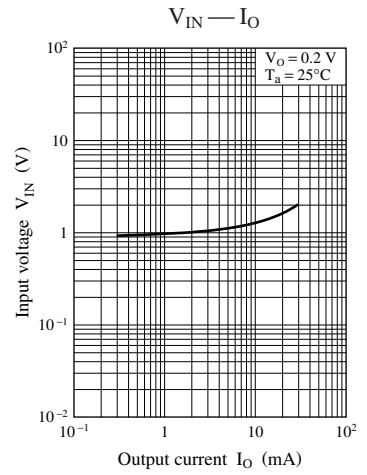
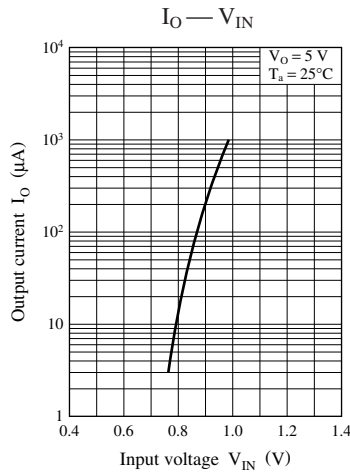
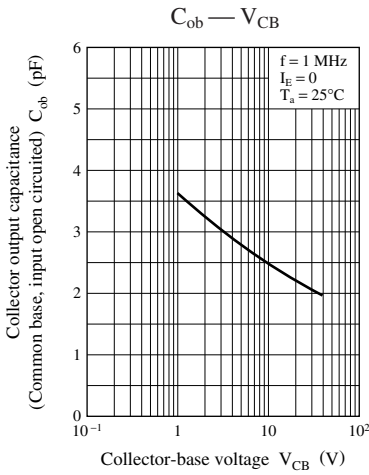


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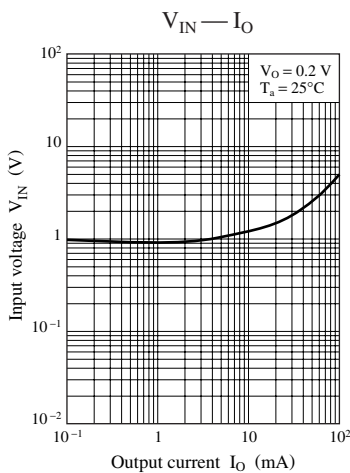
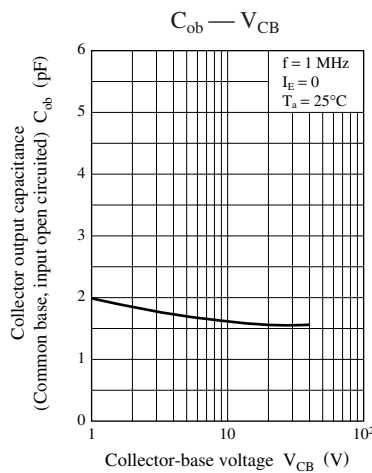
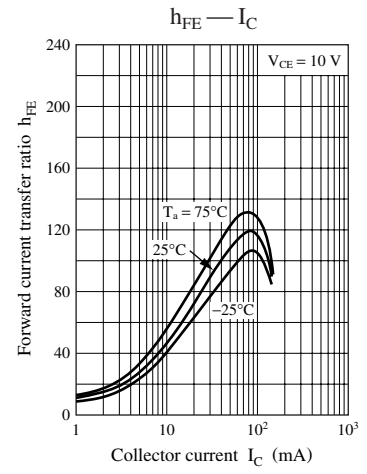
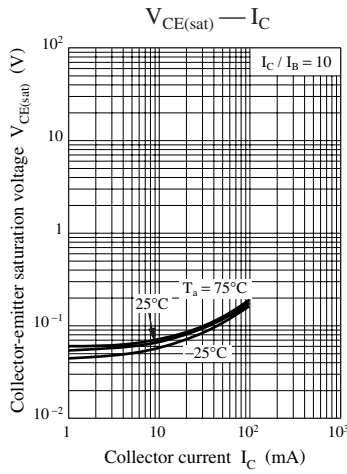
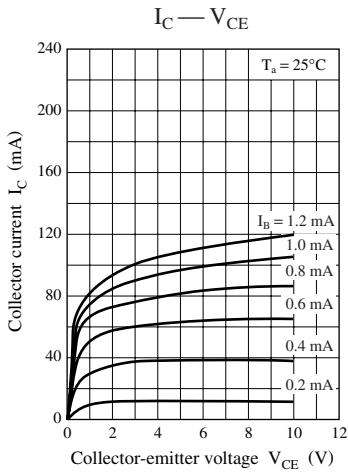


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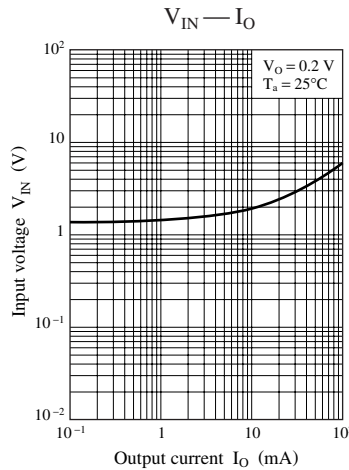
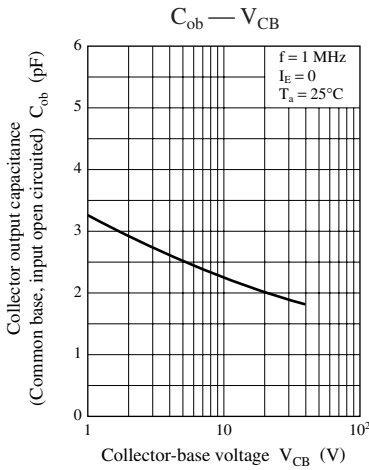
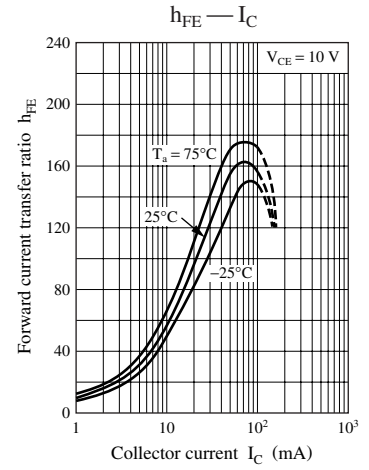
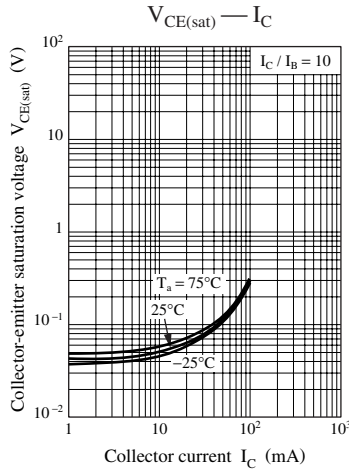
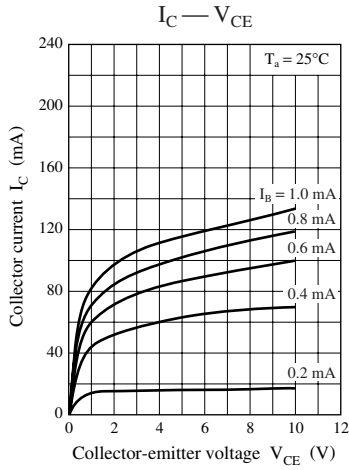




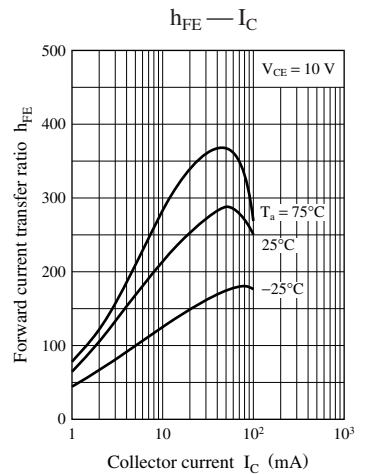
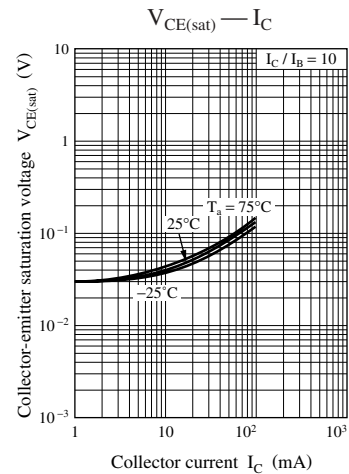
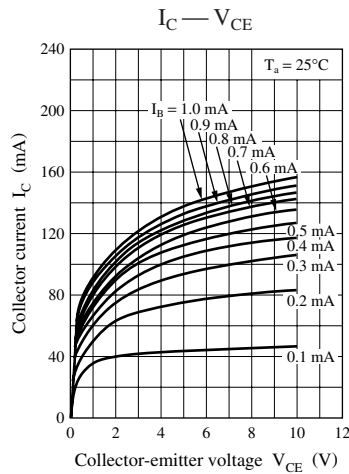
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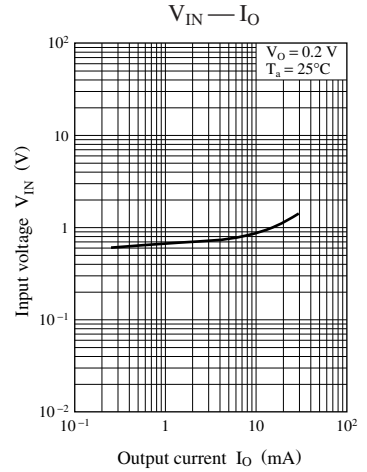
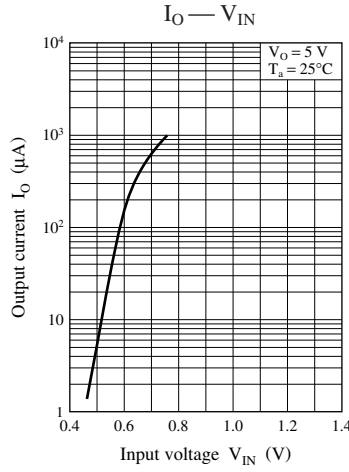
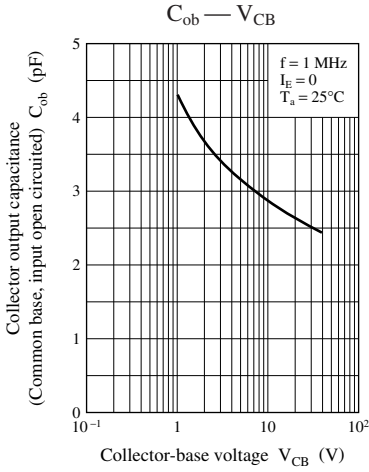


Characteristics charts of UNR921LJ

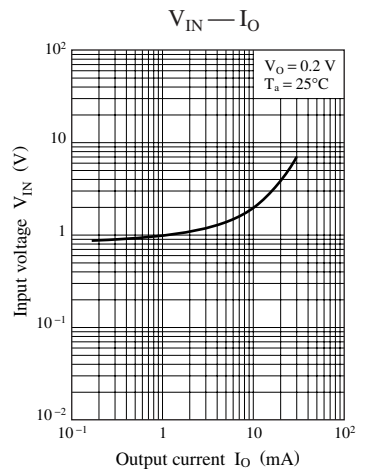
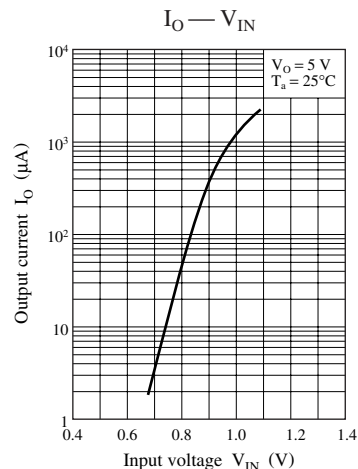
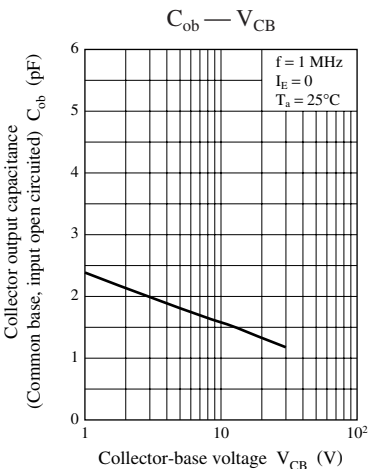
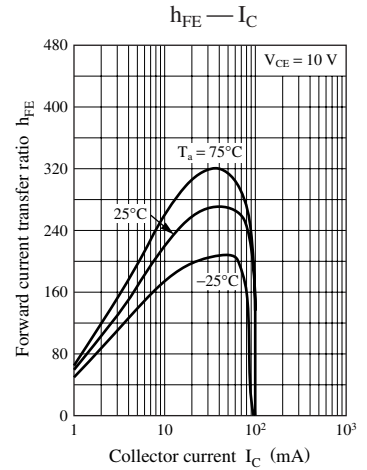
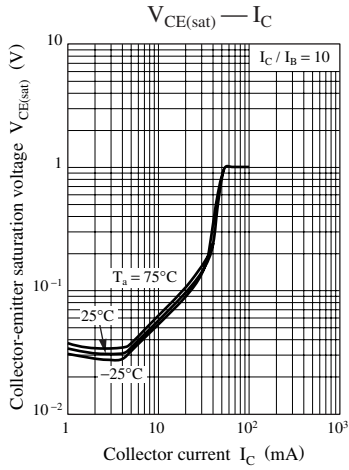
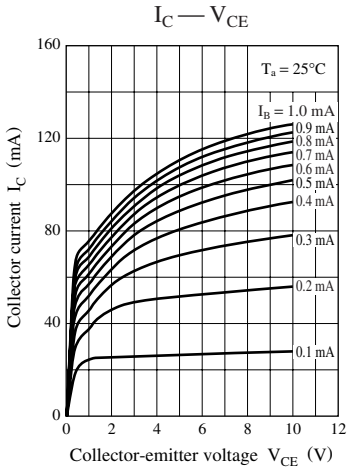


Characteristics charts of UNR921MJ

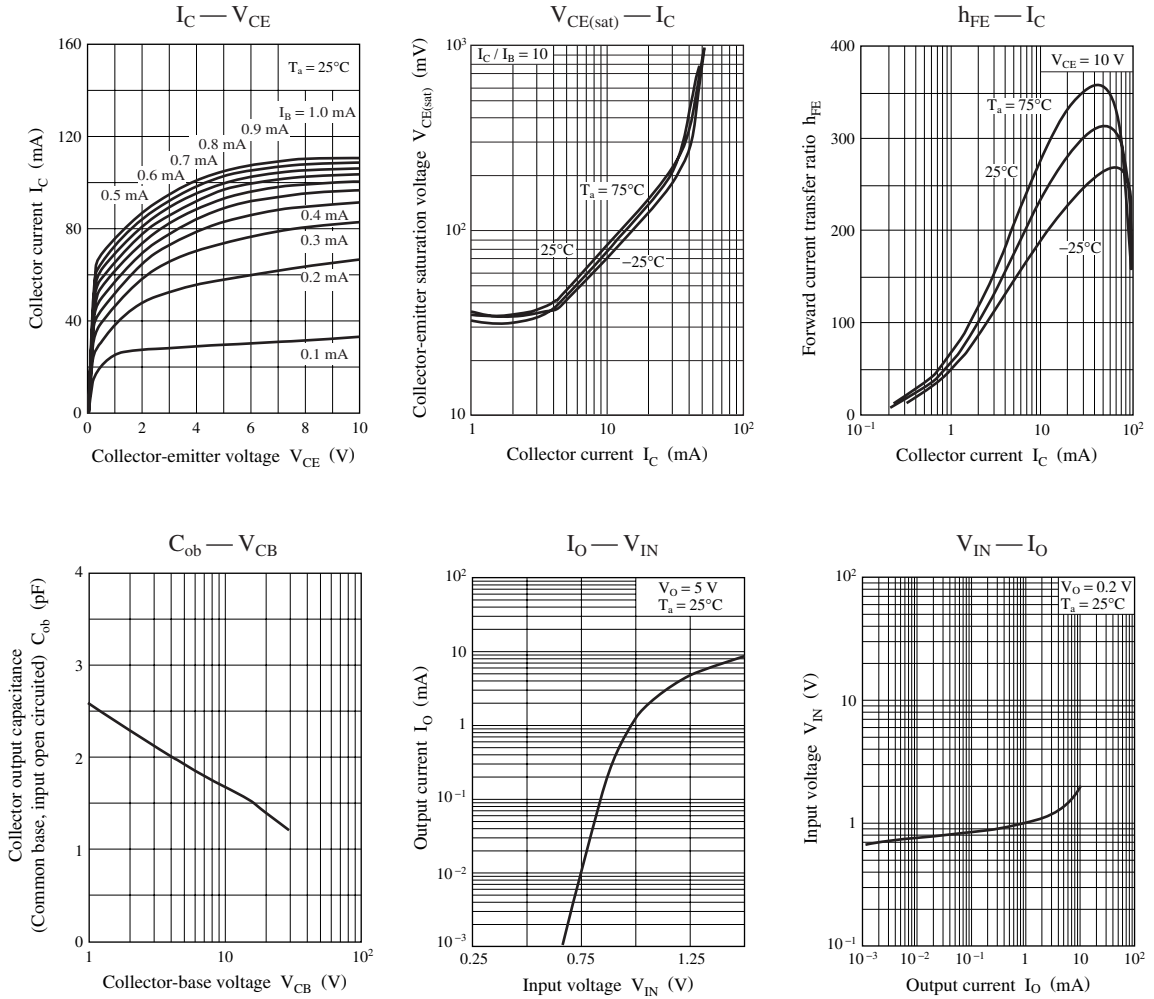




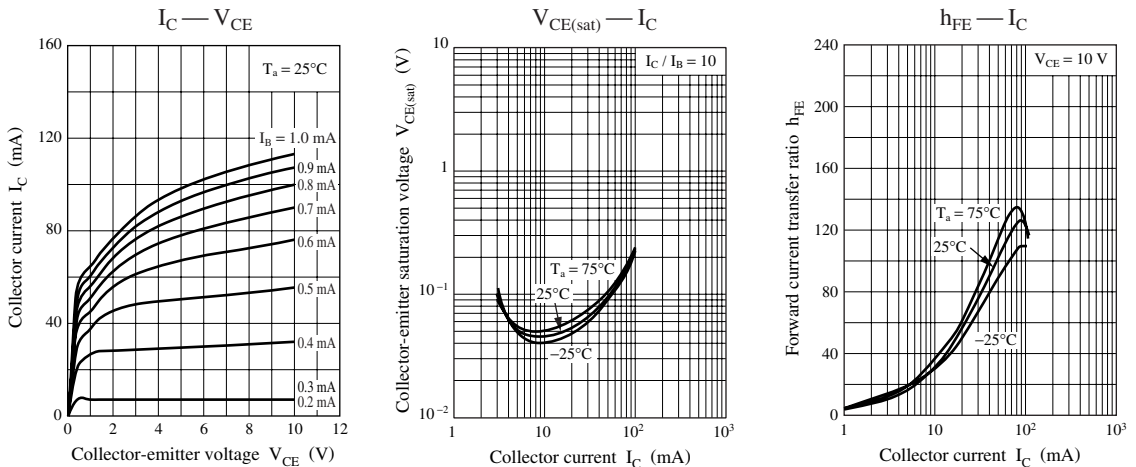
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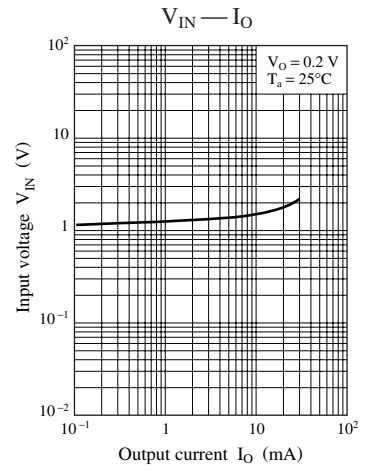
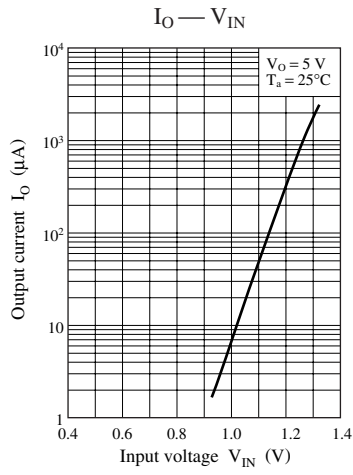
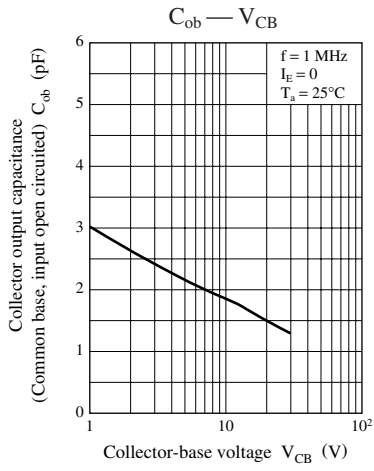


Characteristics charts of UNR921TJ



Characteristics charts of UNR921VJ





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