

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.

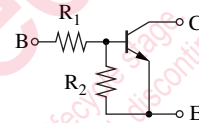
■ Resistance by Part Number

	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

■ Package

- Code
SSMini3-F1
- Pin Name
1: Base
2: Emitter
3: Collector

■ Internal Connection



■ 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

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

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

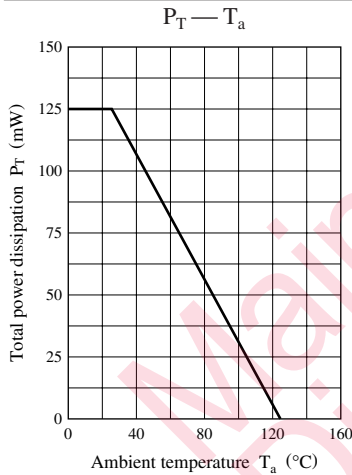
Parameter		Symbol	Conditions	Min	Typ	Max	Unit	
Collector-base voltage (Emitter open)		V_{CBO}	$I_C = 10 \mu\text{A}, I_E = 0$	50			V	
Collector-emitter voltage (Base open)		V_{CEO}	$I_C = 2 \text{ mA}, I_B = 0$	50			V	
Collector-base cut-off current (Emitter open)		I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$			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	
UNR921VJ				$I_C = 10 \text{ mA}, I_B = 1.5 \text{ mA}$				
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) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

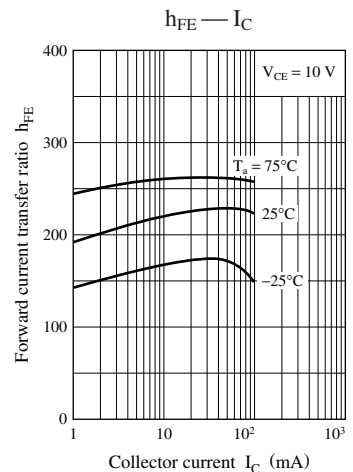
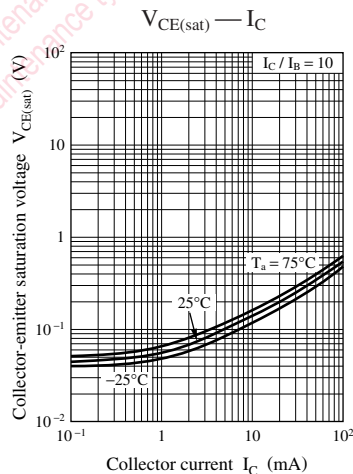
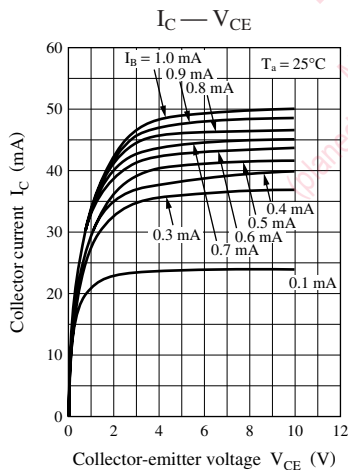
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Emitter-base resistance		UNR921CJ	R_2	-30%	47	+30%	k Ω
Resistance ratio	UNR921MJ	R_1/R_2			0.047		—
	UNR921NJ				0.1		
	UNR9218J/9219J			0.08	0.10	0.12	
	UNR9214J			0.17	0.21	0.25	
	UNR921TJ				0.47		
	UNR921FJ			0.37	0.47	0.57	
	UNR921AJ/921VJ				1.0		
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

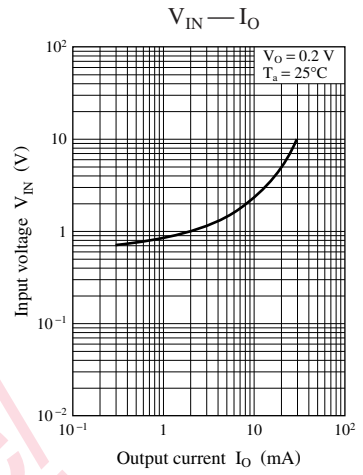
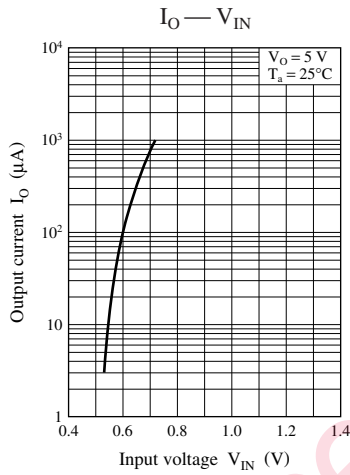
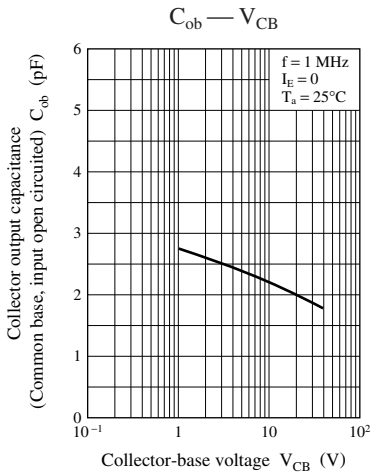
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

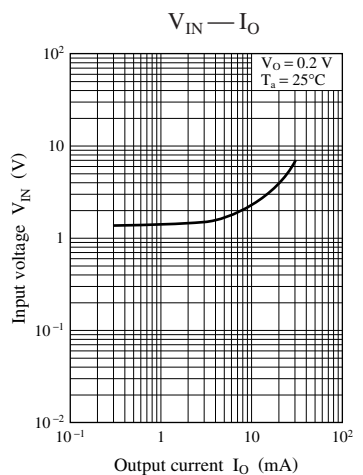
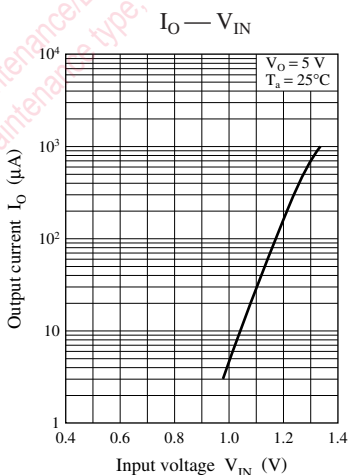
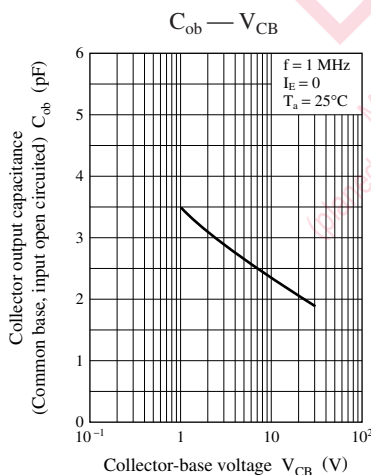
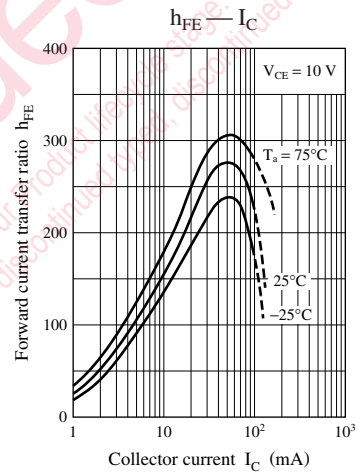
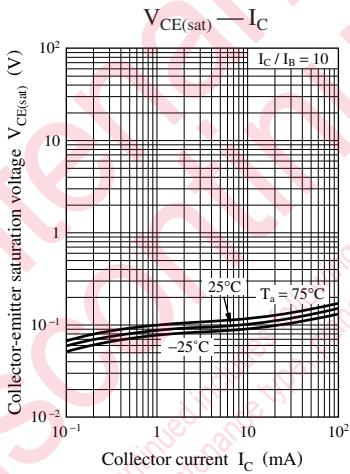
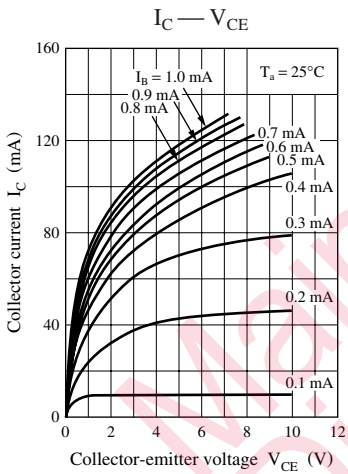


Characteristics charts of UNR9210J

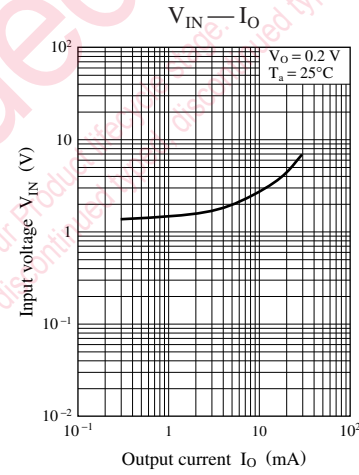
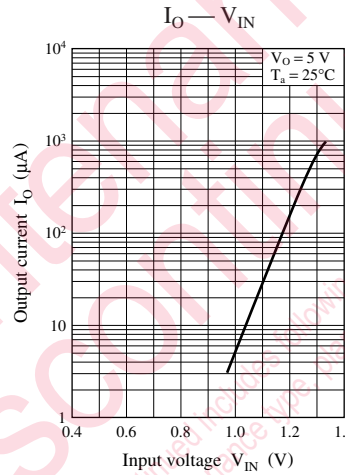
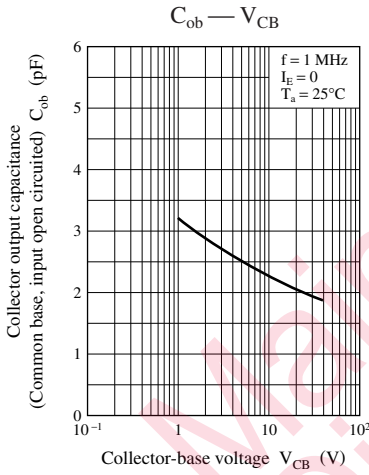
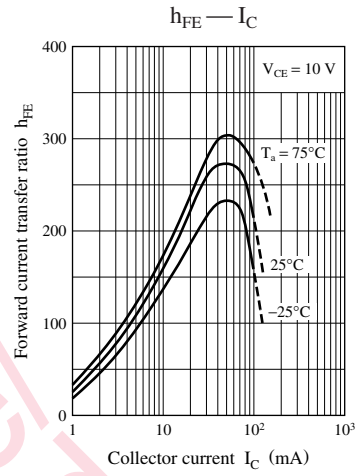
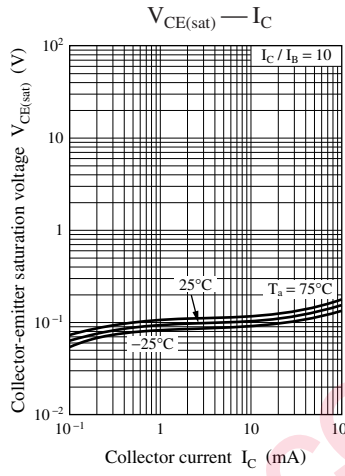
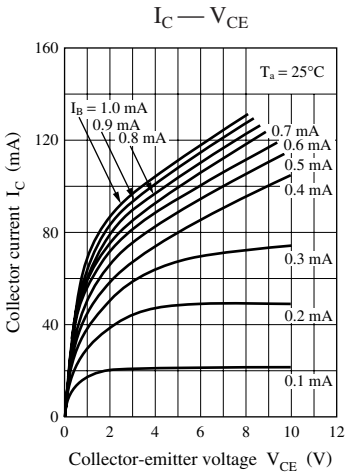




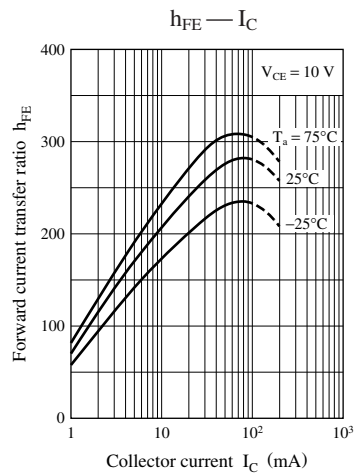
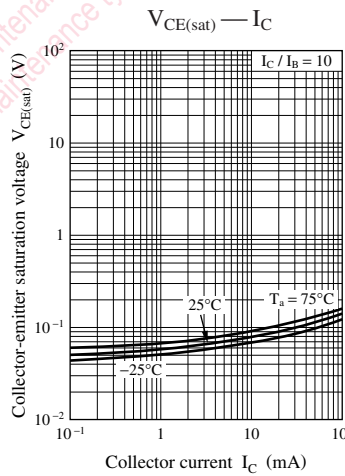
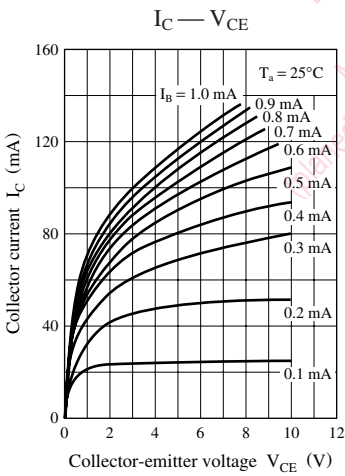
Characteristics charts of UNR9211J

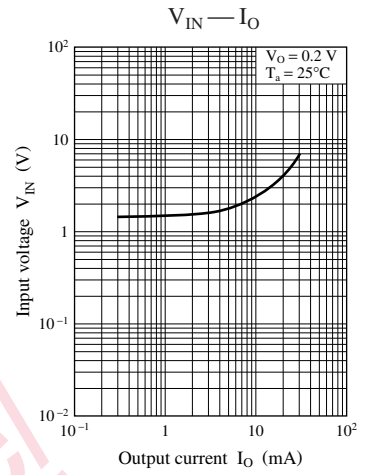
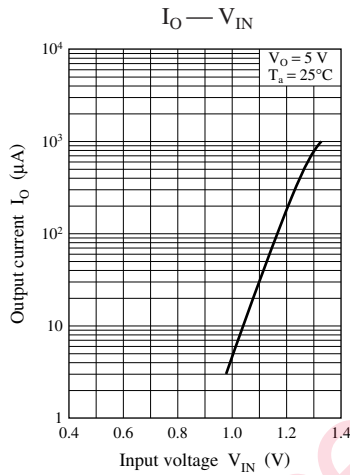
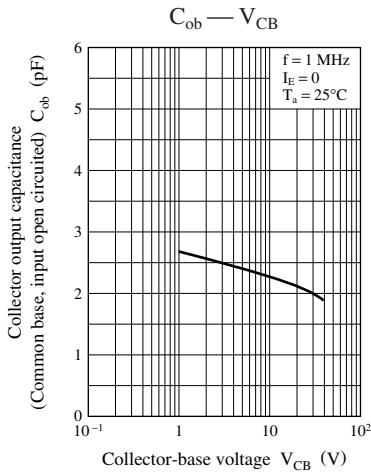


Characteristics charts of UNR9212J

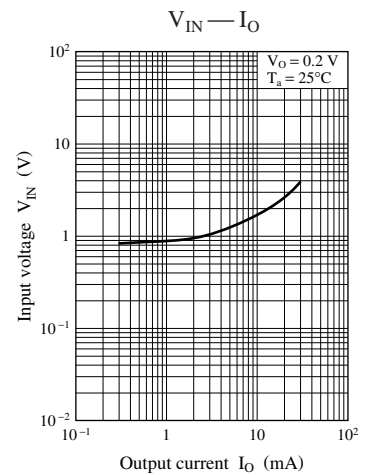
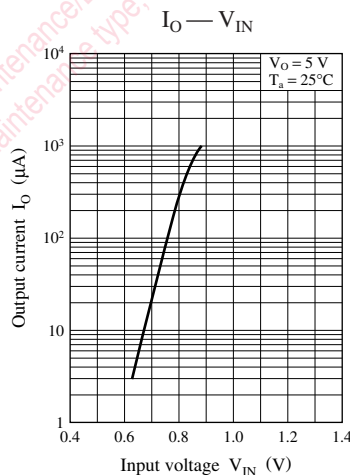
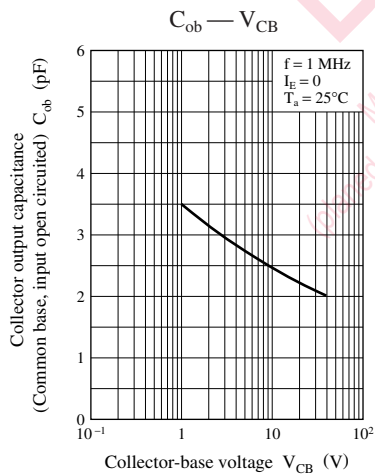
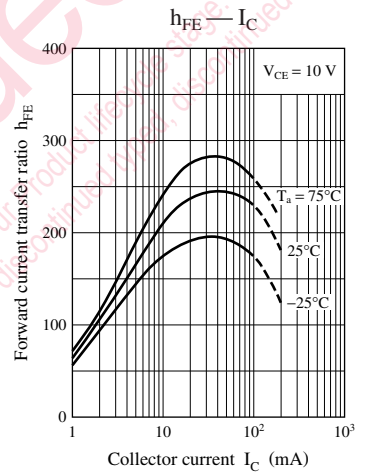
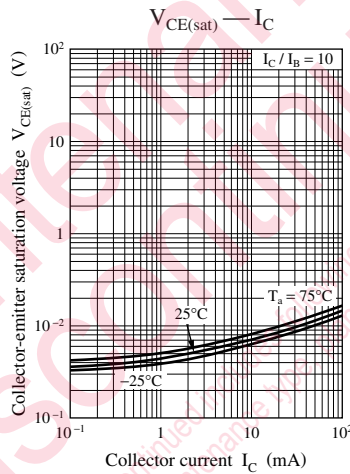
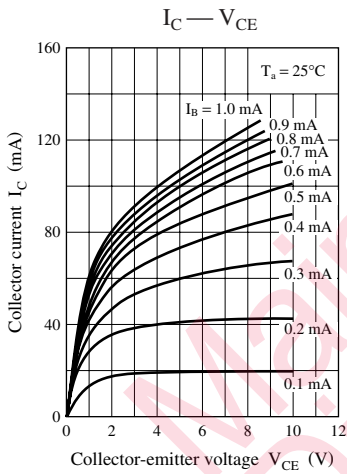


Characteristics charts of UNR9213J

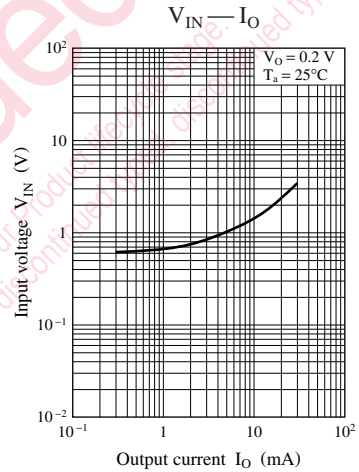
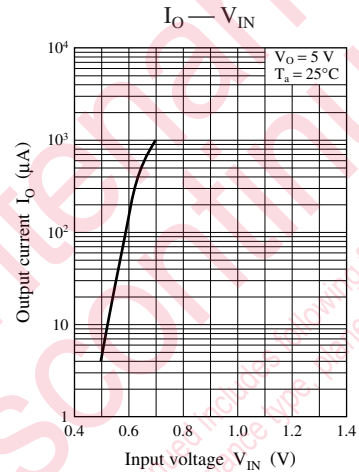
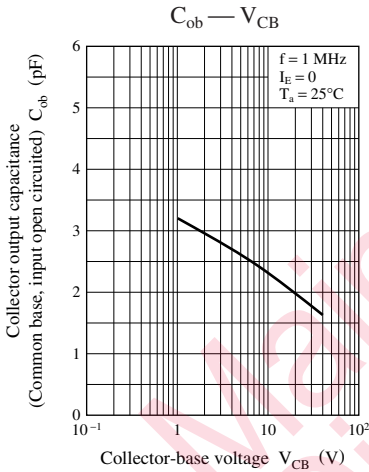
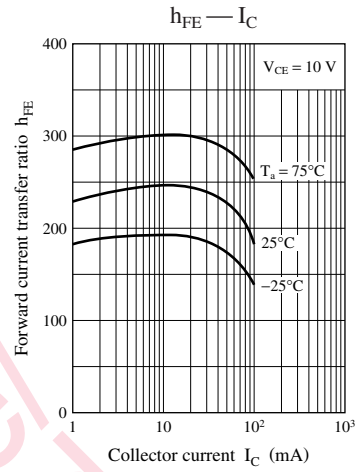
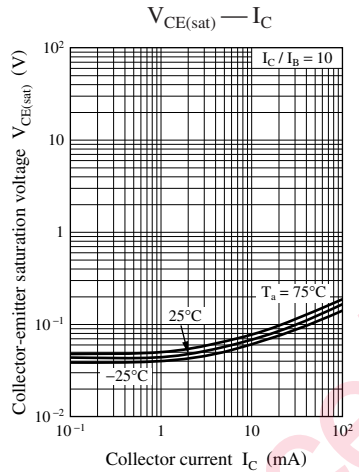
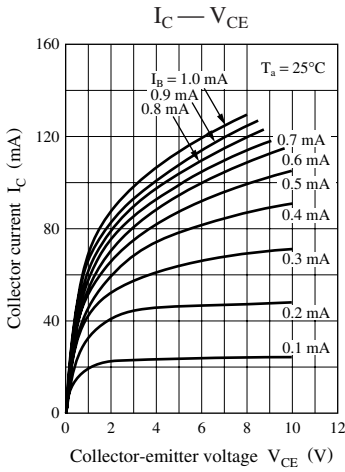




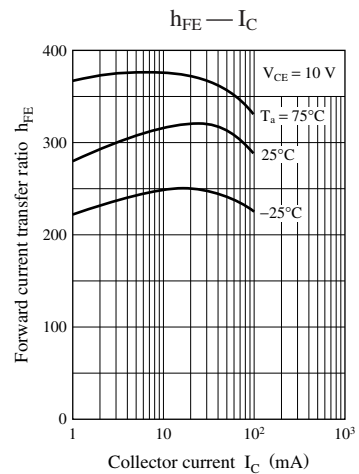
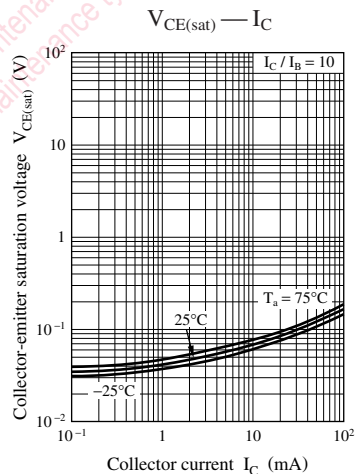
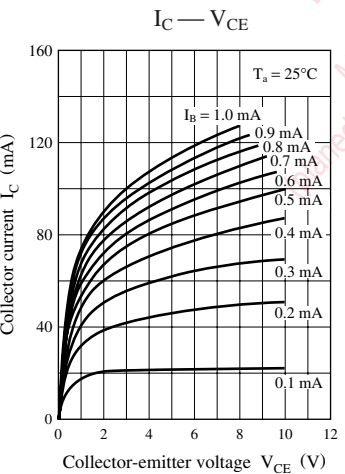
Characteristics charts of UNR9214J

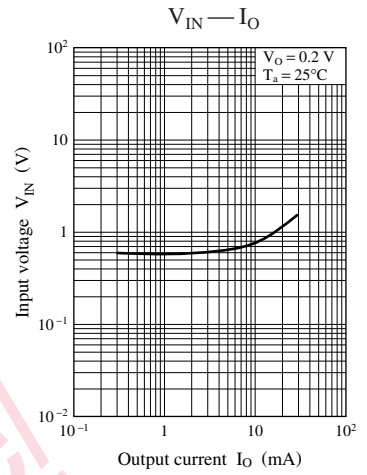
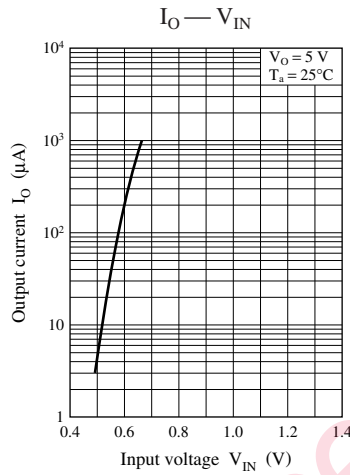
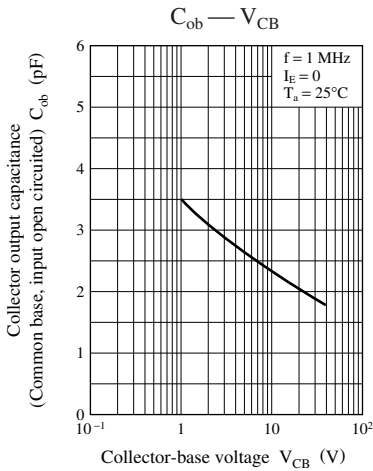


Characteristics charts of UNR9215J

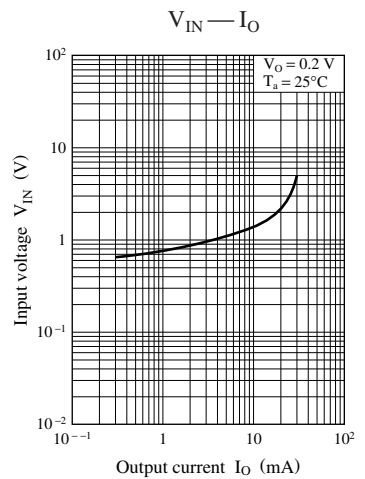
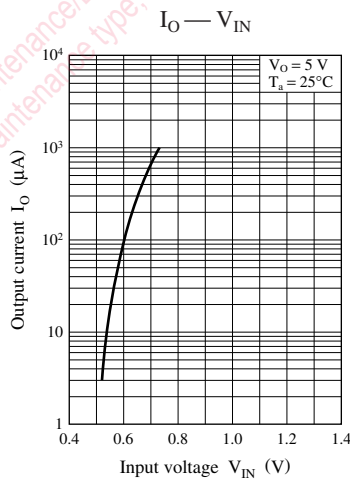
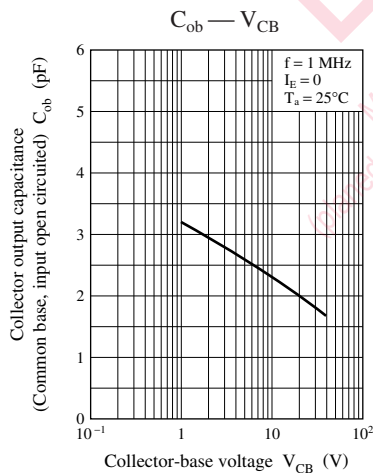
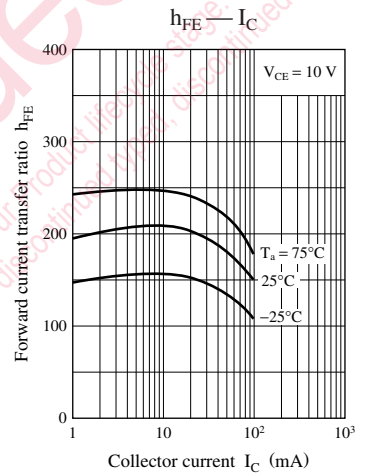
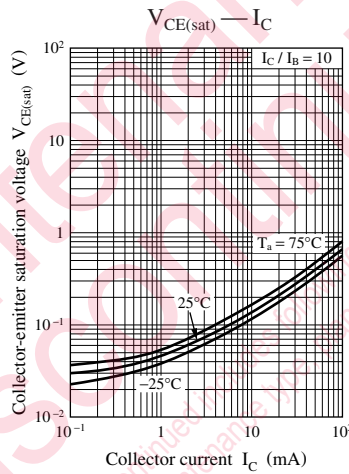
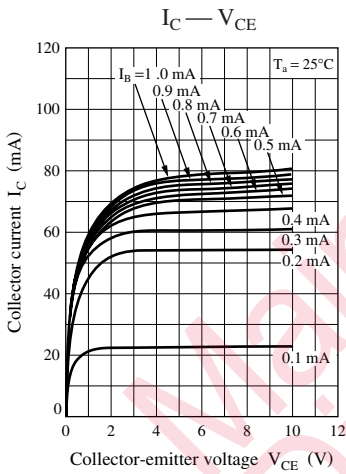


Characteristics charts of UNR9216J

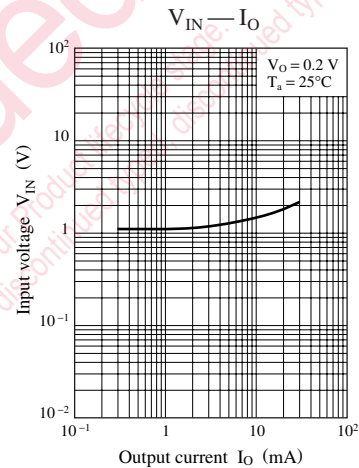
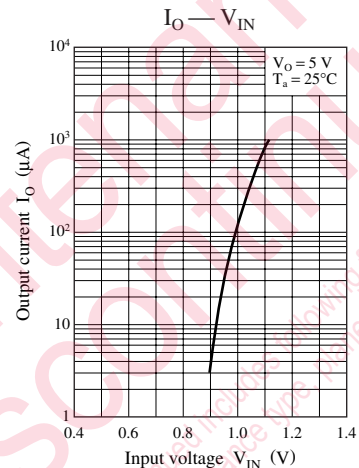
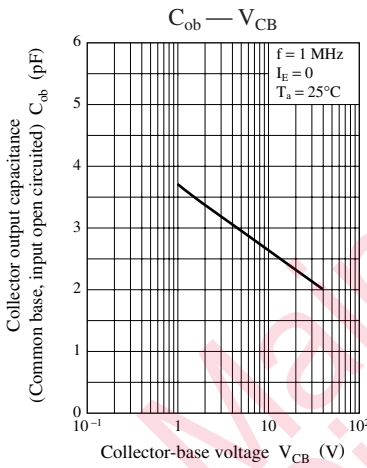
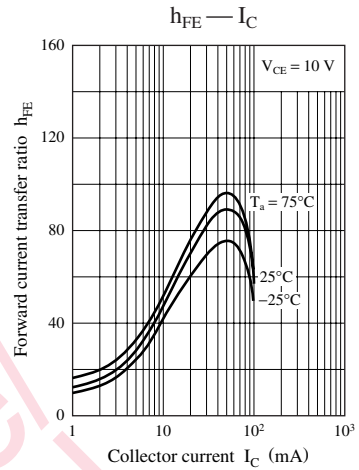
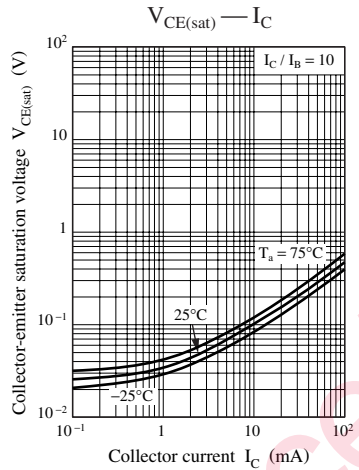
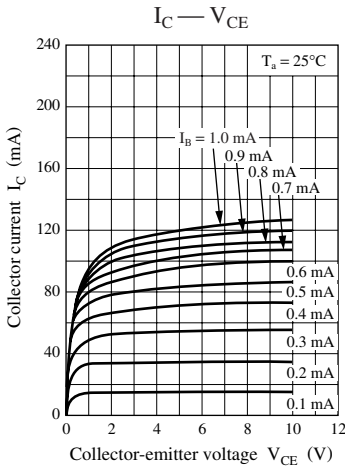




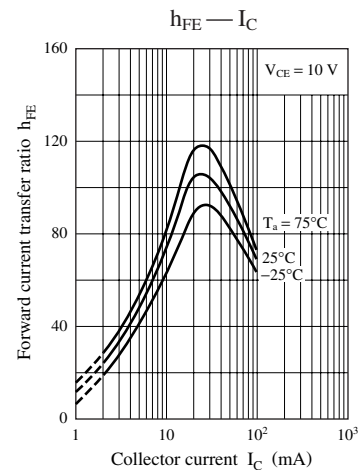
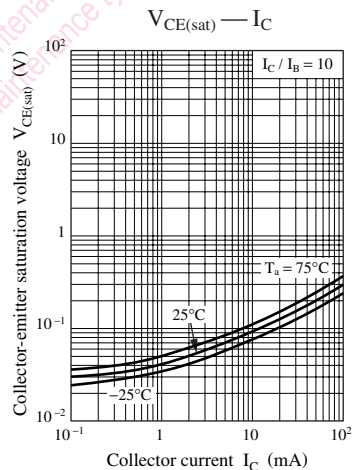
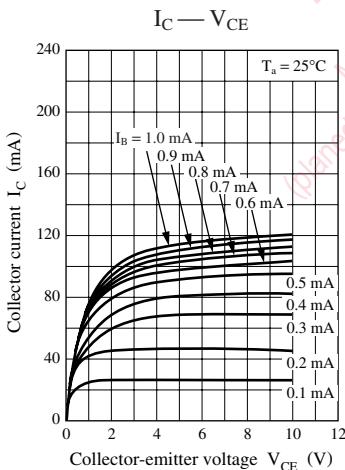
Characteristics charts of UNR9217J

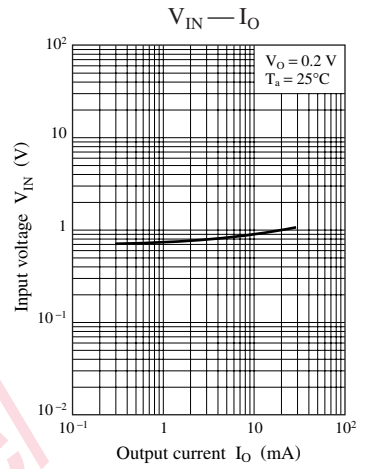
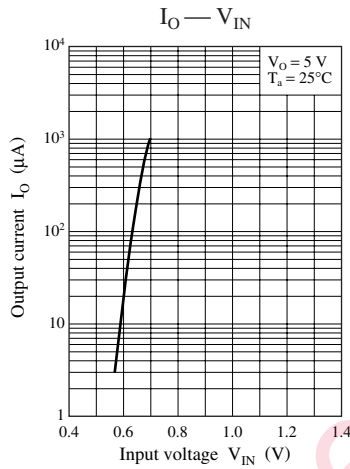
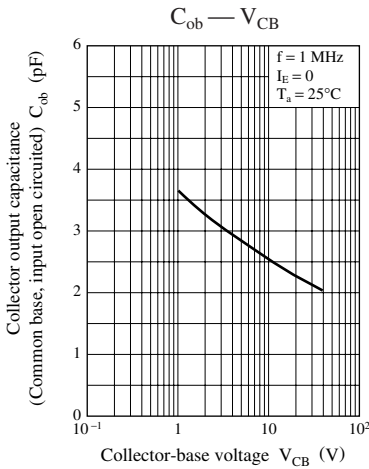


Characteristics charts of UNR9218J

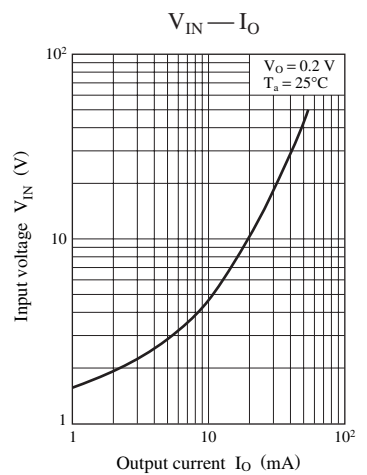
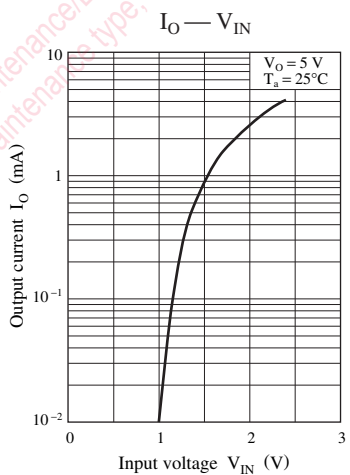
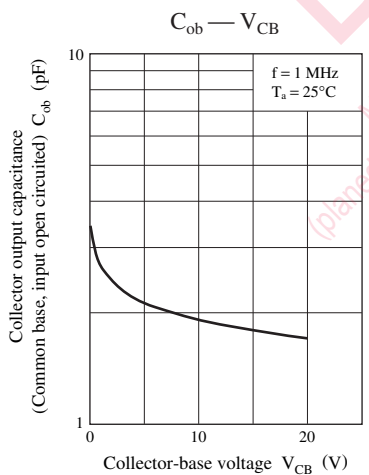
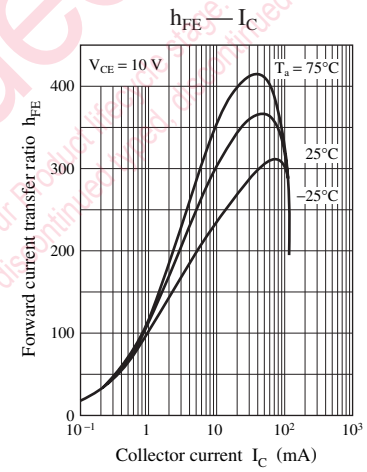
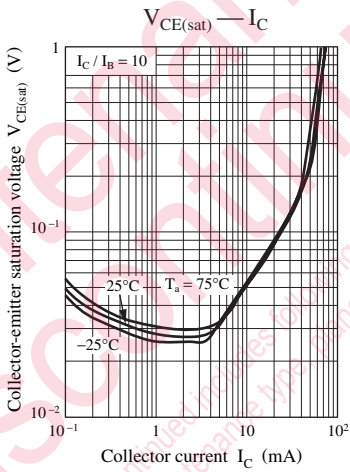
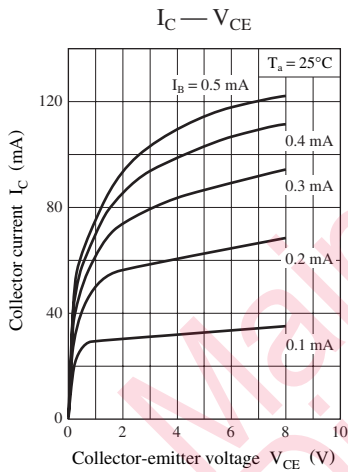


Characteristics charts of UNR9219J

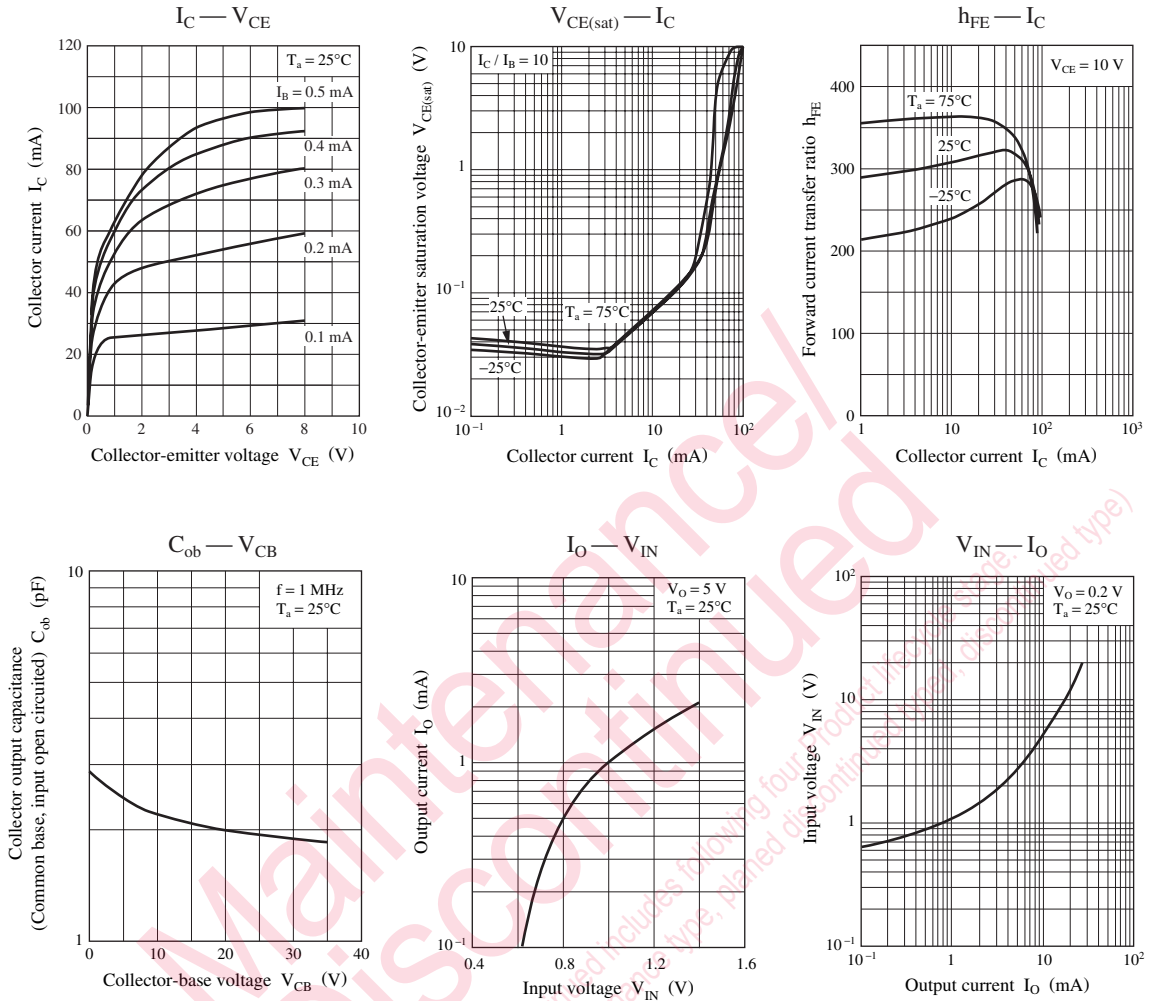




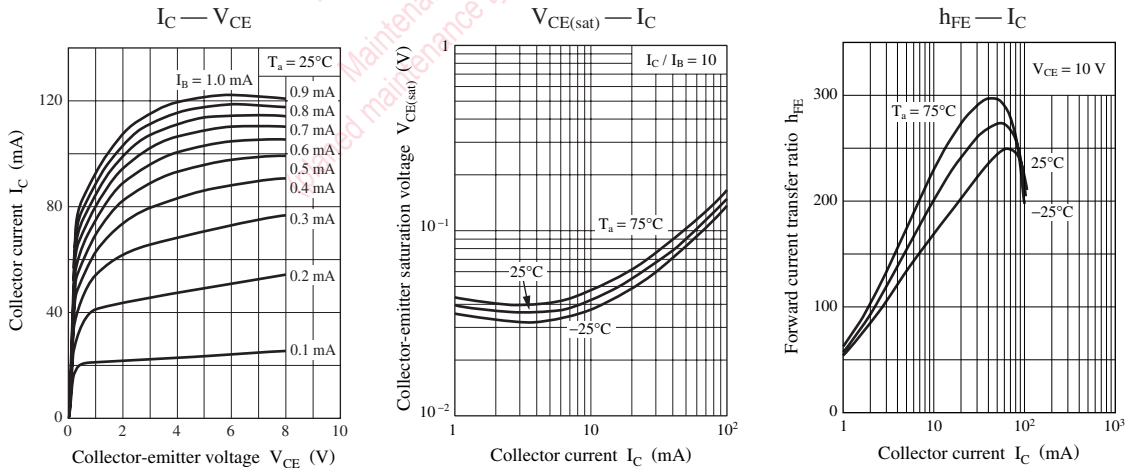
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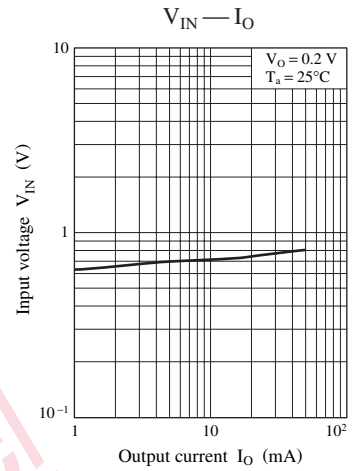
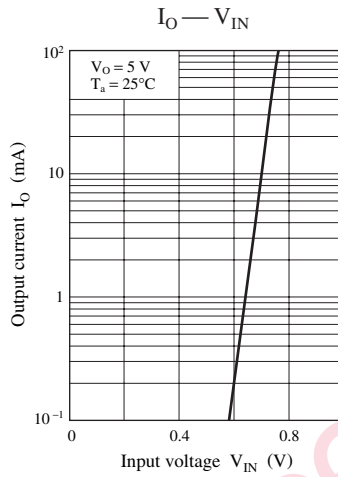
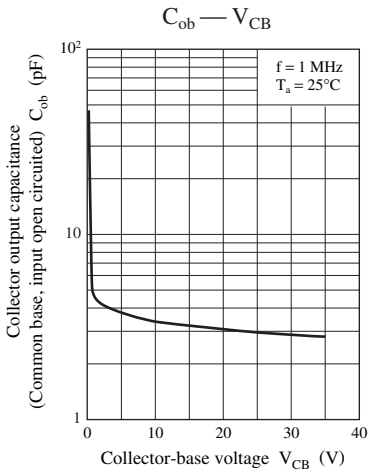


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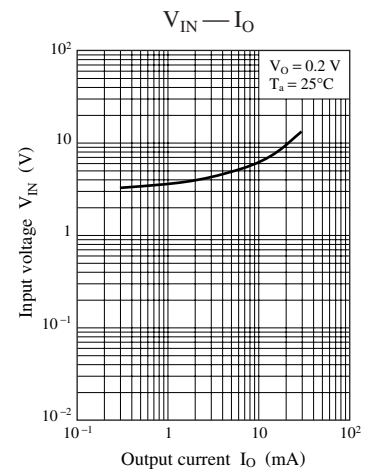
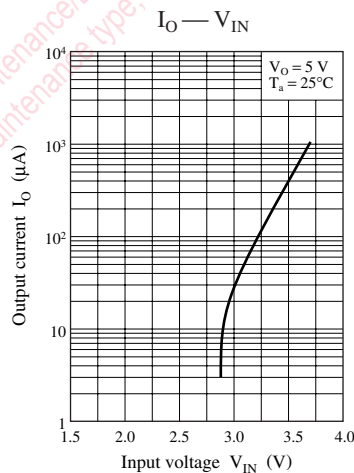
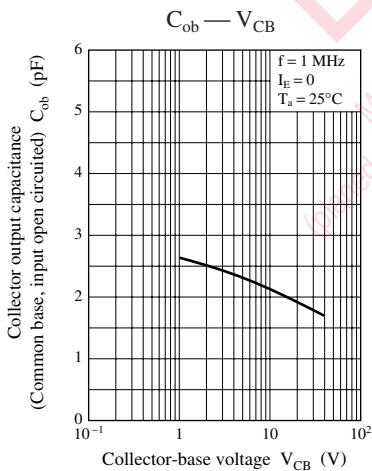
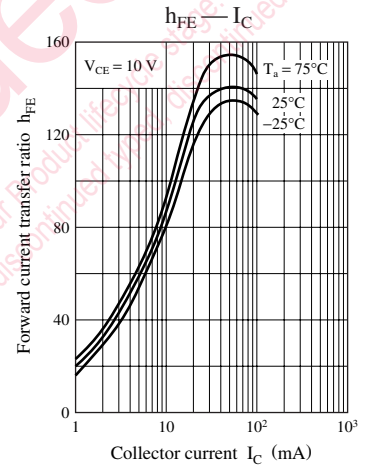
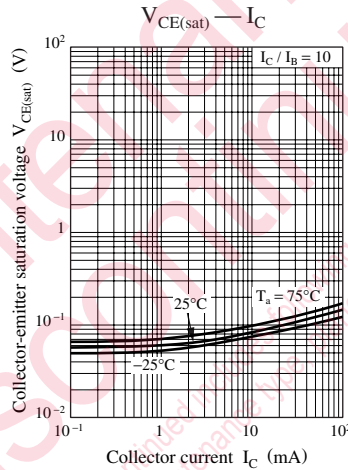
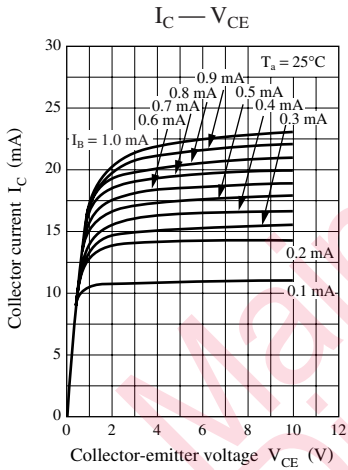


Characteristics charts of UNR921CJ

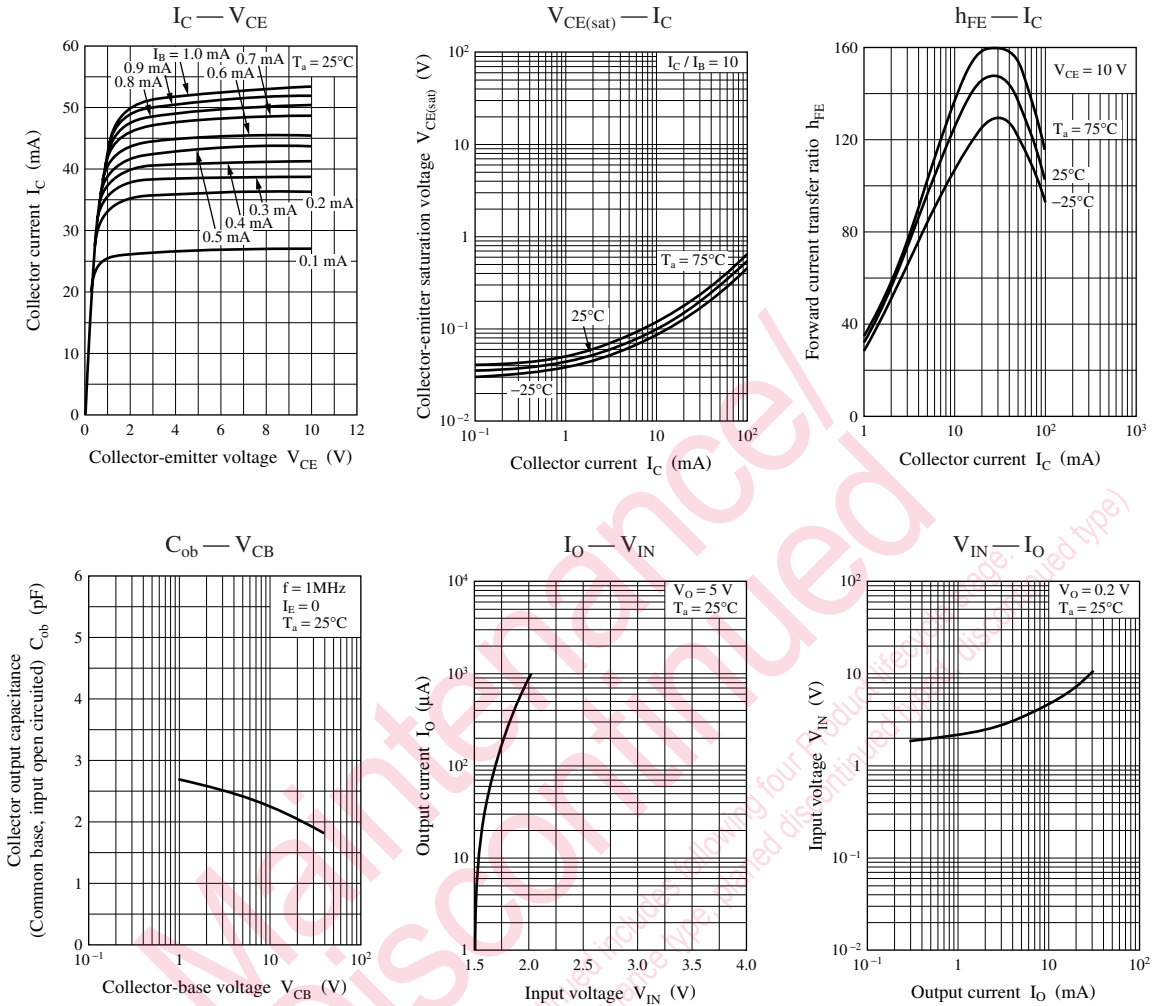




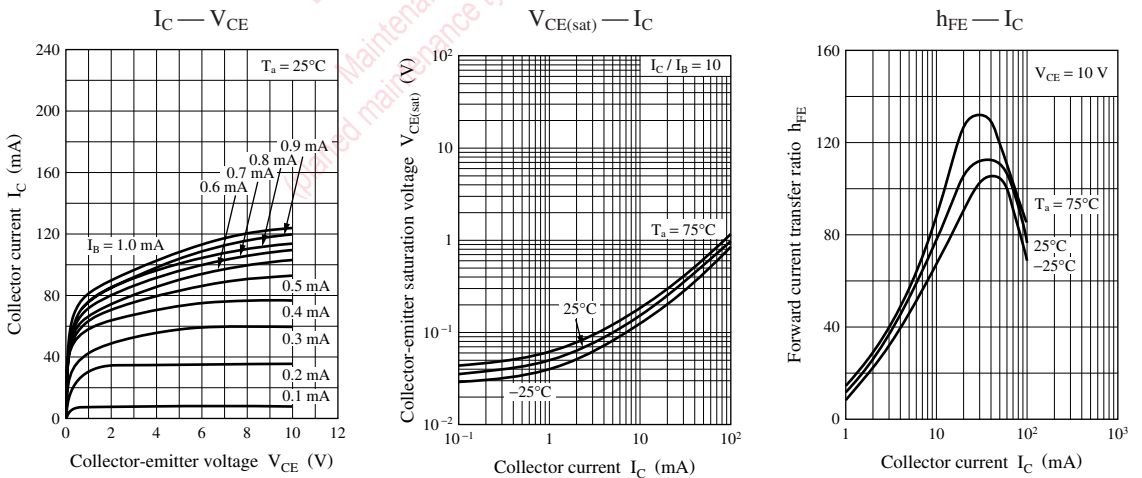
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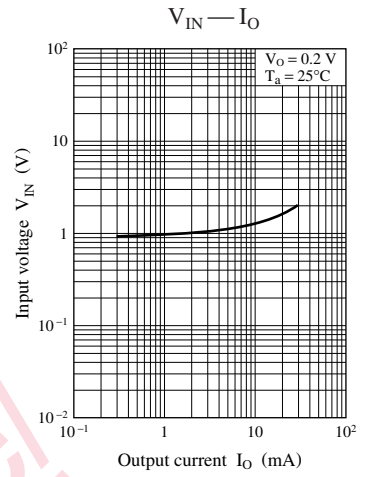
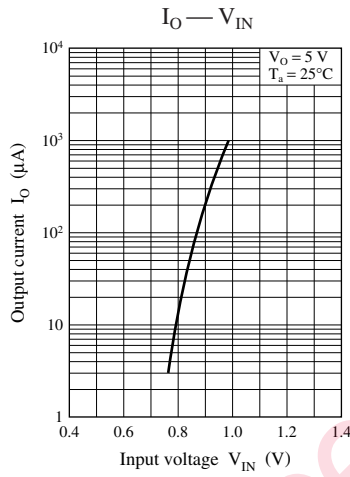
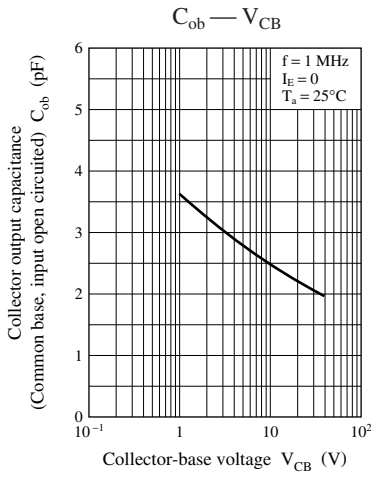


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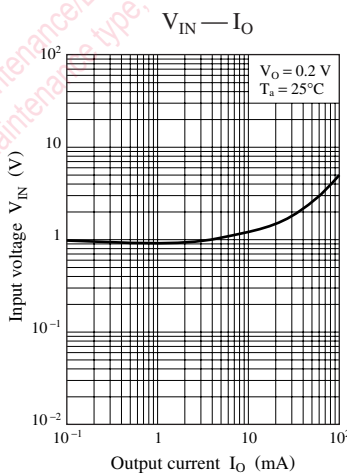
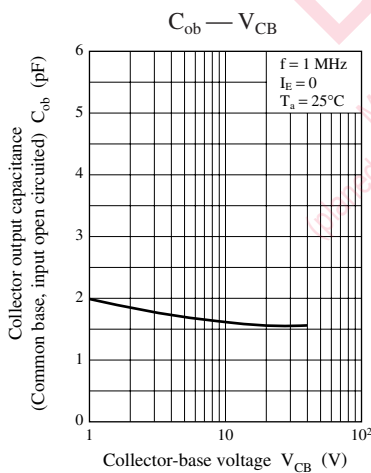
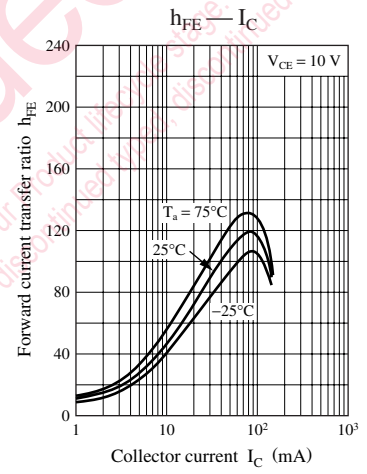
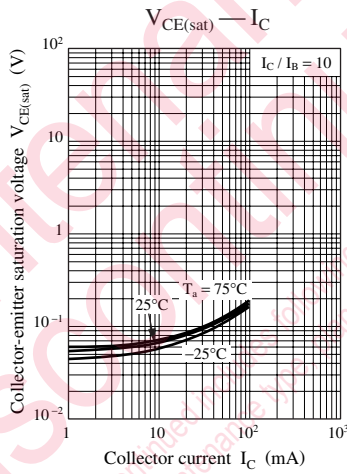
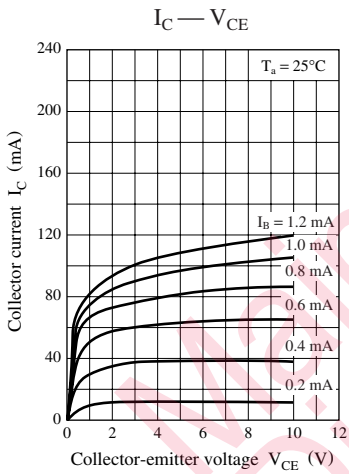


Characteristics charts of UNR921FJ

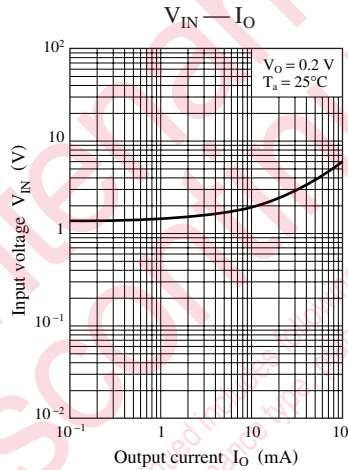
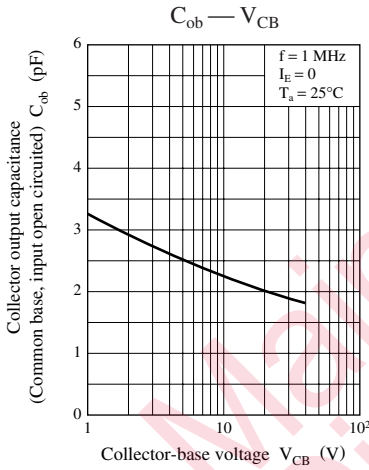
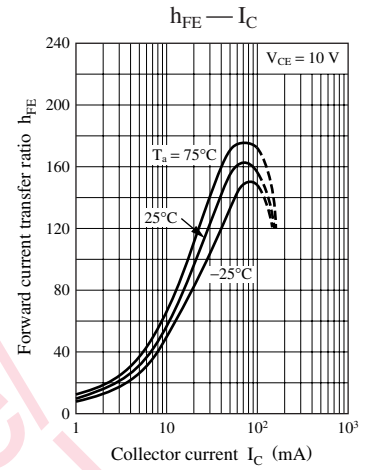
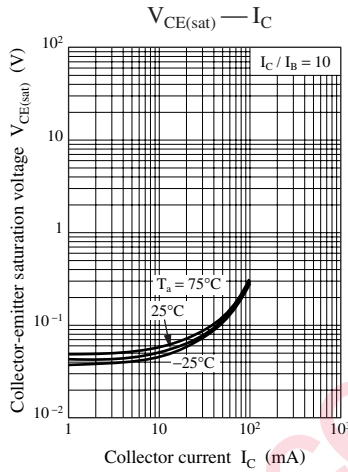
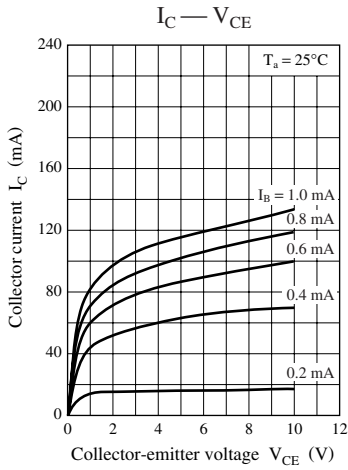




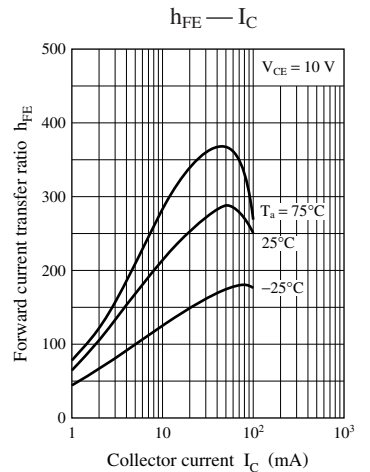
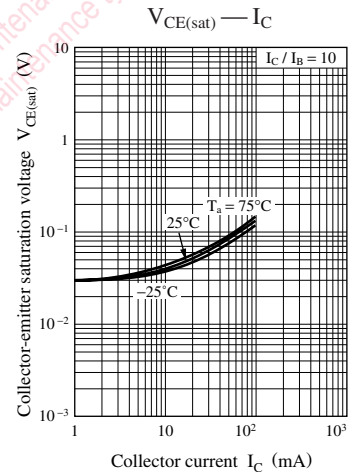
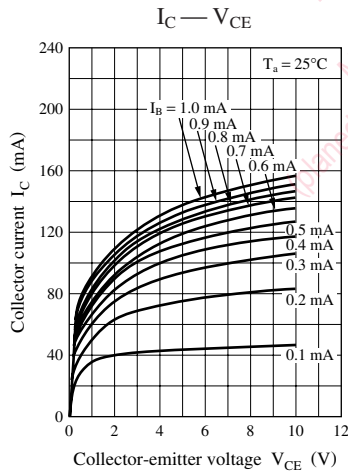
Characteristics charts of UNR921KJ

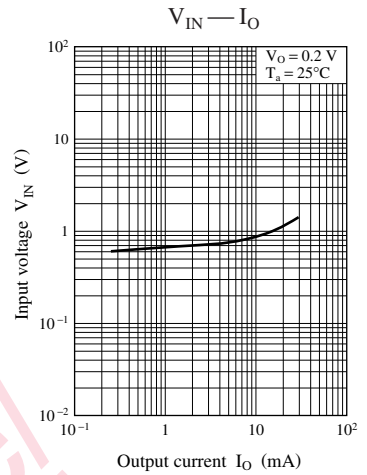
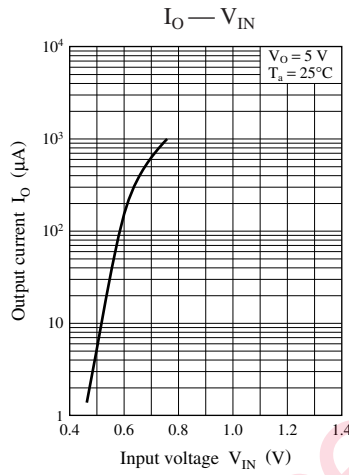
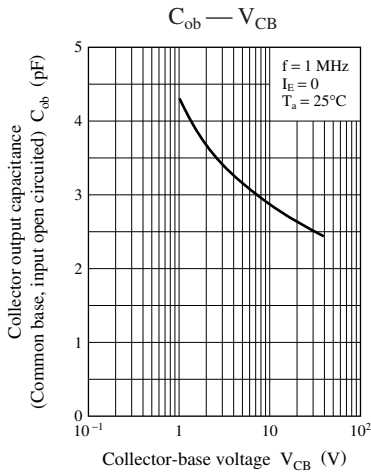


Characteristics charts of UNR921LJ

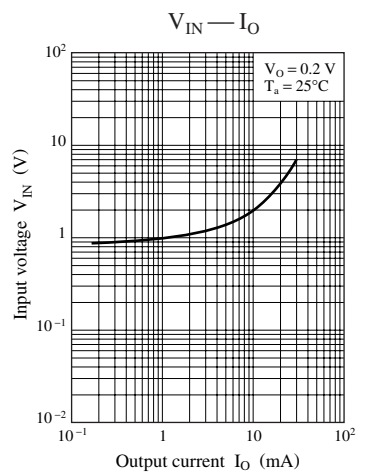
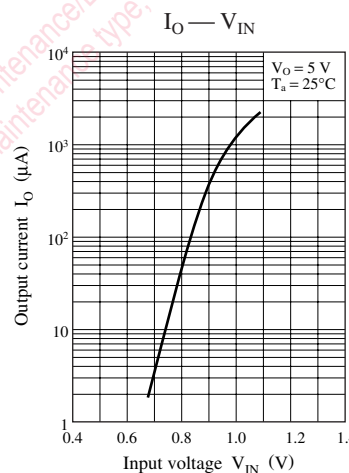
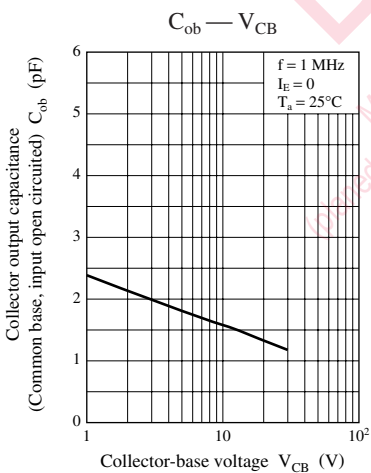
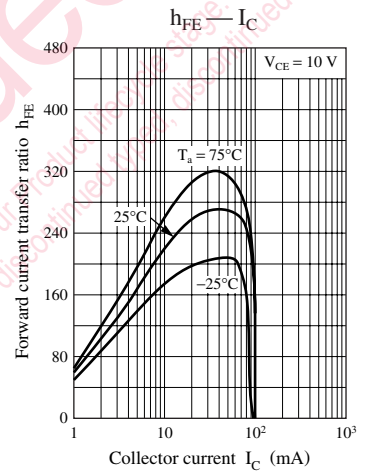
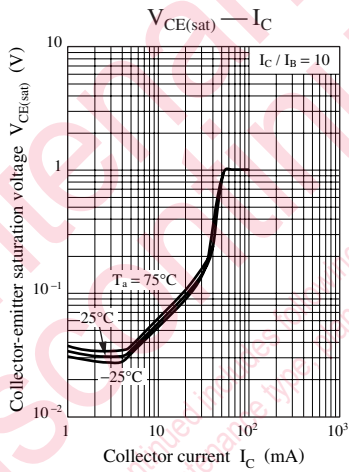
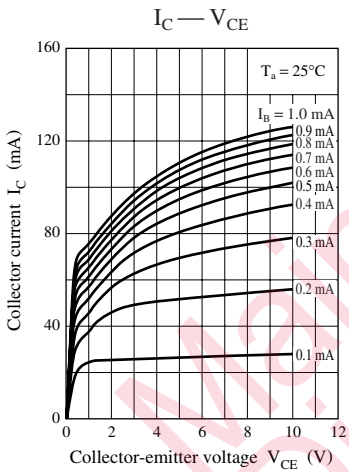


Characteristics charts of UNR921MJ

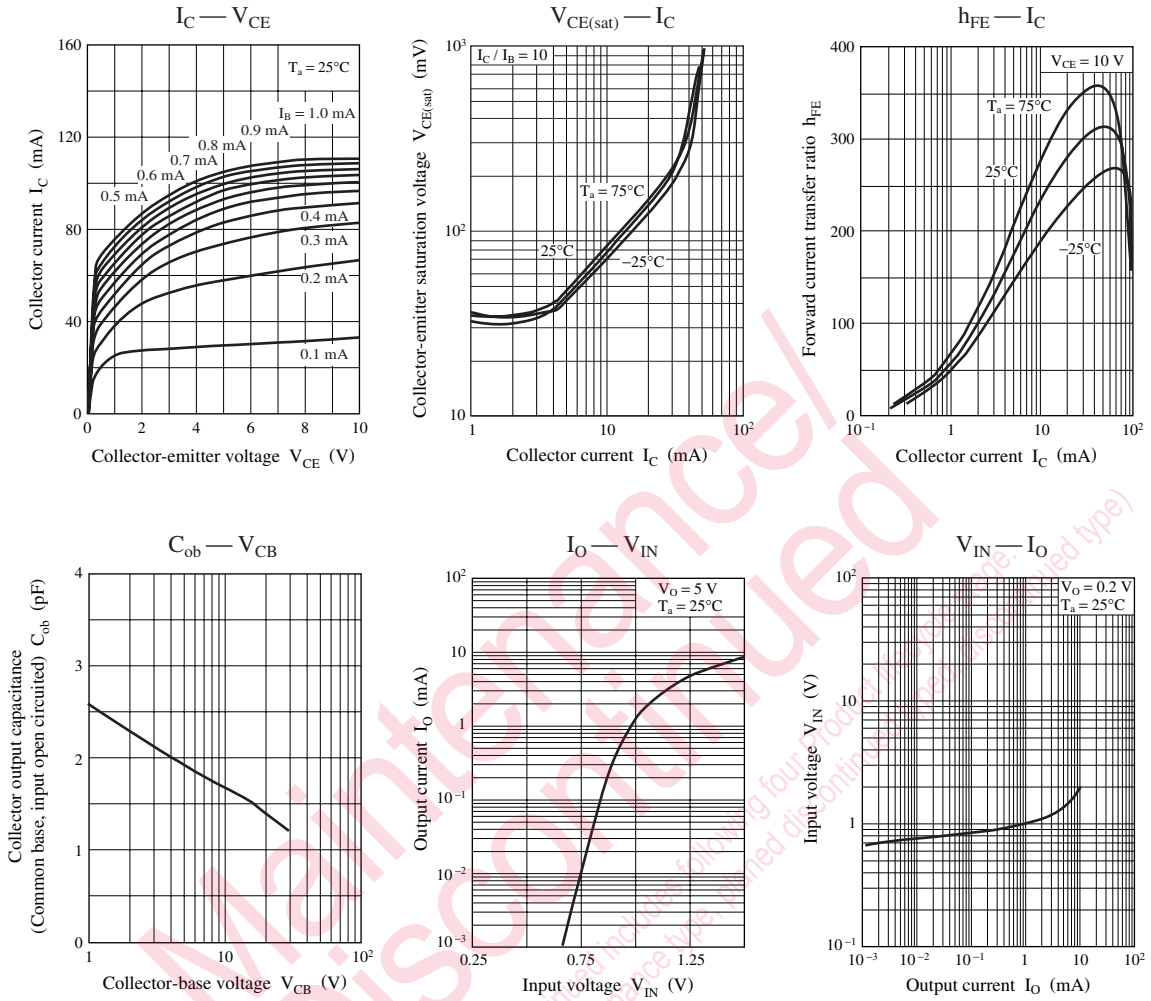




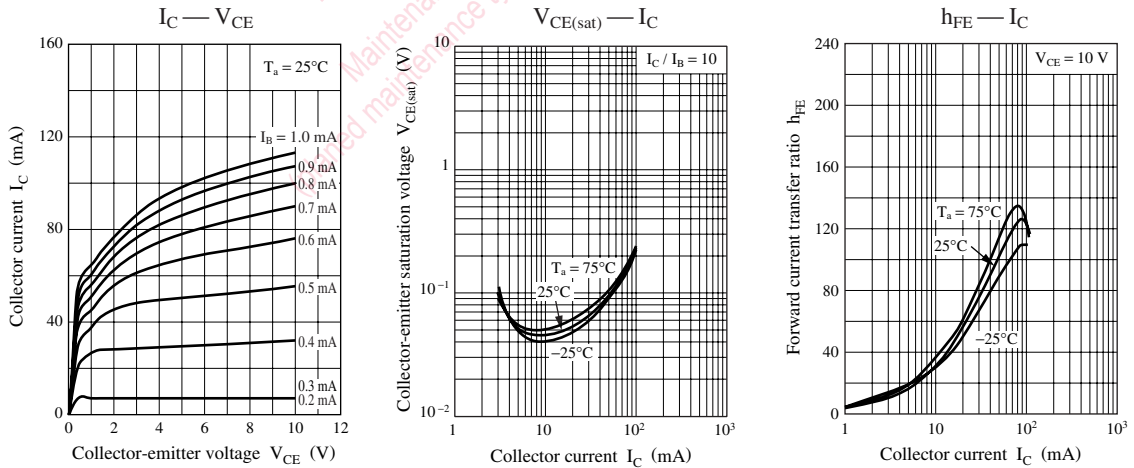
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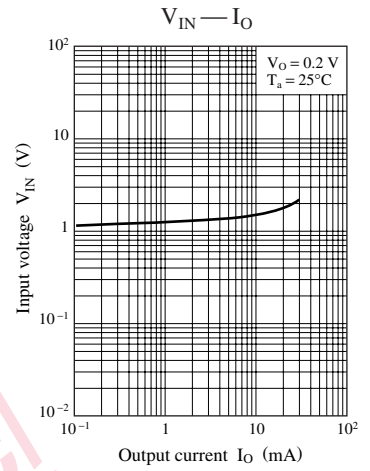
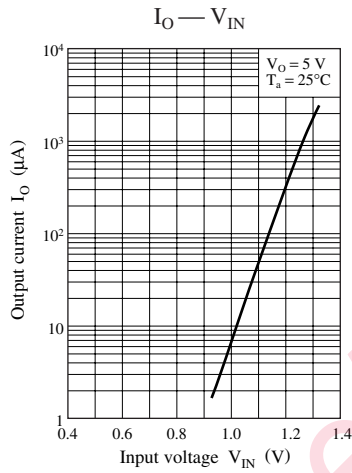
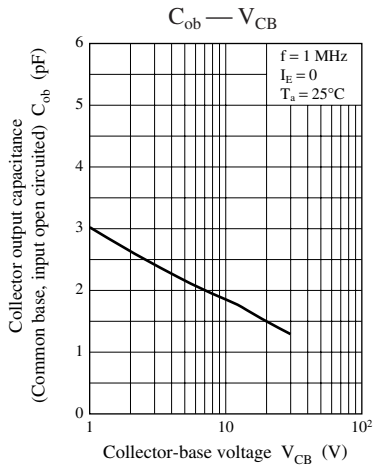


Characteristics charts of UNR921TJ



Characteristics charts of UNR921VJ



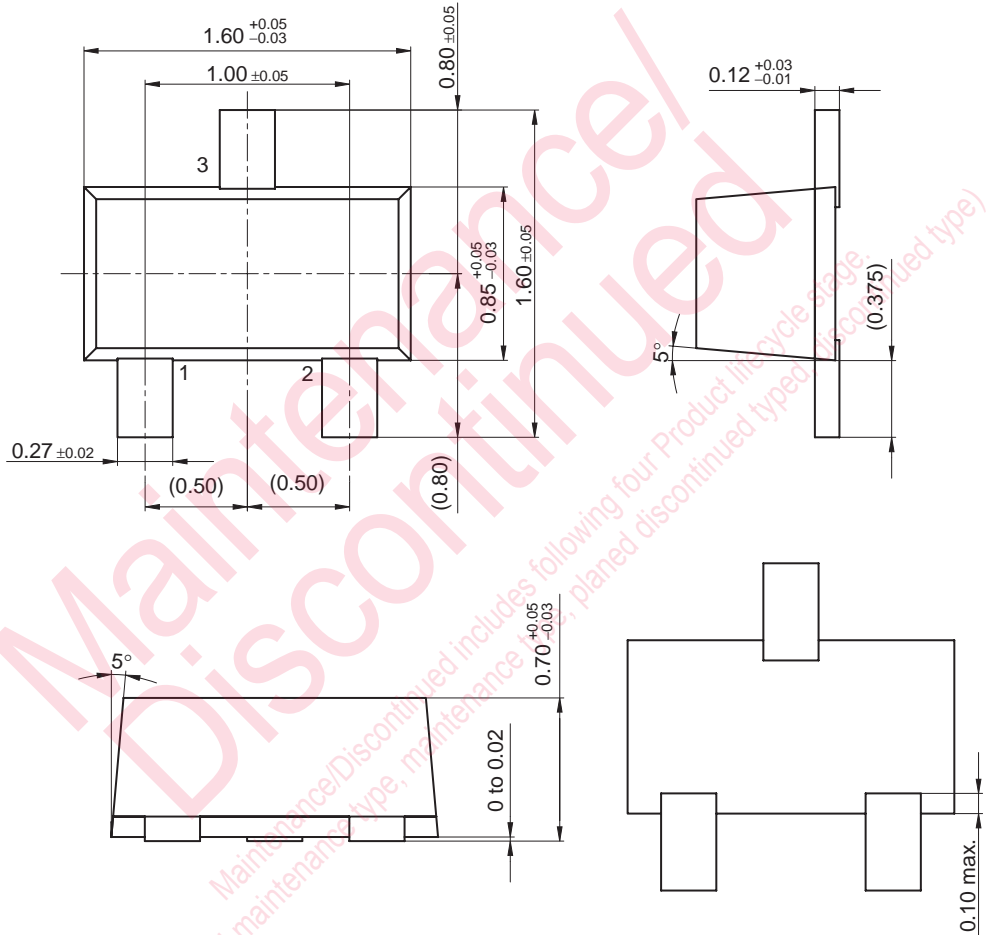


Maintenance/Discontinued

Maintenance/Discontinued includes following four Product lifecycle stage.
(planned maintenance type, maintenance type, planned discontinued type, discontinued type)

SSMini3-F1

Unit: mm



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