

**UNR9211/9212/9213/9214/9215/9216/9217/9218/9219/9210/921D/
921E/921F/921K/921L/921M/921N/921AJ/921BJ/921CJ**
(UN9211/9212/9213/9214/9215/9216/9217/9218/9219/9210/921D/921E/921F/
921K/921L/921M/921N/921AJ/921BJ/921CJ)

Silicon NPN epitaxial planer transistor

For digital circuits

Features

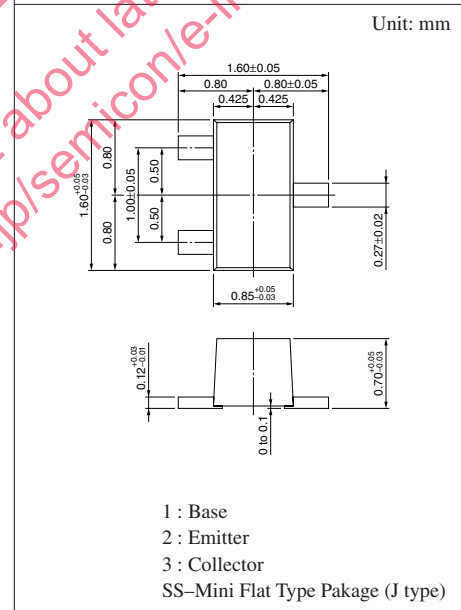
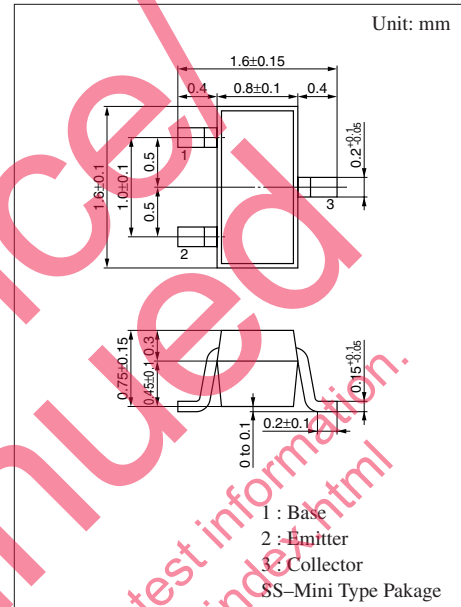
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- SS-Mini type package, allowing automatic insertion through tape packing and magazine packing.

Resistance by Part Number

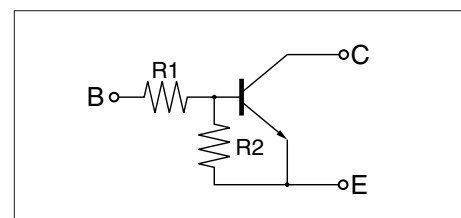
	Marking Symbol	(R ₁)	(R ₂)
• UNR9211	8A	10kΩ	10kΩ
• UNR9212	8B	22kΩ	22kΩ
• UNR9213	8C	47kΩ	47kΩ
• UNR9214	8D	10kΩ	47kΩ
• UNR9215	8E	10kΩ	—
• UNR9216	8F	4.7kΩ	—
• UNR9217	8H	22kΩ	—
• UNR9218	8I	0.51kΩ	5.1kΩ
• UNR9219	8K	1kΩ	10kΩ
• UNR9210	8L	47kΩ	—
• UNR921D	8M	47kΩ	10kΩ
• UNR921E	8N	47kΩ	22kΩ
• UNR921F	8O	4.7kΩ	10kΩ
• UNR921K	8P	10kΩ	4.7kΩ
• UNR921L	8Q	4.7kΩ	4.7kΩ
• UNR921M	EL	2.2kΩ	47kΩ
• UNR921N	EX	4.7kΩ	47kΩ
• UNR921AJ	8X	100kΩ	100kΩ
• UNR921BJ	8Y	100kΩ	—
• UNR921CJ	8Z	—	47kΩ

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V _{CB0}	50	V
Collector to emitter voltage	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 (Ta=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit		
Collector cutoff current		I _{CBO}	V _{CB} = 50V, I _E = 0			0.1	μA		
		I _{CEO}	V _{CE} = 50V, I _B = 0			0.5	μA		
Emitter cutoff current	UNR9211	I _{EBO}	V _{EB} = 6V, I _C = 0			0.5	mA		
	UNR9212/9214/921E/921D					0.2			
	UNR9213/UNR921M/921N/UNR921AJ					0.1			
	UNR9215/9216/9217/9210/UNR921BJ					0.01			
	UNR921F/921K					1.0			
	UNR9219					1.5			
	UNR9218/921L/UNR921CJ					2.0			
Collector to base voltage		V _{CBO}	I _C = 10μA, I _E = 0	50			V		
Collector to emitter voltage		V _{CEO}	I _C = 2mA, I _B = 0	50			V		
Forward current transfer ratio	UNR9211	h _{FE}	V _{CE} = 10V, I _C = 5mA	35					
	UNR9212/921E			60					
	UNR9213/9214/921M/UNR921AJ/921CJ			80					
	UNR9215*/9216*/9217*/9210*/UNR921BJ			160		460			
	UNR921F/921D/9219			30					
	UNR9218/921K/921L			20					
	UNR921N			80		400			
Collector to emitter saturation voltage		V _{CE(sat)}	I _C = 10mA, I _B = 0.3mA			0.25	V		
Output voltage high level		V _{OH}	V _{CC} = 5V, V _B = 0.5V, R _L = 1kΩ	4.9			V		
Output voltage low level		V _{OL}	V _{CC} = 5V, V _B = 2.5V, R _L = 1kΩ			0.2	V		
				UNR9213/921K/UNR921BJ	V _{OC} = 5V, V _B = 3.5V, R _L = 1kΩ				0.2
				UNR921D	V _{CC} = 5V, V _B = 10V, R _L = 1kΩ				0.2
				UNR921E	V _{CC} = 5V, V _B = 6V, R _L = 1kΩ				0.2
				UNR921AJ	V _{CC} = 5V, V _B = 5V, R _L = 1kΩ				0.2
				Transition frequency	f _T	V _{CB} = 10V, I _E = -2mA, f = 200MHz			150
Input resistance	UNR9211/9214/9215/921K	R _I		(-30%)	10	(+30%)	kΩ		
	UNR9212/9217				22				
	UNR9213/921D/921E/9210				47				
	UNR9216/921F/921L/UNR921N				4.7				
	UNR9218				0.51				
	UNR9219/UNR921M				1				
	UNR921AJ/921BJ				100				

* h_{FE} rank classification (UNR9215/9216/9217/9210)

Rank	Q	R	S
h _{FE}	160 to 260	210 to 340	290 to 460

■ Electrical Characteristics (continued) (Ta=25°C)

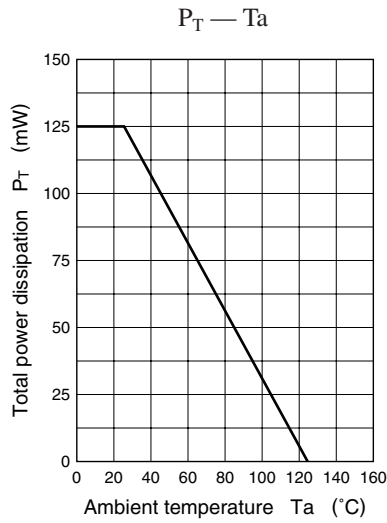
Parameter		Symbol	Conditions	min	typ	max	Unit
Resistance ratio	UNR9211/9212/9213/921L	R_1/R_2		0.8	1.0	1.2	
	UNR9214			0.17	0.21	0.25	
	UNR9218/9219			0.08	0.1	0.12	
	UNR921D				4.7		
	UNR921E				2.14		
	UNR921F				0.47		
	UNR921K				2.13		
	UNR921M				0.047		
	UNR921N				0.1		
	UNR921AJ				1.0		
Resistance between Emitter to Base	UNR921CJ	R_2		-30%	47	30%	k Ω

Maintenance
 Discontinued

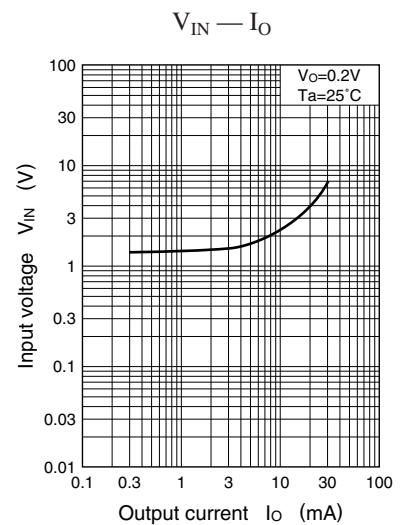
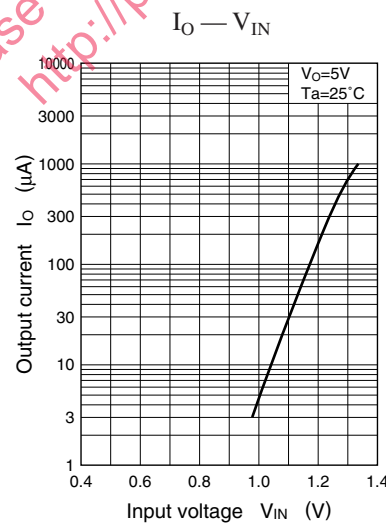
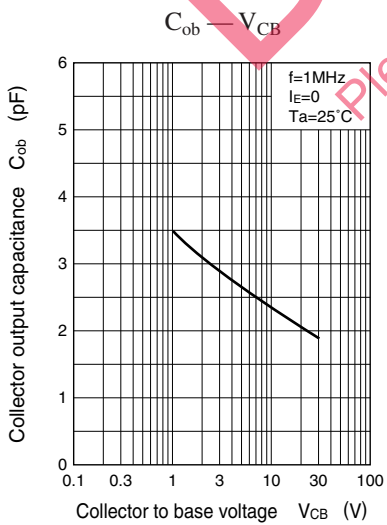
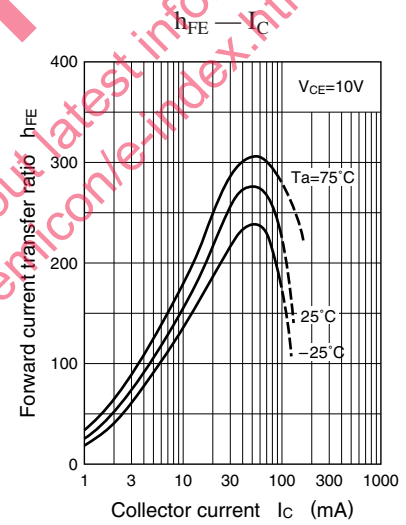
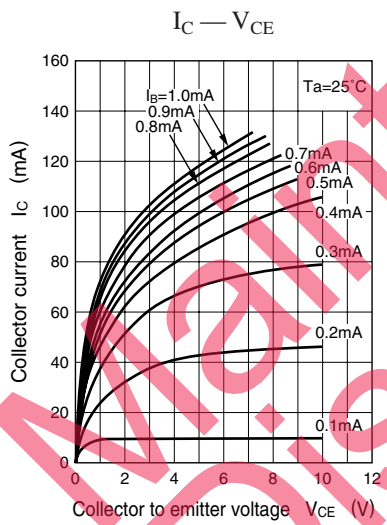
Please visit following URL about latest information.
<http://panasonic.co.jp/semicon/e-index.html>

Transistors with built-in Resistor

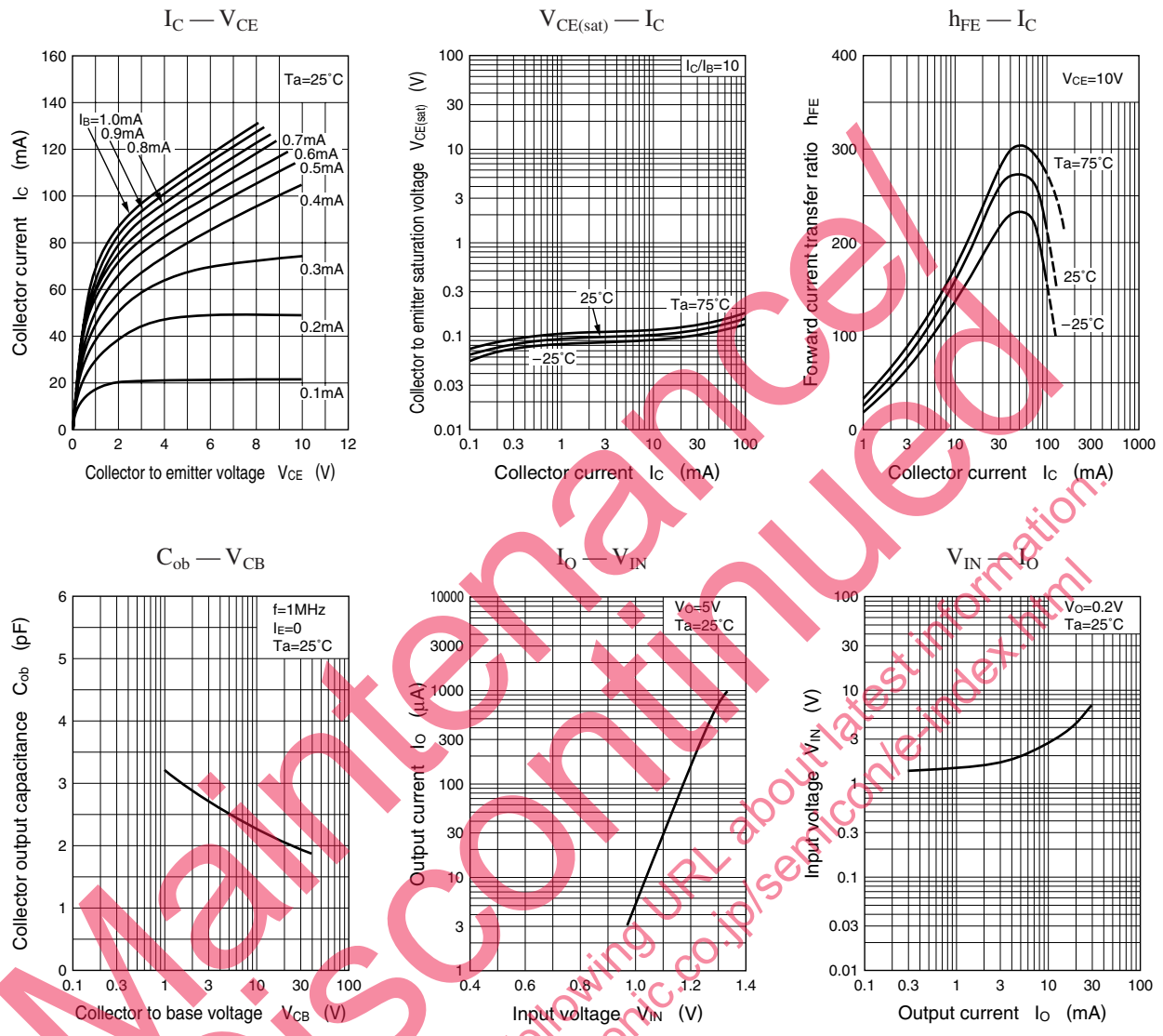
Common characteristics chart



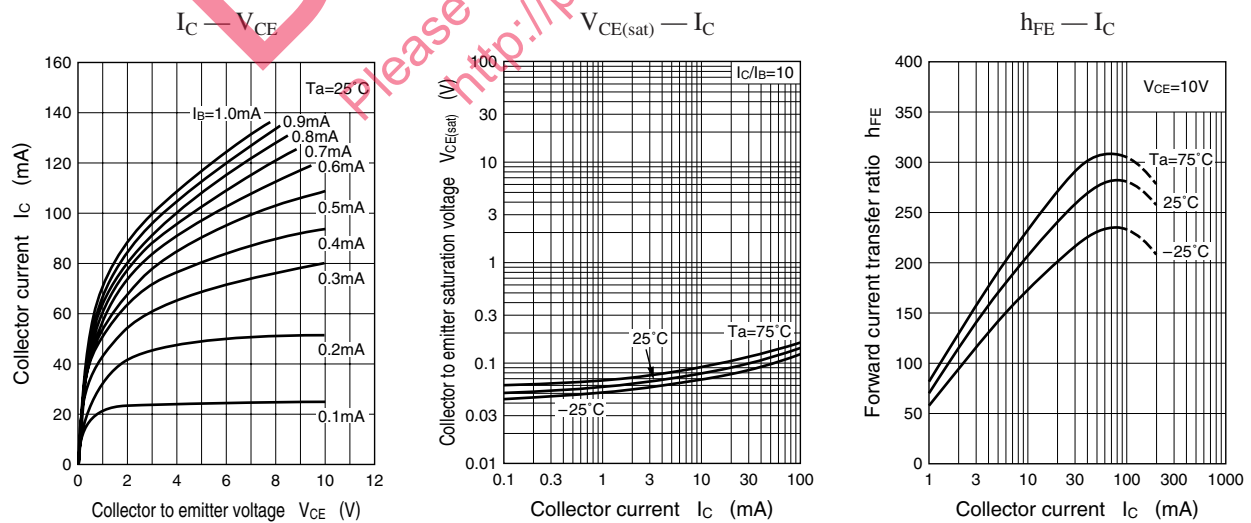
Characteristics charts of UNR9211

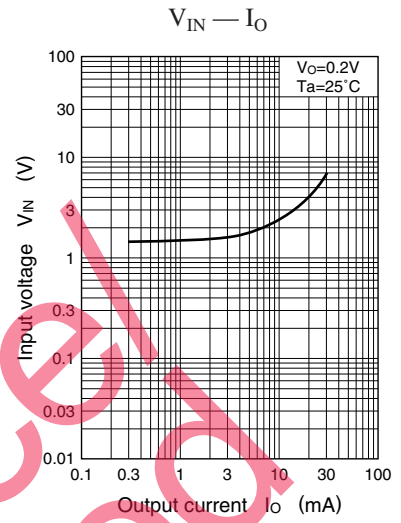
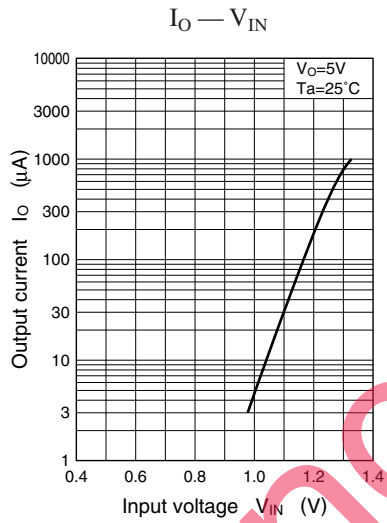
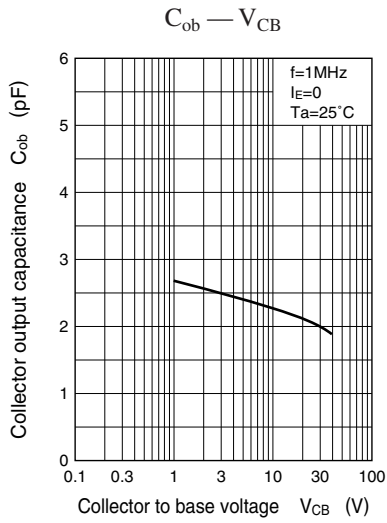


Characteristics charts of UNR9212

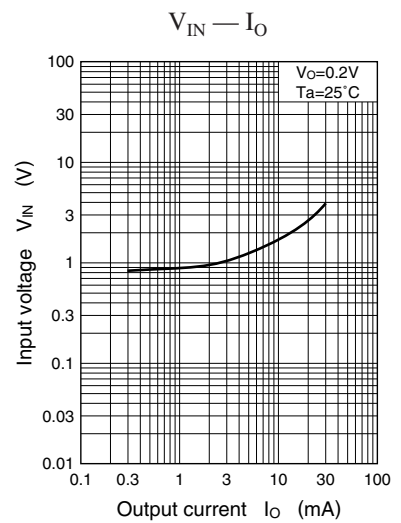
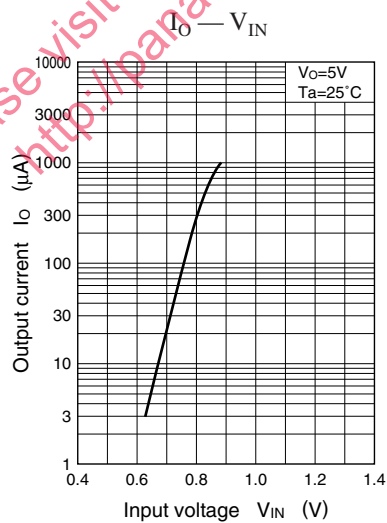
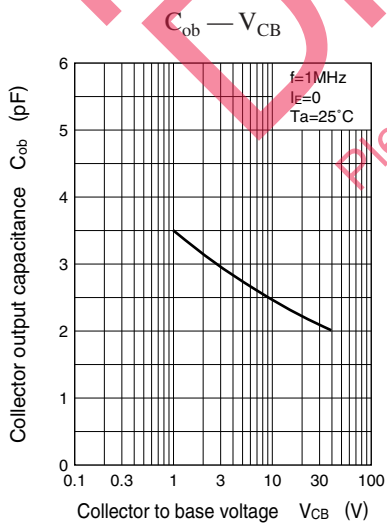
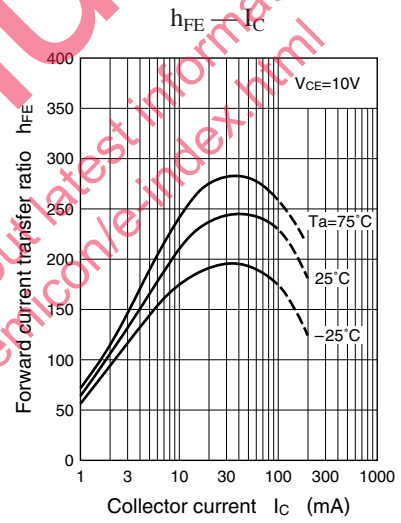
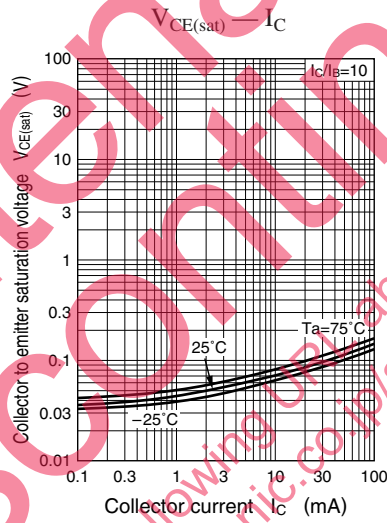
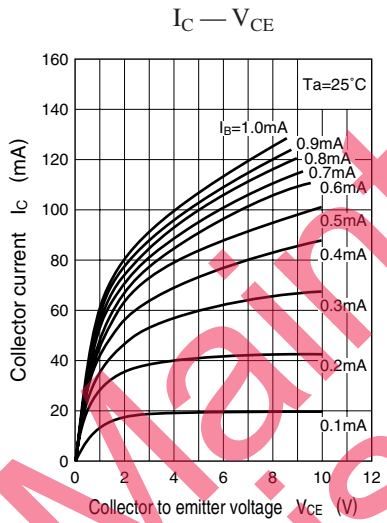


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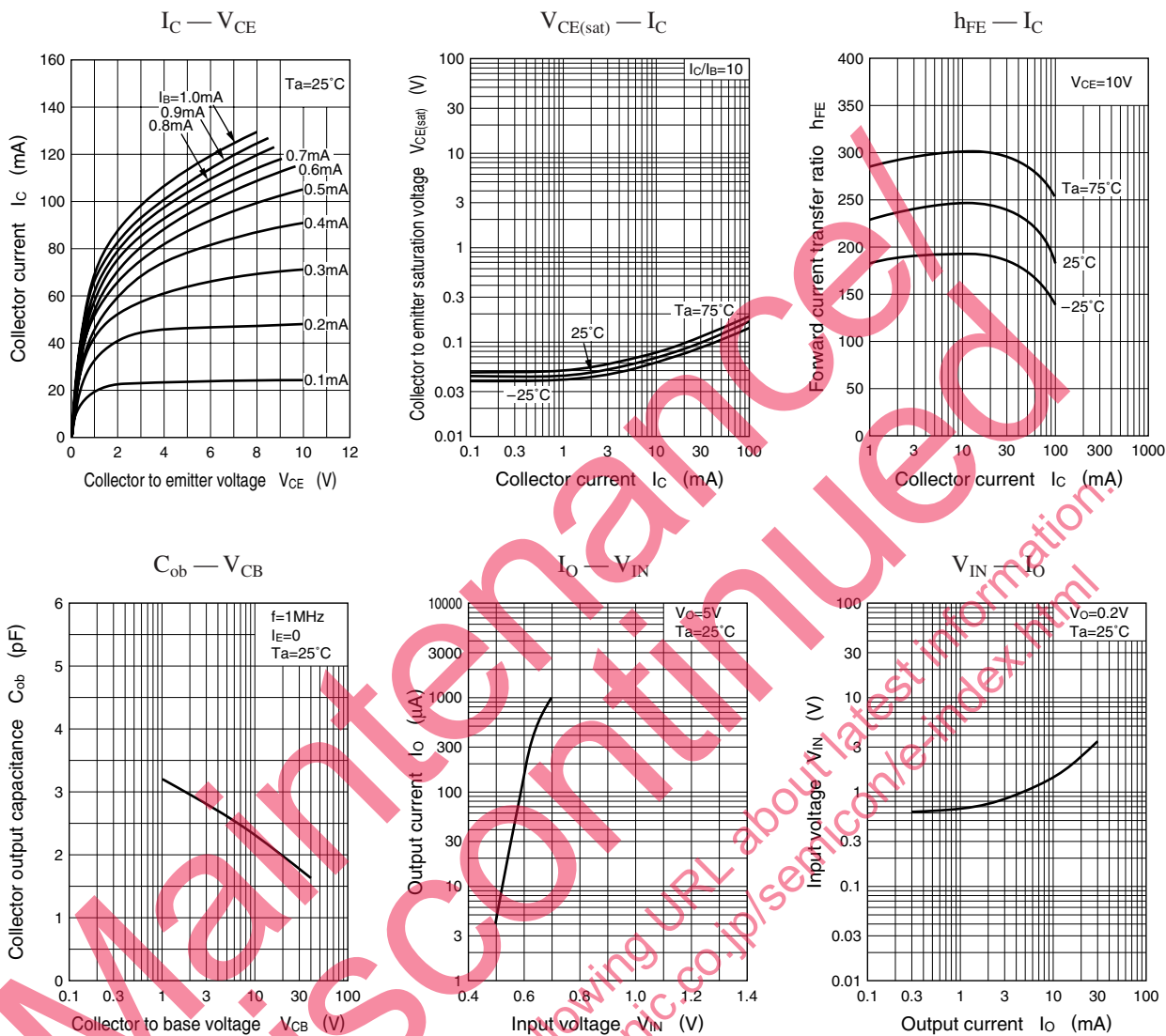




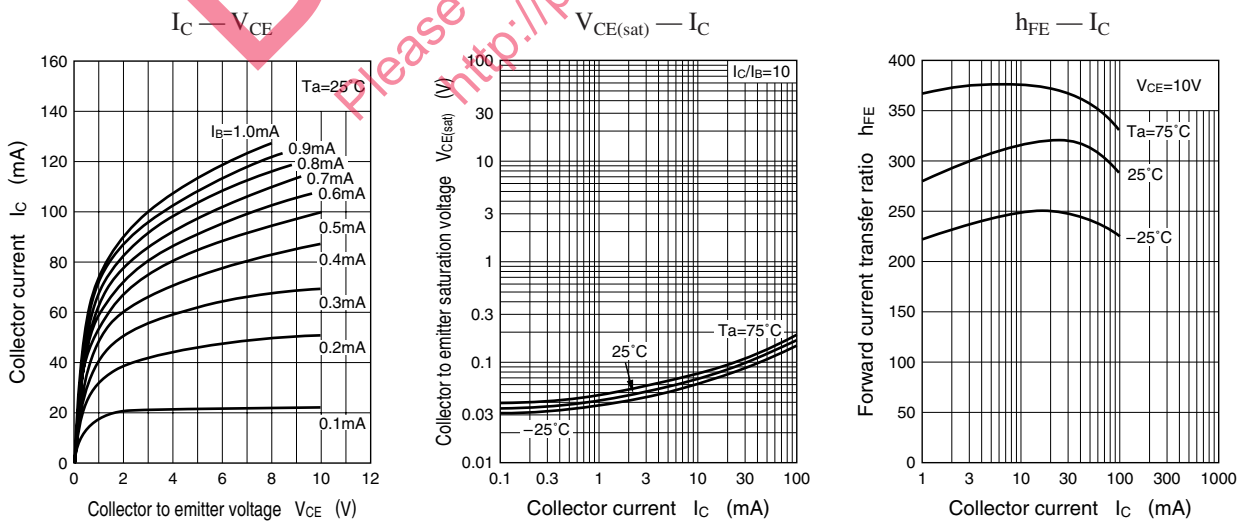
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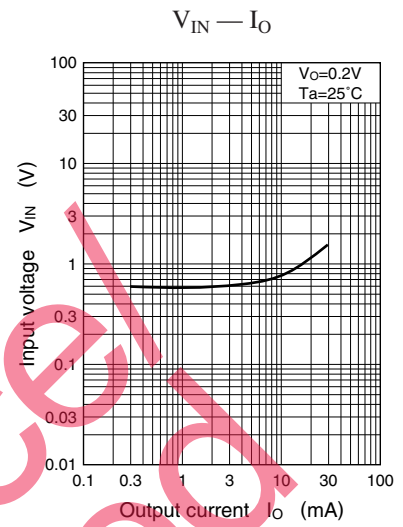
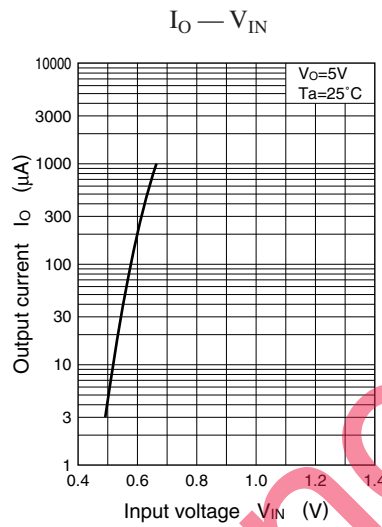
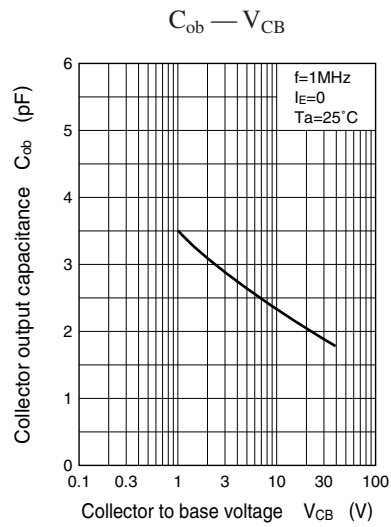


Characteristics charts of UNR9215

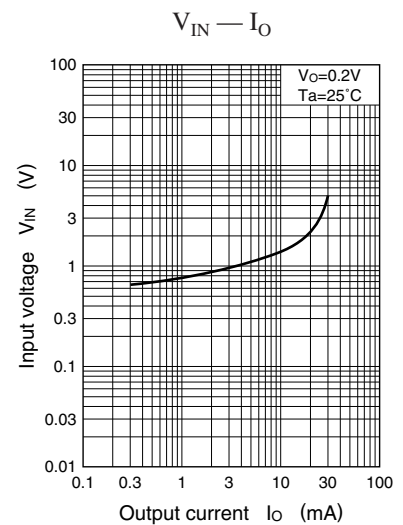
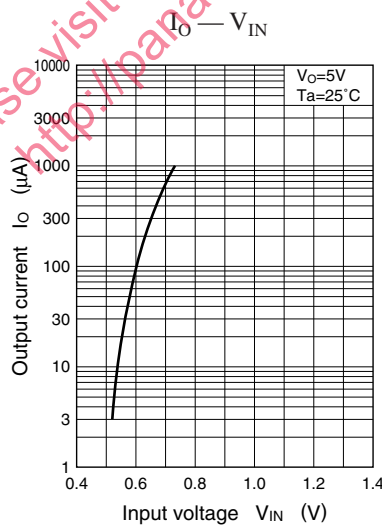
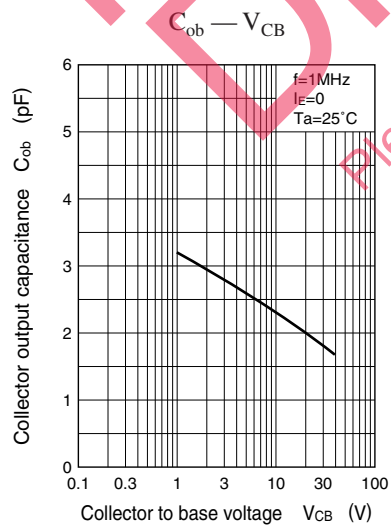
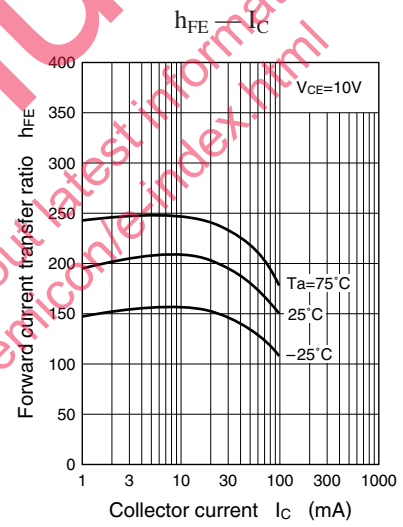
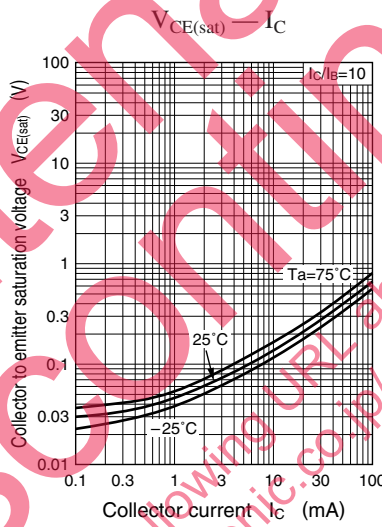
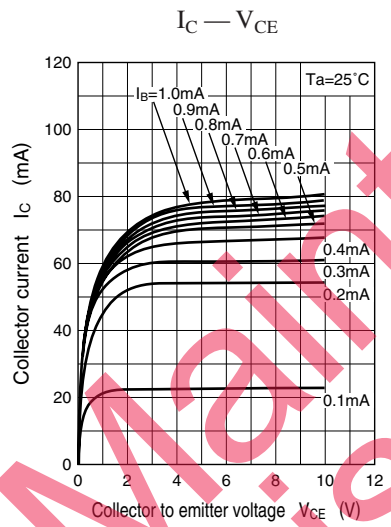


Characteristics charts of UNR9216

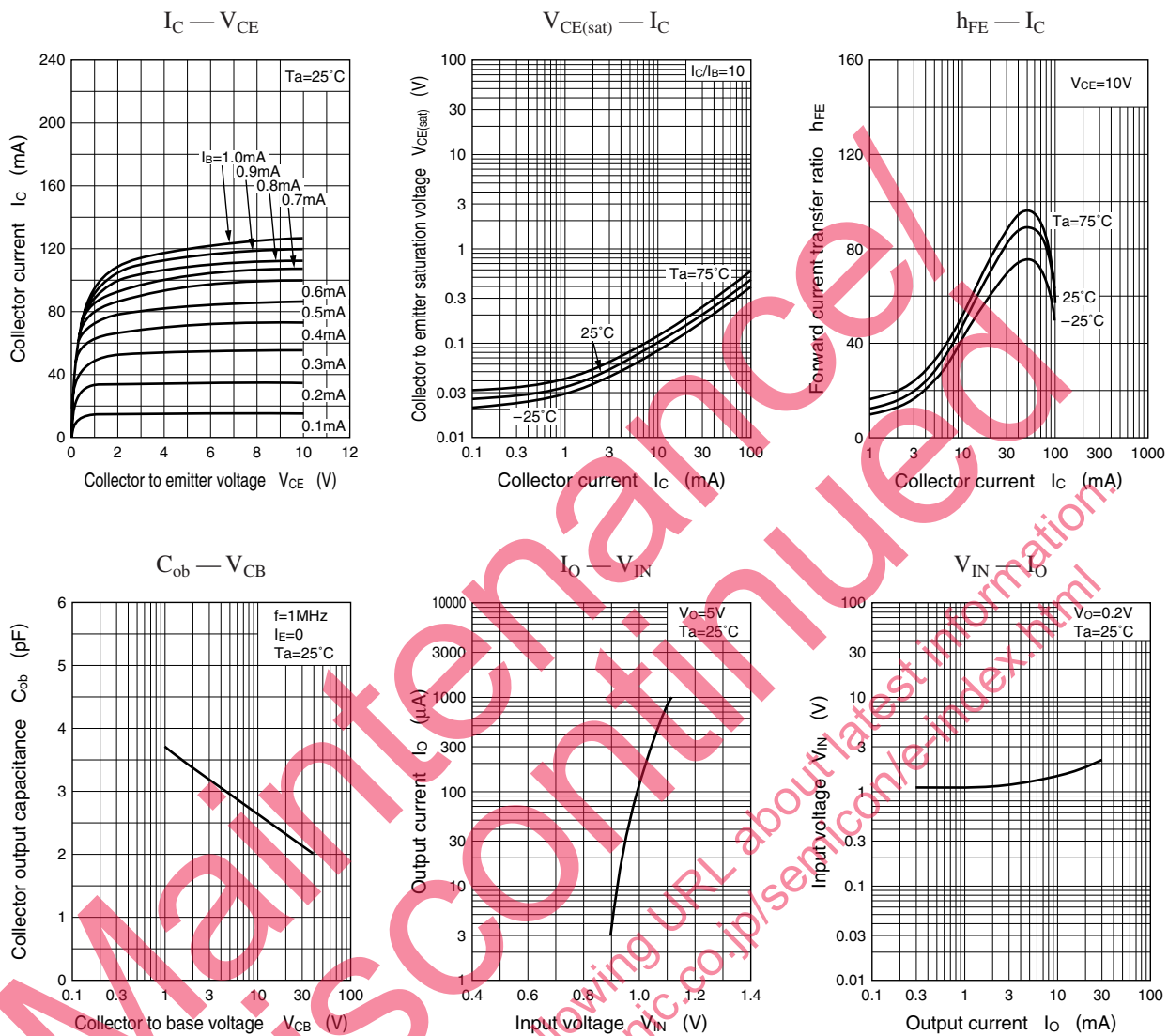




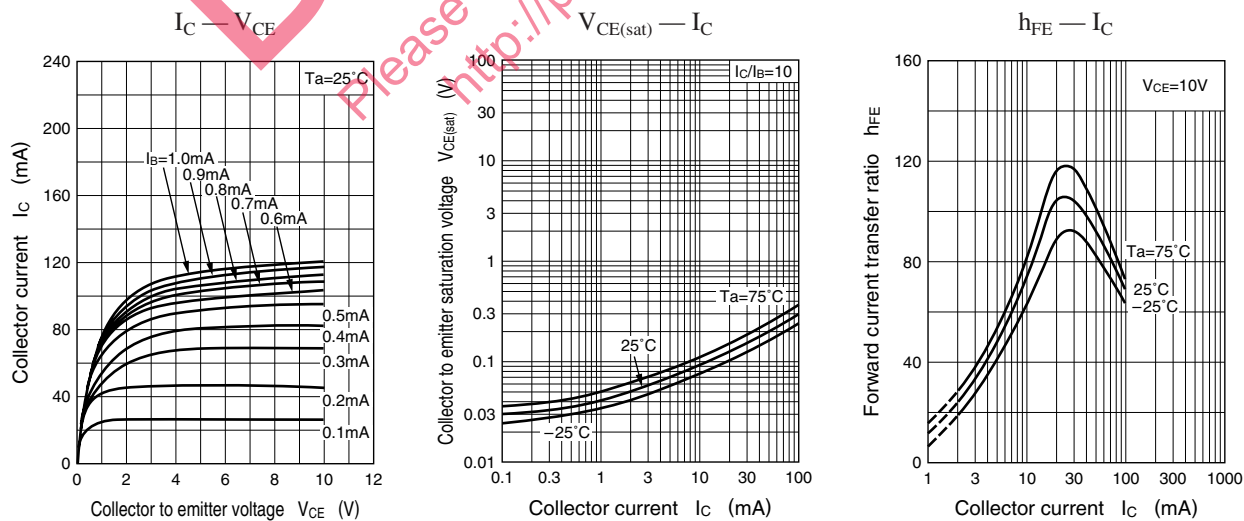
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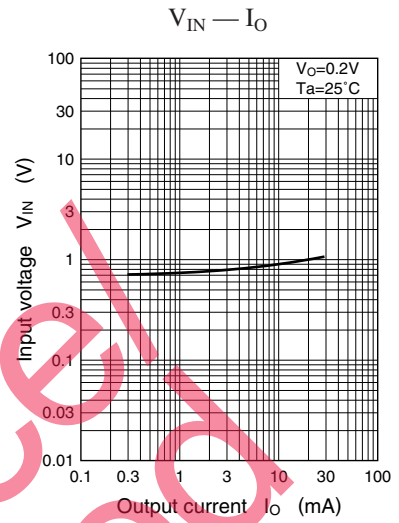
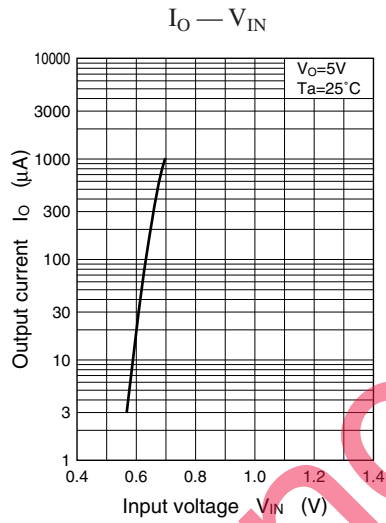
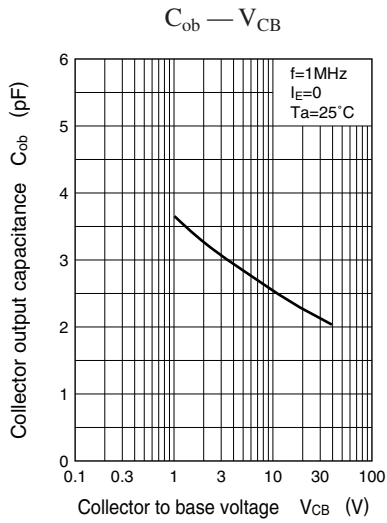


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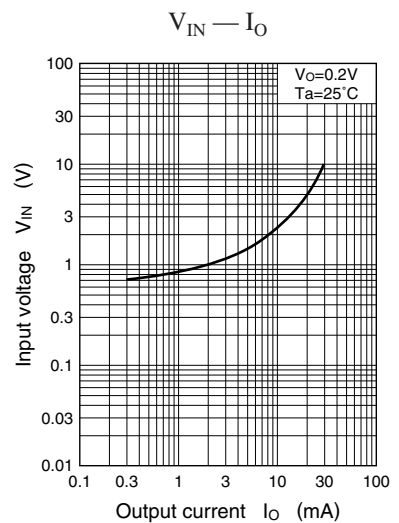
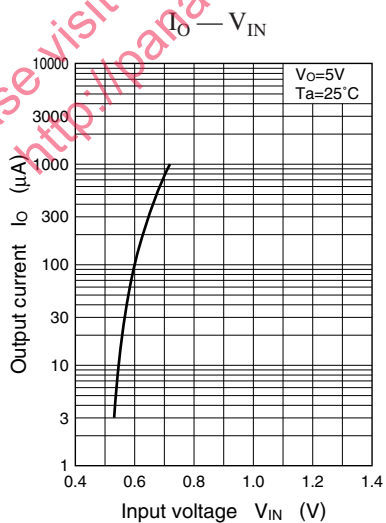
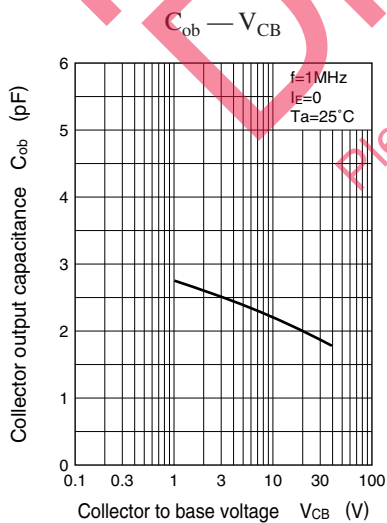
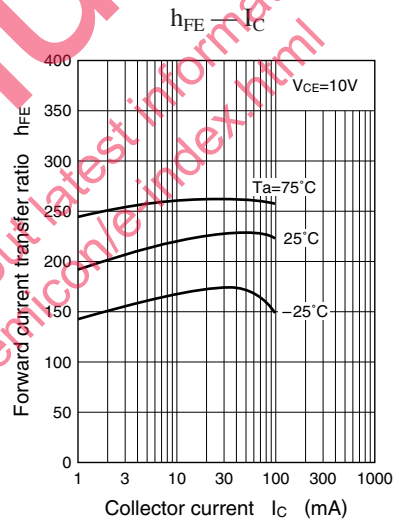
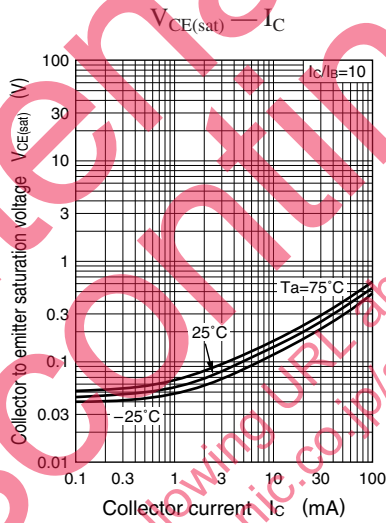
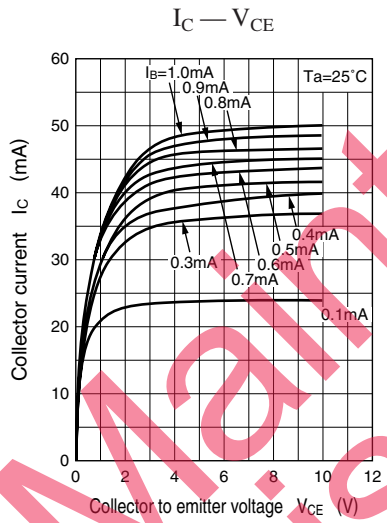


Characteristics charts of UNR9219

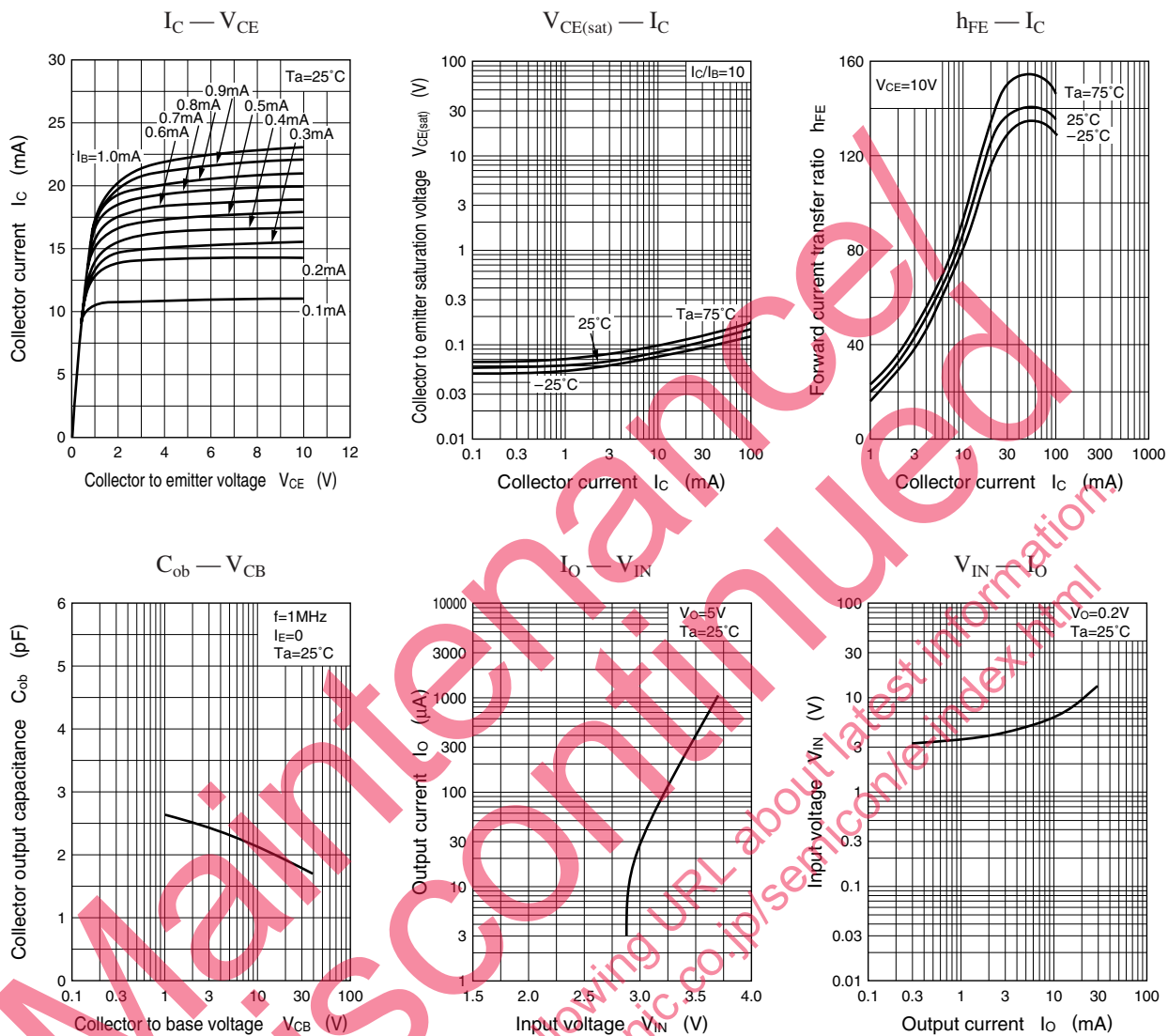




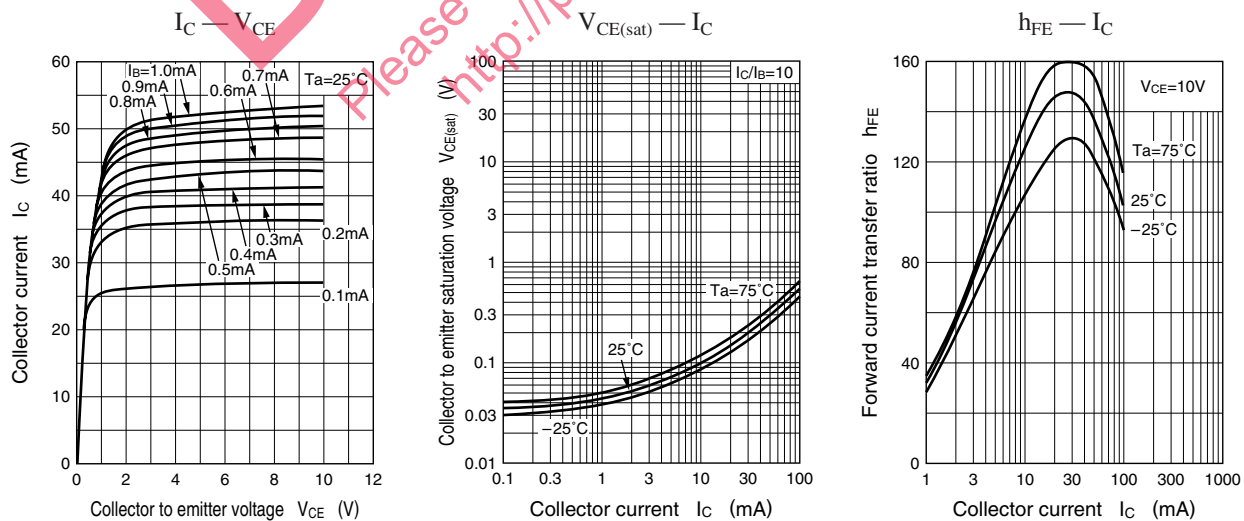
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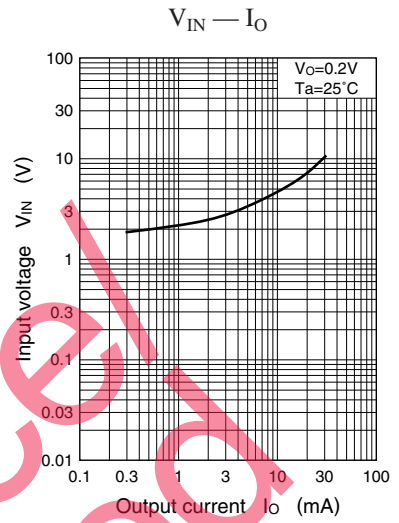
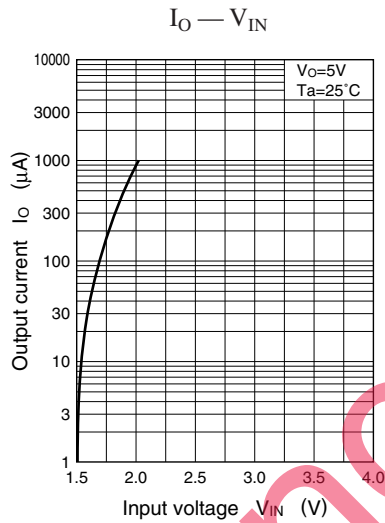
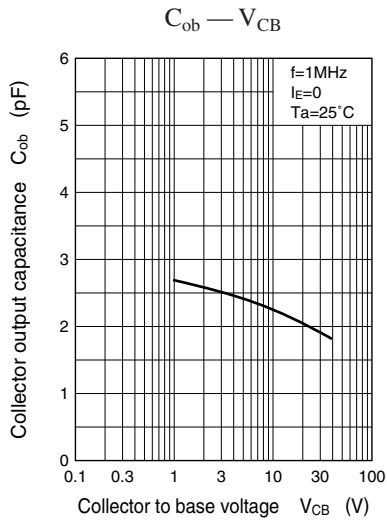


Characteristics charts of UNR921D

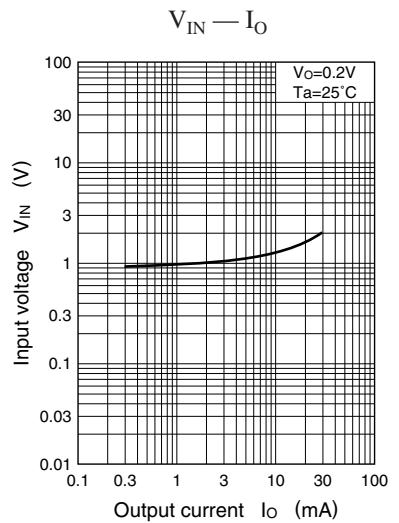
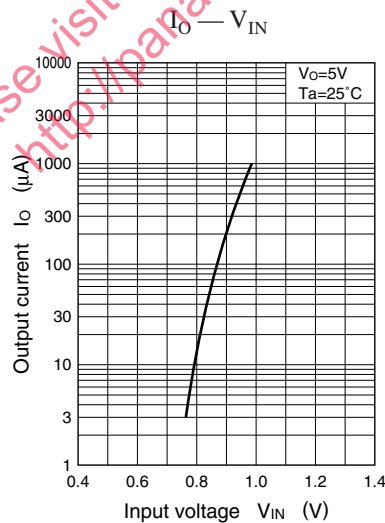
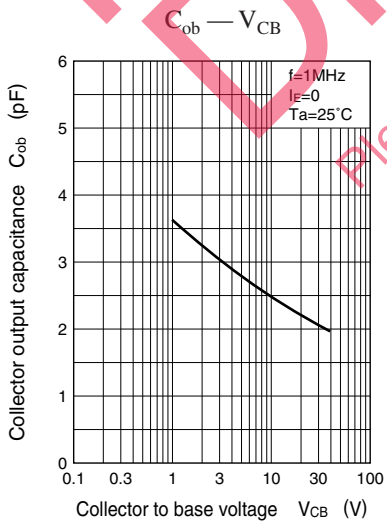
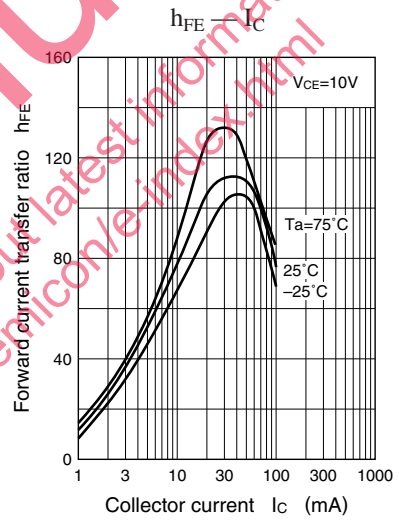
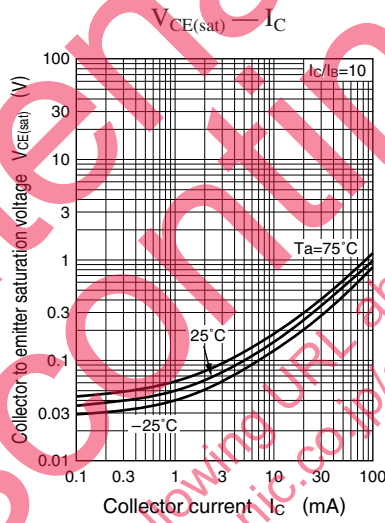
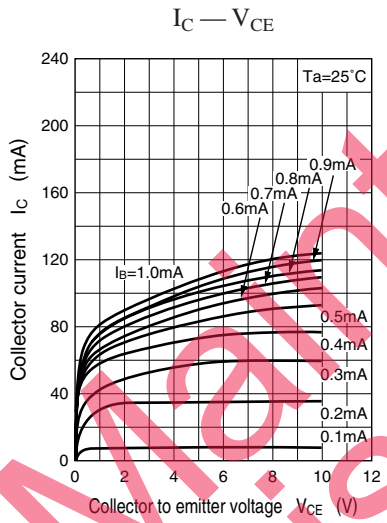


Characteristics charts of UNR921E

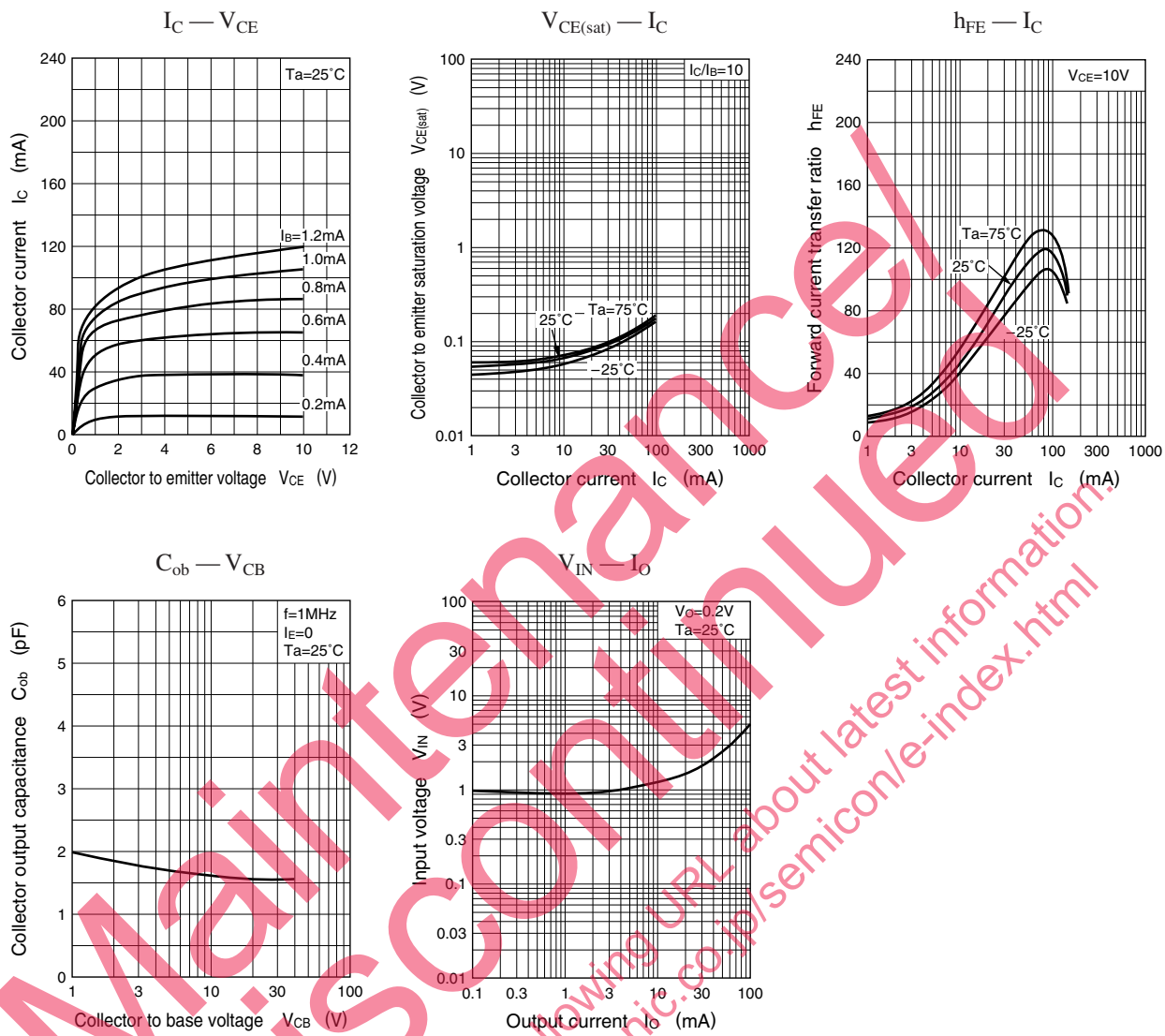




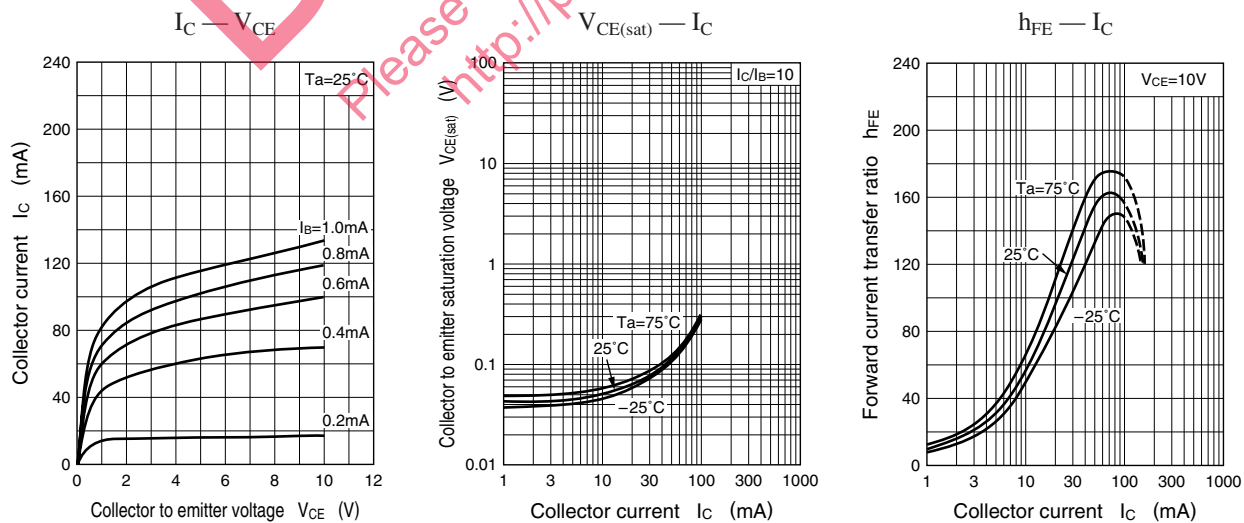
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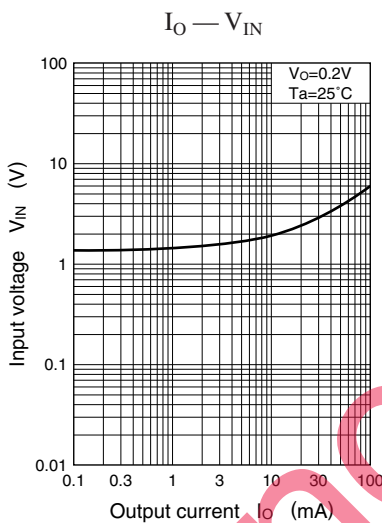
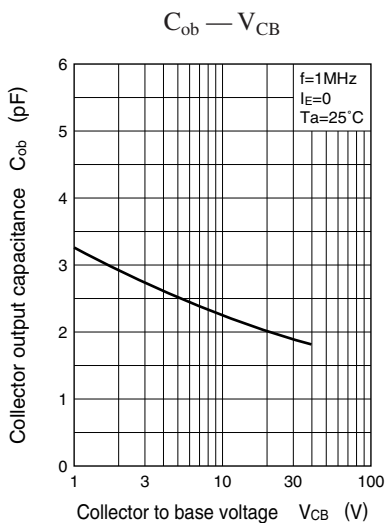


Characteristics charts of UNR921K

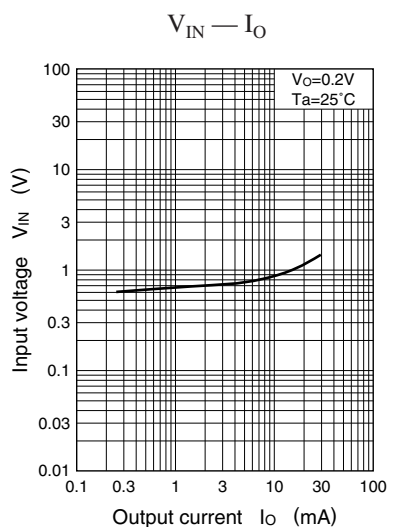
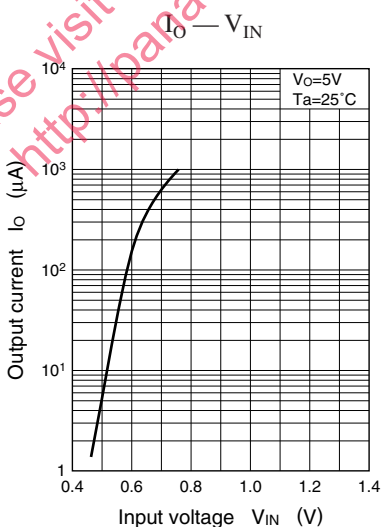
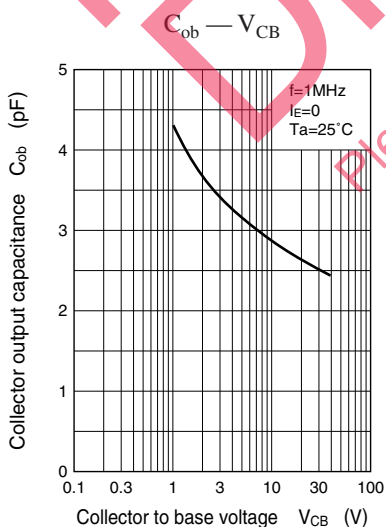
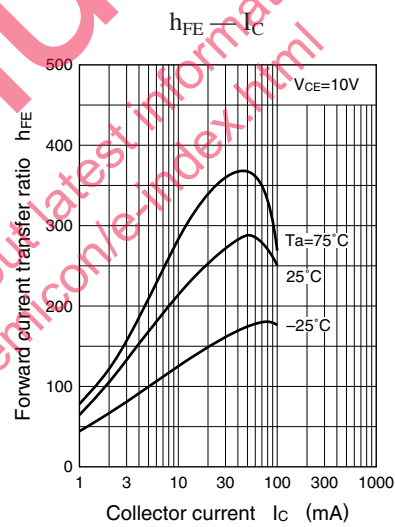
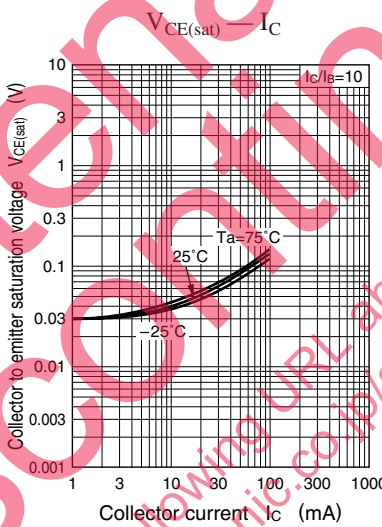
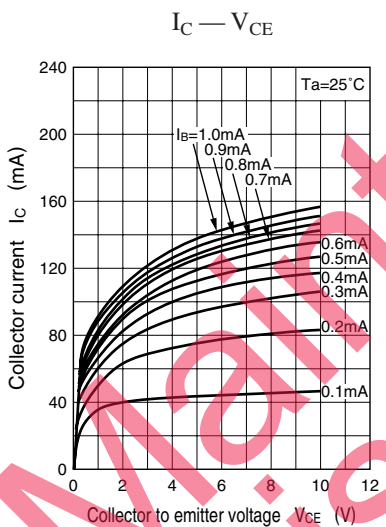


Characteristics charts of UNR921L

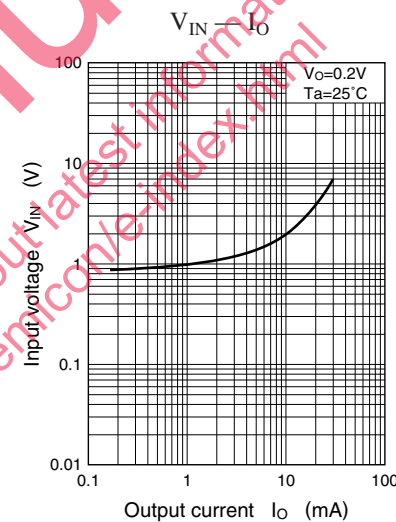
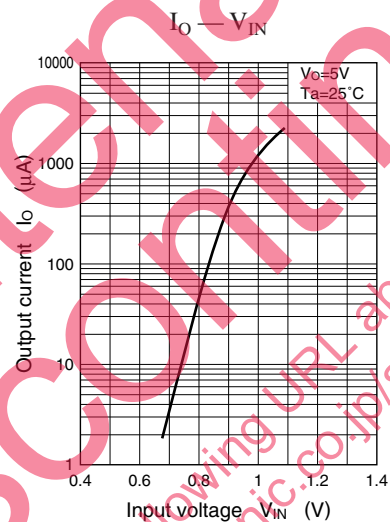
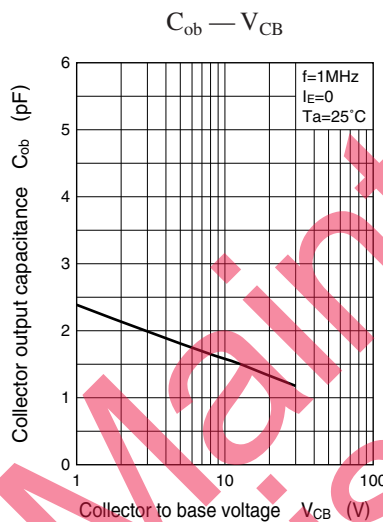
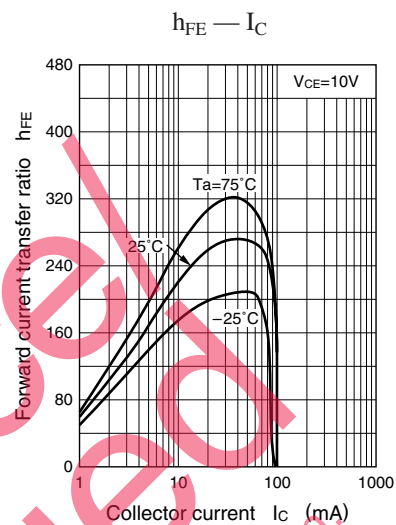
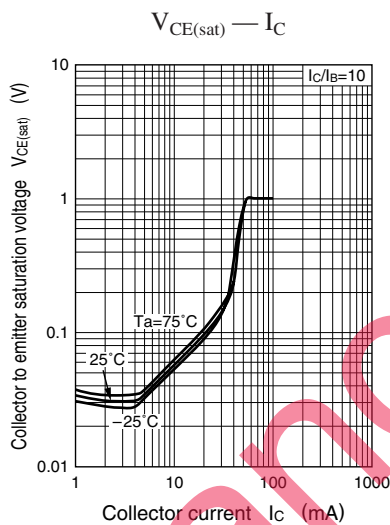
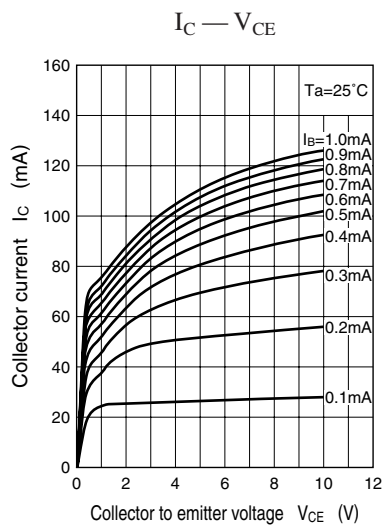




Characteristics charts of UNR921M



Characteristics charts of UNR921N



Request for your special attention and precautions in using the technical information and semiconductors described in this book

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