

# UNR921xG 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.

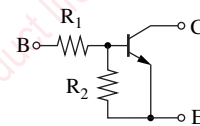
### ■ Resistance by Part Number

	Marking Symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR9210G	8L	47 kΩ	—
• UNR9211G	8A	10 kΩ	10 kΩ
• UNR9212G	8B	22 kΩ	22 kΩ
• UNR9213G	8C	47 kΩ	47 kΩ
• UNR9214G	8D	10 kΩ	47 kΩ
• UNR9215G	8E	10 kΩ	—
• UNR9216G	8F	4.7 kΩ	—
• UNR9217G	8H	22 kΩ	—
• UNR9218G	8I	0.51 kΩ	5.1 kΩ
• UNR9219G	8K	1 kΩ	10 kΩ
• UNR921AG	8X	100 kΩ	100 kΩ
• UNR921BG	8Y	100 kΩ	—
• UNR921CG	8Z	—	47 kΩ
• UNR921DG	8M	47 kΩ	10 kΩ
• UNR921EG	8N	47 kΩ	22 kΩ
• UNR921FG	8O	4.7 kΩ	10 kΩ
• UNR921KG	8P	10 kΩ	4.7 kΩ
• UNR921LG	8Q	4.7 kΩ	4.7 kΩ
• UNR921MG	EL	2.2 kΩ	47 kΩ
• UNR921NG	EX	4.7 kΩ	47 kΩ
• UNR921TG	EZ	22 kΩ	47 kΩ
• UNR921VG	FD	2.2 kΩ	2.2 kΩ

### ■ Package

- Code  
SSMini3-F3
- Pin Name  
1: Base  
2: Emitter  
3: Collector

### ■ Internal Connection



### ■ 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

**■ 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)	UNR9210G/9215G/9216G/9217G/921BG	$I_{EBO}$	$V_{EB} = 6 \text{ V}, I_C = 0$			0.01	mA		
	UNR9213G/921AG					0.1			
	UNR9212G/9214G/921DG/921EG/921MG/921NG/921TG					0.2			
	UNR9211G					0.5			
	UNR921FG/921KG					1.0			
	UNR9219G					1.5			
	UNR9218G/921CG/921LG/921VG					2.0			
Forward current transfer ratio	UNR921VG	$h_{FE}$	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$	6		20	—		
	UNR9218G/921KG/921LG			20					
	UNR9219G/921DG/921FG			30					
	UNR9211G			35					
	UNR9212G/921EG			60					
	UNR9213G/9214G/921AG/921CG/921MG			80					
	UNR921NG/921TG			80	400				
	UNR9210G/9215G/9216G/9217G/921BG			160	460				
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 10 \text{ mA}, I_B = 0.3 \text{ mA}$			0.25	V		
	UNR921VG					$I_C = 10 \text{ mA}, I_B = 1.5 \text{ mA}$			
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		
				UNR9213G/921BG/921KG	$V_{CC} = 5 \text{ V}, V_B = 3.5 \text{ V}, R_L = 1 \text{ k}\Omega$				
				UNR921DG	$V_{CC} = 5 \text{ V}, V_B = 10 \text{ V}, R_L = 1 \text{ k}\Omega$				
				UNR921EG	$V_{CC} = 5 \text{ V}, V_B = 6 \text{ V}, R_L = 1 \text{ k}\Omega$				
				UNR921AG	$V_{CC} = 5 \text{ V}, V_B = 5 \text{ V}, R_L = 1 \text{ k}\Omega$				
Transition frequency		$f_T$	$V_{CB} = 10 \text{ V}, I_E = -2 \text{ mA}, f = 200 \text{ MHz}$		150		MHz		
Input resistance	UNR9218G	$R_1$		-30%	0.51	+30%	k $\Omega$		
	UNR9219G				1				
	UNR921MG/921VG				2.2				
	UNR9216G/921FG/921LG/921NG				4.7				
	UNR9211G/9214G/9215G/921KG				10				
	UNR9212G/9217G/921TG				22				
	UNR9210G/9213G/921DG/921EG				47				
	UNR921AG/921BG				100				

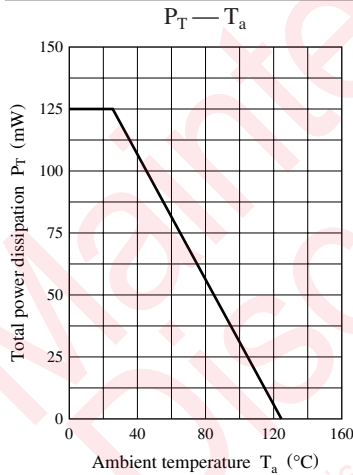
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

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

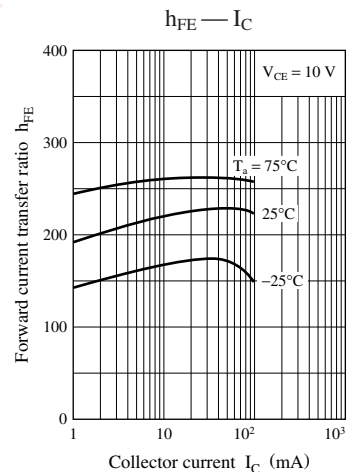
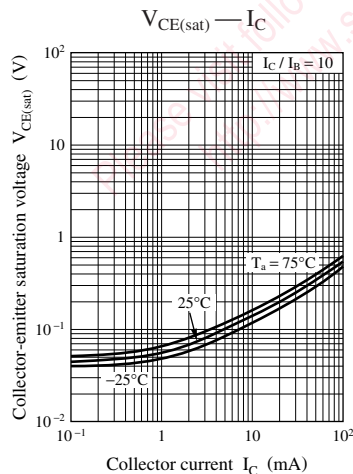
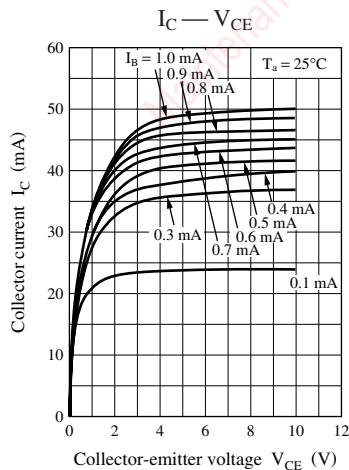
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Emitter-base resistance	UNR921CG	$R_2$		-30%	47	+30%	k $\Omega$
Resistance ratio	UNR921MG	$R_1/R_2$			0.047		—
	UNR921NG				0.1		
	UNR9218G/9219G			0.08	0.10	0.12	
	UNR9214G			0.17	0.21	0.25	
	UNR921TG				0.47		
	UNR921FG			0.37	0.47	0.57	
	UNR921AG/921VG				1.0		
	UNR9211G/9212G/9213G/921LG			0.8	1.0	1.2	
	UNR921KG			1.70	2.13	2.60	
	UNR921EG			1.70	2.14	2.60	
UNR921DG		3.7	4.7	5.7			

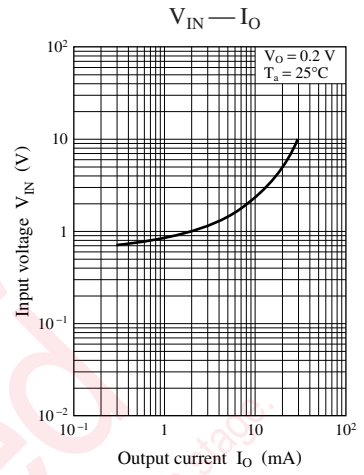
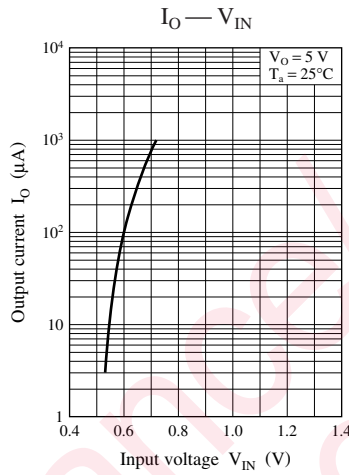
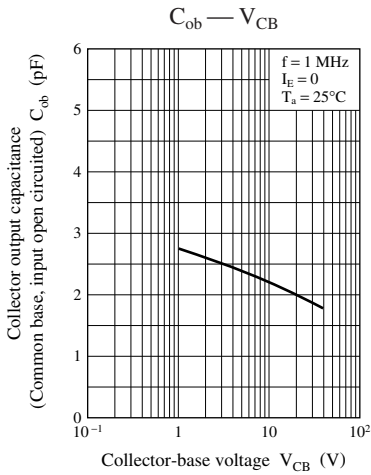
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Common characteristics chart

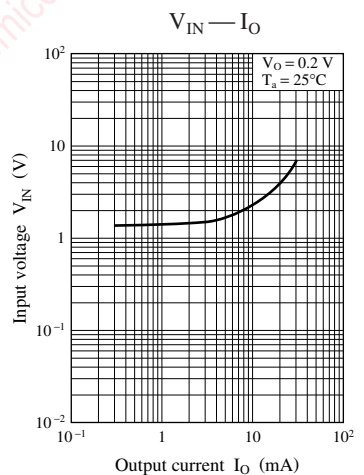
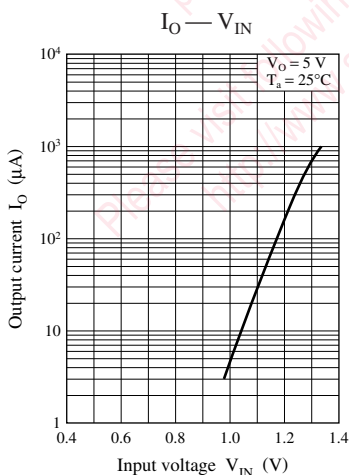
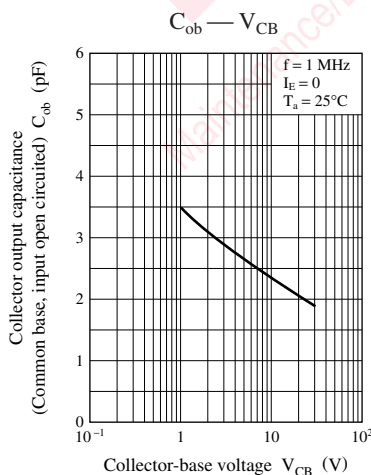
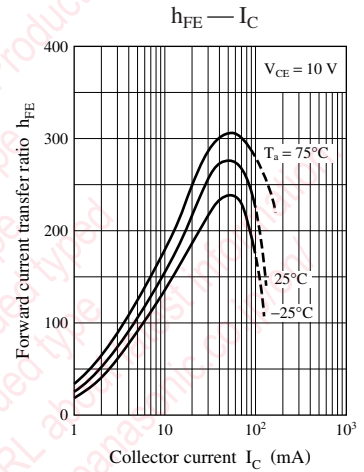
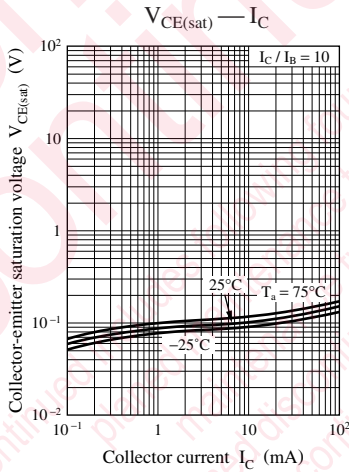
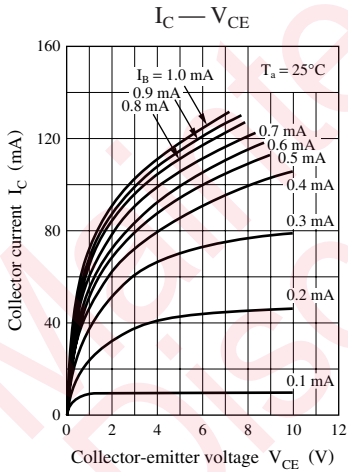


Characteristics charts of UNR9210G

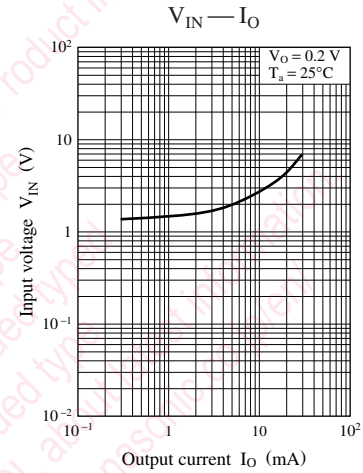
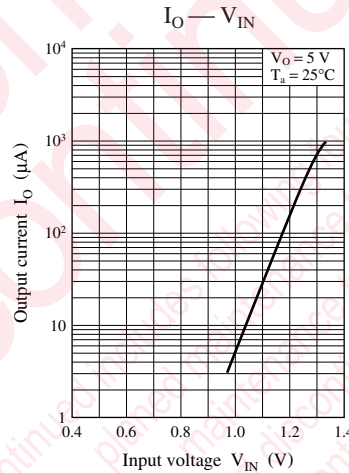
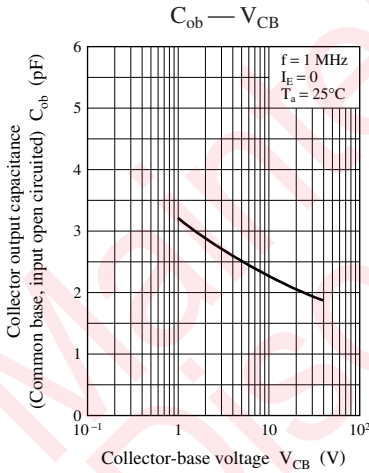
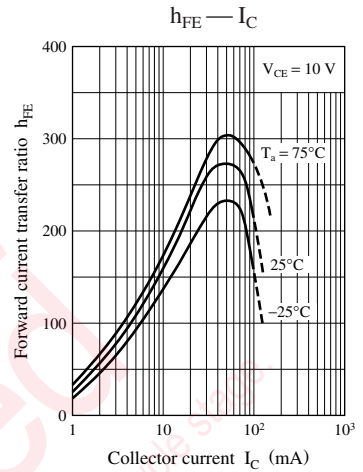
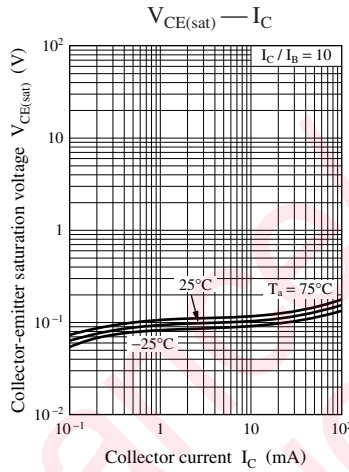
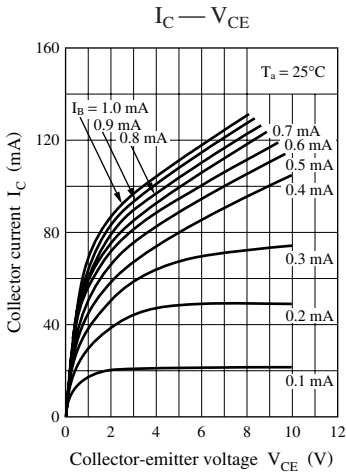




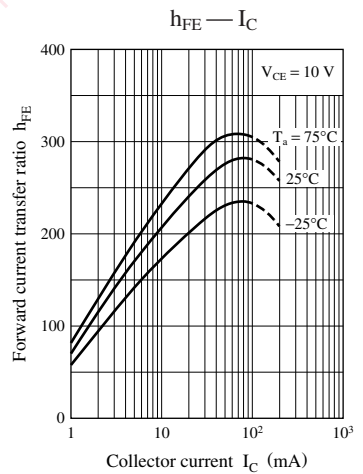
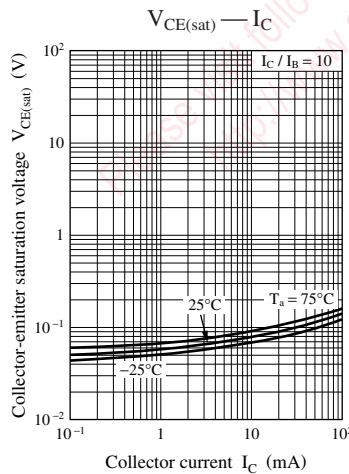
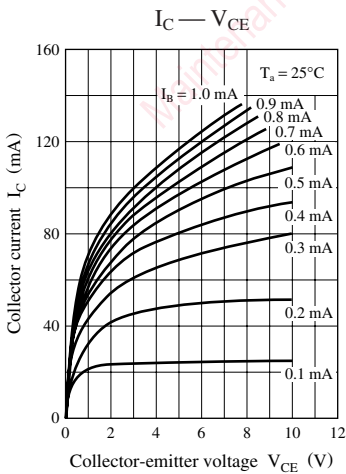
Characteristics charts of UNR9211G

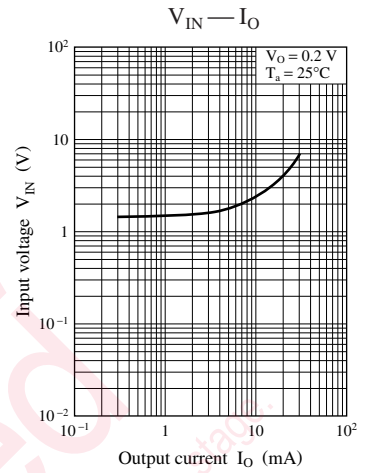
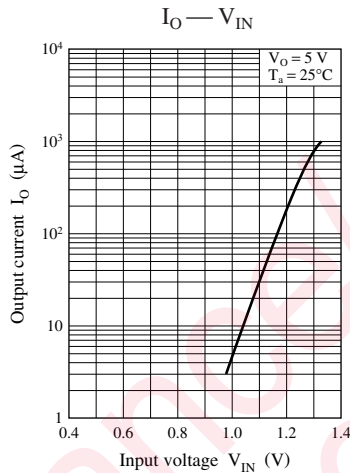
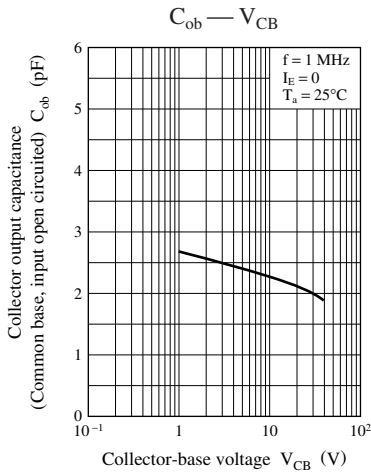


Characteristics charts of UNR9212G

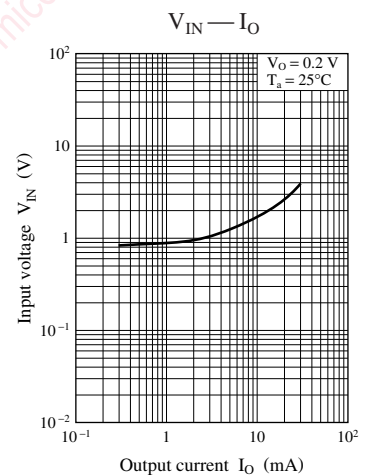
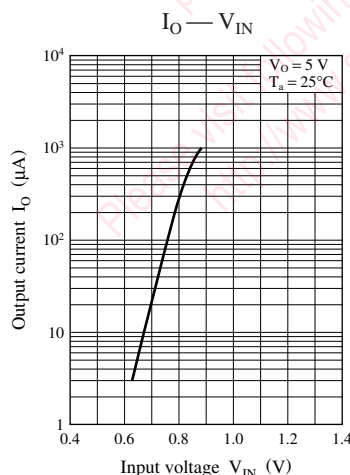
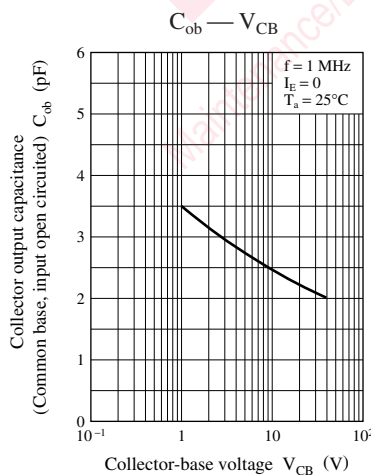
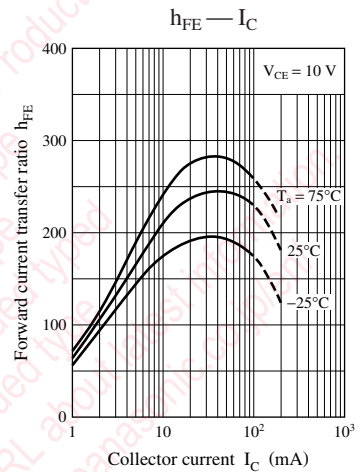
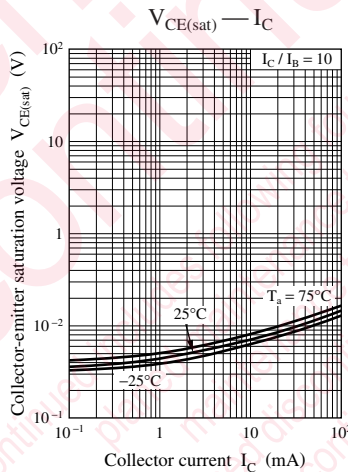
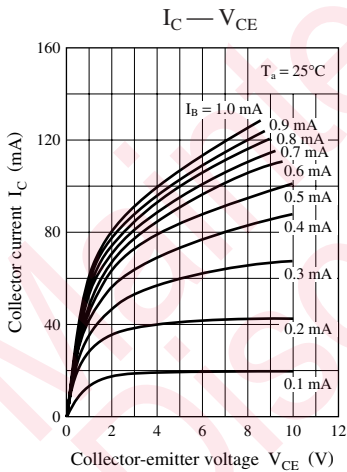


Characteristics charts of UNR9213G

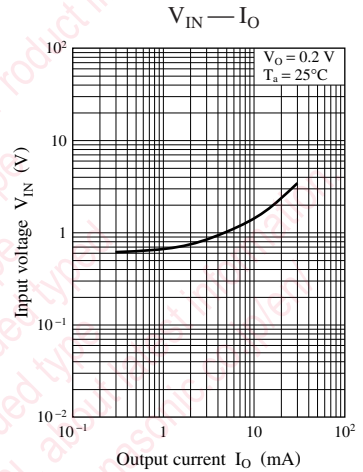
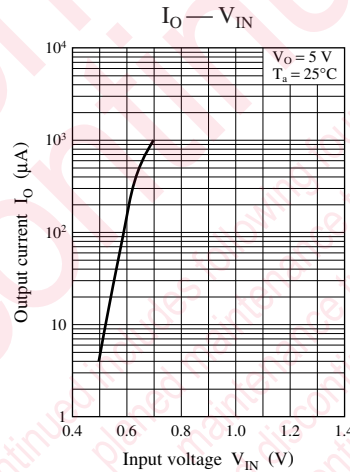
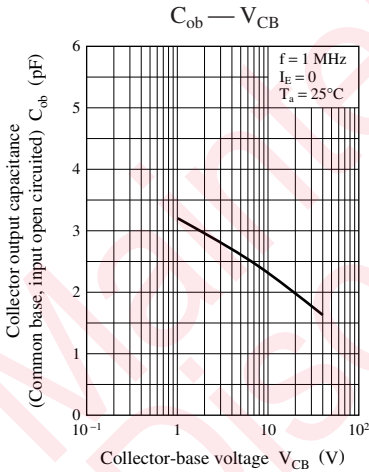
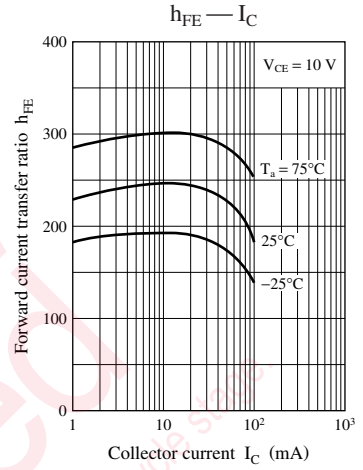
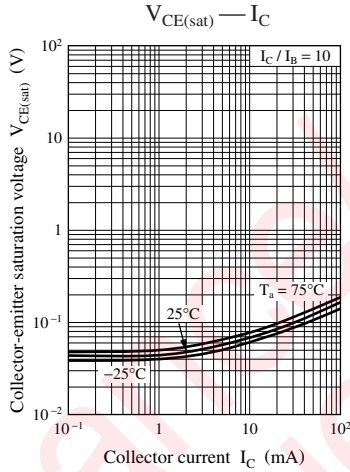
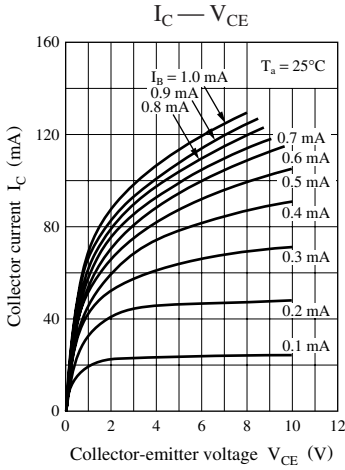




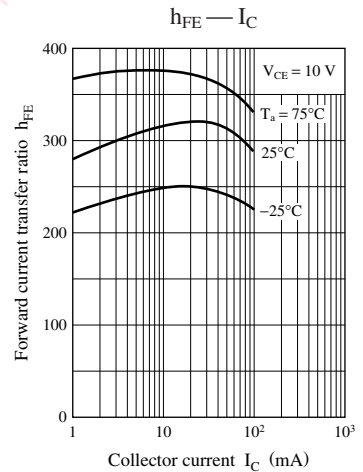
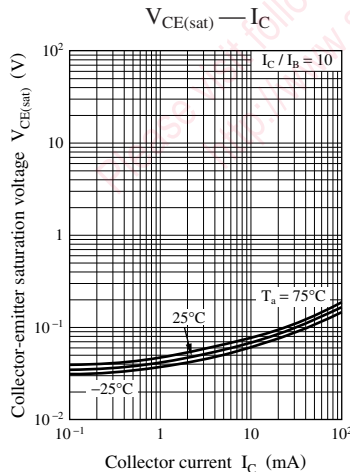
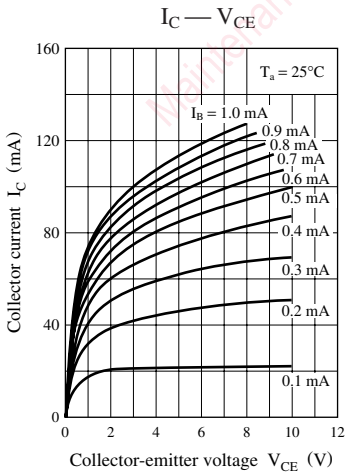
Characteristics charts of UNR9214G



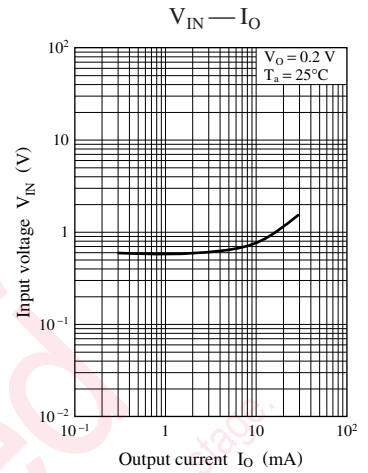
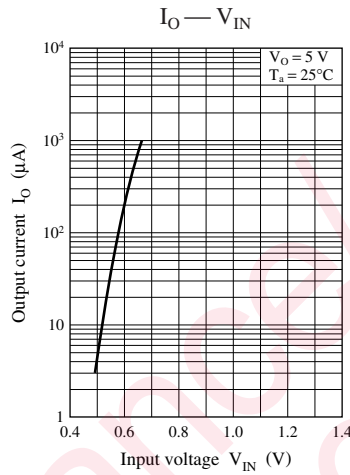
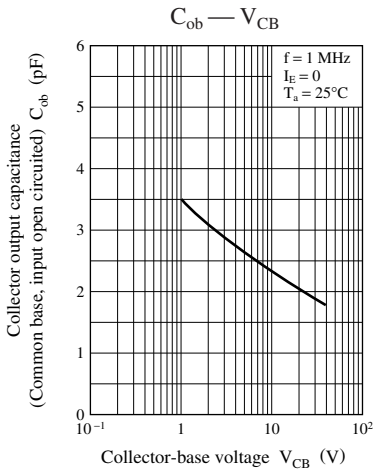
Characteristics charts of UNR9215G



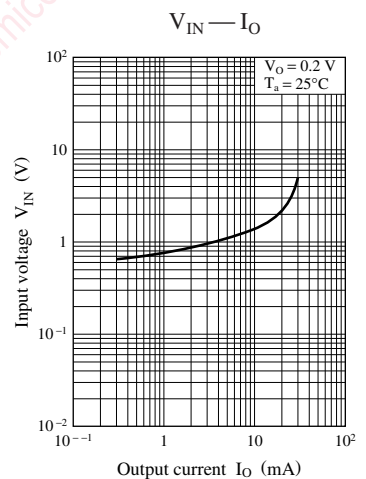
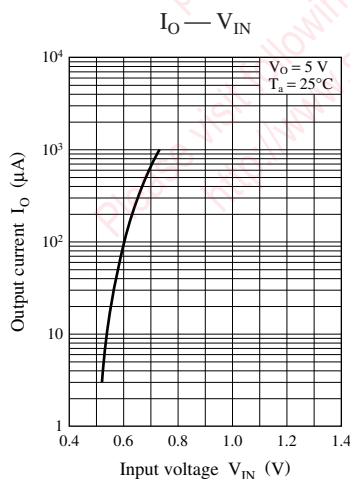
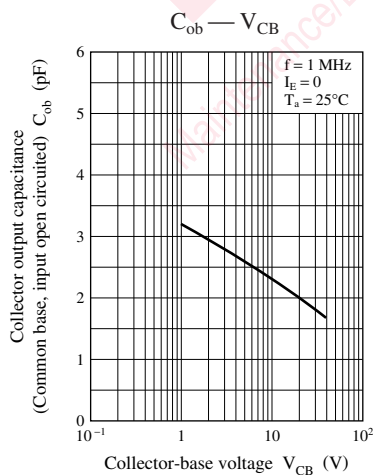
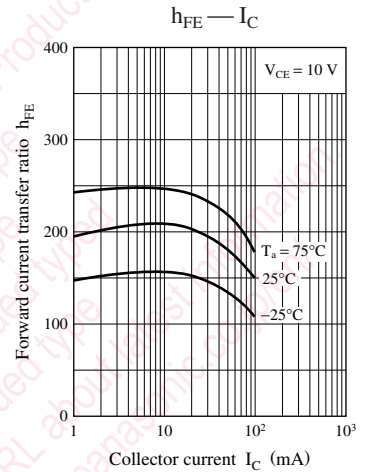
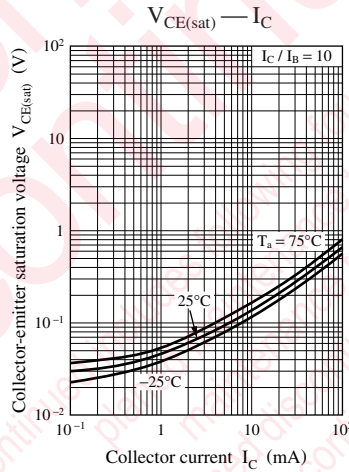
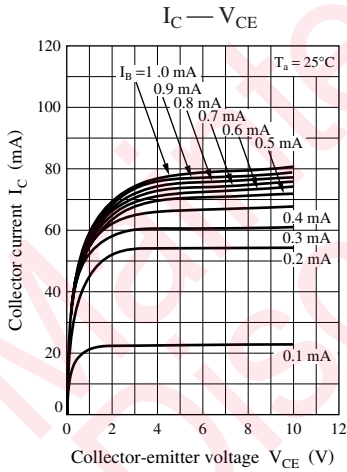
Characteristics charts of UNR9216G





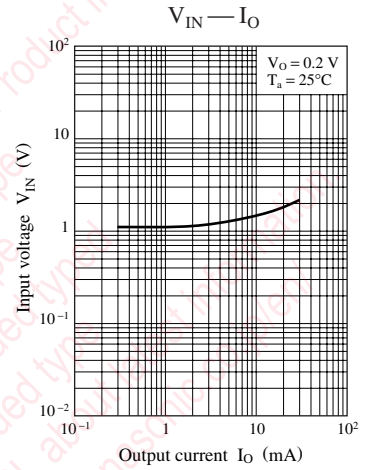
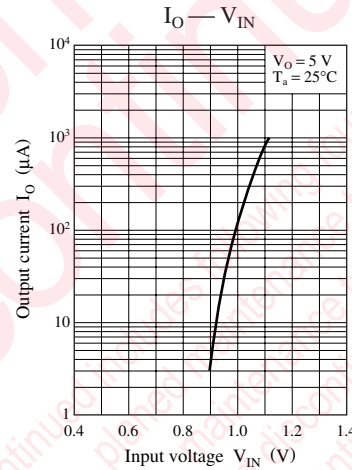
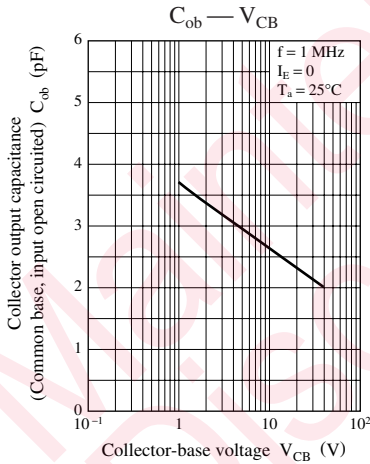
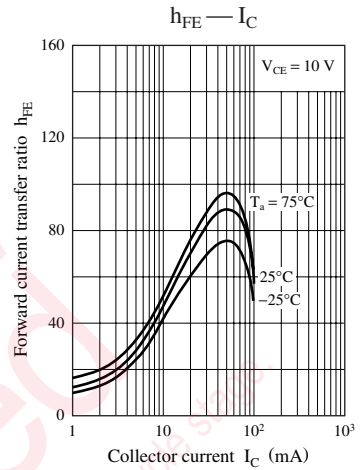
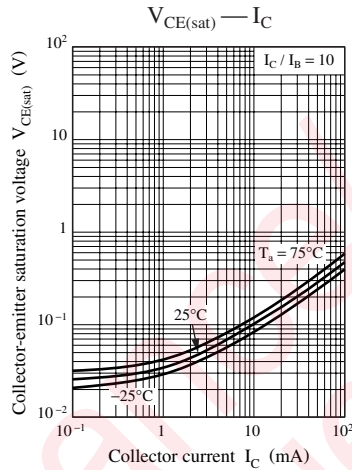
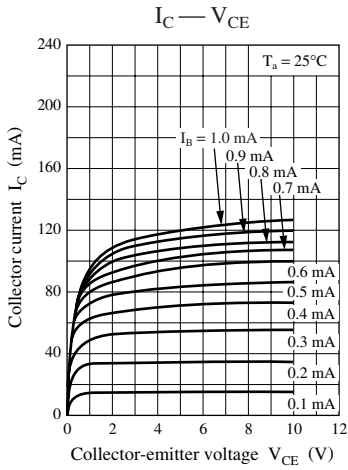


Characteristics charts of UNR9217G

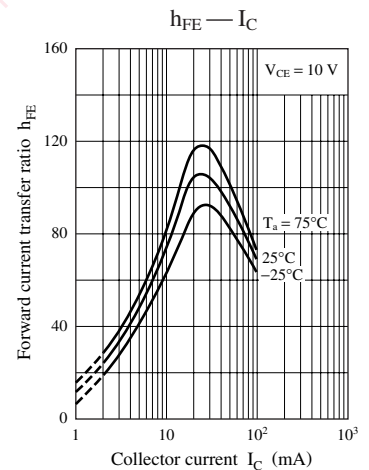
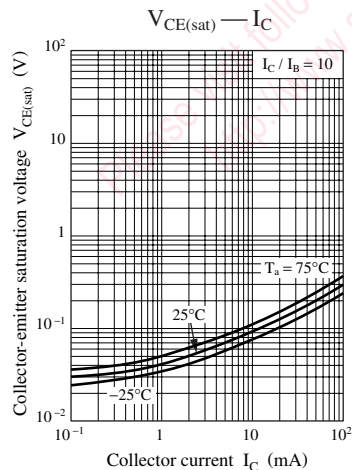
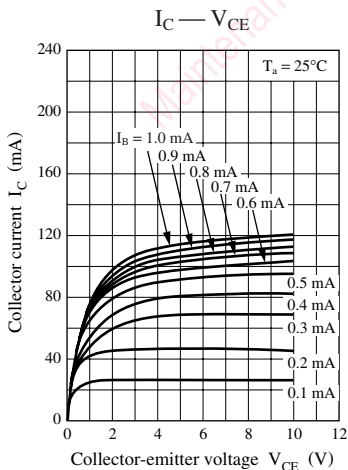


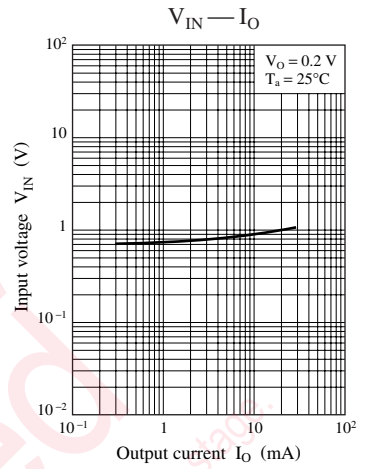
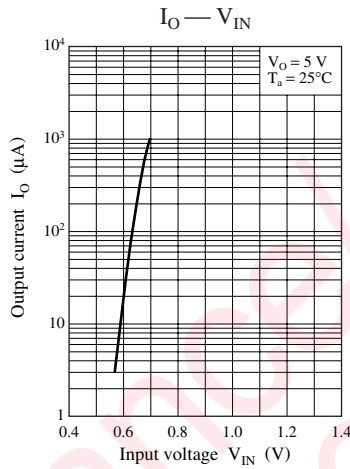
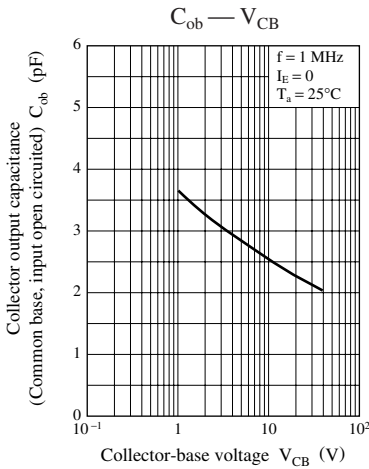


Characteristics charts of UNR9218G

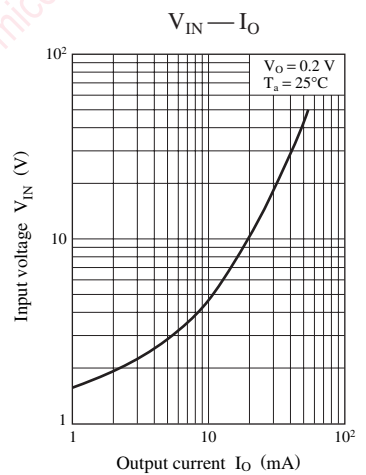
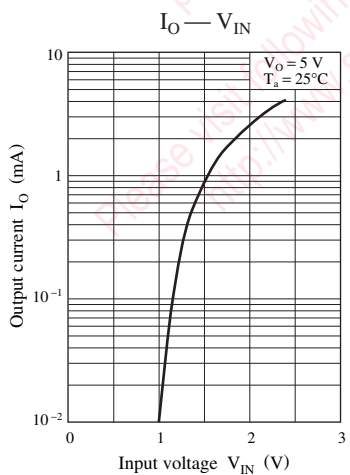
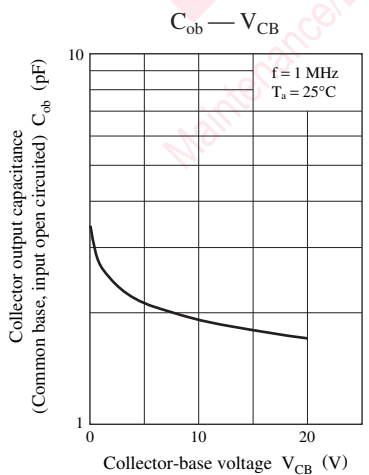
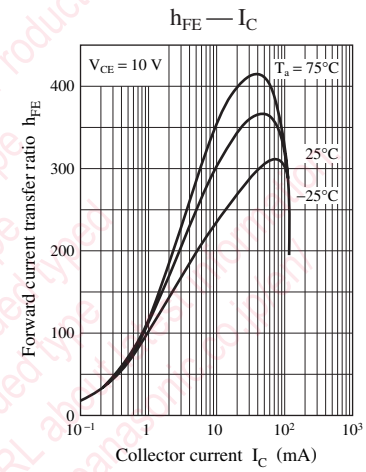
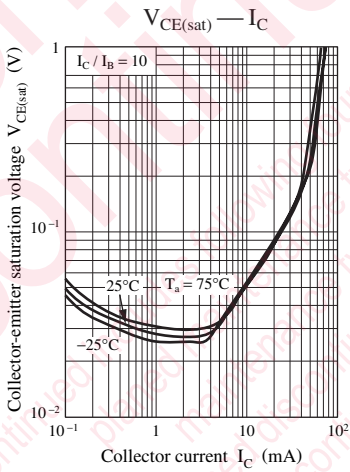
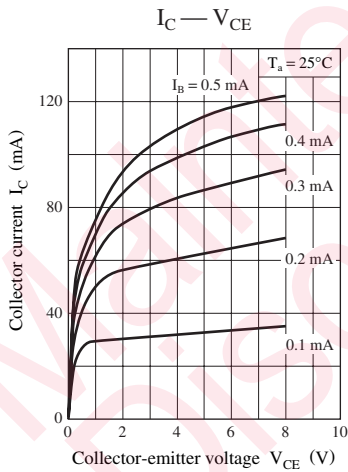


Characteristics charts of UNR9219G

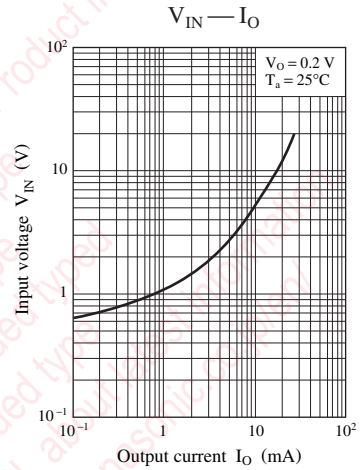
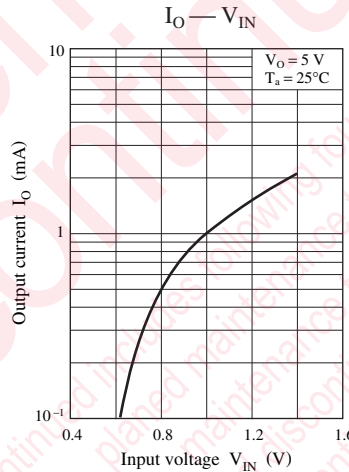
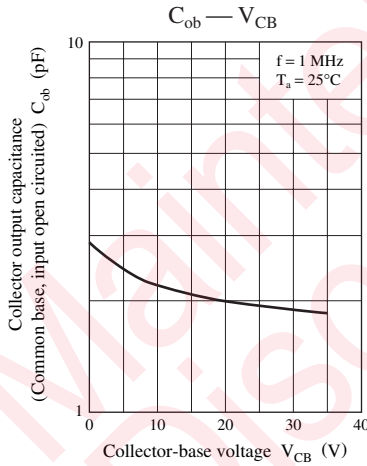
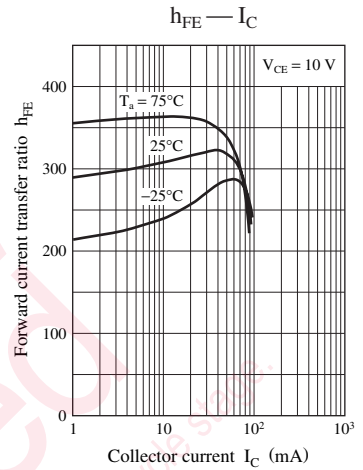
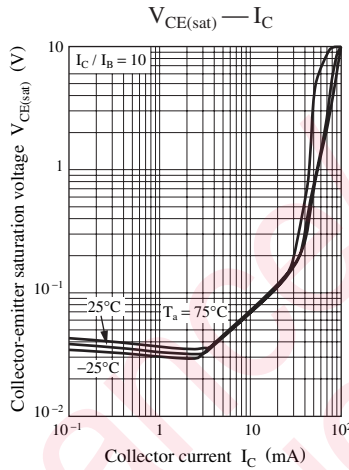
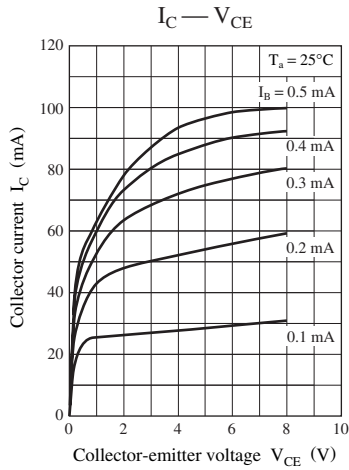




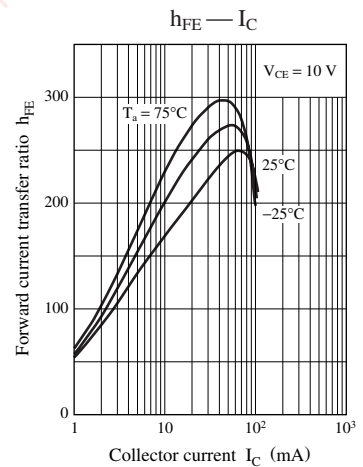
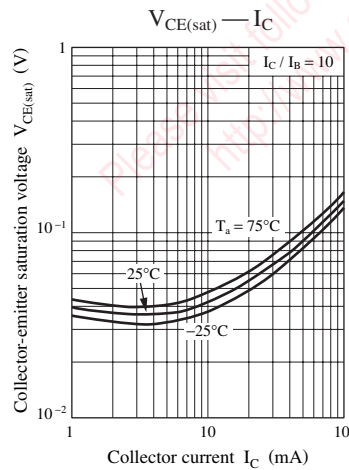
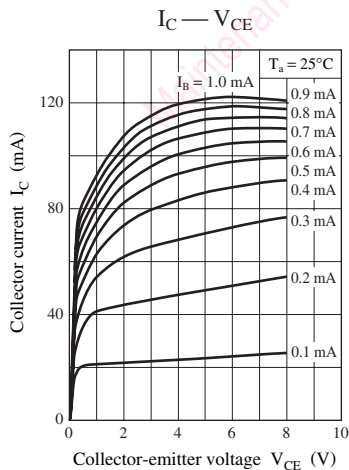
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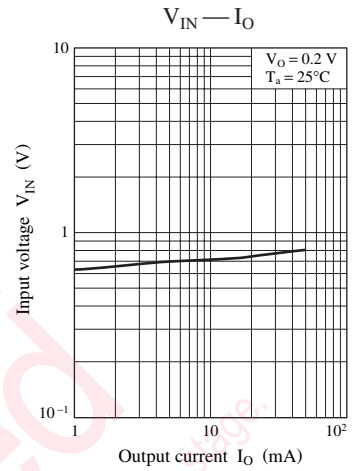
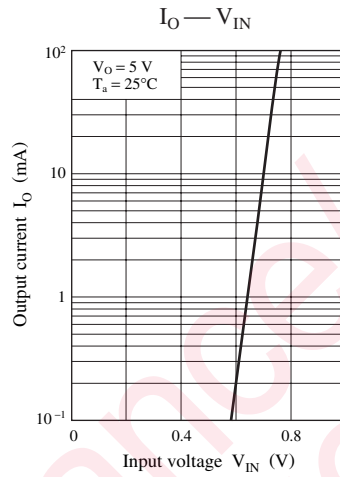
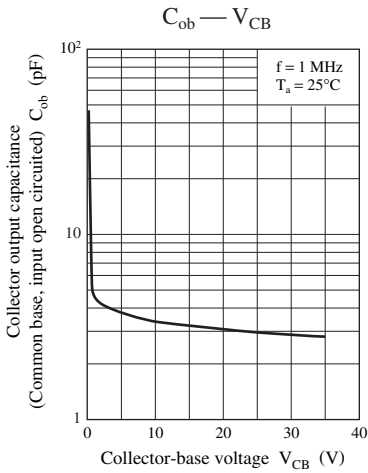


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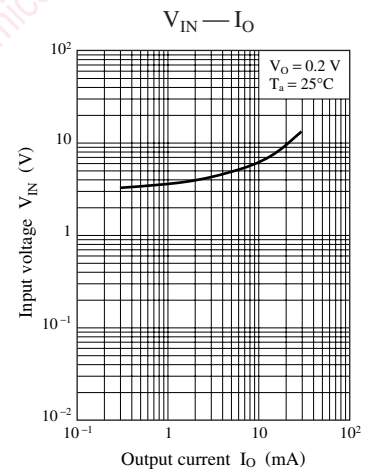
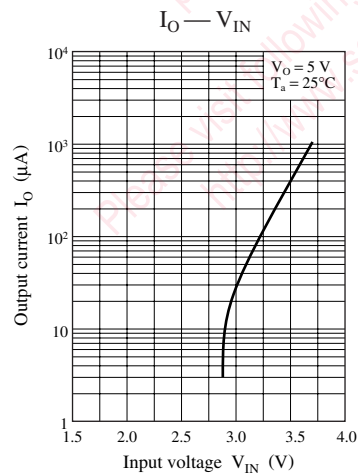
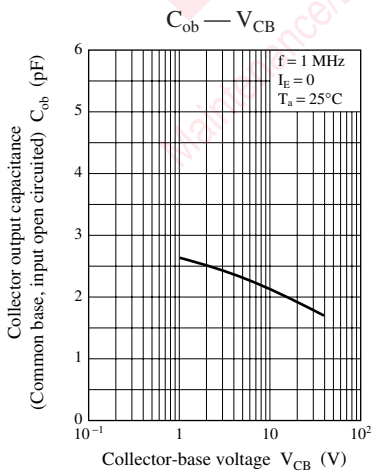
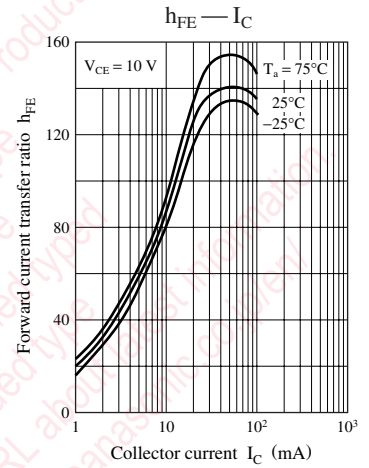
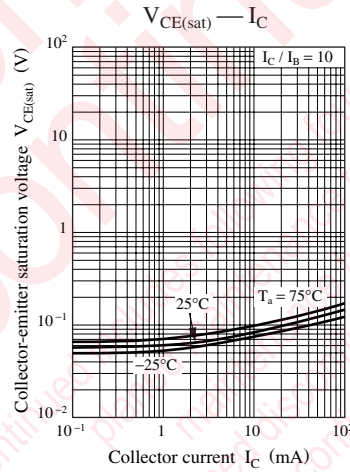
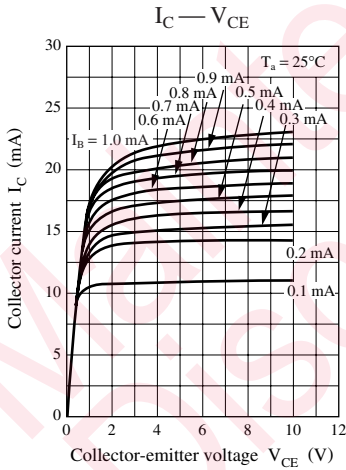


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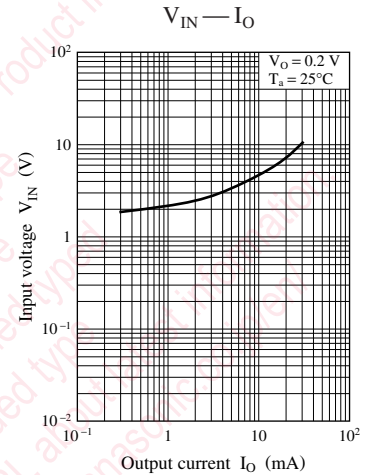
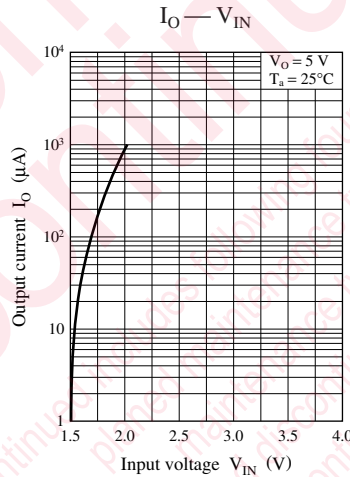
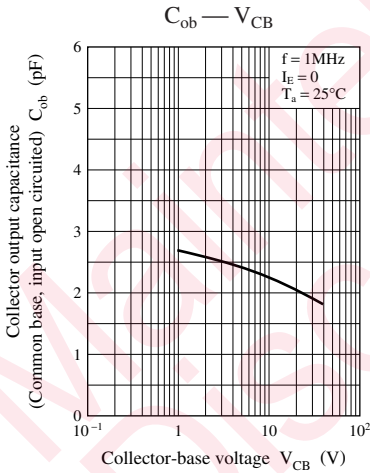
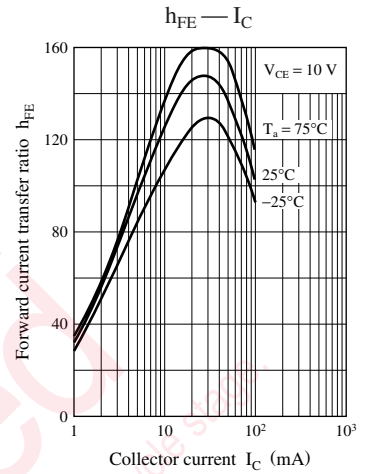
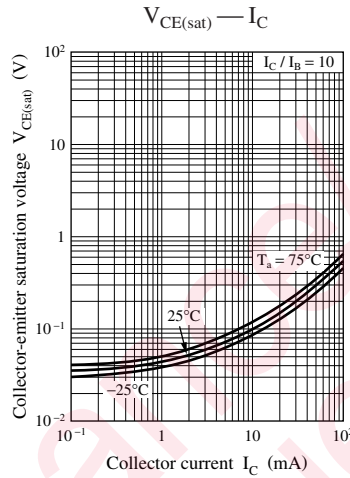
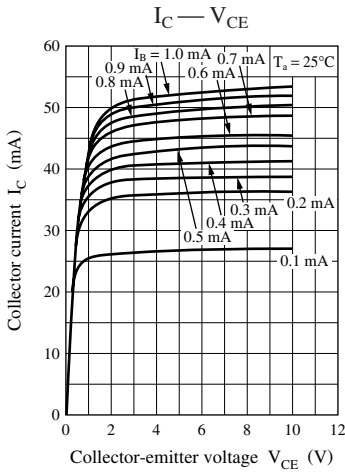




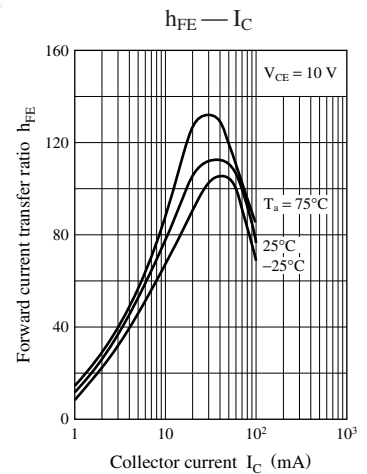
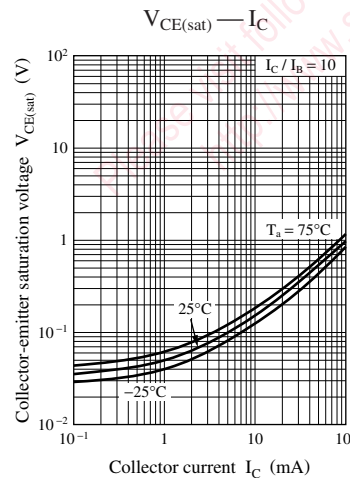
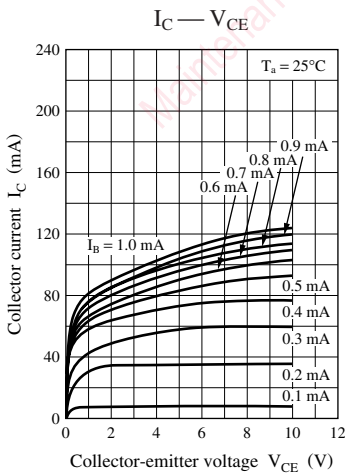
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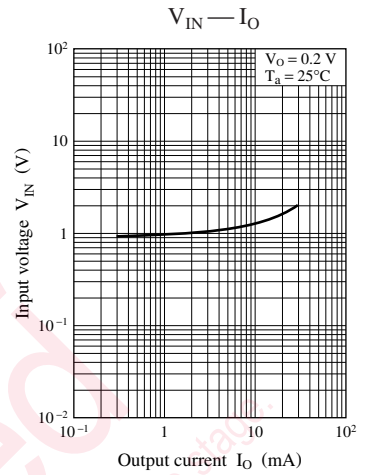
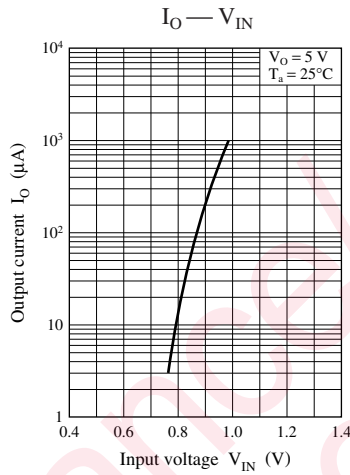
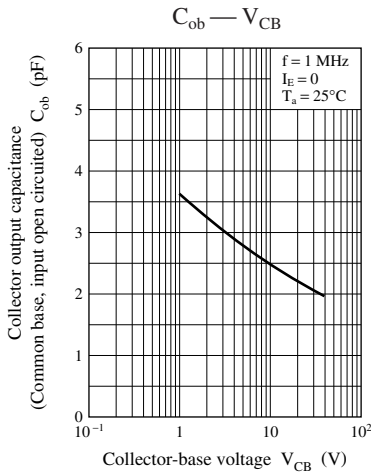


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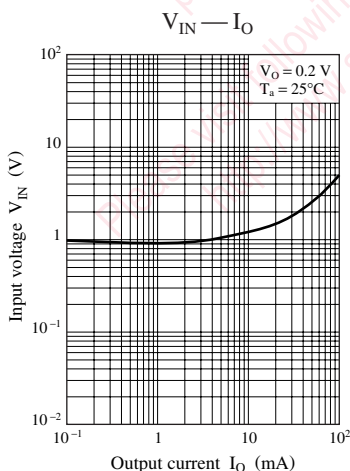
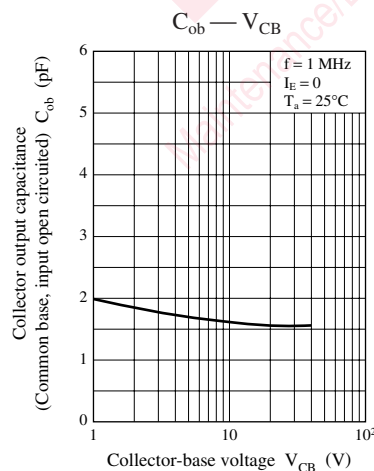
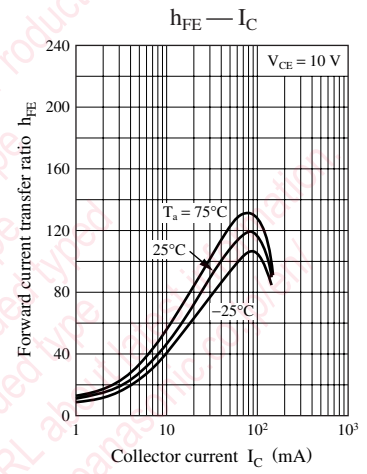
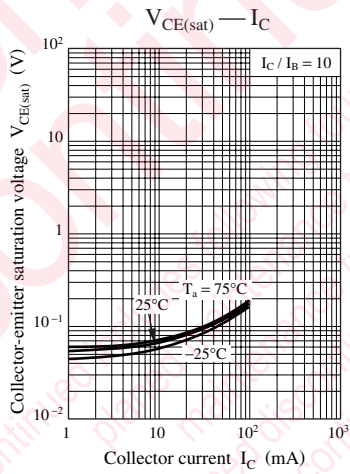
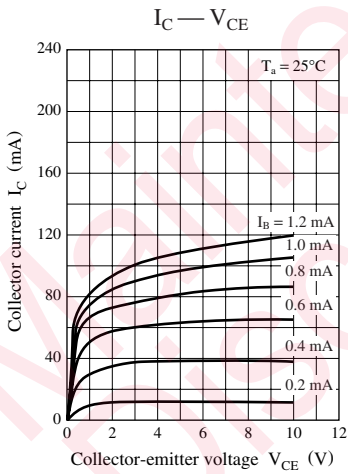


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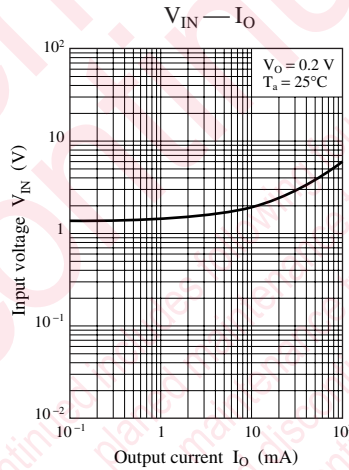
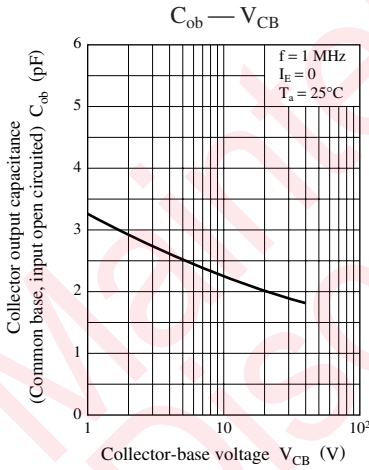
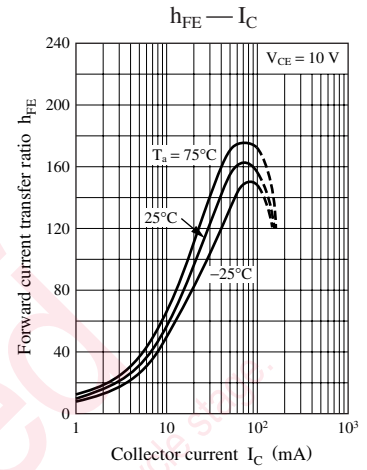
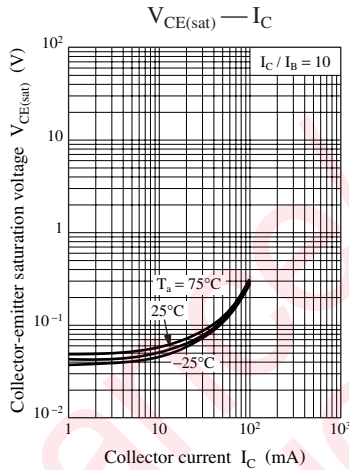
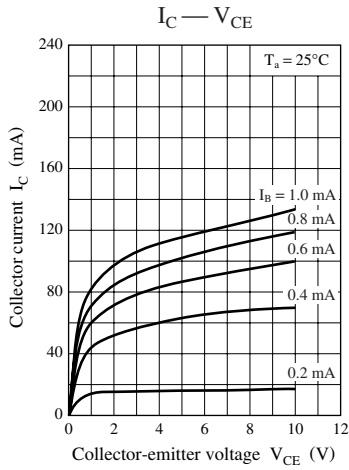




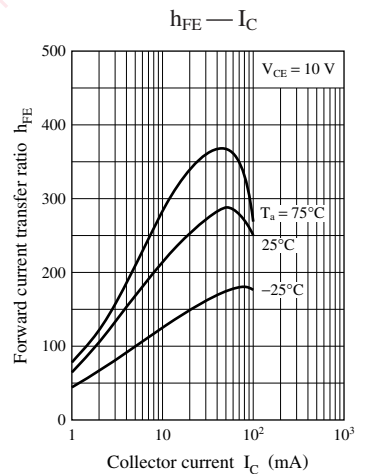
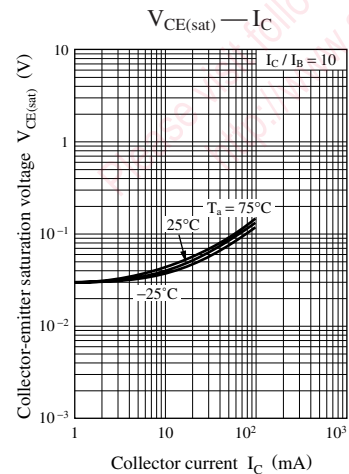
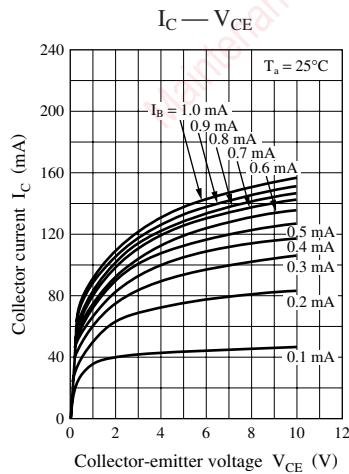
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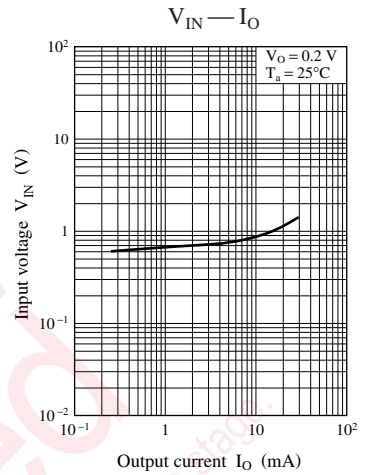
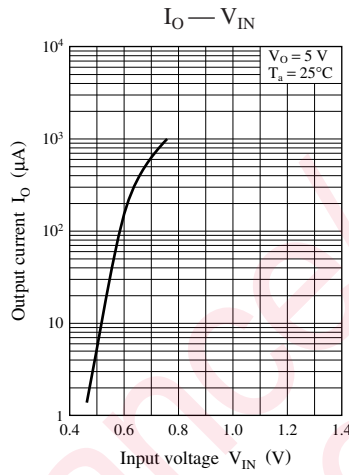
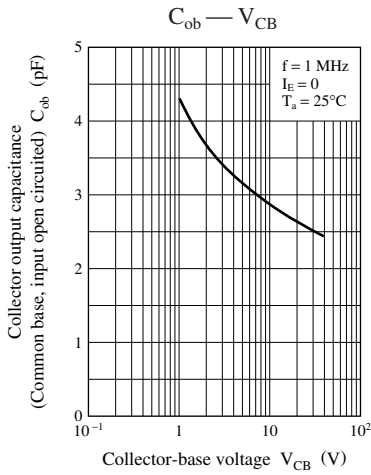
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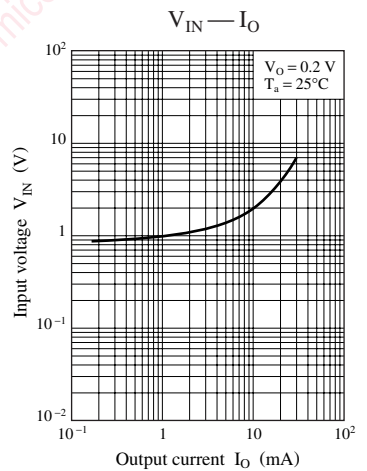
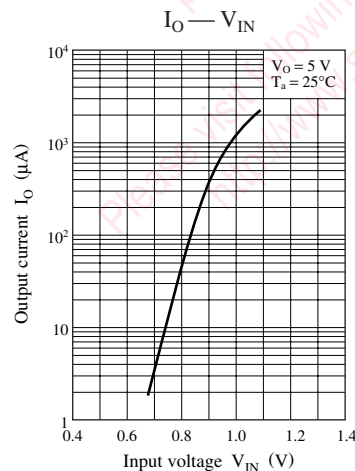
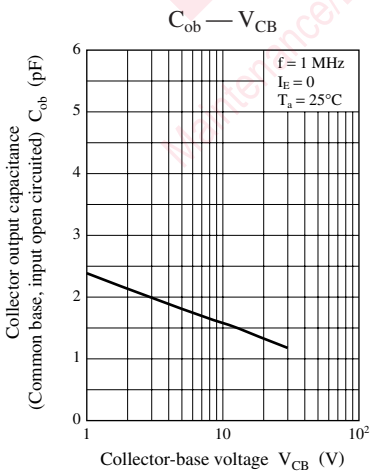
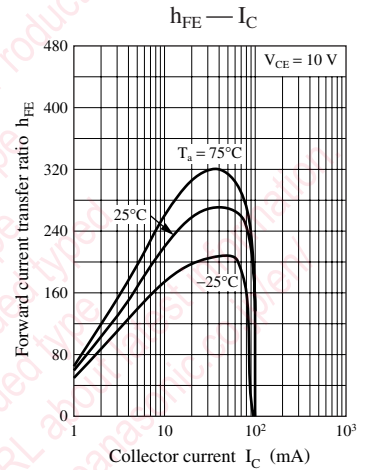
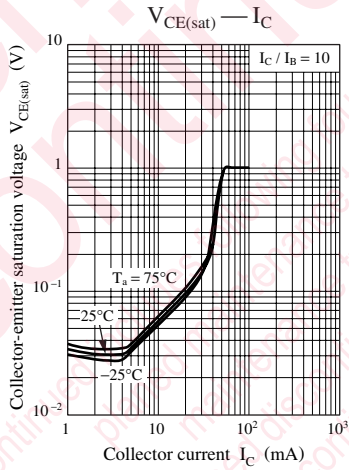
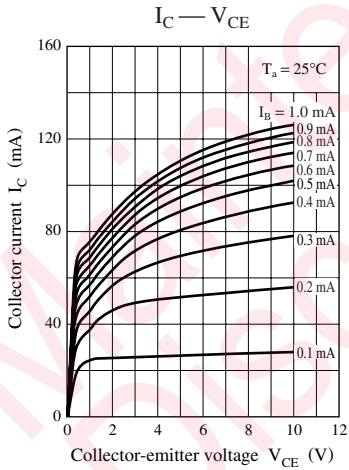
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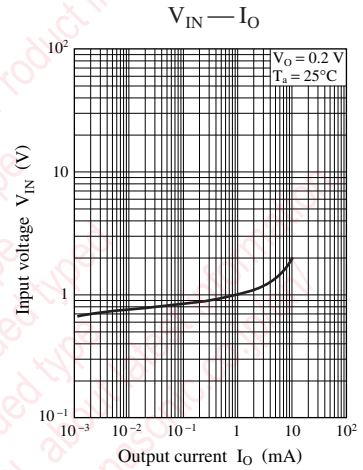
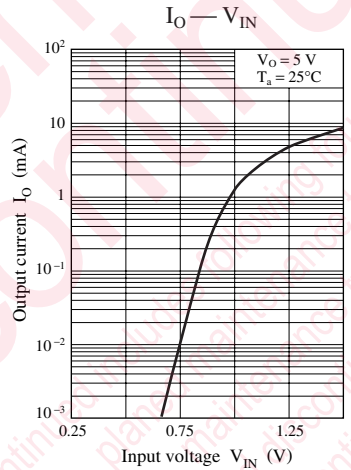
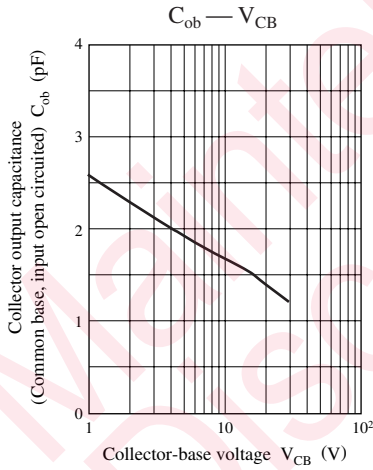
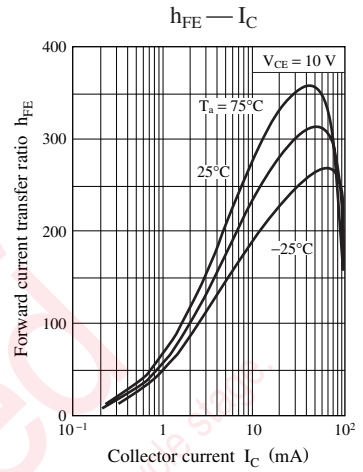
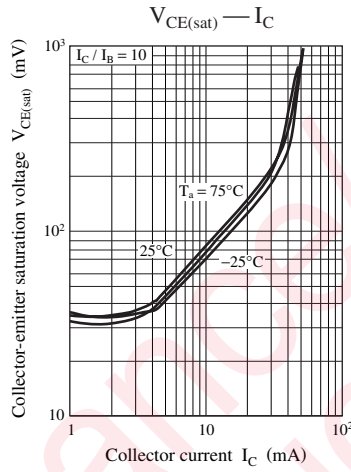
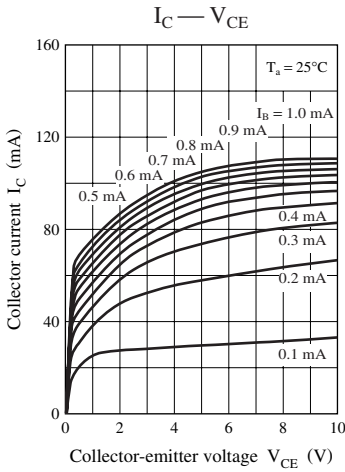




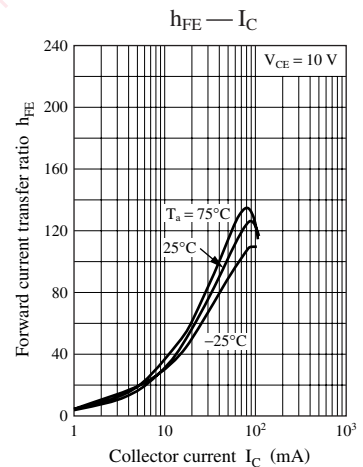
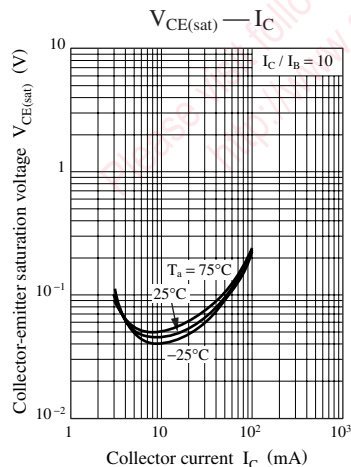
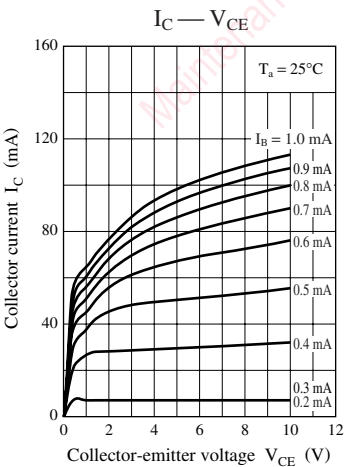
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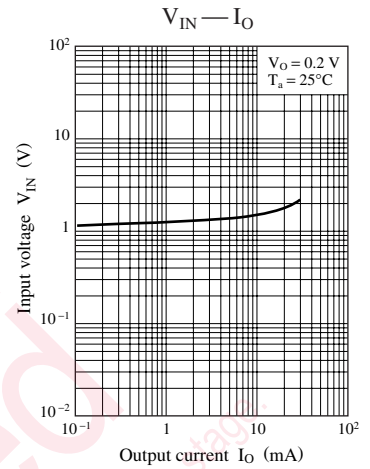
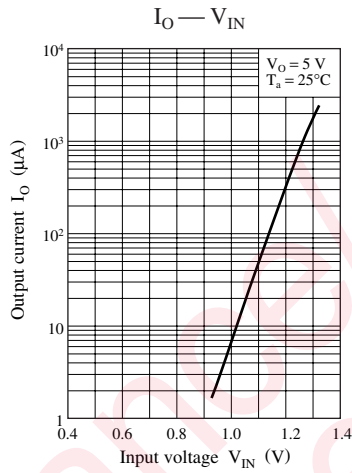
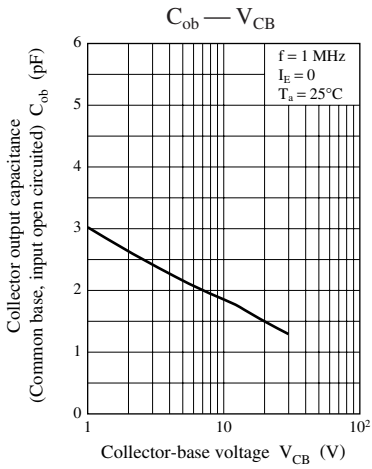


Characteristics charts of UNR921TG



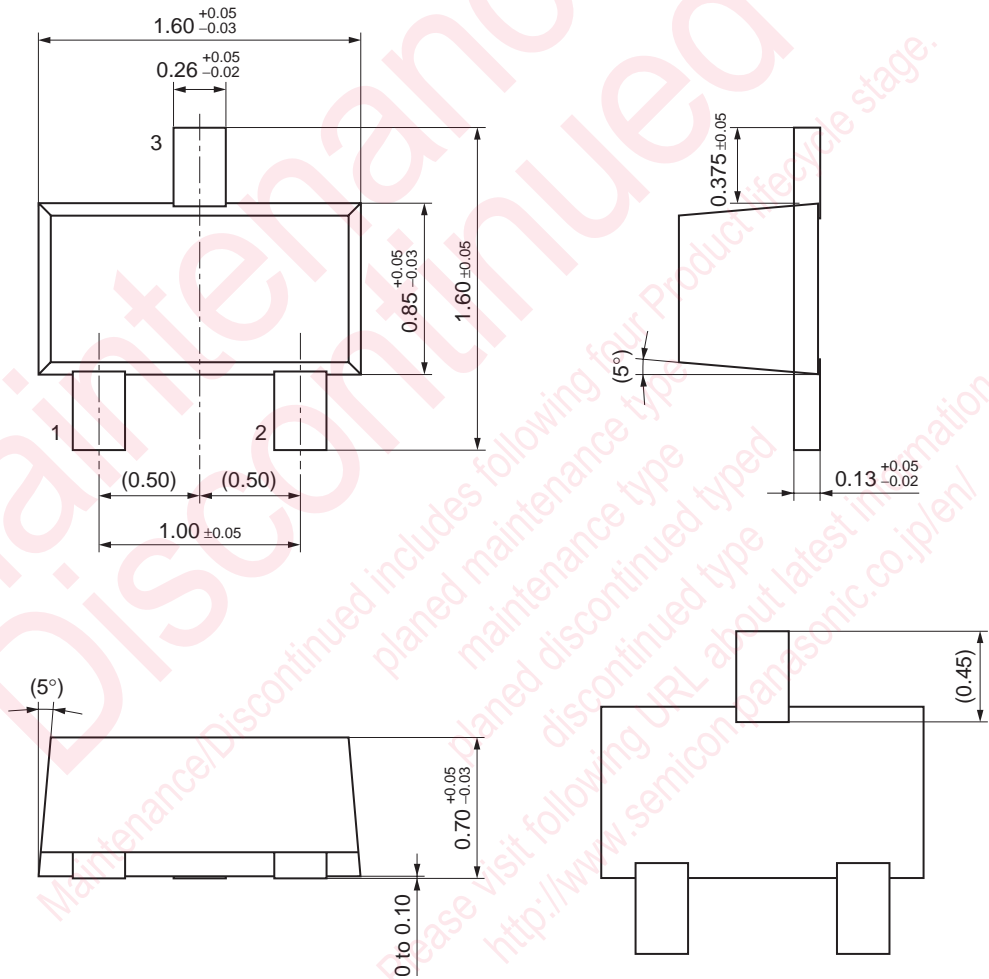
Characteristics charts of UNR921VG





# SSMini3-F3

Unit: mm



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