

# UNR511xG Series

## Silicon PNP epitaxial planar type

For digital circuits

### ■ Features

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

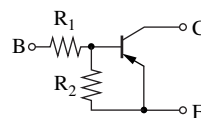
### ■ Resistance by Part Number

	Marking symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR5110G	6L	47 kΩ	—
• UNR5111G	6A	10 kΩ	10 kΩ
• UNR5112G	6B	22 kΩ	22 kΩ
• UNR5113G	6C	47 kΩ	47 kΩ
• UNR5114G	6D	10 kΩ	47 kΩ
• UNR5115G	6E	10 kΩ	—
• UNR5116G	6F	4.7 kΩ	—
• UNR5117G	6H	22 kΩ	—
• UNR5118G	6I	0.51 kΩ	5.1 kΩ
• UNR5119G	6K	1 kΩ	10 kΩ
• UNR511DG	6M	47 kΩ	10 kΩ
• UNR511EG	6N	47 kΩ	22 kΩ
• UNR511FG	6O	4.7 kΩ	10 kΩ
• UNR511HG	6P	2.2 kΩ	10 kΩ
• UNR511LG	6Q	4.7 kΩ	4.7 kΩ
• UNR511MG	EI	2.2 kΩ	47 kΩ
• UNR511NG	EW	4.7 kΩ	47 kΩ
• UNR511TG	EY	22 kΩ	47 kΩ
• UNR511VG	FC	2.2 kΩ	2.2 kΩ
• UNR511ZG	FE	4.7 kΩ	22 kΩ

### ■ Package

- Code  
SMini3-F2
- 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>	150	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°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 cutoff current (Emitter open)		$I_{CBO}$	$V_{CB} = -50 \text{V}, I_E = 0$			-0.1	$\mu\text{A}$	
Collector-emitter cutoff current (Base open)		$I_{CEO}$	$V_{CE} = -50 \text{V}, I_B = 0$			-0.5	$\mu\text{A}$	
Emitter-base cutoff current (Collector open)	UNR5110G/5115G/5116G/5117G	$I_{EBO}$	$V_{EB} = -6 \text{V}, I_C = 0$			-0.01	mA	
	UNR5113G					-0.1		
	UNR5112G/5114G/511DG/511EG/511MG/511NG/511TG					-0.2		
	UNR511ZG					-0.4		
	UNR5111G					-0.5		
	UNR511FG/511HG					-1.0		
	UNR5119G					-1.5		
	UNR5118G/511LG/511VG					-2.0		
Forward current transfer ratio	UNR511VG	$h_{FE}$	$V_{CE} = -10 \text{V}, I_C = -5 \text{mA}$	6		20	—	
	UNR5118G/511LG			20				
	UNR5119G/511DG/511FG/511HG			30				
	UNR5111G			35				
	UNR5112/511EG			60				
	UNR511ZG			60	200			
	UNR5113/5114/511MG			80				
	UNR511N/511TG			80	400			
UNR5110G */5115G */5116G */5117G *	160	460						
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -10 \text{mA}, I_B = -0.3 \text{mA}$			-0.25	V	
	UNR511VG					$I_C = -10 \text{mA}, I_B = -1.5 \text{mA}$		
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	
				UNR5113G	$V_{CC} = -5 \text{V}, V_B = -3.5 \text{V}, R_L = 1 \text{k}\Omega$			
				UNR511DG	$V_{CC} = -5 \text{V}, V_B = -10 \text{V}, R_L = 1 \text{k}\Omega$			
				UNR511EG	$V_{CC} = -5 \text{V}, V_B = -6 \text{V}, R_L = 1 \text{k}\Omega$			
Transition frequency		$f_T$	$V_{CB} = -10 \text{V}, I_E = 1 \text{mA}, f = 200 \text{MHz}$		80		MHz	
Input resistance	UNR5118G	$R_1$		-30%	0.51	+30%	k $\Omega$	
	UNR5119G				1.0			
	UNR511HG/511MG/511VG				2.2			
	UNR5116G/511FG/511LG/511NG/511ZG				4.7			
	UNR5111G/5114G/5115G				10			
	UNR5112G/5117G/511TG				22			
	UNR5110G/5113G/511DG/511EG				47			
Resistance ratio	UNR511MG	$R_1/R_2$			0.047		—	
	UNR511NG				0.1			
	UNR5118G/5119G			0.08	0.10	0.12		
	UNR511ZG				0.21			

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

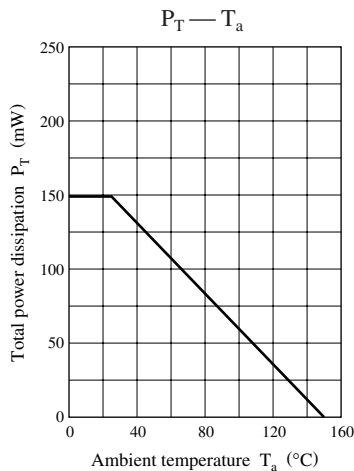
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR5114G			0.17	0.21	0.25	
	UNR511HG			0.17	0.22	0.27	
	UNR511TG				0.47		
	UNR511FG			0.37	0.47	0.57	
	UNR511VG				1.0		
	UNR511G/5112G/5113G/511L			0.8	1.0	1.2	
	UNR511EG			1.70	2.14	2.60	
	UNR511DG			3.7	4.7	5.7	

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

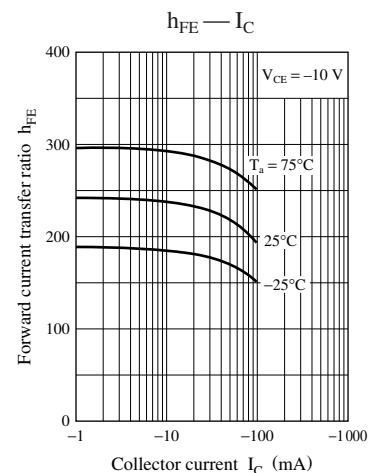
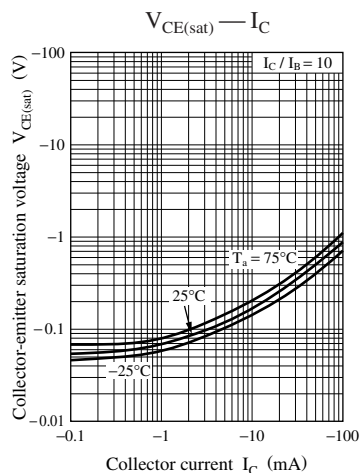
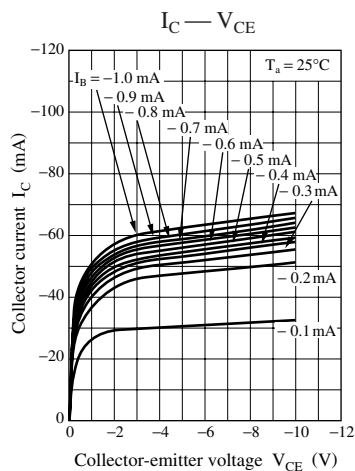
2. \*: Rank classification

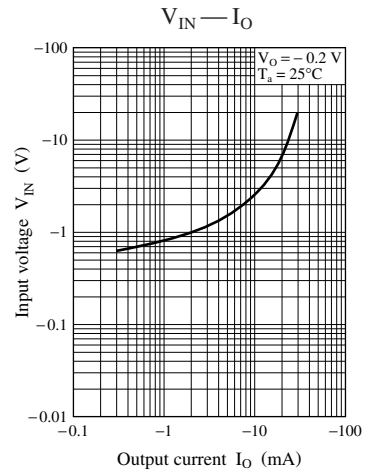
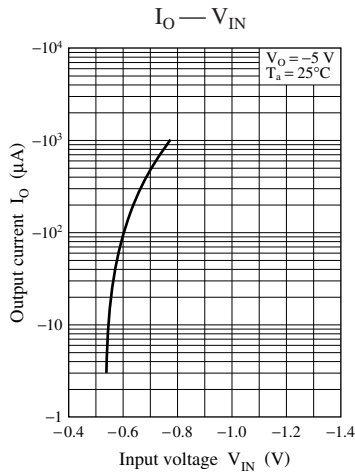
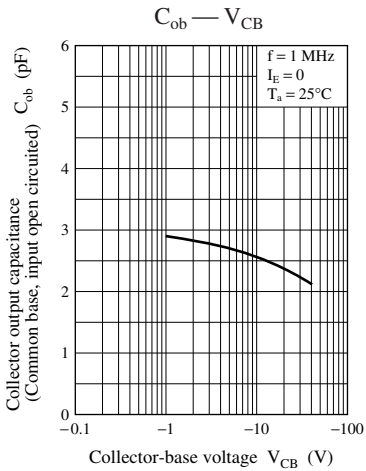
Rank	Q	R	S	No-rank
$h_{FE}$	160 to 260	210 to 340	290 to 460	160 to 460

#### Common characteristics chart

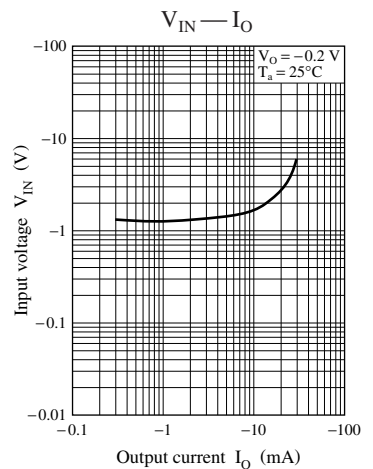
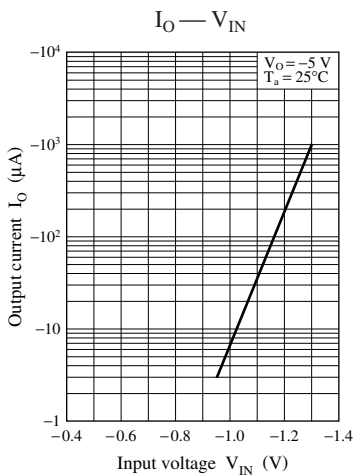
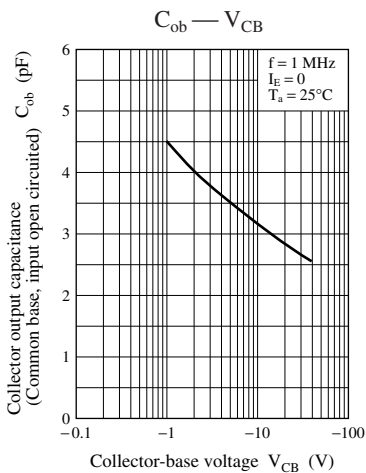
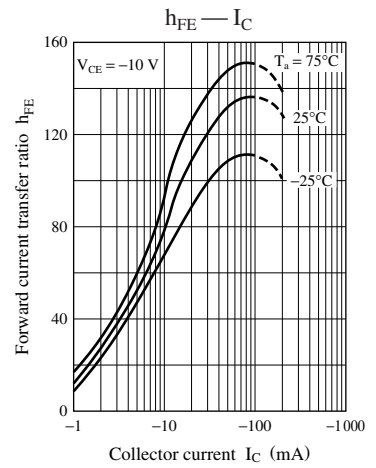
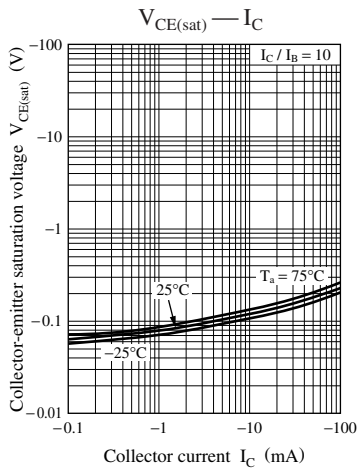
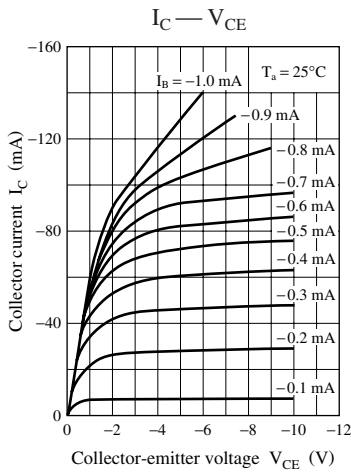


#### Characteristics charts of UNR5110G

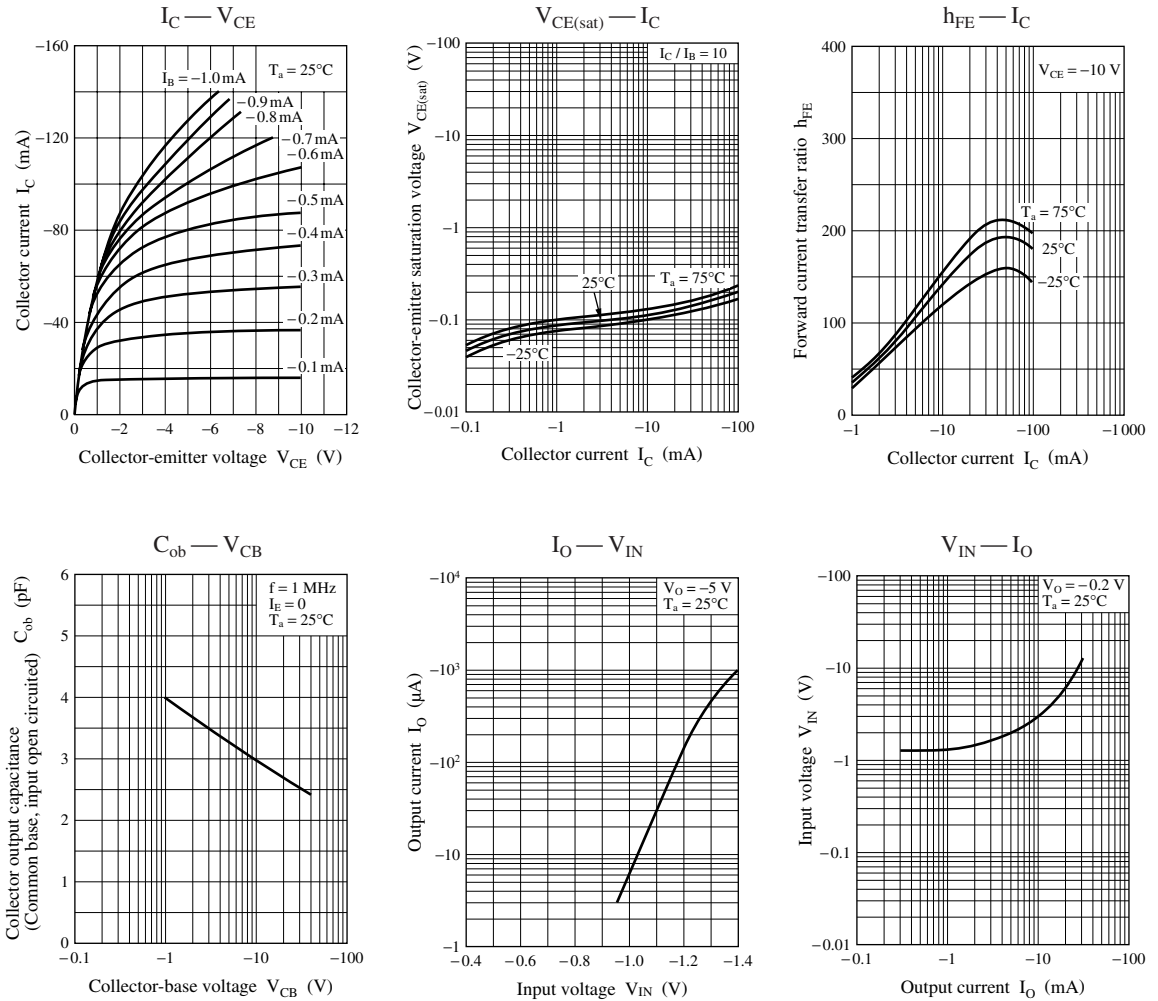




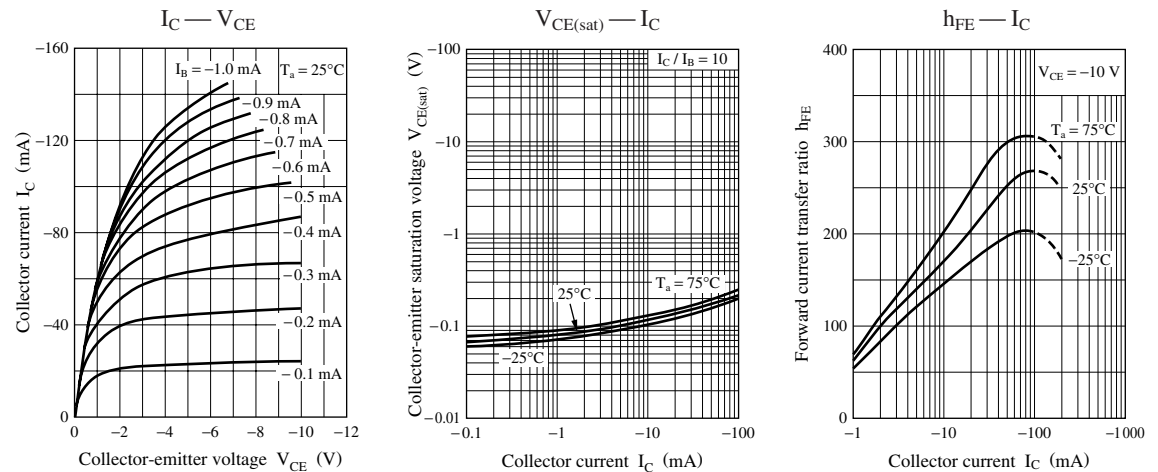
Characteristics charts of UNR5111G

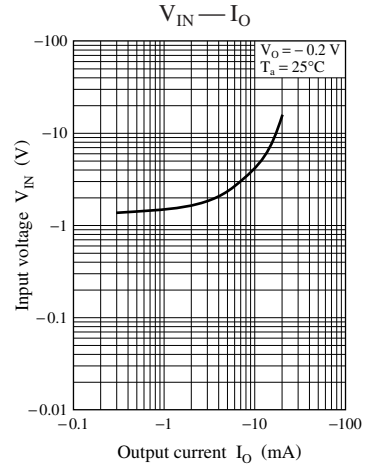
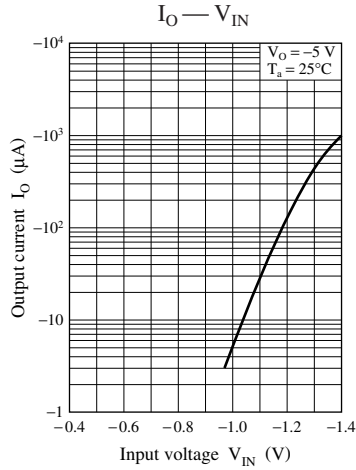
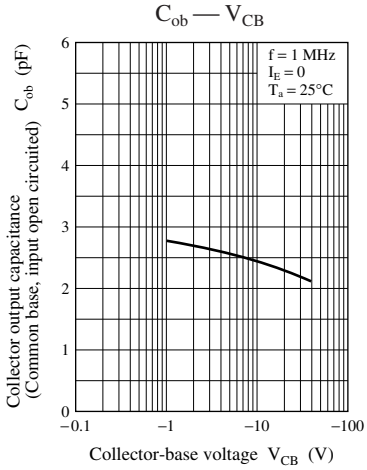


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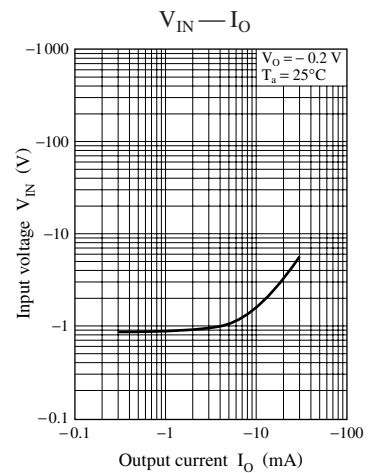
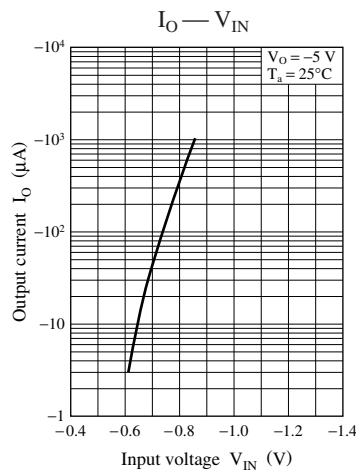
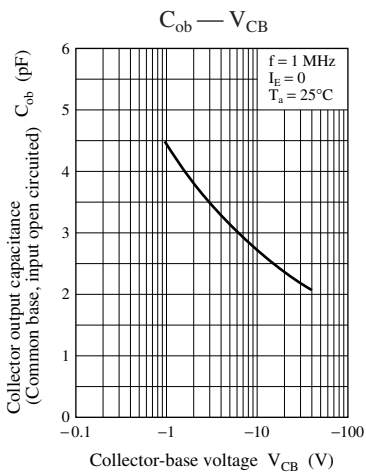
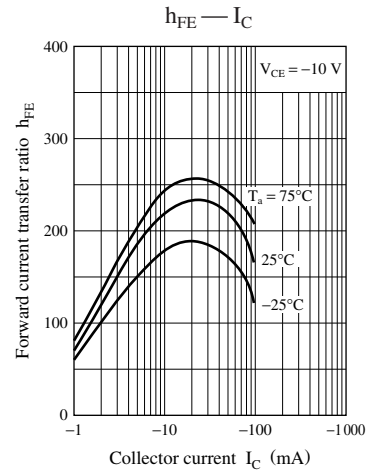
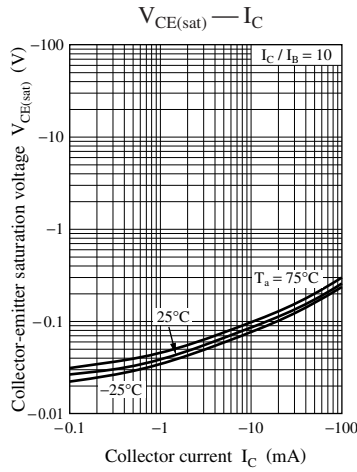
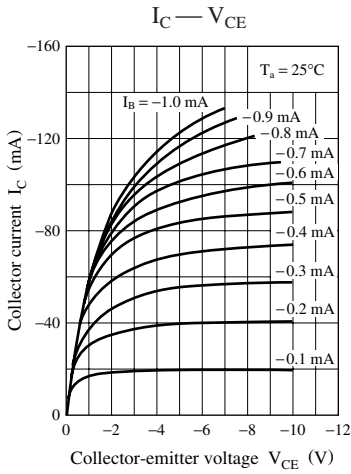


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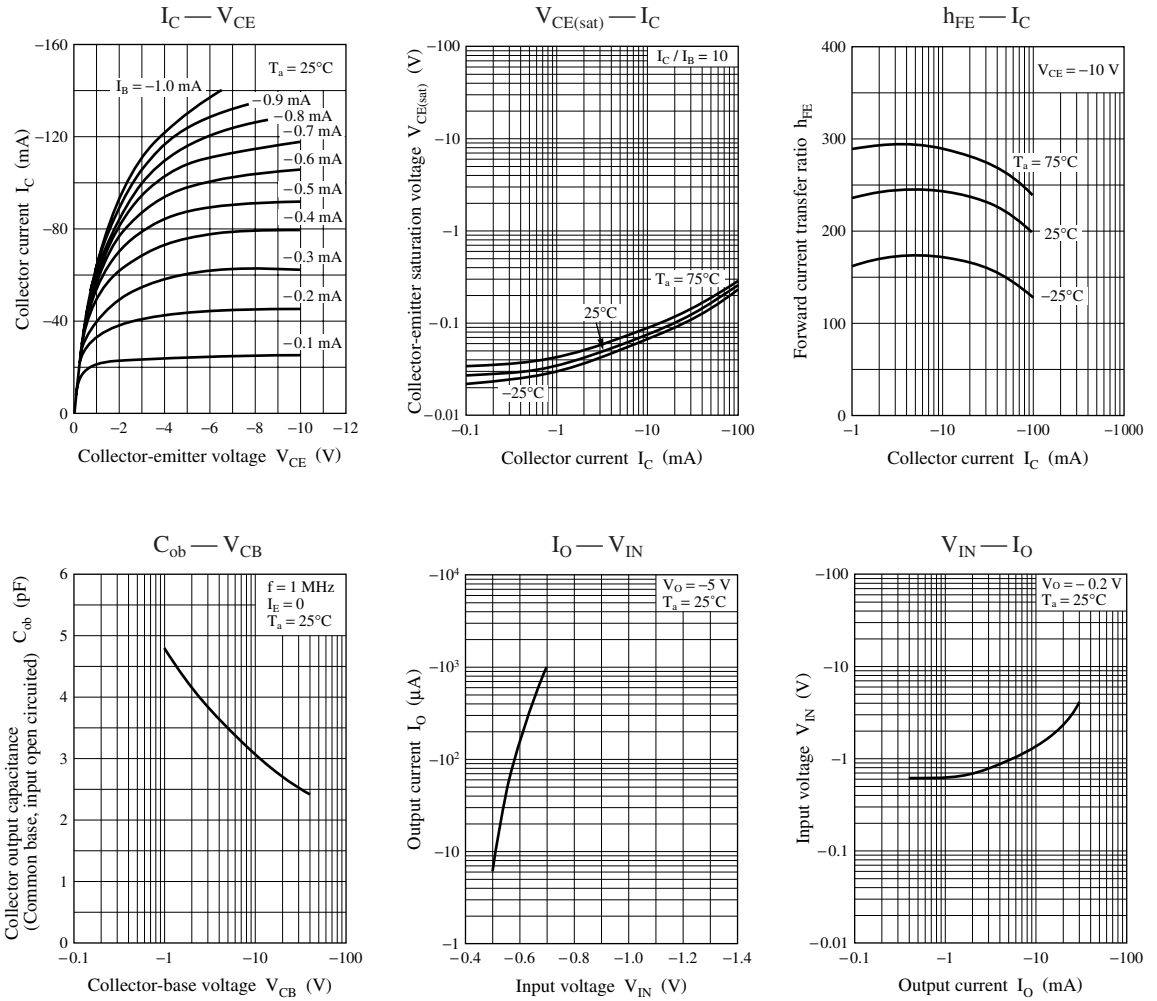




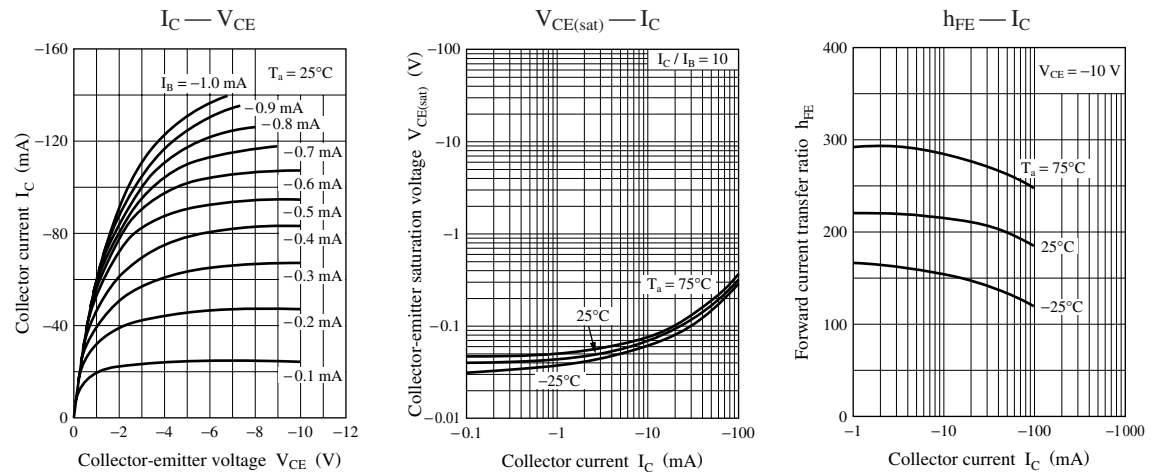
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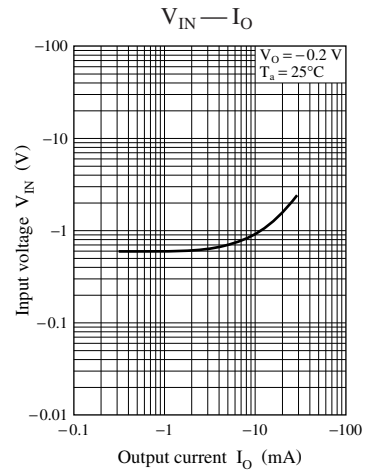
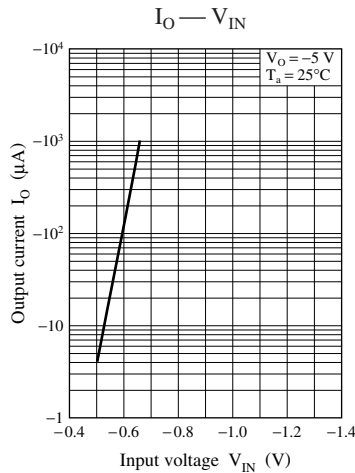
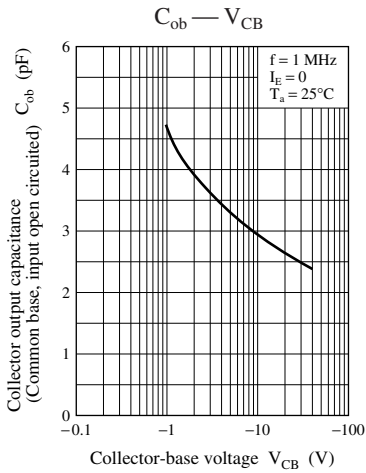


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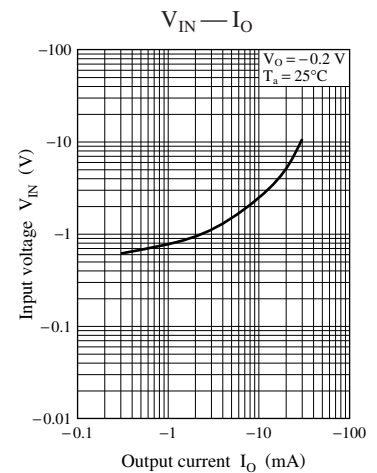
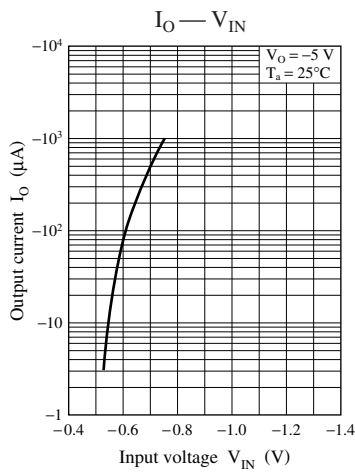
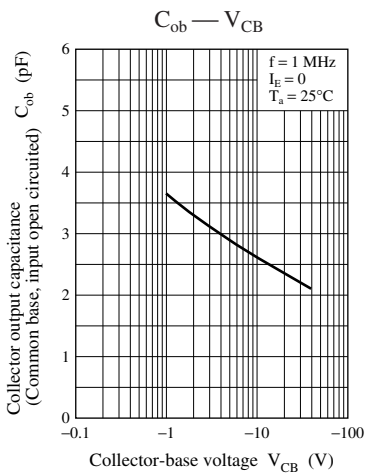
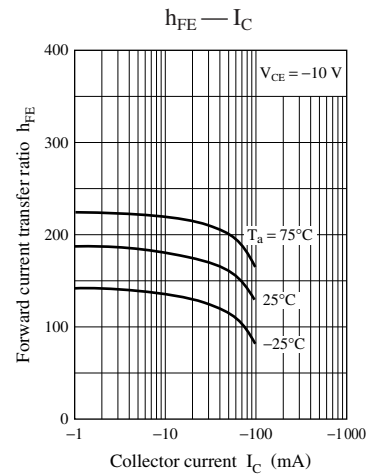
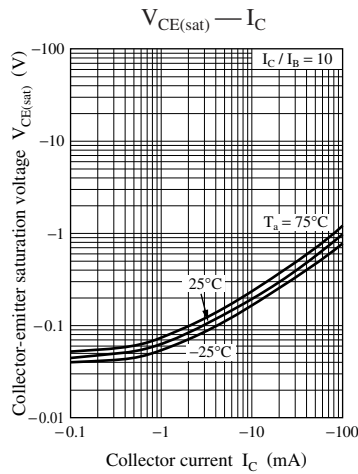
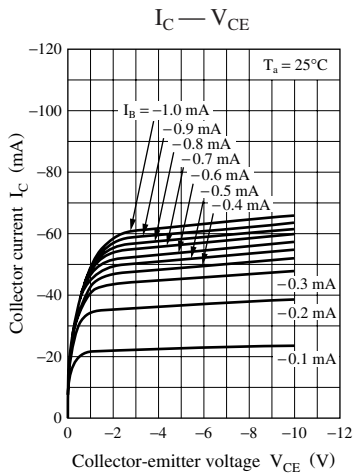


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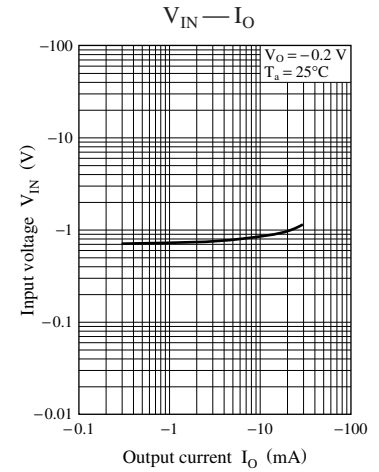
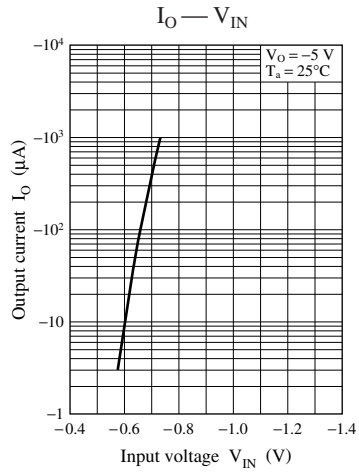
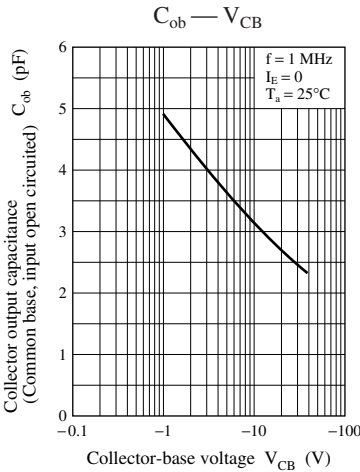
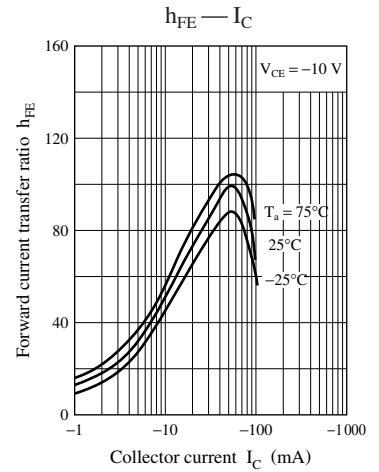
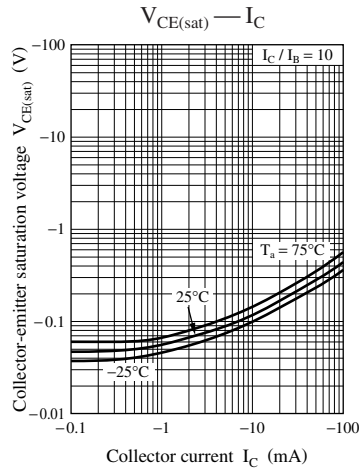
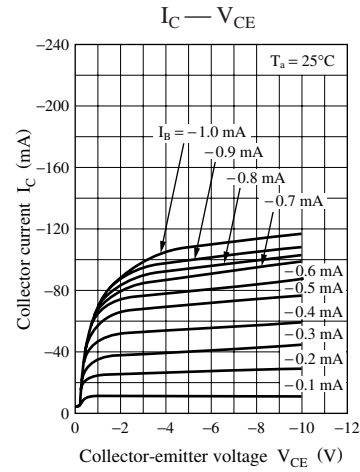


Characteristics charts of UNR5117G

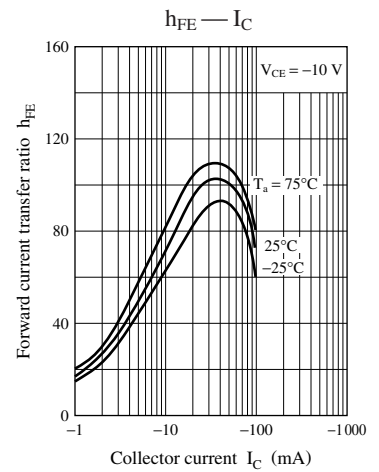
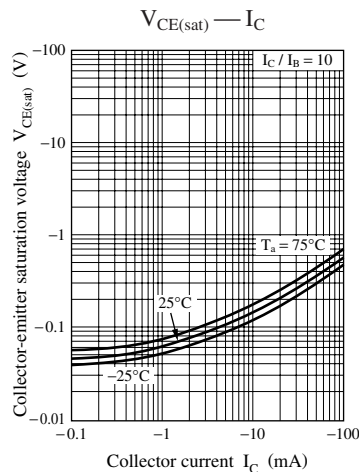
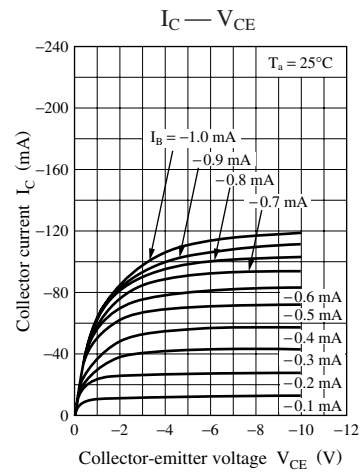


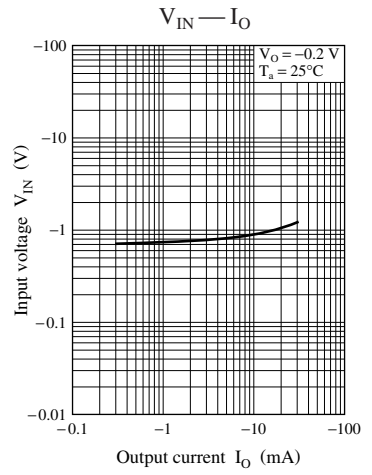
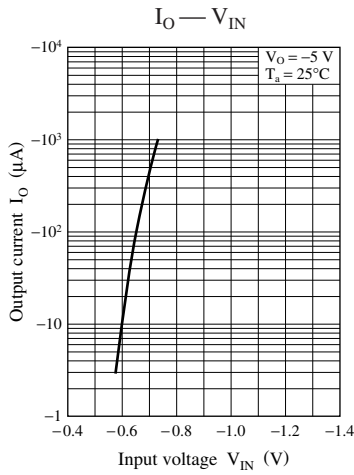
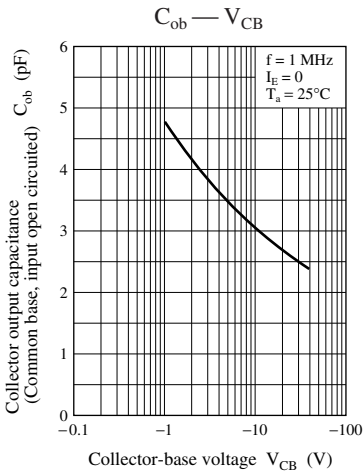


**Characteristics charts of UNR5118G**

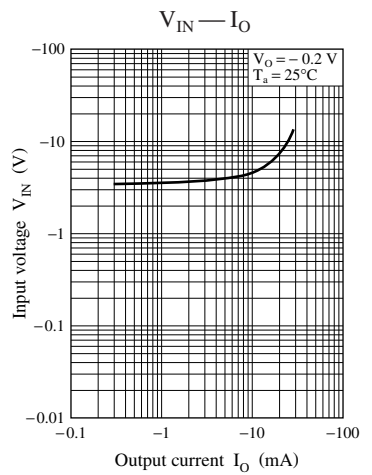
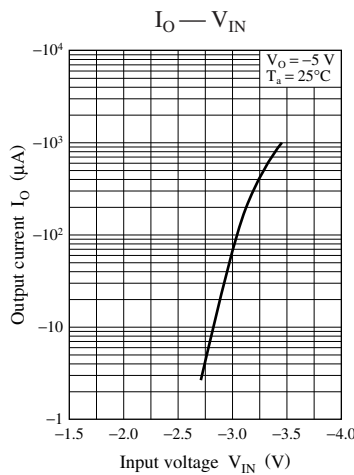
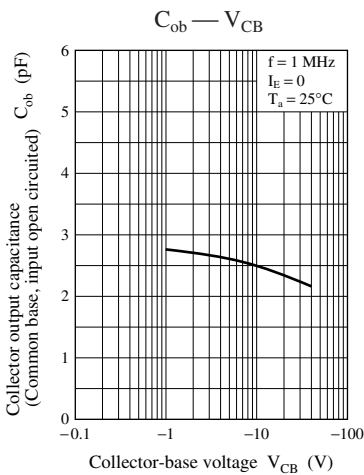
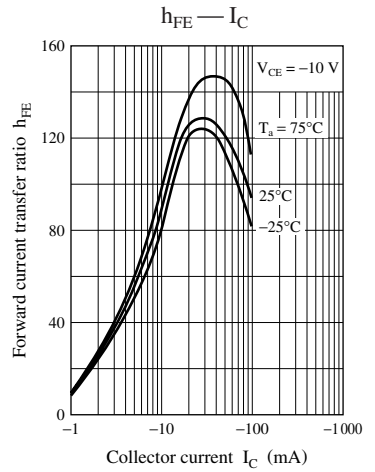
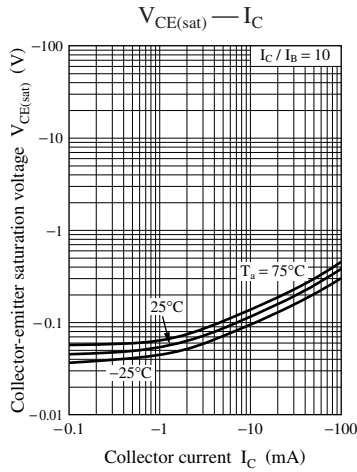
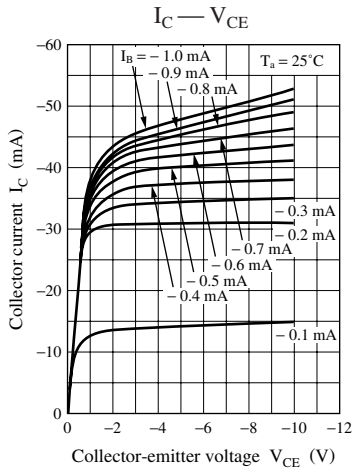


**Characteristics charts of UNR5119G**

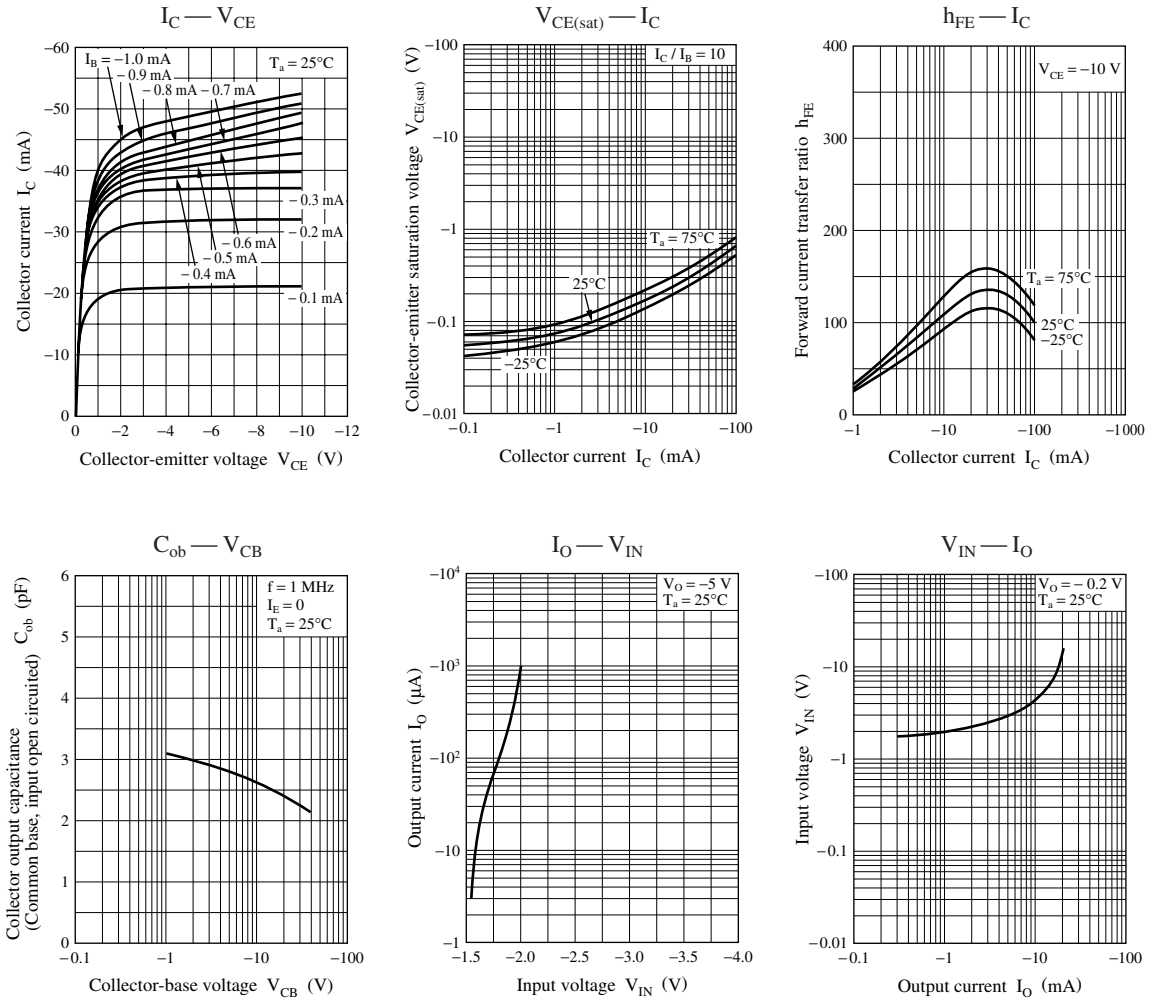




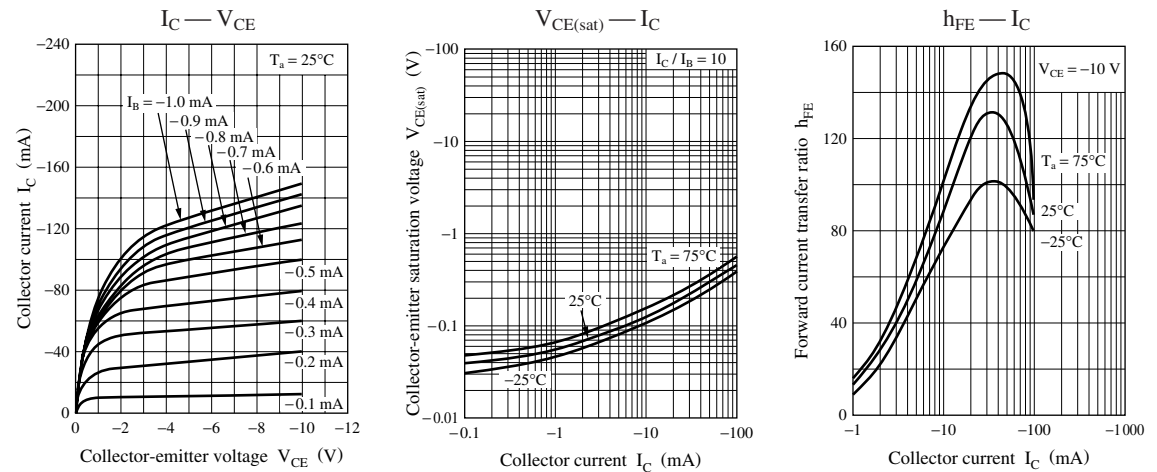
Characteristics charts of UNR511DG

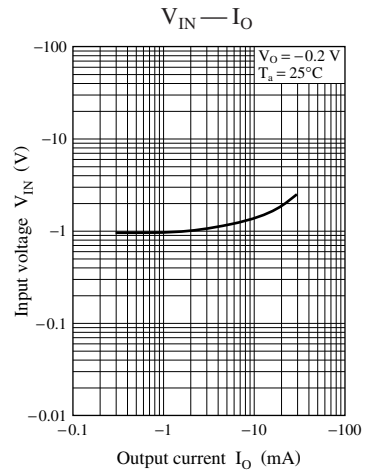
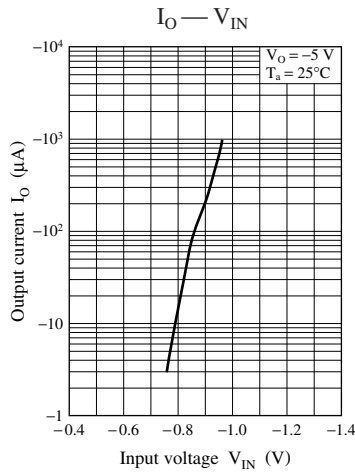
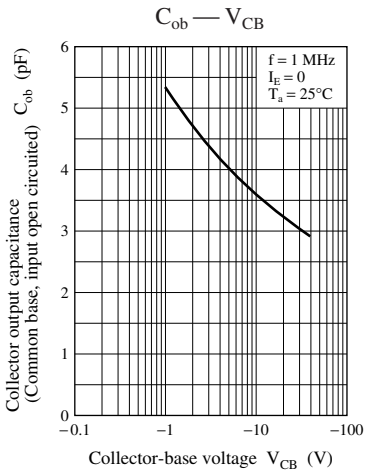


Characteristics charts of UNR511EG

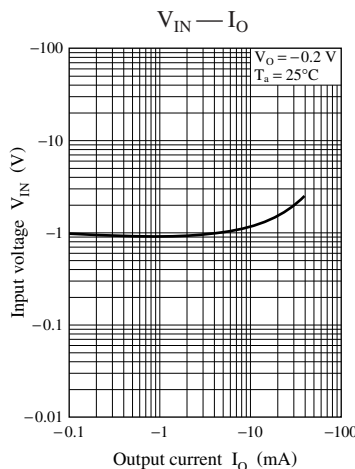
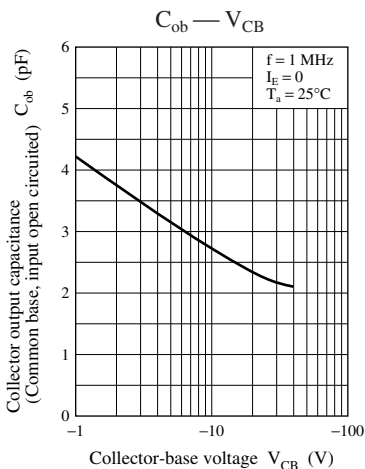
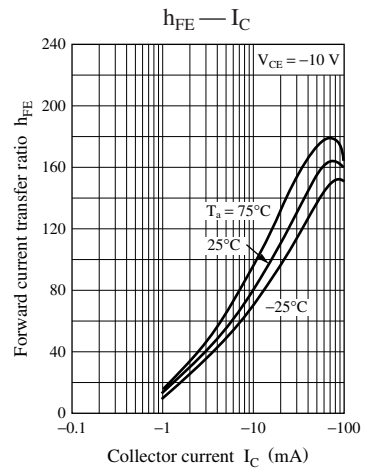
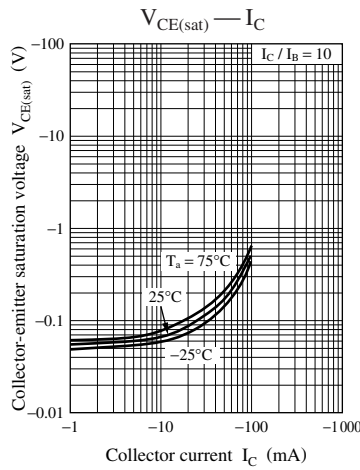
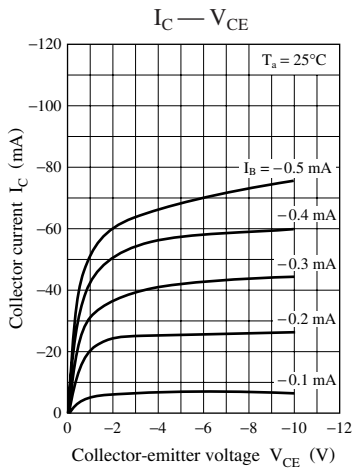


Characteristics charts of UNR511FG

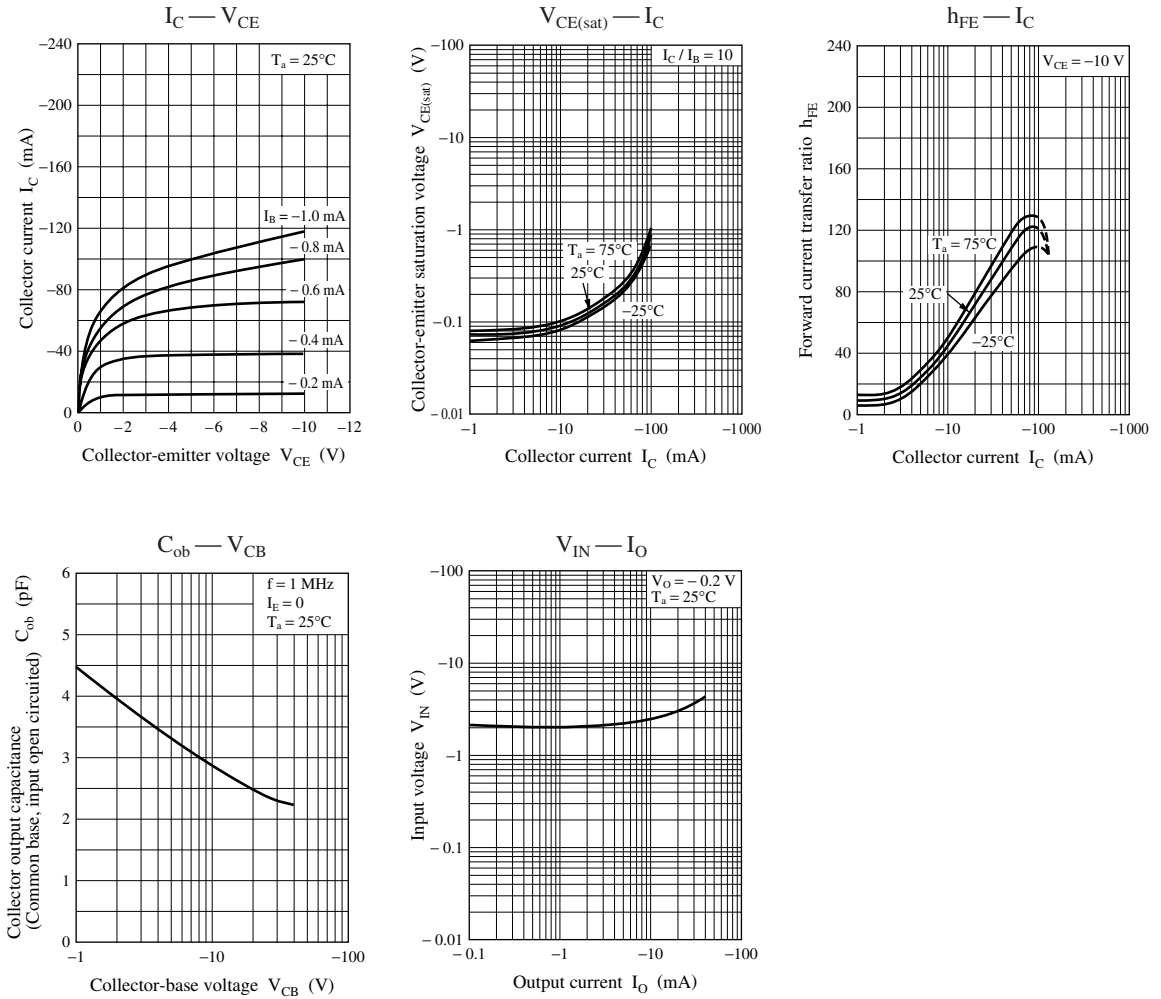




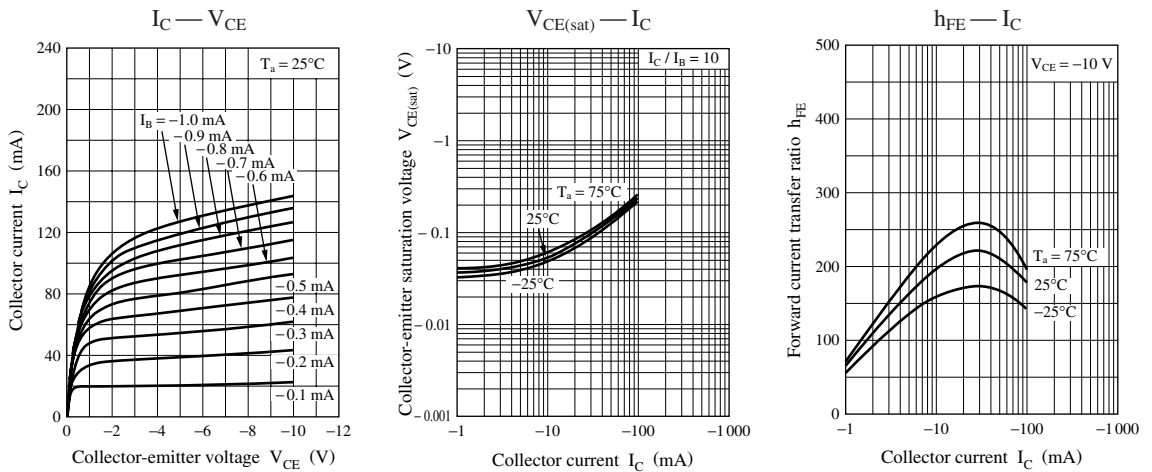
Characteristics charts of UNR511HG

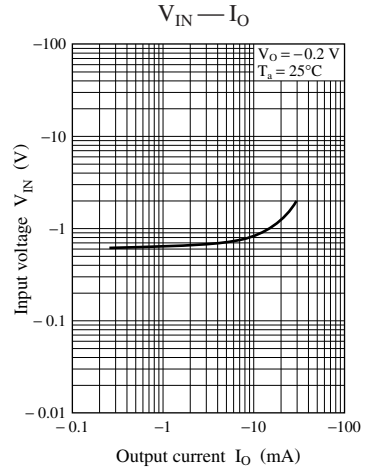
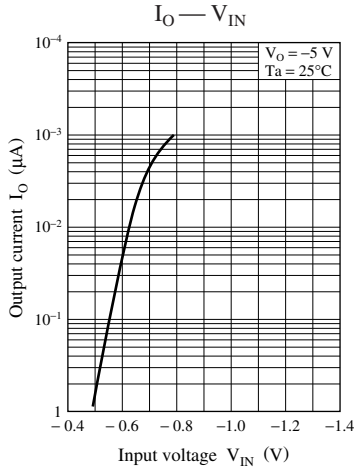
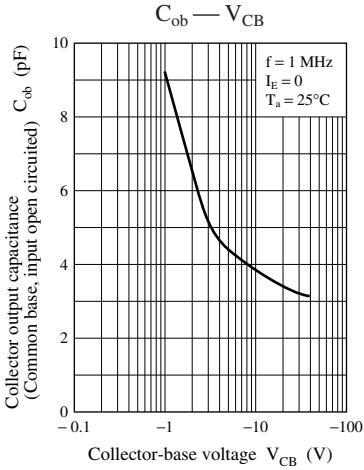


**Characteristics charts of UNR511LG**

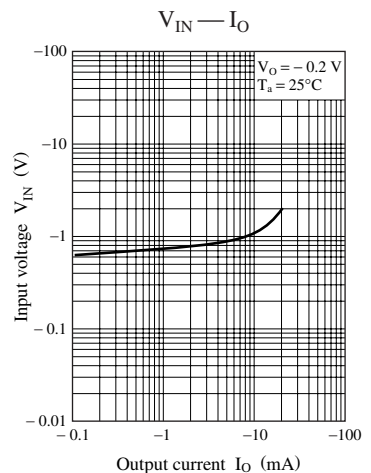
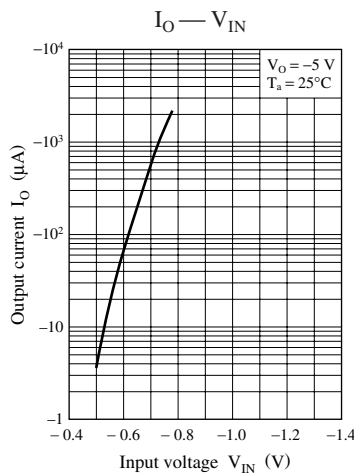
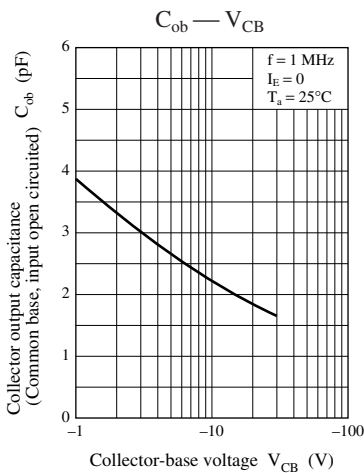
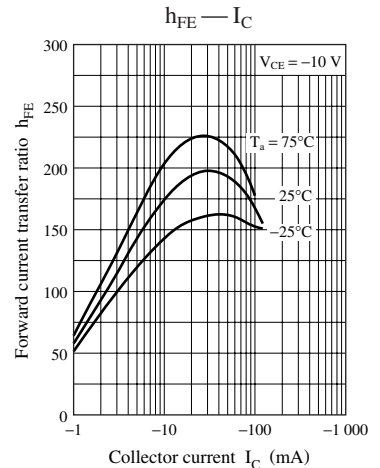
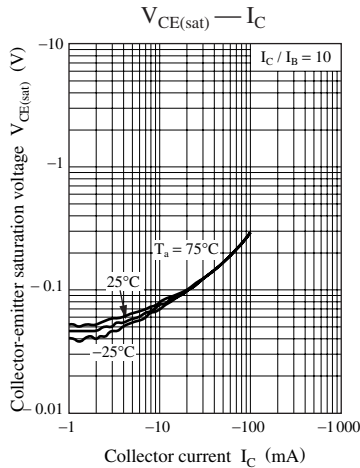
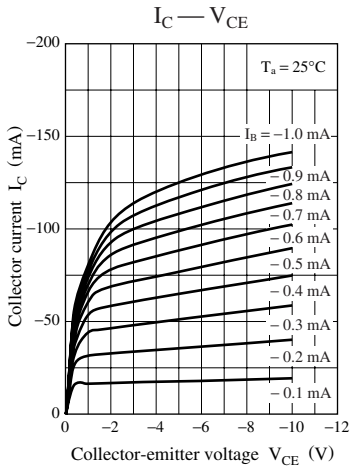


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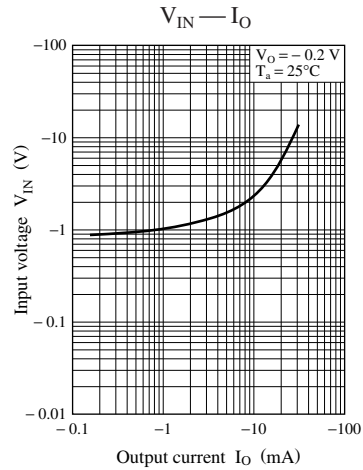
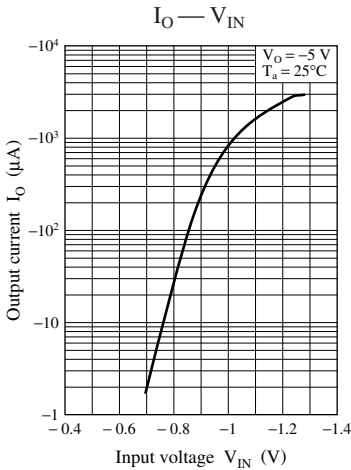
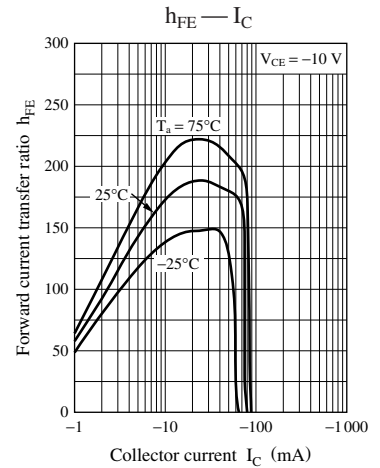
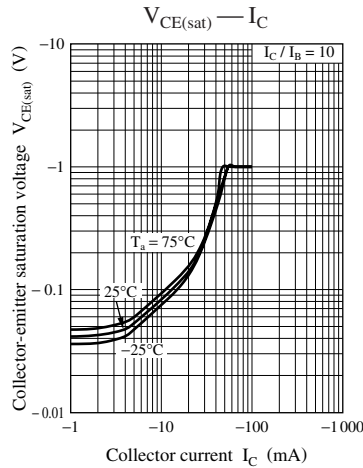
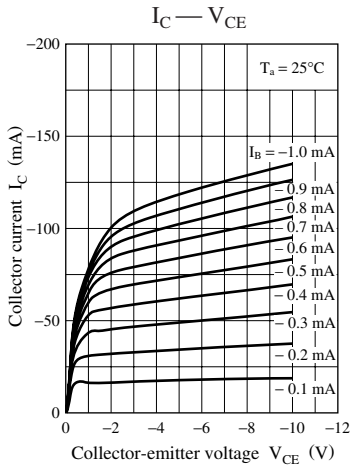




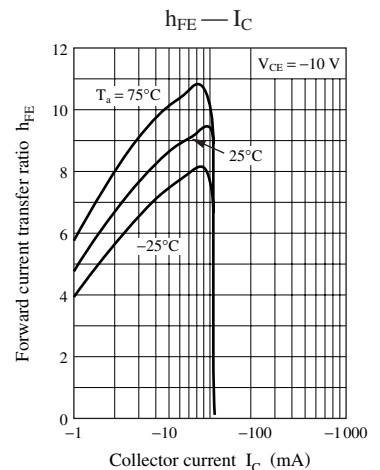
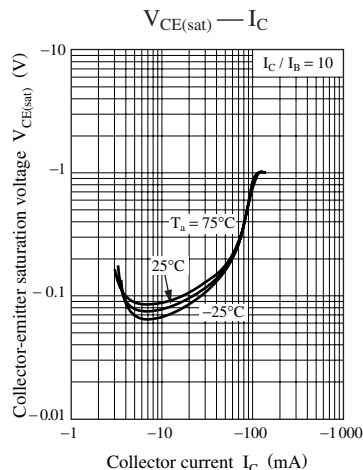
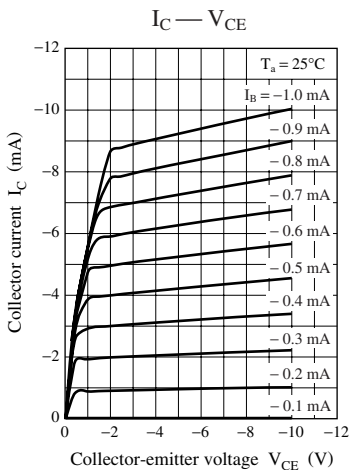
Characteristics charts of UNR511NG

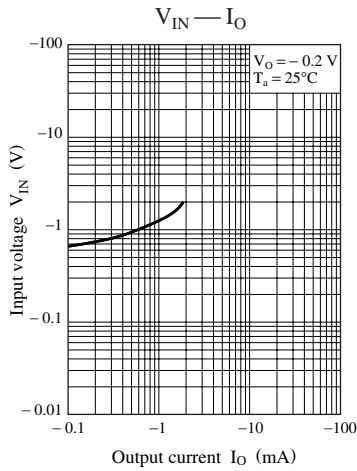
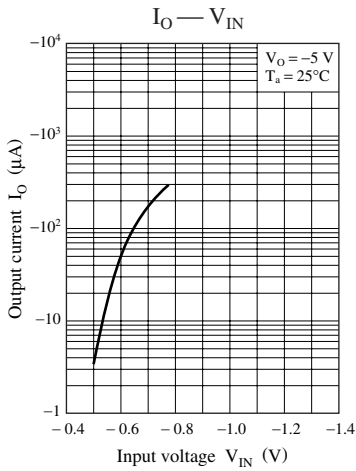


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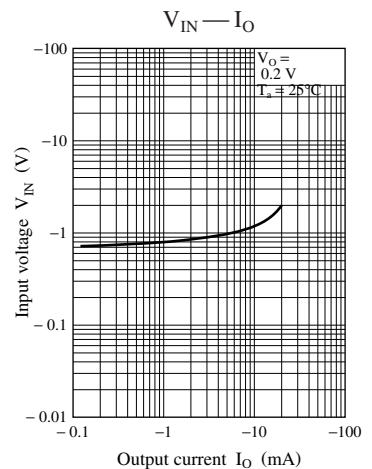
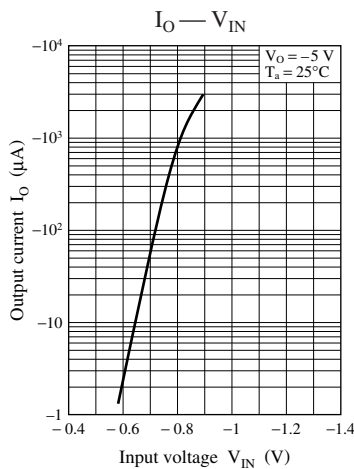
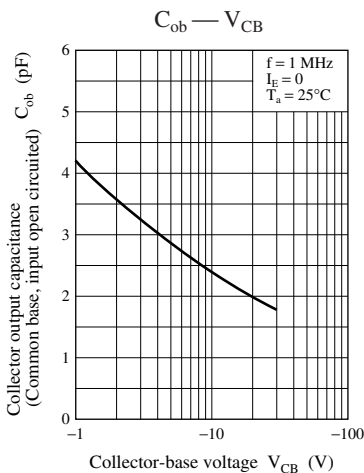
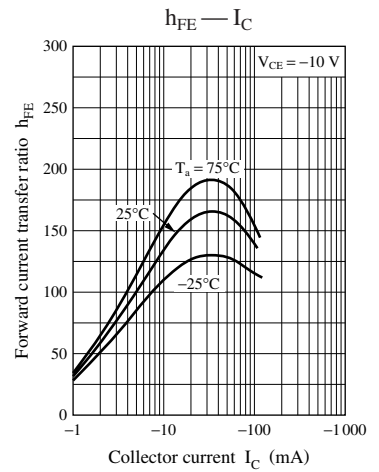
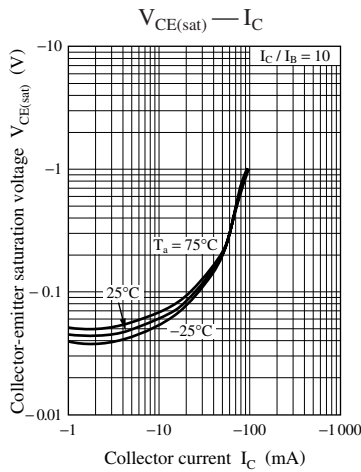
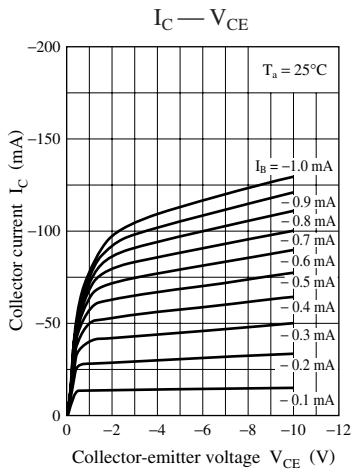


**Characteristics charts of UNR511VG**





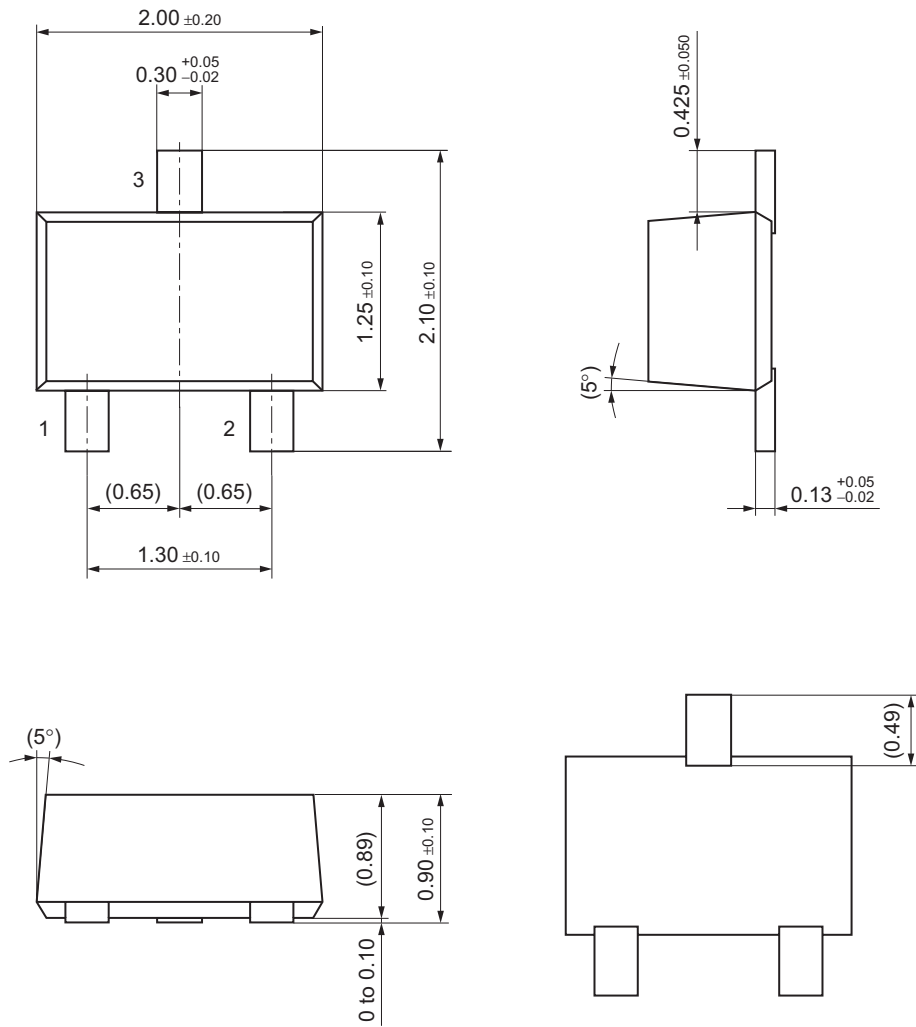
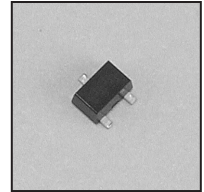
**Characteristics charts of UNR511ZG**





SMini3-F2

Unit: mm



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