

UNR521xG 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
- S-Mini type package, allowing automatic insertion through the tape packing and magazine packing

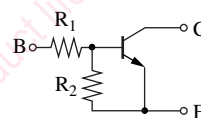
■ Resistance by Part Number

	Marking symbol	(R ₁)	(R ₂)
• UNR5210G	8L	47 kΩ	—
• UNR5211G	8A	10 kΩ	10 kΩ
• UNR5212G	8B	22 kΩ	22 kΩ
• UNR5213G	8C	47 kΩ	47 kΩ
• UNR5214G	8D	10 kΩ	47 kΩ
• UNR5215G	8E	10 kΩ	—
• UNR5216G	8F	4.7 kΩ	—
• UNR5217G	8H	22 kΩ	—
• UNR5218G	8I	0.51 kΩ	5.1 kΩ
• UNR5219G	8K	1 kΩ	10 kΩ
• UNR521DG	8M	47 kΩ	10 kΩ
• UNR521EG	8N	47 kΩ	22 kΩ
• UNR521FG	8O	4.7 kΩ	10 kΩ
• UNR521KG	8P	10 kΩ	4.7 kΩ
• UNR521LG	8Q	4.7 kΩ	4.7 kΩ
• UNR521MG	EL	2.2 kΩ	47 kΩ
• UNR521NG	EX	4.7 kΩ	47 kΩ
• UNR521TG	EZ	22 kΩ	47 kΩ
• UNR521VG	FD	2.2 kΩ	2.2 kΩ
• UNR521ZG	FF	4.7 kΩ	22 kΩ

■ Package

- Code
SMini3-F2
- 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	150	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−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 μA, I _E = 0	50			V
Collector-emitter voltage (Base open)		V _{CEO}	I _C = 2 mA, I _B = 0	50			V
Collector-base cutoff current (Emitter open)		I _{CBO}	V _{CB} = 50 V, I _E = 0			0.1	μA
Collector-emitter cutoff current (Base open)		I _{CEO}	V _{CE} = 50 V, I _B = 0			0.5	
Emitter-base cutoff current (Collector open)	UNR5210G/5215G/5216G/5217G	I _{EBO}	V _{EB} = 6 V, I _C = 0			0.01	mA
	UNR5213G					0.1	
	UNR5212G/5214G/521DG/ 521EG/521MG/521NG/521TG					0.2	
	UNR521ZG					0.4	
	UNR5211G					0.5	
	UNR521FG/521KG					1.0	
	UNR5219G					1.5	
	UNR5218G/521LG/521VG					2.0	
Forward current transfer ratio	UNR521VG	h _{FE}	V _{CE} = 10 V, I _C = 5 mA	6		20	—
	UNR5218G/521KG/521LG			20			
	UNR5219G/521DG/521FG			30			
	UNR5211G			35			
	UNR5212G/521EG			60			
	UNR521ZG			60		200	
	UNR5213G/5214G/521MG			80			
	UNR521NG/521TG			80		400	
	UNR5210G*/5215G*/5216G*/5217G*			160		460	
Collector-emitter saturation voltage		V _{CE(sat)}	I _C = 10 mA, I _B = 0.3 mA			0.25	V
UNR521VG			I _C = 10 mA, I _B = 1.5 mA				
Output voltage high-level		V _{OH}	V _{CC} = 5 V, V _B = 0.5 V, R _L = 1 kΩ	4.9			V
Output voltage low-level		V _{OL}	V _{CC} = 5 V, V _B = 2.5 V, R _L = 1 kΩ			0.2	V
UNR5213G/521KG			V _{CC} = 5 V, V _B = 3.5 V, R _L = 1 kΩ				
UNR521DG			V _{CC} = 5 V, V _B = 10 V, R _L = 1 kΩ				
UNR521EG			V _{CC} = 5 V, V _B = 6.0 V, R _L = 1 kΩ				
Transition frequency		f _T	V _{CB} = 10 V, I _E = −2 mA, f = 200 MHz		150		MHz
Input resistance	UNR5218G	R _i		−30%	0.51	+30%	kΩ
	UNR5219G				1.0		
	UNR521MG/521VG				2.2		
	UNR5216G/521FG/521LG/ 521NG/521ZG				4.7		
	UNR5211G/5214G/5215G/521KG				10		
	UNR5212G/5217G/521TG				22		
	UNR5210G/5213G/521DG/521EG				47		

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

2. *: Rank classification

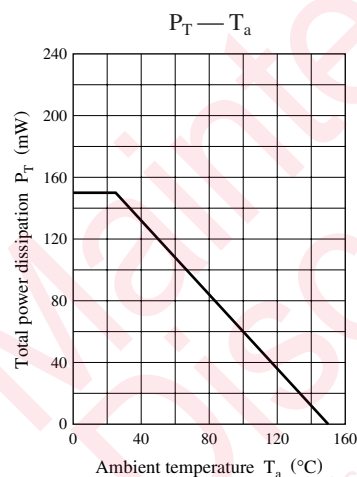
Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

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

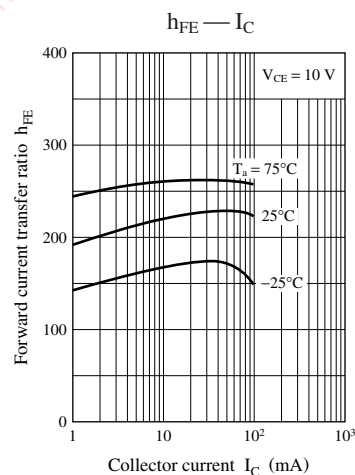
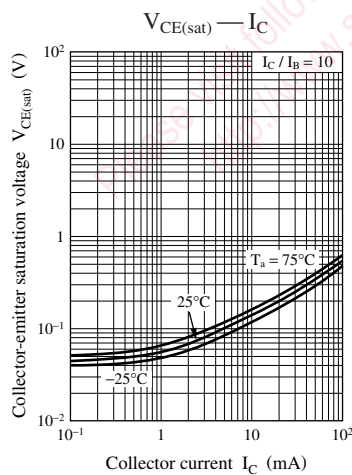
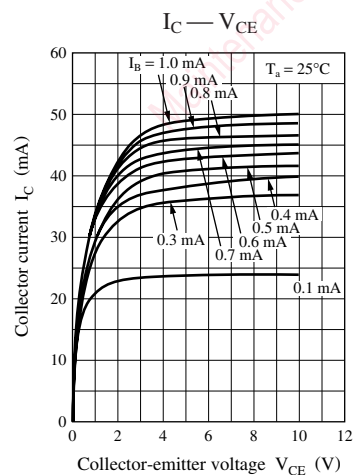
	Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR521MG	R_1/R_2			0.047		—
	UNR521NG				0.1		
	UNR5218G/5219G			0.08	0.10	0.12	
	UNR521ZG				0.21		
	UNR5214G			0.17	0.21	0.25	
	UNR521TG				0.47		
	UNR521FG			0.37	0.47	0.57	
	UNR521VG				1.0		
	UNR5211G/5212G/5213G/521LG			0.8	1.0	1.2	
	UNR521KG			1.70	2.13	2.60	
	UNR521EG			1.70	2.14	2.60	
	UNR521DG			3.7	4.7	5.7	

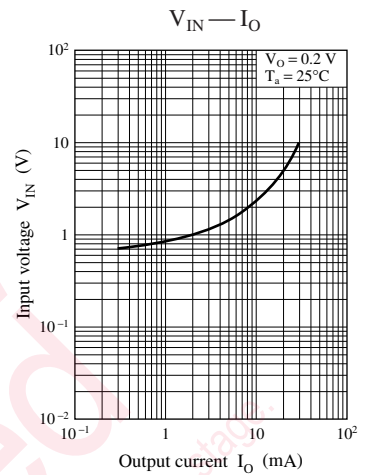
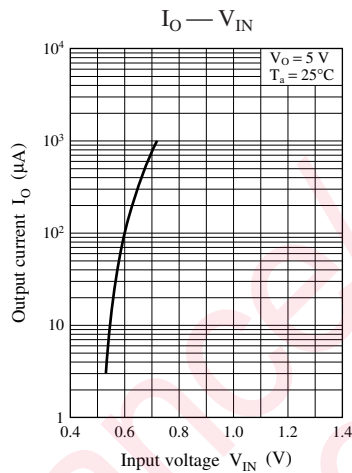
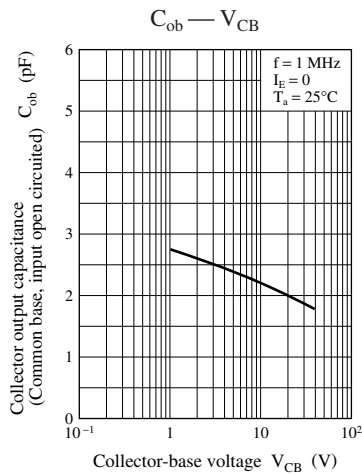
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

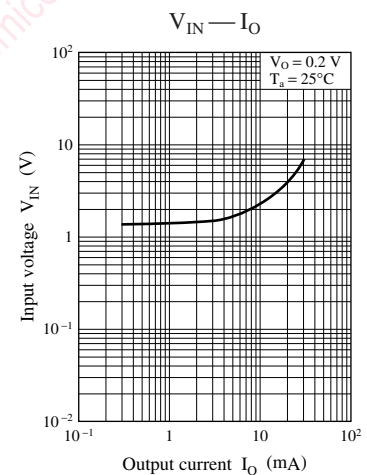
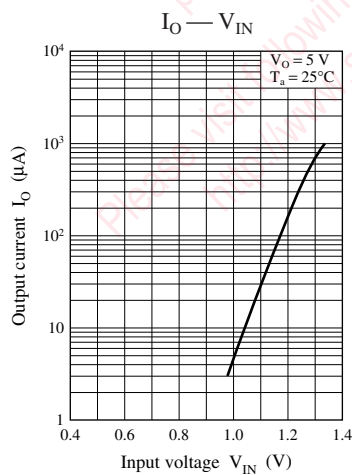
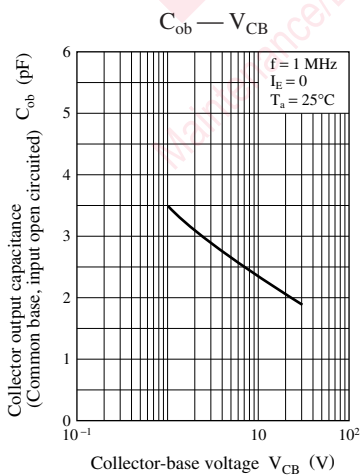
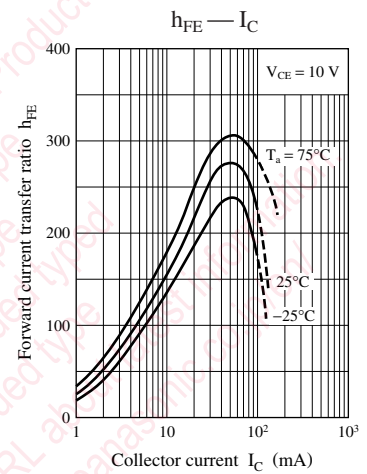
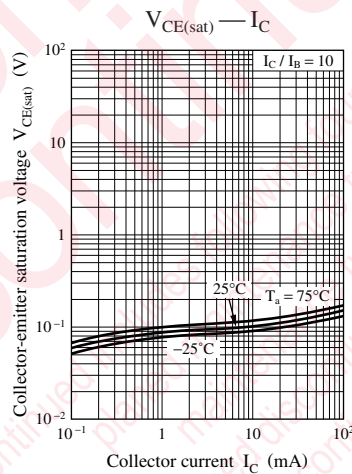
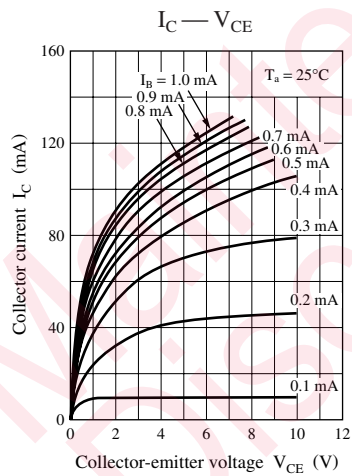


Characteristics charts of UNR5210G

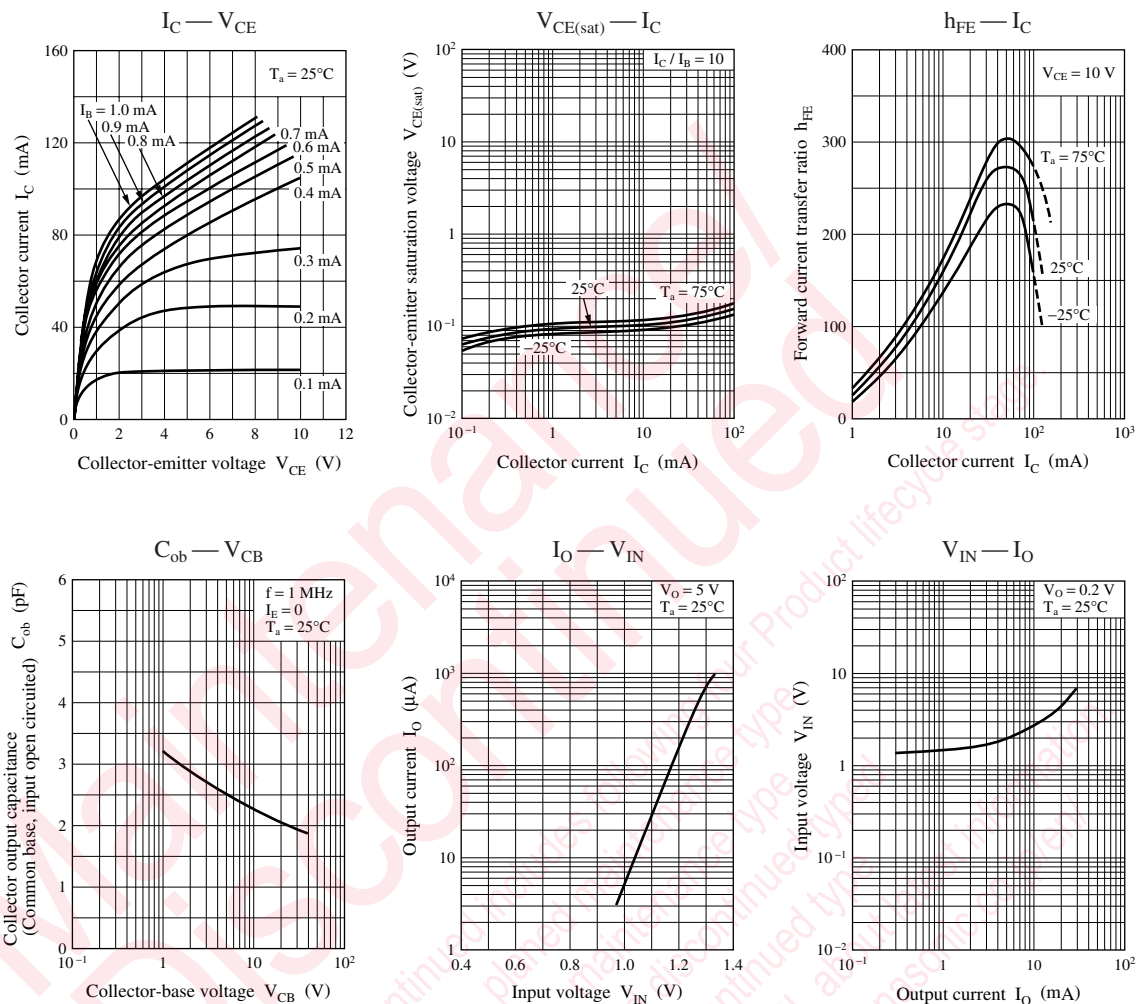




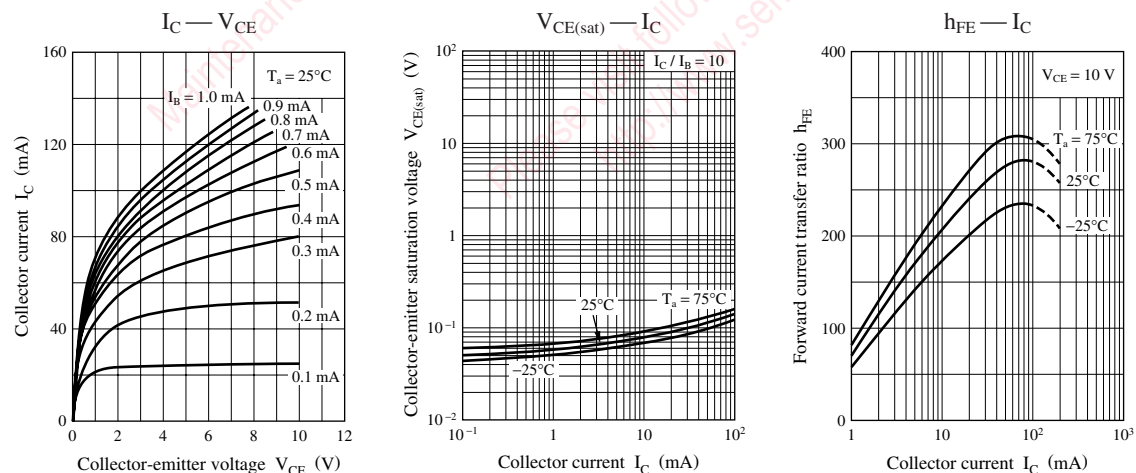
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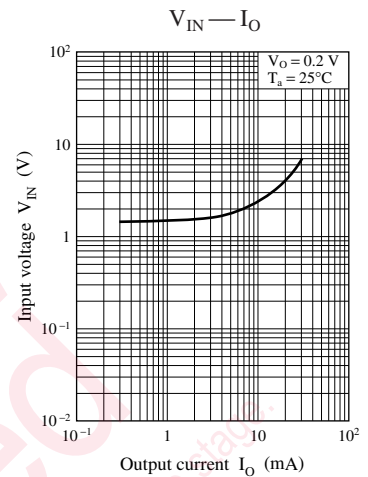
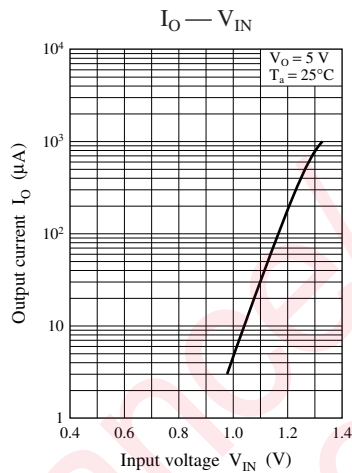
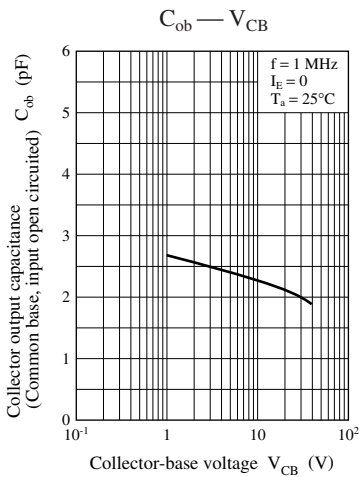


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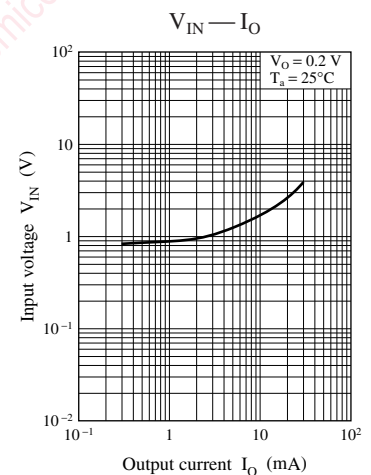
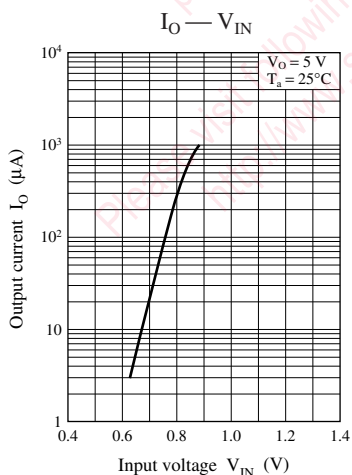
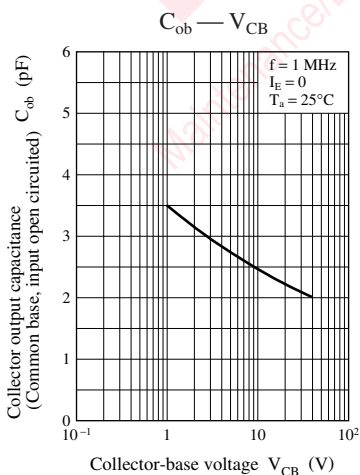
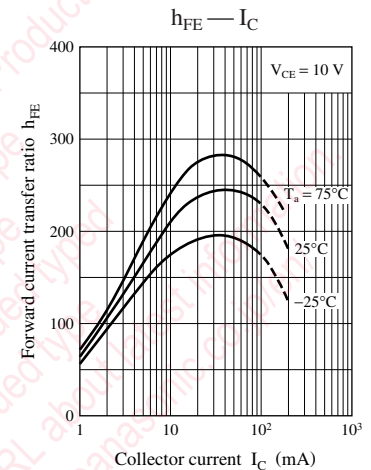
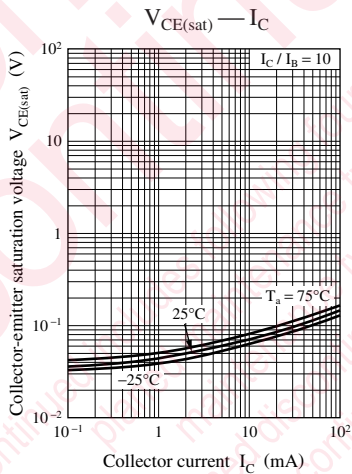
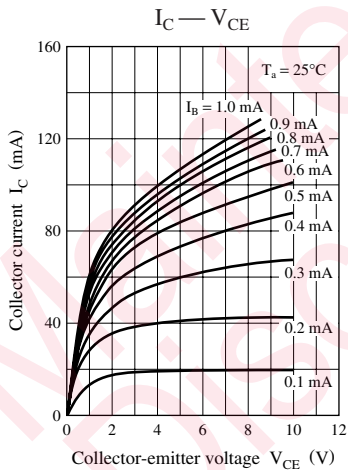


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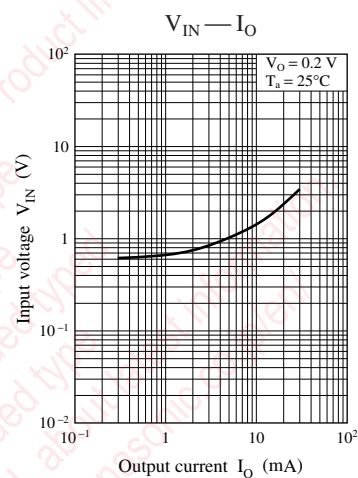
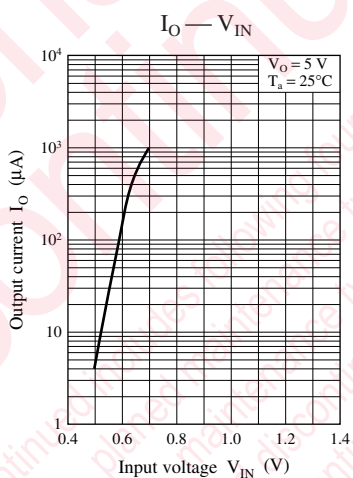
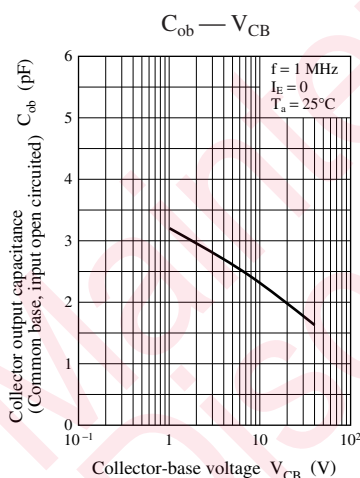
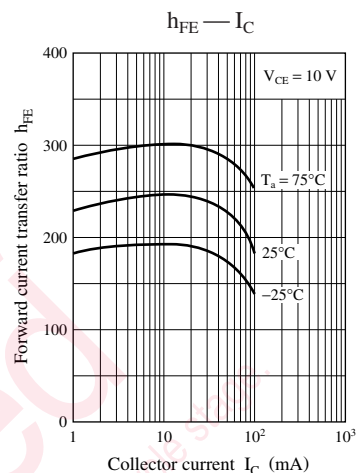
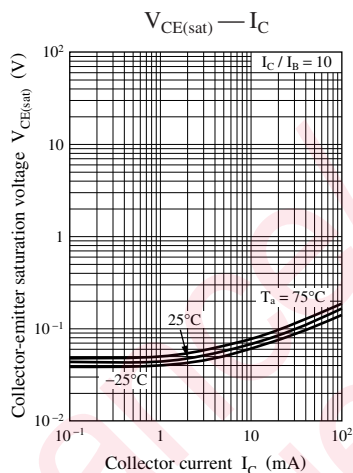
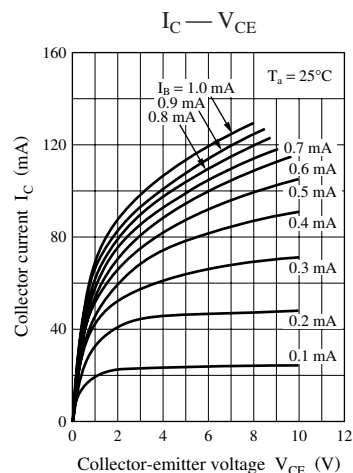




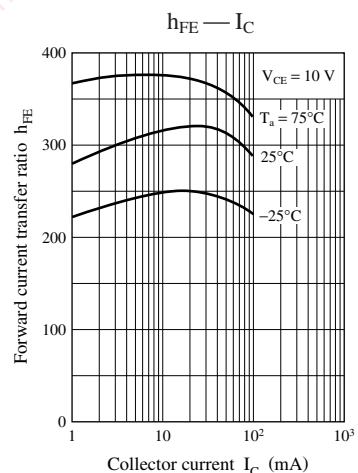
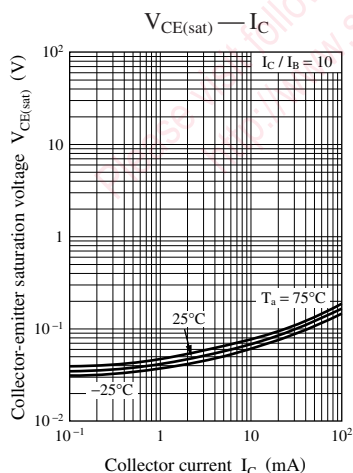
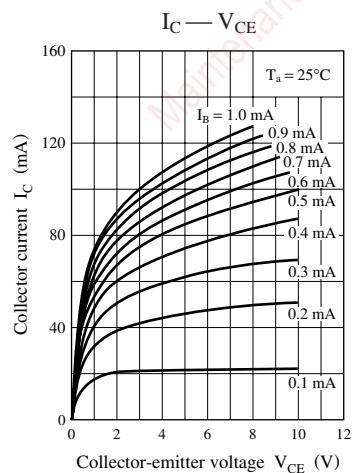
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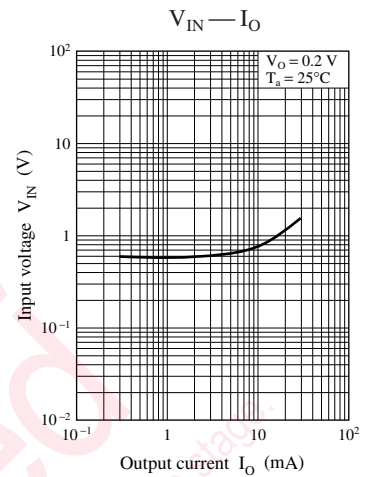
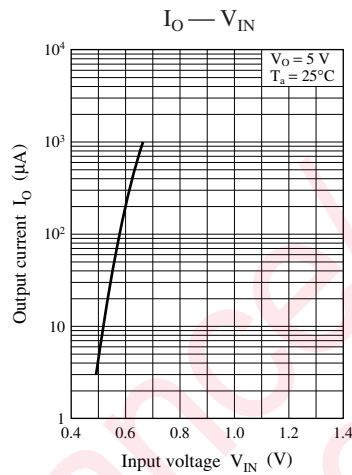
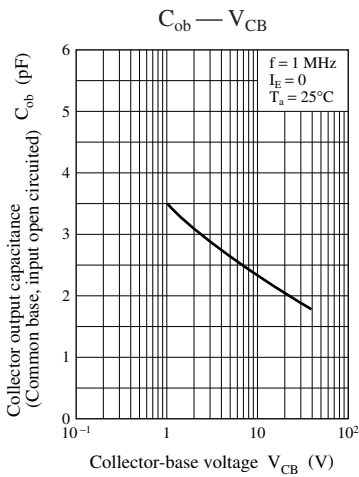


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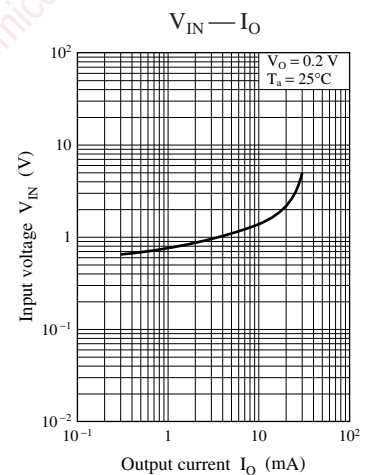
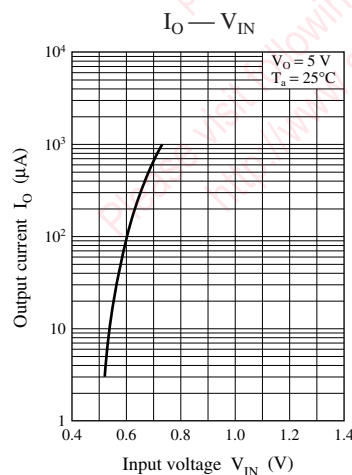
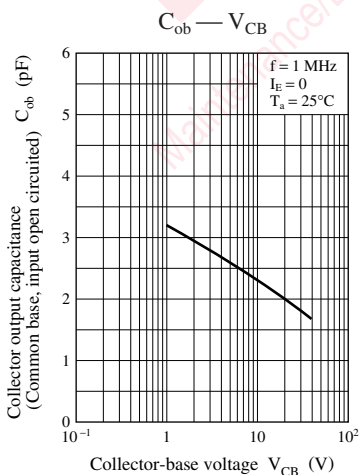
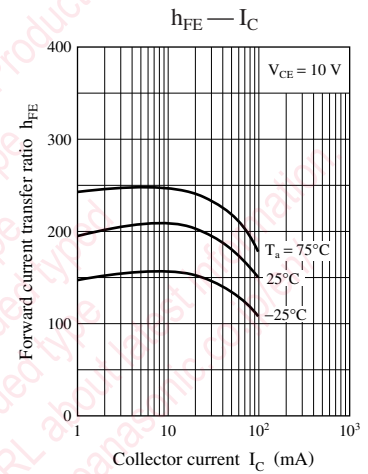
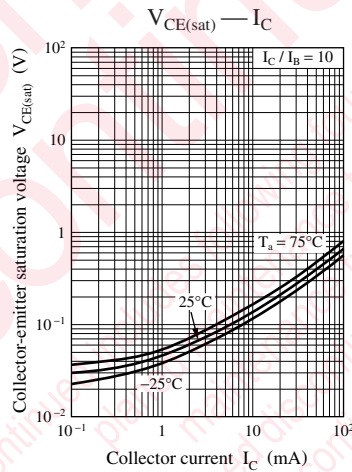
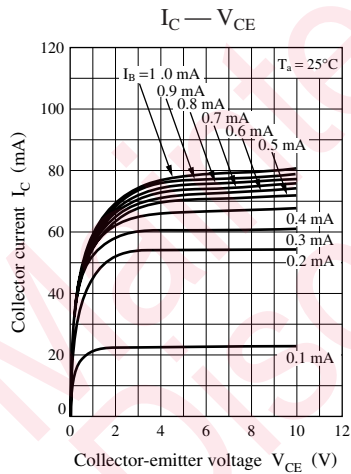


Characteristics charts of UNR5216G

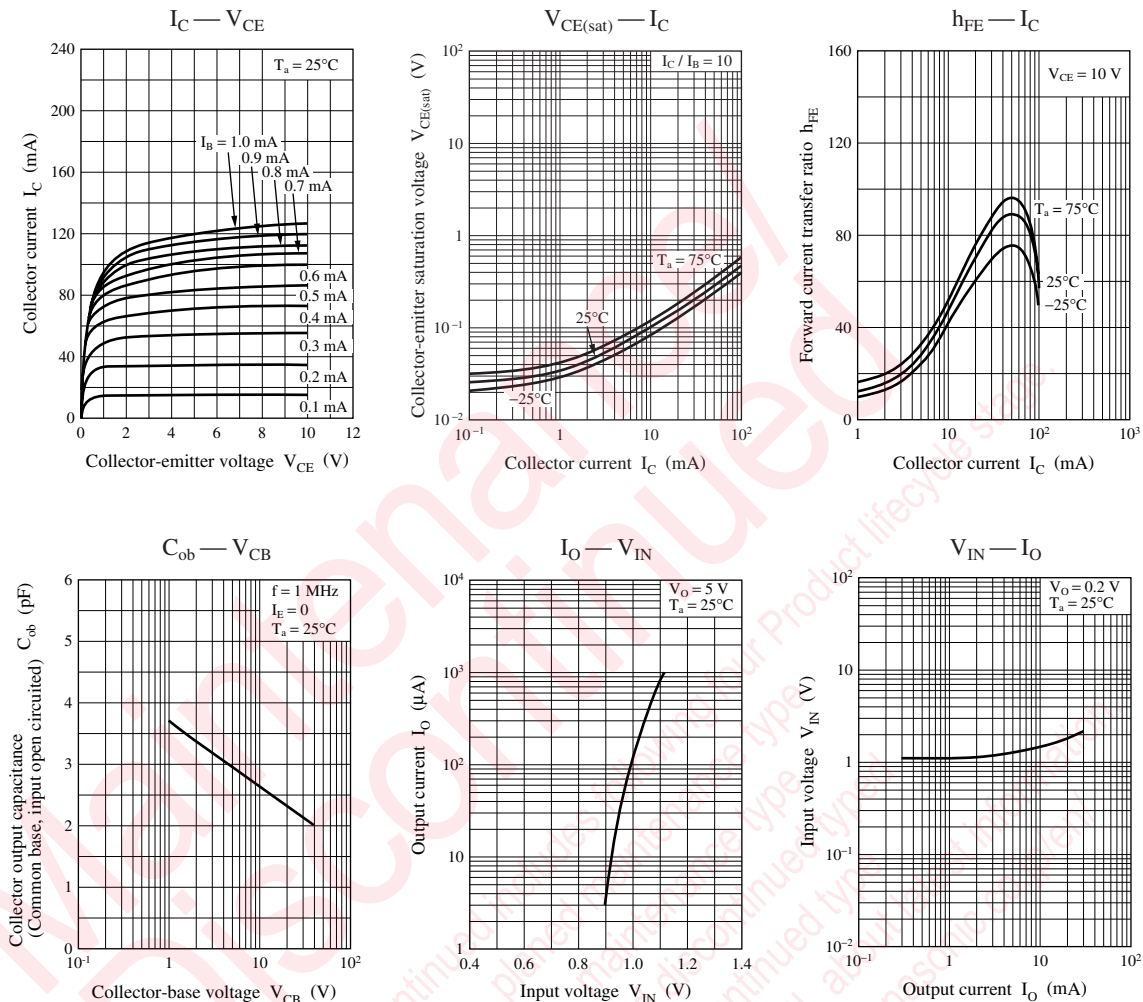




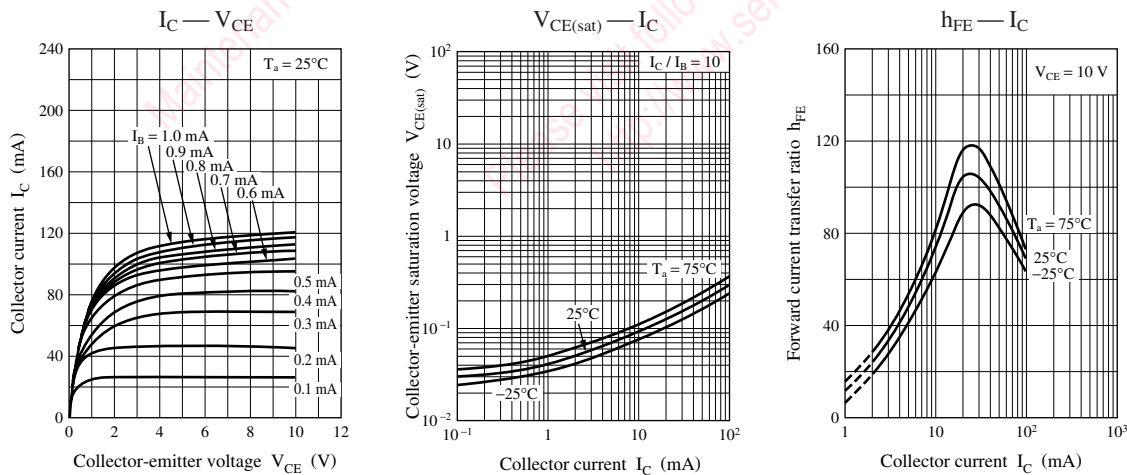
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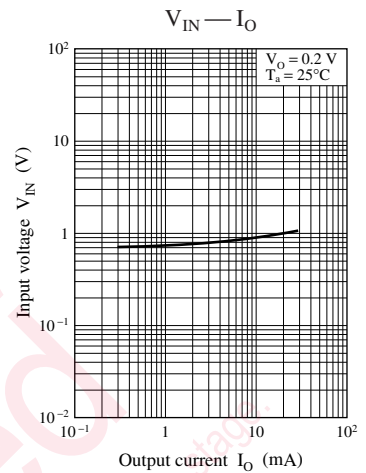
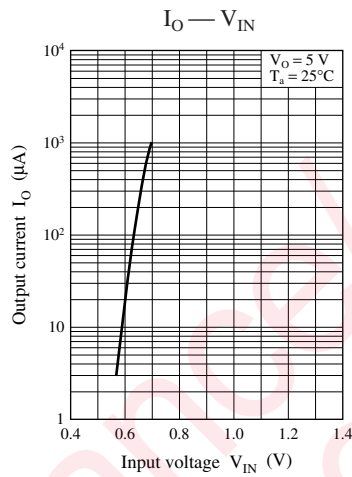
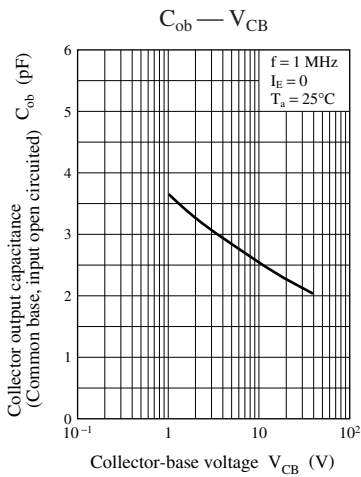


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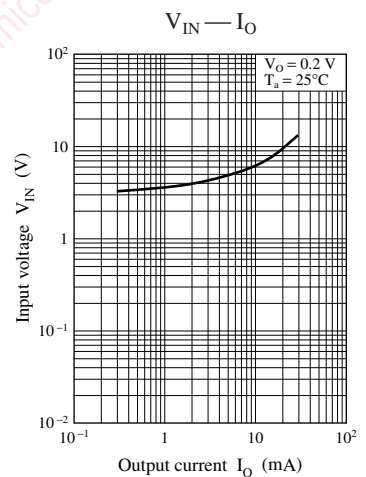
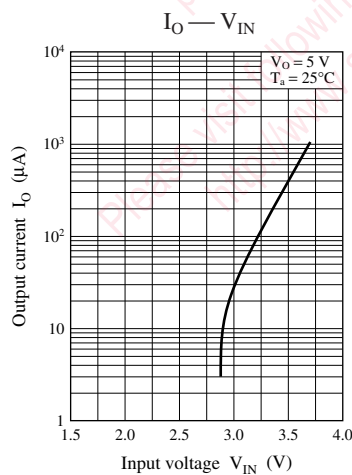
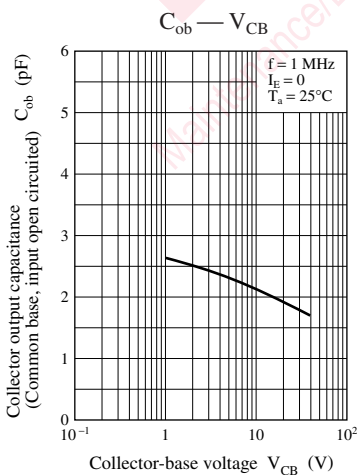
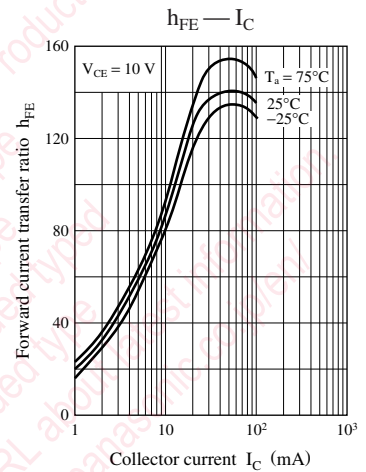
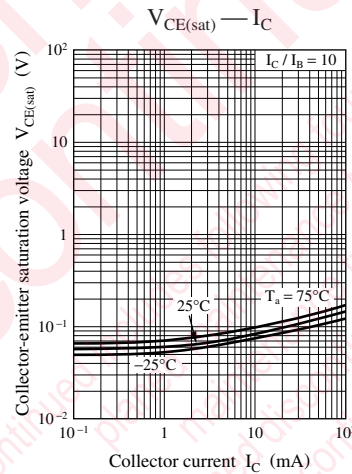
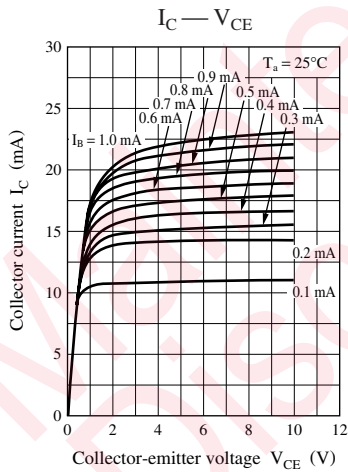


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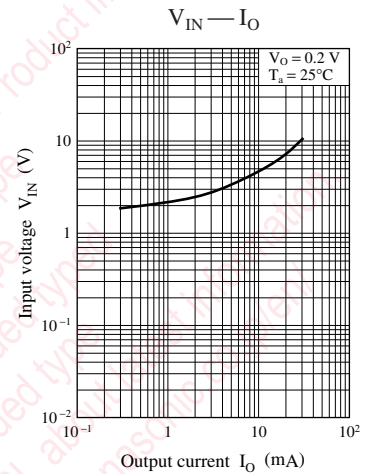
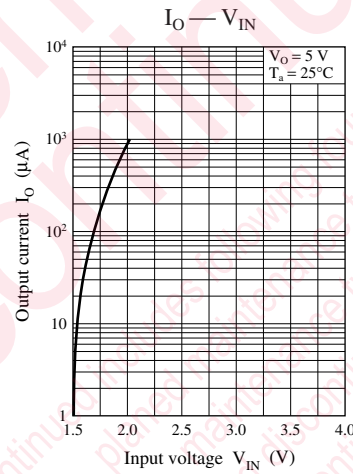
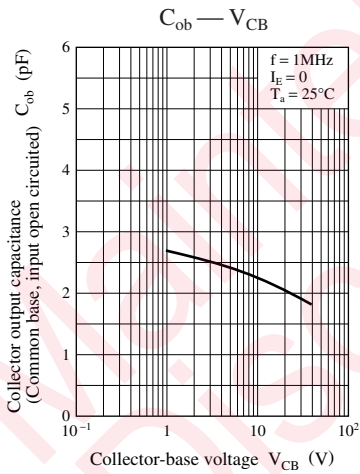
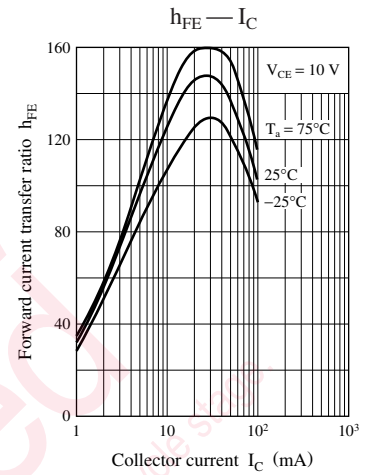
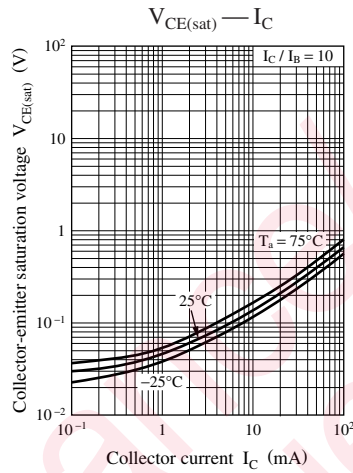
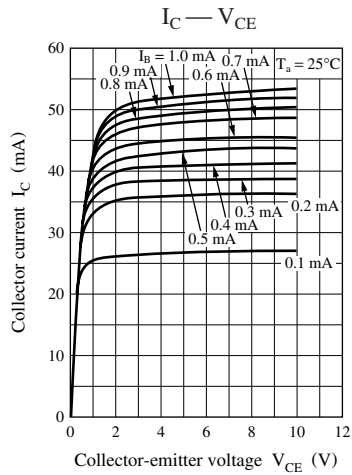




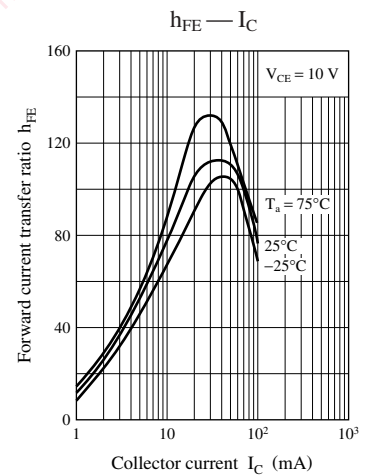
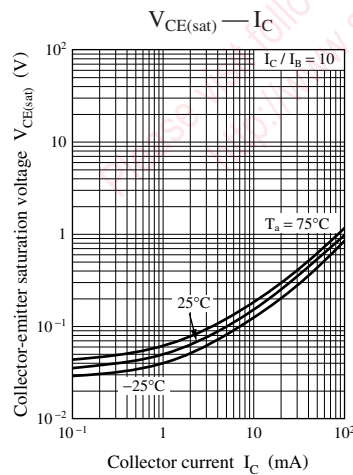
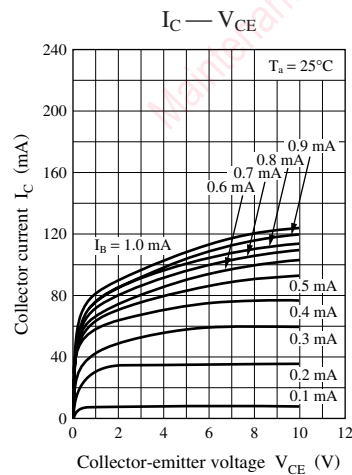
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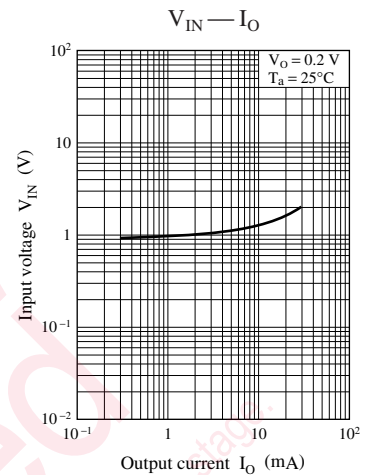
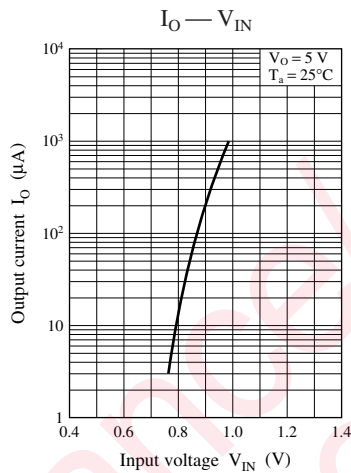
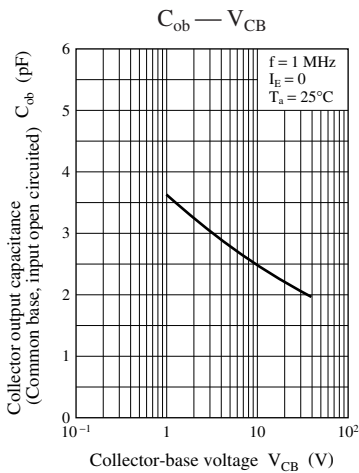


Characteristics charts of UNR521EG

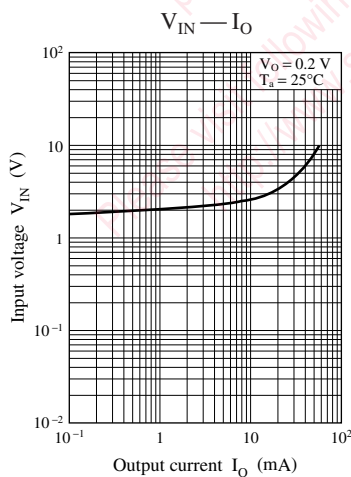
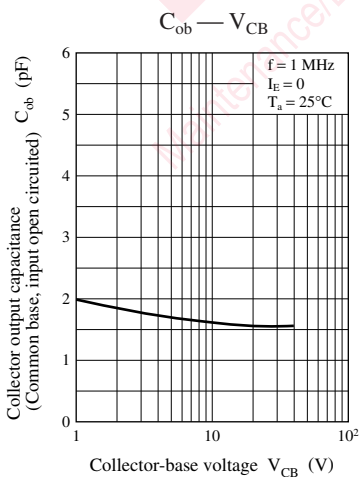
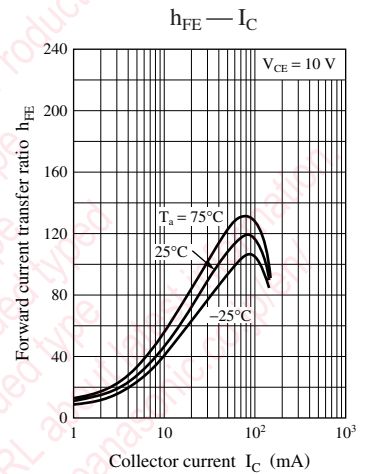
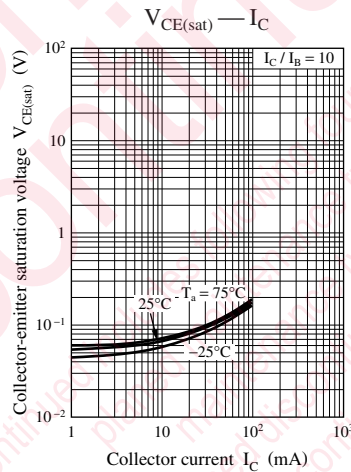
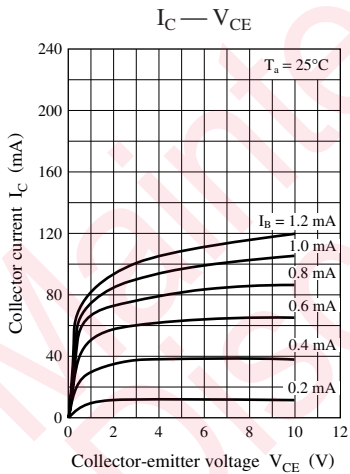


Characteristics charts of UNR521FG

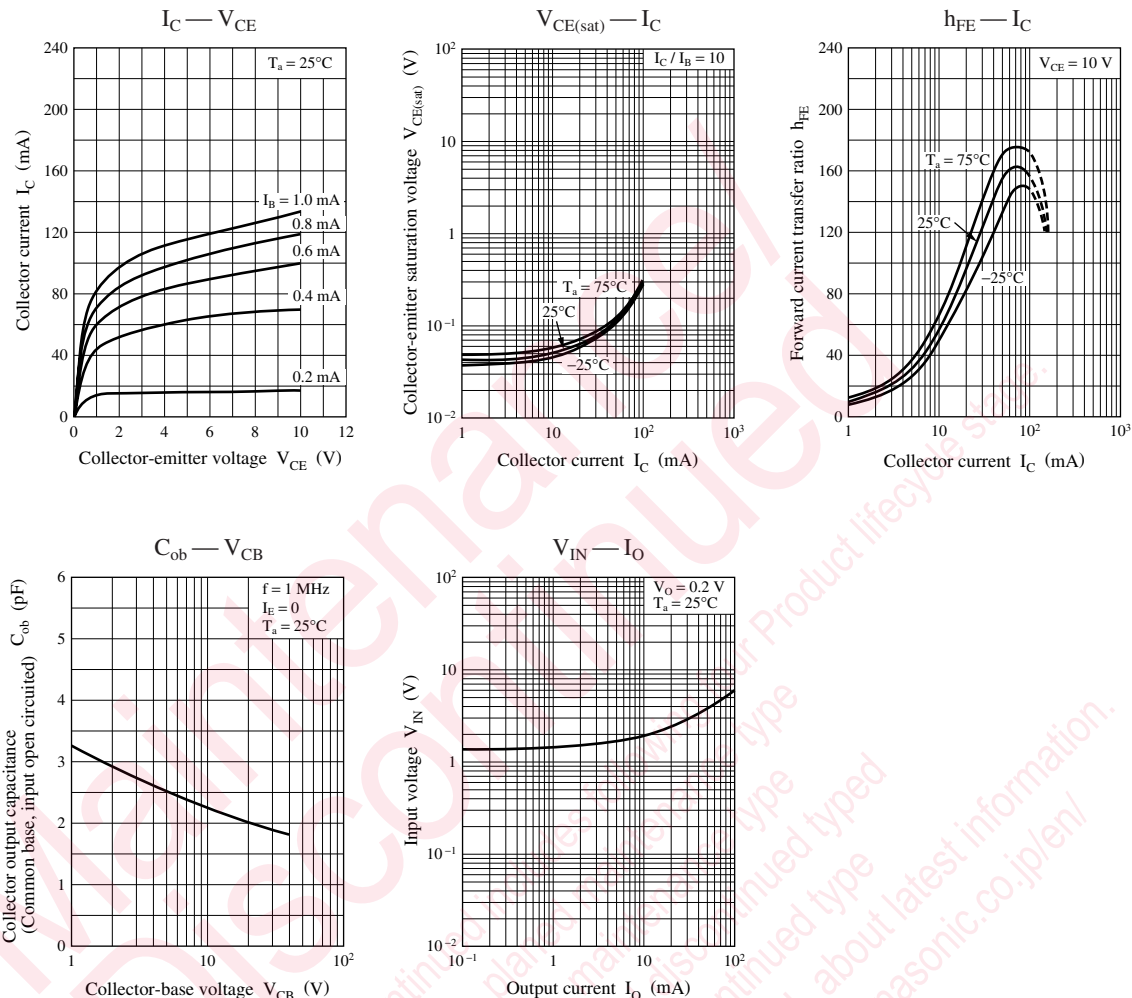




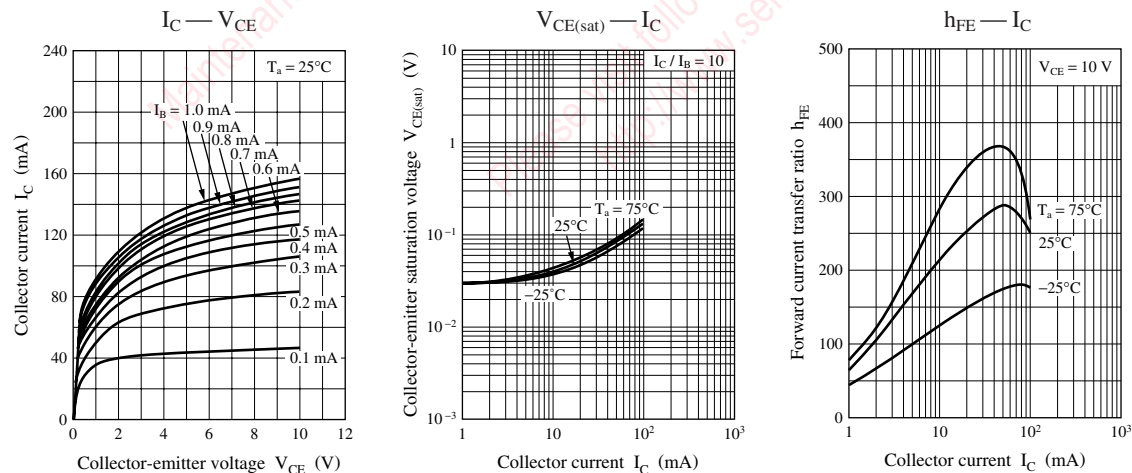
Characteristics charts of UNR521KG

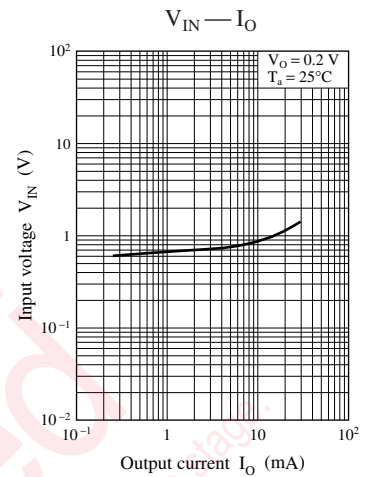
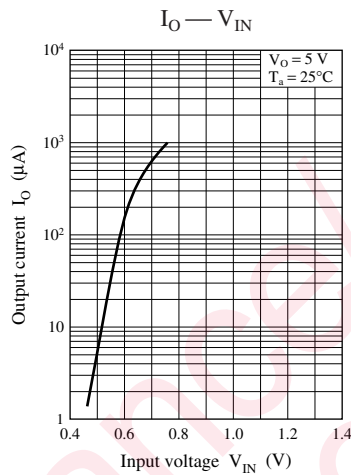
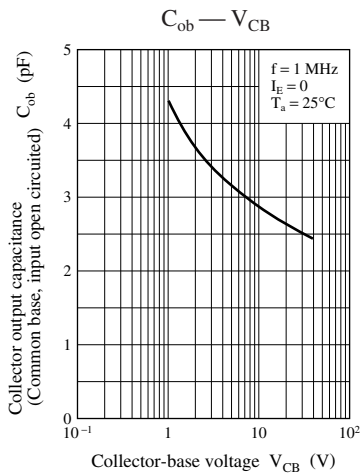


Characteristics charts of UNR521LG

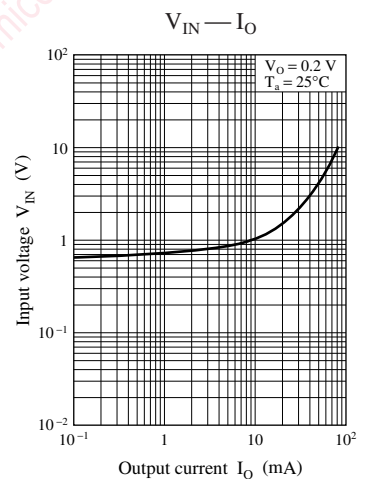
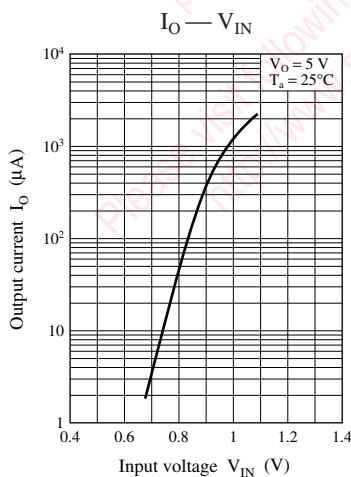
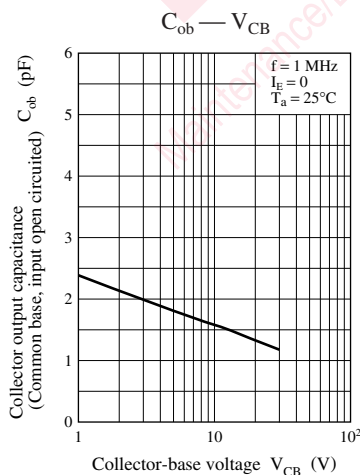
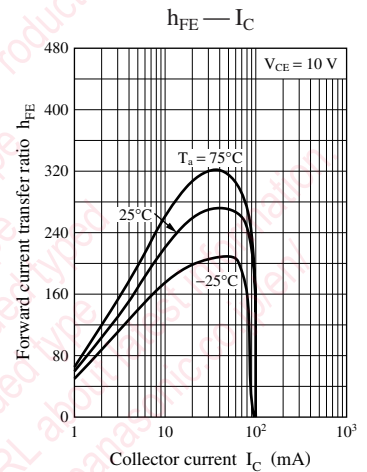
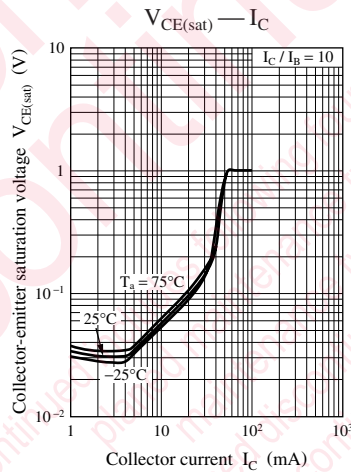
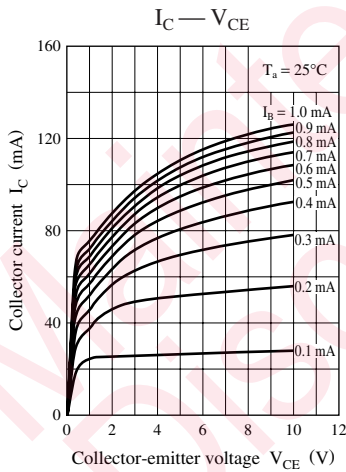


Characteristics charts of UNR521MG

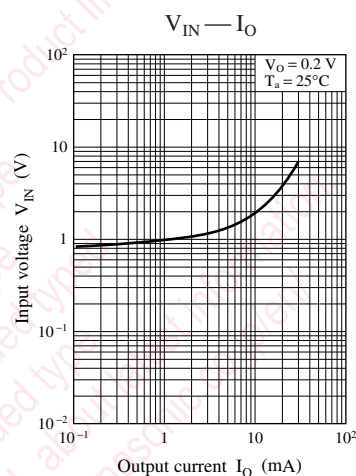
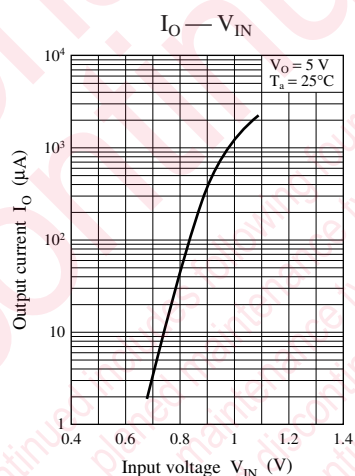
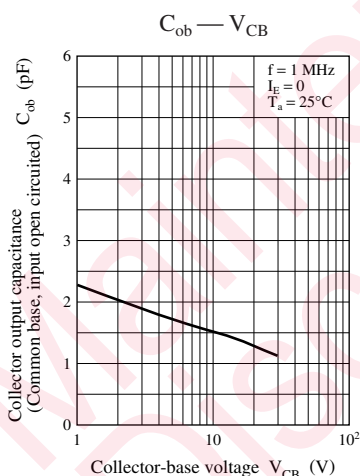
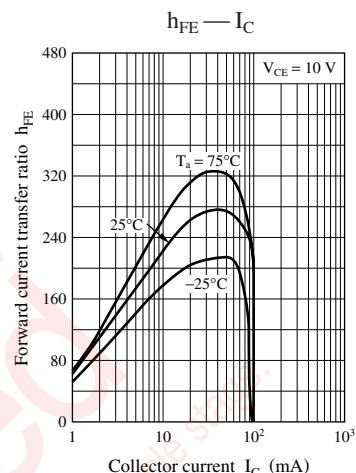
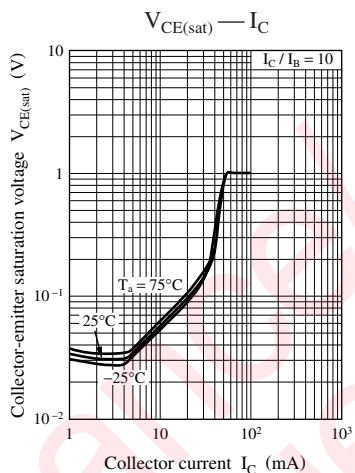
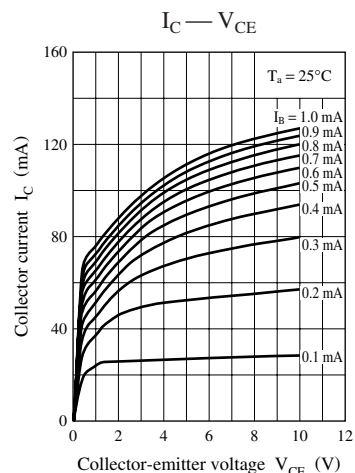




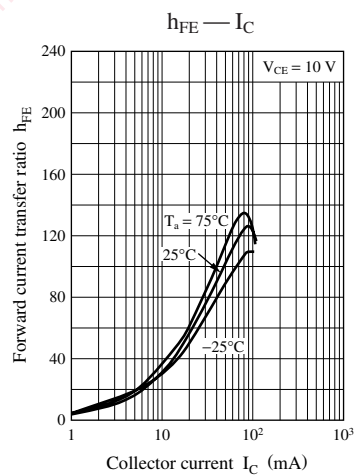
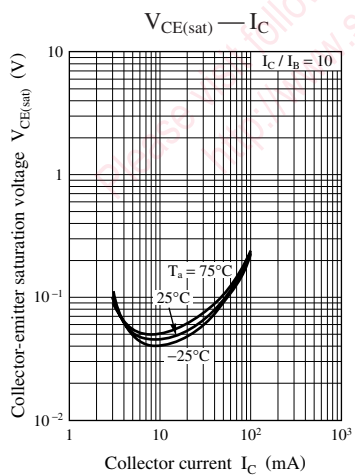
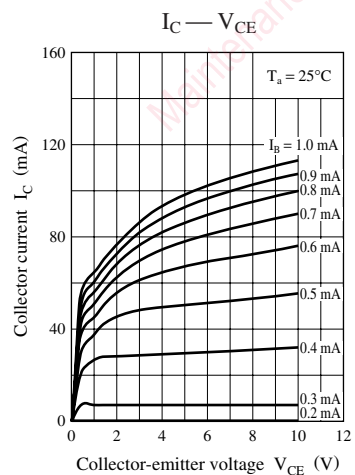
Characteristics charts of UNR521NG

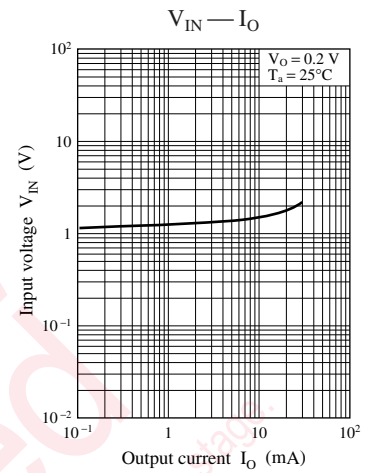
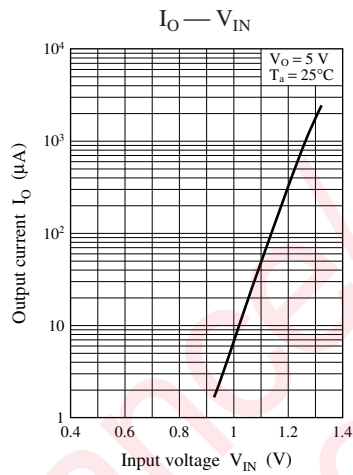
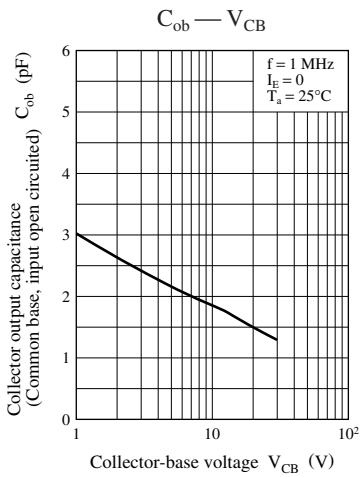


Characteristics charts of UNR521TG

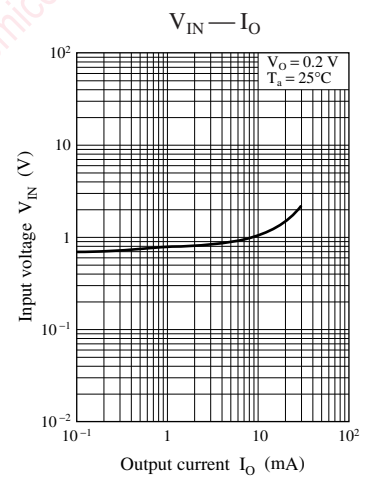
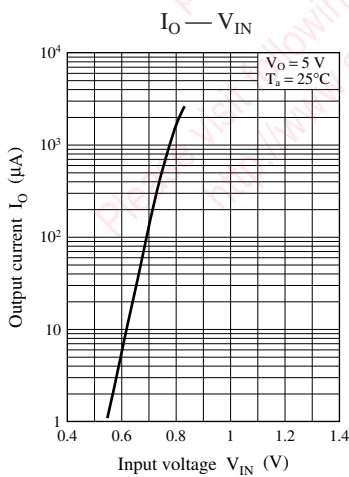
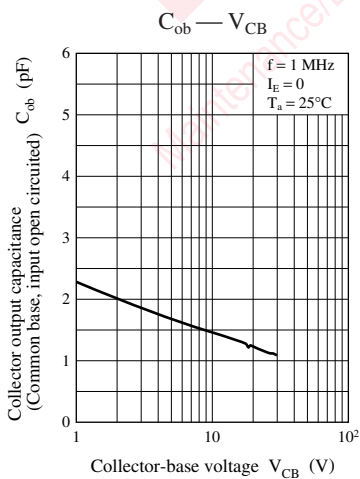
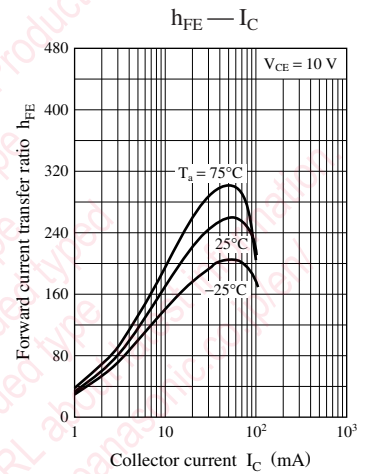
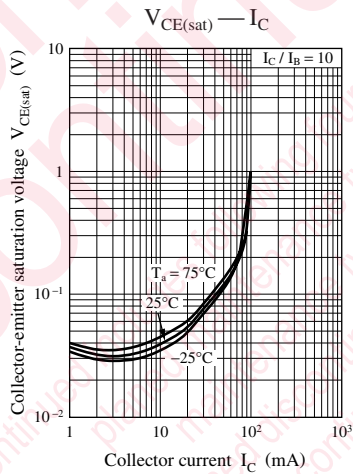
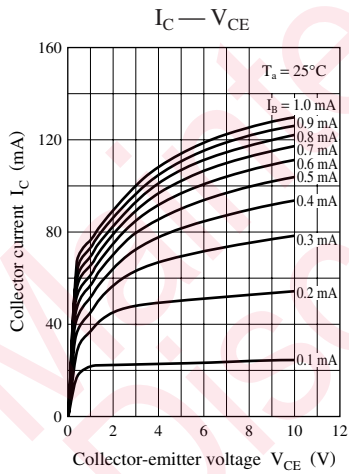


Characteristics charts of UNR521VG



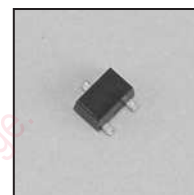
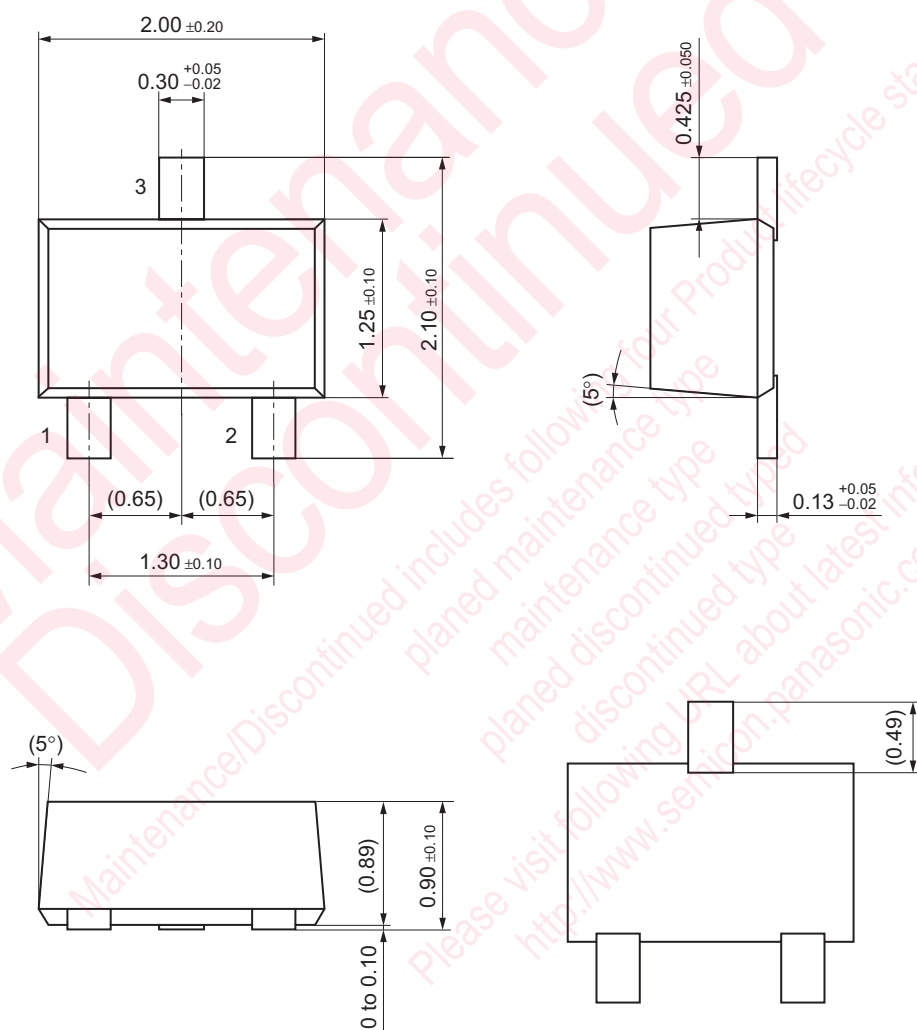


Characteristics charts of UNR521ZG



SMini3-F2

Unit: mm



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