

UNR121x Series (UN121x Series)

Silicon NPN epitaxial planar type

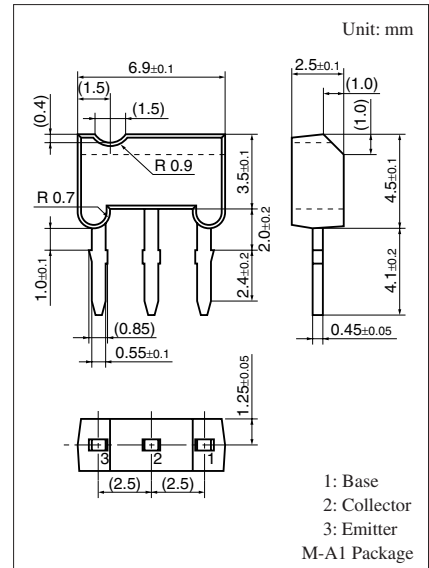
For digital circuits

■ Features

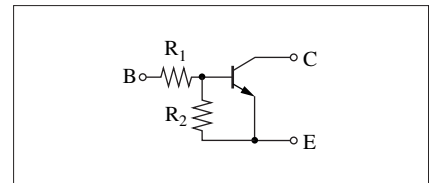
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board

■ Resistance by Part Number

	(R ₁)	(R ₂)
• UNR1210 (UN1210)	47 kΩ	—
• UNR1211 (UN1211)	10 kΩ	10 kΩ
• UNR1212 (UN1212)	22 kΩ	22 kΩ
• UNR1213 (UN1213)	47 kΩ	47 kΩ
• UNR1214 (UN1214)	10 kΩ	47 kΩ
• UNR1215 (UN1215)	10 kΩ	—
• UNR1216 (UN1216)	4.7 kΩ	—
• UNR1217 (UN1217)	22 kΩ	—
• UNR1218 (UN1218)	0.51 kΩ	5.1 kΩ
• UNR1219 (UN1219)	1 kΩ	10 kΩ
• UNR121D (UN121D)	47 kΩ	10 kΩ
• UNR121E (UN121E)	47 kΩ	22 kΩ
• UNR121F (UN121F)	4.7 kΩ	10 kΩ
• UNR121K (UN121K)	10 kΩ	4.7 kΩ
• UNR121L (UN121L)	4.7 kΩ	4.7 kΩ



Internal Connection



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■ 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	400	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

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

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

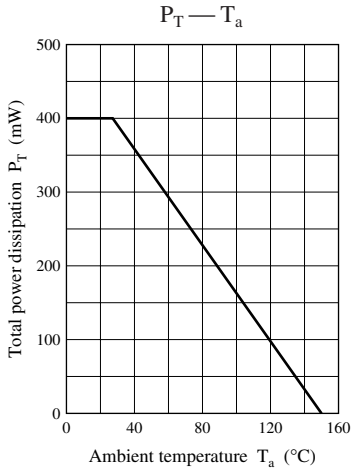
Parameter	Symbol	Conditions	Min	Typ	Max	Unit	
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 10 \mu\text{A}, I_E = 0$	50			V	
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 2 \text{ mA}, I_B = 0$	50			V	
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$			0.1	μA	
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 50 \text{ V}, I_B = 0$			0.5	μA	
Emitter-base cutoff current (Collector open)	UNR1211	I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$			0.5	mA
	UNR1212/1214/121D/121E					0.2	
	UNR1213					0.1	
	UNR1210/1215/1216/1217					0.01	
	UNR121F/121K					1.0	
	UNR1219					1.5	
	UNR1218/121L					2.0	
Forward current transfer ratio	UNR1211	h_{FE}	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$	35			—
	UNR1212/121E			60			
	UNR1213/1214			80			
	UNR1210*/1215*/1216*/1217*			160		460	
	UNR1219/121D/121F			30			
	UNR1218/121K/121L			20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10 \text{ mA}, I_B = 0.3 \text{ mA}$			0.25	V	
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	
		$V_{CC} = 5 \text{ V}, V_B = 3.5 \text{ V}, R_L = 1 \text{ k}\Omega$					
		$V_{CC} = 5 \text{ V}, V_B = 10 \text{ V}, R_L = 1 \text{ k}\Omega$					
		$V_{CC} = 5 \text{ V}, V_B = 6 \text{ V}, R_L = 1 \text{ k}\Omega$					
Transition frequency	f_T	$V_{CB} = 10 \text{ V}, I_E = -2 \text{ mA}, f = 200 \text{ MHz}$		80		MHz	
Input resistance	UNR1211/1214/1215/121K	R_1		-30%	10	+30%	k Ω
	UNR1212/1217				22		
	UNR1210/1213/121D/121E				47		
	UNR1216/121F/121L				4.7		
	UNR1218				0.51		
	UNR1219				1		
Resistance ratio	UNR1211/1212/1213/121L	R_1/R_2		0.8	1.0	1.2	—
	UNR1214			0.17	0.21	0.25	
	UNR1218/1219			0.08	0.1	0.12	
	UNR121D				4.7		
	UNR121E				2.14		
	UNR121F				0.47		
	UNR121K				2.13		

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

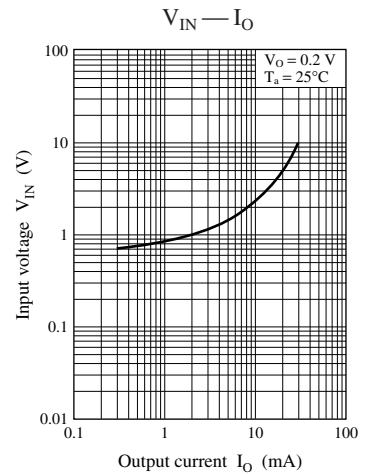
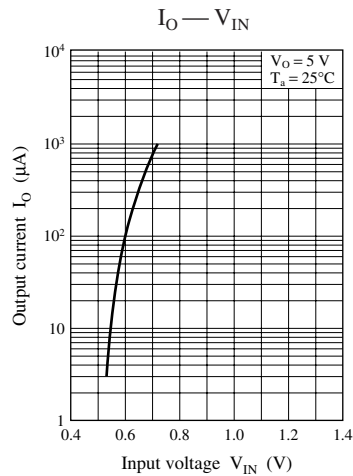
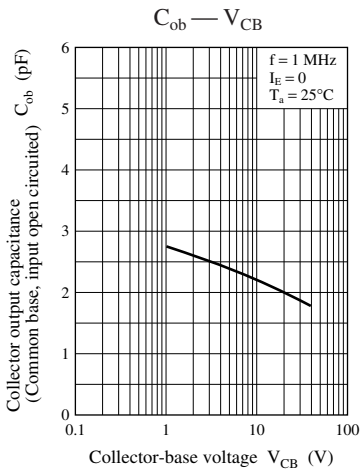
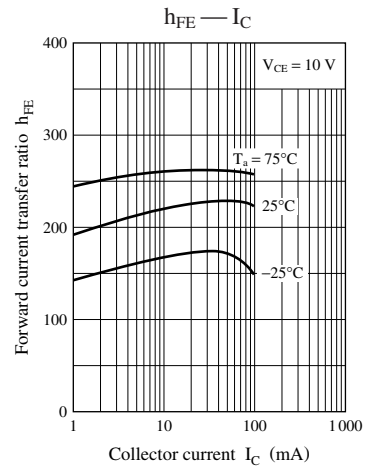
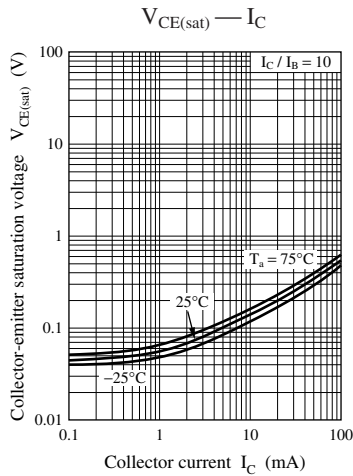
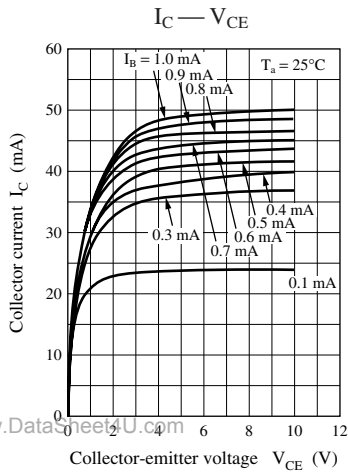
2. *: Rank classification (UNR1110/1115/1116/1117)

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

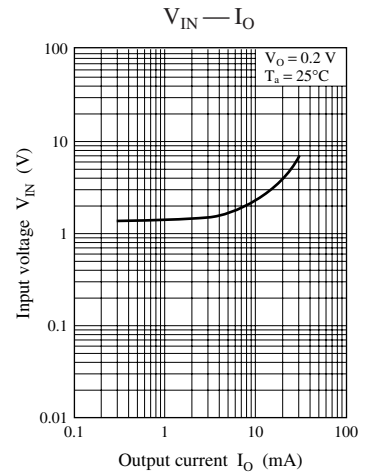
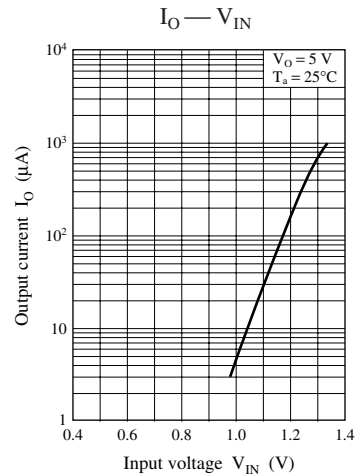
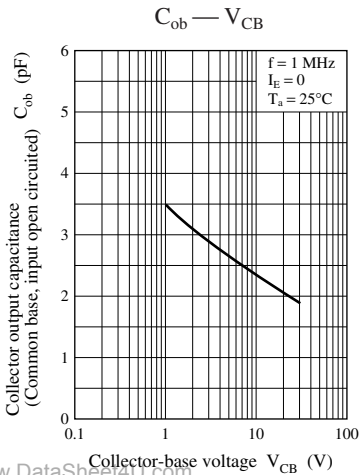
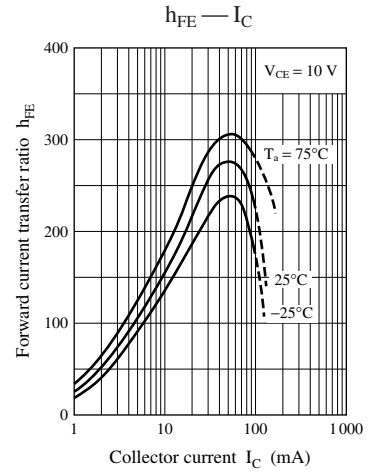
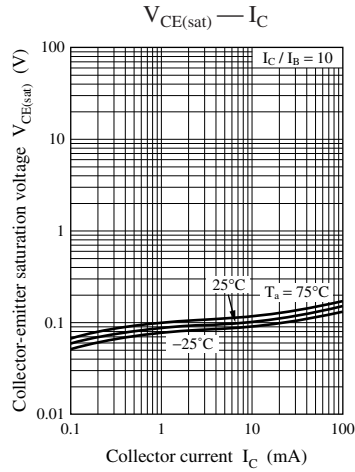
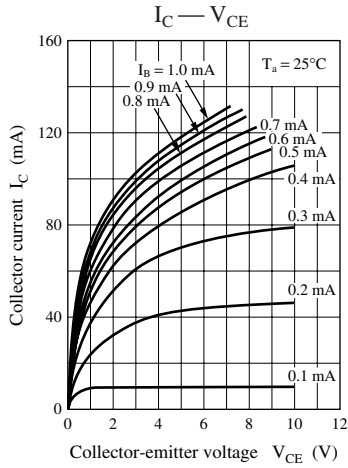
Common characteristics chart



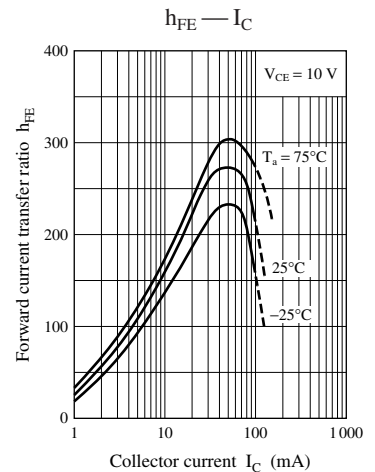
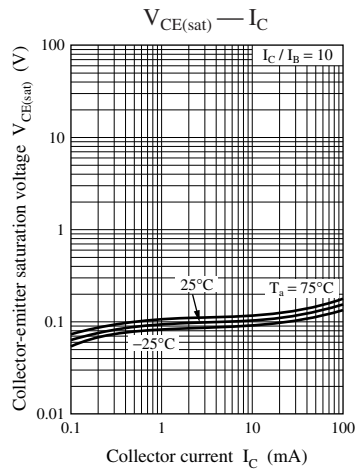
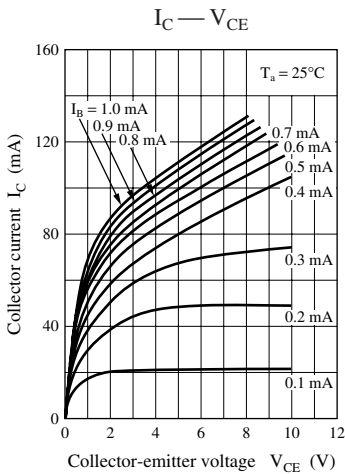
Characteristics charts of UNR1210

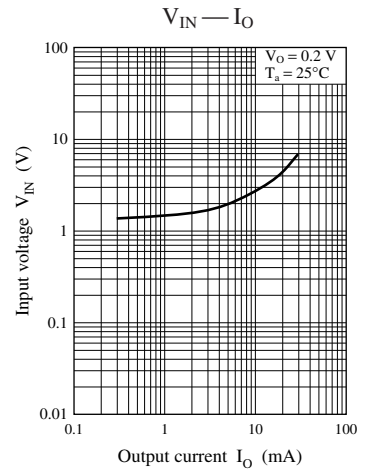
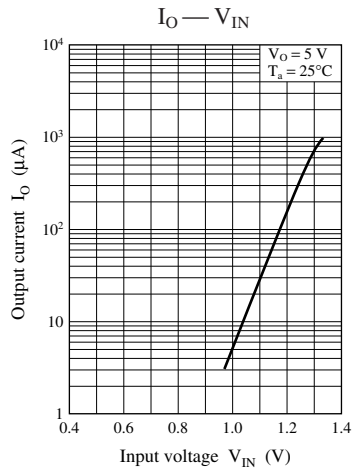
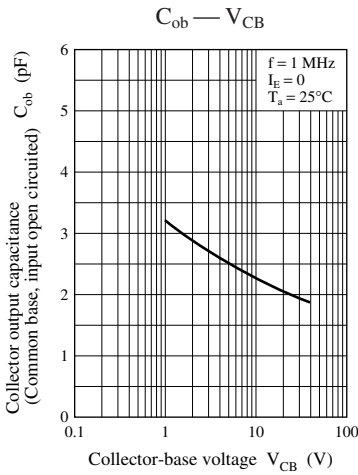


Characteristics charts of UNR1211

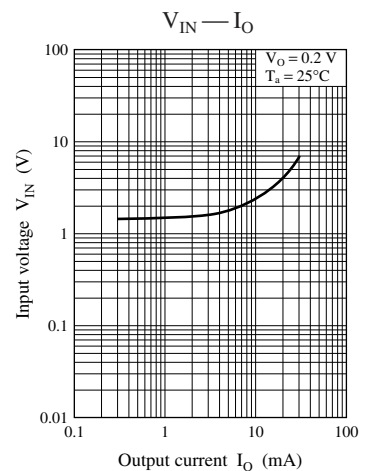
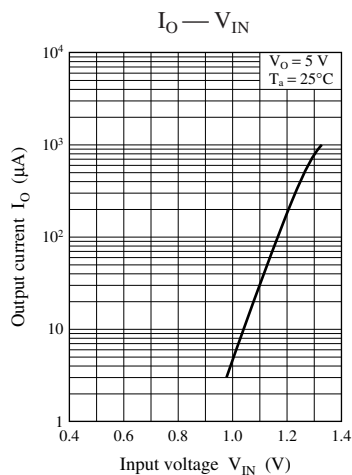
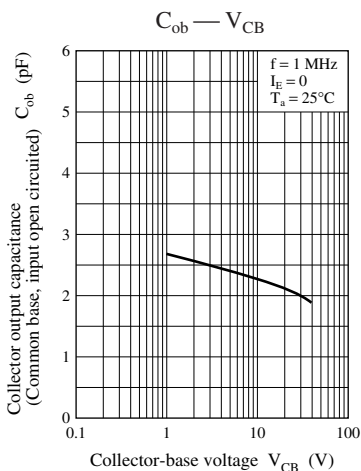
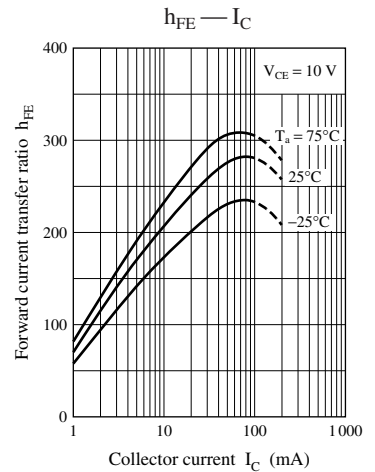
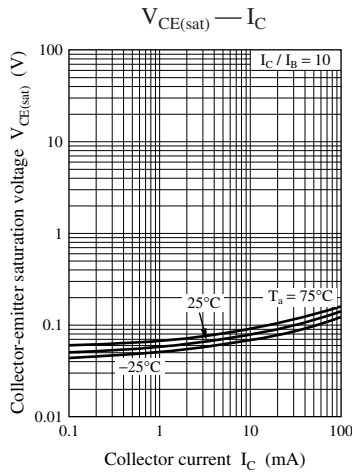
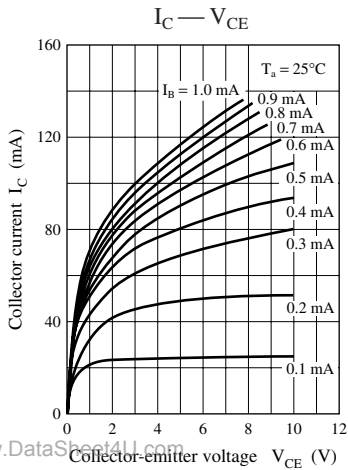


Characteristics charts of UNR1212

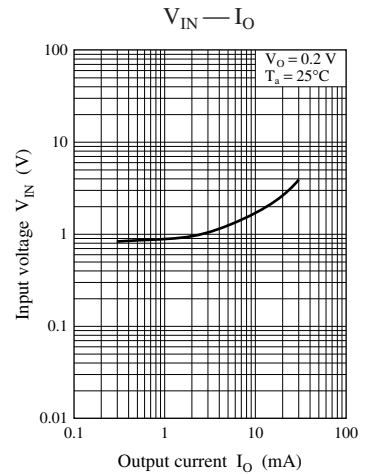
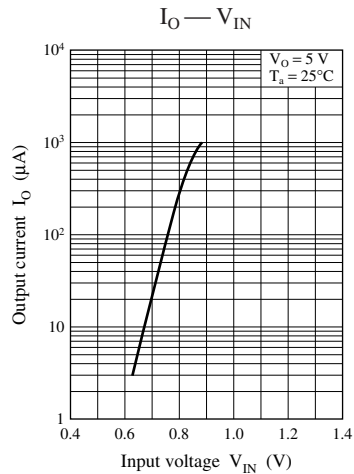
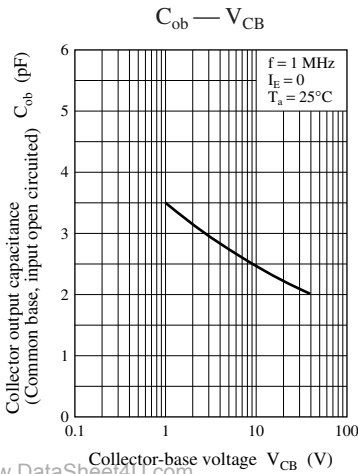
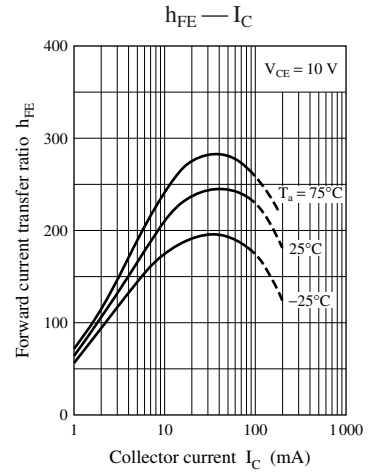
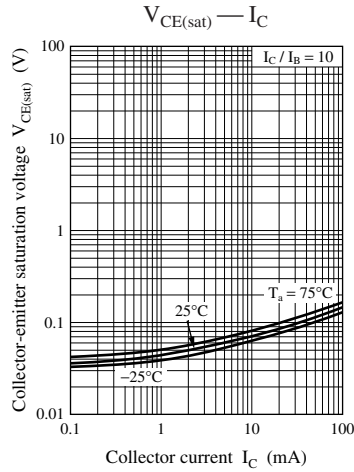
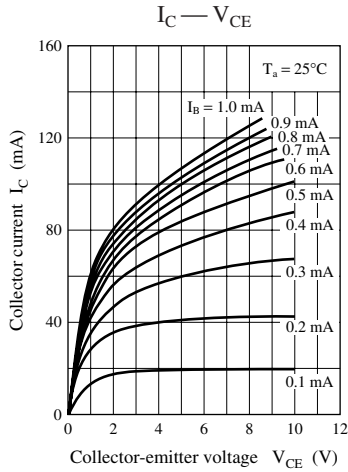




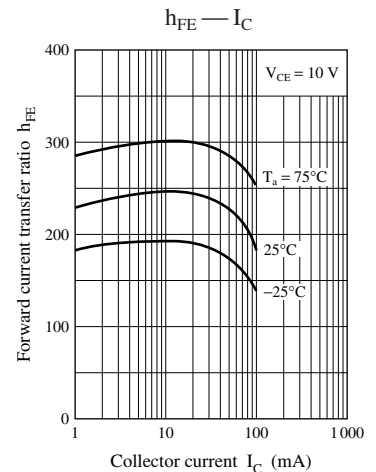
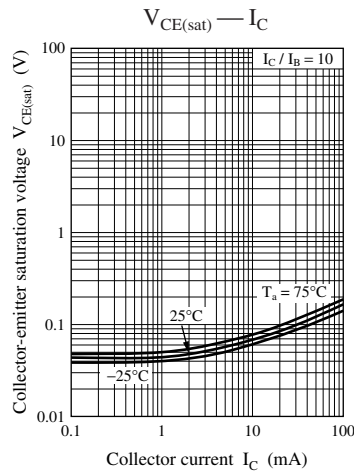
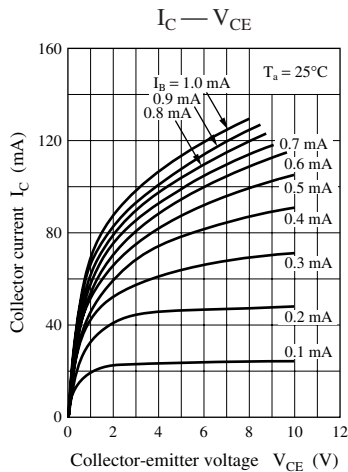
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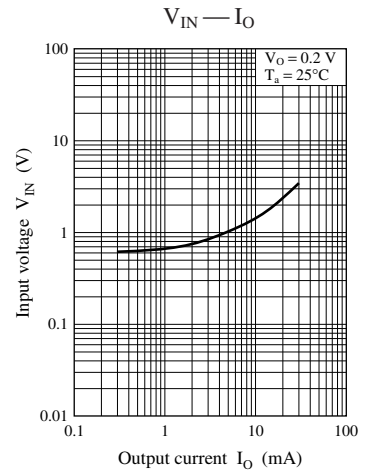
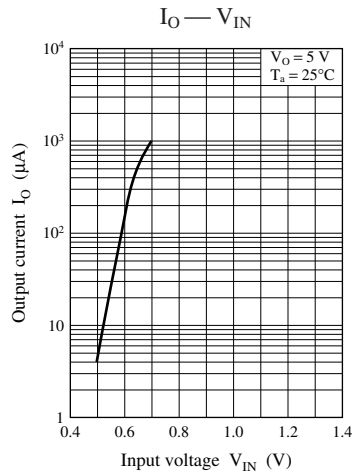
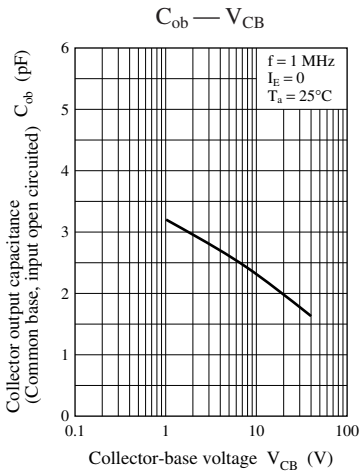


Characteristics charts of UNR1214

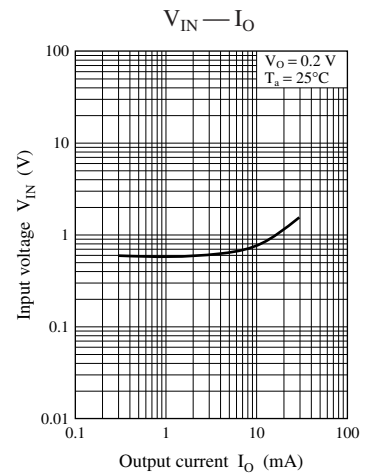
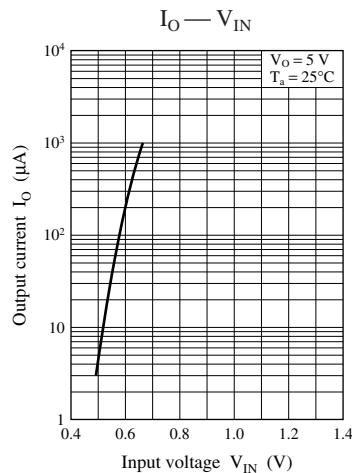
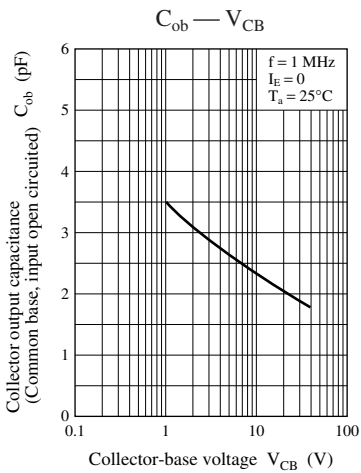
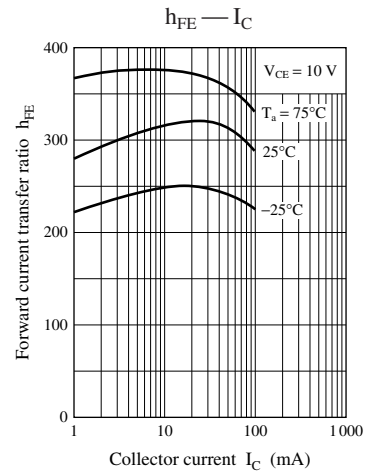
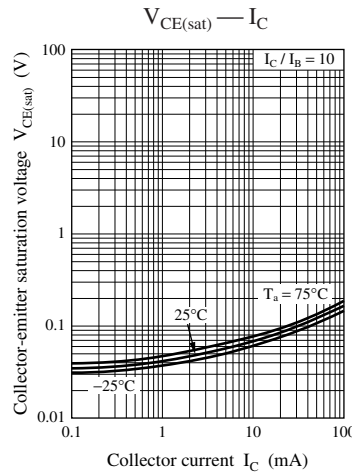
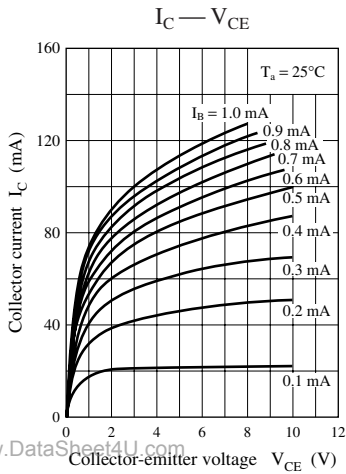


Characteristics charts of UNR1215

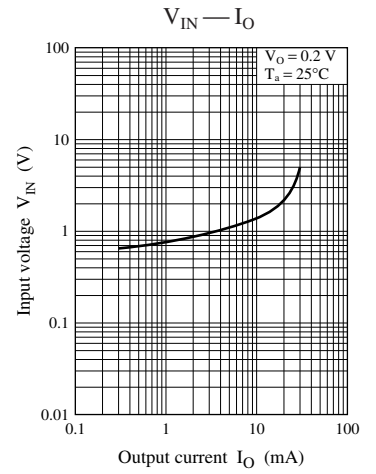
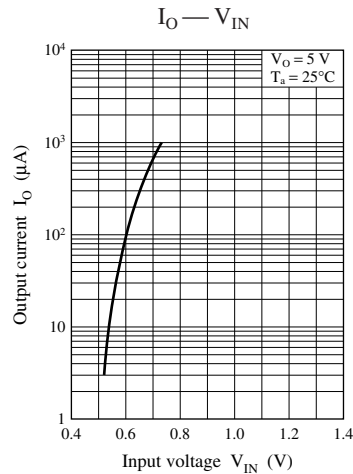
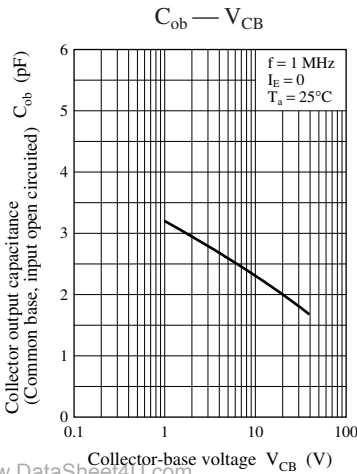
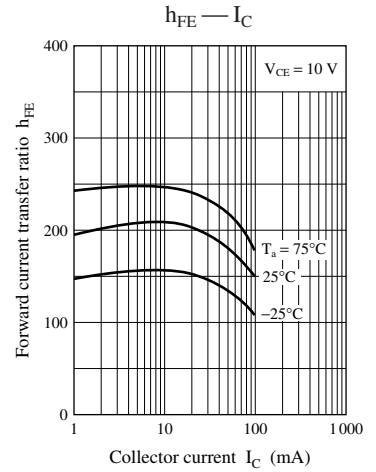
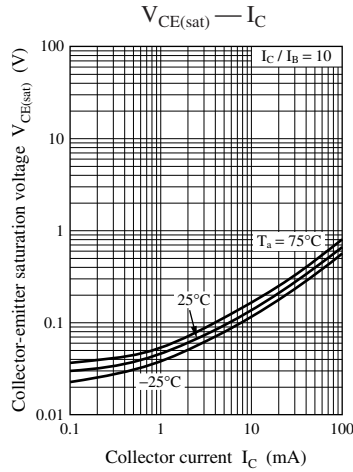
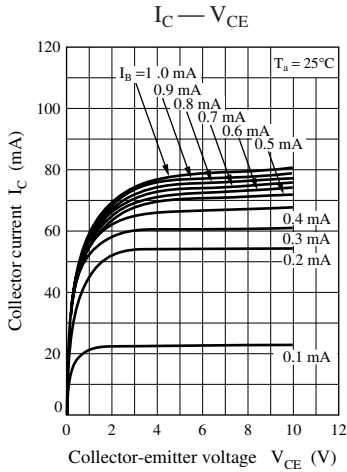




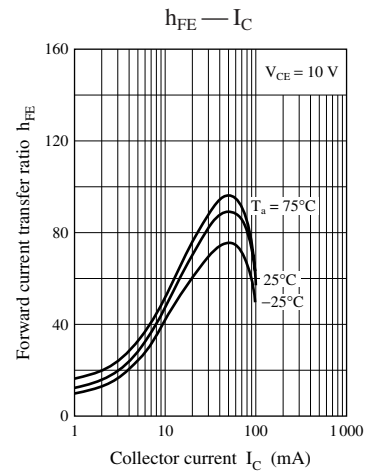
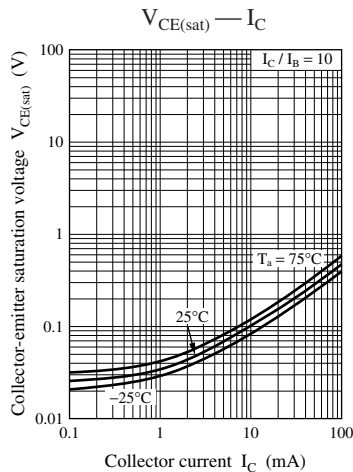
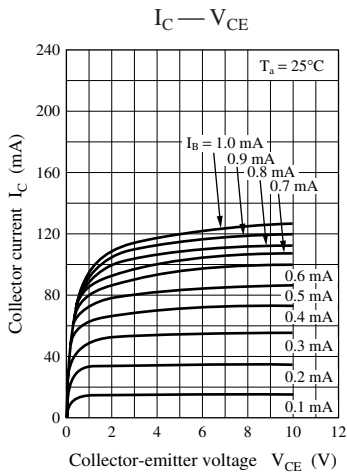
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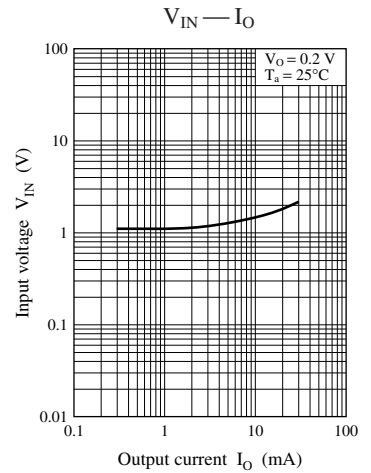
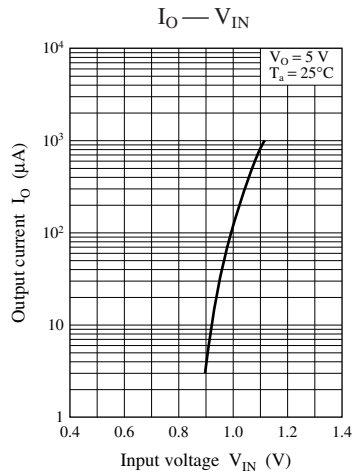
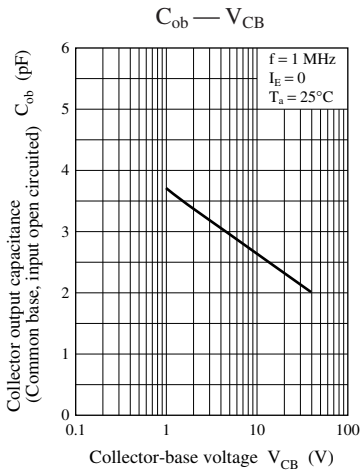


Characteristics charts of UNR1217

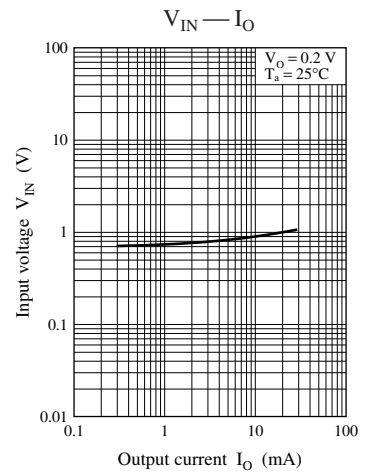
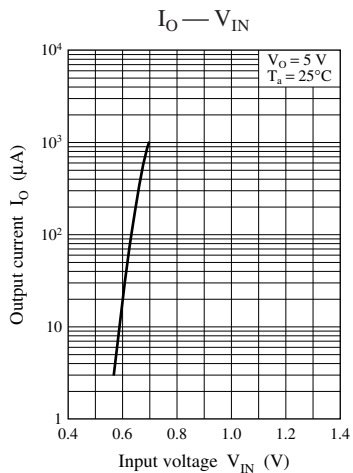
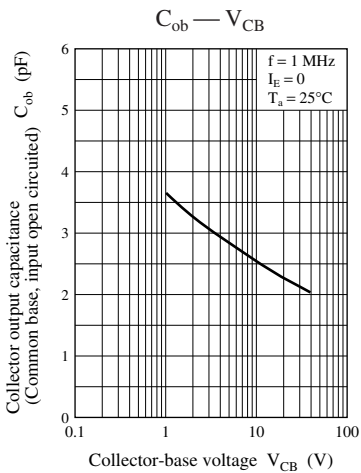
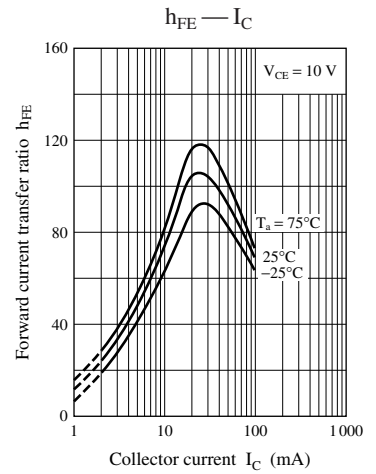
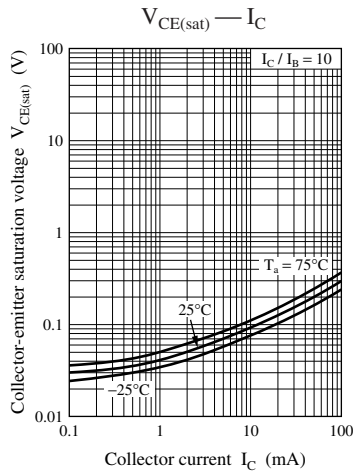
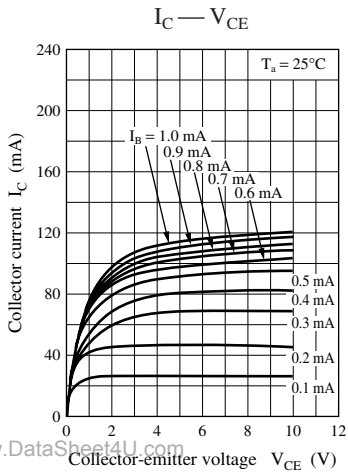


Characteristics charts of UNR1218

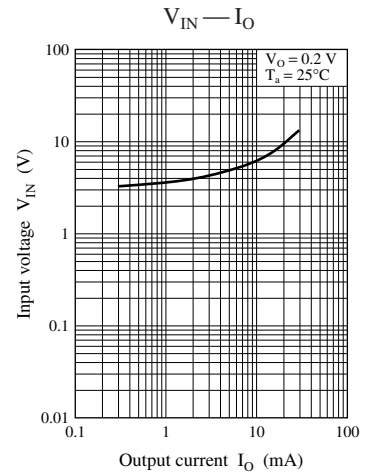
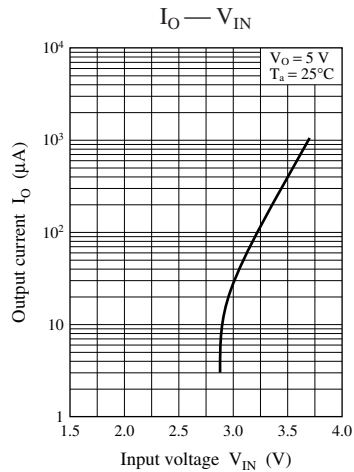
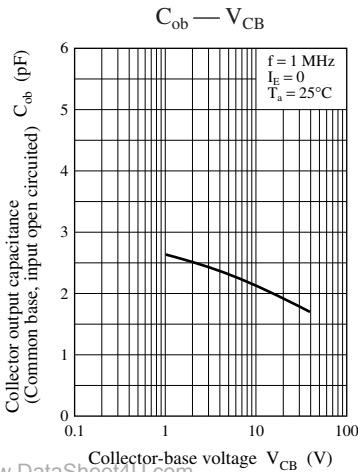
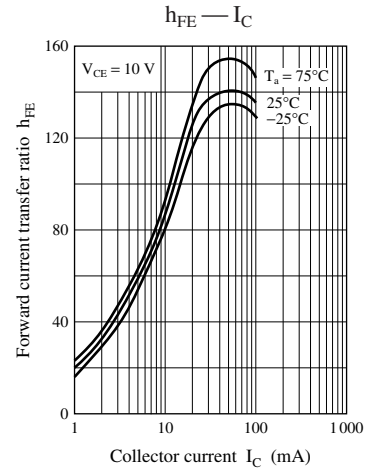
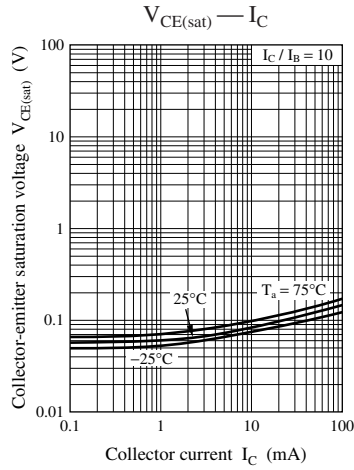
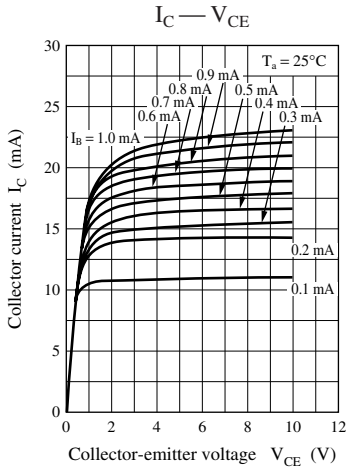




Characteristics charts of UNR1219

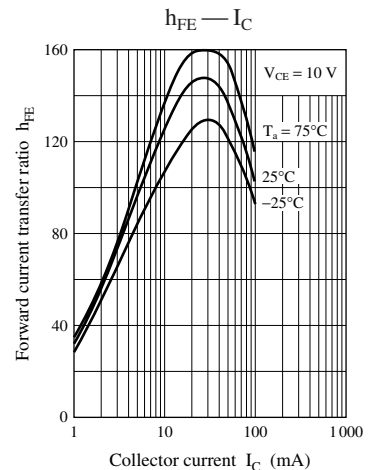
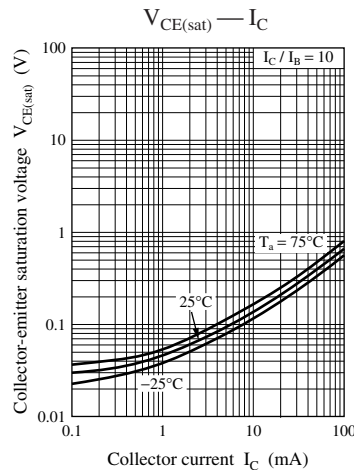
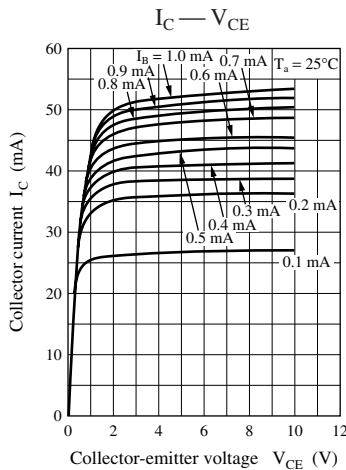


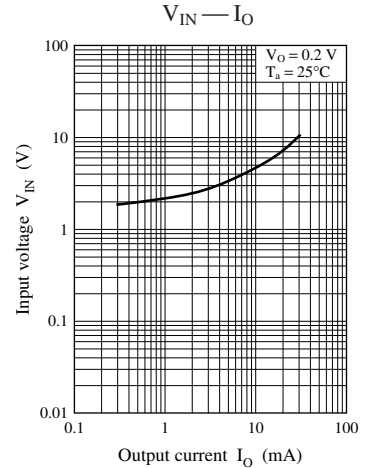
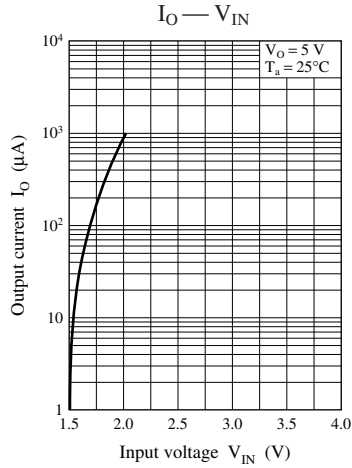
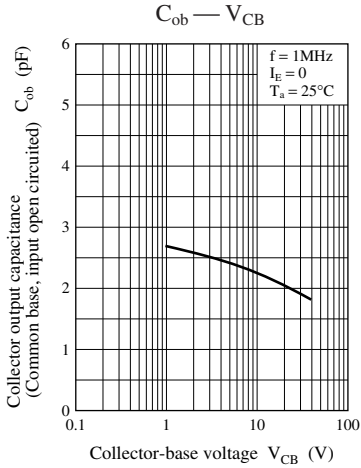
Characteristics charts of UNR121D



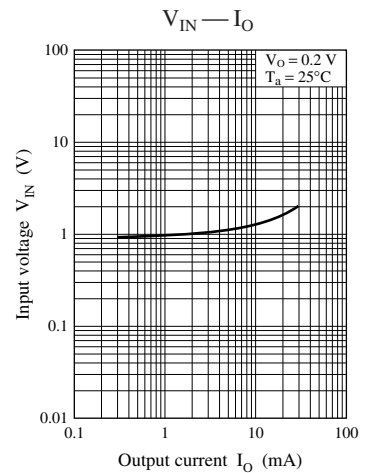
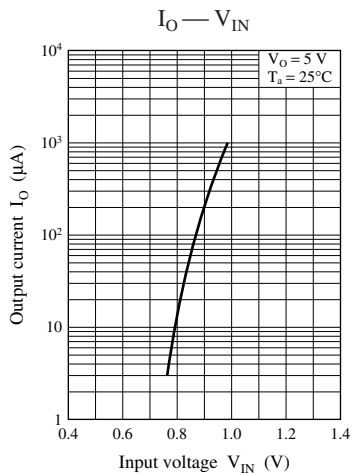
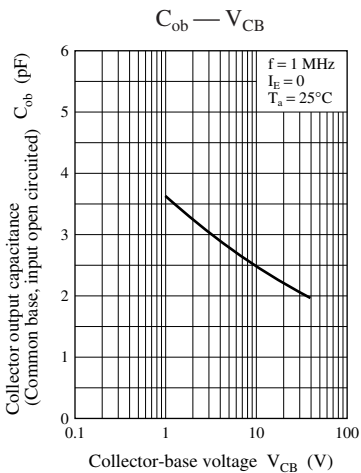
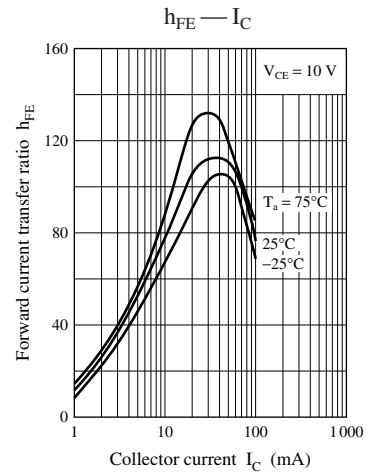
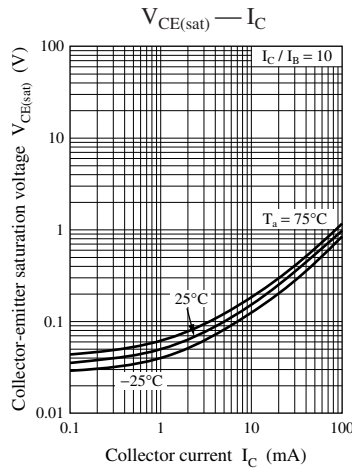
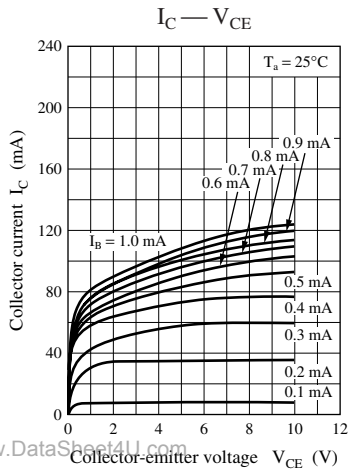
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Characteristics charts of UNR121E

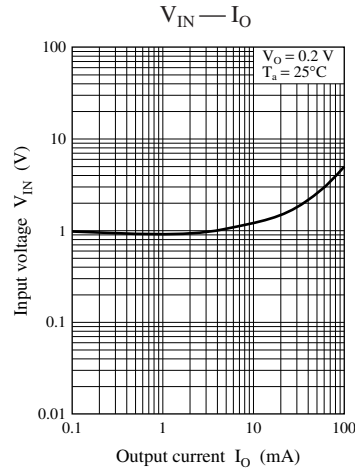
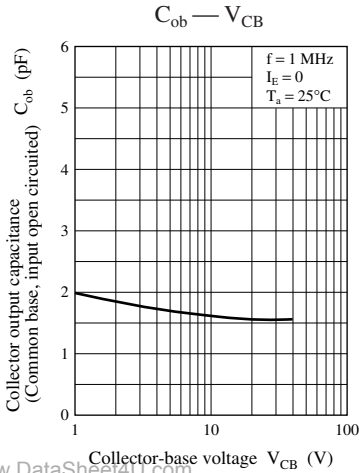
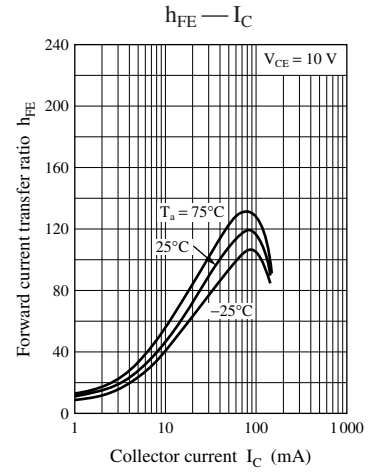
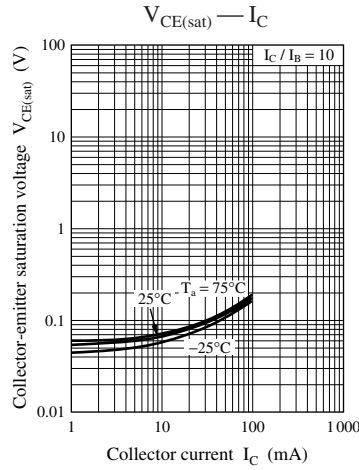
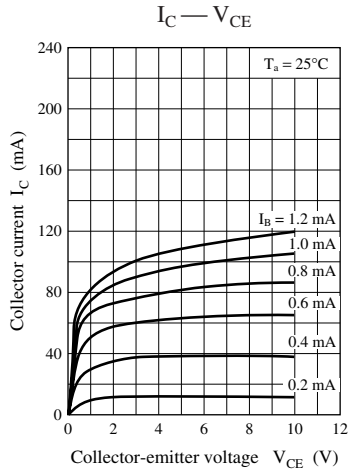




Characteristics charts of UNR121F

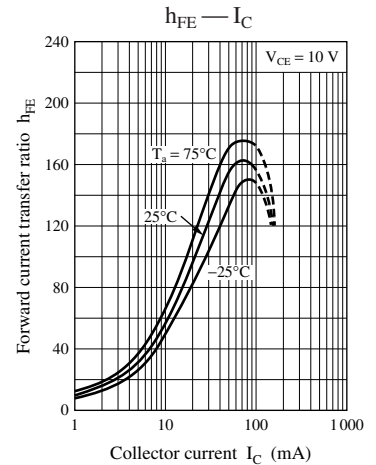
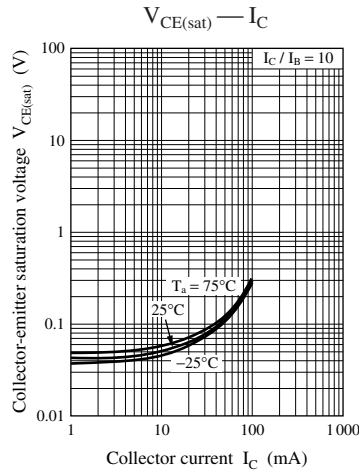
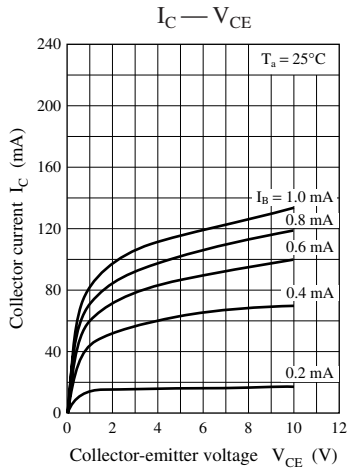


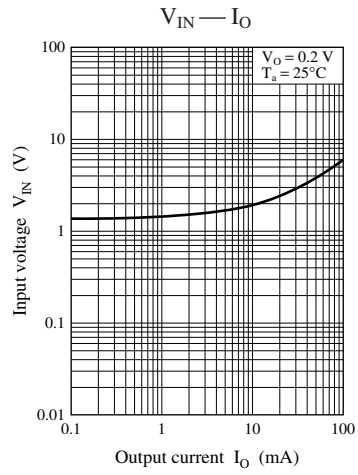
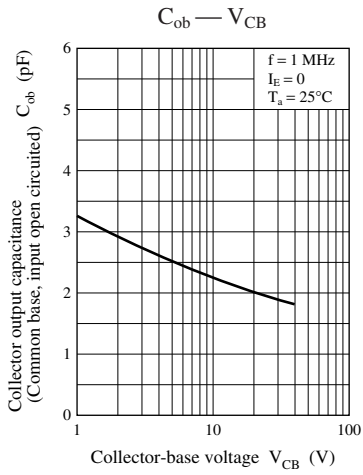
Characteristics charts of UNR121K



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Characteristics charts of UNR121L





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