

UN5211/5212/5213/5214/5215/5216/5217/5218/5219/5210/ 521D/521E/521F/521K/521L/521M/521N/521T/521V/521Z

Silicon NPN epitaxial planer transistor

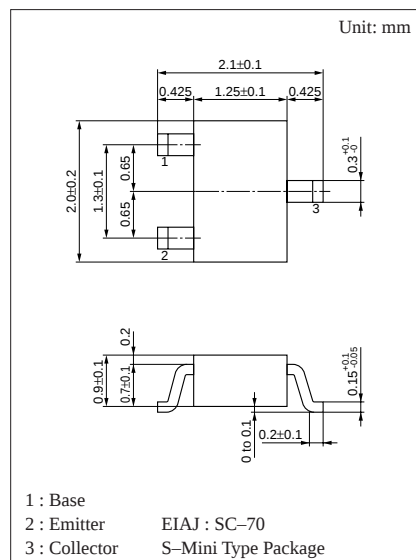
For digital circuits

Features

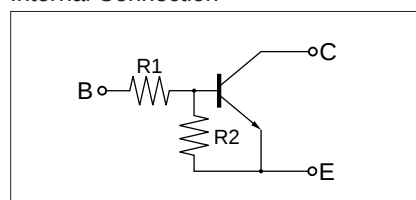
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- S-Mini type package, allowing automatic insertion through tape packing and magazine packing.

Resistance by Part Number

	Marking	Symbol	(R ₁)	(R ₂)
• UN5211	8A		10kΩ	10kΩ
• UN5212	8B		22kΩ	22kΩ
• UN5213	8C		47kΩ	47kΩ
• UN5214	8D		10kΩ	47kΩ
• UN5215	8E		10kΩ	—
• UN5216	8F		4.7kΩ	—
• UN5217	8H		22kΩ	—
• UN5218	8I		0.51kΩ	5.1kΩ
• UN5219	8K		1kΩ	10kΩ
• UN5210	8L		47kΩ	—
• UN521D	8M		47kΩ	10kΩ
• UN521E	8N		47kΩ	22kΩ
• UN521F	8O		4.7kΩ	10kΩ
• UN521K	8P		10kΩ	4.7kΩ
• UN521L	8Q		4.7kΩ	4.7kΩ
• UN521M	EL		2.2kΩ	47kΩ
• UN521N	EX		4.7kΩ	47kΩ
• UN521T	EZ		22kΩ	47kΩ
• UN521V	FD		2.2kΩ	2.2kΩ
• UN521Z	FF		4.7kΩ	22kΩ



Internal Connection



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	50	V
Collector to emitter voltage	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

UN5211/5212/5213/5214/5215/5216/5217/5218/5219/5210/
Transistors with built-in Resistor 521D/521E/521F/521K/521L/521M/521N/521T/521V/521Z

■ Electrical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit	
Collector cutoff current		I _{CBO}	V _{CB} = 50V, I _E = 0			0.1	μA	
		I _{CEO}	V _{CE} = 50V, I _B = 0			0.5	μA	
Emitter cutoff current	UN5211	I _{EBO}	V _{EB} = 6V, I _C = 0			0.5	mA	
	UN5212/5214/521E/521D/521M/521N/521T					0.2		
	UN5213					0.1		
	UN5215/5216/5217/5210					0.01		
	UN521F/521K					1.0		
	UN5219					1.5		
	UN5218/521L/521V					2.0		
	UN521Z					0.4		
Collector to base voltage		V _{CBO}	I _C = 10μA, I _E = 0	50			V	
Collector to emitter voltage		V _{CEO}	I _C = 2mA, I _B = 0	50			V	
Forward current transfer ratio	UN5211	h _{FE}	V _{CE} = 10V, I _C = 5mA	35				
	UN5212/521E			60				
	UN5213/5214/521M			80				
	UN5215*/5216*/5217*/5210*			160		460		
	UN521F/521D/5219			30				
	UN5218/521K/521L			20				
	UN521N/521T			80		400		
	UN521V			6		20		
	UN521Z			60		200		
Collector to emitter saturation voltage		V _{CE(sat)}	I _C = 10mA, I _B = 0.3mA			0.25	V	
		UN521V	I _C = 10mA, I _B = 1.5mA			0.25	V	
Output voltage high level		V _{OH}	V _{CC} = 5V, V _B = 0.5V, R _L = 1kΩ	4.9			V	
Output voltage low level		V _{OL}	V _{CC} = 5V, V _B = 2.5V, R _L = 1kΩ			0.2	V	
			UN5213/521K	V _{OC} = 5V, V _B = 3.5V, R _L = 1kΩ				0.2
			UN521D	V _{CC} = 5V, V _B = 10V, R _L = 1kΩ				0.2
			UN521E	V _{CC} = 5V, V _B = 6V, R _L = 1kΩ				0.2
Transition frequency		f _T	V _{CB} = 10V, I _E = −2mA, f = 200MHz		150		MHz	
Input resistance	UN5211/5214/5215/521K	R _i		(−30%)	10	(+30%)	kΩ	
	UN5212/5217/521T				22			
	UN5213/521D/521E/5210				47			
	UN5216/521F/521L/521N/521Z				4.7			
	UN5218				0.51			
	UN5219				1			
	UN521M/521V				2.2			

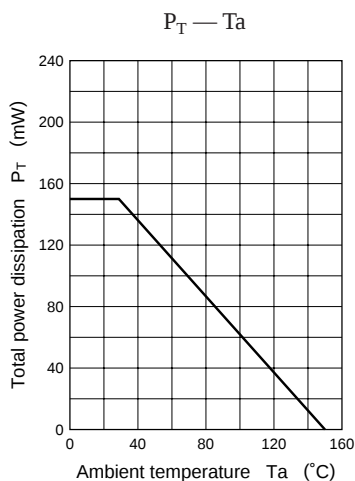
* h_{FE} rank classification (UN5125/5216/5217/5210)

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

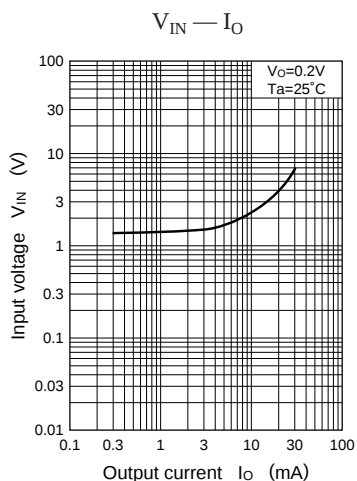
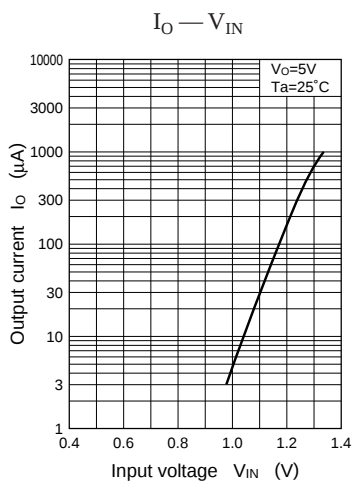
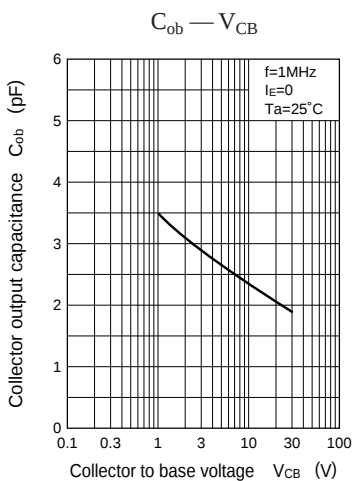
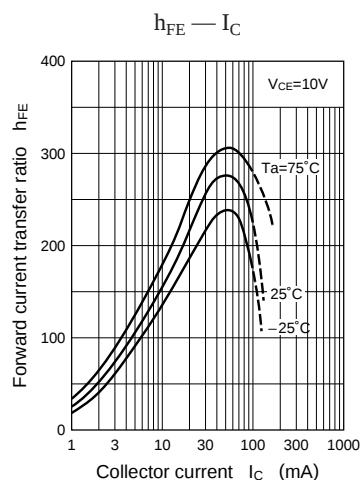
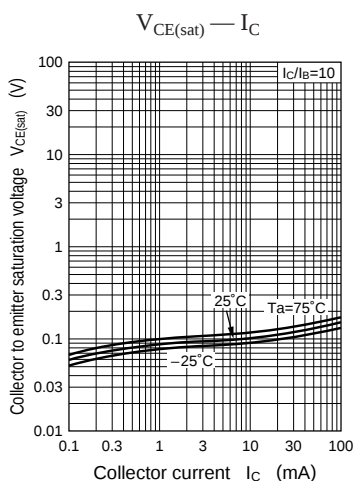
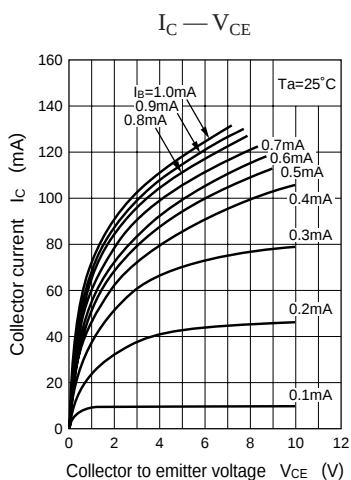
■ Electrical Characteristics (continued) (Ta=25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Resis- tance ratio	UN5211/5212/5213/521L	R_1/R_2		0.8	1.0	1.2	
	UN5214			0.17	0.21	0.25	
	UN5218/5219			0.08	0.1	0.12	
	UN521D				4.7		
	UN521E				2.14		
	UN521F/521T				0.47		
	UN521K				2.13		
	UN521M				0.047		
	UN521N				0.1		
	UN521V				1.0		
	UN521Z				0.21		

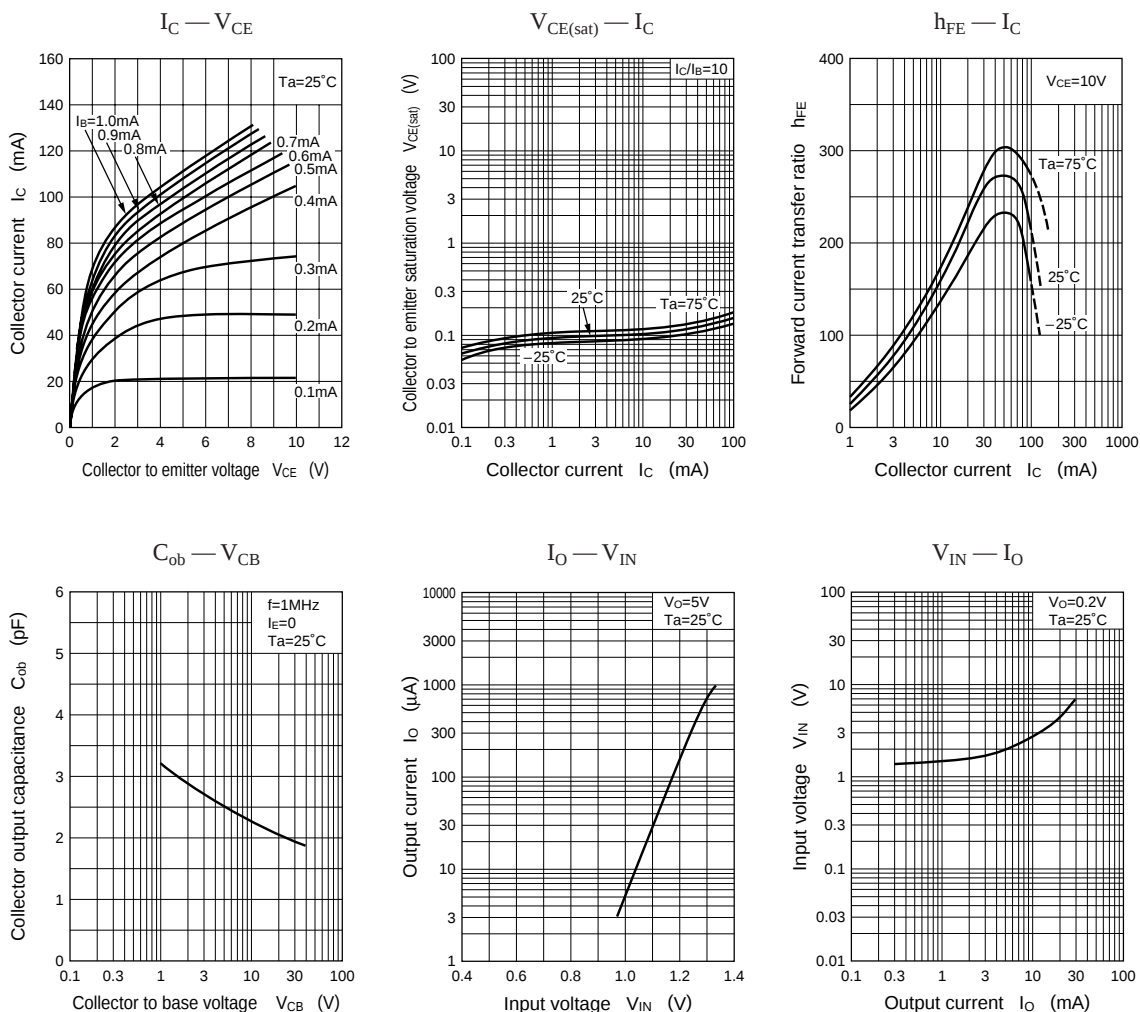
Common characteristics chart



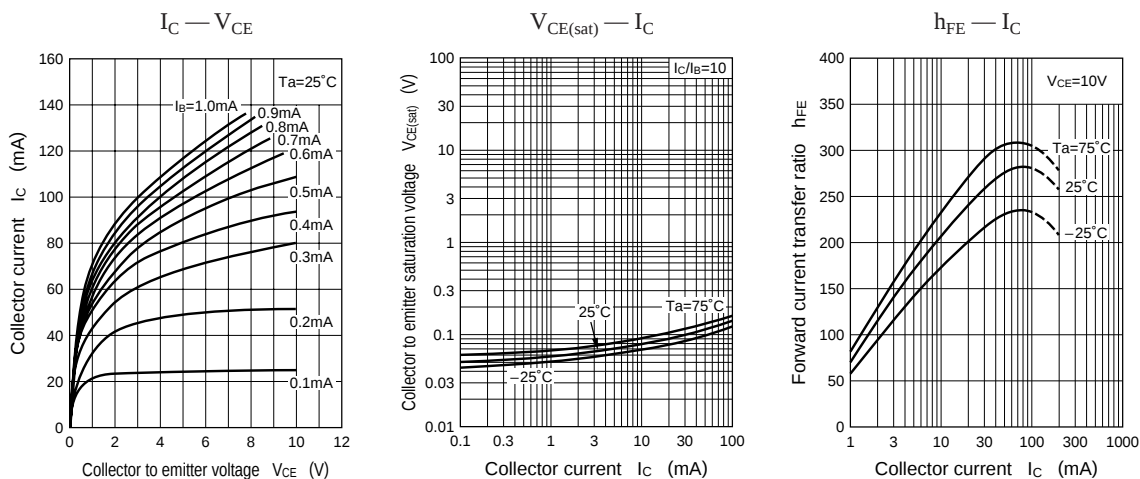
Characteristics charts of UN5211

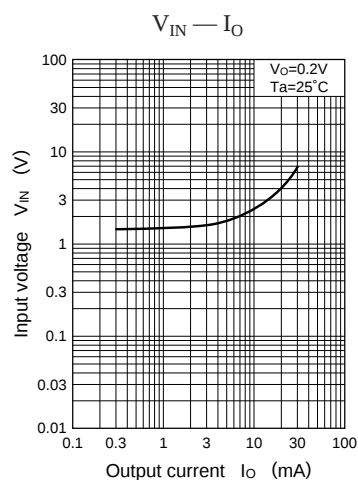
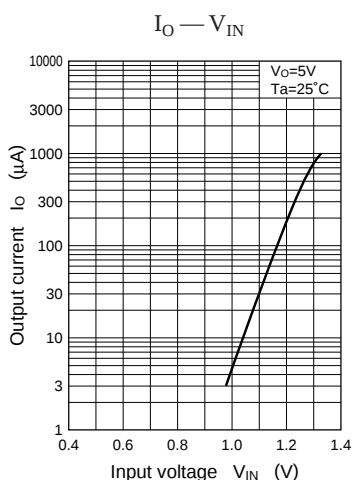
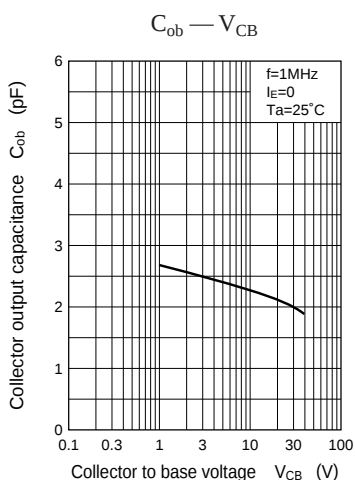


Characteristics charts of UN5212

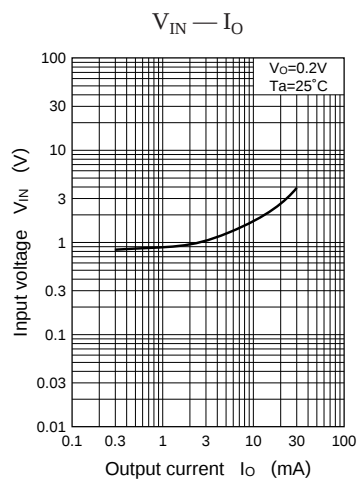
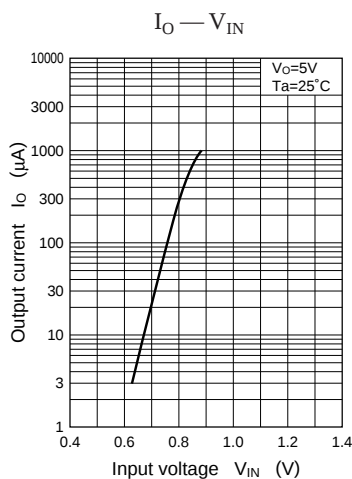
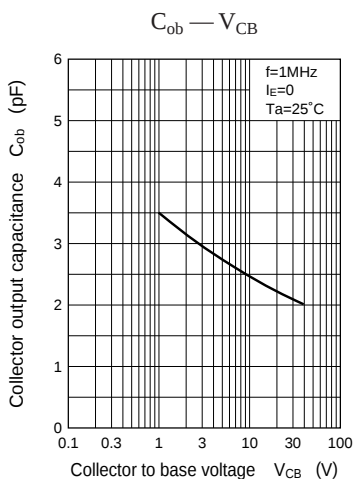
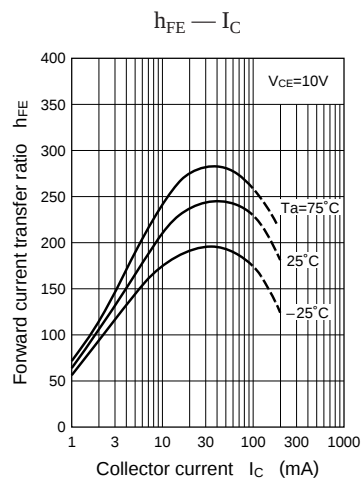
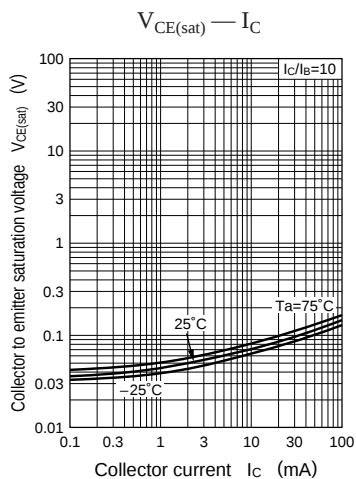
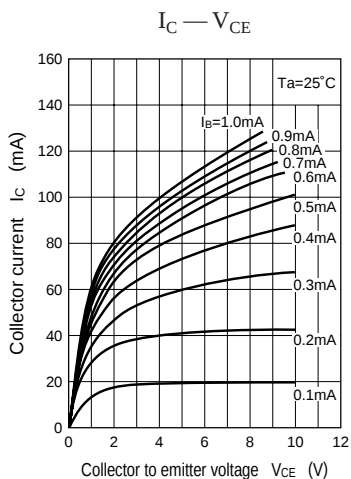


Characteristics charts of UN5213

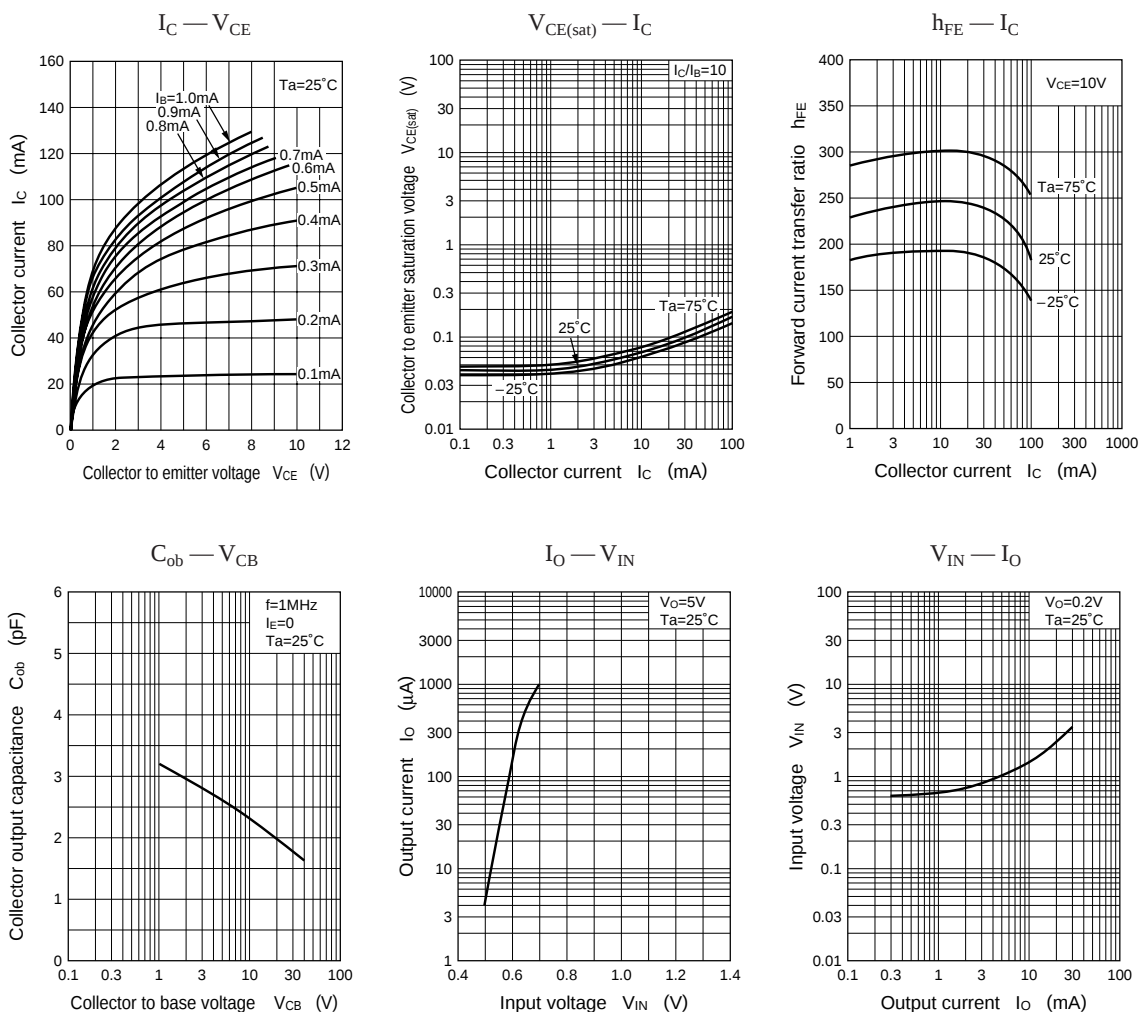




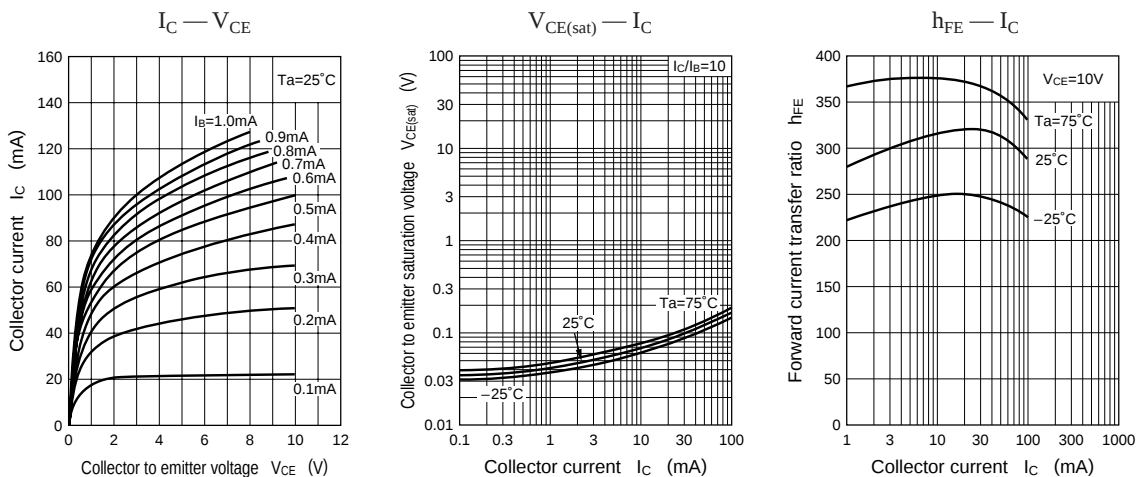
Characteristics charts of UN5214

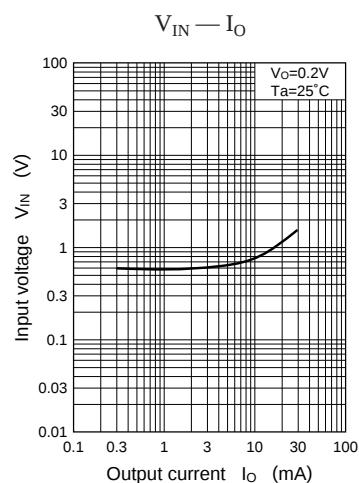
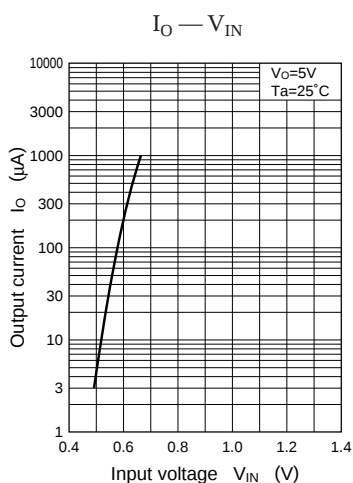
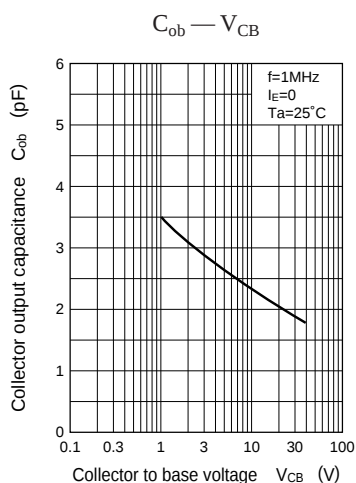


Characteristics charts of UN5215

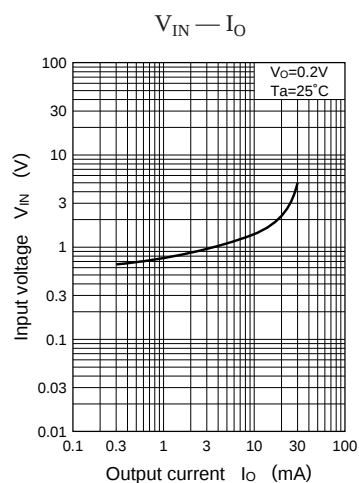
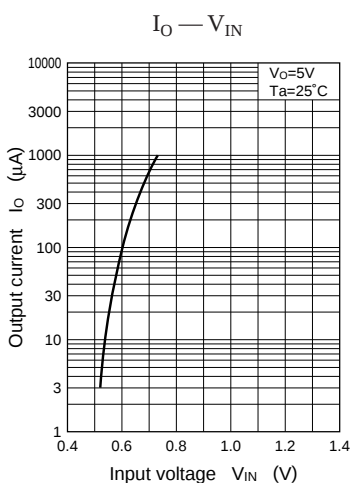
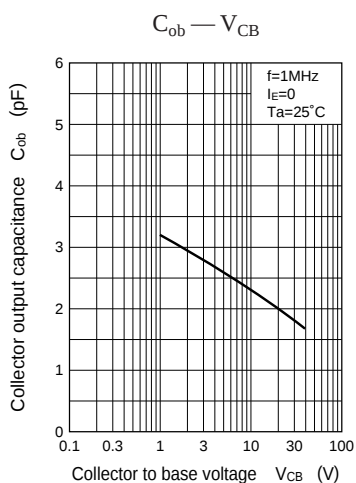
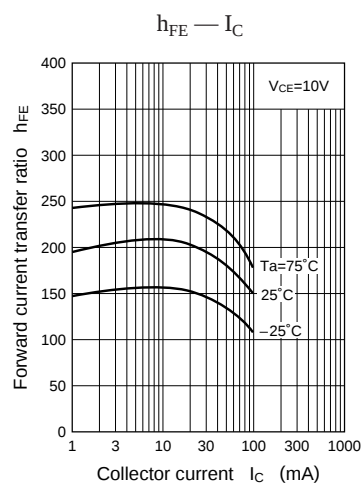
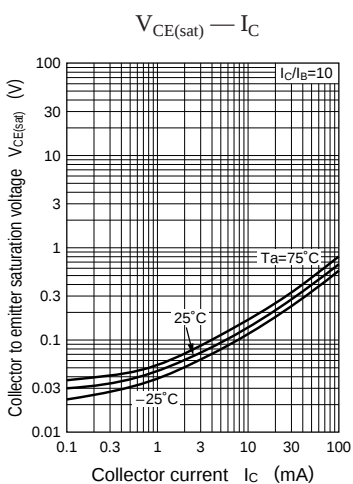
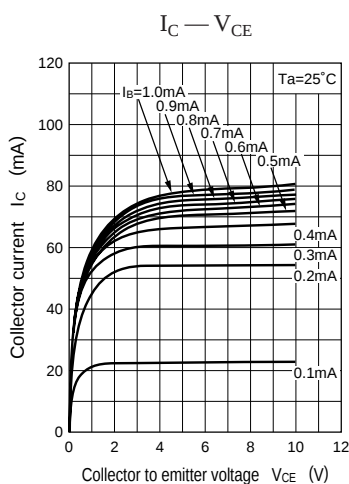


Characteristics charts of UN5216

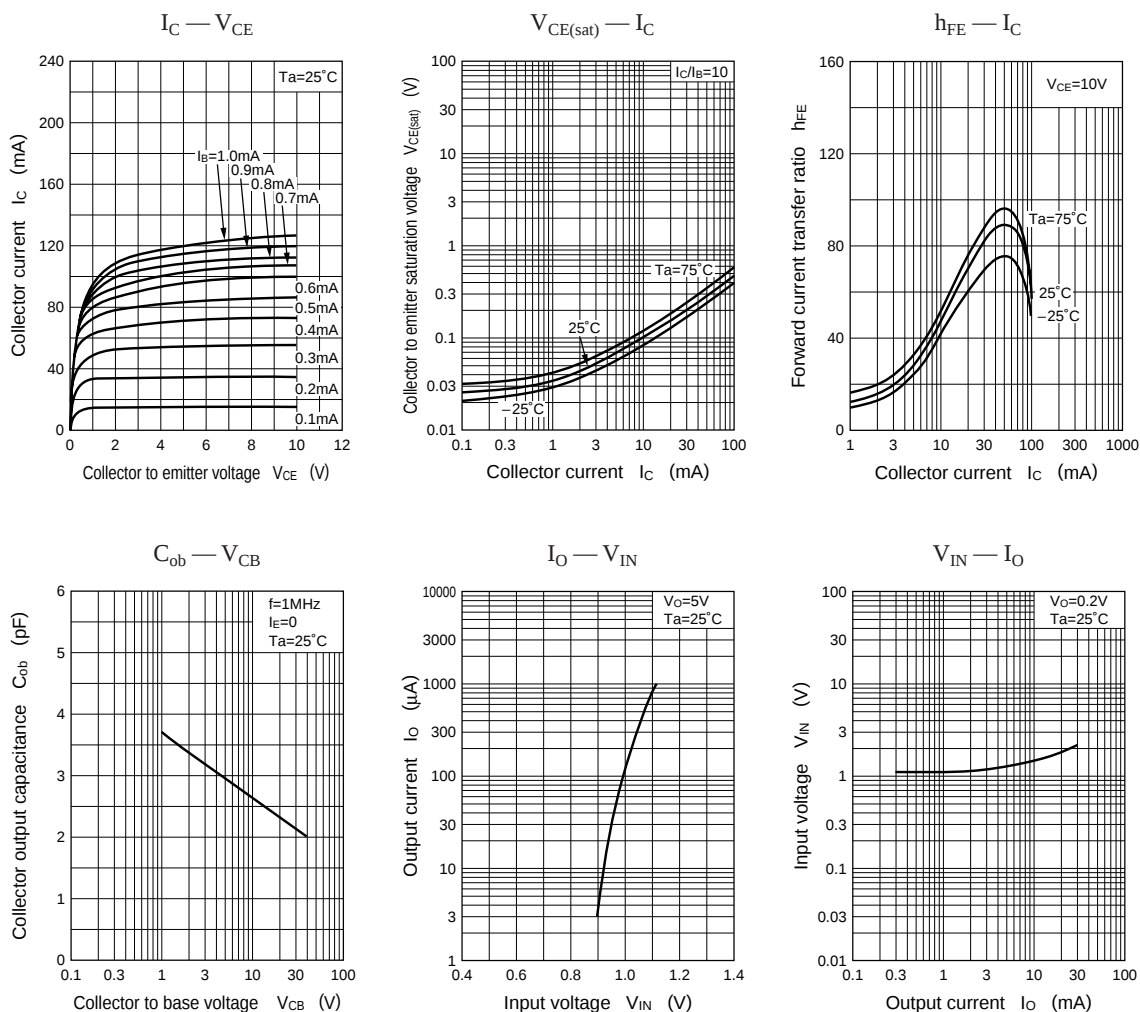




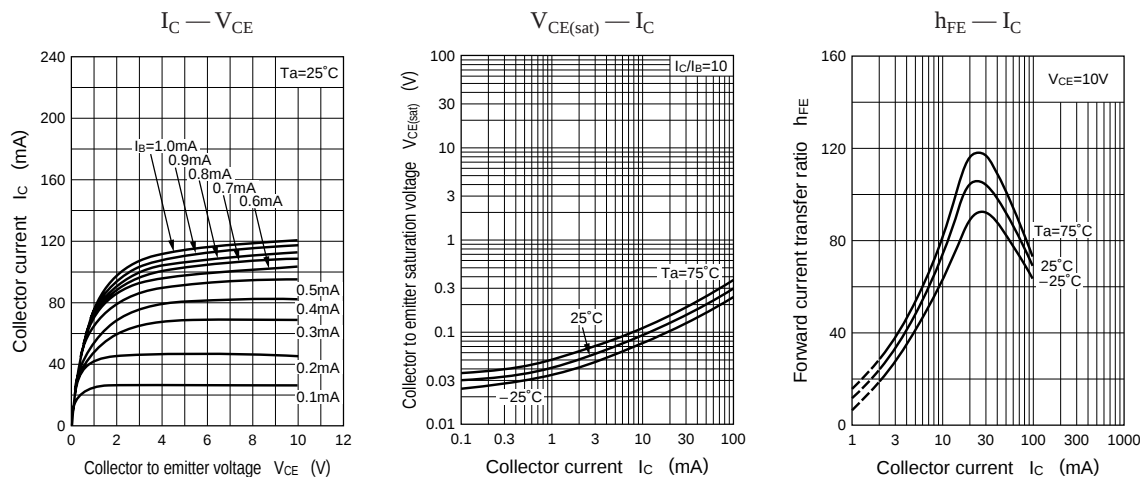
Characteristics charts of UN5217

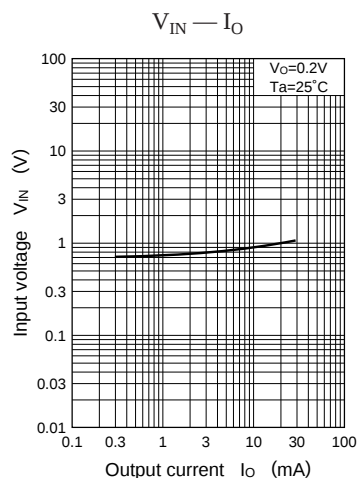
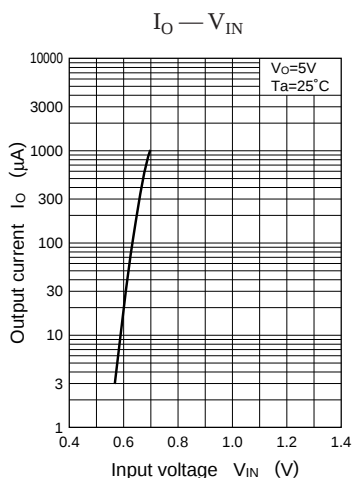
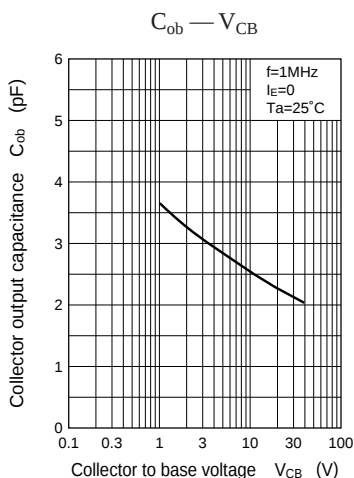


Characteristics charts of UN5218

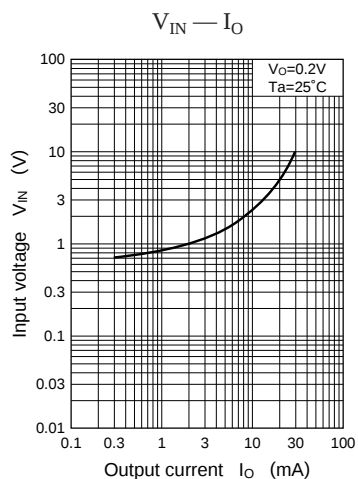
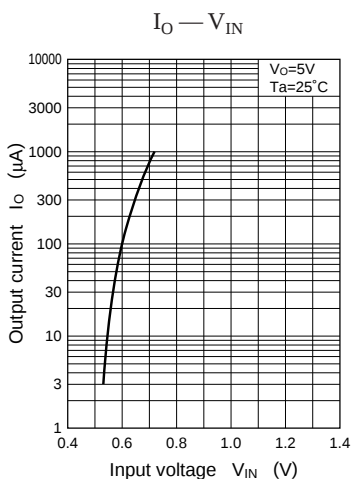
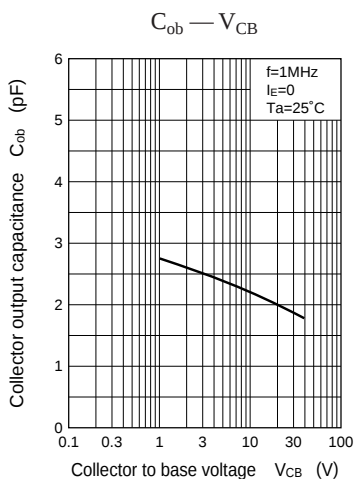
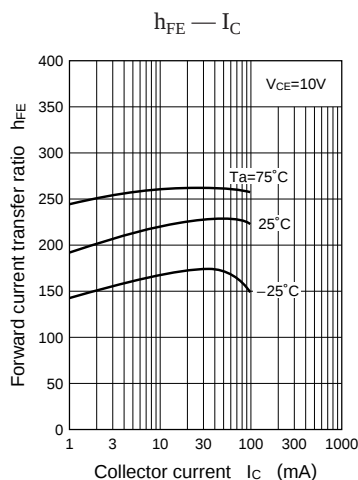
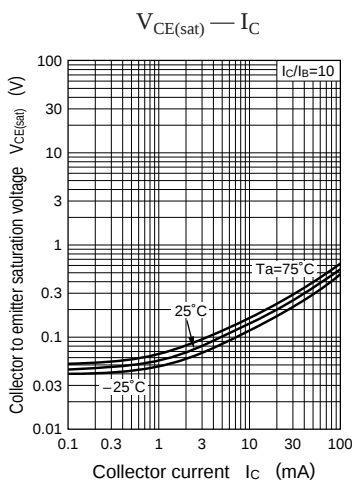
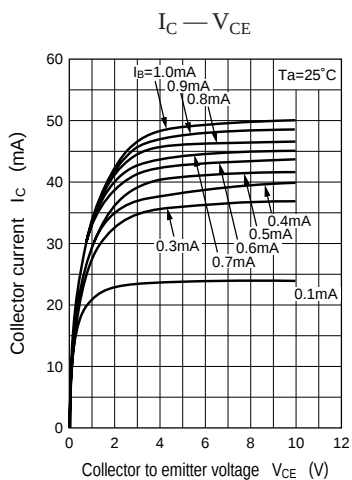


Characteristics charts of UN5219

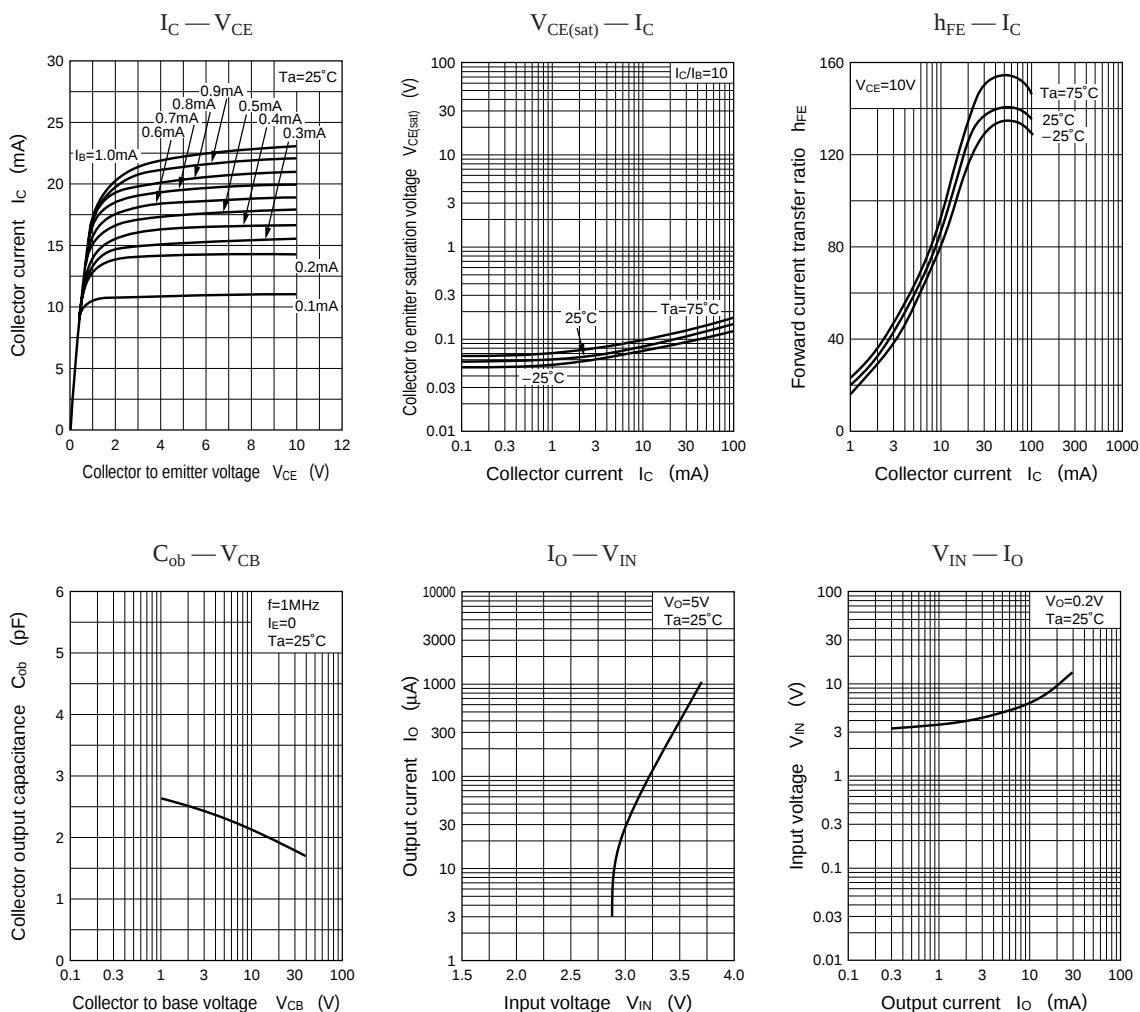




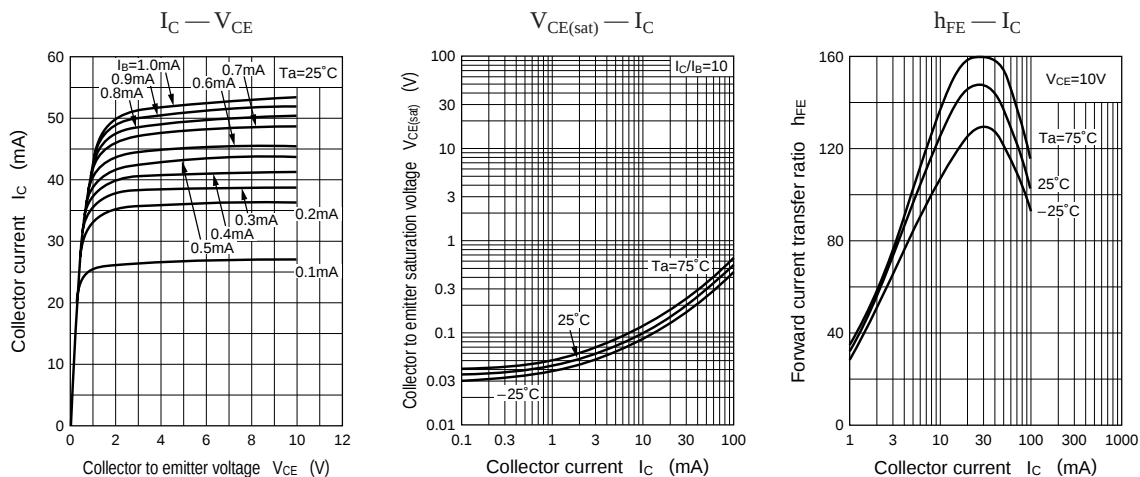
Characteristics charts of UN5210

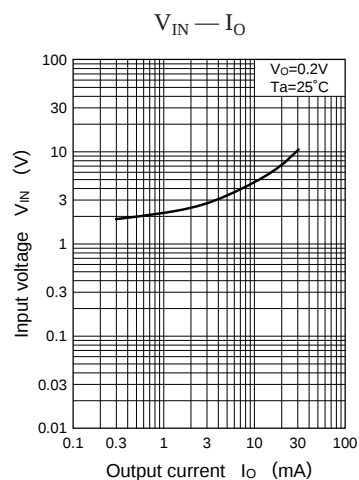
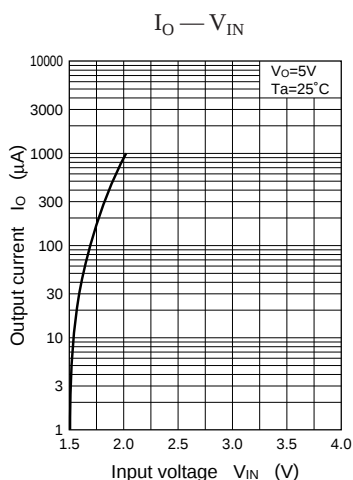
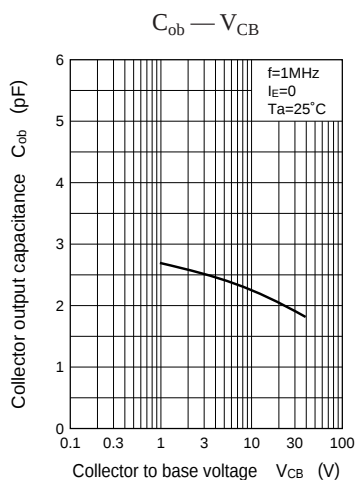


Characteristics charts of UN521D

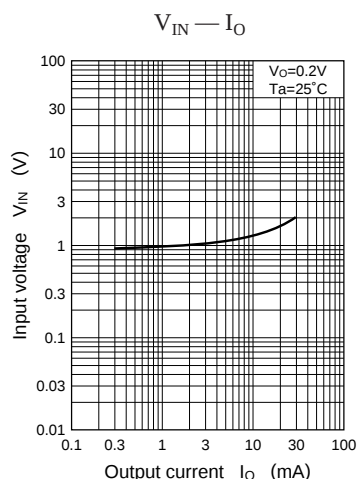
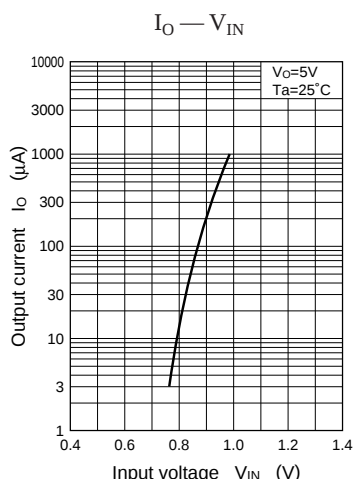
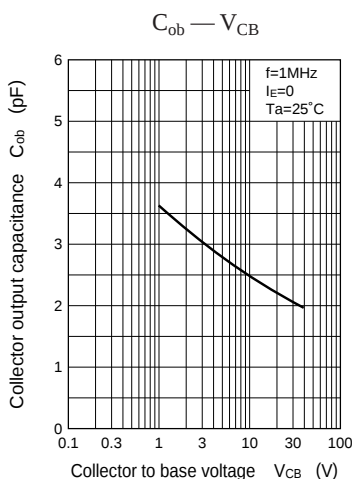
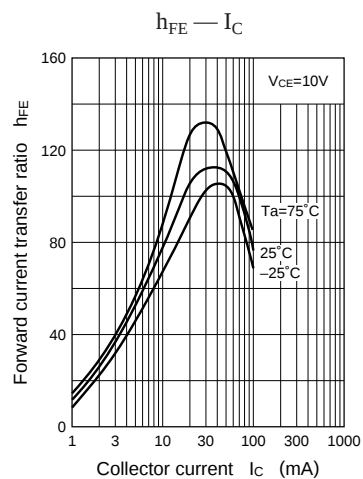
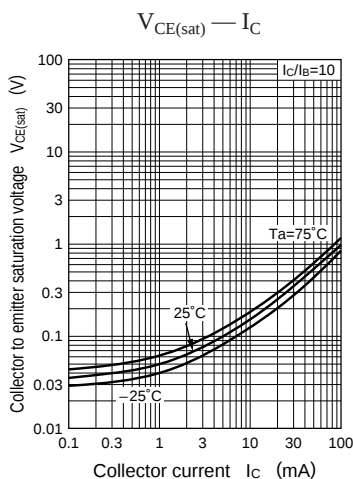
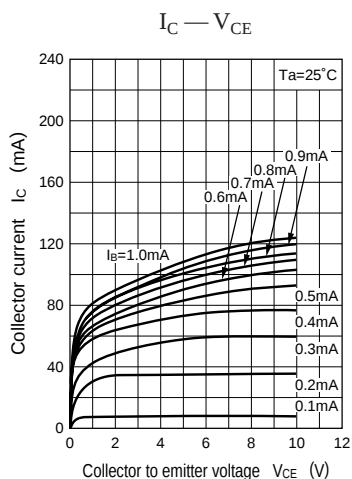


Characteristics charts of UN521E

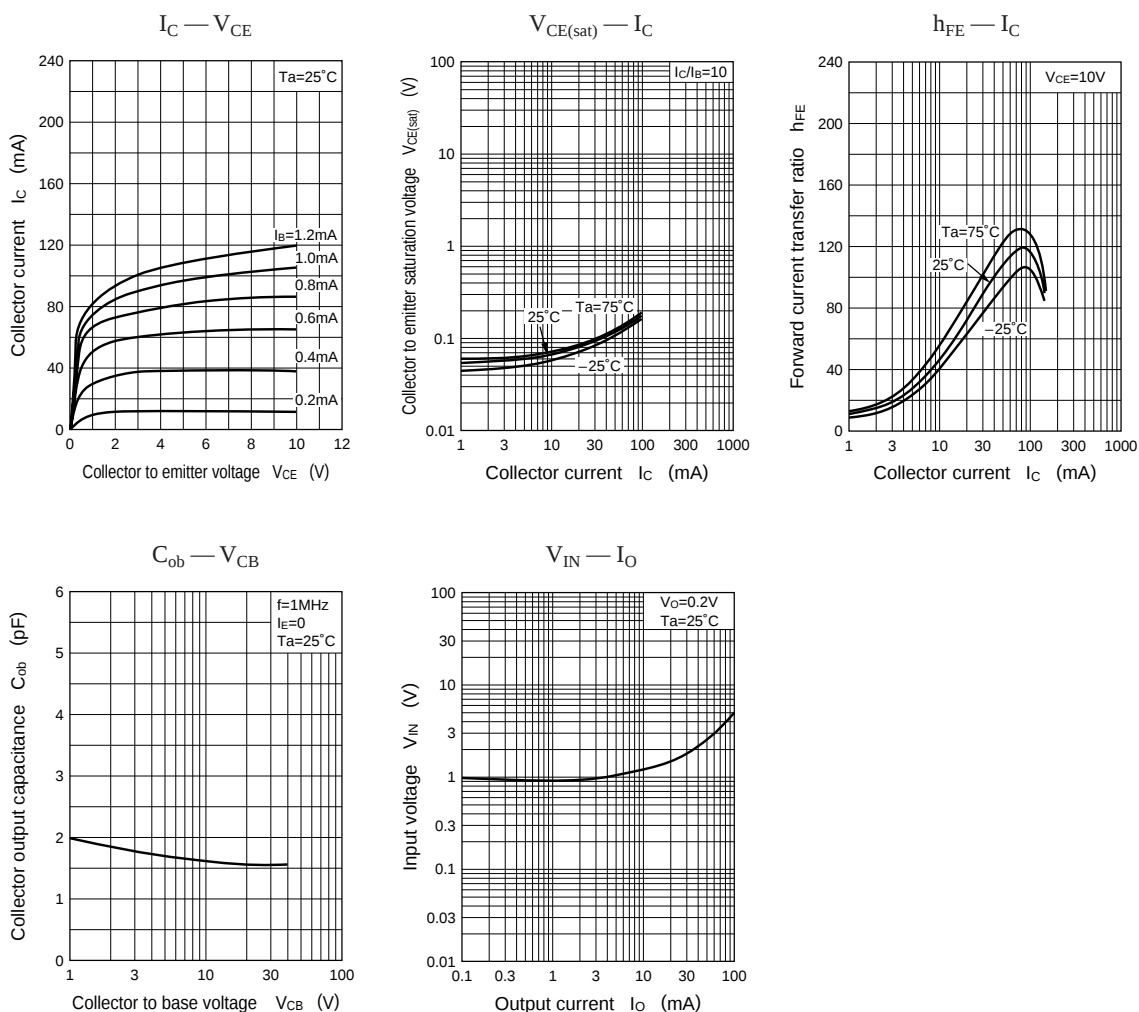




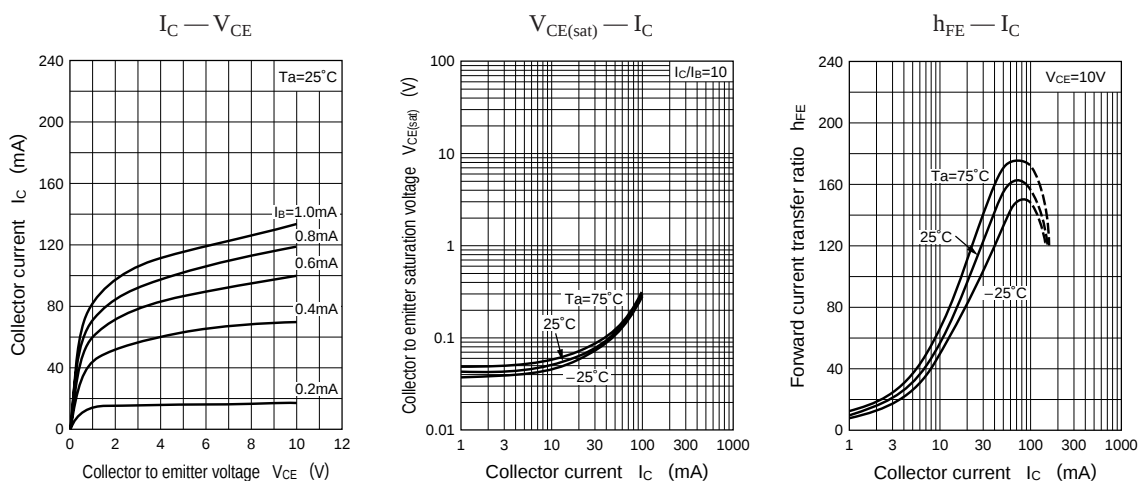
Characteristics charts of UN521F

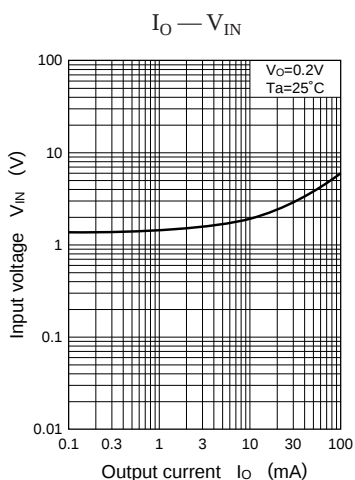
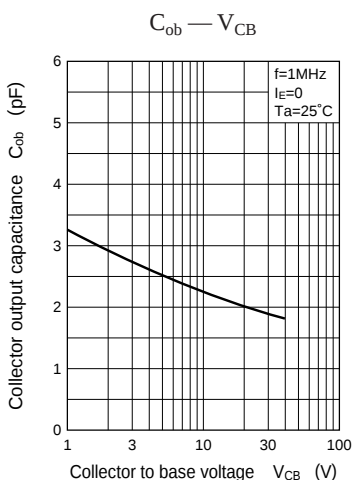


Characteristics charts of UN521K

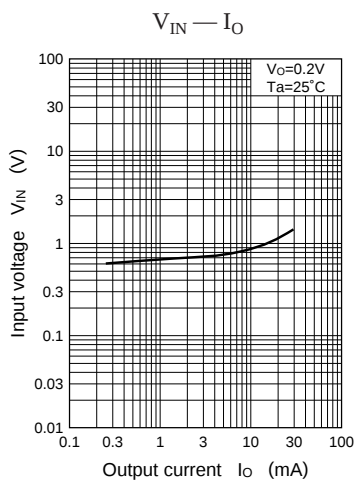
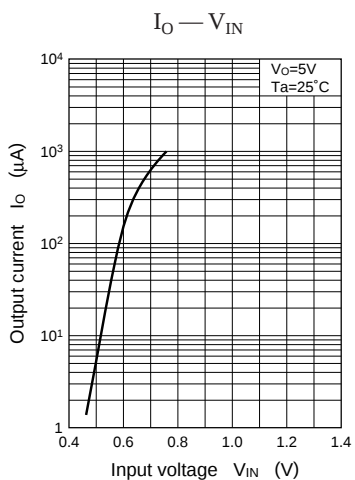
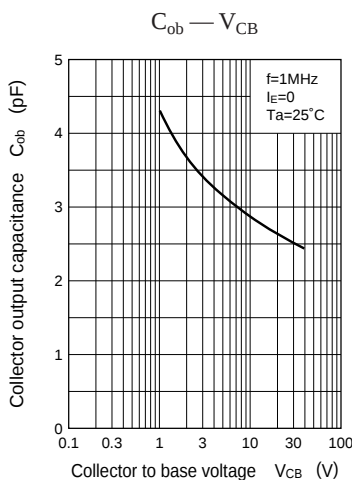
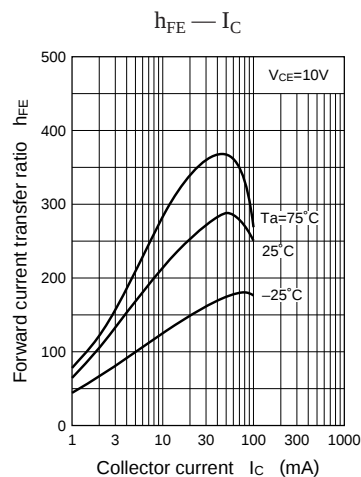
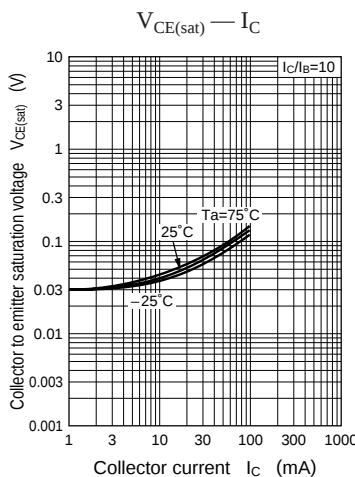
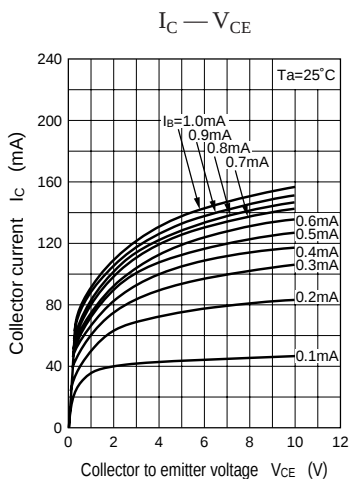


Characteristics charts of UN521L

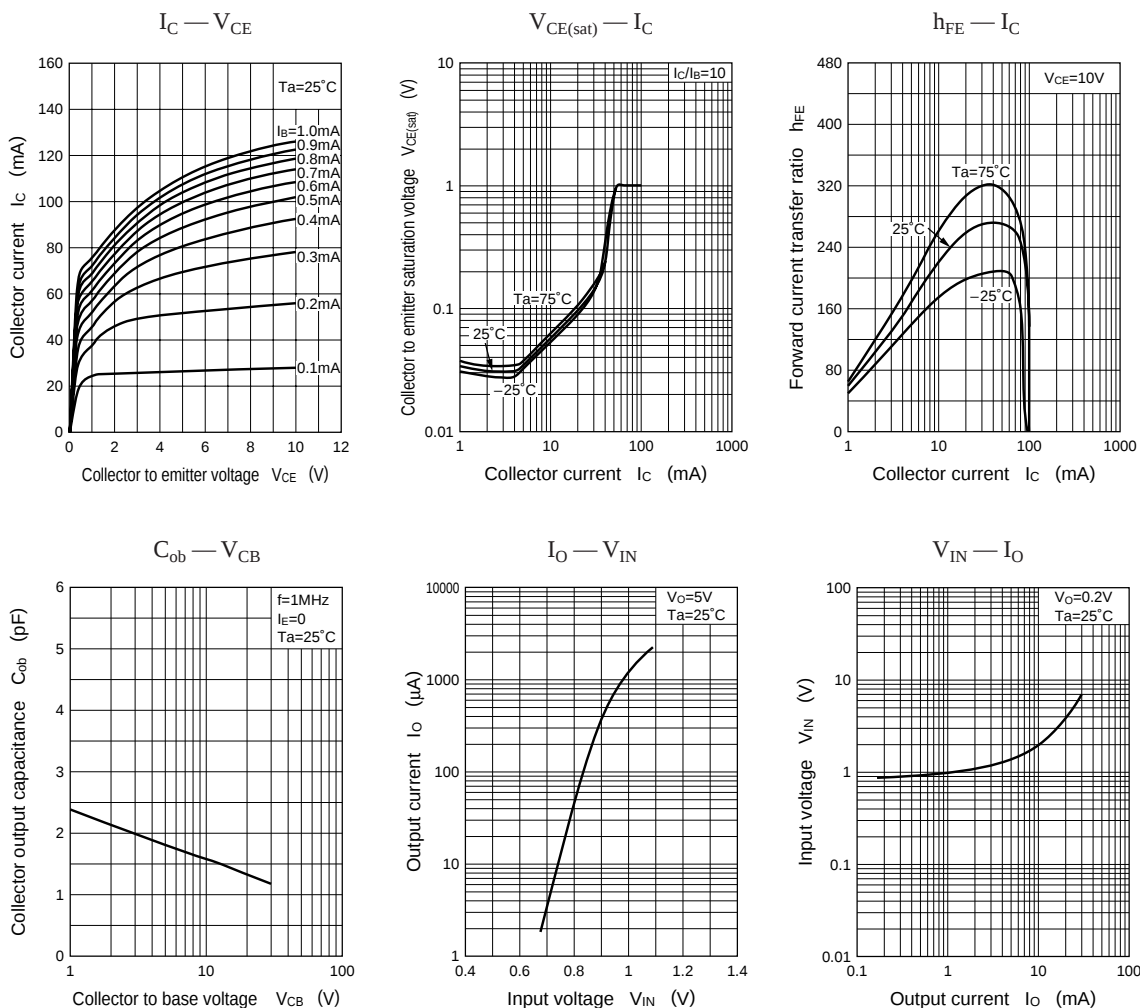




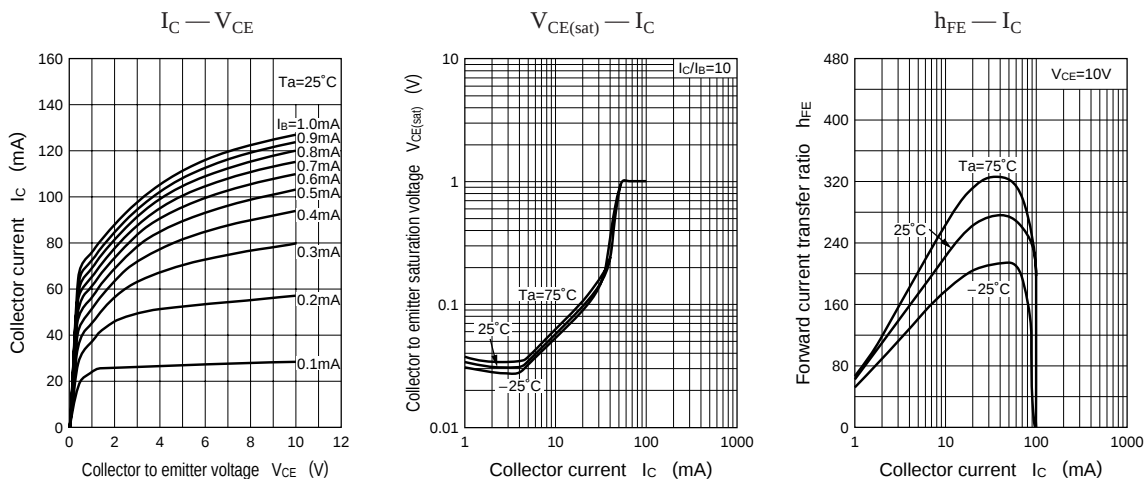
Characteristics charts of UN521M

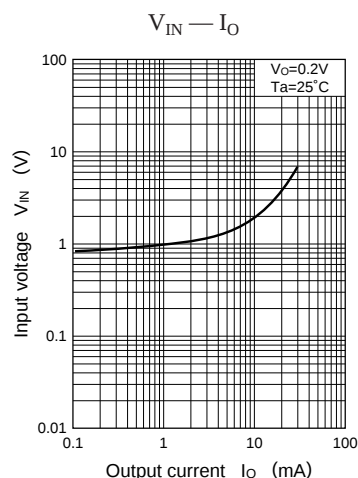
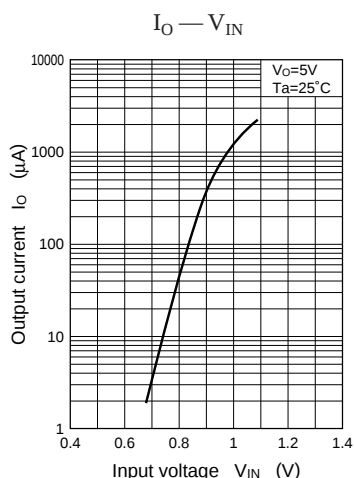
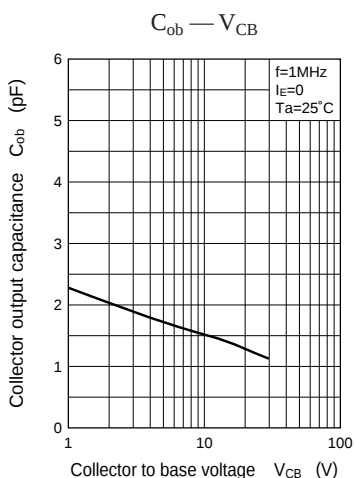


Characteristics charts of UN521N

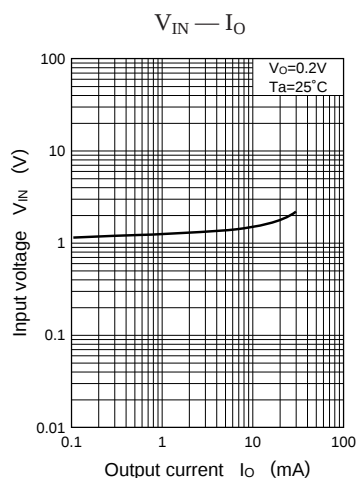
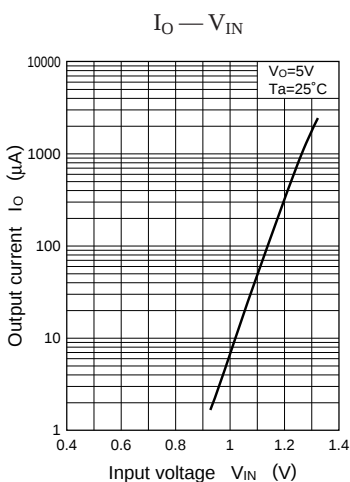
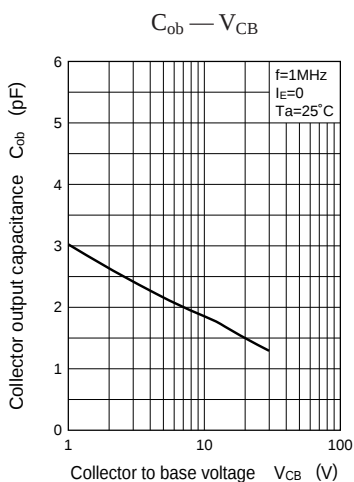
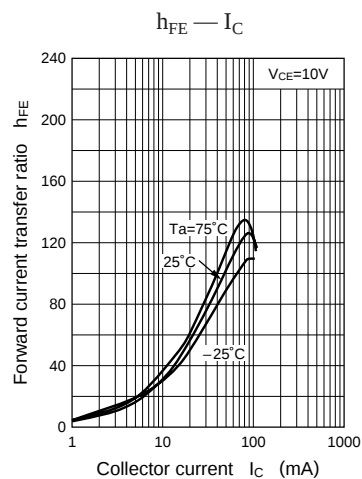
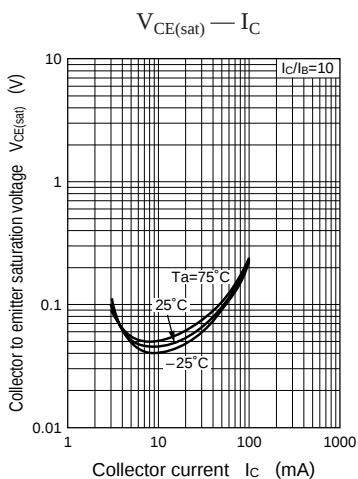
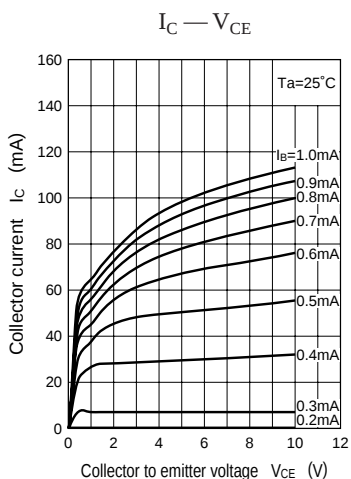


Characteristics charts of UN521T





Characteristics charts of UN521V



Characteristics charts of UN521Z

