

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

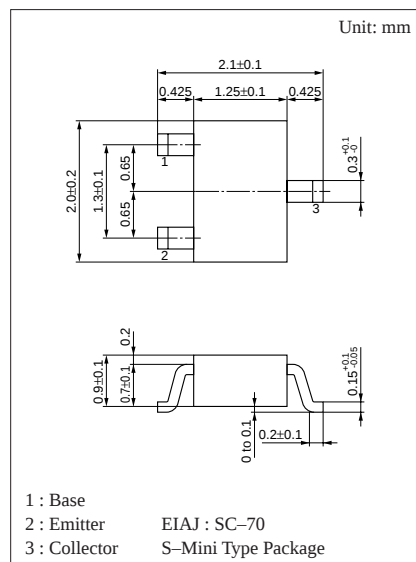
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- S-Mini type package, allowing automatic insertion through tape packing and magazine packing.

Resistance by Part Number

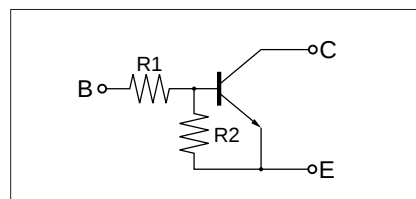
	Marking	Symbol	(R ₁)	(R ₂)
• UN5211	8A		10kΩ	10kΩ
• UN5212	8B		22kΩ	22kΩ
• UN5213	8C		47kΩ	47kΩ
• UN5214	8D		10kΩ	47kΩ
• UN5215	8E		10kΩ	—
• UN5216	8F		4.7kΩ	—
• UN5217	8H		22kΩ	—
• UN5218	8I		0.51kΩ	5.1kΩ
• UN5219	8K		1kΩ	10kΩ
• UN5210	8L		47kΩ	—
• UN521D	8M		47kΩ	10kΩ
• UN521E	8N		47kΩ	22kΩ
• UN521F	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

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



Internal Connection



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		
	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
			V _{OC} = 5V, V _B = 3.5V, R _L = 1kΩ			0.2	
			V _{CC} = 5V, V _B = 10V, R _L = 1kΩ			0.2	
			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		

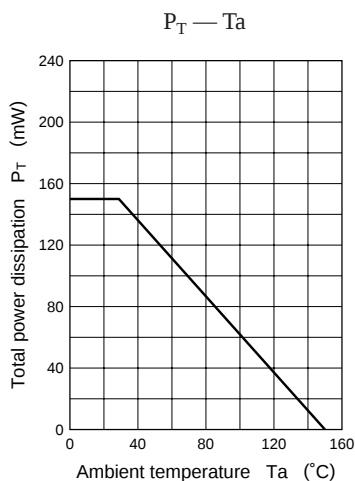
* h_{FE} rank classification (UN5125/5216/5217/5210)

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

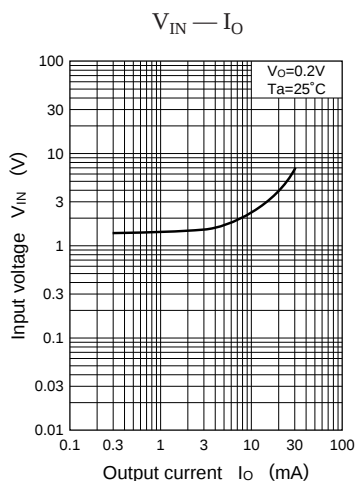
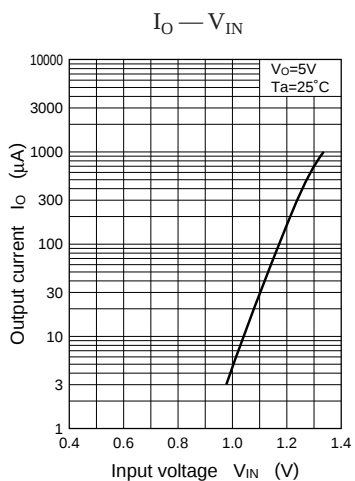
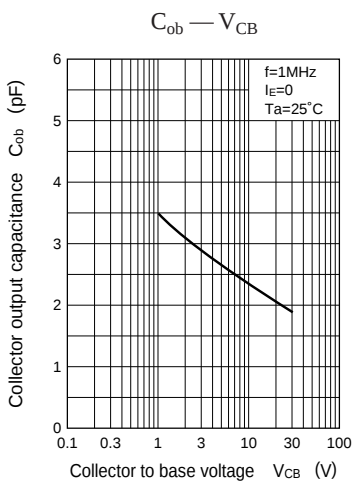
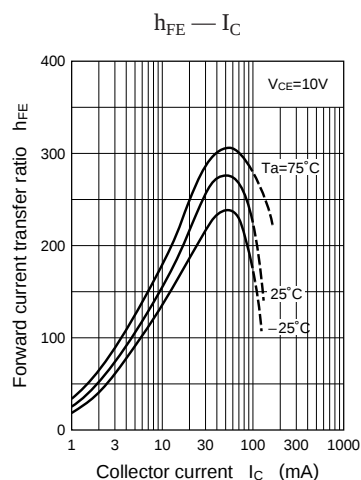
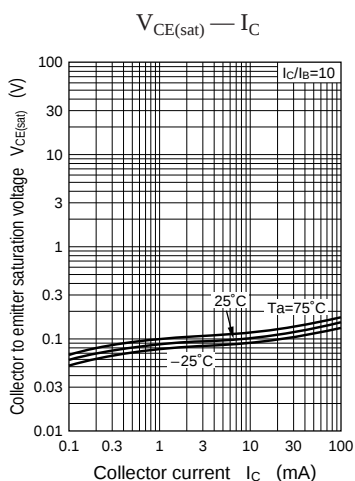
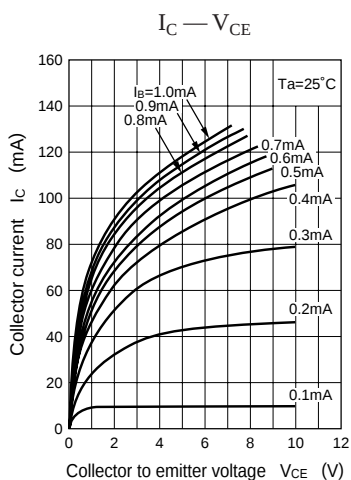
■ Electrical Characteristics (continued) (Ta=25°C)

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		

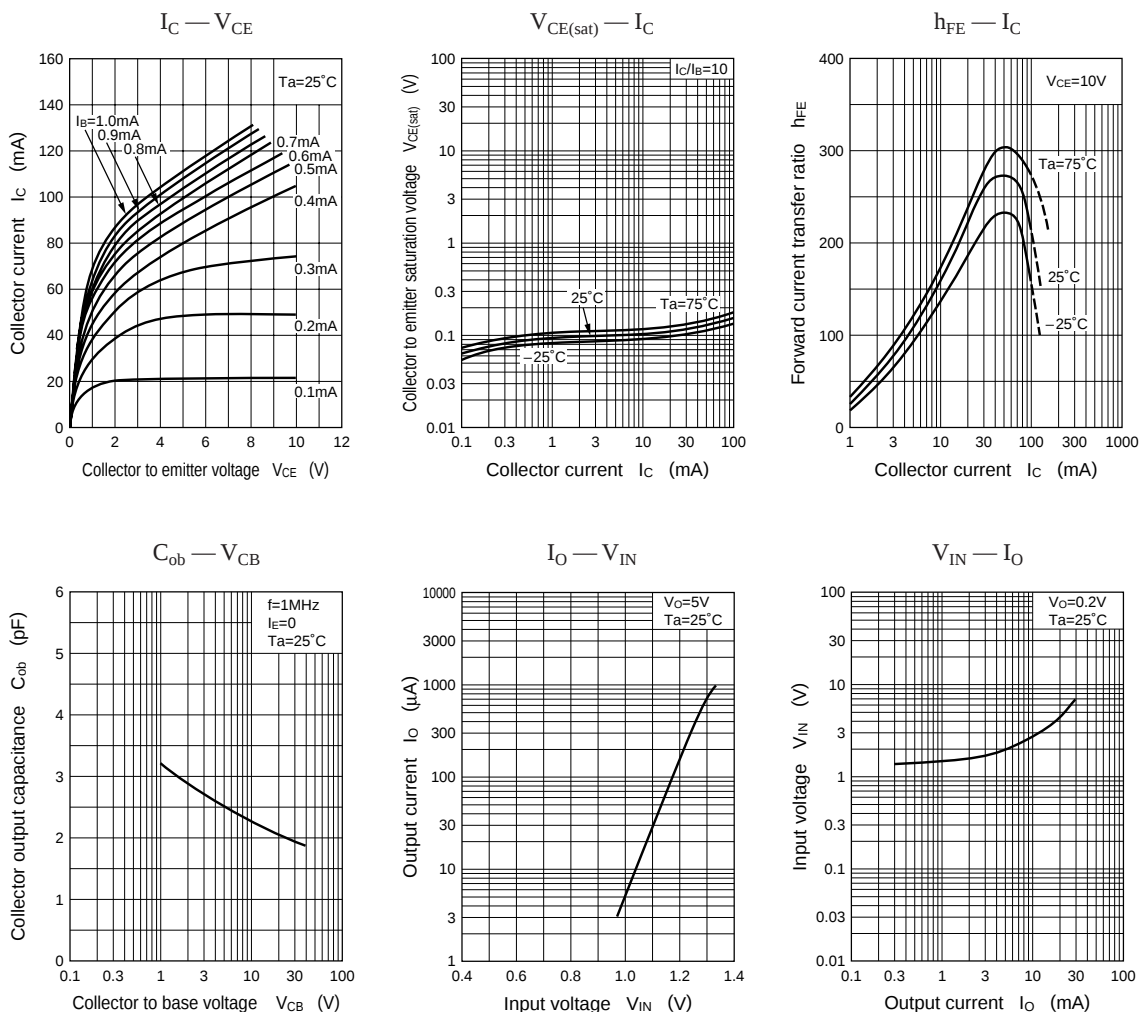
Common characteristics chart



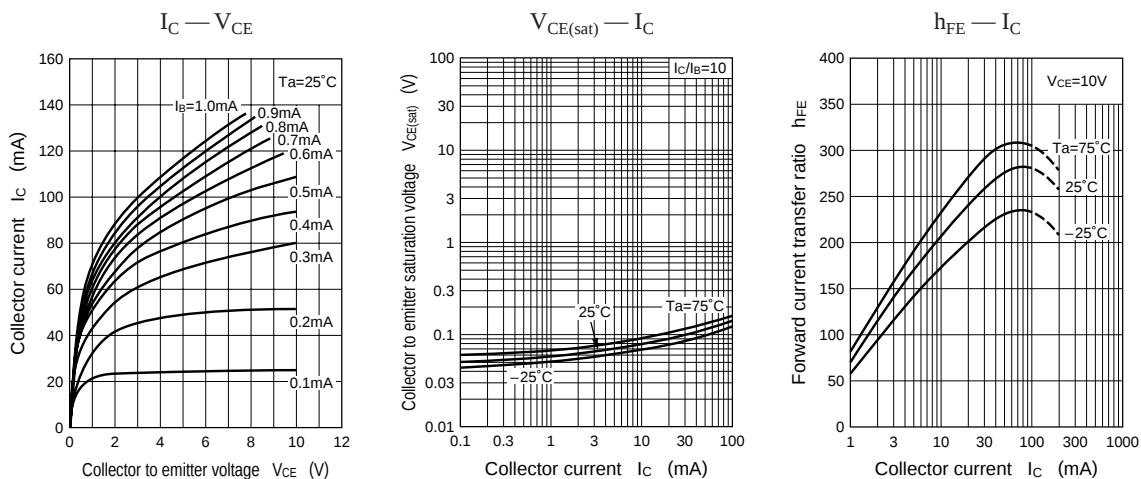
Characteristics charts of UN5211

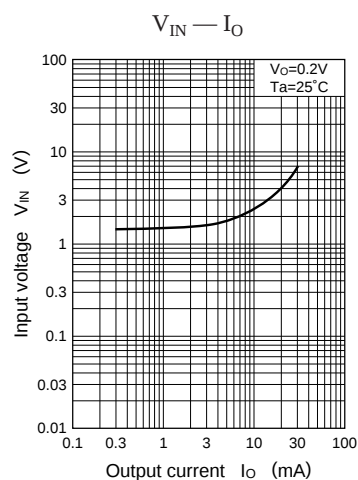
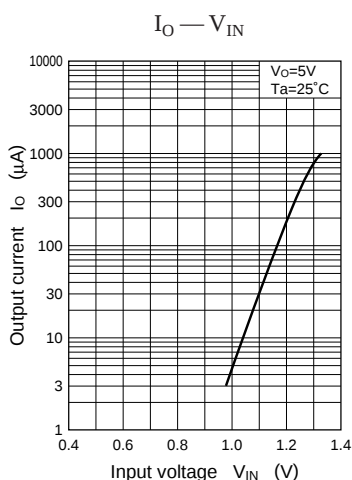
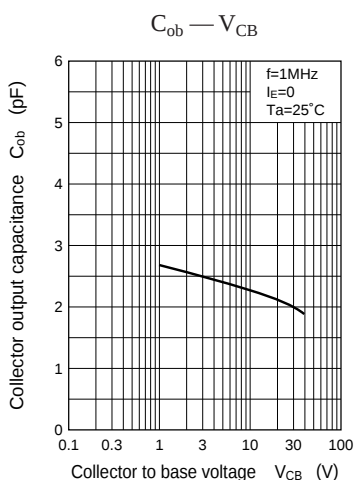


Characteristics charts of UN5212

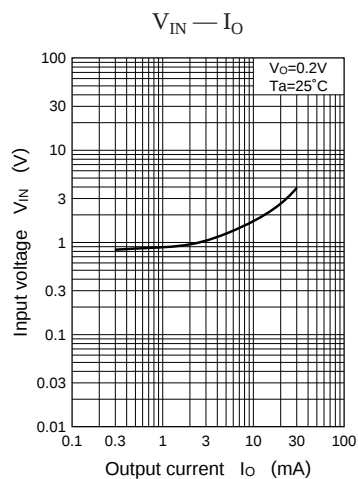
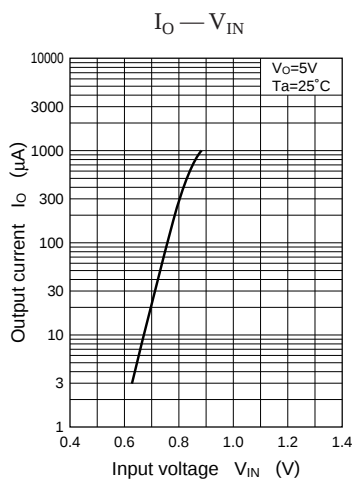
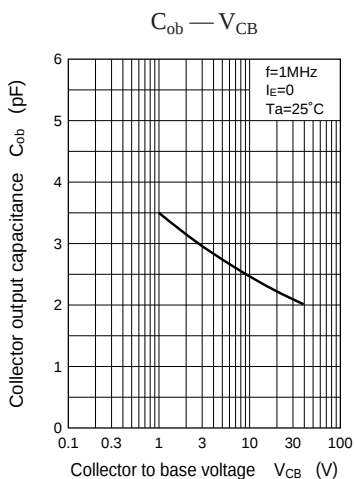
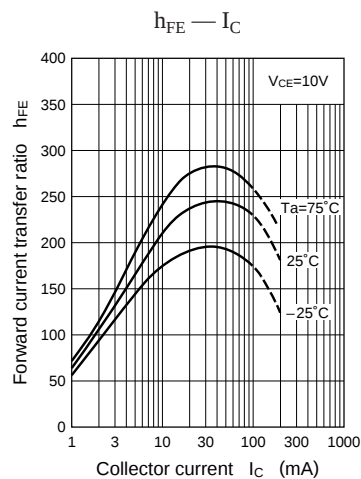
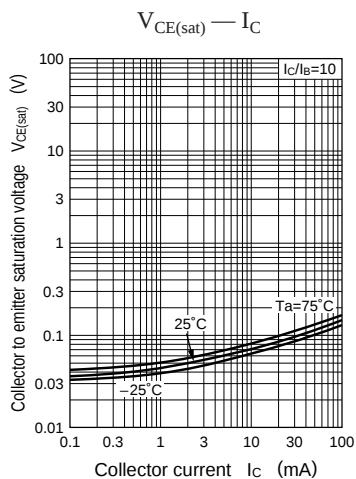
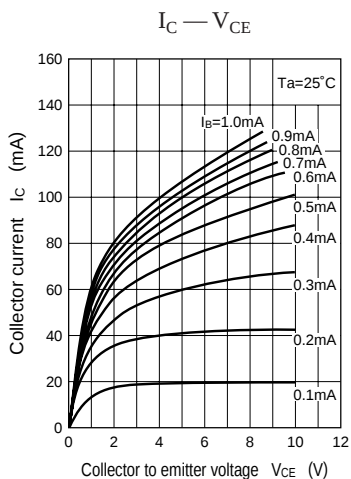


Characteristics charts of UN5213

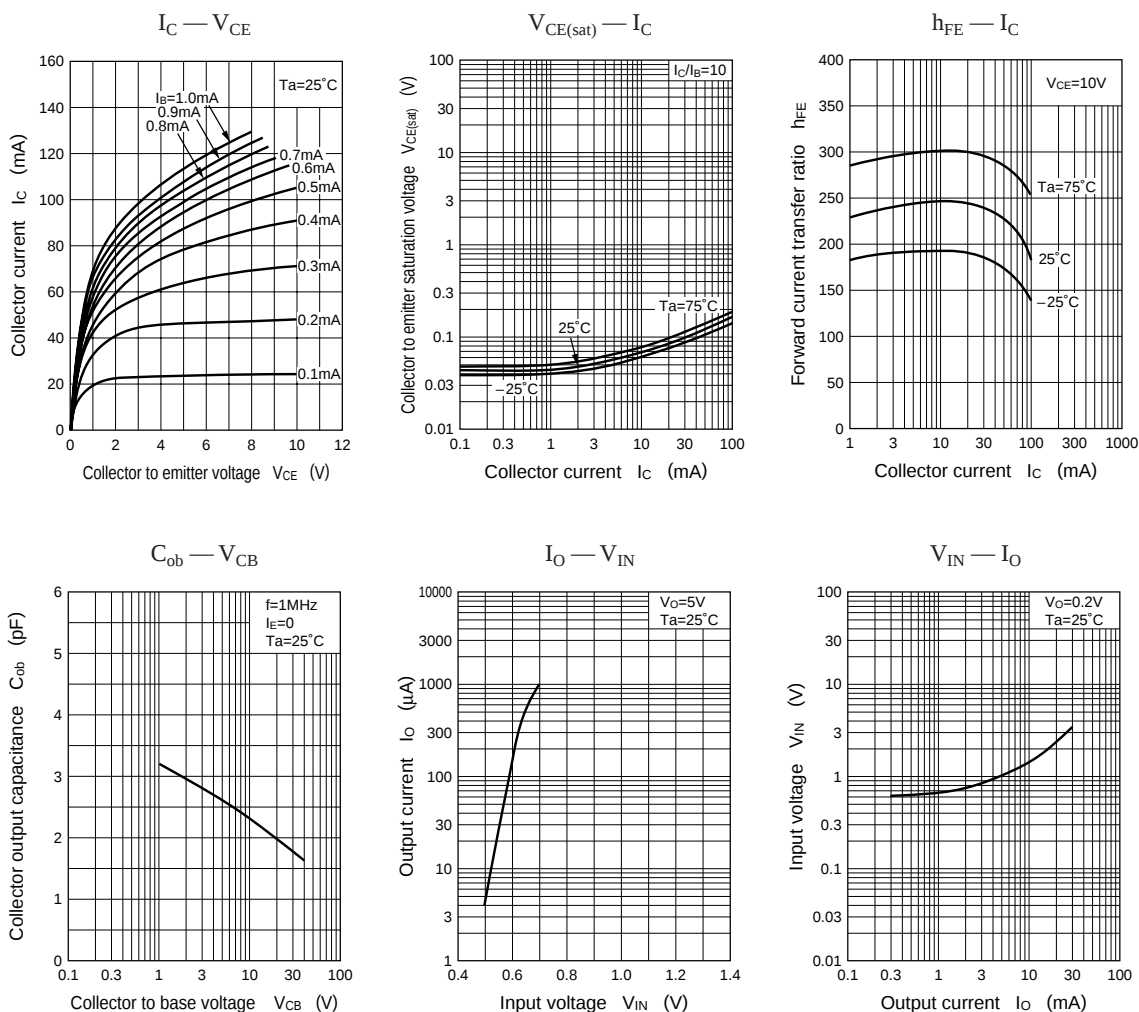




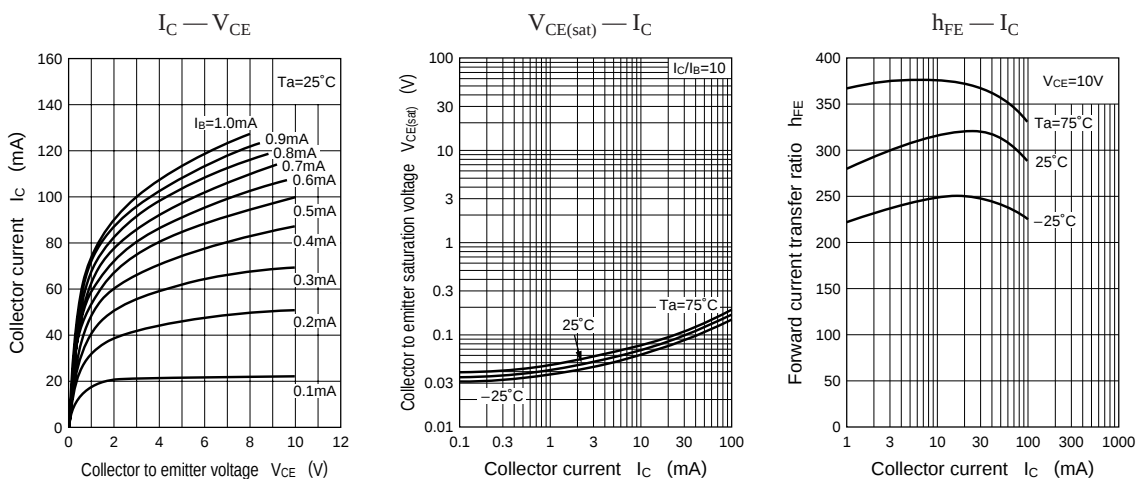
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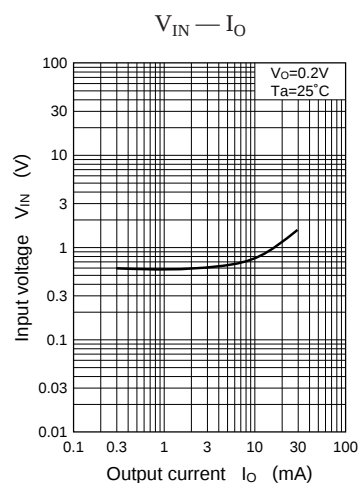
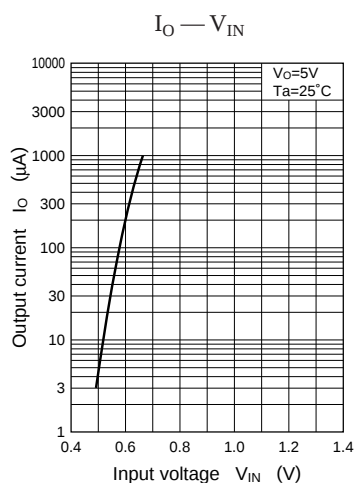
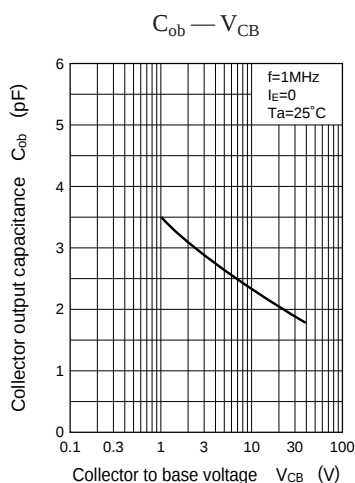


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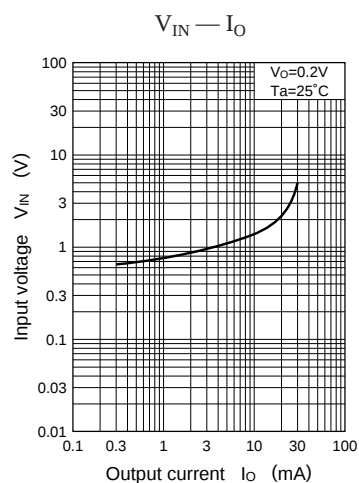
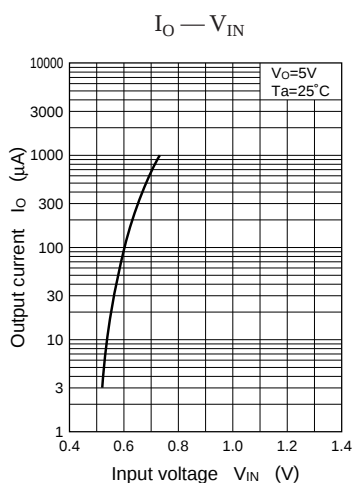
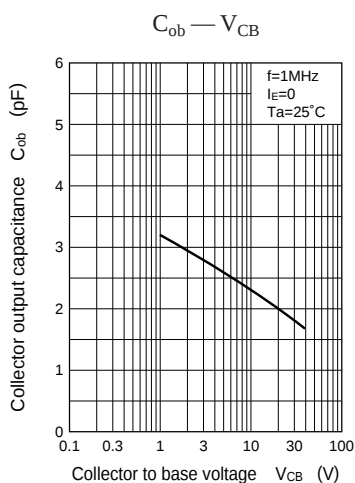
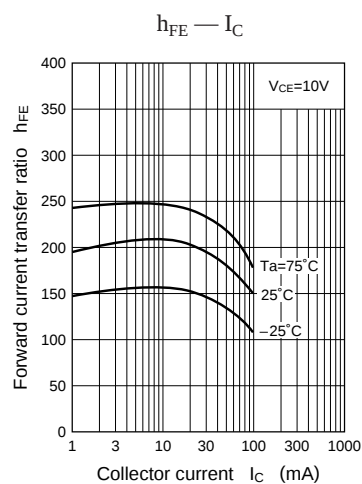
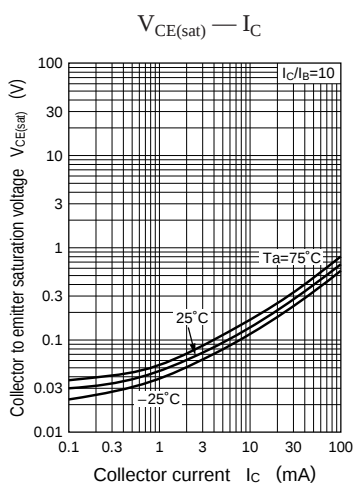
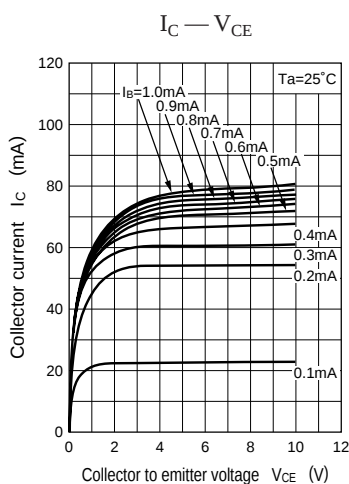


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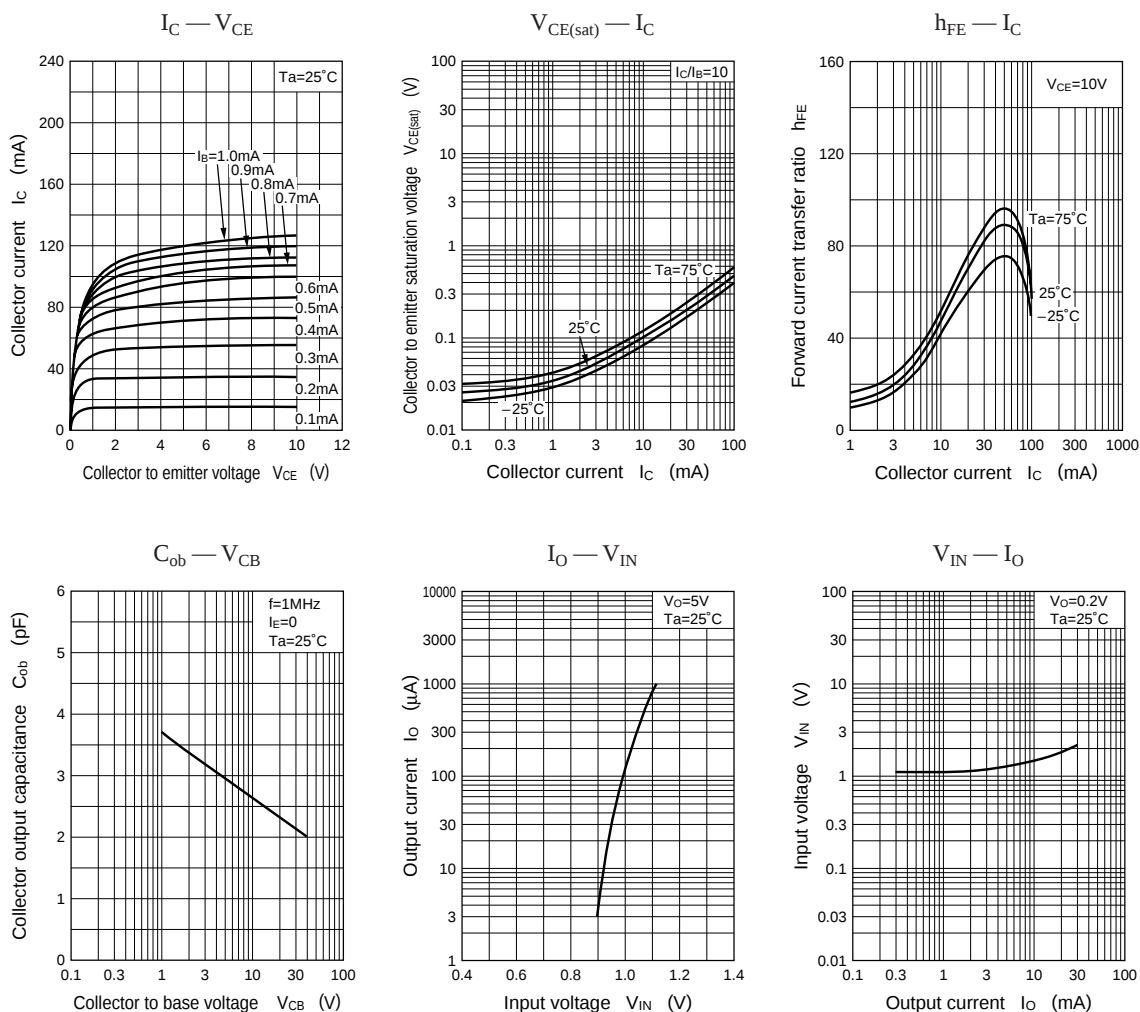




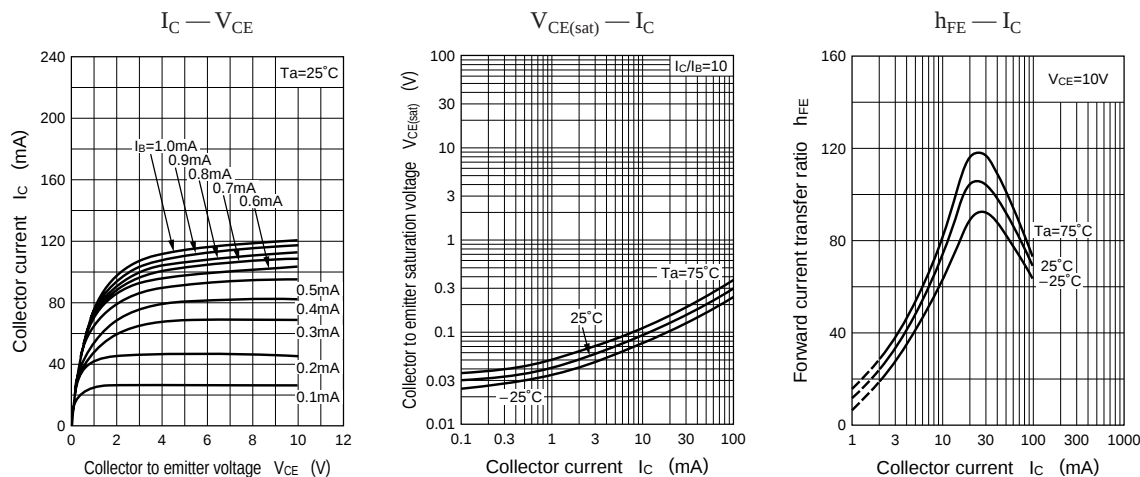
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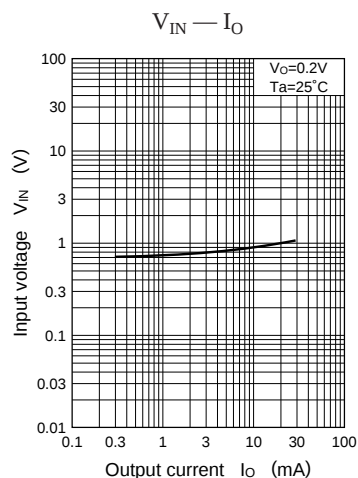
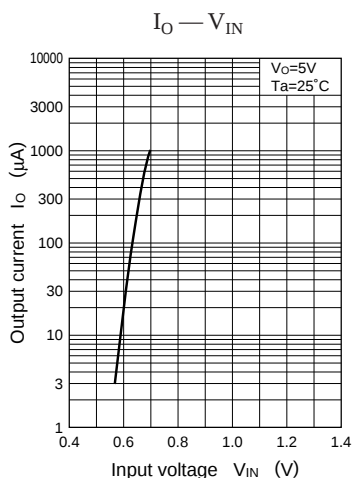
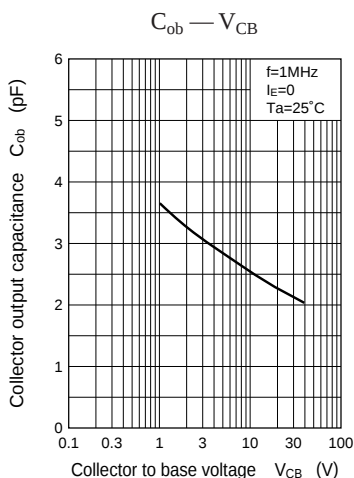


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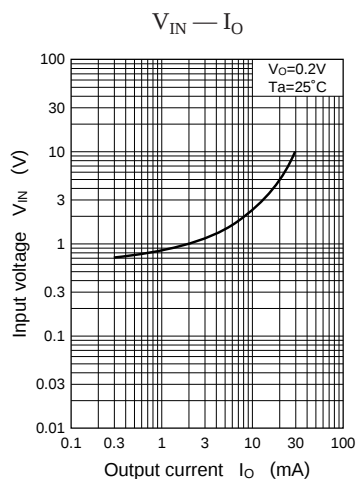
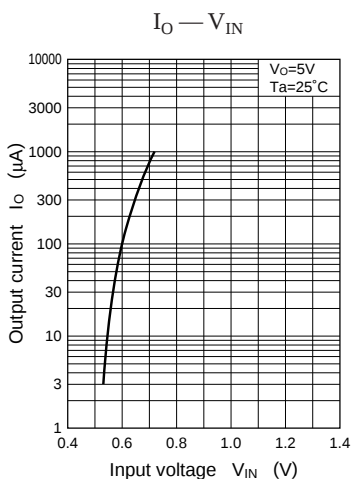
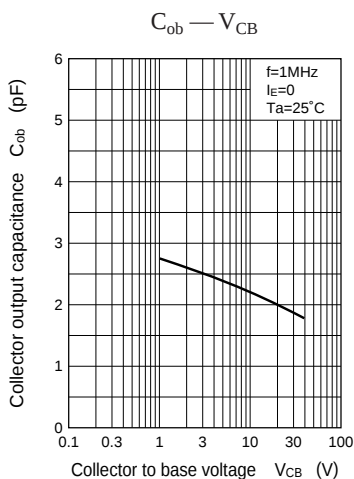
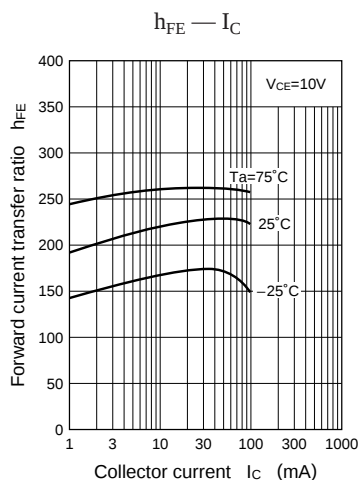
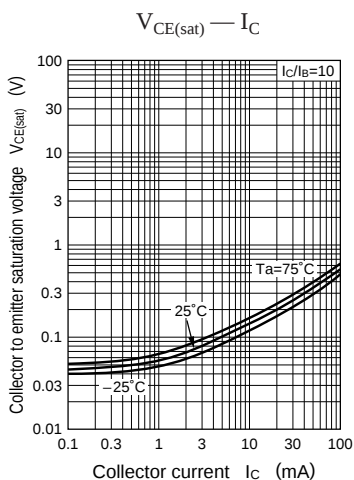
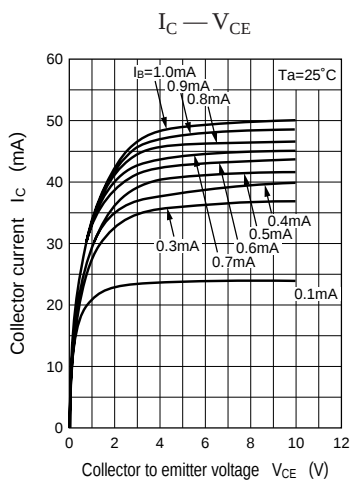


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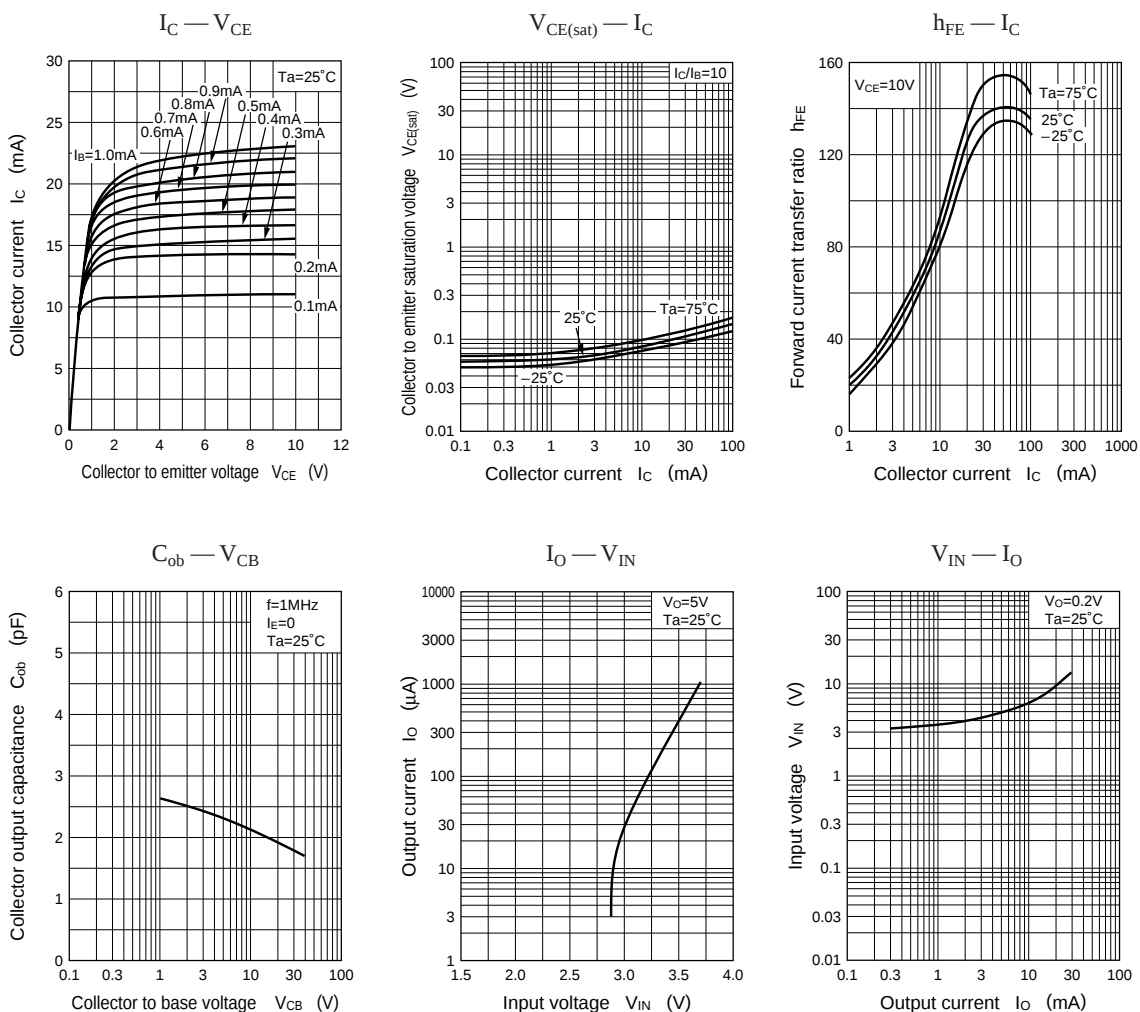




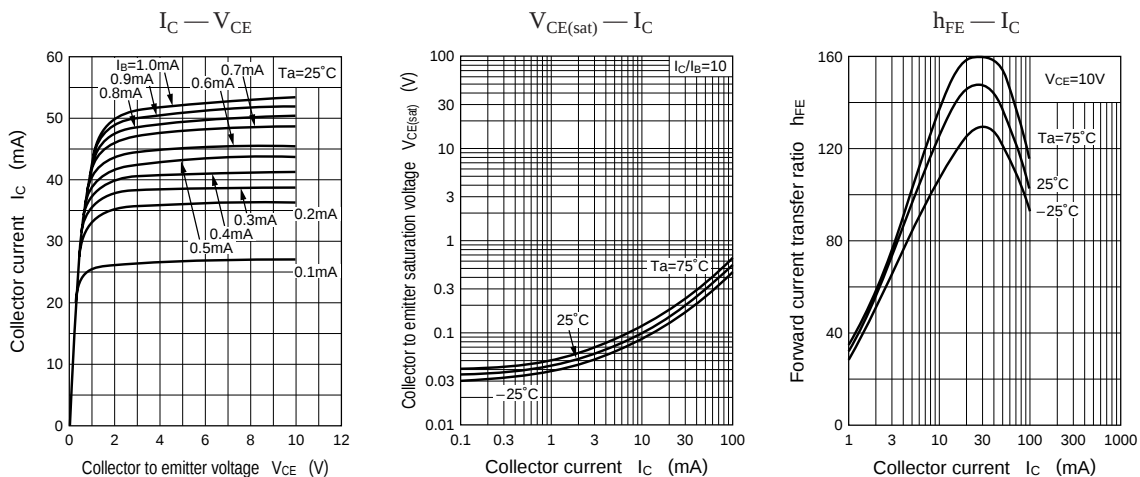
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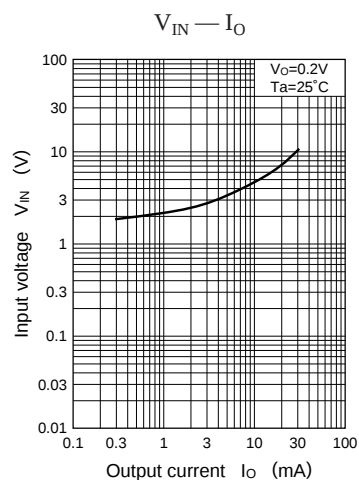
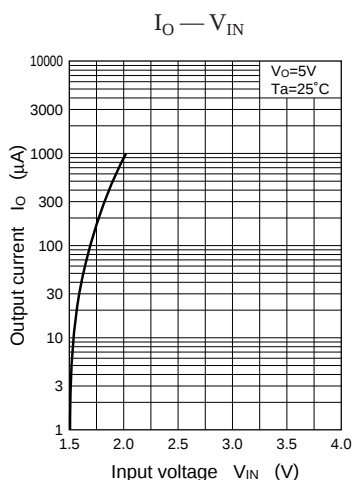
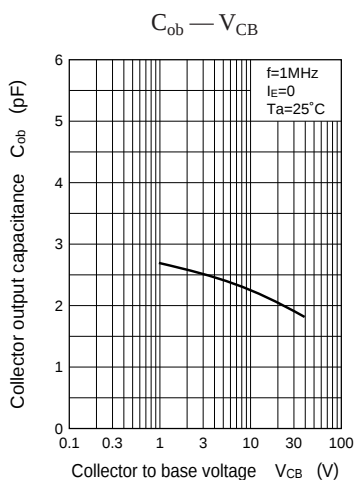


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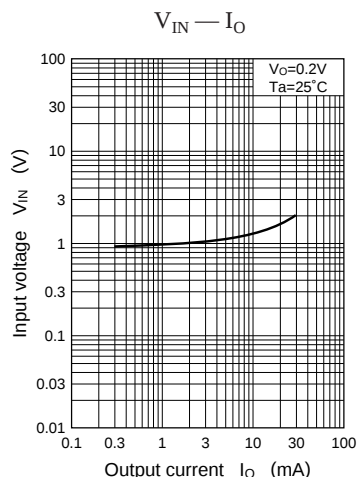
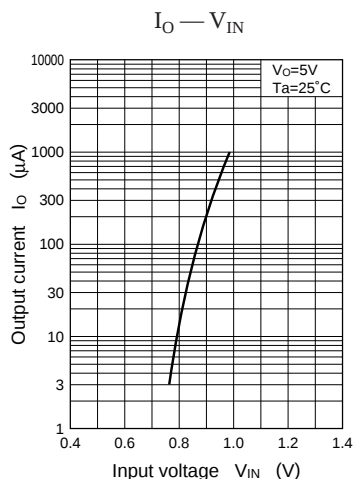
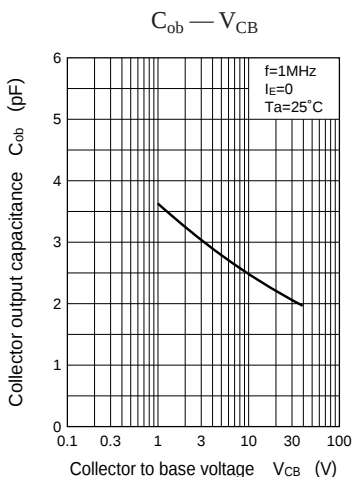
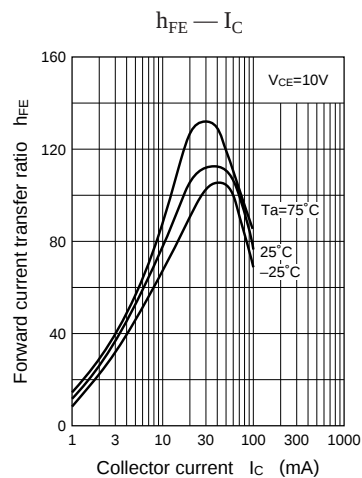
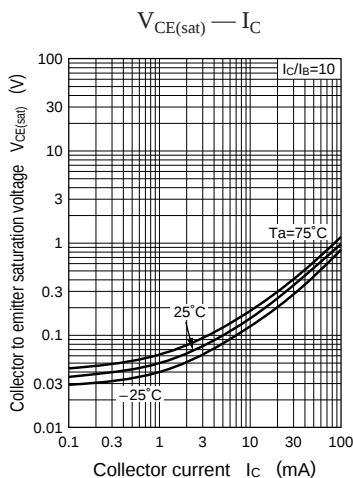
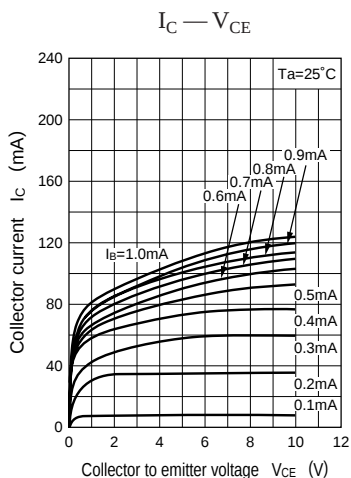


Characteristics charts of UN521E

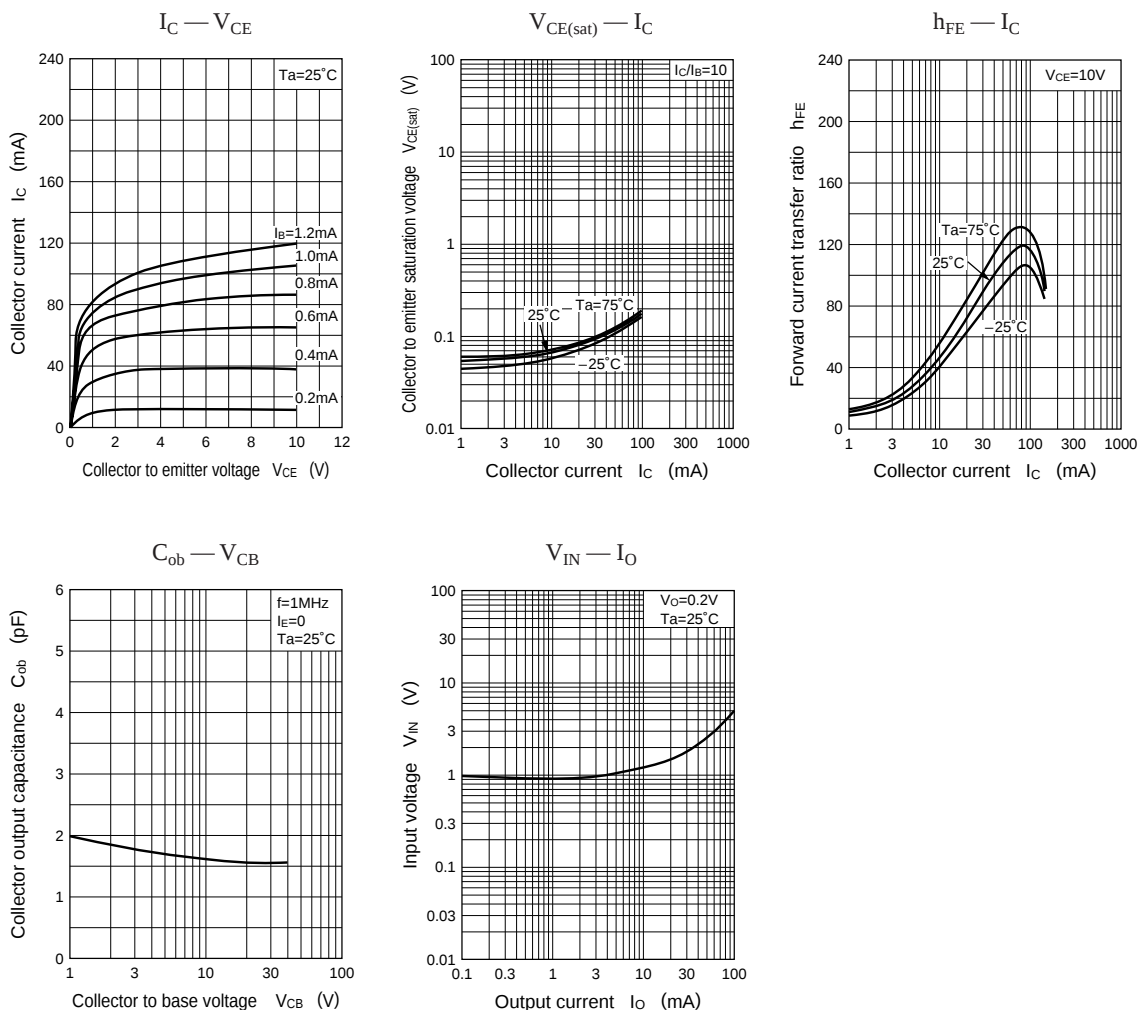




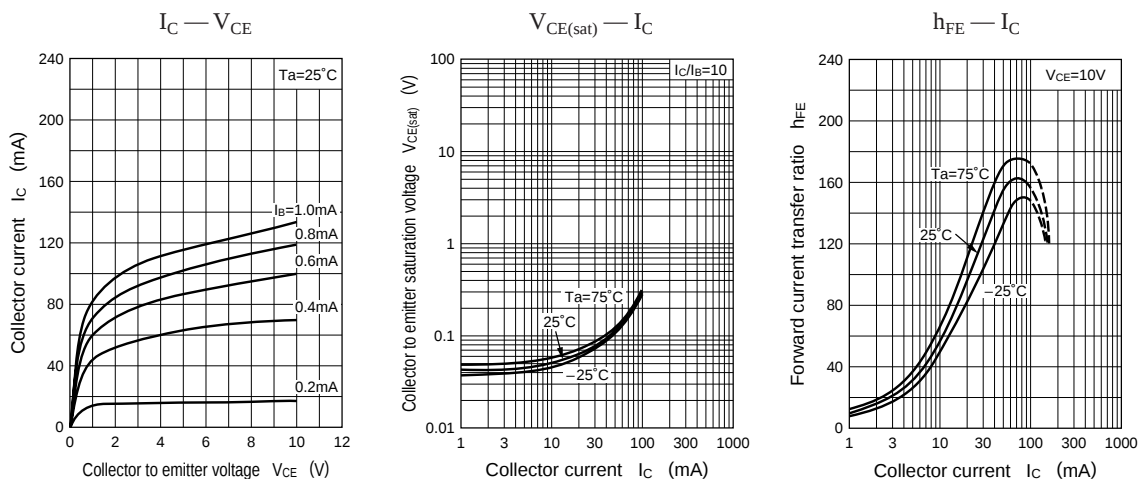
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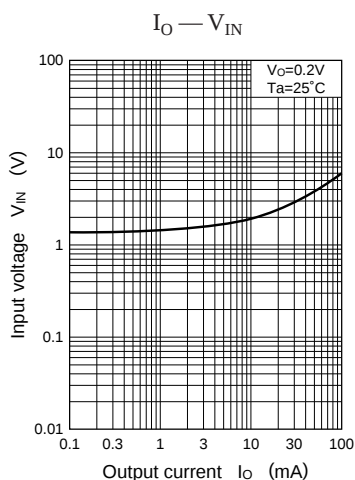
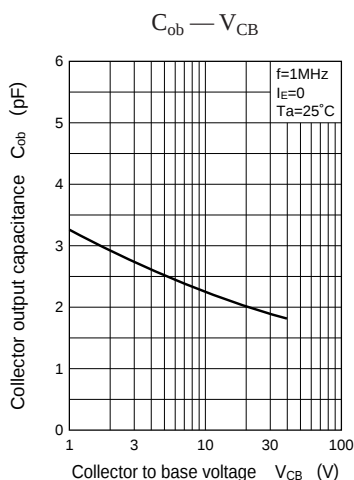


Characteristics charts of UN521K

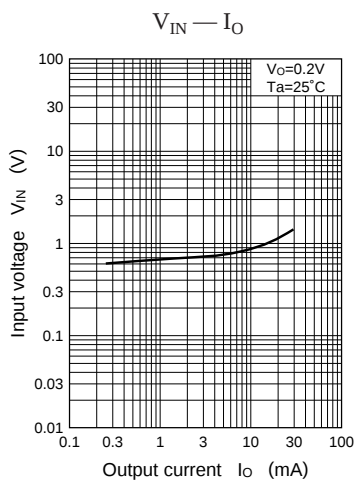
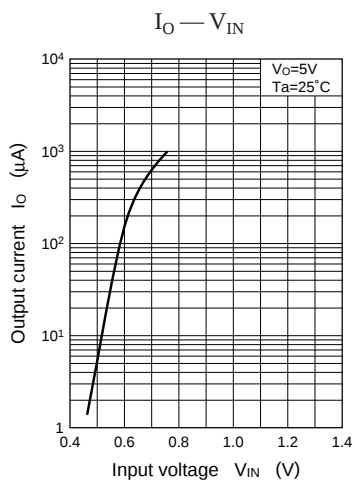
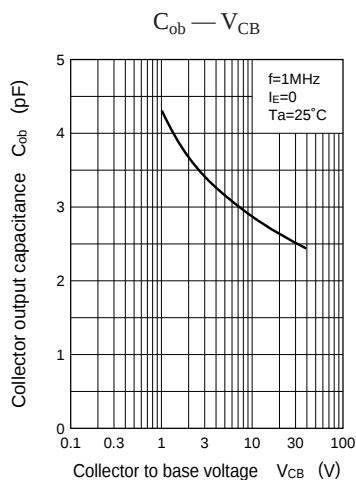
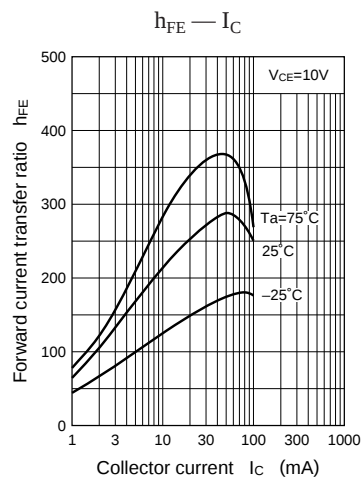
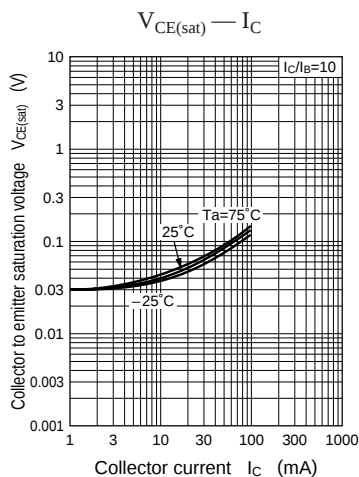
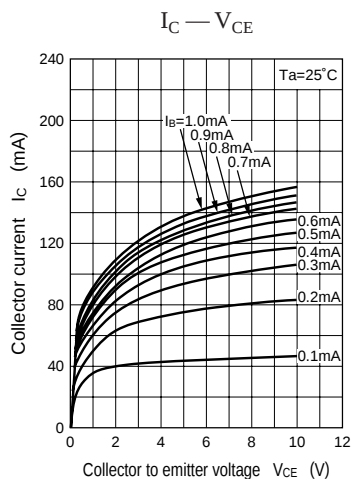


Characteristics charts of UN521L

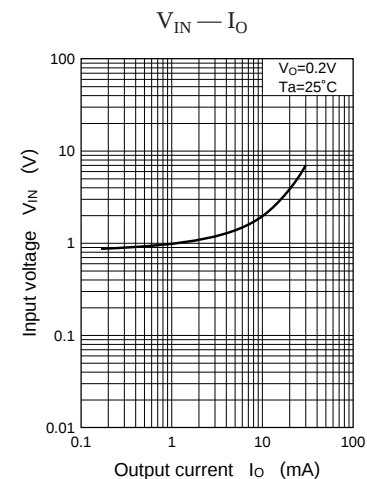
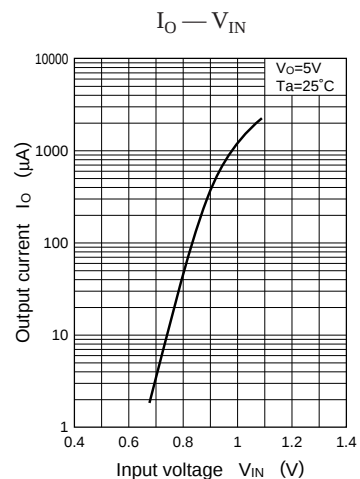
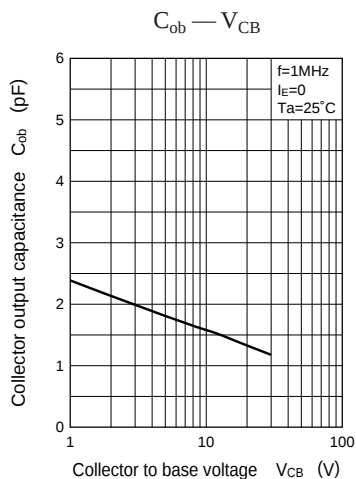
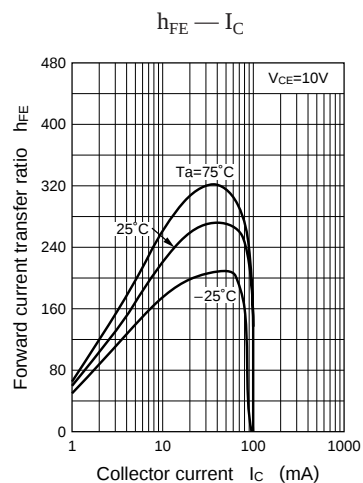
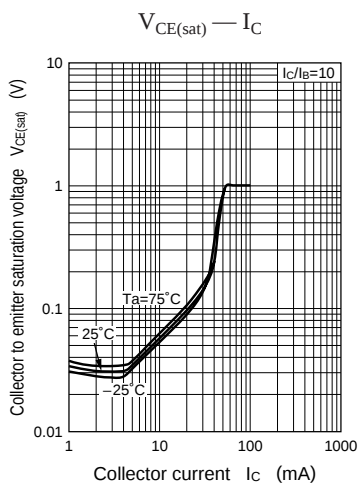
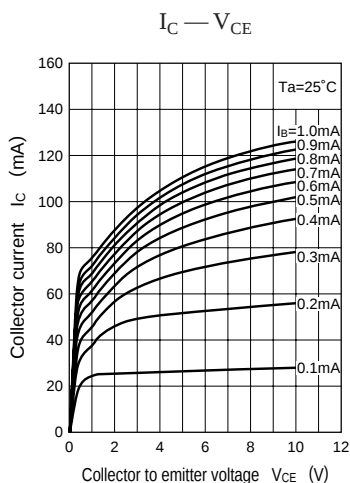




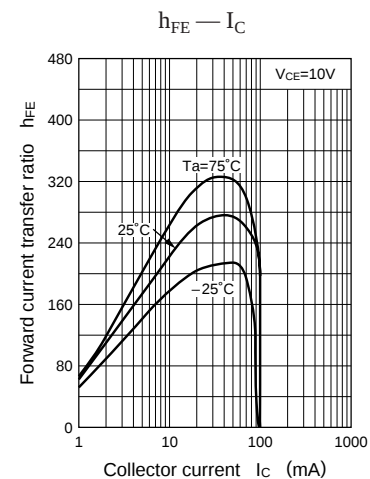
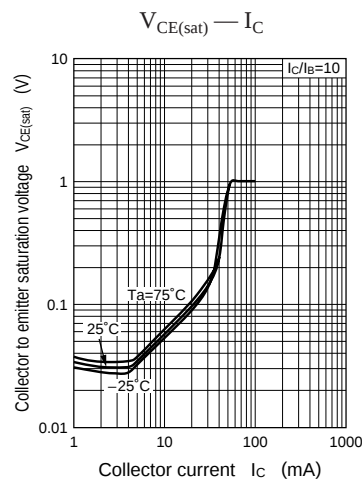
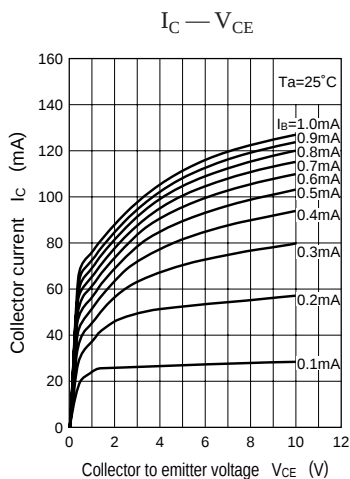
Characteristics charts of UN521M

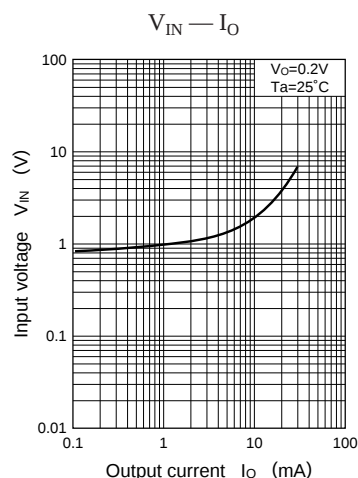
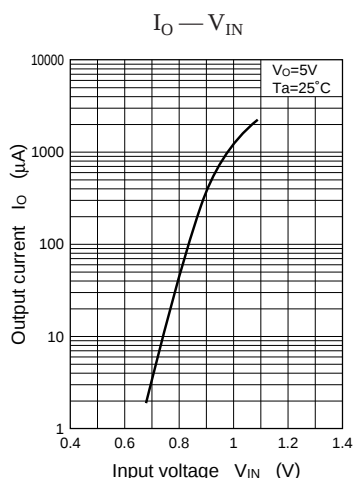
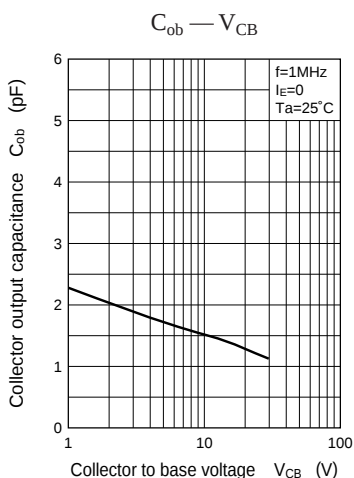


Characteristics charts of UN521N

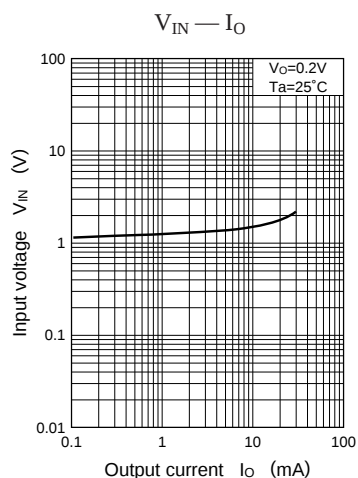
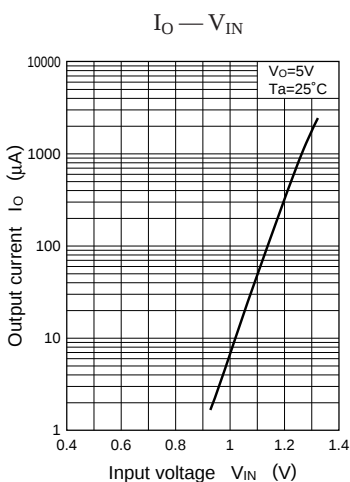
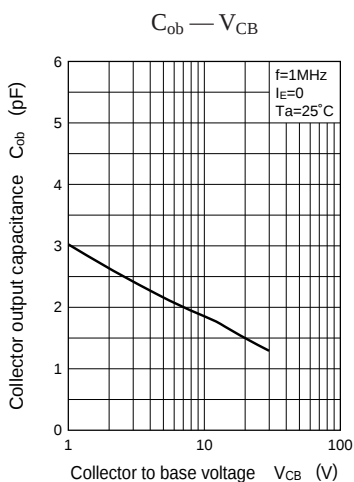
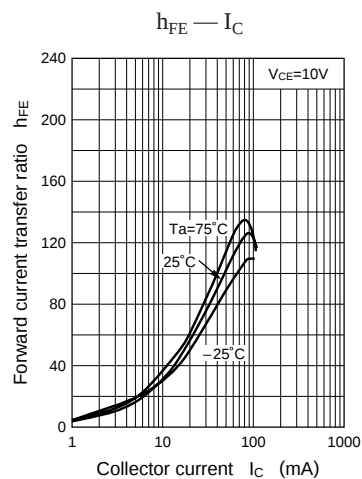
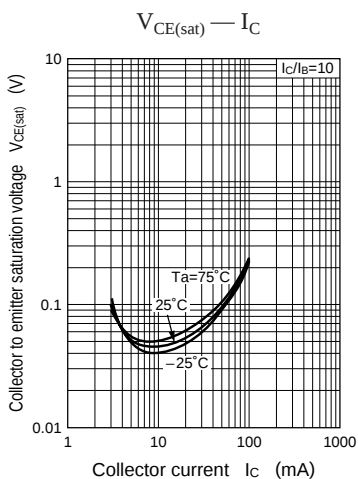
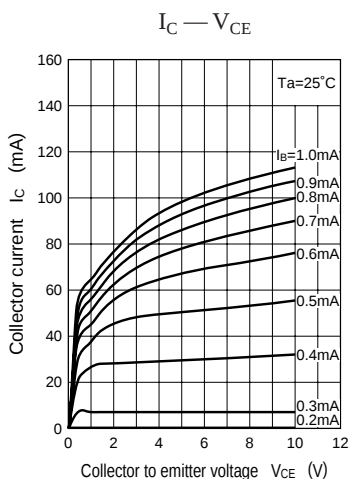


Characteristics charts of UN521T





Characteristics charts of UN521V



Characteristics charts of UN521Z

