UN5111/5112/5113/5114/5115/5116/5117/5118/5119/5110/511D/511E/511F/511H/511L/511M/511N/511T/511V/511Z

Silicon PNP epitaxial planer transistor

For digital circuits

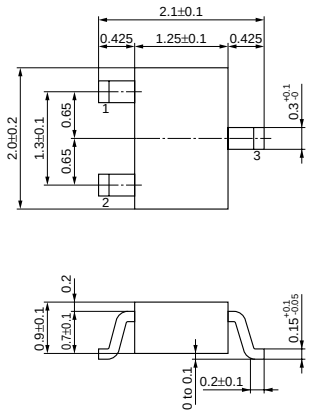
Features

- 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)
UN5111	6A	10kΩ	10kΩ
UN5112	6B	22kΩ	22kΩ
UN5113	6C	47kΩ	47kΩ
UN5114	6D	10kΩ	47kΩ
UN5115	6E	10kΩ	—
UN5116	6F	4.7kΩ	—
UN5117	6H	22kΩ	—
UN5118	6I	0.51Ω	5.1kΩ
UN5119	6K	1kΩ	10kΩ
UN5110	6L	47kΩ	—
UN511D	6M	47kΩ	10kΩ
UN511E	6N	47kΩ	22kΩ
UN511F	6O	4.7kΩ	10kΩ
UN511H	6P	2.2kΩ	10kΩ
UN511L	6Q	4.7kΩ	4.7kΩ
UN511M	EI	2.2kΩ	47kΩ
UN511N	EW	4.7kΩ	47kΩ
UN511T	EY	22kΩ	47kΩ
UN511V	FC	2.2kΩ	2.2kΩ
UN511Z	FE	4.7kΩ	22kΩ

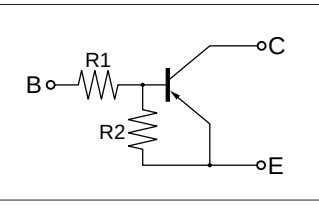
Unit: mm



1 : Base
2 : Emitter
3 : Collector

EIAJ : SC–70
S–Mini Type Package

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

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	UN5111	I_{EBO}	V_{EB} = –6V, I_C = 0			– 0.5	mA
	UN5112/5114/511E/511D/511M/511N/511T					– 0.2	
	UN5113					– 0.1	
	UN5115/5116/5117/5110					– 0.01	
	UN511F/511H					–1.0	
	UN5119					–1.5	
	UN5118/511L/511V					–2.0	
	UN511Z					– 0.4	
Collector to base voltage		V_{CBO}	I_C = –10μA, I_E = 0	–50			V
	UN511N/511T/511V/511Z			–50			
Collector to emitter voltage		V_{CEO}	I_C = –2mA, I_B = 0	–50			V
	UN511N/511T			–50			
Forward current transfer ratio	UN5111	h_{FE}	V_{CE} = –10V, I_C = –5mA	35			
	UN5112/511E			60			
	UN5113/5114/511M			80			
	UN5115*/5116*/5117*/5110*			160		460	
	UN511F/511D/5119/511H			30			
	UN5118/511L			20			
	UN511N/511T			80		400	
	UN511V			6		20	
	UN511Z			60		200	
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = –10mA, I_B = – 0.3mA			– 0.25	V
	UN511V		I_C = –10mA, I_B = –1.5mA			– 0.25	
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
	UN5113		V_{CC} = –5V, V_B = –3.5V, R_L = 1kΩ			– 0.2	
	UN511D		V_{CC} = –5V, V_B = –10V, R_L = 1kΩ			– 0.2	
	UN511E		V_{CC} = –5V, V_B = –6V, R_L = 1kΩ			– 0.2	
Transition frequency		f_T	V_{CB} = –10V, I_E = 1mA, f = 200MHz		80		MHz
	UN511Z		V_{CB} = –10V, I_E = 1mA, f = 200MHz		150		
Input resistance	UN5111/5114/5115	R_1		(–30%)	10	(+30%)	kΩ
	UN5112/5117/511T				22		
	UN5113/5110/511D/511E				47		
	UN5116/511F/511L/511N/511Z				4.7		
	UN5118				0.51		
	UN5119				1		
	UN511H/511M/511V				2.2		

* h_{FE} rank classification (UN5115/5116/5117/5110)

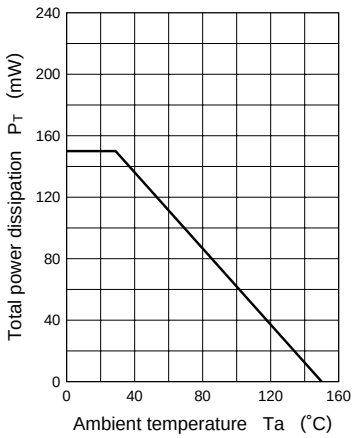
Rank	Q	R	S
h_{FE}	160 to 260	210 to 340	290 to 460

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

Parameter		Symbol	Conditions	min	typ	max	Unit
Resistance ratio	UN5111/5112/5113/511L	R_1/R_2		0.8	1.0	1.2	
	UN5114			0.17	0.21	0.25	
	UN5118/5119			0.08	0.1	0.12	
	UN511D				4.7		
	UN511E				2.14		
	UN511F/511T				0.47		
	UN511H			0.17	0.22	0.27	
	UN511M				0.047		
	UN511N				0.1		
	UN511V				1.0		
	UN511Z				0.21		

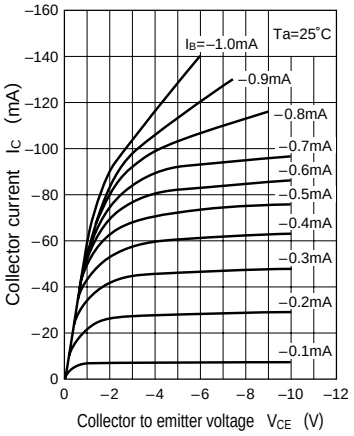
Common characteristics chart

P_T — Ta

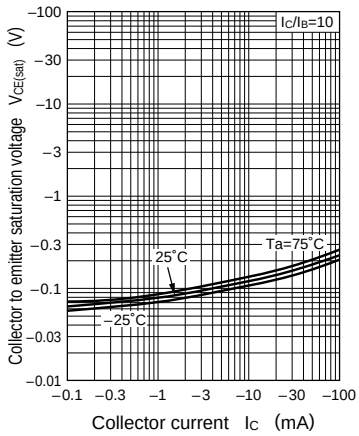


Characteristics charts of UN5111

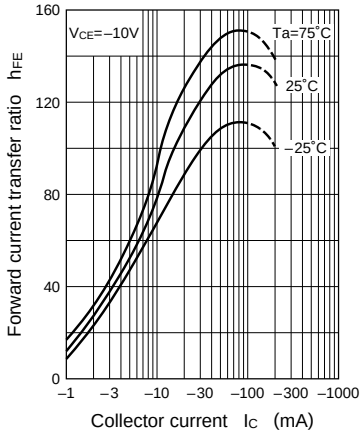
I_C — V_{CE}



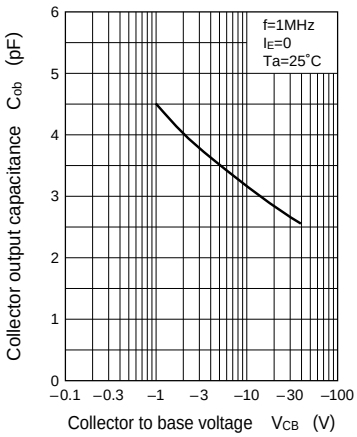
$V_{CE(sat)}$ — I_C



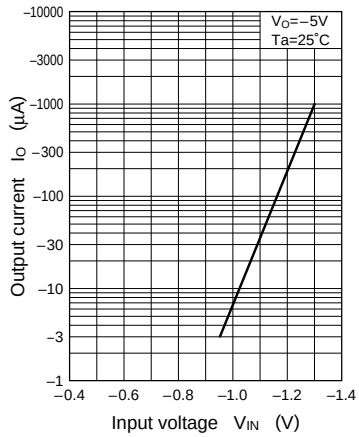
h_{FE} — I_C



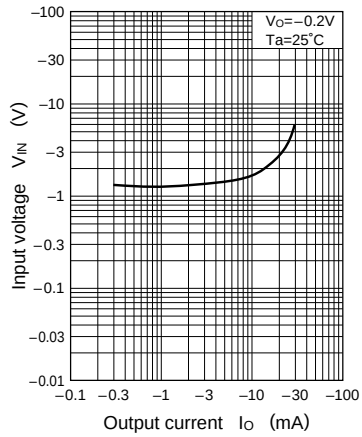
C_{ob} — V_{CB}



I_O — V_{IN}

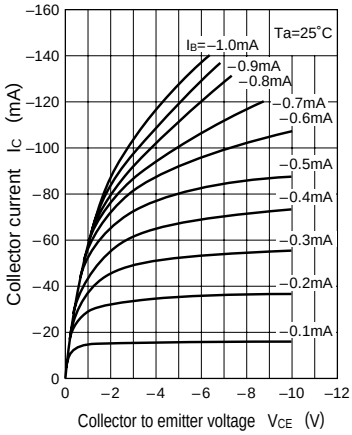


V_{IN} — I_O

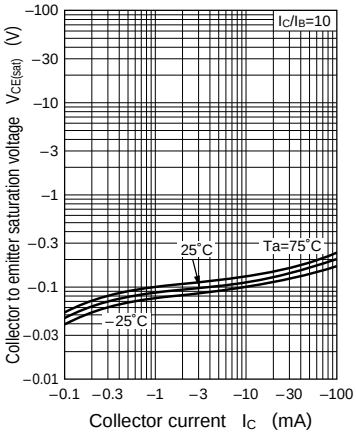


Characteristics charts of UN5112

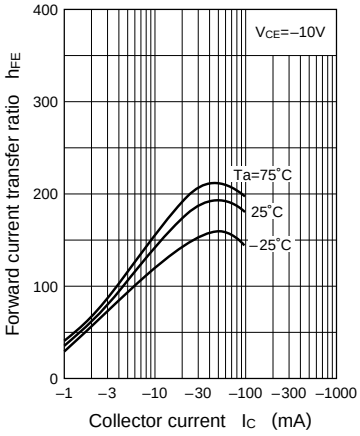
I_C — V_{CE}



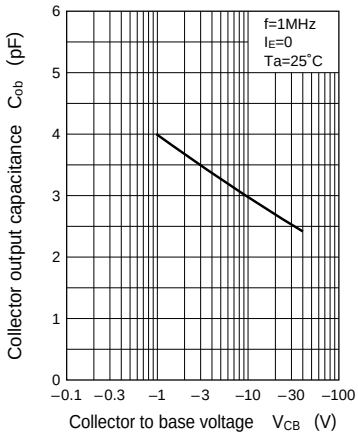
$V_{CE(sat)}$ — I_C



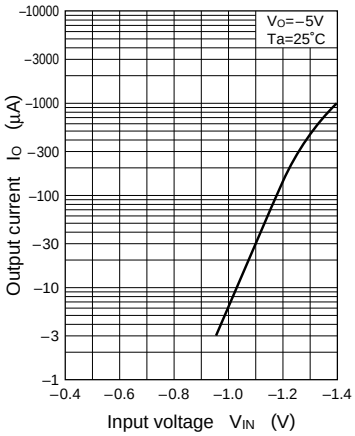
h_{FE} — I_C



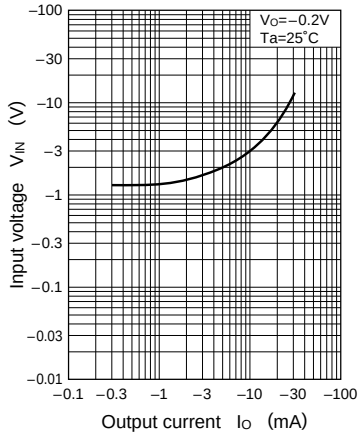
C_{ob} — V_{CB}



I_O — V_{IN}

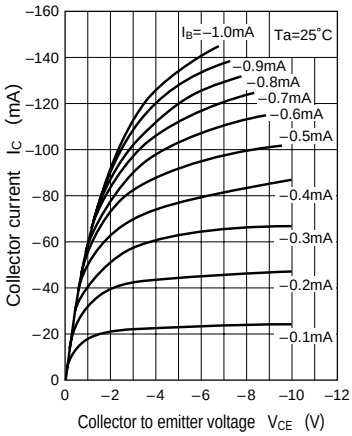


V_{IN} — I_O

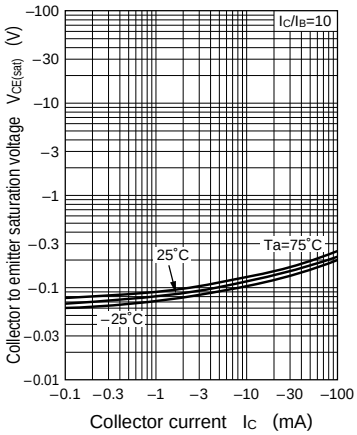


Characteristics charts of UN5113

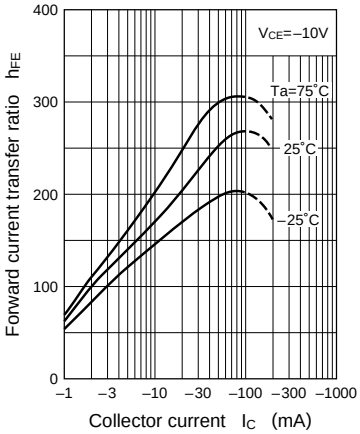
I_C — V_{CE}



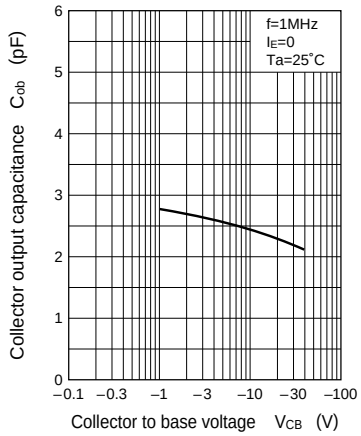
$V_{CE(sat)}$ — I_C



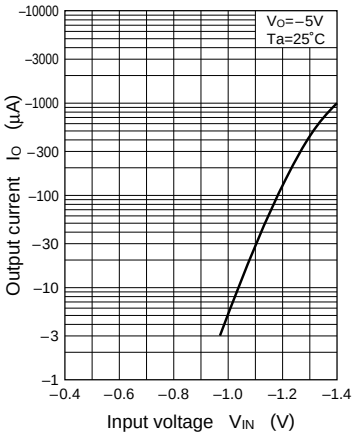
h_{FE} — I_C



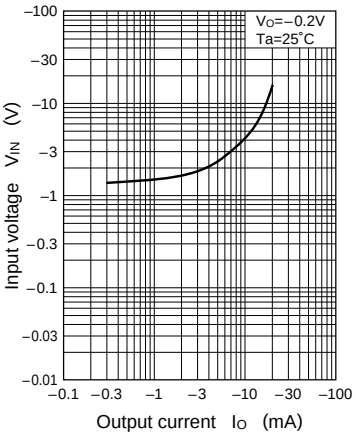
C_{ob} — V_{CB}



I_O — V_{IN}

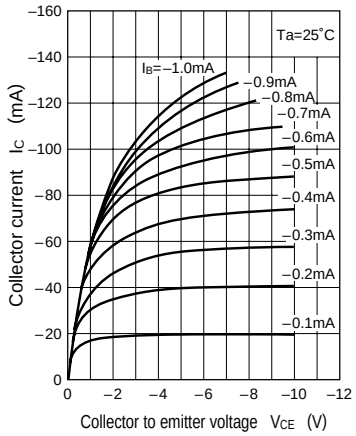


V_{IN} — I_O

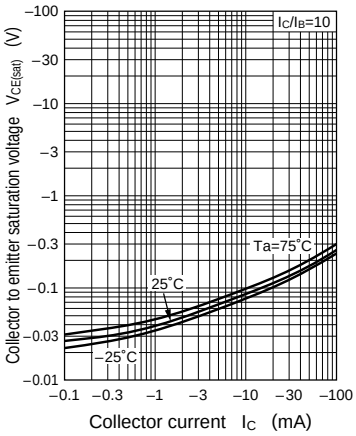


Characteristics charts of UN5114

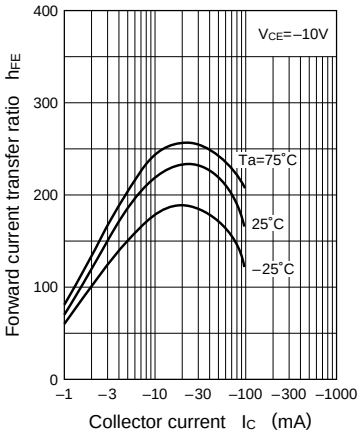
I_C — V_{CE}



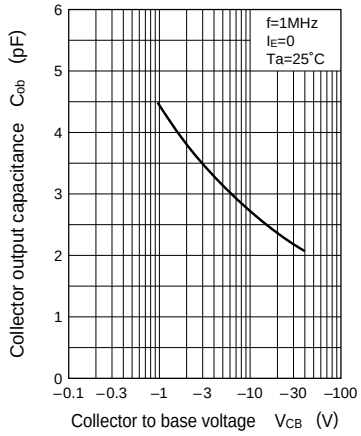
$V_{CE(sat)}$ — I_C



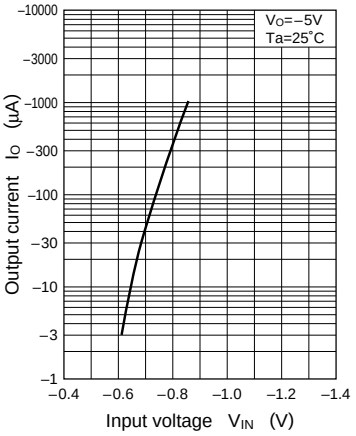
h_{FE} — I_C



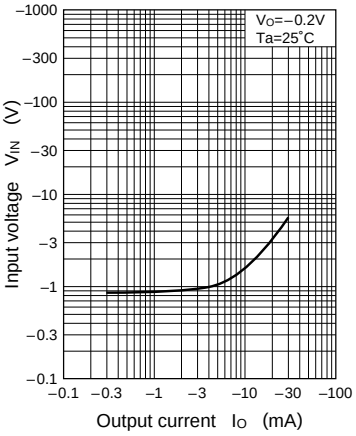
C_{ob} — V_{CB}



I_O — V_{IN}

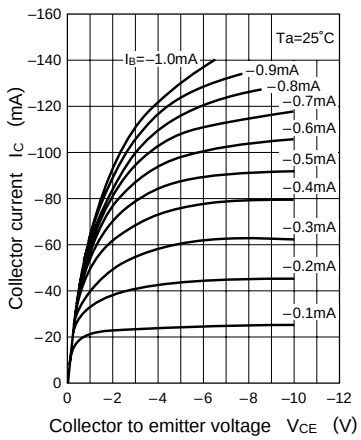


V_{IN} — I_O

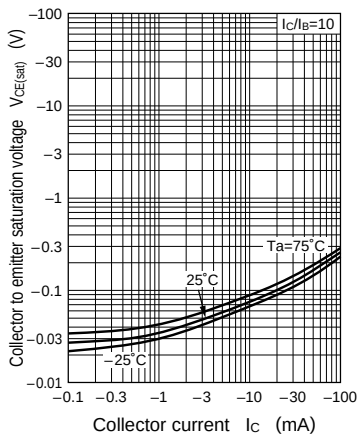


Characteristics charts of UN5115

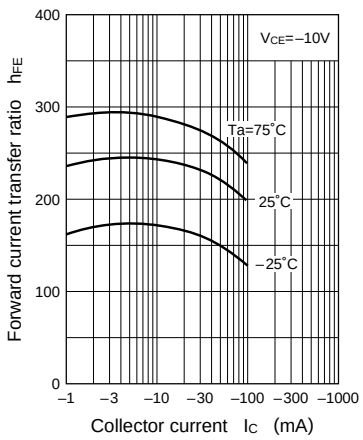
I_C — V_{CE}



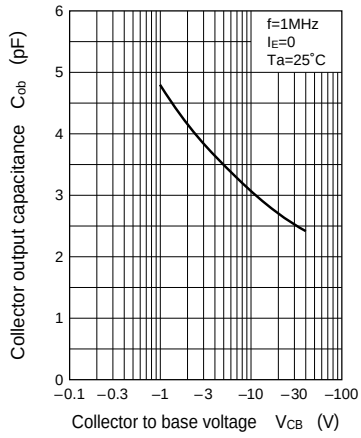
$V_{CE(sat)}$ — I_C



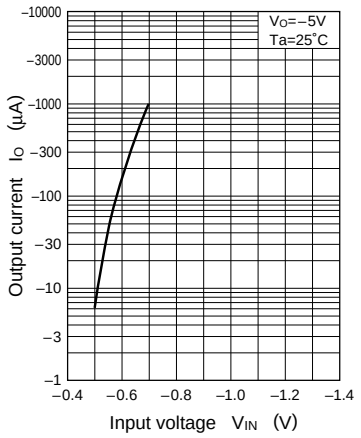
h_{FE} — I_C



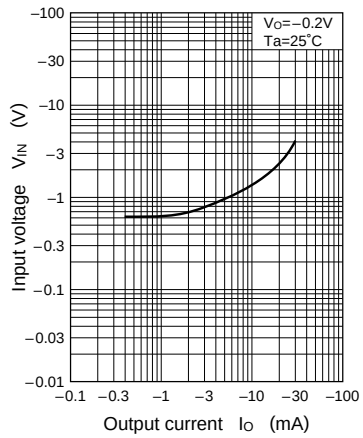
C_{ob} — V_{CB}



I_O — V_{IN}

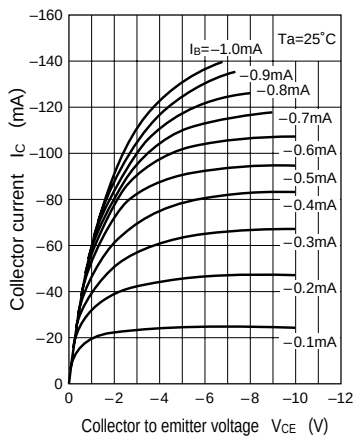


V_{IN} — I_O

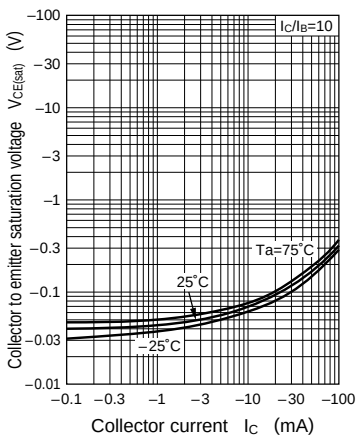


Characteristics charts of UN5116

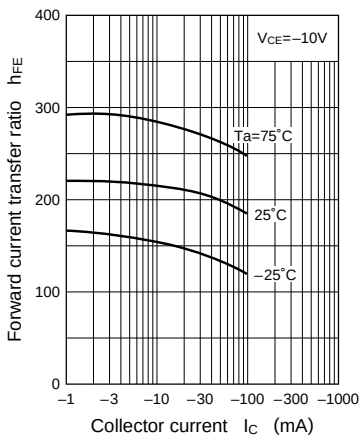
I_C — V_{CE}



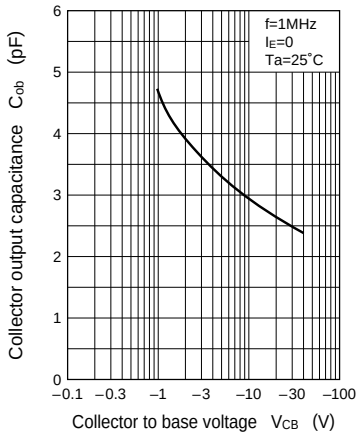
$V_{CE(sat)}$ — I_C



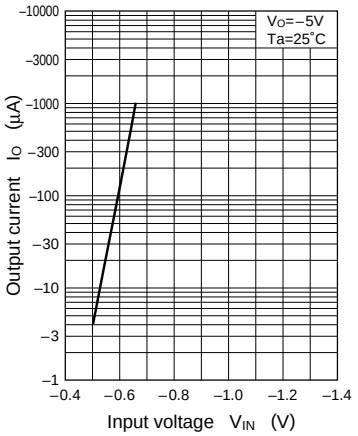
h_{FE} — I_C



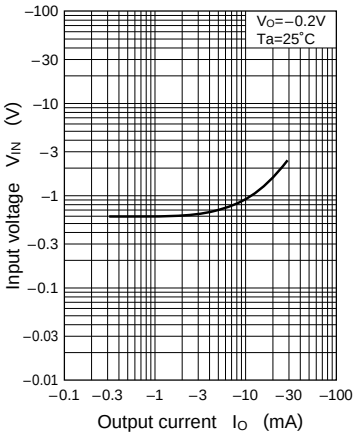
C_{ob} — V_{CB}



I_O — V_{IN}

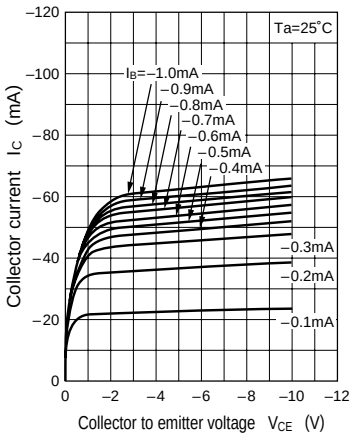


V_{IN} — I_O

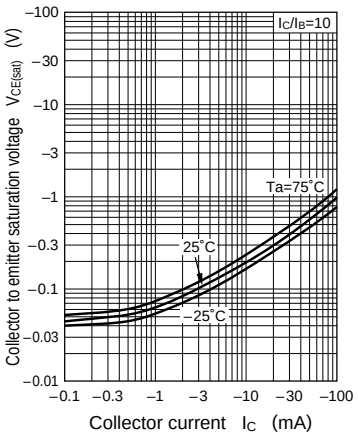


Characteristics charts of UN5117

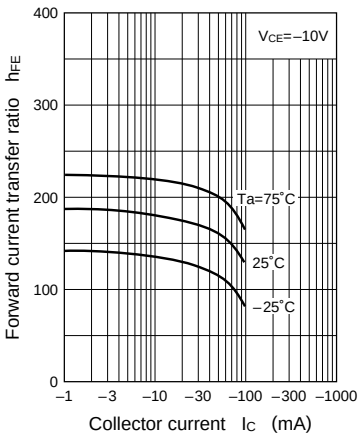
I_C — V_{CE}



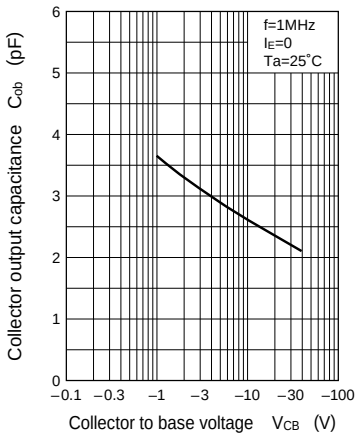
$V_{CE(sat)}$ — I_C



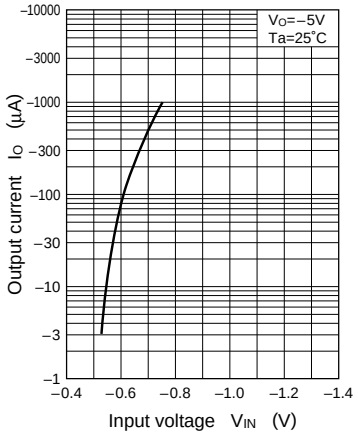
h_{FE} — I_C



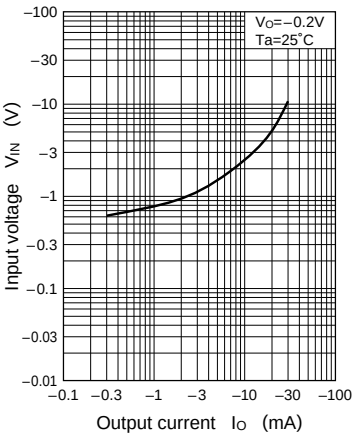
C_{ob} — V_{CB}



I_O — V_{IN}

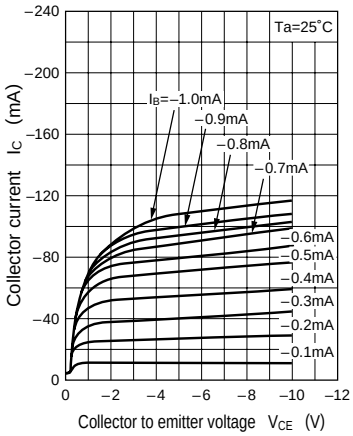


V_{IN} — I_O

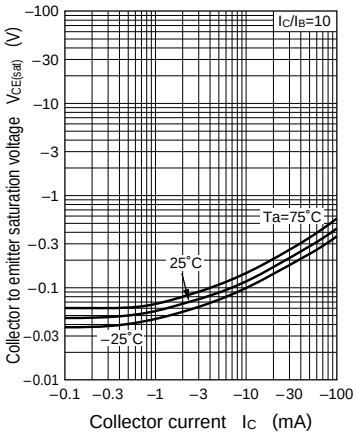


Characteristics charts of UN5118

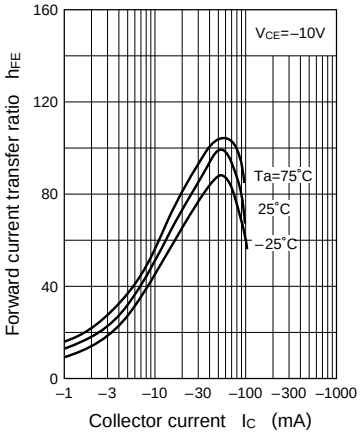
I_C — V_{CE}



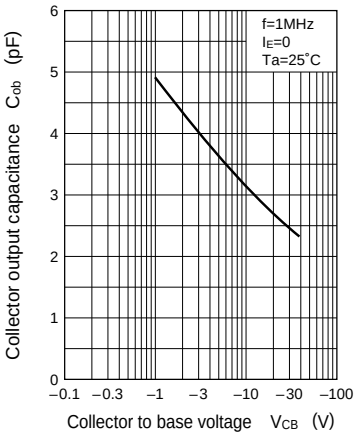
$V_{CE(sat)}$ — I_C



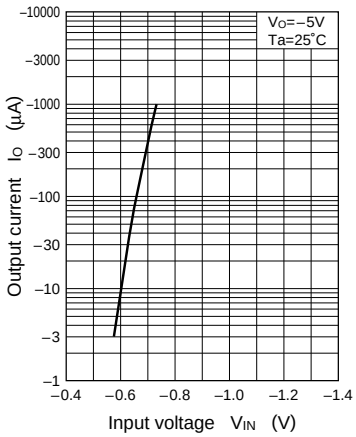
h_{FE} — I_C



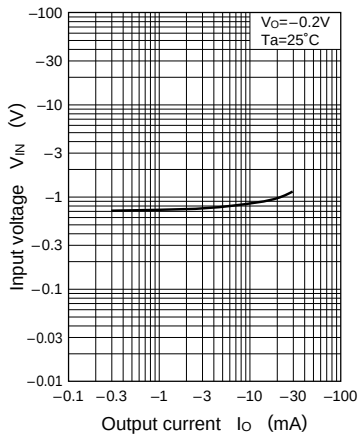
C_{ob} — V_{CB}



I_O — V_{IN}

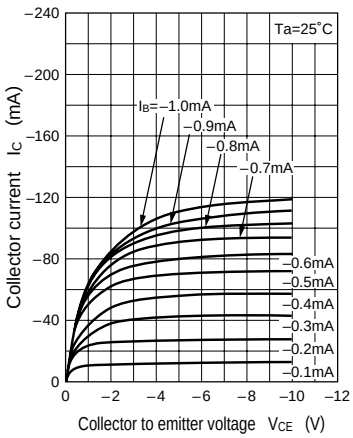


V_{IN} — I_O

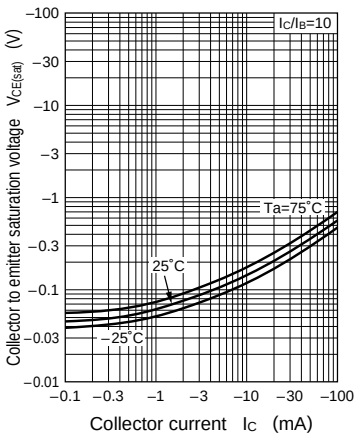


Characteristics charts of UN5119

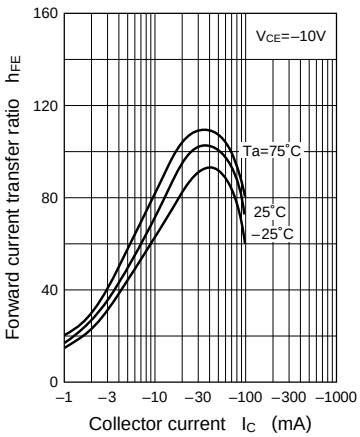
I_C — V_{CE}



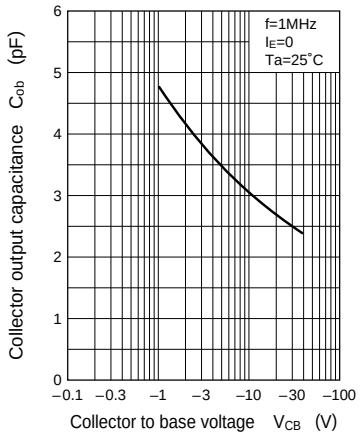
$V_{CE(sat)}$ — I_C



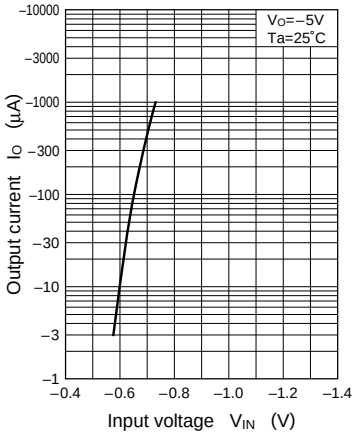
h_{FE} — I_C



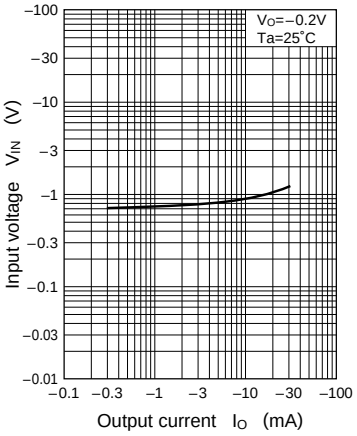
C_{ob} — V_{CB}



I_O — V_{IN}

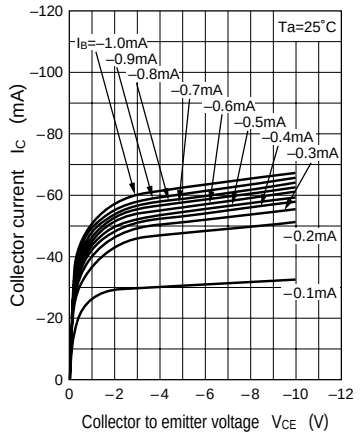


V_{IN} — I_O

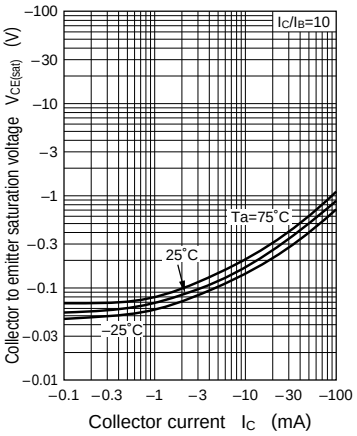


Characteristics charts of UN5110

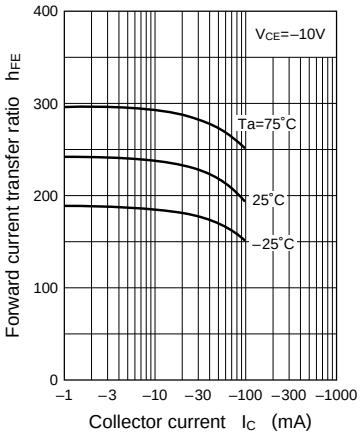
I_C — V_{CE}



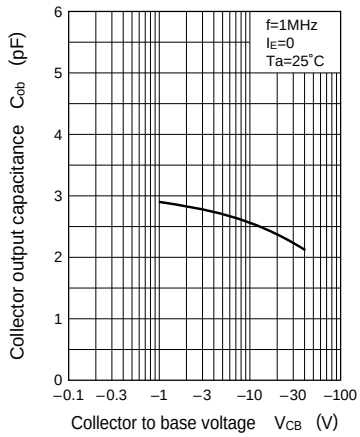
$V_{CE(sat)}$ — I_C



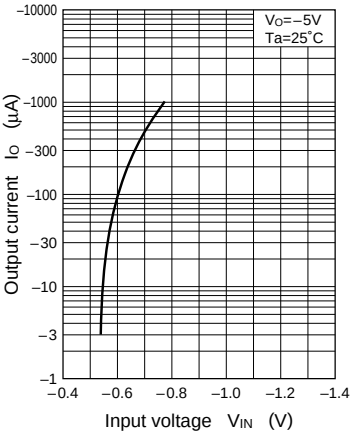
h_{FE} — I_C



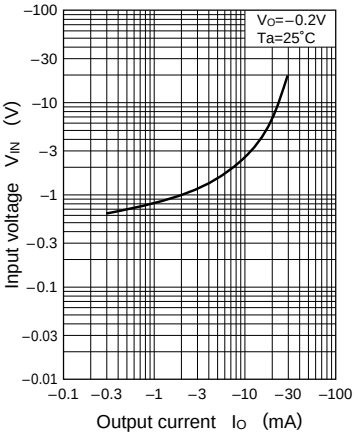
C_{ob} — V_{CB}



I_O — V_{IN}

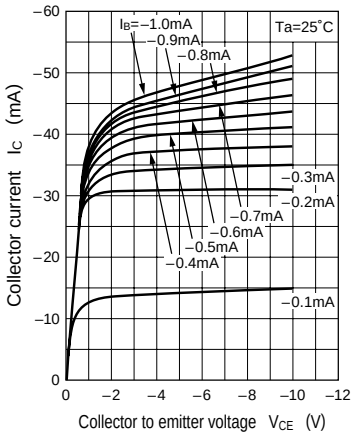


V_{IN} — I_O

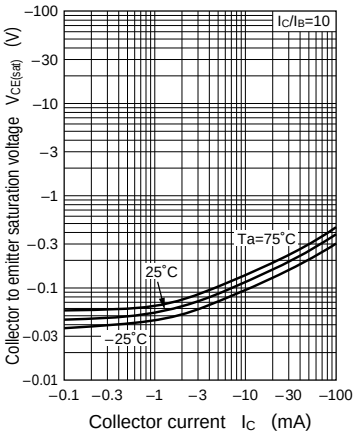


Characteristics charts of UN511D

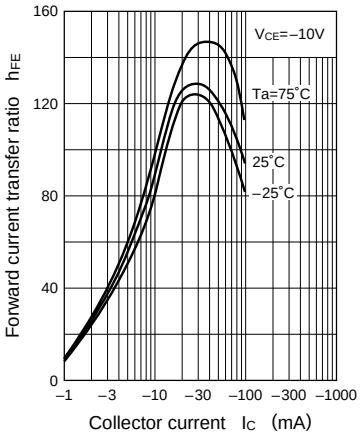
I_C — V_{CE}



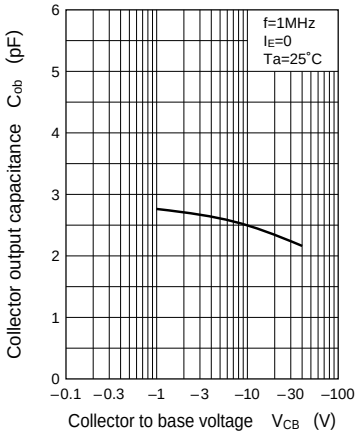
$V_{CE(sat)}$ — I_C



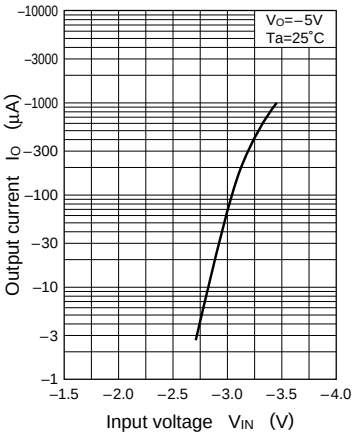
h_{FE} — I_C



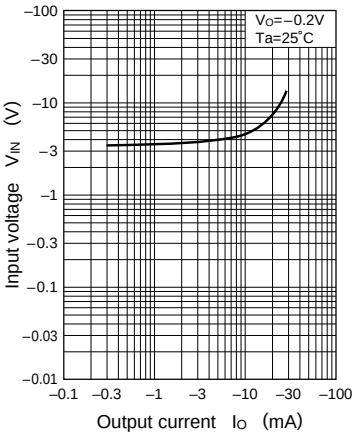
C_{ob} — V_{CB}



I_O — V_{IN}

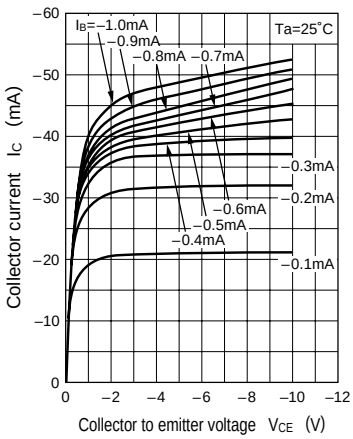


V_{IN} — I_O

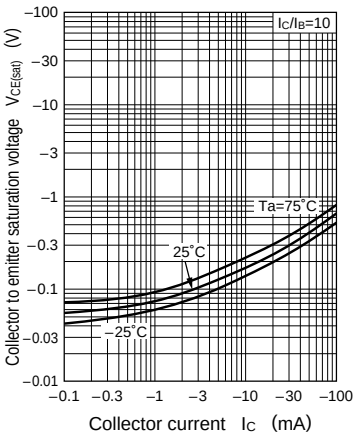


Characteristics charts of UN511E

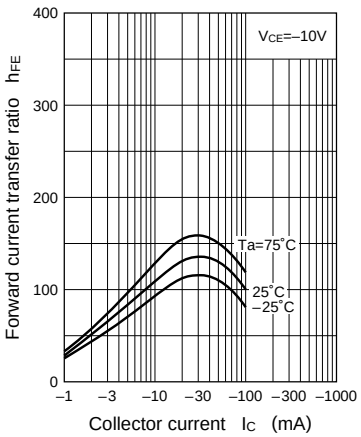
I_C — V_{CE}



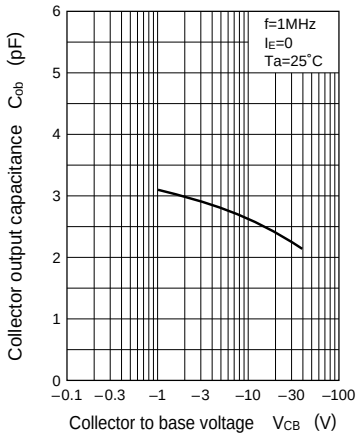
$V_{CE(sat)}$ — I_C



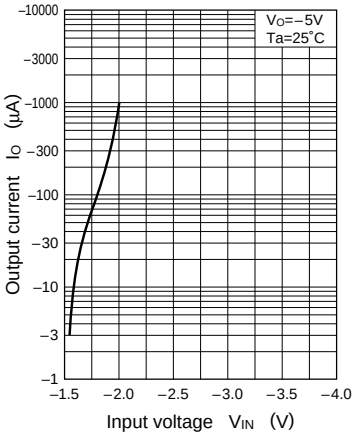
h_{FE} — I_C



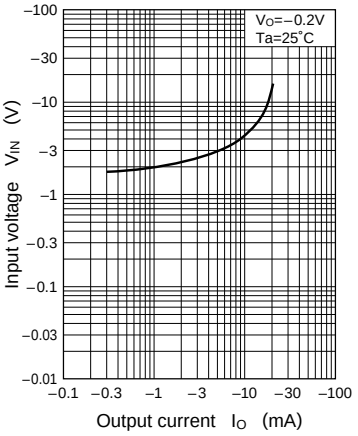
C_{ob} — V_{CB}



I_O — V_{IN}

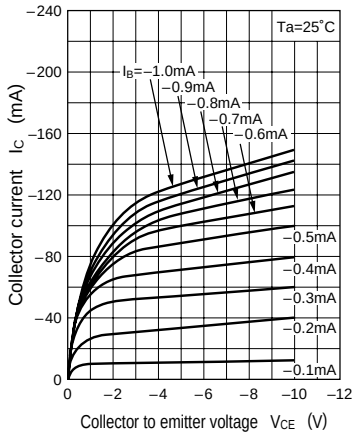


V_{IN} — I_O

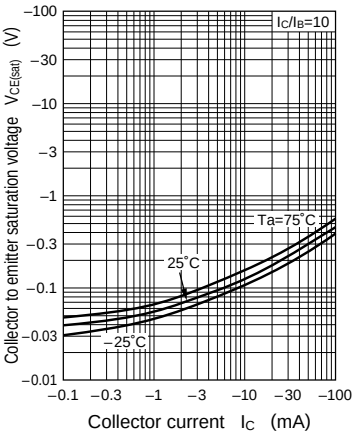


Characteristics charts of UN511F

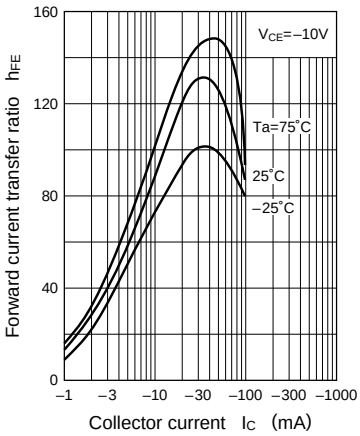
I_C — V_{CE}



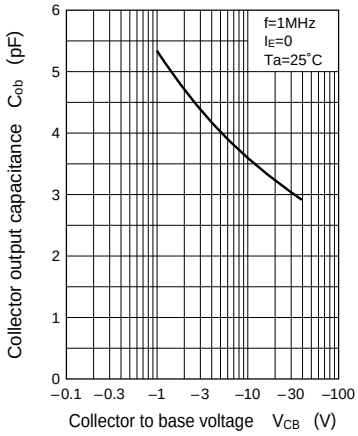
$V_{CE(sat)}$ — I_C



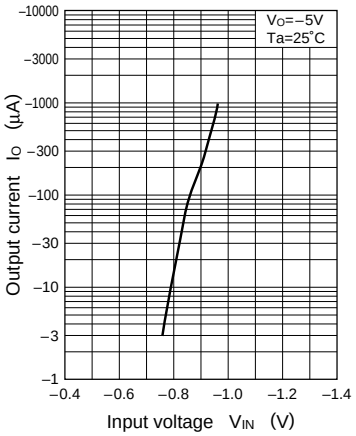
h_{FE} — I_C



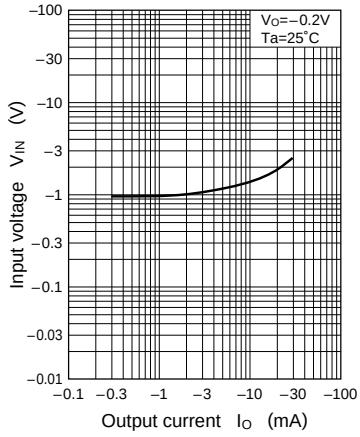
C_{ob} — V_{CB}



I_O — V_{IN}

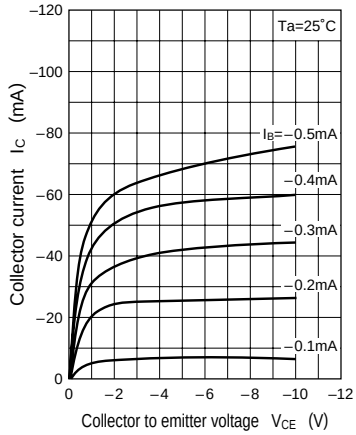


V_{IN} — I_O

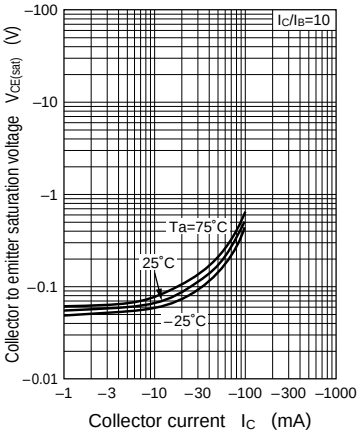


Characteristics charts of UN511H

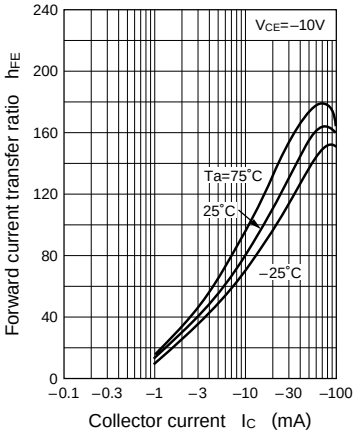
I_C — V_{CE}



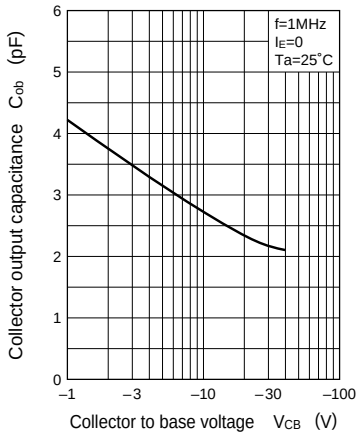
$V_{CE(sat)}$ — I_C



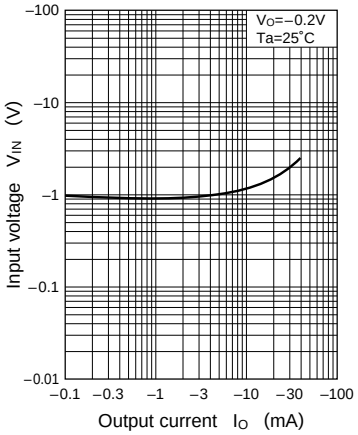
h_{FE} — I_C



C_{ob} — V_{CB}

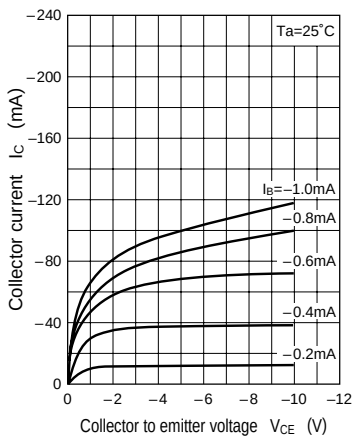


V_{IN} — I_O

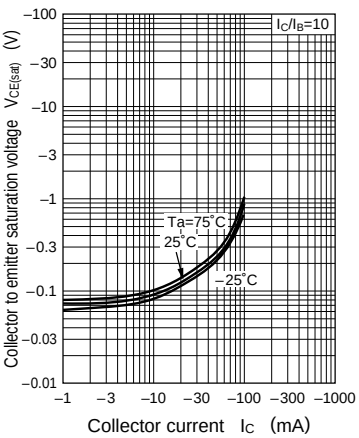


Characteristics charts of UN511L

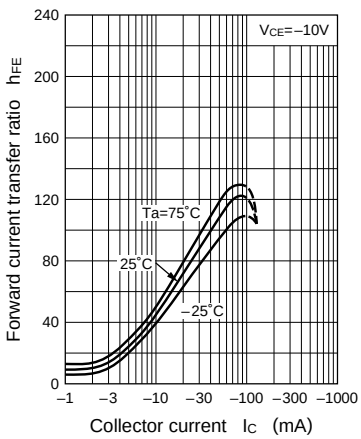
I_C — V_{CE}



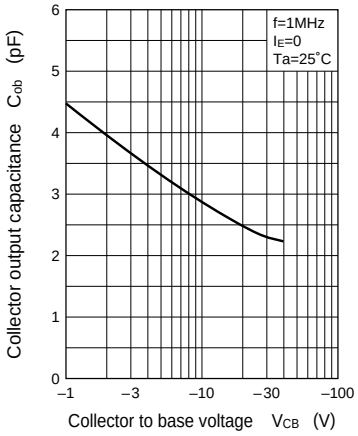
$V_{CE(sat)}$ — I_C



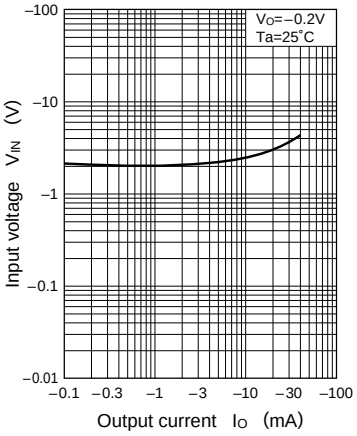
h_{FE} — I_C



C_{ob} — V_{CB}

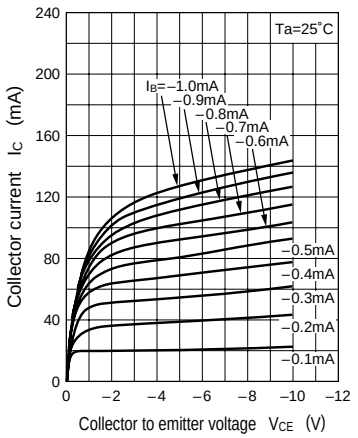


V_{IN} — I_O

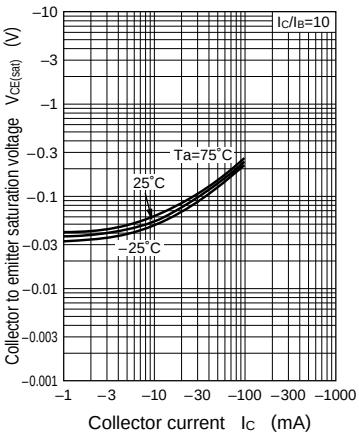


Characteristics charts of UN511M

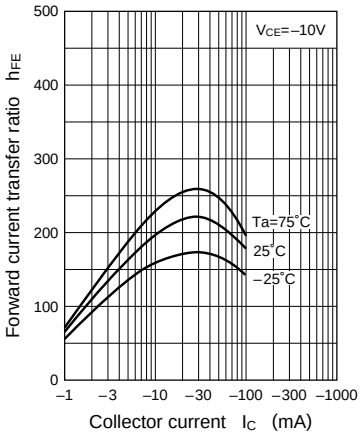
I_C — V_{CE}



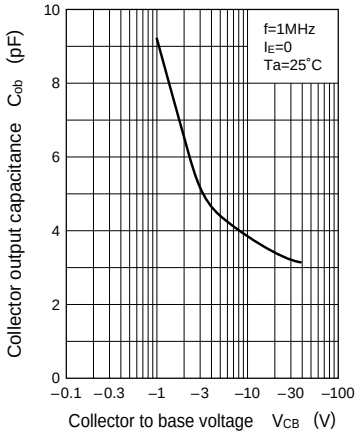
$V_{CE(sat)}$ — I_C



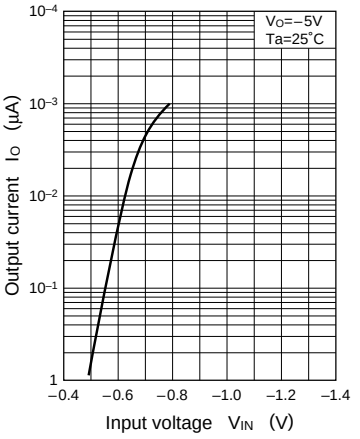
h_{FE} — I_C



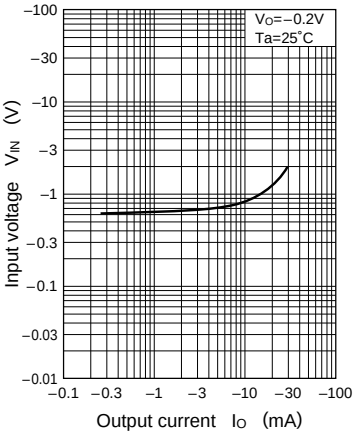
C_{ob} — V_{CB}



I_O — V_{IN}

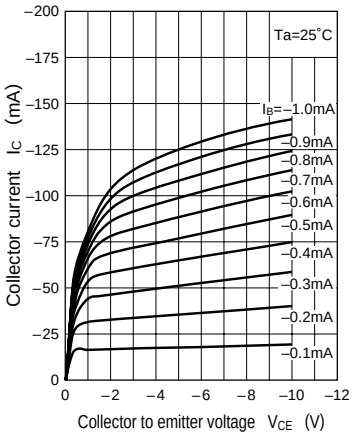


V_{IN} — I_O

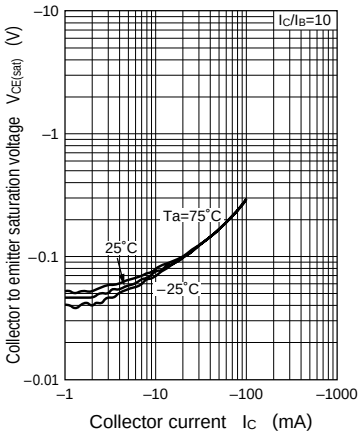


Characteristics charts of UN511N

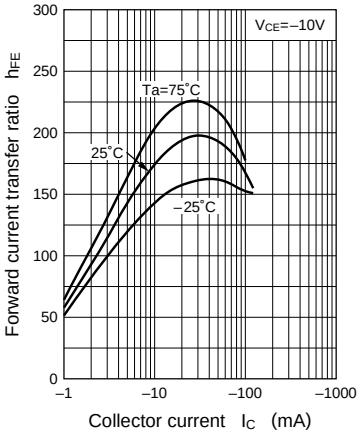
I_C — V_{CE}



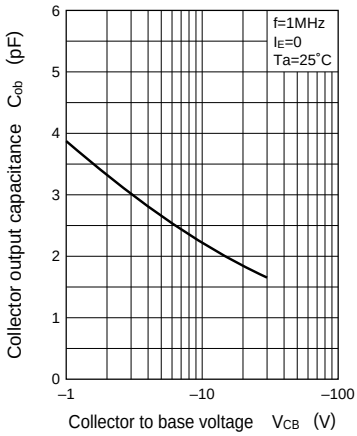
$V_{CE(sat)}$ — I_C



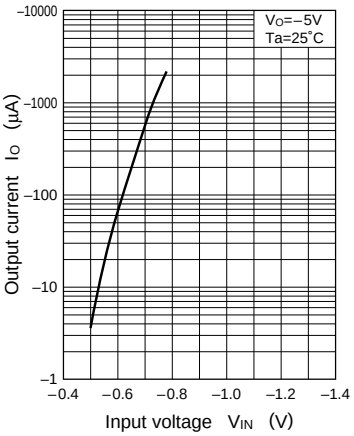
h_{FE} — I_C



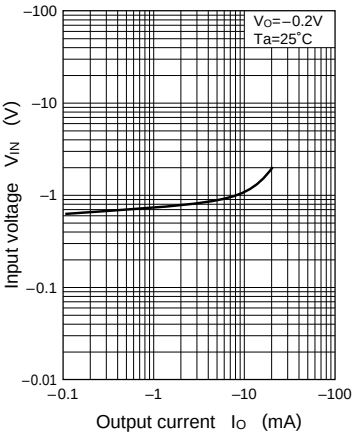
C_{ob} — V_{CB}



I_O — V_{IN}

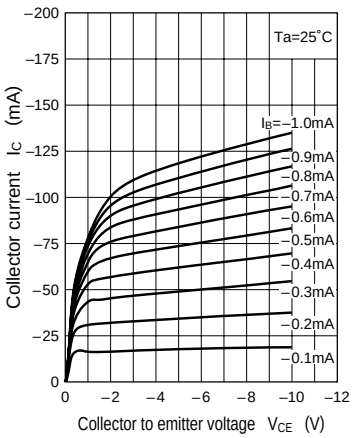


V_{IN} — I_O

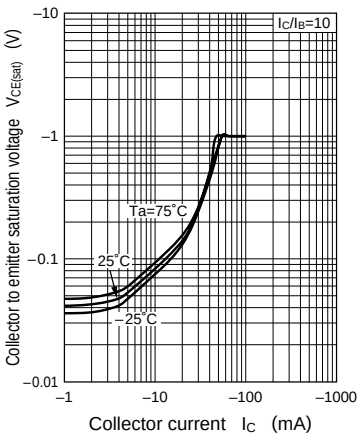


Characteristics charts of UN511T

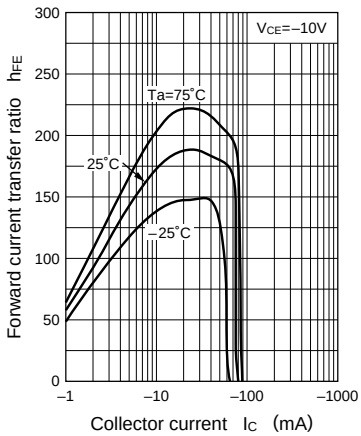
I_C — V_{CE}



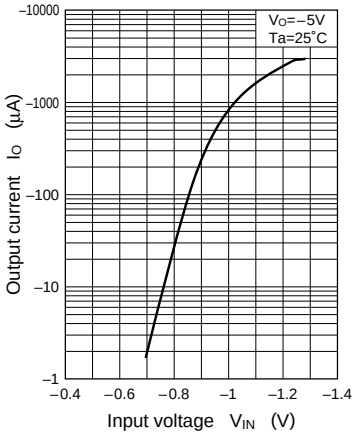
$V_{CE(sat)}$ — I_C



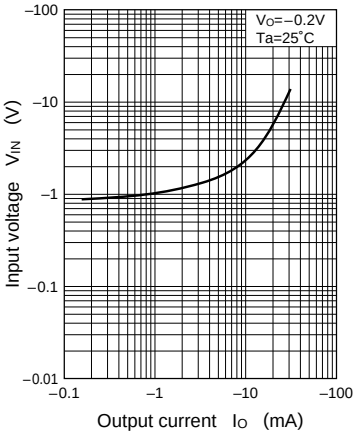
h_{FE} — I_C



I_O — V_{IN}

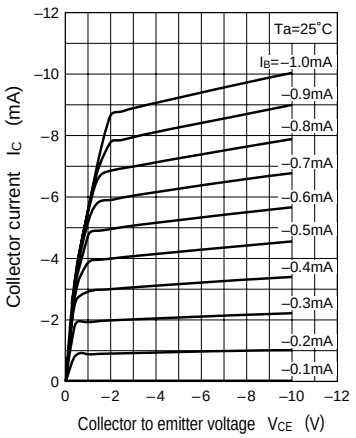


V_{IN} — I_O

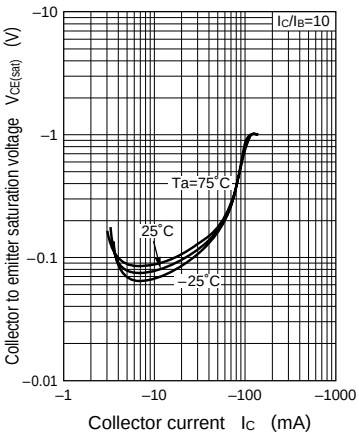


Characteristics charts of UN511V

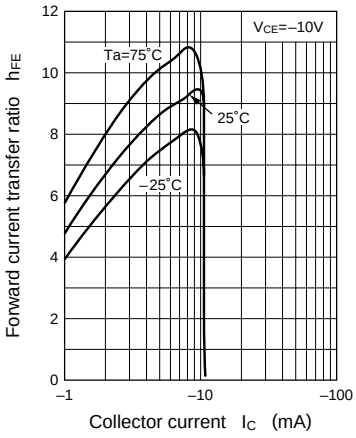
I_C — V_{CE}



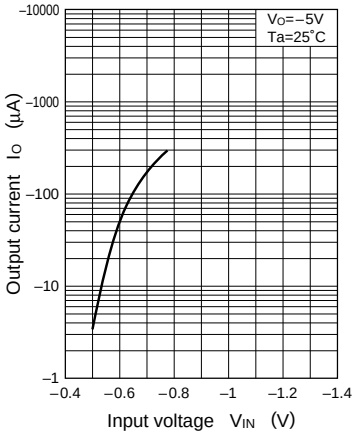
$V_{CE(sat)}$ — I_C



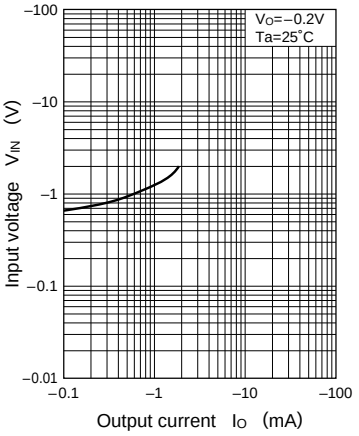
h_{FE} — I_C



I_O — V_{IN}

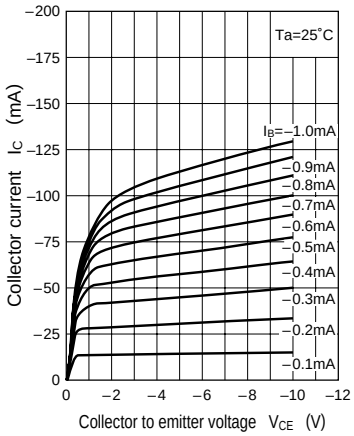


V_{IN} — I_O

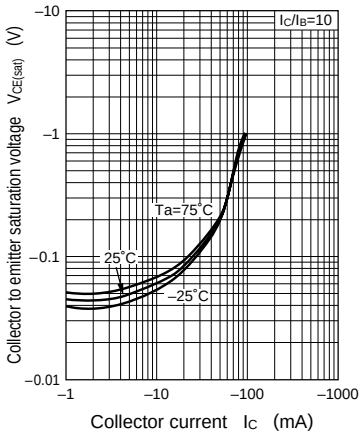


Characteristics charts of UN511Z

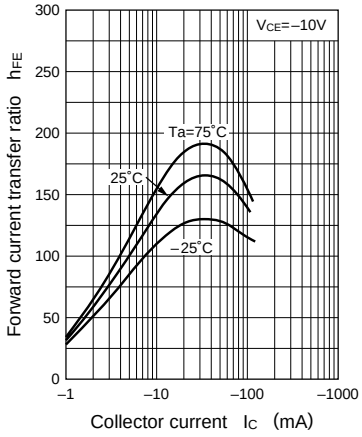
I_C — V_{CE}



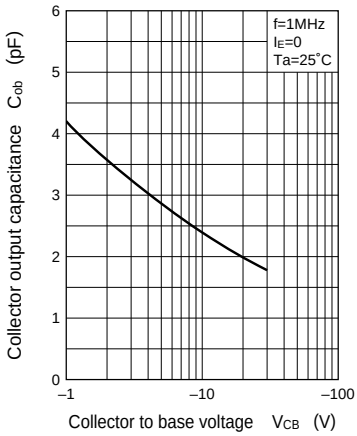
$V_{CE(sat)}$ — I_C



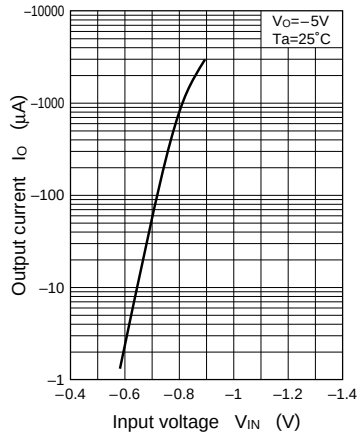
h_{FE} — I_C



C_{ob} — V_{CB}



I_O — V_{IN}



V_{IN} — I_O