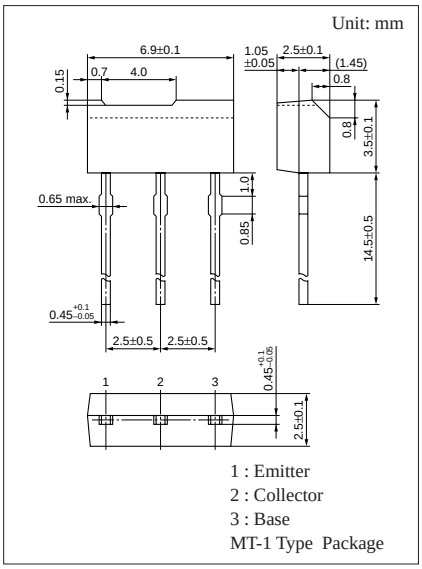
UN6111/6112/6113/6114/6115/6116/6117/6118/6119/6110/611D/611E/611F/611H/611L

Silicon PNP epitaxial planer transistor

For digital circuits



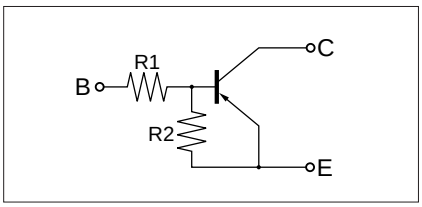
Features

- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- MT-1 type package, allowing supply with the radial taping.

Resistance by Part Number

	(R_1)	(R_2)
● UN6111	10kΩ	10kΩ
● UN6112	22kΩ	22kΩ
● UN6113	47kΩ	47kΩ
● UN6114	10kΩ	47kΩ
● UN6115	10kΩ	—
● UN6116	4.7kΩ	—
● UN6117	22kΩ	—
● UN6118	0.51kΩ	5.1kΩ
● UN6119	1kΩ	10kΩ
● UN6110	47kΩ	—
● UN611D	47kΩ	10kΩ
● UN611E	47kΩ	22kΩ
● UN611F	4.7kΩ	10kΩ
● UN611H	2.2kΩ	10kΩ
● UN611L	4.7kΩ	4.7kΩ

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	400	mW
Junction temperature	T_j	150	˚C
Storage temperature	T_{stg}	–55 to +150	˚C

Electrical Characteristics (Ta=25˚C)

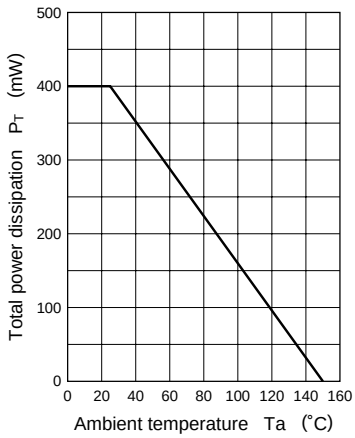
Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current		I_{CBO}	V_{CB} = –50V, I_E = 0			– 0.1	μA
		I_{CEO}	V_{CE} = –50V, I_B = 0			– 0.5	μA
Emitter cutoff current	UN6111	I_{EBO}	V_{EB} = –6V, I_C = 0			– 0.5	mA
	UN6112/6114/611E/611D					– 0.2	
	UN6113					– 0.1	
	UN6115/6116/6117/6110					– 0.01	
	UN611F/611H					–1.0	
	UN6119					–1.5	
	UN6118/611L					–2.0	
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	UN6111	h_{FE}	V_{CE} = –10V, I_C = –5mA	35			
	UN6112/611E			60			
	UN6113/6114			80			
	UN6115*/6116*/6117*/6110*			160		460	
	UN611F/611D/6119/611H			30			
	UN6118/611L			20			
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = –10mA, I_B = – 0.3mA			– 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
	UN6113		V_{CC} = –5V, V_B = –3.5V, R_L = 1kΩ			– 0.2	
	UN611D		V_{CC} = –5V, V_B = –10V, R_L = 1kΩ			– 0.2	
	UN611E		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
Input resistance	UN6111/6114/6115	R_1		(–30%)	10	(+30%)	kΩ
	UN6112/6117				22		
	UN6113/6110/611D/611E				47		
	UN6116/611F/611L				4.7		
	UN6118				0.51		
	UN6119				1		
	UN611H				2.2		
Resistance ratio	UN6111/6112/6113/611L	R_1/R_2		0.8	1.0	1.2	
	UN6114			0.17	0.21	0.25	
	UN6118/6119			0.08	0.1	0.12	
	UN611D			3.7	4.7	5.7	
	UN611E			1.7	2.14	2.6	
	UN611F			0.37	0.47	0.57	
	UN611H			0.17	0.22	0.27	

* h_{FE} rank classification (UN6115/6116/6117/6110)

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

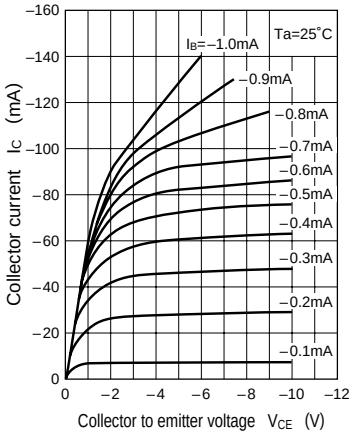
Common characteristics chart

P_T — Ta

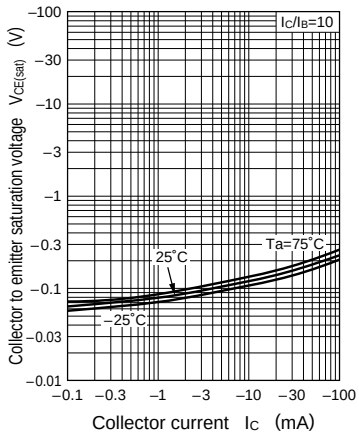


Characteristics charts of UN6111

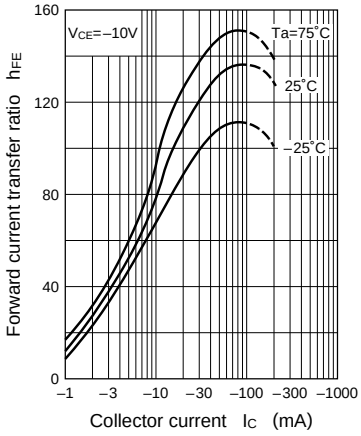
I_C — V_{CE}



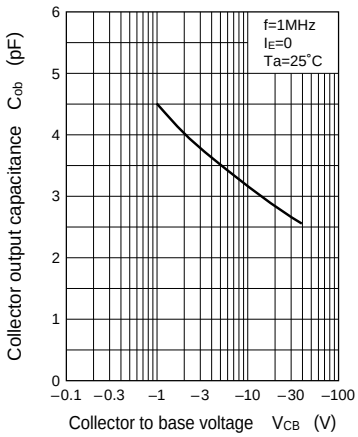
$V_{CE(sat)}$ — I_C



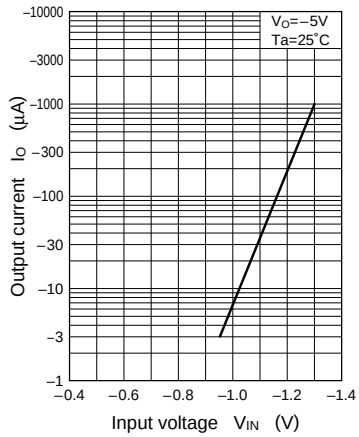
h_{FE} — I_C



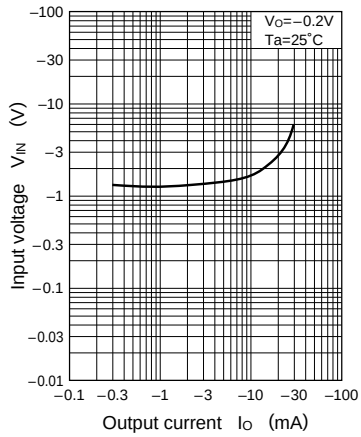
C_{ob} — V_{CB}



I_O — V_{IN}

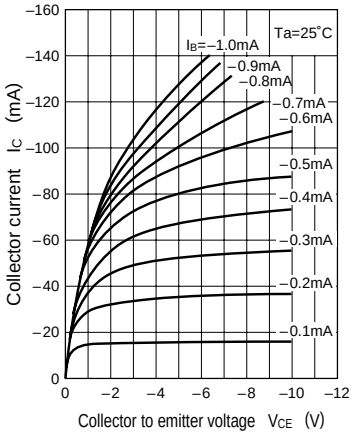


V_{IN} — I_O

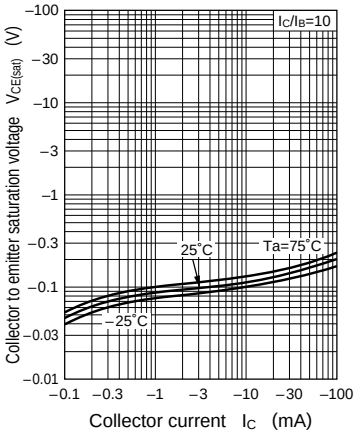


Characteristics charts of UN6112

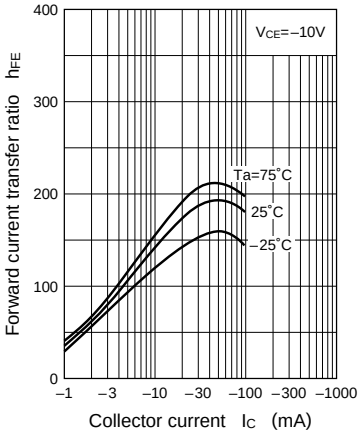
I_C — V_{CE}



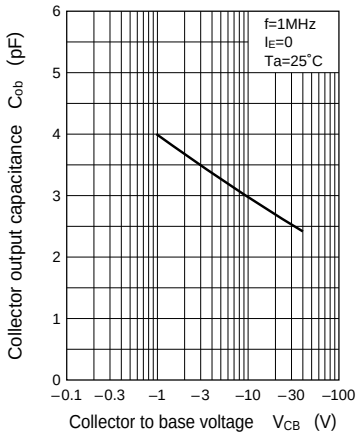
$V_{CE(sat)}$ — I_C



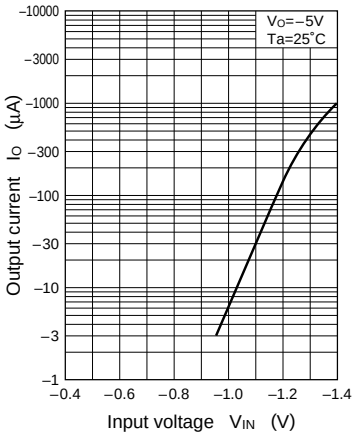
h_{FE} — I_C



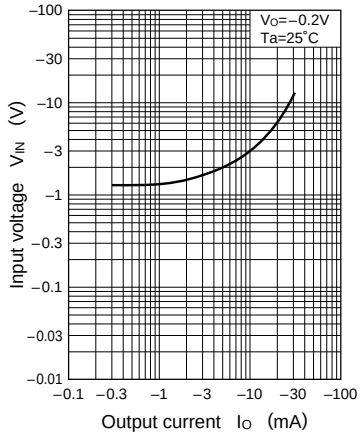
C_{ob} — V_{CB}



I_O — V_{IN}

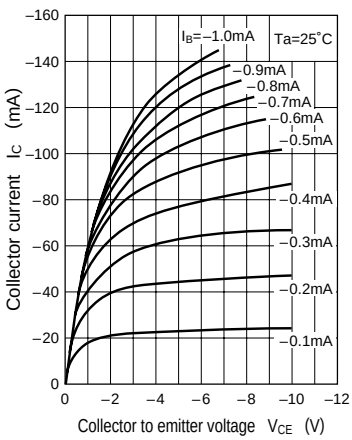


V_{IN} — I_O

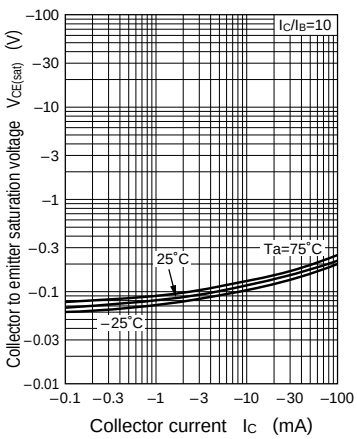


Characteristics charts of UN6113

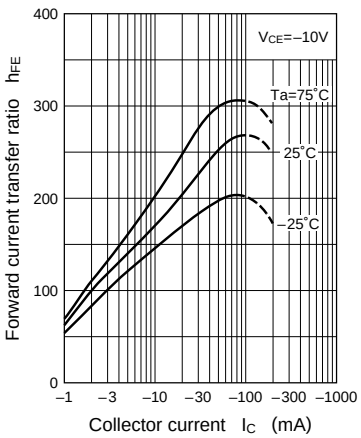
I_C — V_{CE}



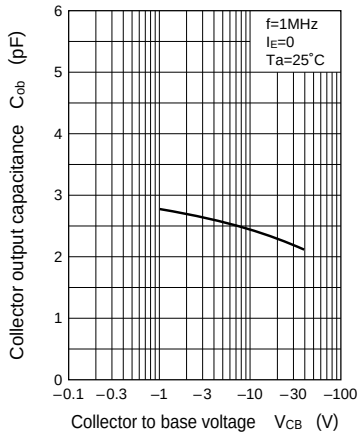
$V_{CE(sat)}$ — I_C



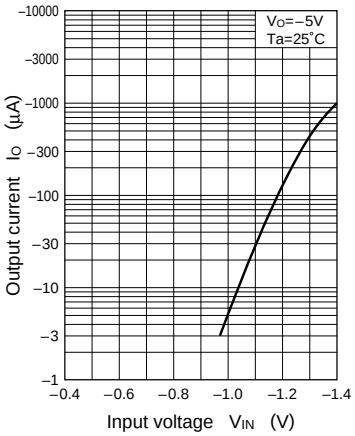
h_{FE} — I_C



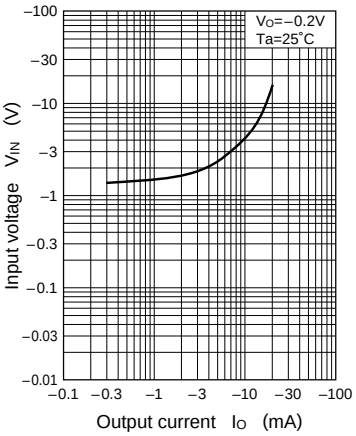
C_{ob} — V_{CB}



I_O — V_{IN}

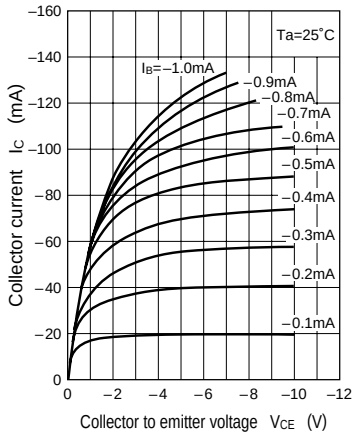


V_{IN} — I_O

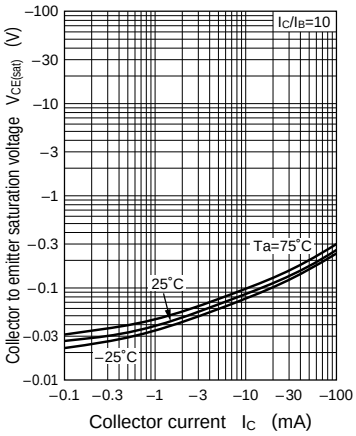


Characteristics charts of UN6114

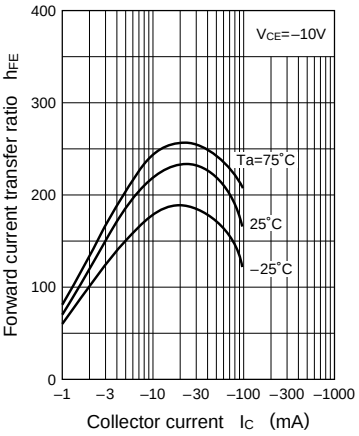
I_C — V_{CE}



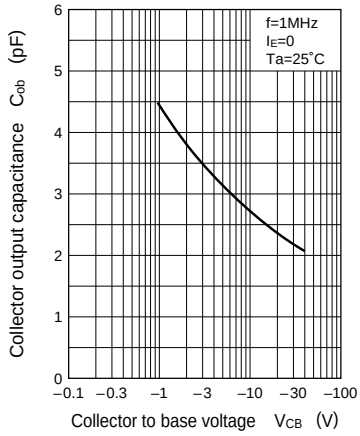
$V_{CE(sat)}$ — I_C



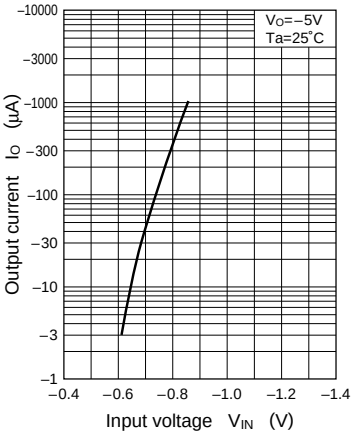
h_{FE} — I_C



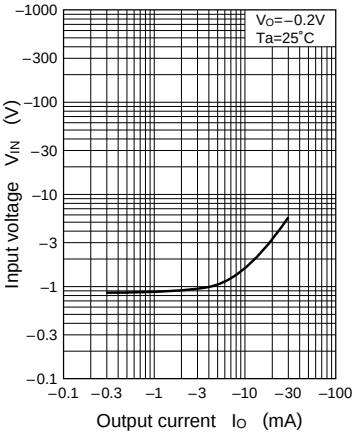
C_{ob} — V_{CB}



I_O — V_{IN}

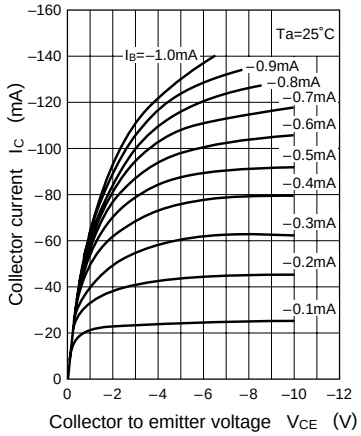


V_{IN} — I_O

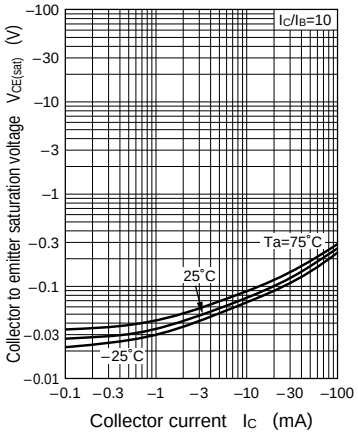


Characteristics charts of UN6115

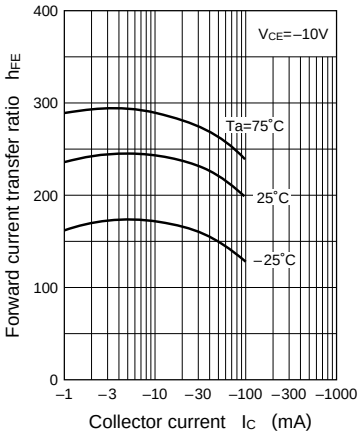
I_C — V_{CE}



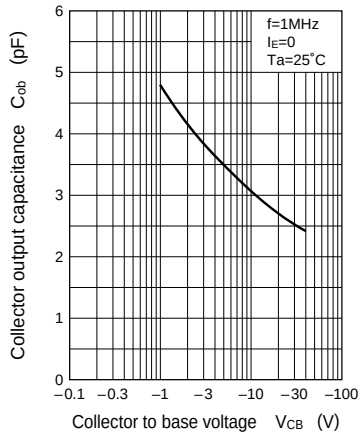
$V_{CE(sat)}$ — I_C



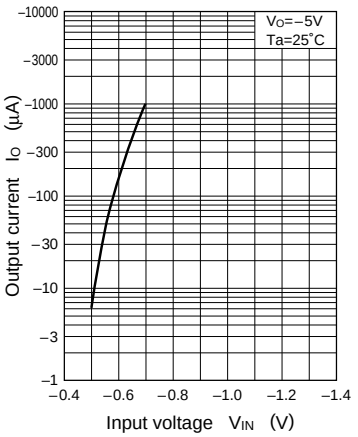
h_{FE} — I_C



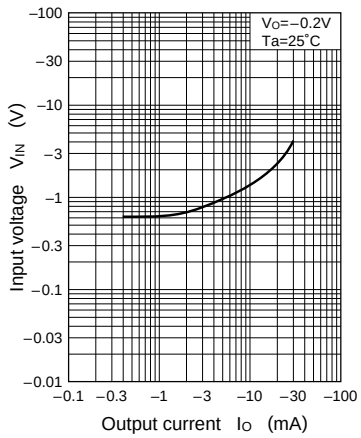
C_{ob} — V_{CB}



I_O — V_{IN}

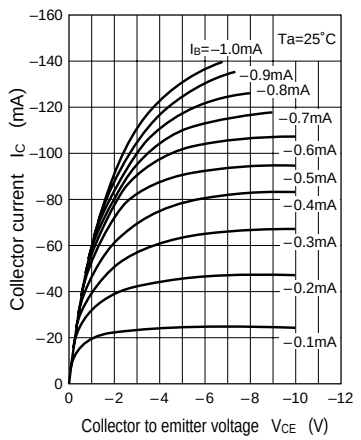


V_{IN} — I_O

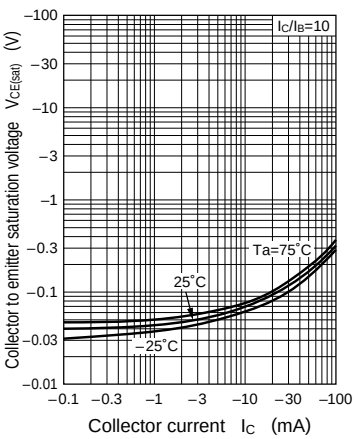


Characteristics charts of UN6116

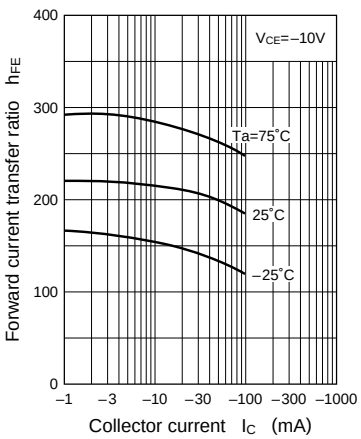
I_C — V_{CE}



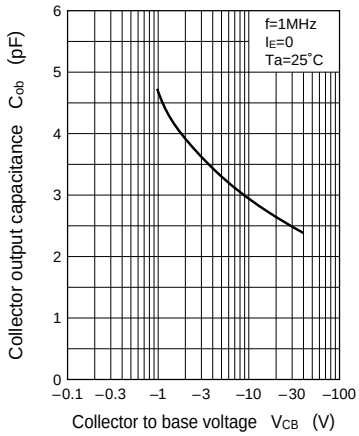
$V_{CE(sat)}$ — I_C



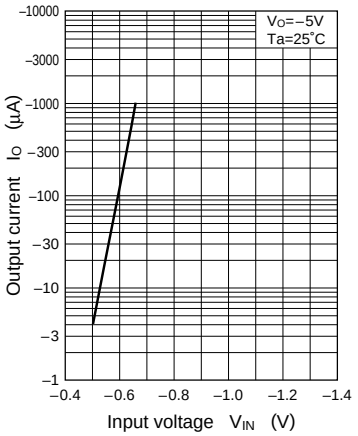
h_{FE} — I_C



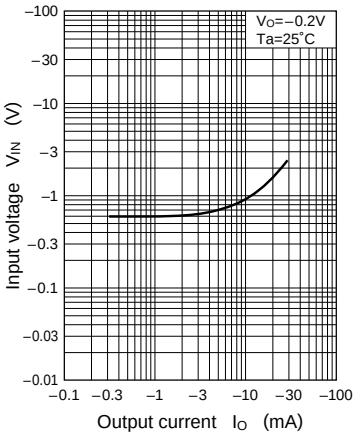
C_{ob} — V_{CB}



I_O — V_{IN}

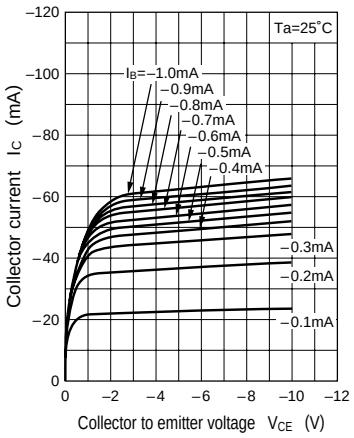


V_{IN} — I_O

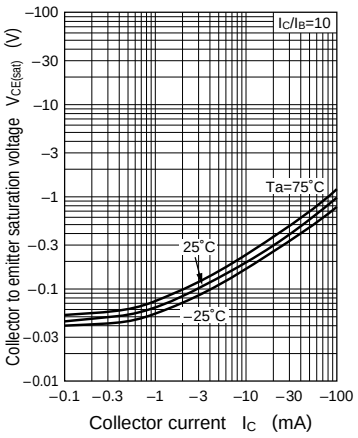


Characteristics charts of UN6117

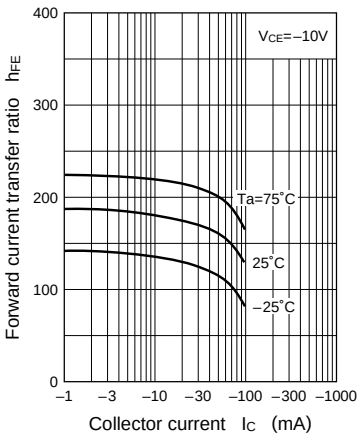
I_C — V_{CE}



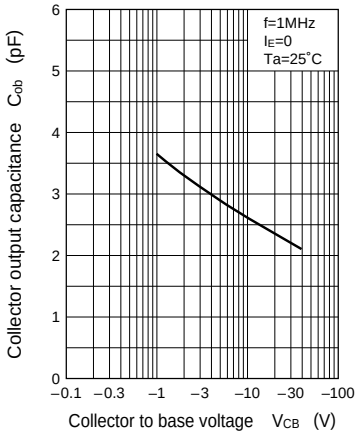
$V_{CE(sat)}$ — I_C



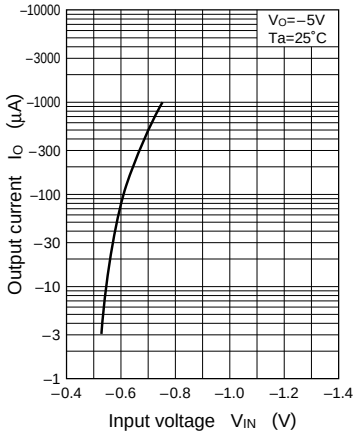
h_{FE} — I_C



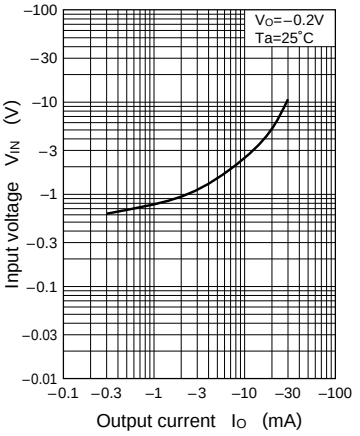
C_{ob} — V_{CB}



I_O — V_{IN}

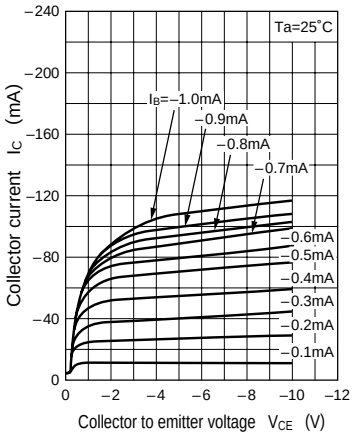


V_{IN} — I_O

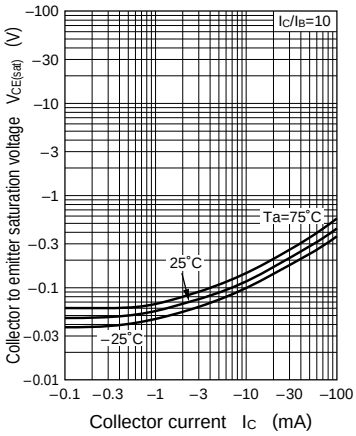


Characteristics charts of UN6118

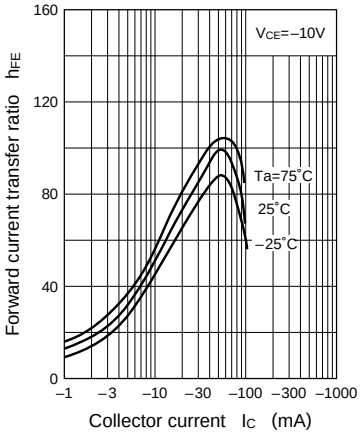
I_C — V_{CE}



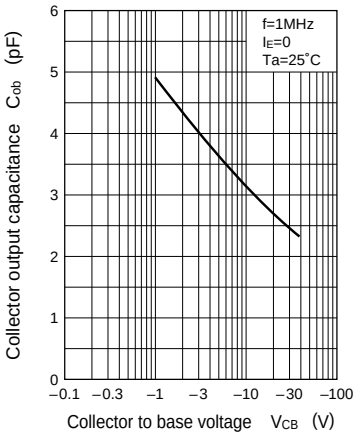
$V_{CE(sat)}$ — I_C



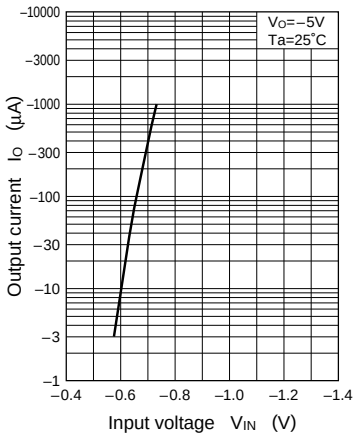
h_{FE} — I_C



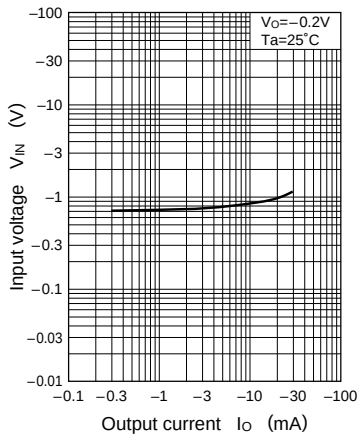
C_{ob} — V_{CB}



I_O — V_{IN}

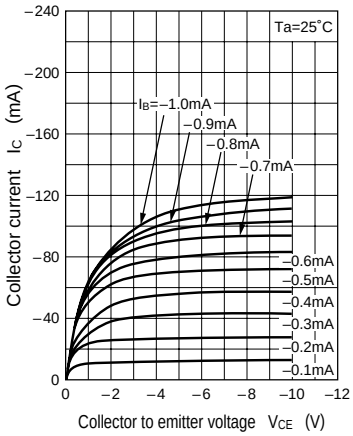


V_{IN} — I_O

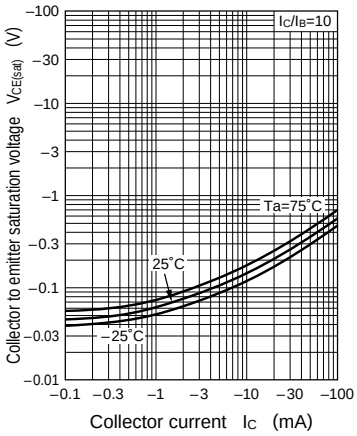


Characteristics charts of UN6119

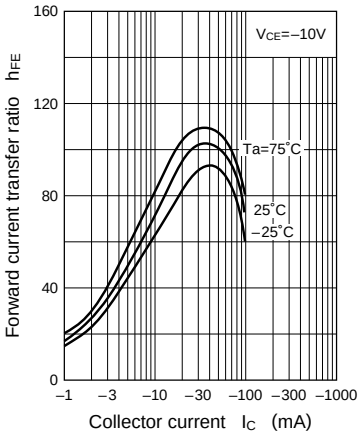
I_C — V_{CE}



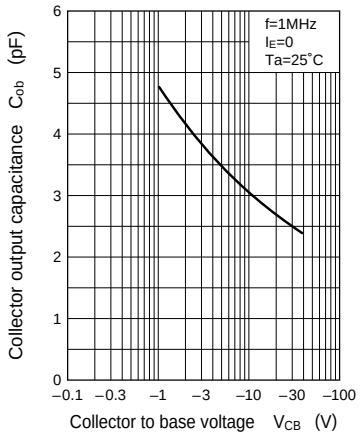
$V_{CE(sat)}$ — I_C



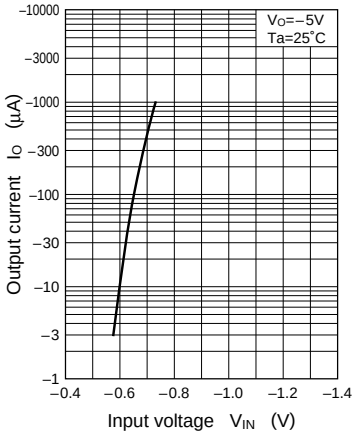
h_{FE} — I_C



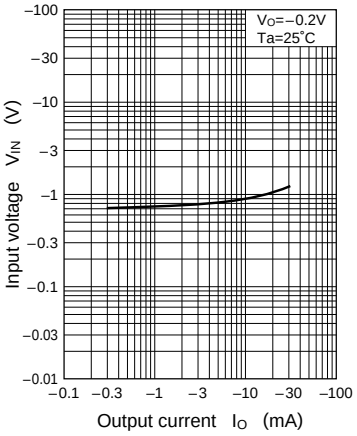
C_{ob} — V_{CB}



I_O — V_{IN}

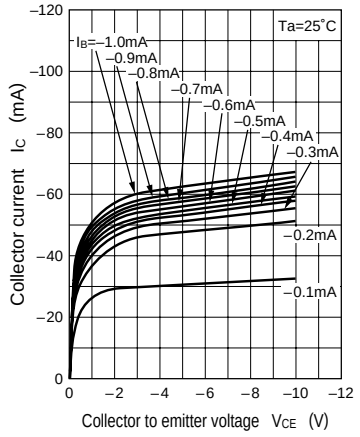


V_{IN} — I_O

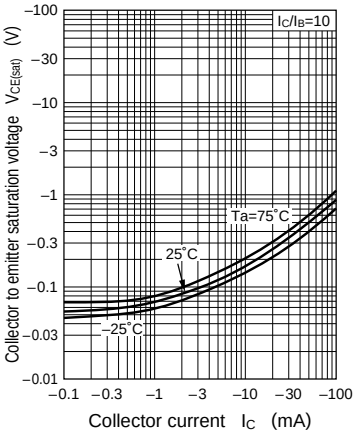


Characteristics charts of UN6110

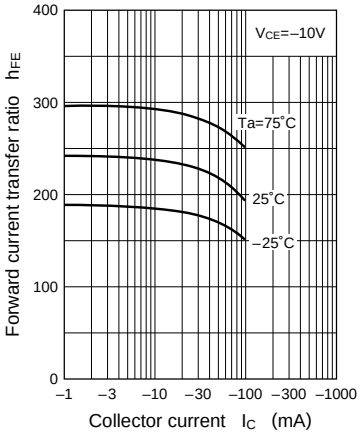
I_C — V_{CE}



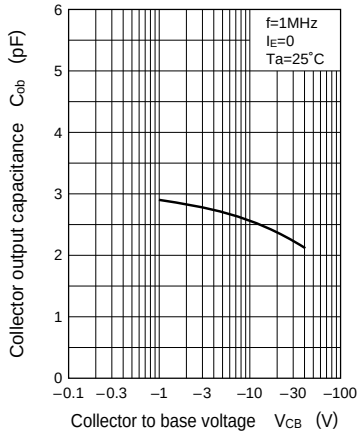
$V_{CE(sat)}$ — I_C



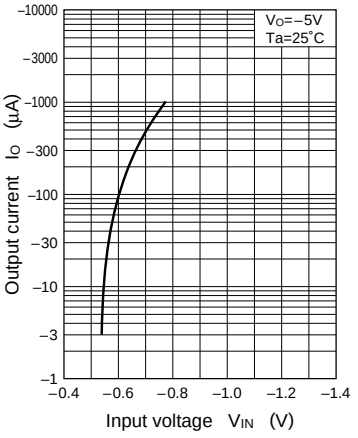
h_{FE} — I_C



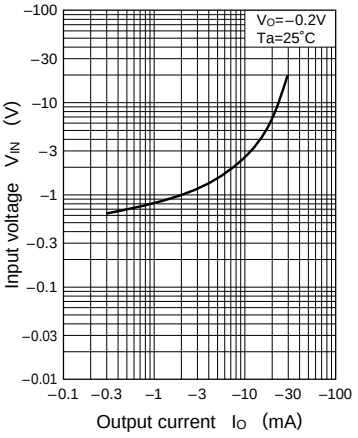
C_{ob} — V_{CB}



I_O — V_{IN}

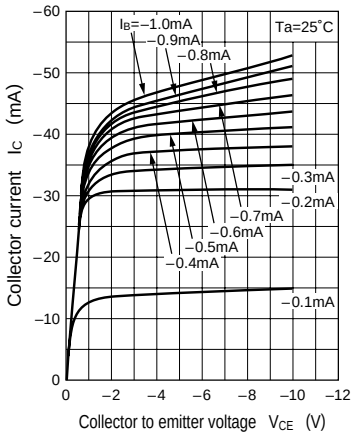


V_{IN} — I_O

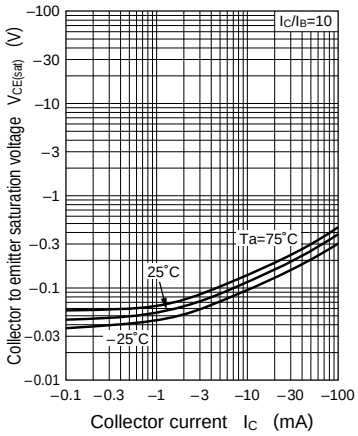


Characteristics charts of UN611D

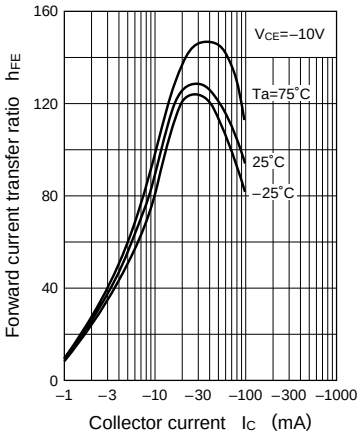
I_C — V_{CE}



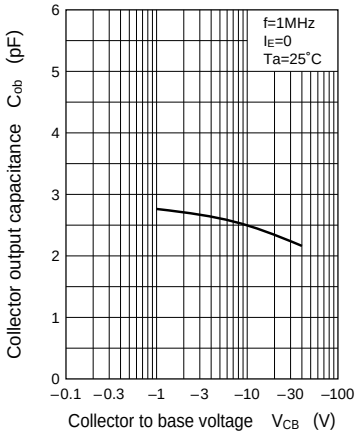
$V_{CE(sat)}$ — I_C



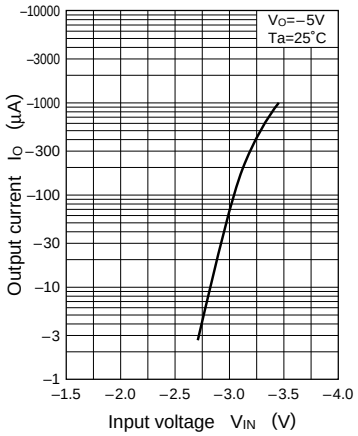
h_{FE} — I_C



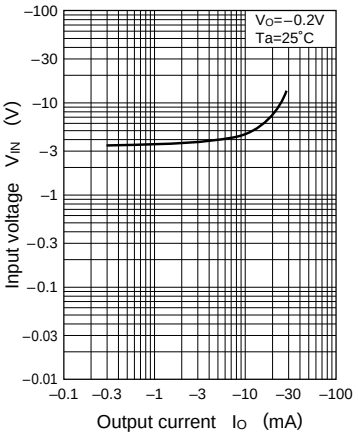
C_{ob} — V_{CB}



I_O — V_{IN}

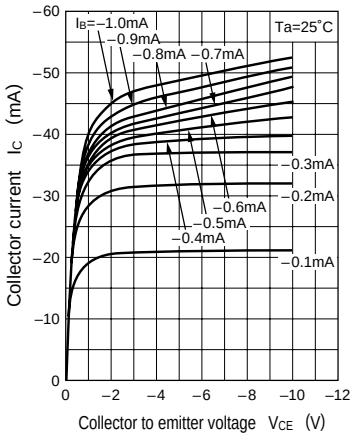


V_{IN} — I_O

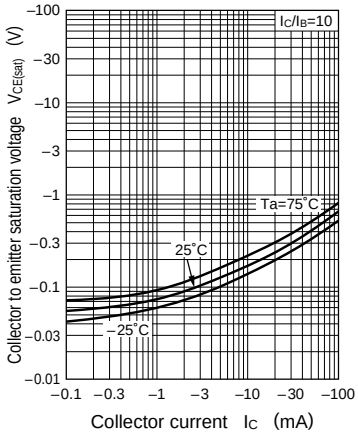


Characteristics charts of UN611E

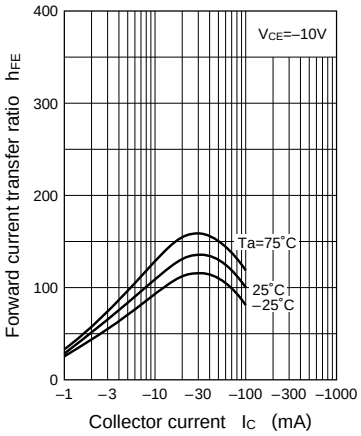
I_C — V_{CE}



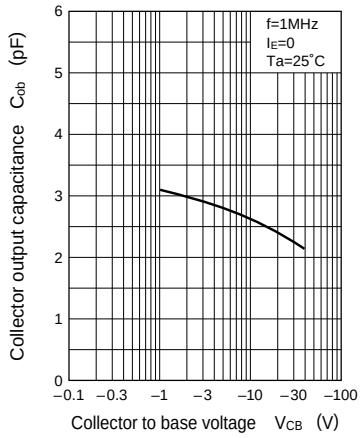
$V_{CE(sat)}$ — I_C



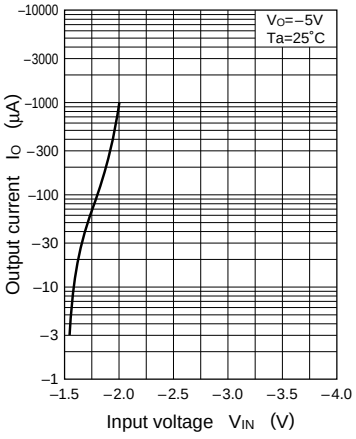
h_{FE} — I_C



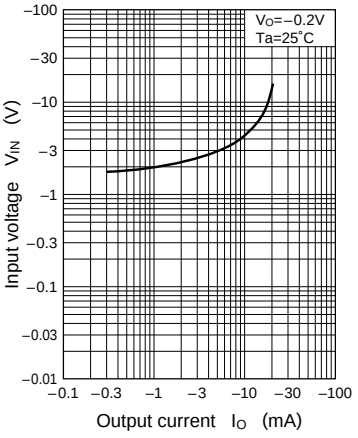
C_{ob} — V_{CB}



I_O — V_{IN}

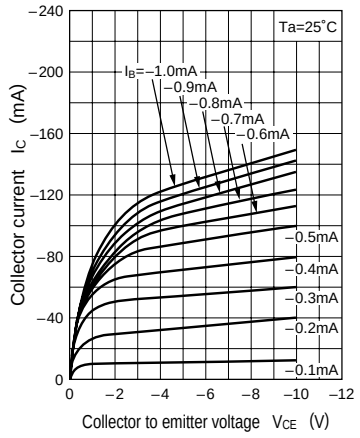


V_{IN} — I_O

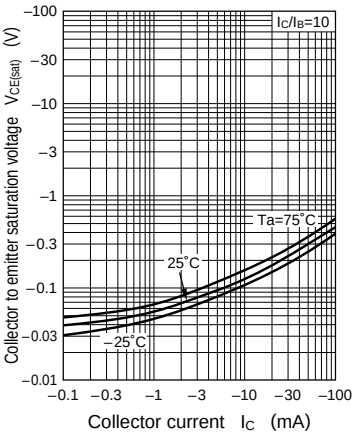


Characteristics charts of UN611F

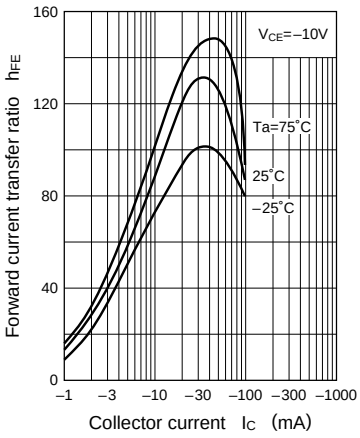
I_C — V_{CE}



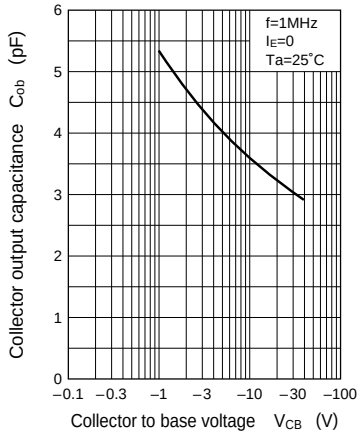
$V_{CE(sat)}$ — I_C



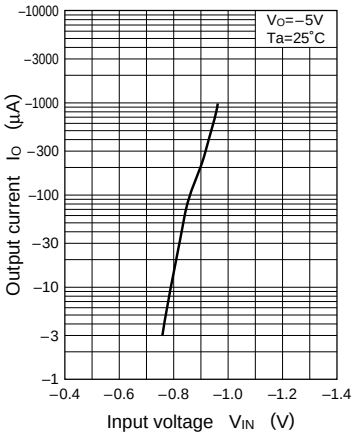
h_{FE} — I_C



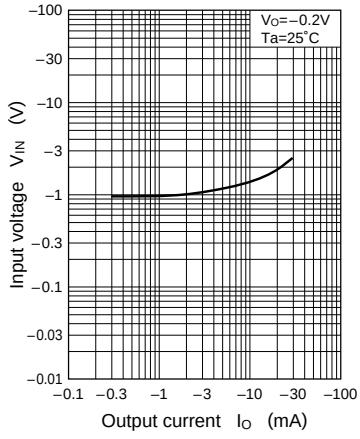
C_{ob} — V_{CB}



I_O — V_{IN}

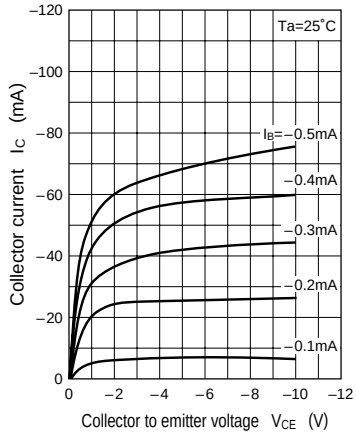


V_{IN} — I_O

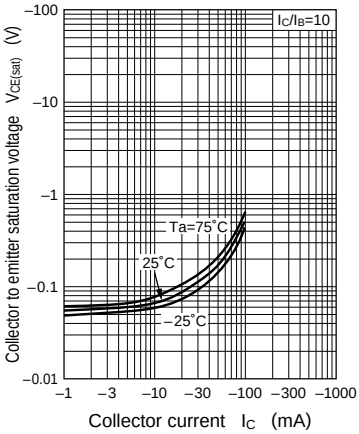


Characteristics charts of UN611H

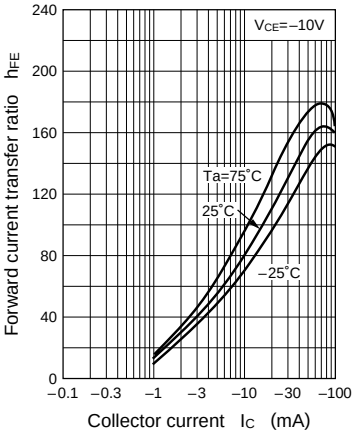
I_C — V_{CE}



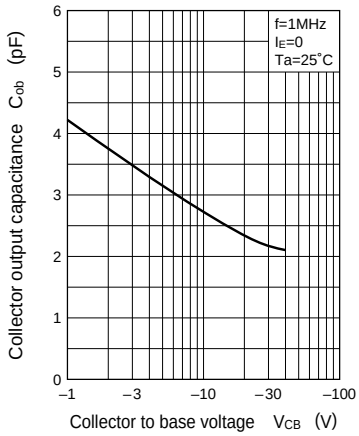
$V_{CE(sat)}$ — I_C



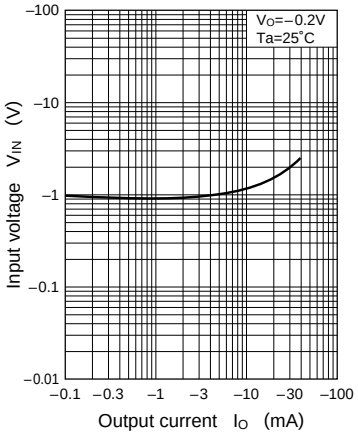
h_{FE} — I_C



C_{ob} — V_{CB}

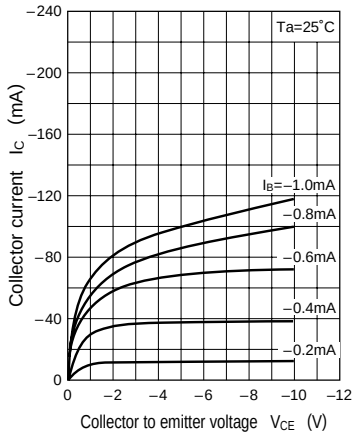


V_{IN} — I_O

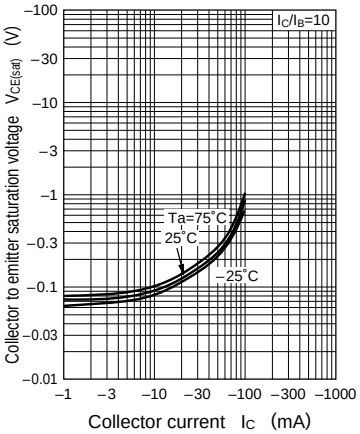


Characteristics charts of UN611L

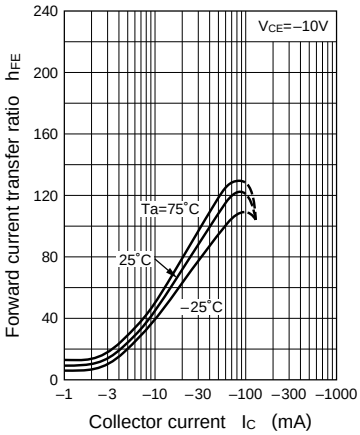
I_C — V_{CE}



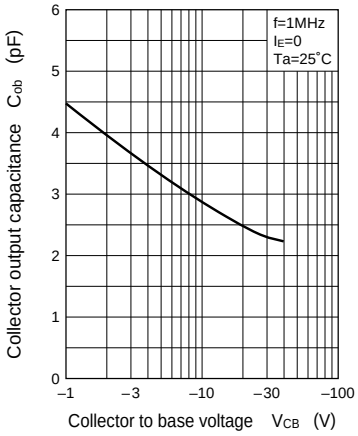
$V_{CE(sat)}$ — I_C



h_{FE} — I_C



C_{ob} — V_{CB}



V_{IN} — I_O

