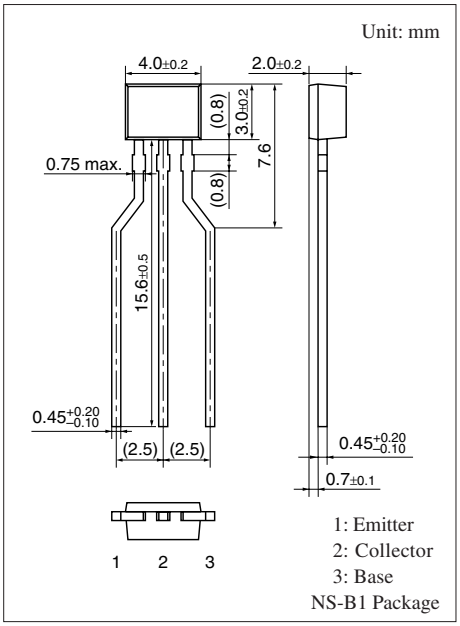
UNR412x Series (UN412x Series)

Silicon PNP epitaxial planar type

For digital circuits



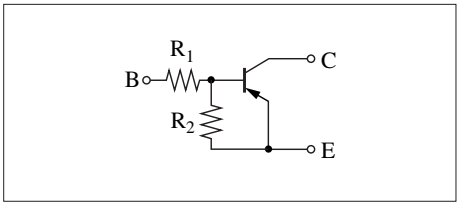
■ Features

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

■ Resistance by Part Number

	(R_1)	(R_2)
• UNR4121 (UN4121)	2.2 kΩ	2.2 kΩ
• UNR4122 (UN4122)	4.7 kΩ	4.7 kΩ
• UNR4123 (UN4123)	10 kΩ	10 kΩ
• UNR4124 (UN4124)	2.2 kΩ	10 kΩ
• UNR412X (UN412X)	0.27 kΩ	5 kΩ
• UNR412Y (UN412Y)	3.1 kΩ	4.6 kΩ

Internal Connection



■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	−50	V
Collector-emitter voltage (Base open)	V_{CEO}	−50	V
Collector current	I_C	−500	mA
Total power dissipation	P_T	300	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)		V_{CBO}	$I_C = -10$ µA, $I_E = 0$	−50			V
Collector-emitter voltage (Base open)		V_{CEO}	$I_C = -2$ mA, $I_B = 0$	−50			V
Collector-base cutoff current (Emitter open)		I_{CBO}	$V_{CB} = -50$ V, $I_E = 0$			−1	µA
	UNR412X					− 0.1	
Collector-emitter cutoff current (Base open)		I_{CEO}	$V_{CE} = -50$ V, $I_B = 0$			−1	µA
	UNR412X					− 0.5	
Emitter-base cutoff current (Collector open)	UNR4121	I_{EBO}	$V_{EB} = -6$ V, $I_C = 0$			−5	mA
	UNR4122/412X/412Y					−2	
	UNR4123/4124					−1	

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

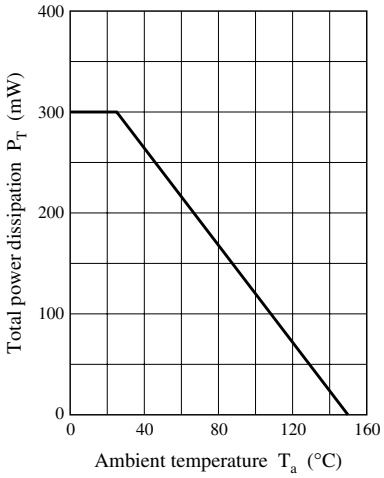
■ Electrical Characteristics (continued) $T_a = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Forward current transfer ratio	UNR4121	h_{FE}	$V_{CE} = -10$ V, $I_C = -100$ mA	40			—
	UNR4122/412Y			50			
	UNR4123/4124			60			
	UNR412X			20			
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -100$ mA, $I_B = -5$ mA			− 0.25	V
	UNR412X		$I_C = -10$ mA, $I_B = -0.3$ mA			− 0.25	
	UNR412Y		$I_C = -50$ mA, $I_B = -5$ mA			− 0.15	
Output voltage high-level		V_{OH}	$V_{CC} = -5$ V, $V_B = -0.5$ V, $R_L = 500\ \Omega$	−4.9			V
Output voltage low-level		V_{OL}	$V_{CC} = -5$ V, $V_B = -3.5$ V, $R_L = 500\ \Omega$			− 0.2	V
Transition frequency		f_T	$V_{CB} = -10$ V, $I_E = 50$ mA, f = 200 MHz		200		MHz
Input resistance	UNR4121/4124	R_1		−30%	2.2	+30%	kΩ
	UNR4122				4.7		
	UNR4123				10		
	UNR412X				0.27		
	UNR412Y				3.1		
Resistance ratio		R_1/R_2		0.8	1.0	1.2	—
	UNR4124			0.17	0.22	0.27	
	UNR412X			0.043	0.054	0.065	
	UNR412Y				0.67		

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

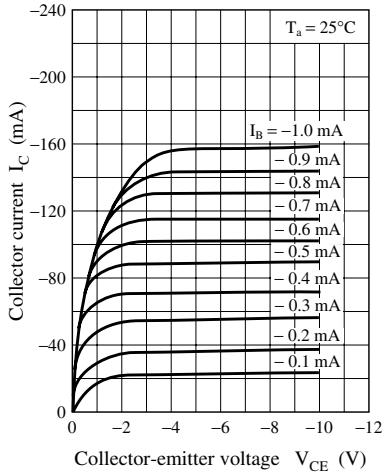
Common characteristics chart

P_T — T_a

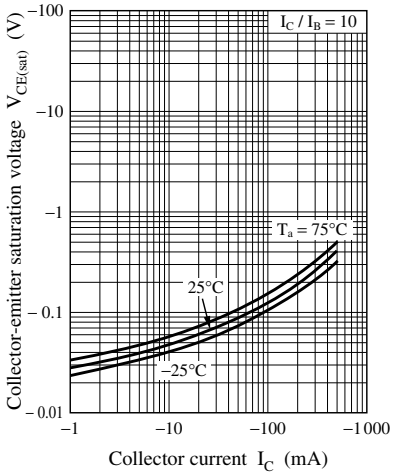


Characteristics charts of UNR4121

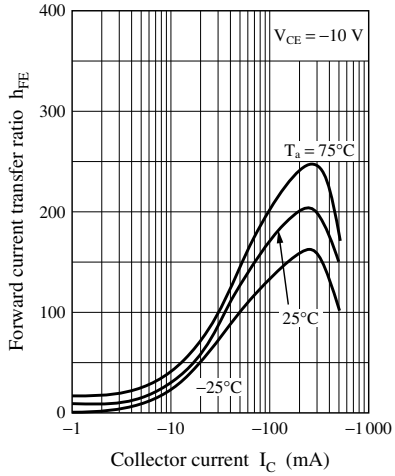
I_C — V_{CE}



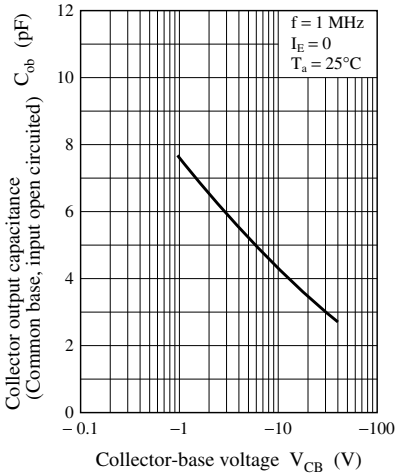
$V_{CE(sat)}$ — I_C



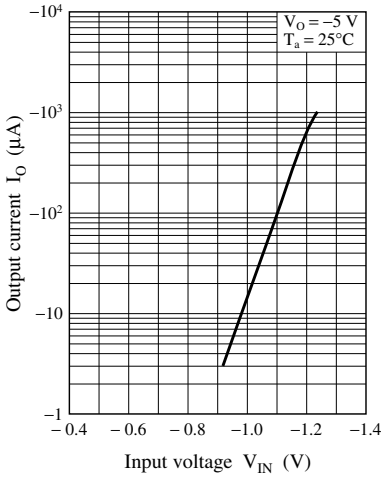
h_{FE} — I_C



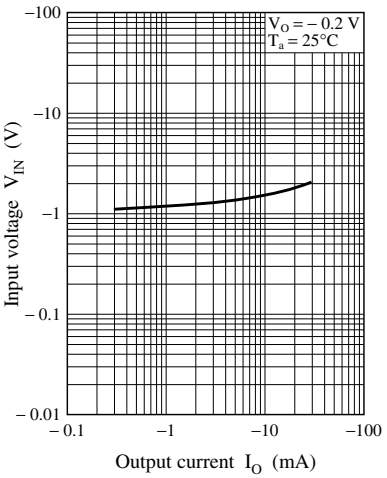
C_{ob} — V_{CB}



I_O — V_{IN}

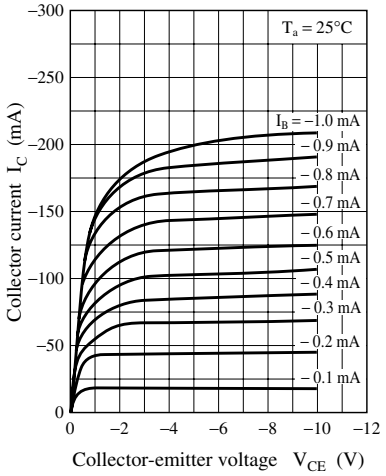


V_{IN} — I_O

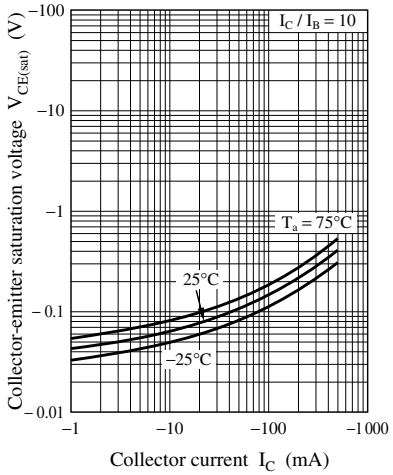


Characteristics charts of UNR4122

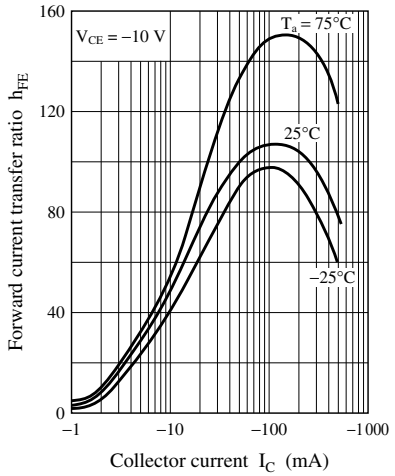
I_C — V_{CE}



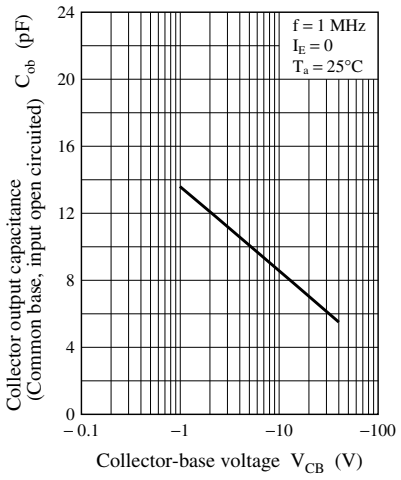
$V_{CE(sat)}$ — I_C



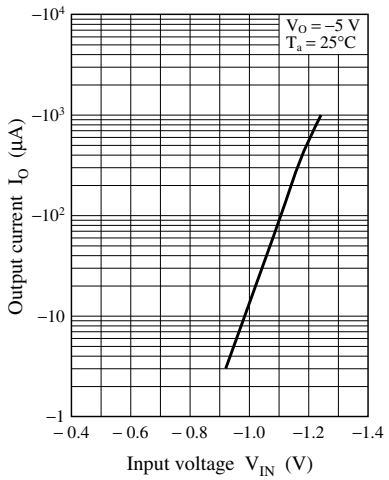
h_{FE} — I_C



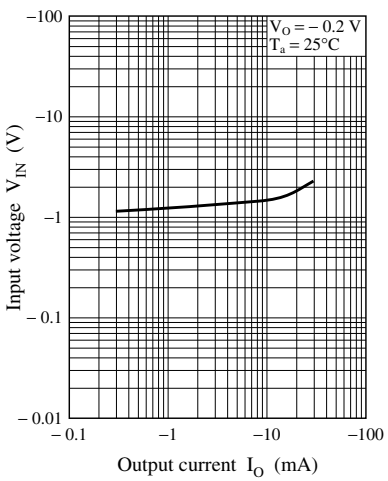
C_{ob} — V_{CB}



I_O — V_{IN}

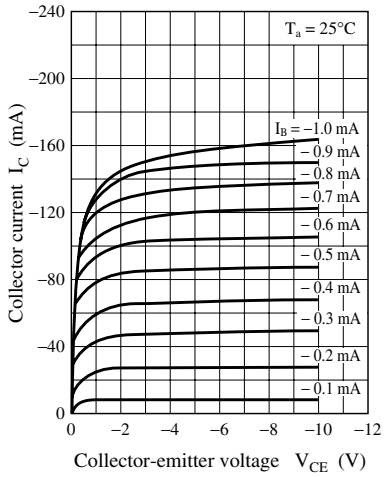


V_{IN} — I_O

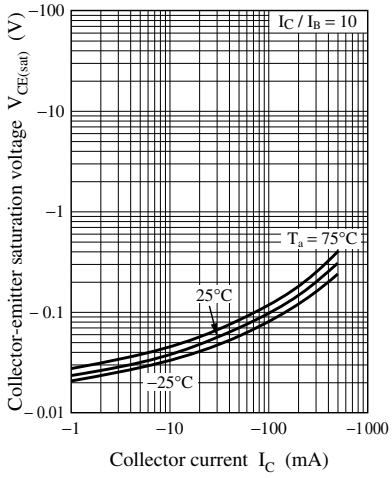


Characteristics charts of UNR4123

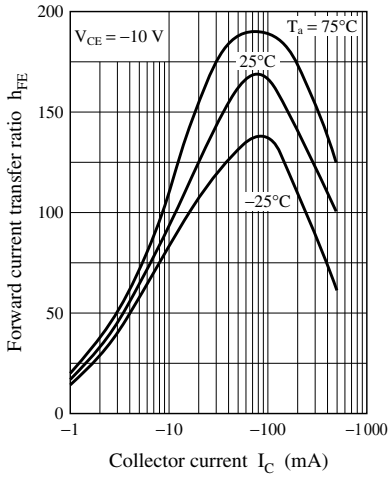
I_C — V_{CE}



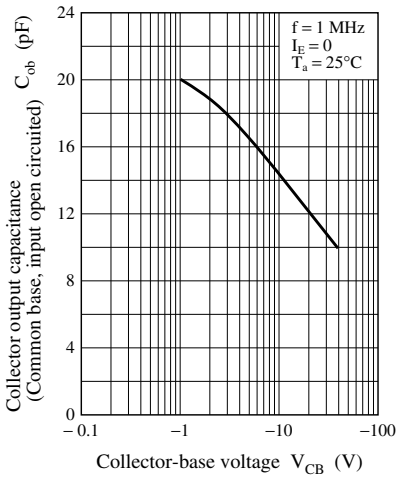
$V_{CE(sat)}$ — I_C



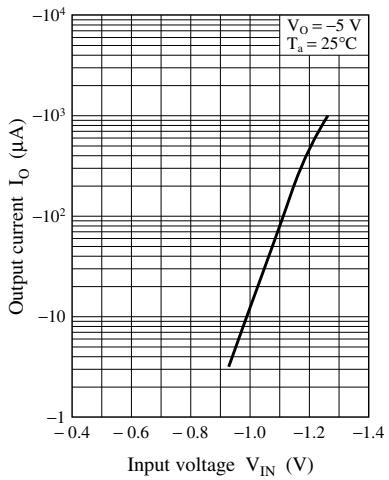
h_{FE} — I_C



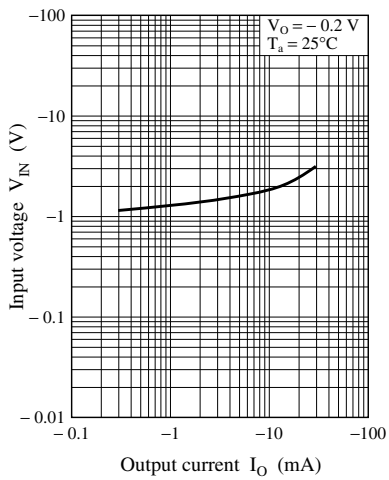
C_{ob} — V_{CB}



I_O — V_{IN}

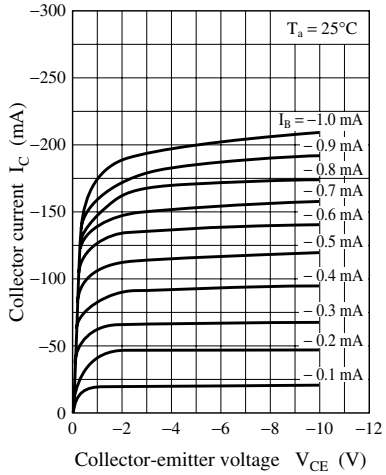


V_{IN} — I_O

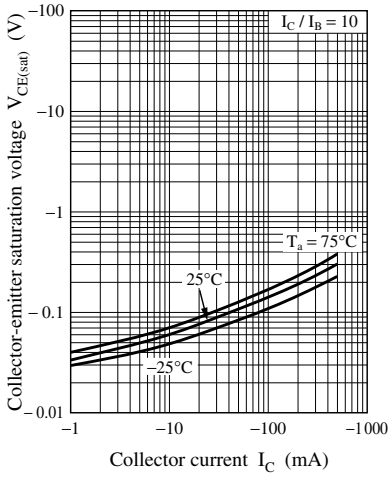


Characteristics charts of UNR4124

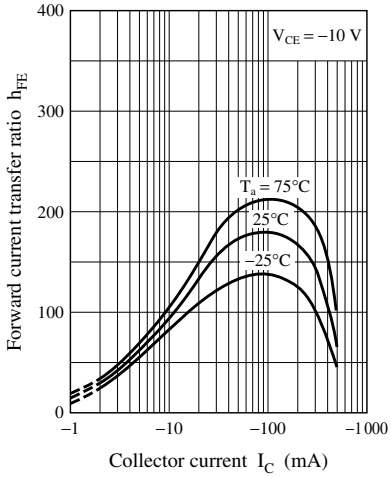
I_C — V_{CE}



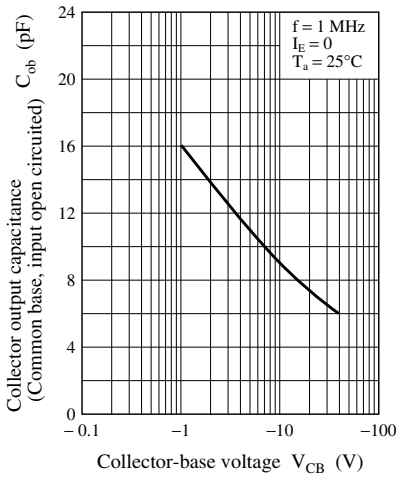
$V_{CE(sat)}$ — I_C



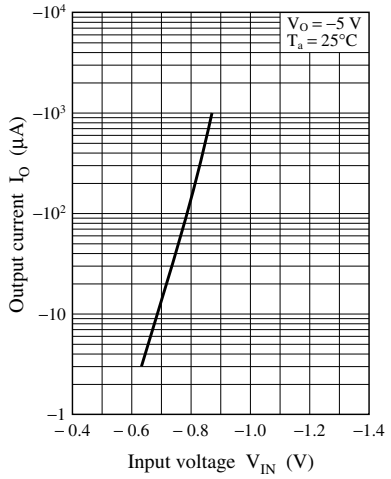
h_{FE} — I_C



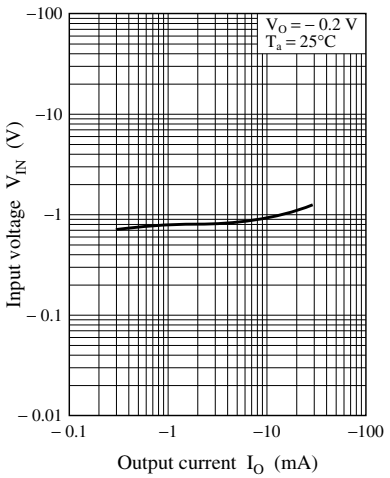
C_{ob} — V_{CB}



I_O — V_{IN}

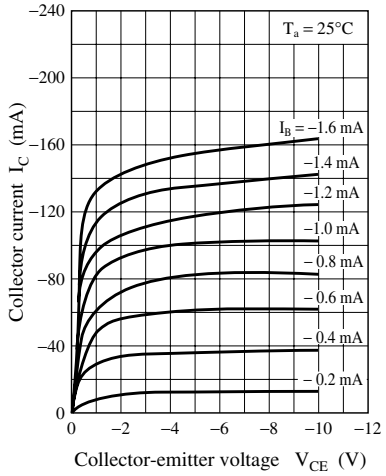


V_{IN} — I_O

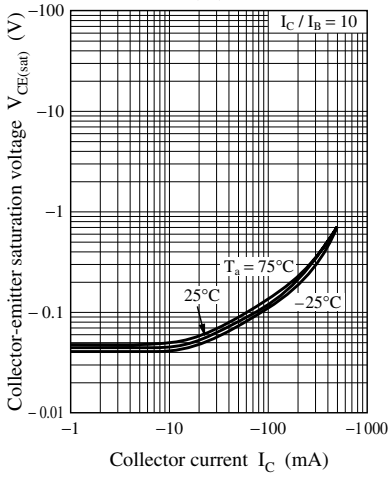


Characteristics charts of UNR412X

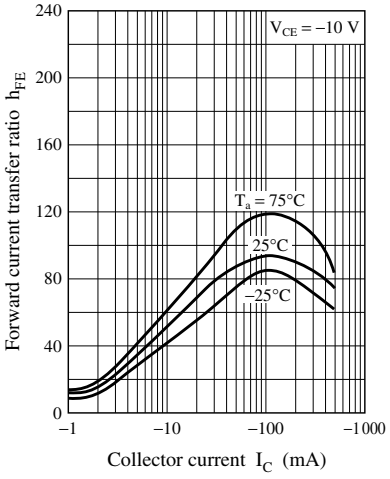
I_C — V_{CE}



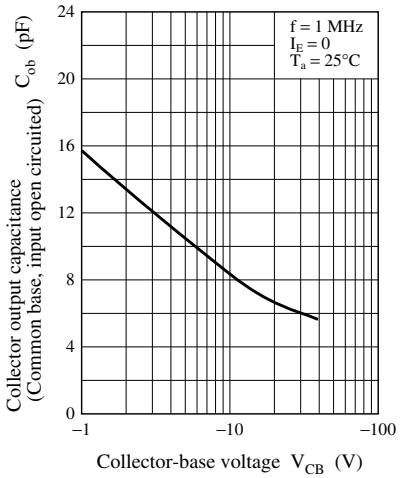
$V_{CE(sat)}$ — I_C



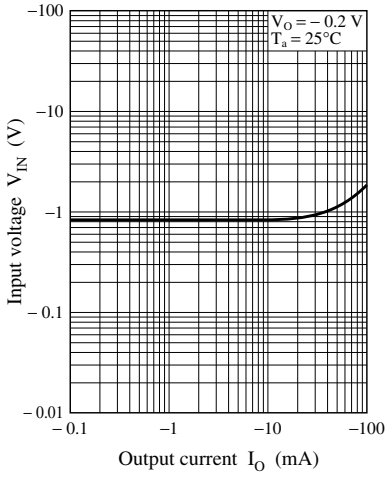
h_{FE} — I_C



C_{ob} — V_{CB}

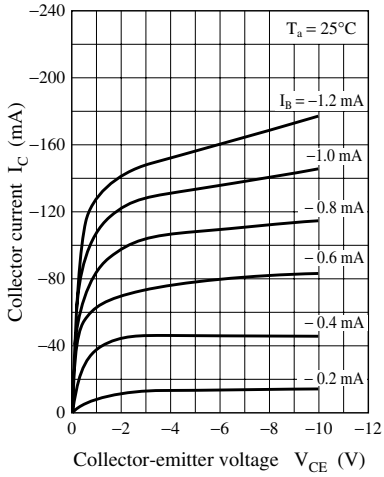


V_{IN} — I_O

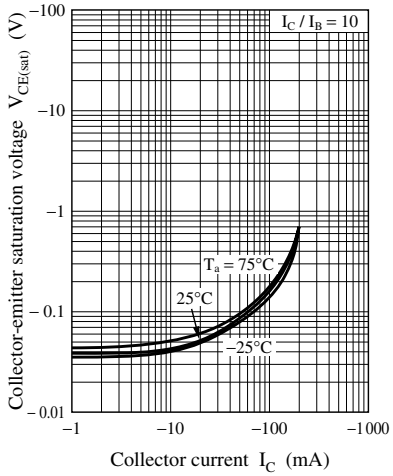


Characteristics charts of UNR412Y

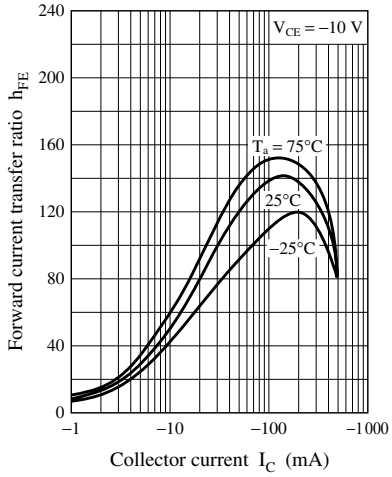
I_C — V_{CE}



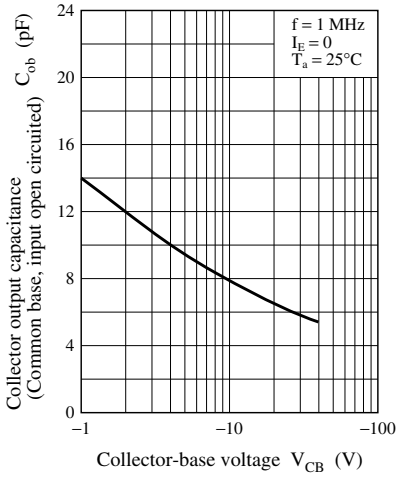
$V_{CE(sat)}$ — I_C



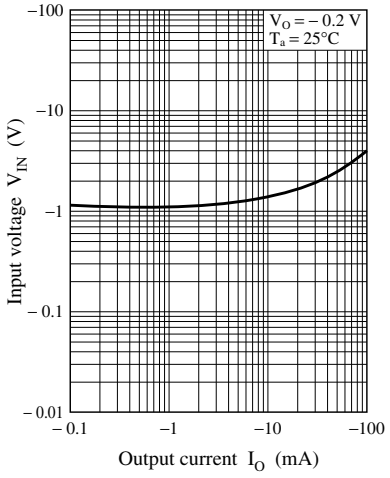
h_{FE} — I_C



C_{ob} — V_{CB}



V_{IN} — I_O



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