UNR1221/1222/1223/1224 (UN1221/1222/1223/1224)

Silicon NPN epitaxial planer transistor

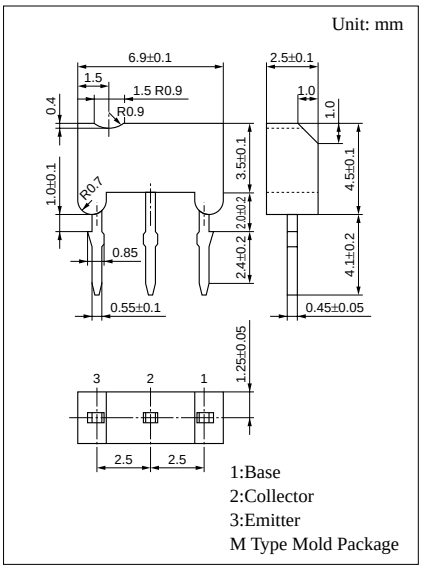
For digital circuits

Features

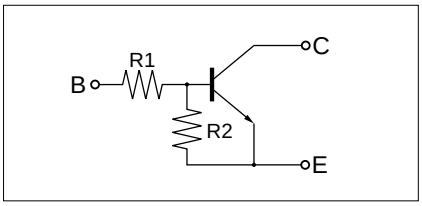
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

Resistance by Part Number

	(R_1)	(R_2)
● UNR1221	2.2kΩ	2.2kΩ
● UNR1222	4.7kΩ	4.7kΩ
● UNR1223	10kΩ	10kΩ
● UNR1224	2.2kΩ	10kΩ



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	500	mA
Total power dissipation	P_T	600	mW
Junction temperature	T_j	150	˚C
Storage temperature	T_{stg}	–55 to +150	˚C

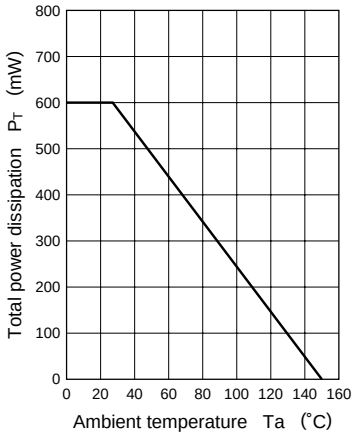
Electrical Characteristics (Ta=25˚C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current		I_{CBO}	V_{CB} = 50V, I_E = 0			1	μA
		I_{CEO}	V_{CE} = 50V, I_B = 0			1	μA
Emitter cutoff current	UNR1221	I_{EBO}	V_{EB} = 6V, I_C = 0			5	mA
	UNR1222					2	
	UNR1223/1224					1	
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	UNR1221	h_{FE}	V_{CE} = 10V, I_C = 100mA	40			
	UNR1222			50			
	UNR1223/1224			60			
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = 100mA, I_B = 5mA			0.25	V
Output voltage high level		V_{OH}	V_{CC} = 5V, V_B = 0.5V, R_L = 500Ω	4.9			V
Output voltage low level		V_{OL}	V_{CC} = 5V, V_B = 3.5V, R_L = 500Ω			0.2	V
Transition frequency		f_T	V_{CB} = 10V, I_E = –50mA, f = 200MHz		200		MHz
Input resistance	UNR1221/1224	R_1		(–30%)	2.2	(+30%)	kΩ
	UNR1222				4.7		
	UNR1223				10		
Resistance ratio		R_1/R_2		0.8	1.0	1.2	
	UNR1224				0.22		

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

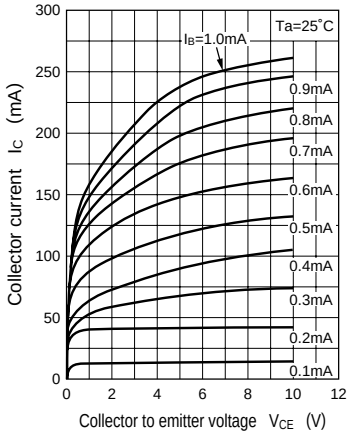
Common characteristics chart

P_T — Ta

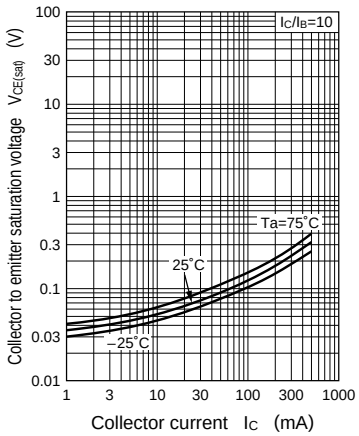


Characteristics charts of UNR1221

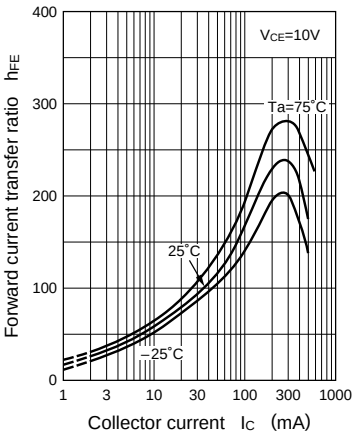
I_C — V_{CE}



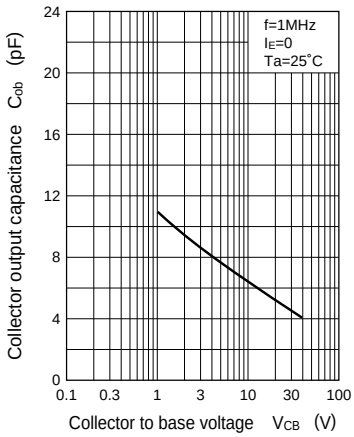
$V_{CE(sat)}$ — I_C



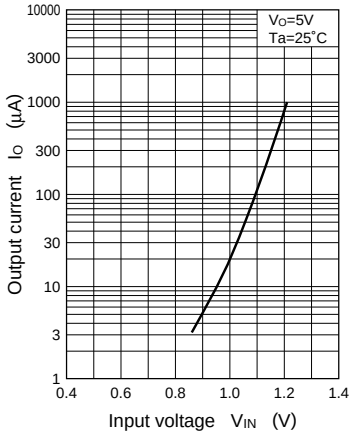
h_{FE} — I_C



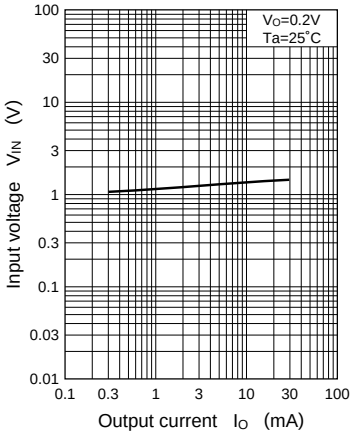
C_{ob} — V_{CB}



I_O — V_{IN}

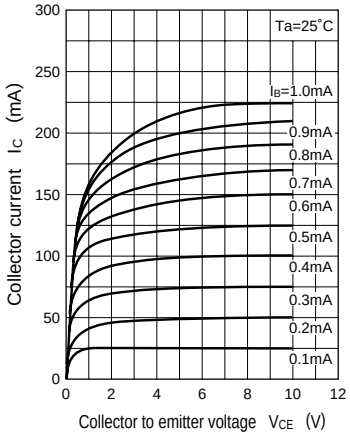


V_{IN} — I_O

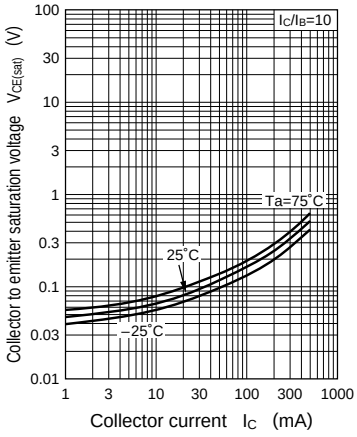


Characteristics charts of UNR1222

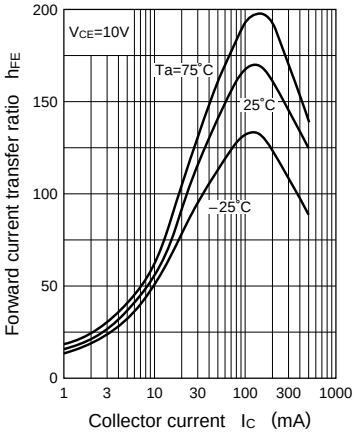
I_C — V_{CE}



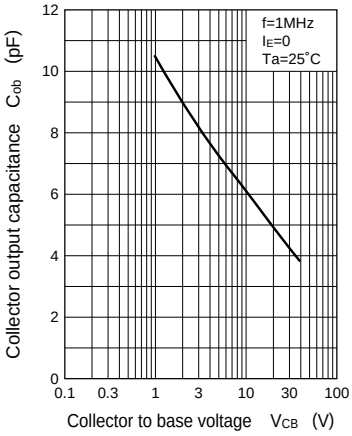
$V_{CE(sat)}$ — I_C



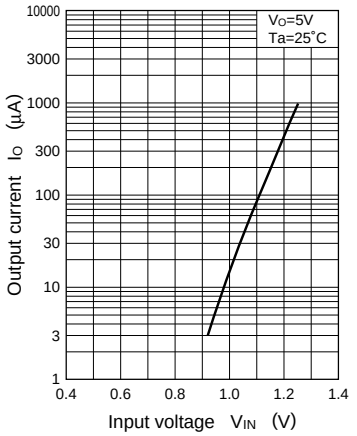
h_{FE} — I_C



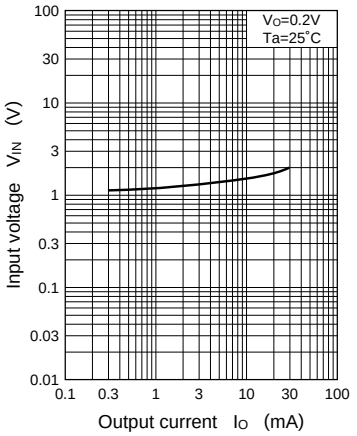
C_{ob} — V_{CB}



I_O — V_{IN}

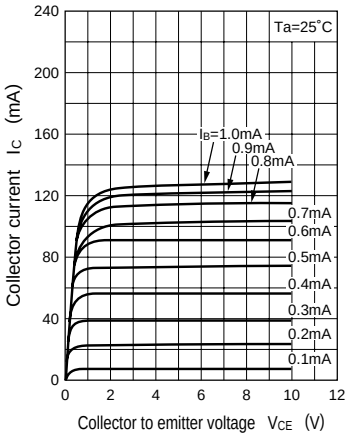


V_{IN} — I_O

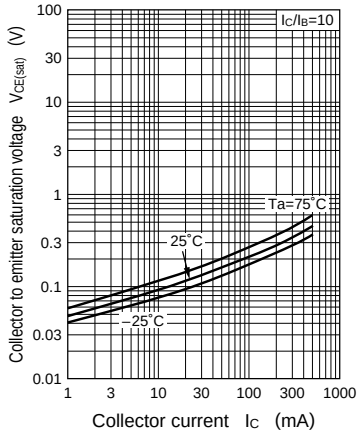


Characteristics charts of UNR1223

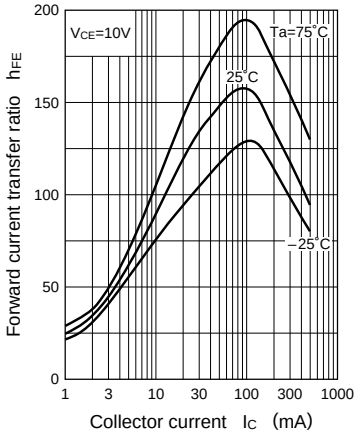
I_C — V_{CE}



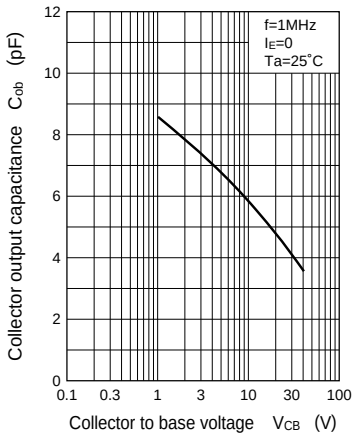
$V_{CE(sat)}$ — I_C



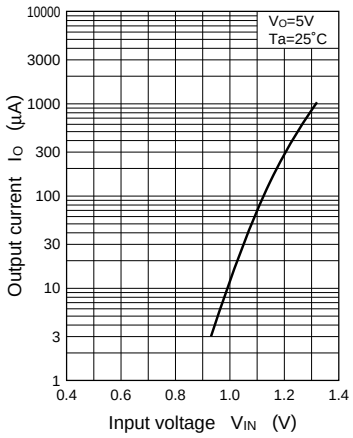
h_{FE} — I_C



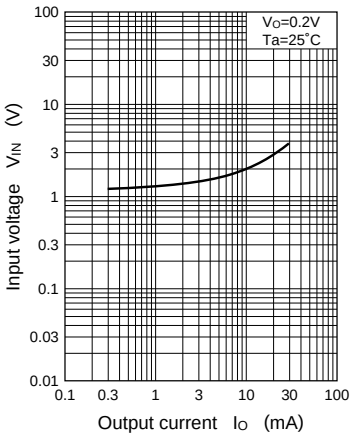
C_{ob} — V_{CB}



I_O — V_{IN}

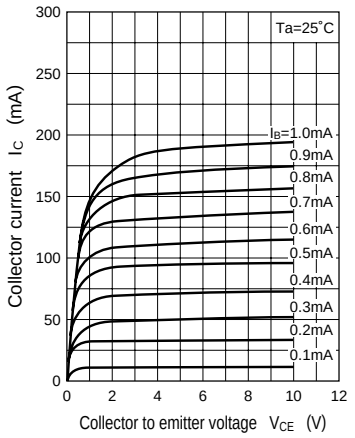


V_{IN} — I_O

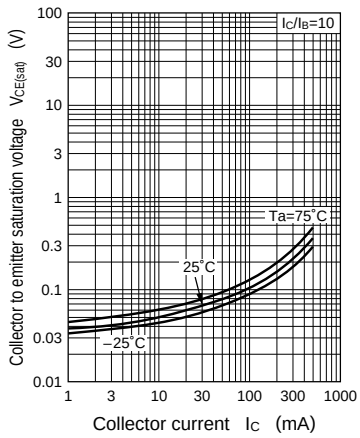


Characteristics charts of UNR1224

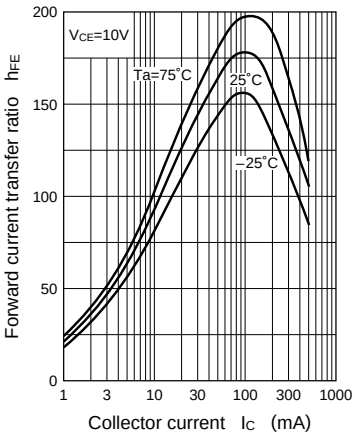
I_C — V_{CE}



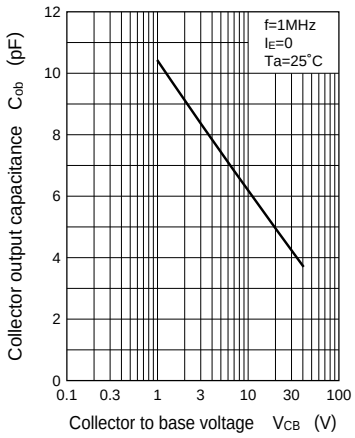
$V_{CE(sat)}$ — I_C



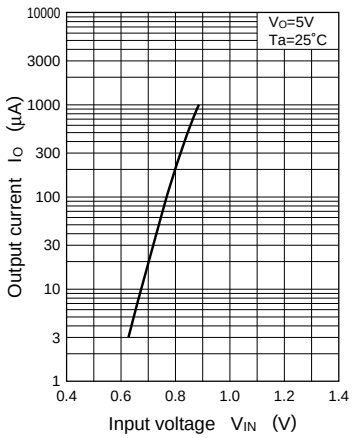
h_{FE} — I_C



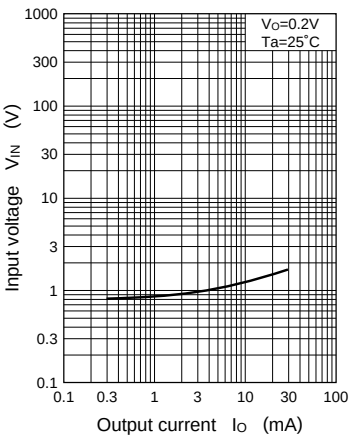
C_{ob} — V_{CB}



I_O — V_{IN}



V_{IN} — I_O



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