

UN2221/2222/2223/2224

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.
- Mini type package, allowing downsizing of the equipment and automatic insertion through tape packing and magazine packing.

Resistance by Part Number

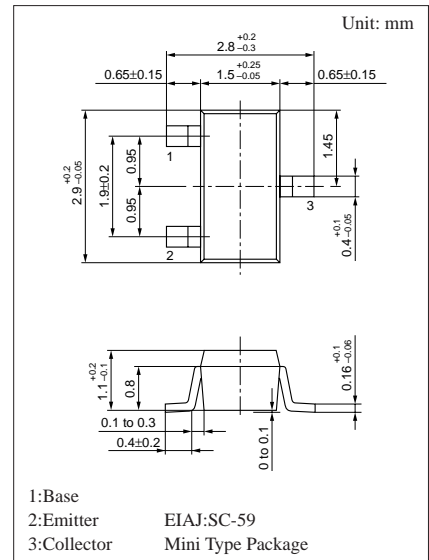
	Marking Symbol	(R ₁)	(R ₂)
• UN2221	9A	2.2kΩ	2.2kΩ
• UN2222	9B	4.7kΩ	4.7kΩ
• UN2223	9C	10kΩ	10kΩ
• UN2224	9D	2.2kΩ	10kΩ

Absolute Maximum Ratings (T_a=25°C)

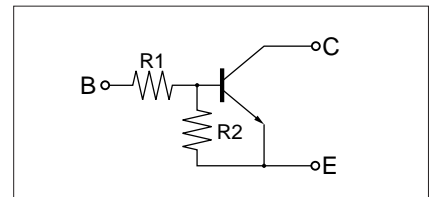
Parameter	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	50	V
Collector to emitter voltage	V _{CEO}	50	V
Collector current	I _C	500	mA
Total power dissipation	P _T	200	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Electrical Characteristics (T_a=25°C)

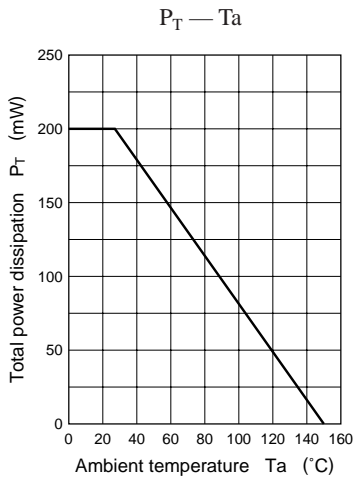
Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current		I _{CBO}	V _{CB} = 50V, I _E = 0			1	μA
		I _{CEO}	V _{CE} = 50V, I _B = 0			1	μA
Emitter cutoff current	UN2221	I _{EBO}	V _{EB} = 6V, I _C = 0			5	mA
	UN2222					2	
	UN2223/2224					1	
Collector to base voltage		V _{CBO}	I _C = 10μA, I _E = 0	50			V
Collector to emitter voltage		V _{CEO}	I _C = 2mA, I _B = 0	50			V
Forward current transfer ratio	UN2221	h _{FE}	V _{CE} = 10V, I _C = 100mA	40			
	UN2222			50			
	UN2223/2224			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	UN2221/2224	R ₁			2.2		kΩ
	UN2222			(-30%)	4.7	(+30%)	
	UN2223				10		
Resistance ratio		R ₁ /R ₂		0.8	1.0	1.2	
				UN2224		0.22	



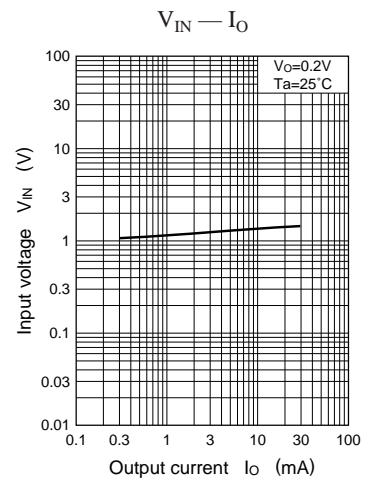
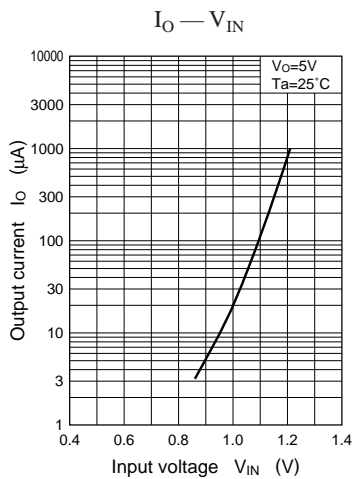
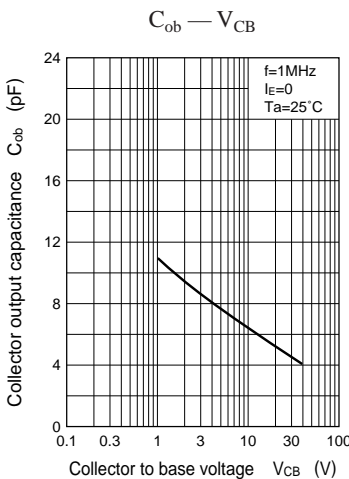
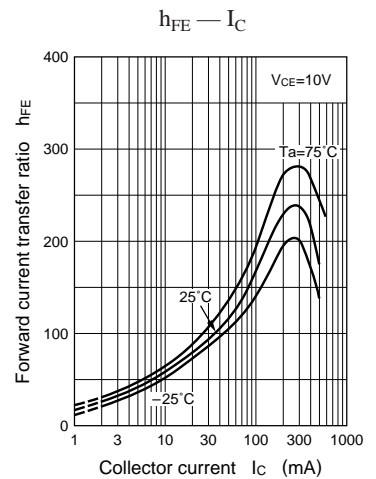
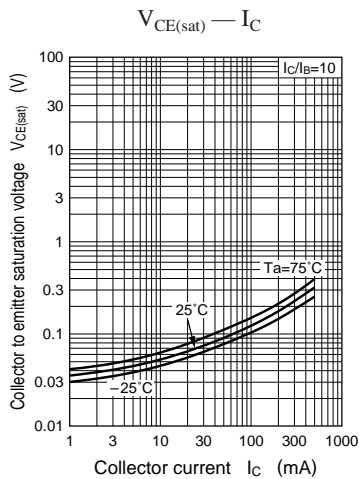
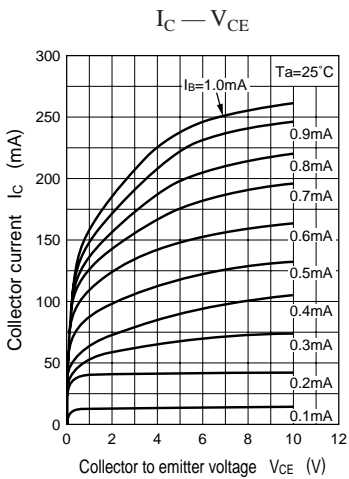
Internal Connection



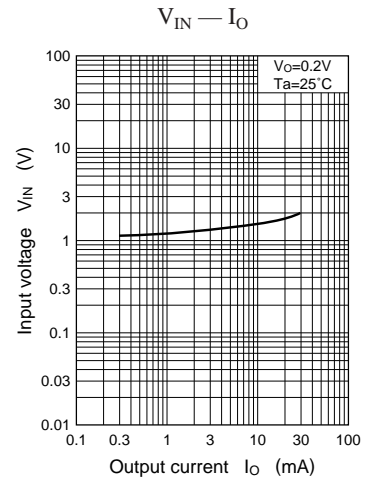
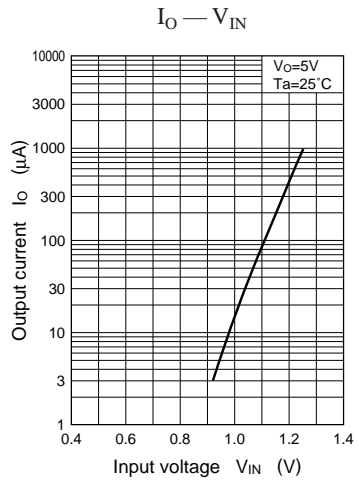
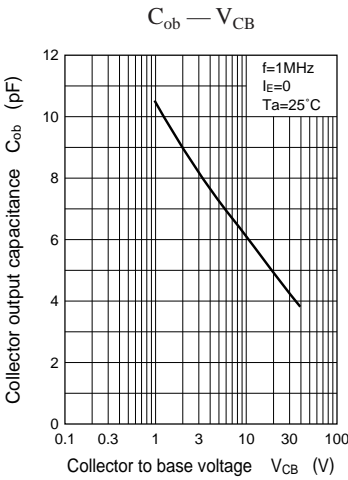
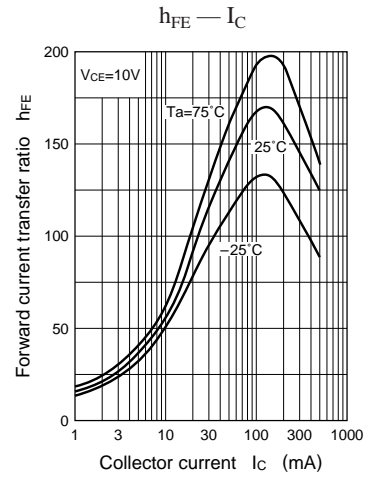
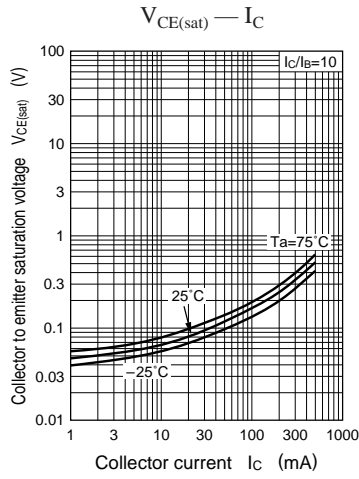
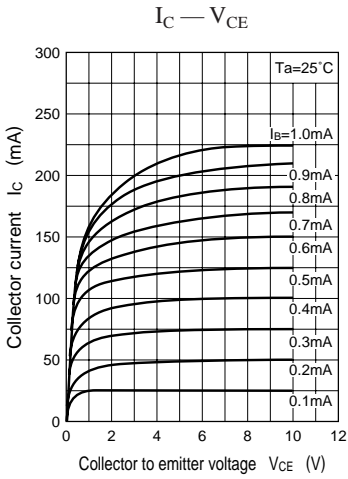
Common characteristics chart



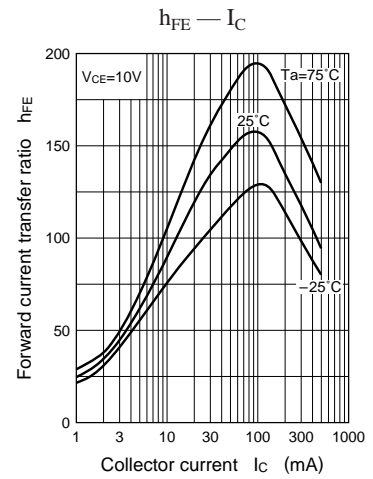
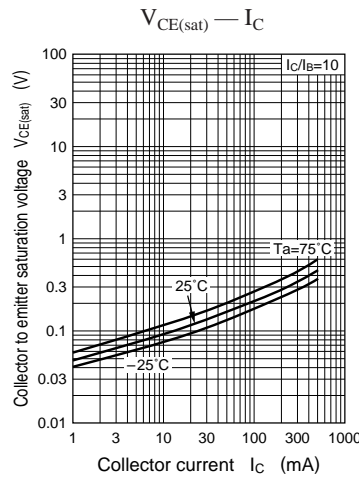
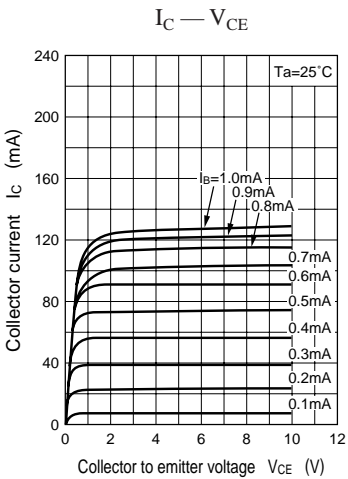
Characteristics charts of UN2221

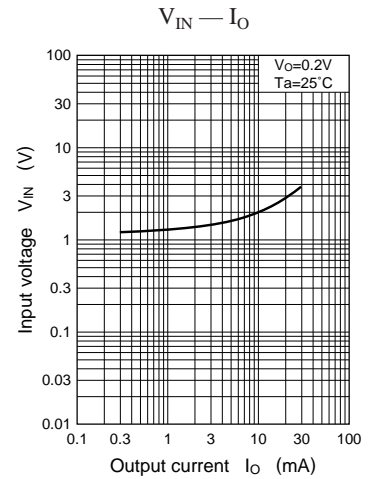
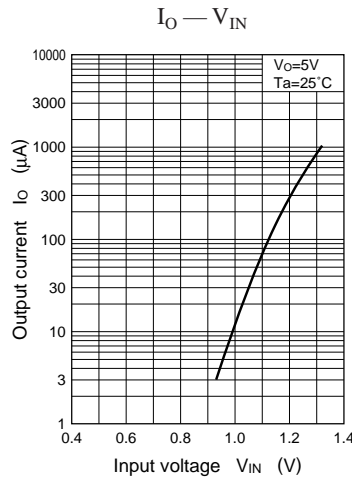
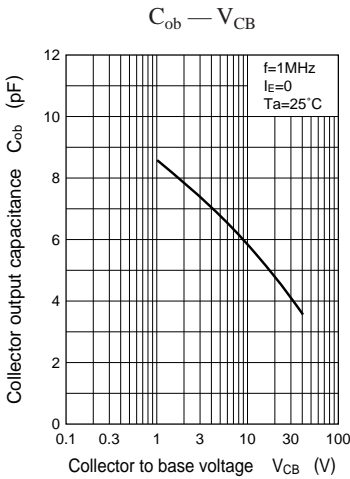


Characteristics charts of UN2222



Characteristics charts of UN2223





Characteristics charts of UN2224

