

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

## Silicon NPN epitaxial planar 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

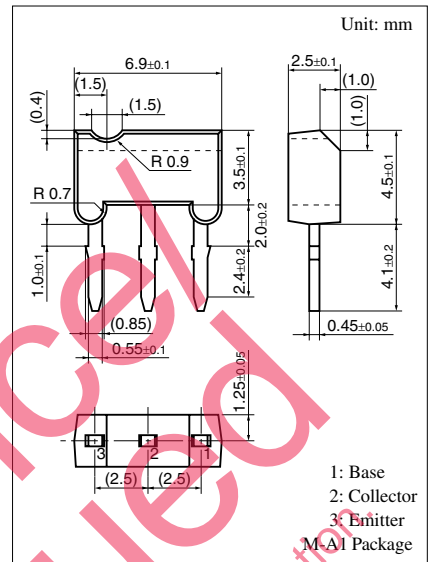
	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR1221	2.2kΩ	2.2kΩ
• UNR1222	4.7kΩ	4.7kΩ
• UNR1223	10kΩ	10kΩ
• UNR1224	2.2kΩ	10kΩ

### ■ Absolute Maximum Ratings (Ta=25°C)

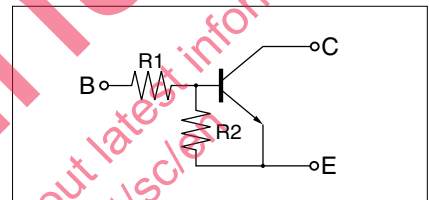
Parameter	Symbol	Ratings	Unit
Collector to base voltage	V <sub>CBO</sub>	50	V
Collector to emitter voltage	V <sub>CEO</sub>	50	V
Collector current	I <sub>C</sub>	500	mA
Total power dissipation	P <sub>T</sub>	600	mW
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

### ■ Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0			1	μA
	I <sub>CEO</sub>	V <sub>CE</sub> = 50V, I <sub>B</sub> = 0			1	μA
Emitter cutoff current	UNR1221	V <sub>EB</sub> = 6V, I <sub>E</sub> = 0			5	mA
	UNR1222				2	
	UNR1223/1224				1	
Collector to base voltage	V <sub>CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> = 0	50			V
Collector to emitter voltage	V <sub>CEO</sub>	I <sub>C</sub> = 2mA, I <sub>B</sub> = 0	50			V
Forward current transfer ratio	UNR1221	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA	40			
	UNR1222		50			
	UNR1223/1224		60			
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 100mA, I <sub>B</sub> = 5mA			0.25	V
Output voltage high level	V <sub>OH</sub>	V <sub>CC</sub> = 5V, V <sub>B</sub> = 0.5V, R <sub>L</sub> = 500Ω	4.9			V
Output voltage low level	V <sub>OL</sub>	V <sub>CC</sub> = 5V, V <sub>B</sub> = 3.5V, R <sub>L</sub> = 500Ω			0.2	V
Transition frequency	f <sub>T</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = -50mA, f = 200MHz		200		MHz
Input resistance	UNR1221/1224	R <sub>1</sub>		2.2		kΩ
	UNR1222		(-30%)	4.7	(+30%)	
	UNR1223			10		
Resistance ratio		R <sub>1</sub> /R <sub>2</sub>	0.8	1.0	1.2	
	UNR1224				0.22	

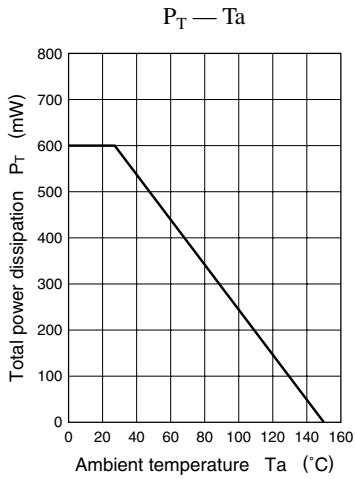


### Internal Connection

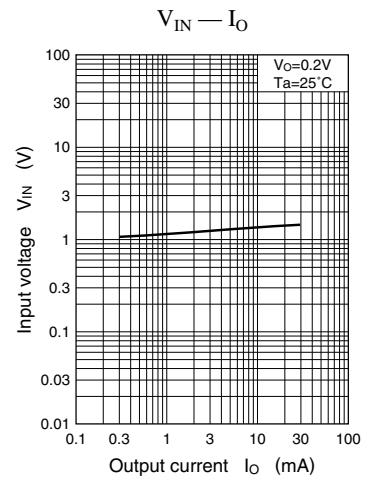
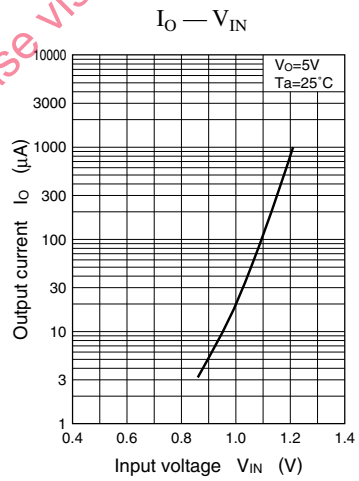
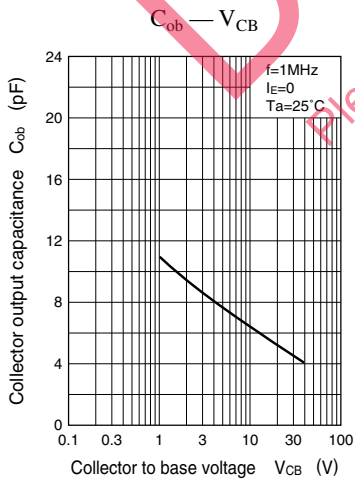
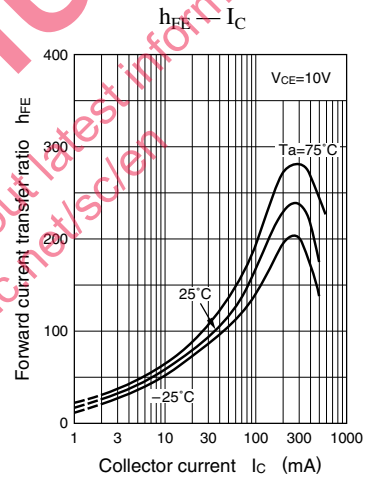
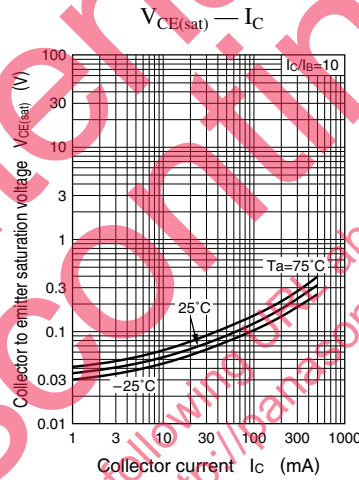
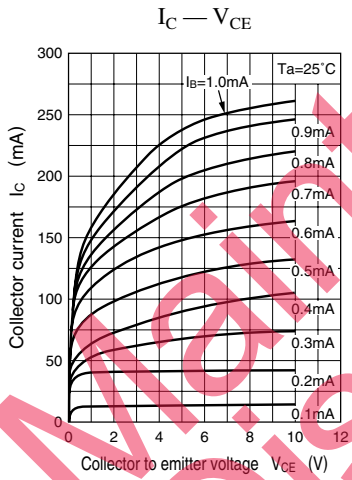


Note) The part numbers in the parenthesis show conventional part number.

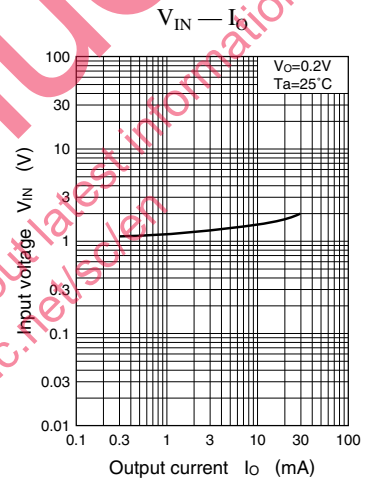
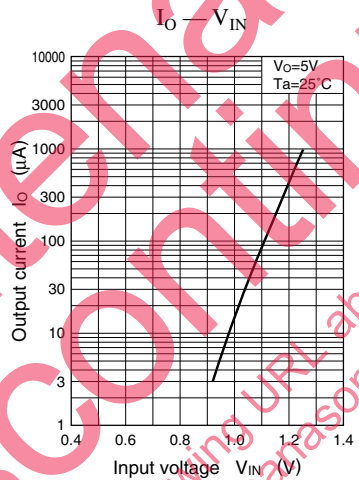
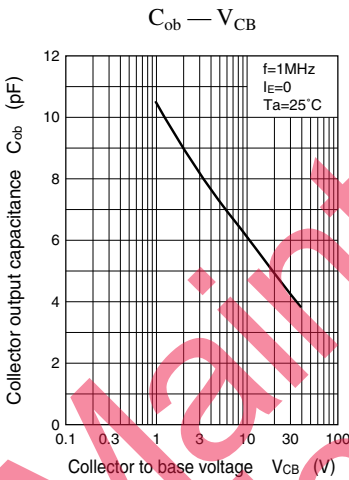
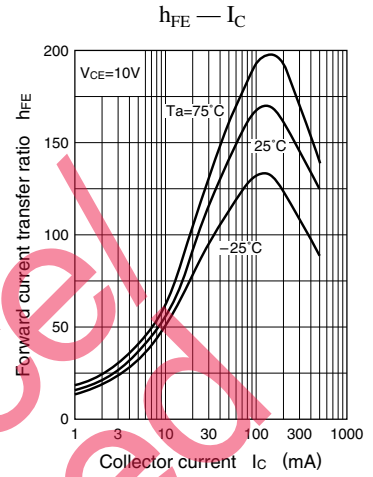
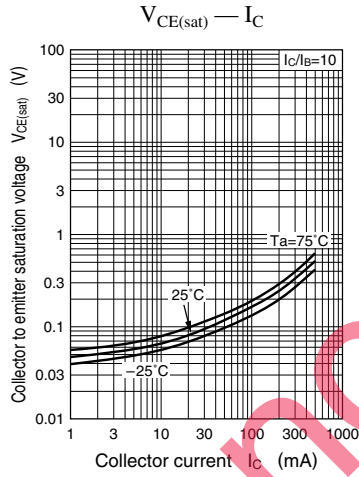
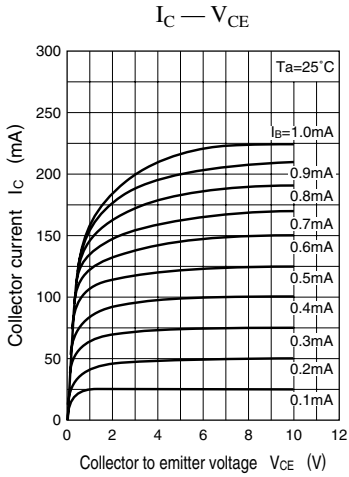
Common characteristics chart



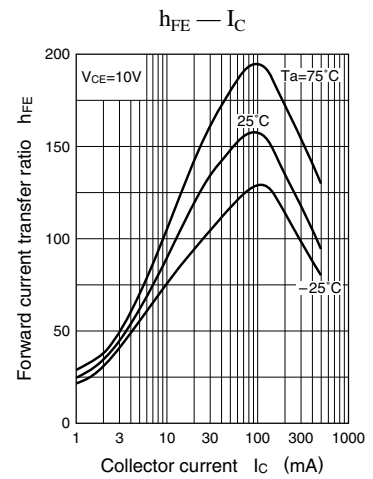
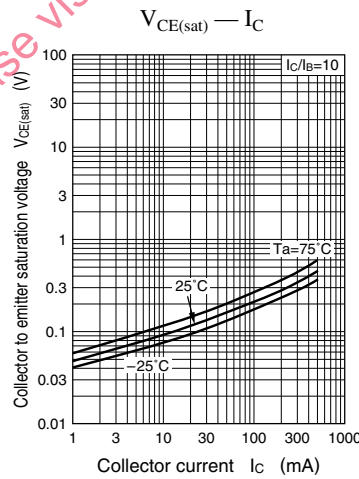
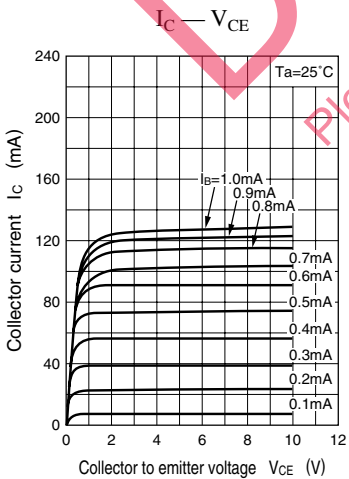
Characteristics charts of UNR1221

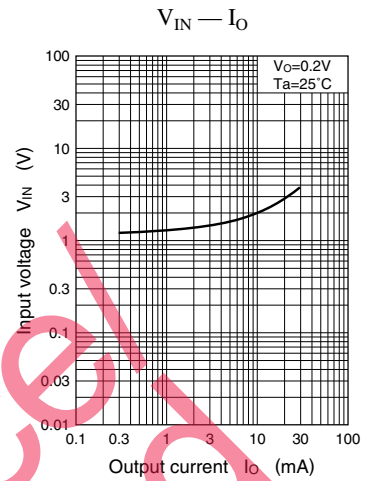
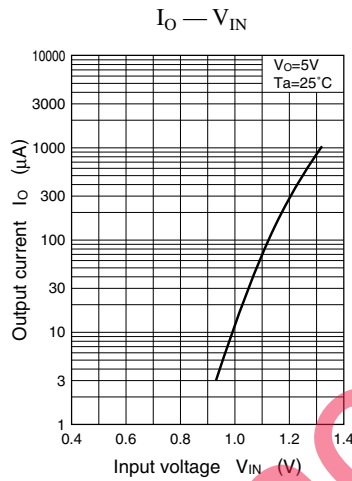
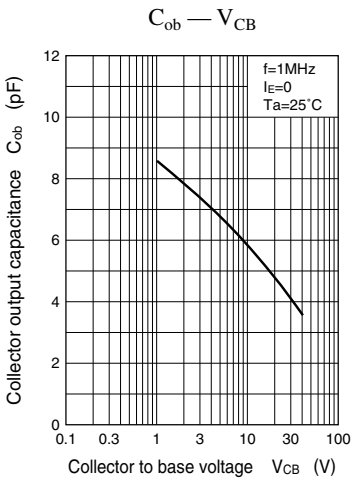


Characteristics charts of UNR1222

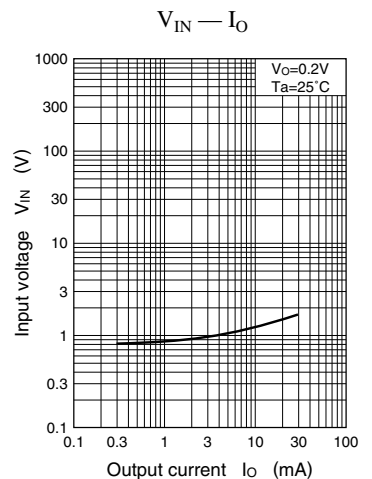
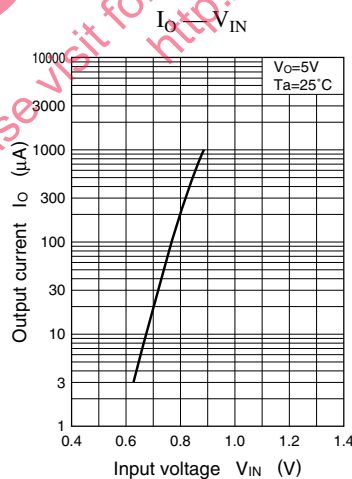
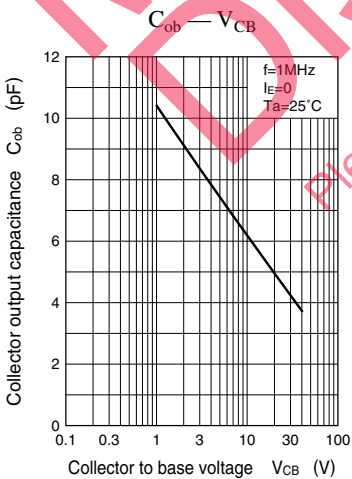
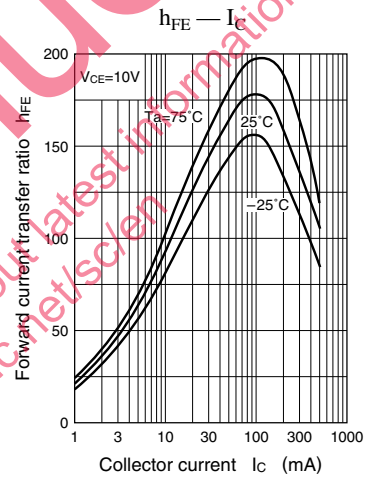
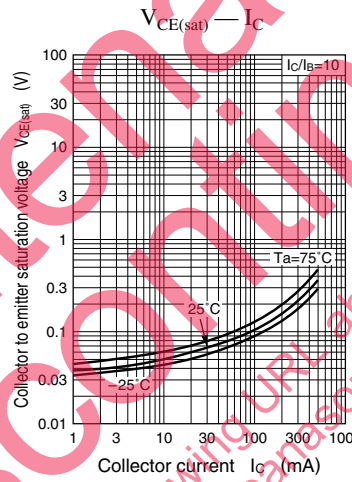
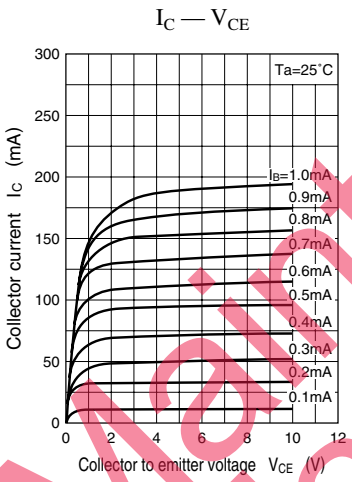


Characteristics charts of UNR1223





Characteristics charts of UNR1224



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