

# UNR6221/6222/6223/6224 (UN6221/6222/6223/6224)

Silicon NPN epitaxial planer transistor

For digital circuits

## Features

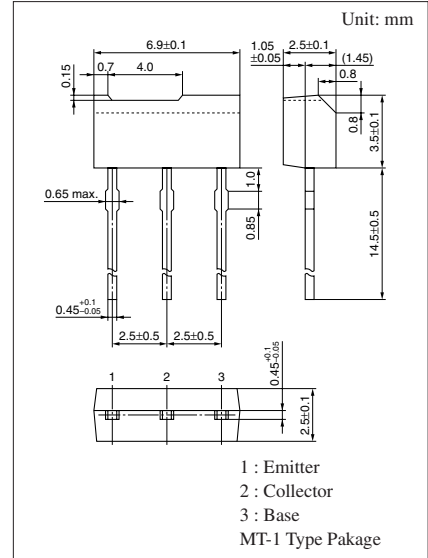
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- MT-1 type package, allowing supply with the radial taping.

## Resistance by Part Number

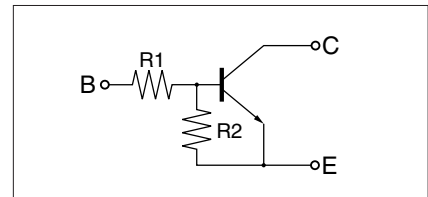
- |           | (R <sub>1</sub> ) | (R <sub>2</sub> ) |
|-----------|-------------------|-------------------|
| • UNR6221 | 2.2kΩ             | 2.2kΩ             |
| • UNR6222 | 4.7kΩ             | 4.7kΩ             |
| • UNR6223 | 10kΩ              | 10kΩ              |
| • UNR6224 | 2.2kΩ             | 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



## Internal Connection

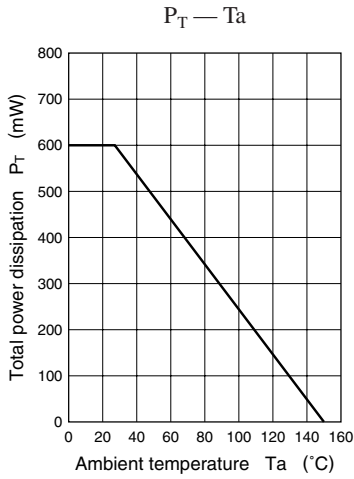


Note.) The Part numbers in the Parenthesis show conventional part number.

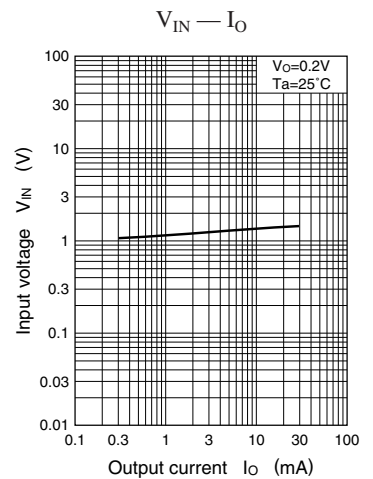
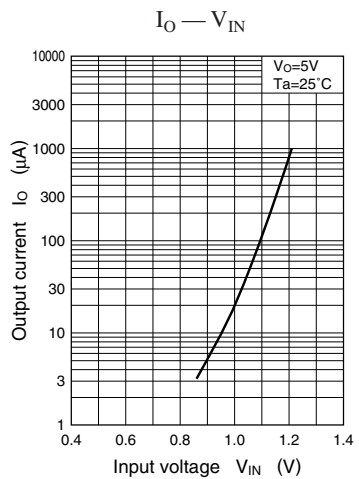
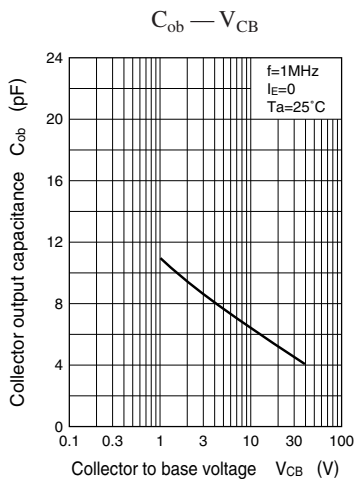
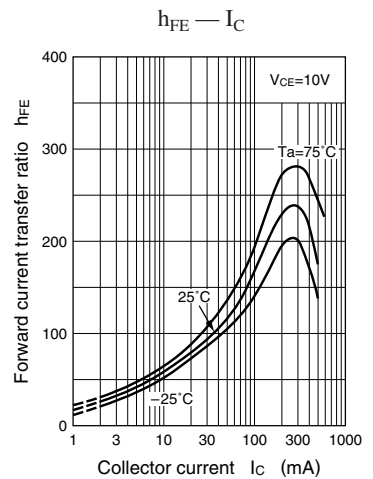
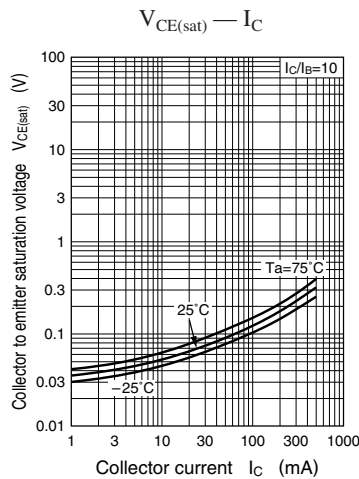
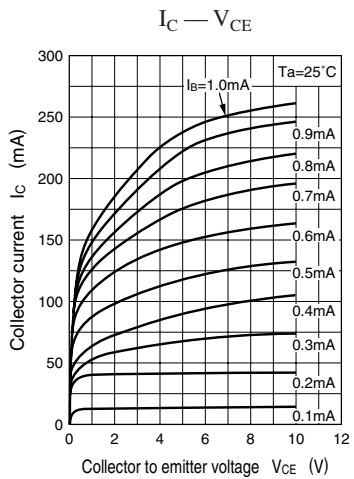
**Electrical Characteristics** ( $T_a=25^\circ\text{C}$ )

Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current		$I_{CBO}$	$V_{CB} = 50\text{V}, I_E = 0$			1	$\mu\text{A}$
		$I_{CEO}$	$V_{CE} = 50\text{V}, I_B = 0$			1	$\mu\text{A}$
Emitter cutoff current	UNR6221	$I_{EBO}$	$V_{EB} = 6\text{V}, I_C = 0$			5	mA
	UNR6222					2	
	UNR6223/6224					1	
Collector to base voltage		$V_{CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	50			V
Collector to emitter voltage		$V_{CEO}$	$I_C = 2\text{mA}, I_B = 0$	50			V
Forward current transfer ratio	UNR6221	$h_{FE}$	$V_{CE} = 10\text{V}, I_C = 100\text{mA}$	40			
	UNR6222			50			
	UNR6223/6224			60			
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = 100\text{mA}, I_B = 5\text{mA}$			0.25	V
Output voltage high level		$V_{OH}$	$V_{CC} = 5\text{V}, V_B = 0.5\text{V}, R_L = 500\Omega$	4.9			V
Output voltage low level		$V_{OL}$	$V_{CC} = 5\text{V}, V_B = 3.5\text{V}, R_L = 500\Omega$			0.2	V
Transition frequency		$f_T$	$V_{CB} = 10\text{V}, I_E = -50\text{mA}, f = 200\text{MHz}$		200		MHz
Input resistance	UNR6221/6224	$R_1$		(-30%)	2.2	(+30%)	k $\Omega$
	UNR6222				4.7		
	UNR6223				10		
Resistance ratio		$R_1/R_2$			0.8	1.0	1.2
					UNR6224	0.17	0.22

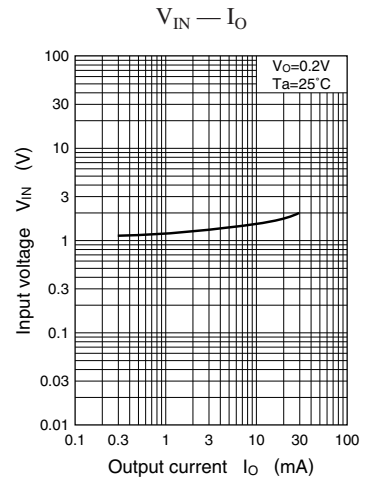
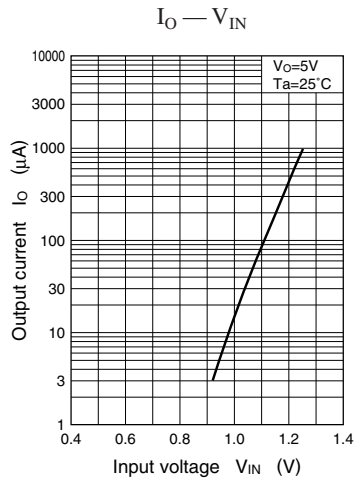
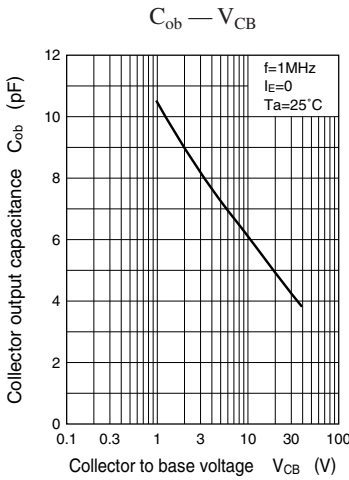
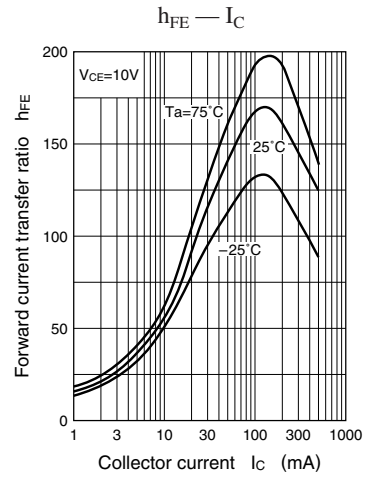
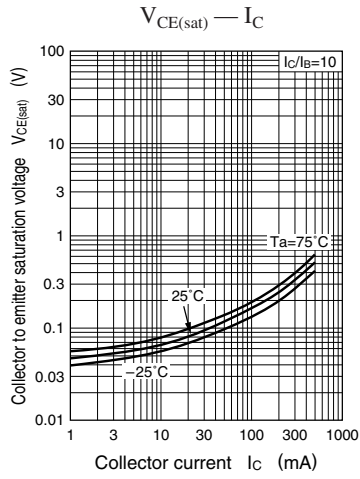
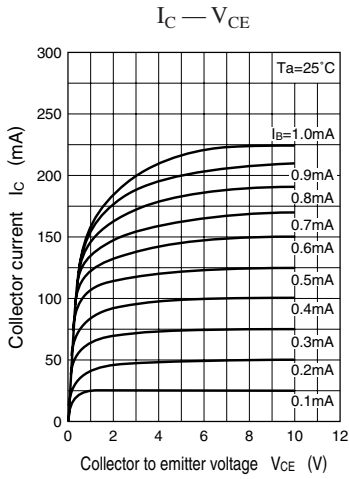
Common characteristics chart



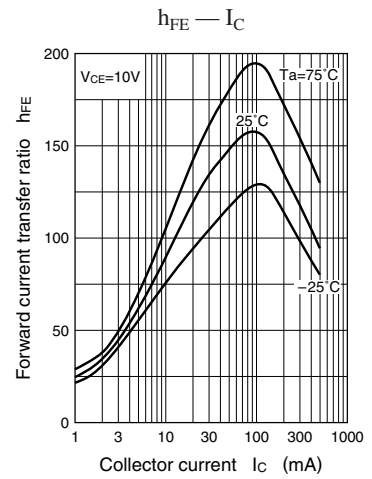
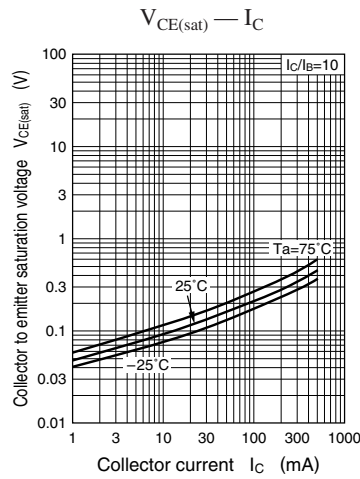
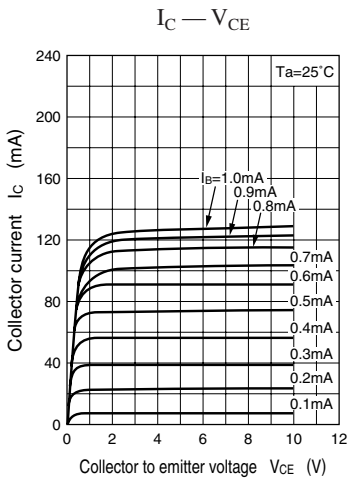
Characteristics charts of UNR6221

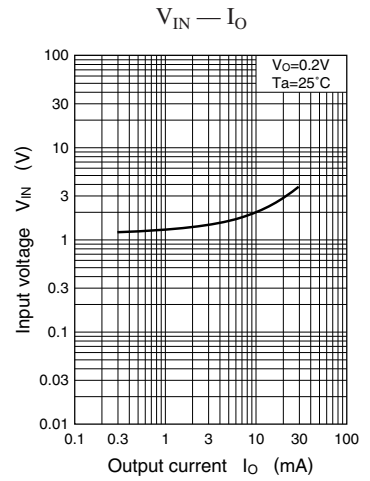
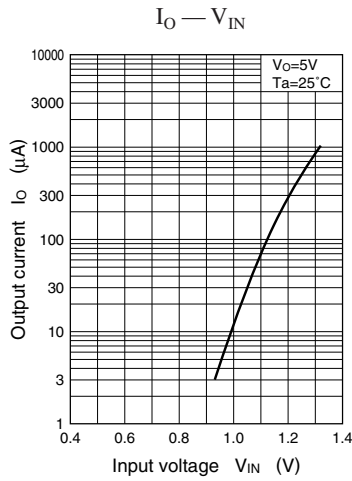
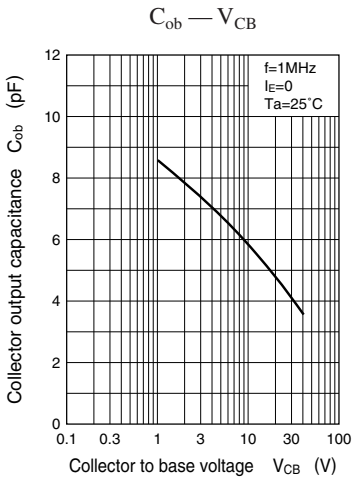


Characteristics charts of UNR6222

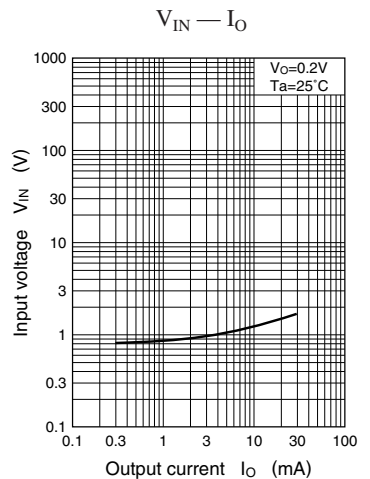
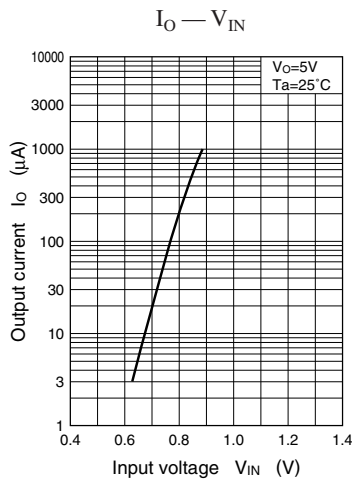
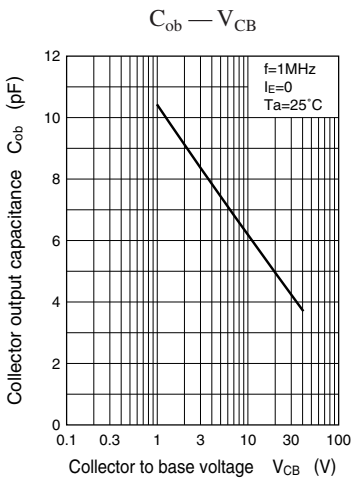
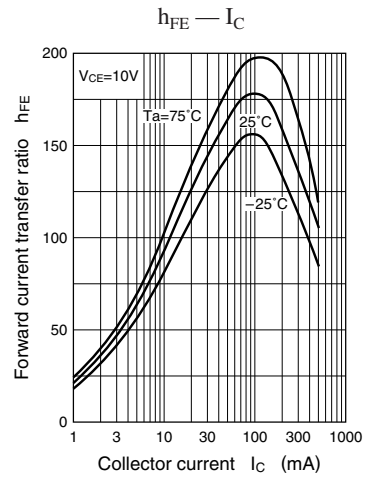
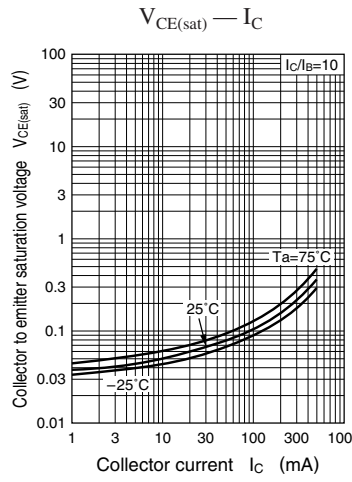
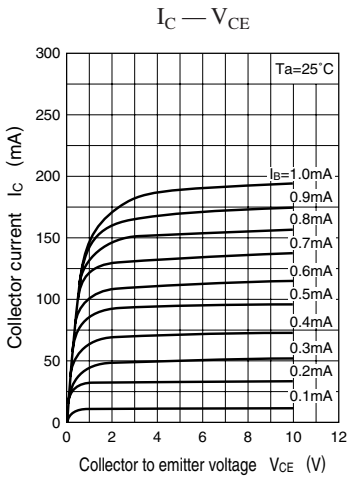


Characteristics charts of UNR6223





Characteristics charts of UNR6224



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