

# UNR4221/4222/4223/4224

## (UN4221/4222/4223/4224)

Silicon NPN 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 <sub>1</sub> )	(R <sub>2</sub> )
• UNR4221 (UN4221)	2.2 kΩ	2.2 kΩ
• UNR4222 (UN4222)	4.7 kΩ	4.7 kΩ
• UNR4223 (UN4223)	10 kΩ	10 kΩ
• UNR4224 (UN4224)	2.2 kΩ	10 kΩ

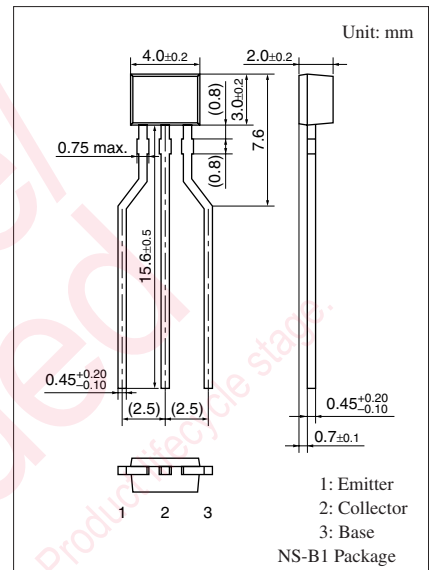
### ■ Absolute Maximum Ratings T<sub>a</sub> = 25°C

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V <sub>CB0</sub>	50	V
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	50	V
Collector current	I <sub>C</sub>	500	mA
Total power dissipation	P <sub>T</sub>	300	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

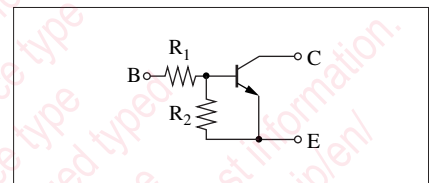
### ■ Electrical Characteristics T<sub>a</sub> = 25°C ± 3°C

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)		V <sub>CB0</sub>	I <sub>C</sub> = 10 μA, I <sub>E</sub> = 0	50			V
Collector-emitter voltage (Base open)		V <sub>CEO</sub>	I <sub>C</sub> = 2 mA, I <sub>B</sub> = 0	50			V
Collector-base cutoff current (Emitter open)		I <sub>CB0</sub>	V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0			1.0	μA
Collector-emitter cutoff current (Base open)		I <sub>CEO</sub>	V <sub>CE</sub> = 50 V, I <sub>B</sub> = 0			1.0	μA
Emitter-base cutoff current (Collector open)	UNR4221	I <sub>EBO</sub>	V <sub>EB</sub> = 6 V, I <sub>C</sub> = 0			5.0	mA
	UNR4222					2.0	
	UNR4223/4224					1.0	
Forward current transfer ratio	UNR4221	h <sub>FE</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 100 mA	40			—
	UNR4222			50			
	UNR4223/4224			60			
Collector-emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>C</sub> = 100 mA, I <sub>B</sub> = 5 mA			0.25	V
Output voltage high-level		V <sub>OH</sub>	V <sub>CC</sub> = 5 V, V <sub>B</sub> = 0.5 V, R <sub>L</sub> = 500 Ω	4.9			V
Output voltage low-level		V <sub>OL</sub>	V <sub>CC</sub> = 5 V, V <sub>B</sub> = 3.5 V, R <sub>L</sub> = 500 Ω			0.2	V

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



### Internal Connection

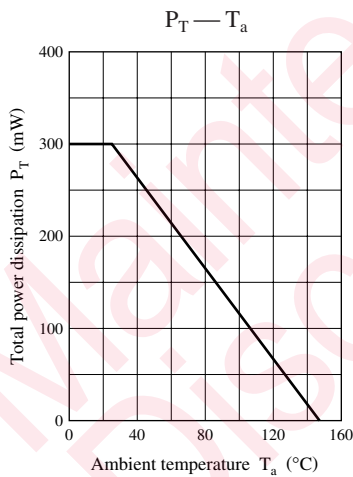


■ Electrical Characteristics (continued)  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

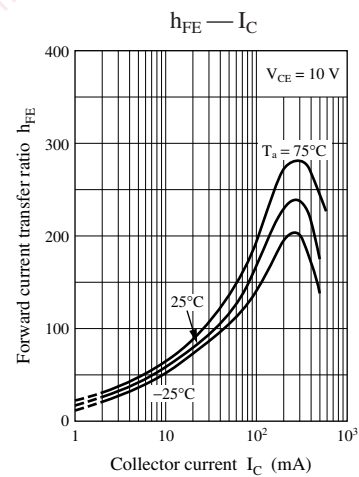
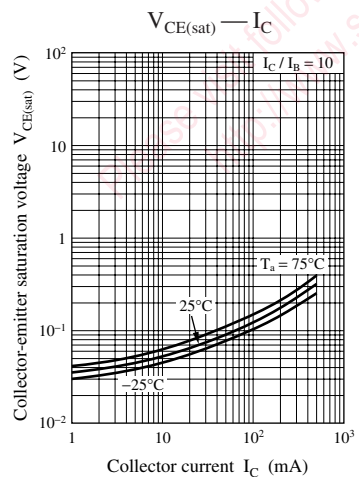
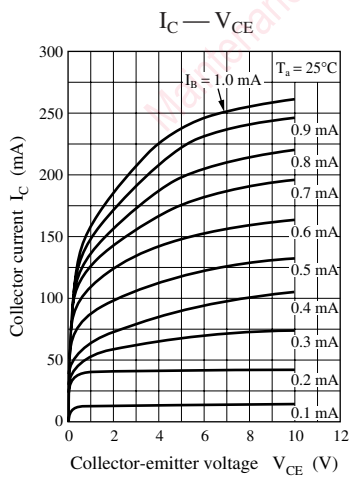
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Transition frequency		$f_T$	$V_{CB} = 10\text{ V}, I_E = -50\text{ mA}, f = 200\text{ MHz}$		200		MHz
Input resistance	UNR4221/4224	$R_1$		-30%	2.2	+30%	k $\Omega$
	UNR4222				4.7		
	UNR4223				10		
Resistance ratio		$R_1/R_2$		0.8	1.0	1.2	
	UNR4224			0.17	0.22	0.27	

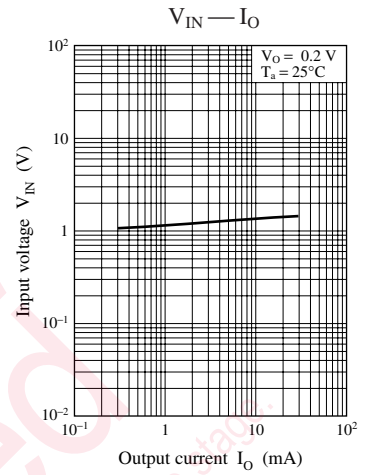
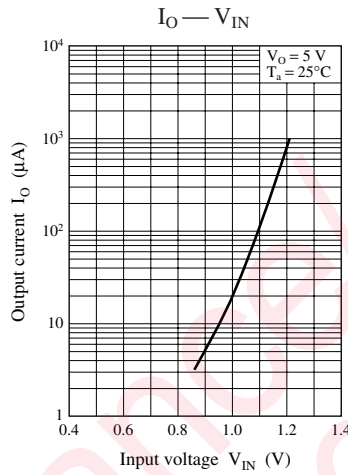
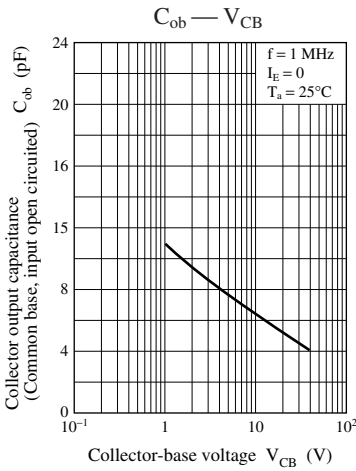
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

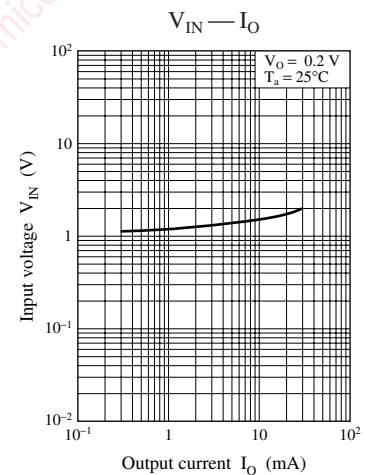
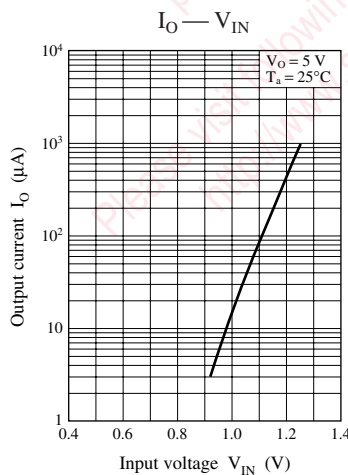
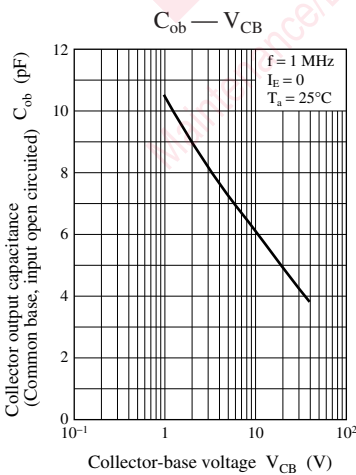
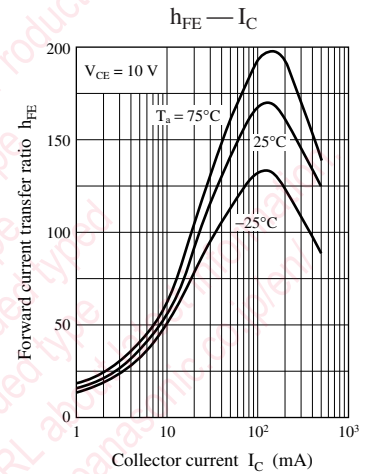
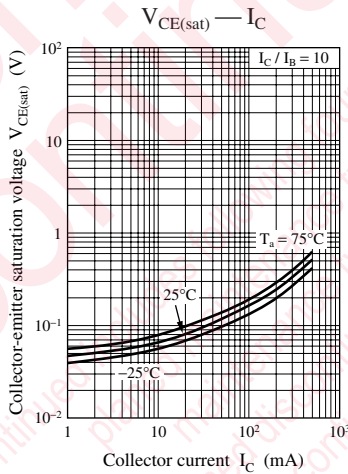
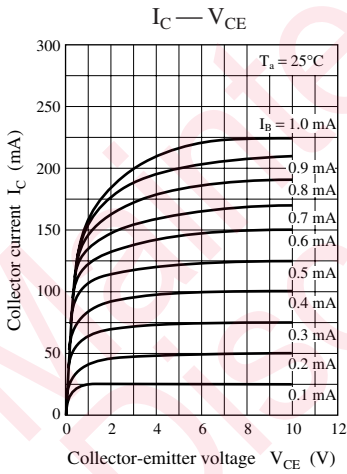


Characteristics charts of UNR4221

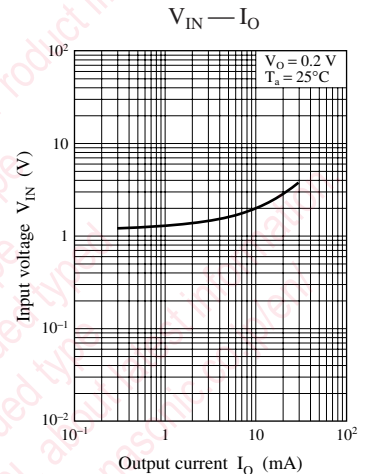
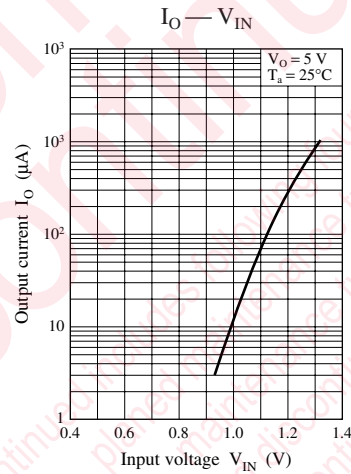
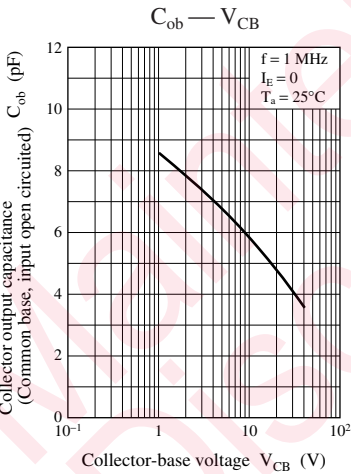
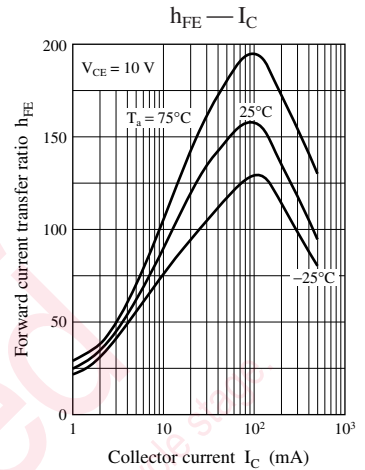
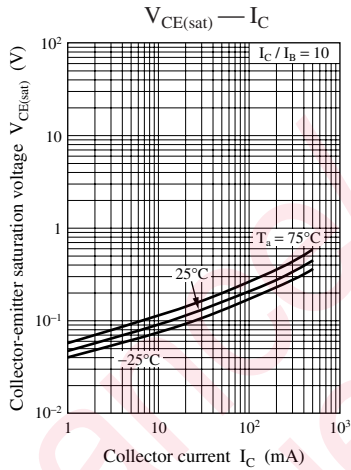
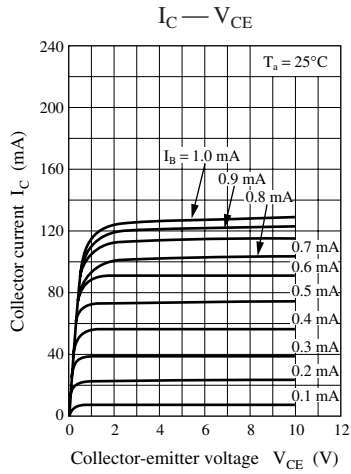




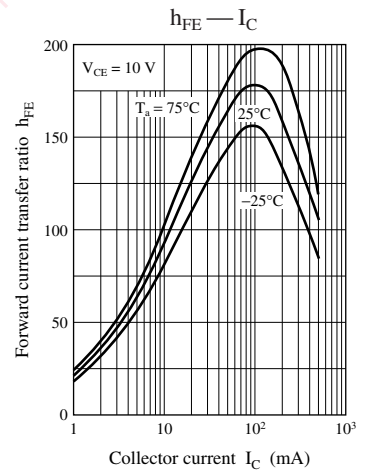
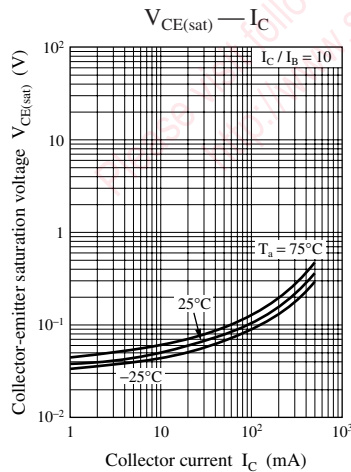
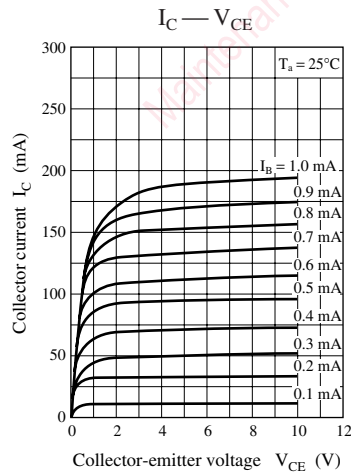
Characteristics charts of UNR4222

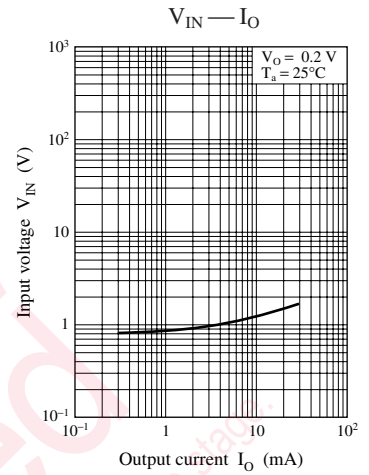
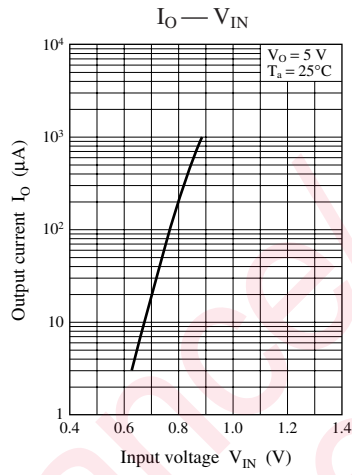
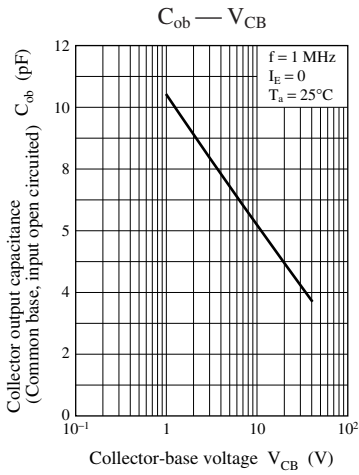


Characteristics charts of UNR4223



Characteristics charts of UNR4224





Maintenance/Discontinued includes following four Product lifecycle stages:  
 planned maintenance type  
 maintenance type  
 planned discontinued type  
 discontinued type  
 Please visit following URL about latest information.  
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