

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 ₁)	(R ₂)
• 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

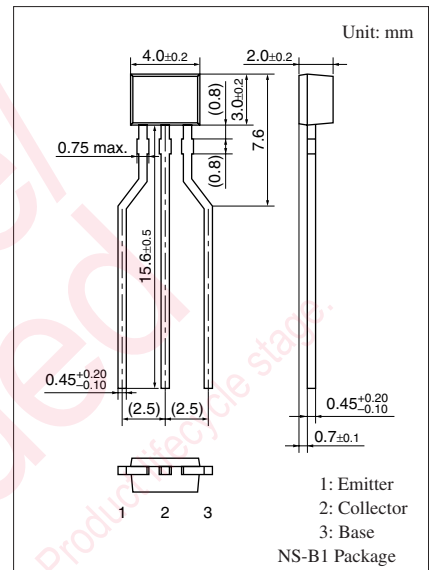
■ Absolute Maximum Ratings T_a = 25°C

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V _{CB0}	50	V
Collector-emitter voltage (Base open)	V _{CEO}	50	V
Collector current	I _C	500	mA
Total power dissipation	P _T	300	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

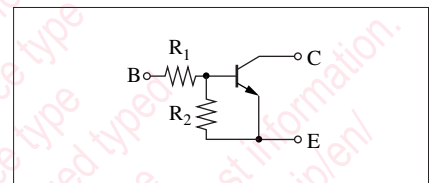
■ Electrical Characteristics T_a = 25°C ± 3°C

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

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



Internal Connection

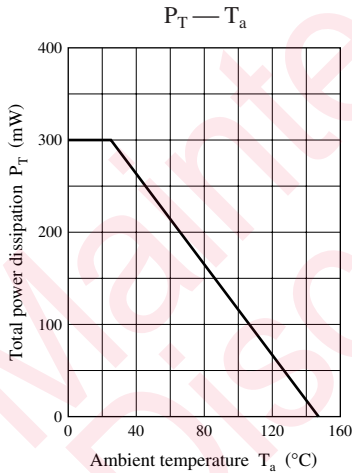


■ Electrical Characteristics (continued) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

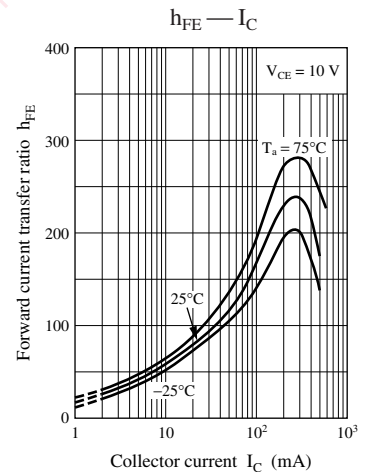
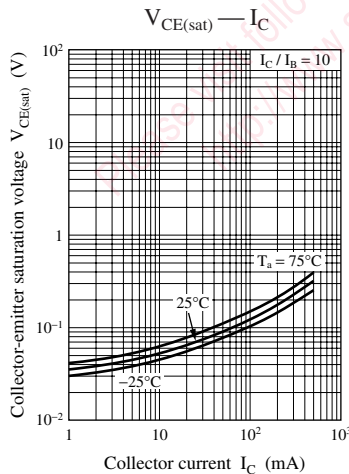
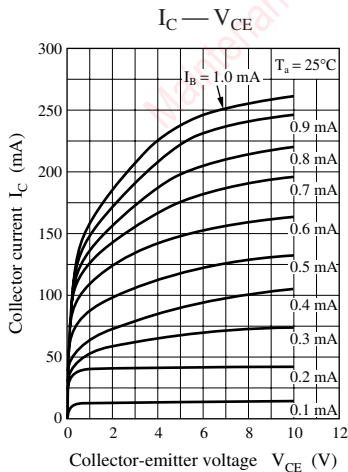
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Transition frequency	f_T	$V_{CB} = 10\text{ V}, I_E = -50\text{ mA}, f = 200\text{ MHz}$		200		MHz
Input resistance	UNR4221/4224 UNR4222 UNR4223	R_1	-30%	2.2	+30%	k Ω
				4.7		
				10		
Resistance ratio	UNR4224	R_1/R_2	0.8	1.0	1.2	
			0.17	0.22	0.27	

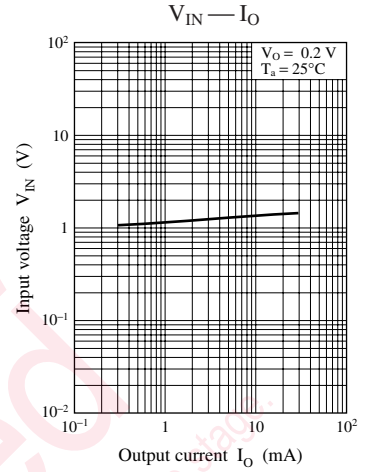
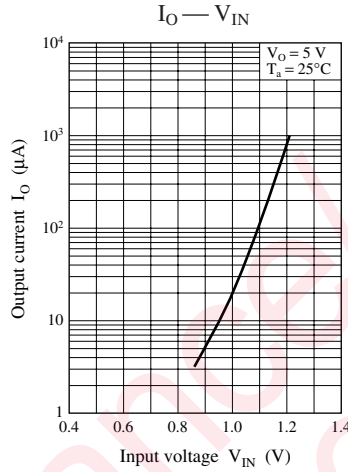
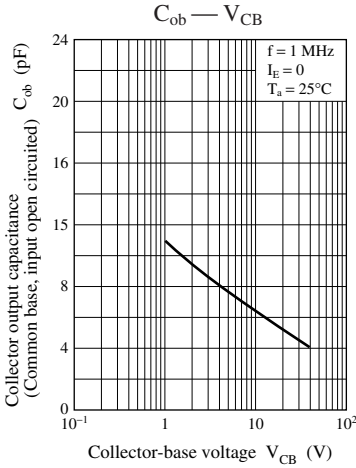
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Common characteristics chart

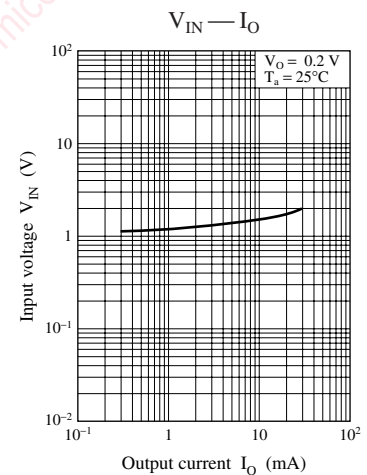
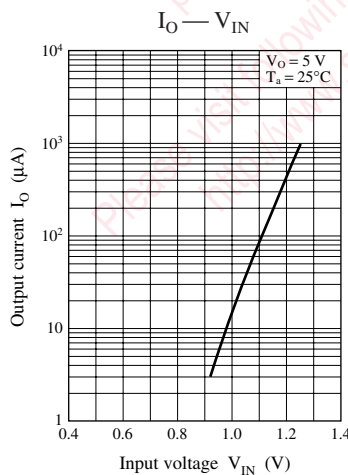
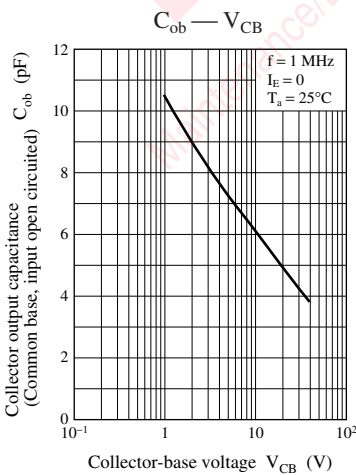
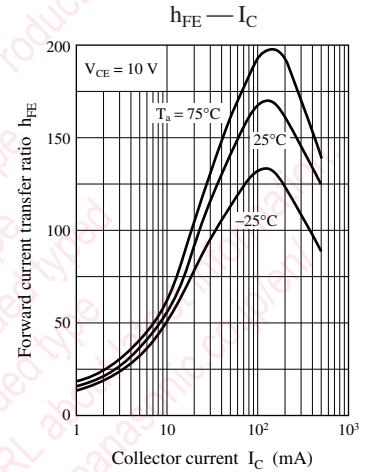
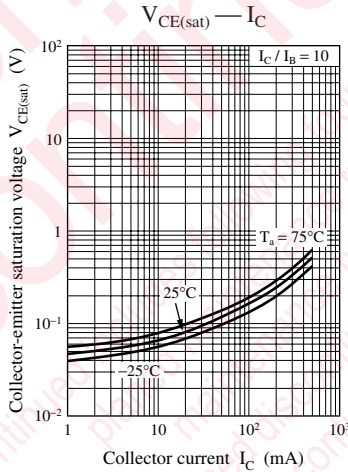
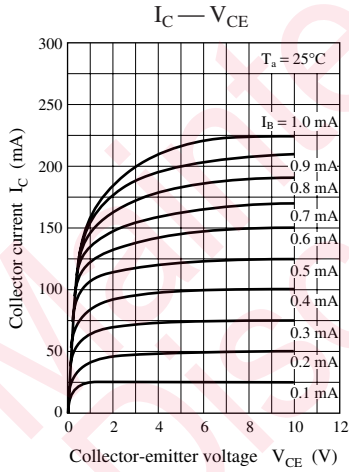


Characteristics charts of UNR4221

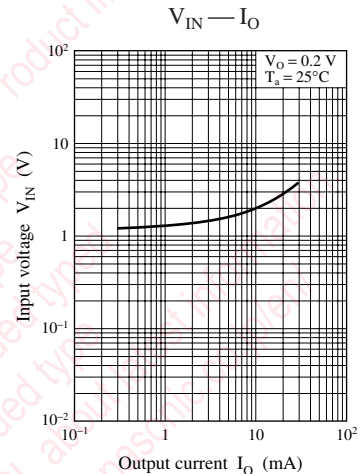
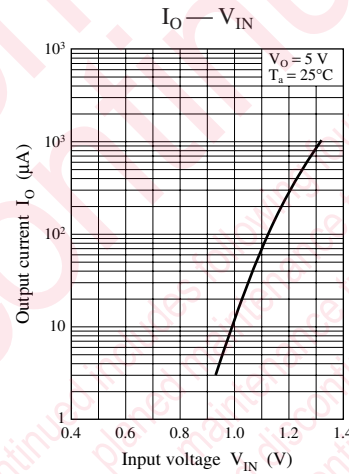
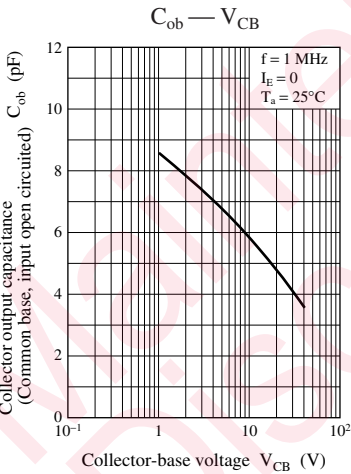
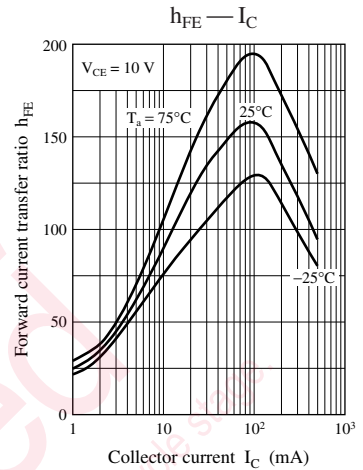
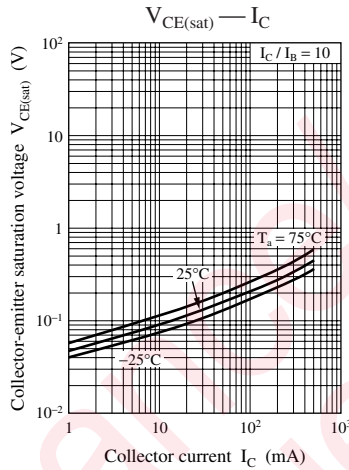
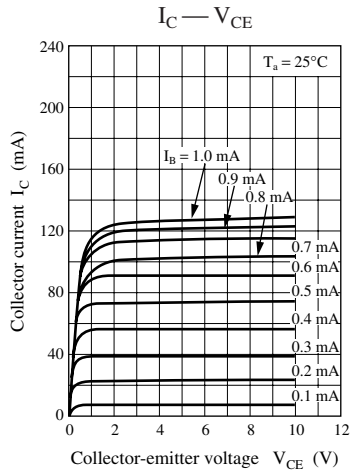




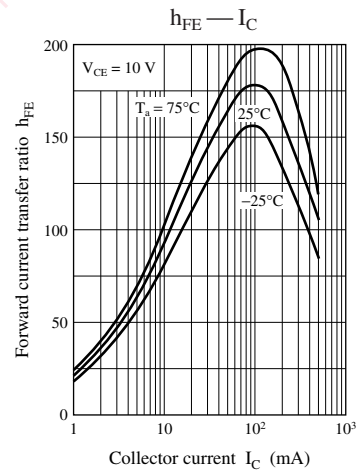
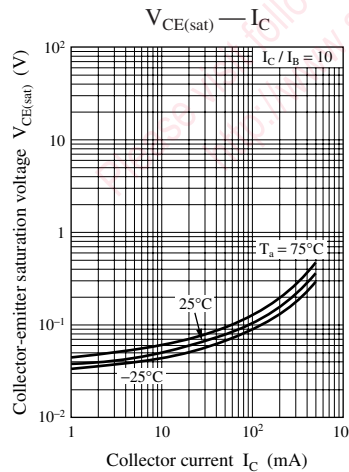
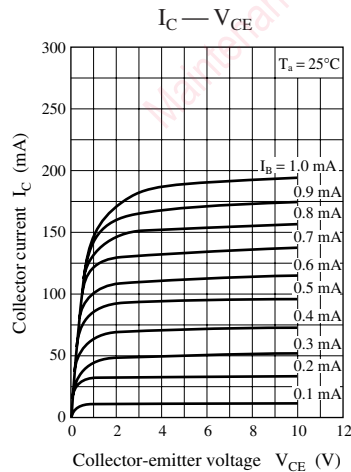
Characteristics charts of UNR4222

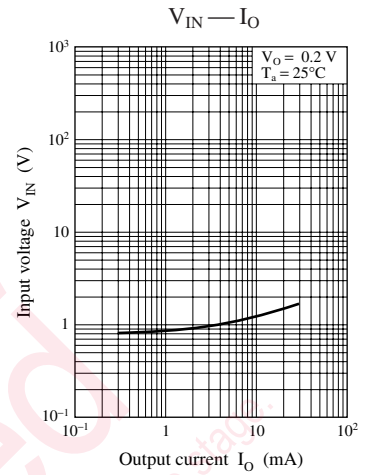
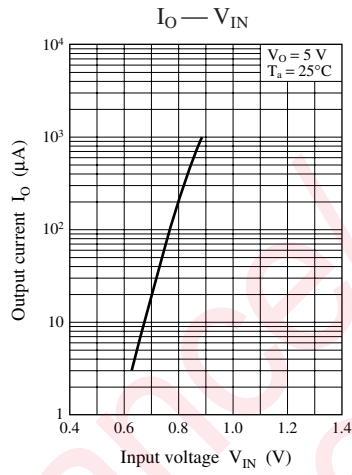
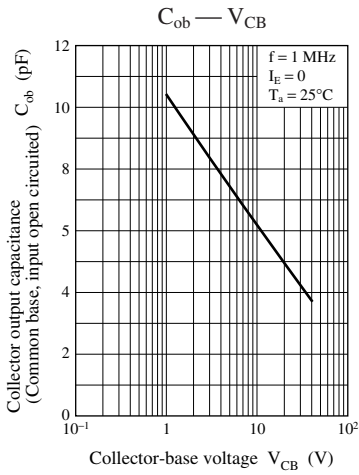


Characteristics charts of UNR4223



Characteristics charts of UNR4224





Maintenance/Discontinued includes following four Product lifecycle stages:
planned maintenance type
maintenance type
planned discontinued type
discontinued type
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