

UNR3210/3213/3216/321L/321N

Silicon NPN epitaxial planar transistor

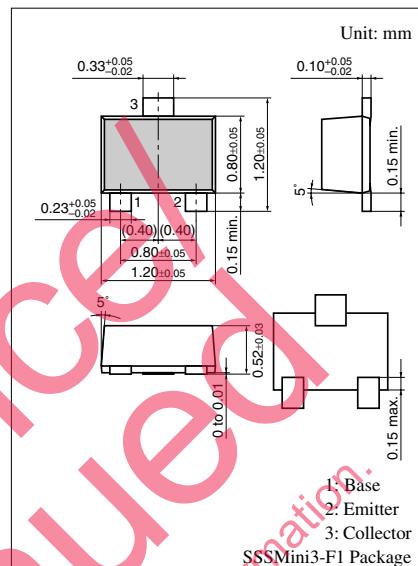
For digital circuits

■ Features

- Optimum for downsizing of the equipment and high-density mounting
- Contribute for low power consumption

■ Resistance by Part Number

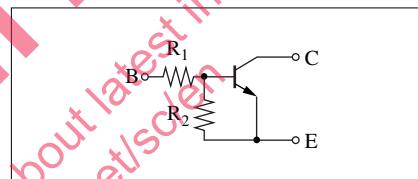
	Marking symbol	(R ₁)	(R ₂)
• UNR3210	8L	47 kΩ	—
• UNR3213	8C	47 kΩ	47 kΩ
• UNR3216	8F	4.7 kΩ	—
• UNR321L	8Q	4.7 kΩ	4.7 kΩ
• UNR321N	EX	4.7 kΩ	47 kΩ



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	50	V
Collector to emitter voltage	V_{CEO}	50	V
Collector current	I_C	100	mA
Total power dissipation	P_T	100	mW
Junction temperature	T_j	125	°C
Storage temperature	T_{stg}	-55 to +125	°C

Internal Connection



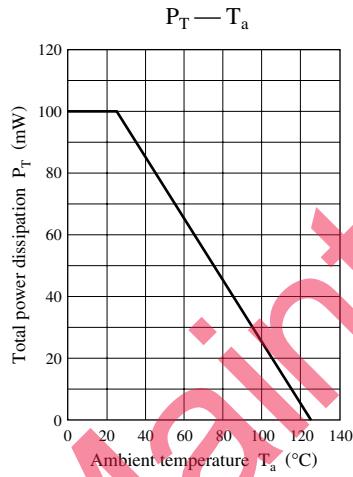
■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 50\text{ V}$, $I_E = 0$			0.1	μA
	I_{CEO}	$V_{CE} = 50\text{ V}$, $I_B = 0$			0.5	
Emitter cutoff current	I_{EBO}	$V_{EB} = 6\text{ V}$, $I_C = 0$			0.01	mA
					0.1	
					0.2	
					2.0	
Collector to base voltage	V_{CBO}	$I_C = 10\text{ μA}$, $I_E = 0$	50			V
Collector to emitter voltage	V_{CEO}	$I_C = 2\text{ mA}$, $I_B = 0$	50			V
Forward current transfer ratio	h_{FE}	$V_{CE} = 10\text{ V}$, $I_C = 5\text{ mA}$	20			
			80			
				400		
			160		460	
Collector to emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = 10\text{ mA}$, $I_B = 0.3\text{ mA}$			0.25	V

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
High-level output voltage	V_{OH}	$V_{CC} = 5 \text{ V}$, $V_B = 0.5 \text{ V}$, $R_L = 1 \text{ k}\Omega$	4.9			V
Low-level output voltage UNR3213	V_{OL}	$V_{CC} = 5 \text{ V}$, $V_B = 2.5 \text{ V}$, $R_L = 1 \text{ k}\Omega$			0.2	V
		$V_{CC} = 5 \text{ V}$, $V_B = 3.5 \text{ V}$, $R_L = 1 \text{ k}\Omega$				
Transition frequency	f_T	$V_{CB} = 10 \text{ V}$, $I_E = -2 \text{ mA}$, $f = 200 \text{ MHz}$		150		MHz
Input resistance UNR3210/3213	R_I		-30%	4.7	+30%	$\text{k}\Omega$
				47		
Resistance ratio UNR321N	R_I/R_2		0.8	1.0	1.2	
				0.1		

Common characteristics chart



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