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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# UNR3113, UNR311A, UNR311T

## Silicon PNP 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

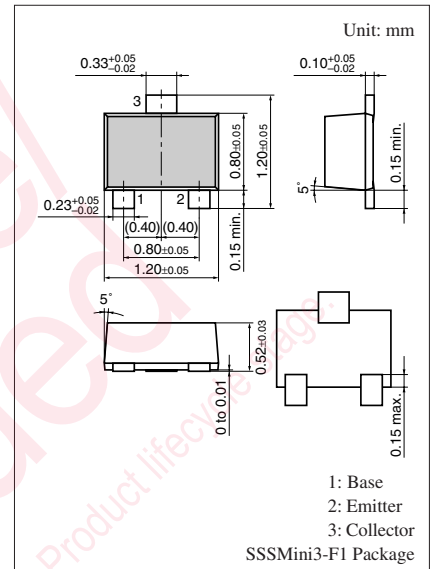
	Marking symbol	(R <sub>1</sub> )	(R <sub>2</sub> )
• UNR3113	6C	47 kΩ	47 kΩ
• UNR311A	6X	100 kΩ	100 kΩ
• UNR311T	EY	22 kΩ	47 kΩ

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

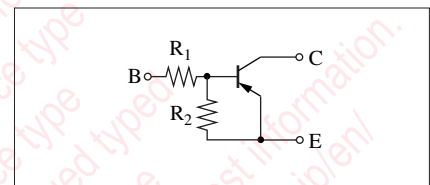
Parameter	Symbol	Rating	Unit
Collector to base voltage	V <sub>CBO</sub>	-50	V
Collector to emitter voltage	V <sub>CEO</sub>	-50	V
Collector current	I <sub>C</sub>	-100	mA
Total power dissipation	P <sub>T</sub>	100	mW
Junction temperature	T <sub>j</sub>	125	°C
Storage temperature	T <sub>stg</sub>	-55 to +125	°C

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

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector to base voltage		V <sub>CBO</sub>	I <sub>C</sub> = -10 μA, I <sub>E</sub> = 0	-50			V
Collector to emitter voltage		V <sub>CEO</sub>	I <sub>C</sub> = -2 mA, I <sub>B</sub> = 0	-50			V
Collector cutoff current		I <sub>CBO</sub>	V <sub>CB</sub> = -50 V, I <sub>E</sub> = 0			-0.1	μA
		I <sub>CEO</sub>	V <sub>CE</sub> = -50 V, I <sub>B</sub> = 0			-0.5	
Emitter cutoff current	UNR3113, 311A	I <sub>EBO</sub>	V <sub>EB</sub> = -6 V, I <sub>C</sub> = 0			-0.1	mA
	UNR311T					-0.2	
Forward current transfer ratio	UNR3113, 311A	h <sub>FE</sub>	V <sub>CE</sub> = -10 V, I <sub>C</sub> = -5 mA	80			
	UNR311T			80	400		
Collector to emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>C</sub> = -10 mA, I <sub>B</sub> = -0.3 mA			-0.25	V
High-level output voltage		V <sub>OH</sub>	V <sub>CC</sub> = -5 V, V <sub>B</sub> = -0.5 V, R <sub>L</sub> = 1 kΩ	-4.9			V
Low-level output voltage	UNR3113	V <sub>OL</sub>	V <sub>CC</sub> = -5 V, V <sub>B</sub> = -3.5 V, R <sub>L</sub> = 1 kΩ			-0.2	V
	UNR311A		V <sub>CC</sub> = -5 V, V <sub>B</sub> = -5.0 V, R <sub>L</sub> = 1 kΩ				
	UNR311T		V <sub>CC</sub> = -5 V, V <sub>B</sub> = -2.5 V, R <sub>L</sub> = 1 kΩ				



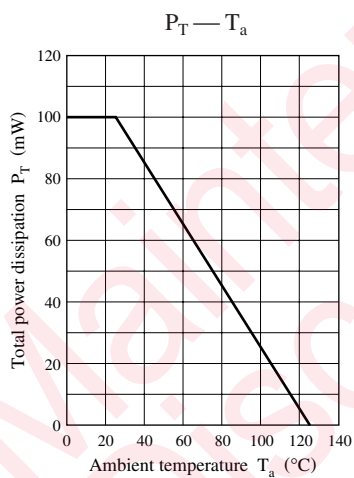
### Internal Connection



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

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input resistance	UNR3113	$R_1$		-30%	47	+30%	k $\Omega$
	UNR311A				100		
	UNR311T				22		
Resistance ratio	UNR3113	$R_1 / R_2$		0.8	1.0	1.2	
	UNR311A				1.0		
	UNR311T				0.37		
Gain bandwidth product		$f_T$	$V_{CB} = -10\text{ V}, I_E = 1\text{ mA}, f = 200\text{ MHz}$		80		MHz

Common characteristics chart



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