## **UNR31A1**

## Silicon PNP epitaxial planar transistor

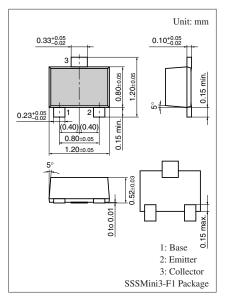
#### For digital circuits

#### ■ Features

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

### ■ Absolute Maximum Ratings $T_a = 25$ °C

Parameter	Symbol	Rating	Unit	
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	-50	V	
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	-50	V	
Collector current	$I_C$	-80	mA	
Total power dissipation	P <sub>T</sub>	100	mW	
Junction temperature	$T_{j}$	125	°C	
Storage temperature	$T_{stg}$	-55 to +125	°C	



Marking Symbol: CE

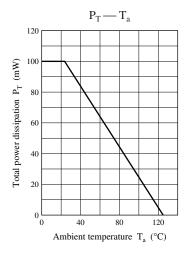
#### Internal Connection

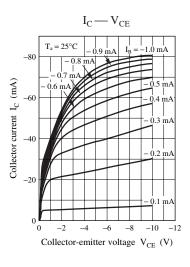
$$\begin{array}{c}
R_1 (10 k\Omega) \\
B \circ \longrightarrow W \\
R_2 \\
(10 k\Omega)
\end{array}$$
 $\circ$  C

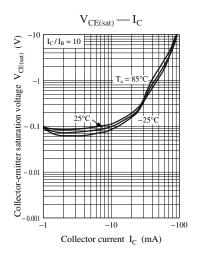
### ■ Electrical Characteristics $T_a = 25$ °C $\pm 3$ °C

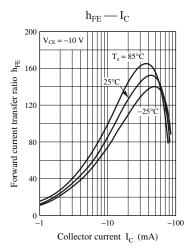
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	$I_C = -10 \ \mu A, I_E = 0$	-50			V
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	$I_C = -2 \text{ mA}, I_B = 0$	-50			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -50 \text{ V}, I_E = 0$			- 0.1	μΑ
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = -50 \text{ V}, I_{B} = 0$			- 0.5	μΑ
Emitter-base cutoff current (Collector open)	I <sub>EBO</sub>	$V_{EB} = -6 \text{ V}, I_C = 0$			- 0.5	mA
Forward current transfer ratio	$h_{FE}$	$V_{CE} = -10 \text{ V}, I_{C} = -5 \text{ mA}$	35			_
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	$I_C = -10 \text{ mA}, I_B = -0.3 \text{ mA}$			- 0.25	V
Output voltage high-level	V <sub>OH</sub>	$V_{CC} = -5 \text{ V}, V_B = -0.5 \text{ V}, R_L = 1 \text{ k}\Omega$	-4.9			V
Output voltage low-level	V <sub>OL</sub>	$V_{CC} = -5 \text{ V}, V_B = -2.5 \text{ V}, R_L = 1 \text{ k}\Omega$			- 0.2	V
Input resistance	R <sub>1</sub>		-30%	10	+30%	kΩ
Resistance ratio	$R_1/R_2$		0.8	1.0	1.2	
Transition frequency	$f_T$	$V_{CB} = -10 \text{ V}, I_E = 1 \text{ mA}, f = 200 \text{ MHz}$		80		MHz

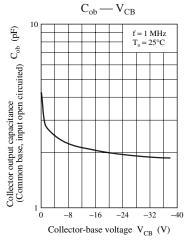
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

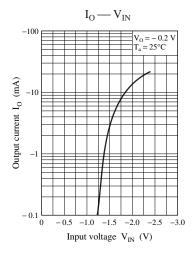


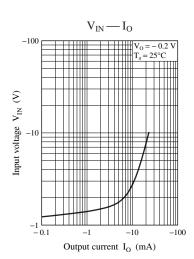












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