

UP01213

Silicon NPN epitaxial planar type

For digital circuits

■ Features

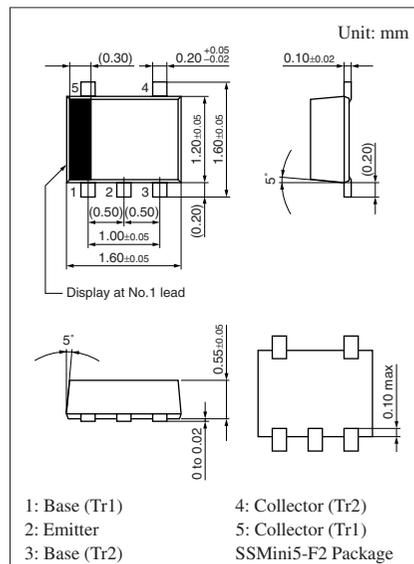
- Two elements incorporated into one package
(Transistors with built-in resistor)
- Reduction of the mounting area and assembly cost by one half

■ Basic Part Number

- UNR1213 × 2

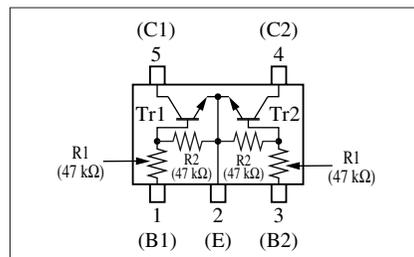
■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	50	V
Collector-emitter voltage (Base open)	V_{CEO}	50	V
Collector current	I_C	100	mA
Total power dissipation	P_T	125	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$



Marking Symbol: 9L

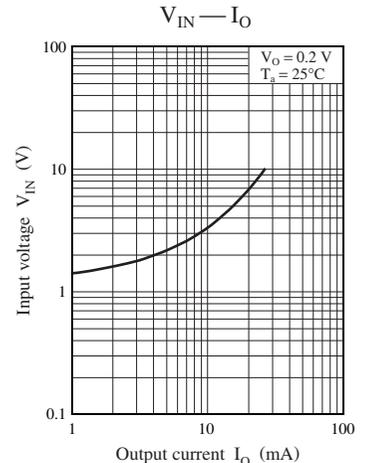
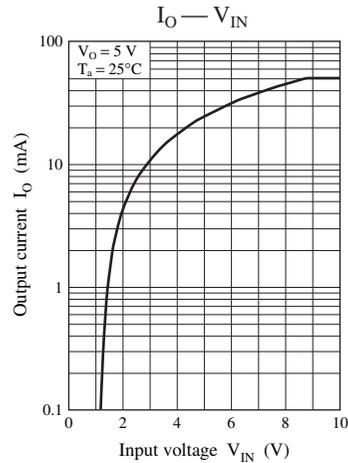
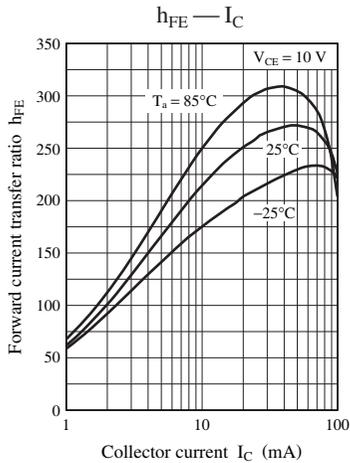
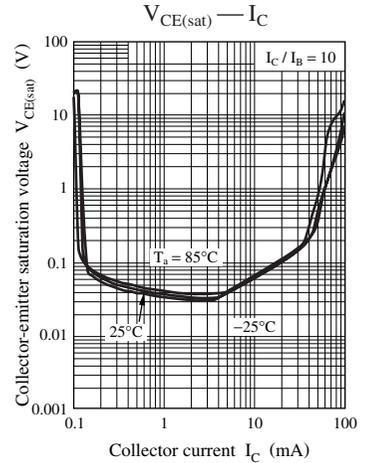
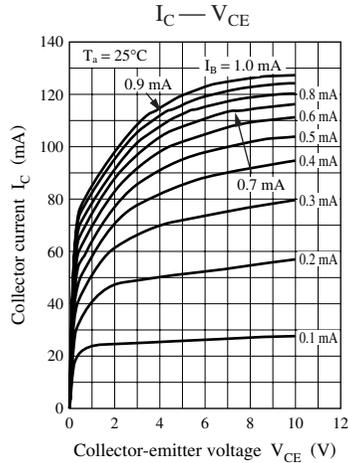
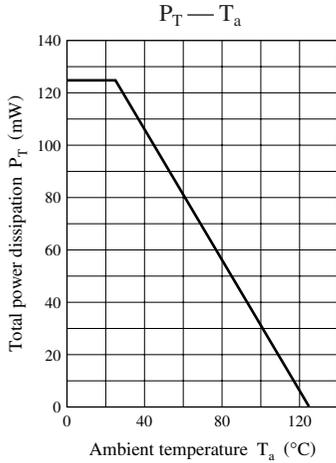
Internal Connection



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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 10 \mu\text{A}$, $I_E = 0$	50			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 2 \text{ mA}$, $I_B = 0$	50			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 50 \text{ V}$, $I_E = 0$			0.1	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 50 \text{ V}$, $I_B = 0$			0.5	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 6 \text{ V}$, $I_C = 0$			0.1	mA
Forward current transfer ratio	h_{FE}	$V_{CE} = 10 \text{ V}$, $I_C = 5 \text{ mA}$	80			—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10 \text{ mA}$, $I_B = 0.3 \text{ mA}$			0.25	V
Output voltage high-level	V_{OH}	$V_{CC} = 5 \text{ V}$, $V_B = 0.5 \text{ V}$, $R_L = 1 \text{ k}\Omega$	4.9			V
Output voltage low-level	V_{OL}	$V_{CC} = 5 \text{ V}$, $V_B = 3.5 \text{ V}$, $R_L = 1 \text{ k}\Omega$			0.2	V
Input resistance	R_I		-30%	47	+30%	$\text{k}\Omega$
Resistance ratio	R_I / R_2		0.8	1.0	1.2	—
Transition frequency	f_T	$V_{CB} = 10 \text{ V}$, $I_E = -2 \text{ mA}$, $f = 200 \text{ MHz}$		150		MHz

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



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