

UNA0233

Silicon PNP epitaxial planar transistor (3 elements)
 Silicon NPN epitaxial planar transistor (3 elements)

For motor drives

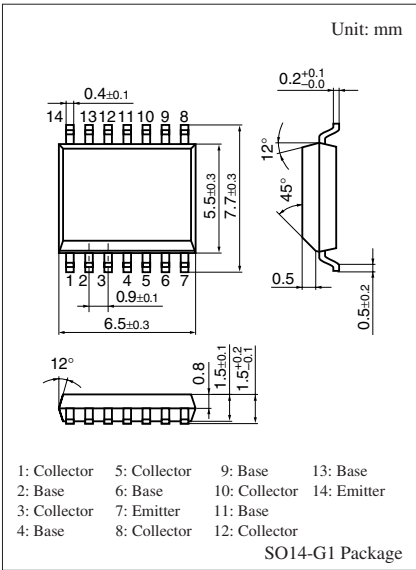
■ Features

- Small and lightweight
- Low power consumption
- Low voltage drive
- With 6 elements incorporated

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

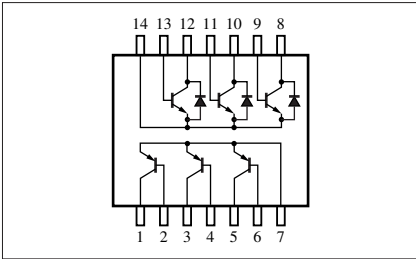
	Parameter	Symbol	Rating	Unit
PNP	Collector-base voltage (Emitter open)	V_{CBO}	-10	V
	Collector-emitter voltage (Base open)	V_{CEO}	-10	V
	Collector current	I_C	-0.5	A
	Peak collector current	I_{CP}	-1	A
NPN	Collector-base voltage (Emitter open)	V_{CBO}	10	V
	Collector-emitter voltage (Base open)	V_{CEO}	10	V
	Emitter-base voltage (Collector open)	V_{EBO}	7	V
	Collector current	I_C	0.5	A
	Peak collector current	I_{CP}	1	A
Overall	Collector power dissipation *	P_C	0.5	W
	Junction temperature	T_j	150	$^\circ\text{C}$
	Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note) *: When the dissipation on one device is $T_C = 25^\circ\text{C}$



Marking Symbol: UN233

Internal Connection



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

• PNP

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = -10\ \mu\text{A}$, $I_E = 0$	-10			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -1\ \text{mA}$, $I_B = 0$	-10			V
Forward current transfer ratio ^{*1}	h_{FE}	$V_{CE} = -2\ \text{V}$, $I_C = -100\ \text{mA}$	200		450	—
Collector-emitter saturation voltage ^{*1}	$V_{CE(sat)}$	$I_C = -1\ \text{A}$, $I_B = -25\ \text{mA}$			-0.4	V
Transition frequency	f_T	$V_{CB} = -6\ \text{V}$, $I_E = 50\ \text{mA}$, $f = 200\ \text{MHz}$		190		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = -10\ \text{V}$, $I_E = 0$, $f = 1\ \text{MHz}$		65		pF

• NPN

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 10\ \mu\text{A}$, $I_E = 0$	10			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 1\ \text{mA}$, $I_B = 0$	10			V
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = 10\ \mu\text{A}$, $I_C = 0$	7			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 7\ \text{V}$, $I_E = 0$			1	μA
Forward current transfer ratio ^{*1}	h_{FE}	$V_{CE} = 2\ \text{V}$, $I_C = 200\ \text{mA}$	200		800	—
Collector-emitter saturation voltage ^{*1}	$V_{CE(sat)}$	$I_C = 1\ \text{A}$, $I_B = 25\ \text{mA}$			0.4	V
Transition frequency	f_T	$V_{CB} = 6\ \text{V}$, $I_E = -50\ \text{mA}$, $f = 200\ \text{MHz}$		120		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = 6\ \text{V}$, $I_E = 0$, $f = 1\ \text{MHz}$		25		pF
Forward voltage ^{*2}	V_F	$I_F = 0.5\ \text{A}$			1.3	V

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Application to the built-in diode

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