

UNA0222 (UN222)

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

For motor drives

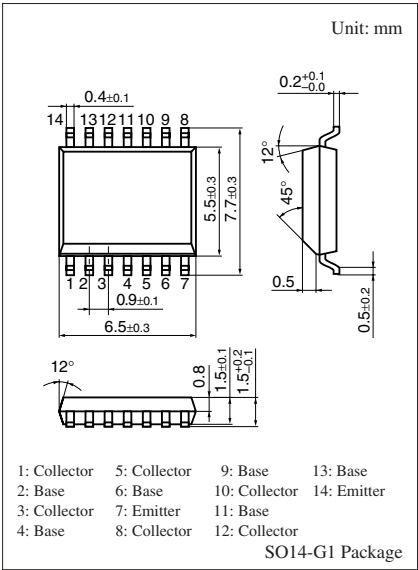
■ Features

- Small and lightweight
- Low power consumption (low $V_{CE(sat)}$ transistor used)
- Low voltage drive
- Transistors with built-in resistor with 6 elements incorporated

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

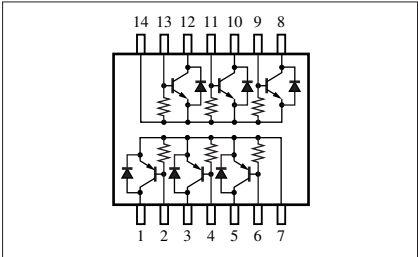
	Parameter	Symbol	Rating	Unit
PNP	Collector-base voltage (Emitter open)	V_{CBO}	-10	V
	Collector-emitter voltage (Base open)	V_{CEO}	-10	V
	Collector current	I_C	-3	A
	Peak collector current	I_{CP}	-4	A
NPN	Collector-base voltage (Emitter open)	V_{CBO}	10	V
	Collector-emitter voltage (Base open)	V_{CEO}	10	V
	Collector current	I_C	3	A
	Peak collector current	I_{CP}	4	A
Overall	Total power dissipation *	P_T	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: UN222

Internal Connection



Note) The part number in the parenthesis shows conventional part number.

■ 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
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -6\ \text{V}$, $I_E = 0$			-1	μA
Forward current transfer ratio	h_{FE}	$V_{CE} = -1\ \text{V}$, $I_C = -0.5\ \text{A}$	200		700	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -2\ \text{A}$, $I_B = -50\ \text{mA}$			-0.45	V
Transition frequency	f_T	$V_{CB} = -6\ \text{V}$, $I_E = 50\ \text{mA}$, $f = 200\ \text{MHz}$		150		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = -6\ \text{V}$, $I_E = 0$, $f = 1\ \text{MHz}$		70		pF
Forward voltage ^{*1}	V_F	$I_F = -1\ \text{A}$			-1.5	V
Bias resistance ^{*2}	R_{EB}		-30%	10	+30%	k Ω

• NPN

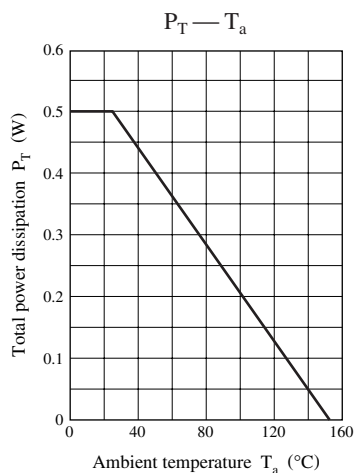
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 10\ \mu\text{A}$, $I_E = 0$	10			V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 1\ \text{mA}$, $I_B = 0$	10			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 6\ \text{V}$, $I_E = 0$			1	μA
Forward current transfer ratio	h_{FE}	$V_{CE} = 1\ \text{V}$, $I_C = 0.5\ \text{A}$	200		700	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2\ \text{A}$, $I_B = 50\ \text{mA}$			0.25	V
Transition frequency	f_T	$V_{CB} = 6\ \text{V}$, $I_E = -50\ \text{mA}$, $f = 200\ \text{MHz}$		150		MHz
Collector output capacitance (Common base, input open circuited)	C_{ob}	$V_{CB} = 6\ \text{V}$, $I_E = 0$, $f = 1\ \text{MHz}$		50		pF
Forward voltage ^{*1}	V_F	$I_F = 1\ \text{A}$			1.5	V
Bias resistance ^{*2}	R_{EB}		-30%	10	+30%	k Ω

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

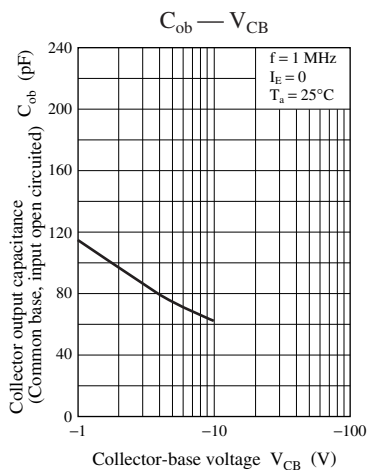
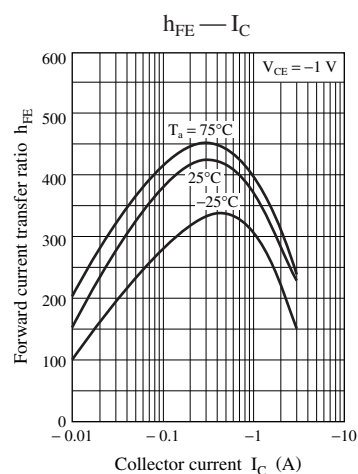
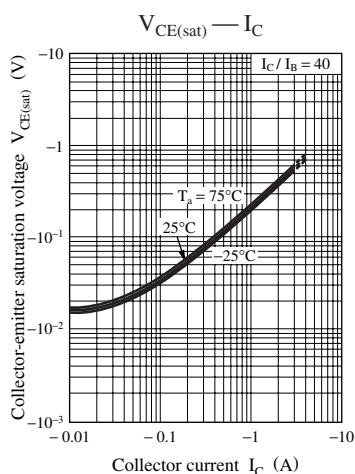
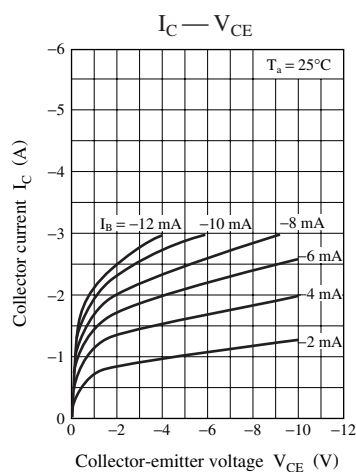
2. *1: Application to the built-in diode

*2: Application to the built-in resistance

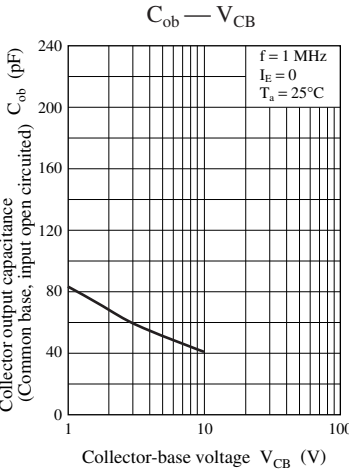
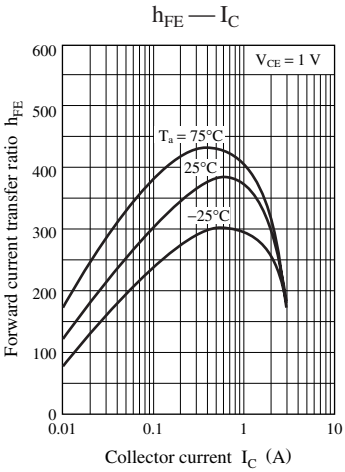
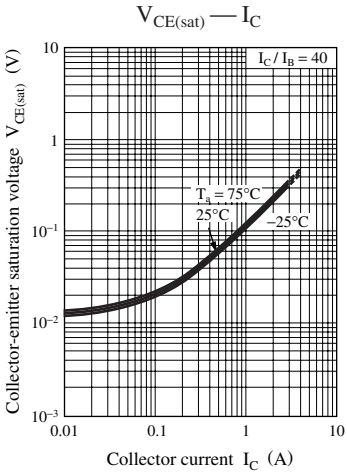
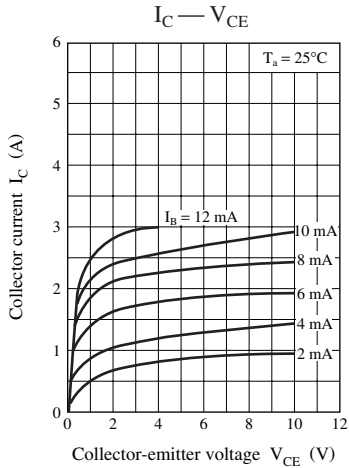
Common characteristics chart



Characteristics charts of PNP transistor block



Characteristics charts of NPN transistor block



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