UNA0222 (UN222)

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

For motor drives

■ Features

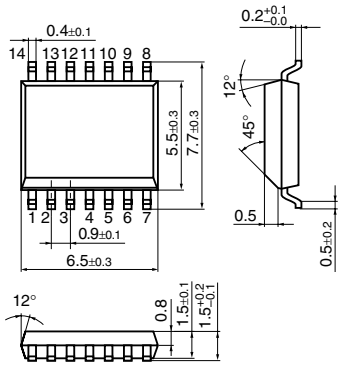
- Small and lightweight
- Low power consumption (low $V_{CE(sat)}$ transistor used)
- Low voltage drive
- Transistors with built-in resistor with 6 elements incorporated

■ Absolute Maximum Ratings $T_a = 25°C$

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	°C
	Storage temperature	T_{stg}	−55 to +150	°C

Note) *: When the dissipation on one device is $T_C = 25°C$

Unit: mm

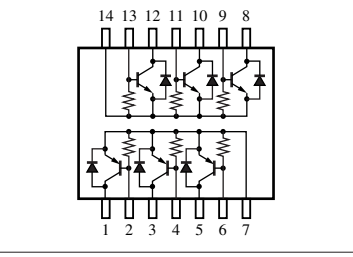


1: Collector	5: Collector	9: Base	13: Base
2: Base	6: Base	10: Collector	14: Emitter
3: Collector	7: Emitter	11: Base	
4: Base	8: Collector	12: Collector	

SO14-G1 Package

Marking Symbol: UN222

Internal Connection



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

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

• PNP

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

• NPN

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

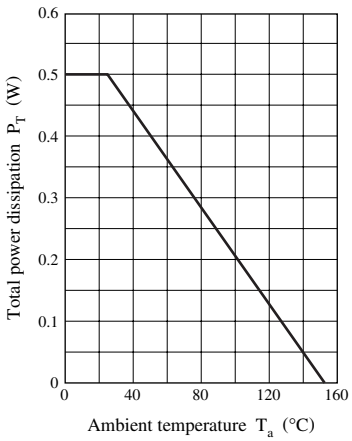
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

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

∗2: Application to the built-in resistance

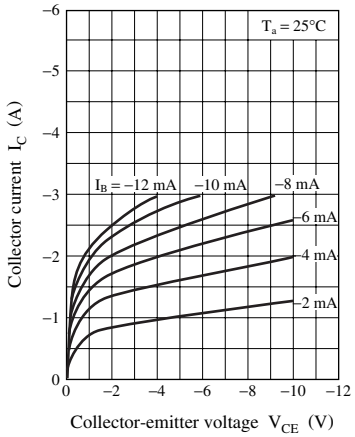
Common characteristics chart

P_T — T_a

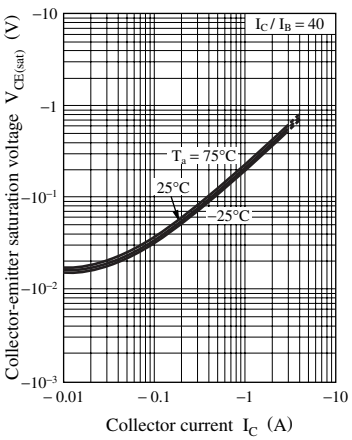


Characteristics charts of PNP transistor block

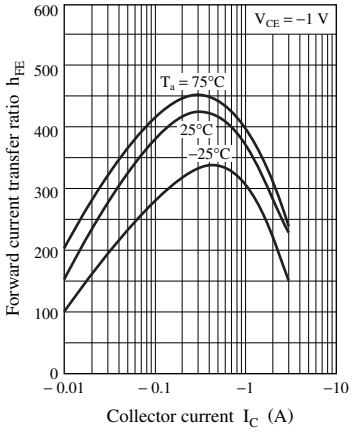
I_C — V_{CE}



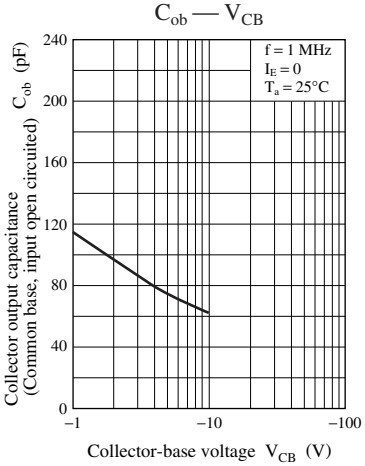
$V_{CE(sat)}$ — I_C



h_{FE} — I_C

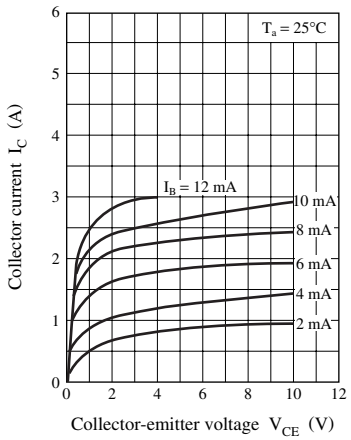


C_{ob} — V_{CB}

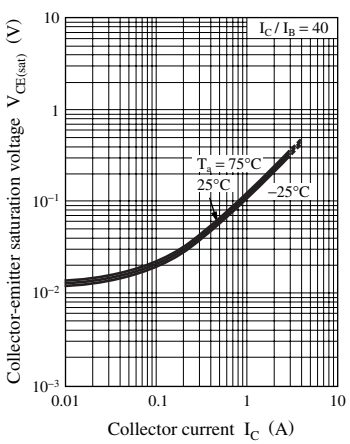


Characteristics charts of NPN transistor block

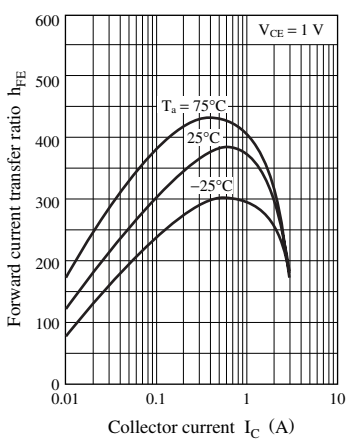
I_C — V_{CE}



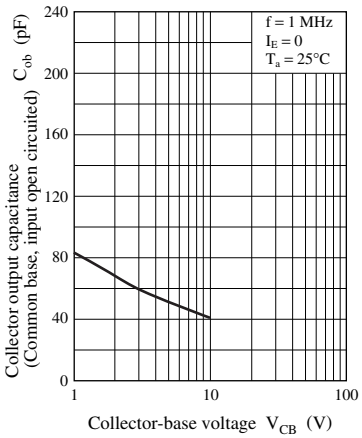
$V_{CE(sat)}$ — I_C



h_{FE} — I_C



C_{ob} — V_{CB}



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