

# UN228

Transistor array to drive the small motor

## ■ Features

- Small and lightweight
- Low power consumption
- Low-voltage drive
- With 4 elements incorporated

## ■ Applications

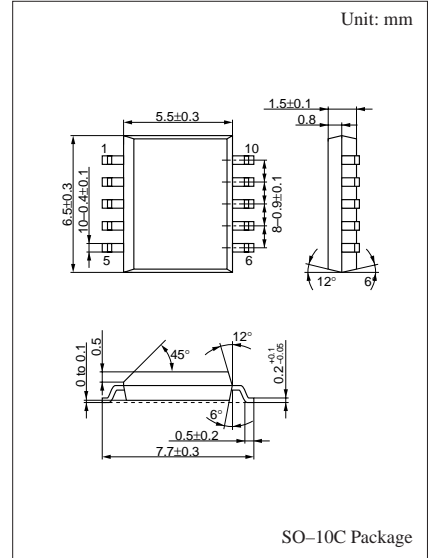
- For motor drives
- Small motor drive circuits in general

## ■ Absolute Maximum Ratings (Ta=25±3°C)

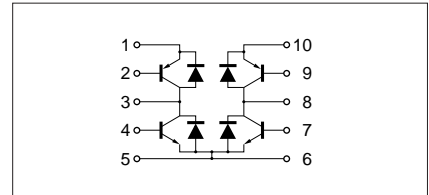
Parameter	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	±12	V
Collector to emitter voltage	$V_{CEO}$	±10	V
Emitter to base voltage	$V_{EBO}$	±7	V
Collector current	$I_C$	±1	A
Peak collector current	$I_{CP}$	±2.5	A
Total power dissipation	$P_T^*$	0.5	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{sig}$	-55 to +150	°C

Note: ± marks used above: +: NPN part, -: PNP part

\*  $T_C = 25^\circ\text{C}$  only when the elements are active



## Internal Connection

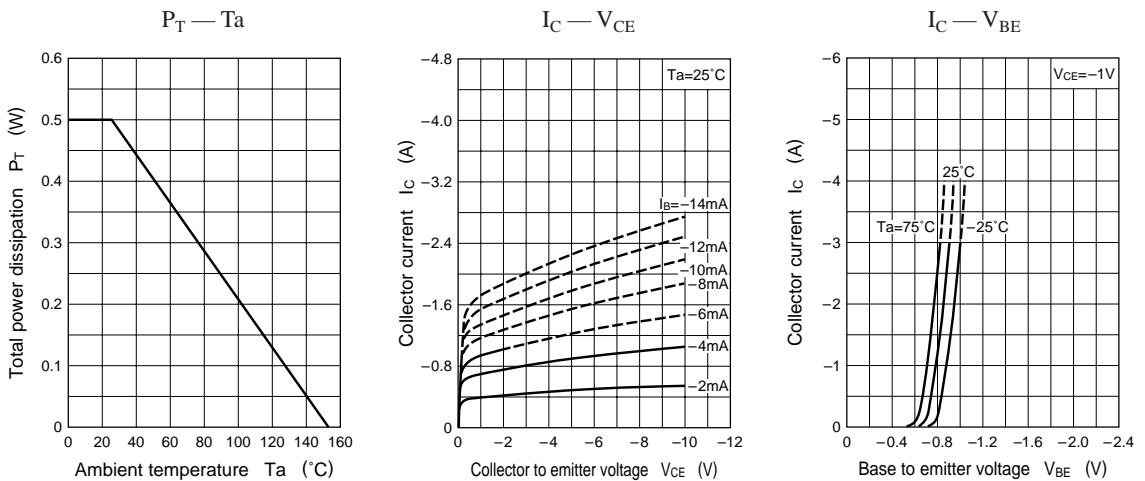


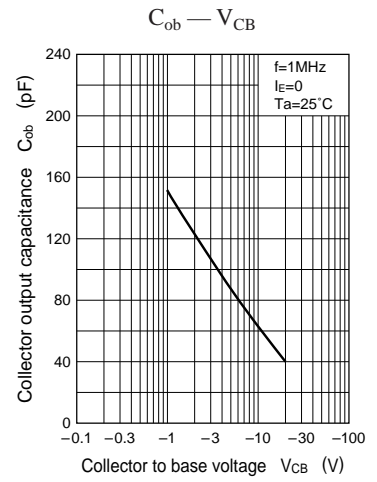
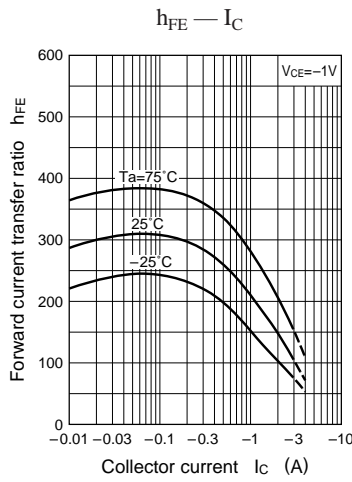
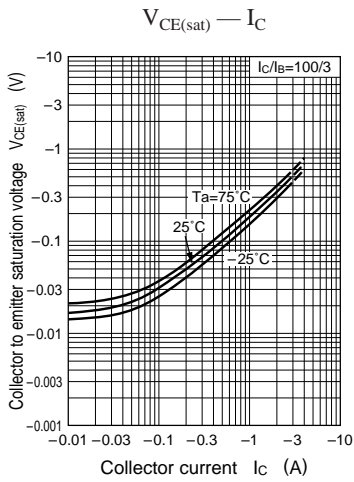
■ Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V <sub>CB0</sub>	(NPN) I <sub>C</sub> = 10μA, I <sub>E</sub> = 0	12			V
		(PNP) I <sub>C</sub> = -10μA, I <sub>E</sub> = 0	-12			
Collector to emitter voltage	V <sub>CEO</sub>	(NPN) I <sub>C</sub> = 1mA, I <sub>B</sub> = 0	10			V
		(PNP) I <sub>C</sub> = -1mA, I <sub>B</sub> = 0	-10			
Emitter to base voltage	V <sub>EBO</sub>	(NPN) I <sub>E</sub> = 10μA, I <sub>C</sub> = 0	7			V
		(PNP) I <sub>E</sub> = -10μA, I <sub>C</sub> = 0	-7			
Collector cutoff current	I <sub>CBO</sub>	(NPN) V <sub>CB</sub> = 10V, I <sub>E</sub> = 0			1	μA
		(PNP) V <sub>CB</sub> = -10V, I <sub>E</sub> = 0			-1	
Forward current transfer ratio	h <sub>FE</sub>	(NPN) V <sub>CE</sub> = 1V, I <sub>C</sub> = 0.5A*	200		800	
		(PNP) V <sub>CE</sub> = -1V, I <sub>C</sub> = 0.5A*	200		800	
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	(NPN) I <sub>C</sub> = 1A, I <sub>B</sub> = 30mA*		0.2	0.3	V
		(PNP) I <sub>C</sub> = -1A, I <sub>B</sub> = -30mA*		-0.2	-0.3	
Transition frequency	f <sub>T</sub>	(NPN) V <sub>CB</sub> = 6V, I <sub>E</sub> = -50mA, f = 200MHz		150		MHz
		(PNP) V <sub>CB</sub> = -6V, I <sub>E</sub> = 50mA, f = 200MHz		150		
Collector output capacitance	C <sub>ob</sub>	(NPN) V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz		50		pF
		(PNP) V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz		65		
Forward voltage	V <sub>F</sub>	(NPN) I <sub>F</sub> = 1A			1.5	V
		(PNP) I <sub>F</sub> = -1A			-1.5	

\*Pulse measurement

Characteristics charts of PNP transistor block





Characteristics charts of NPN transistor block

