

5-channel high current driver

BA612

The BA612 is a high-current driver IC, and contains an array of five Darlington transistors, each with input resistance. Input and output can be directed in the same direction using DIP Pin 14, with the layout optimized to facilitate mounting.

●Applications

Hammer solenoid drivers

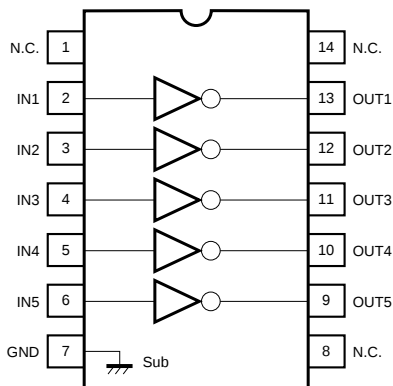
Relay drivers

LED drivers

●Features

- 1) 5-circuit Darlington transistor array.
- 2) Large current (up to 400mA) can be driven.
- 3) Input and output pins are aligned in the same direction, for easy mounting.
- 4) High current transfer ratio.
- 5) Can be coupled with MOS ICs.

●Block diagram



● Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{CC}	24	V
Power dissipation	P_d	550*	mW
Operating temperature	T_{opr}	$-25 \sim +75$	$^\circ\text{C}$
Storage temperature	T_{stg}	$-55 \sim +125$	$^\circ\text{C}$
Collector current	I_c	450	mA
Input pin voltage withstanding (+)	V_{IN+}	24	V
Input pin voltage withstanding (-)	V_{IN-}	-0.5	V

* Reduced by 5.5mW for each increase in T_a of 1°C over 25°C

● Internal circuit configuration

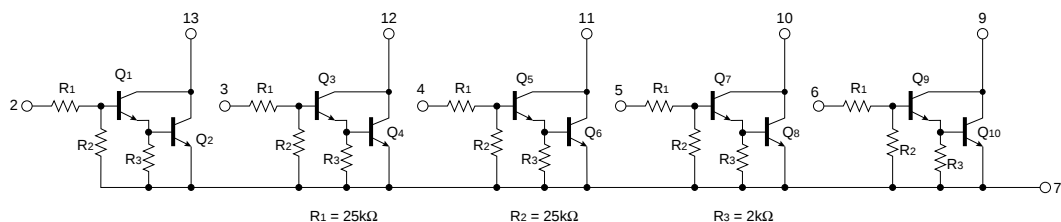


Fig.1

● Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement circuit
Usage voltage range	V_{CC}	—	—	20	V	—	—
Output leakage current	I_L	—	—	100	μA	$V_{CC} = 26\text{V}$, $V_{IN} = 0\text{V}$	Fig.10
Output current (1 circuit)	I_{OUT}	—	—	400	mA	When only 1 circuit is on	Fig.11
Output current (5 circuits)	I_{OUT}	—	Fig.3	—	—	DC per circuit when all 5 circuits are on at once	—
Collector saturation voltage	$V_{CE(sat)}$	—	—	2.0	V	$I_{OUT} = 400\text{mA}$, $V_{IN} = 17\text{V}$	Fig.11
DC current transfer ratio	h_{FE}	2000	—	—	—	—	—
Input current	I_{IN}	—	0.6	1.0	mA	$V_{IN} = 17\text{V}$, $I_{OUT} = 0\text{mA}$	Fig.11

● Electrical characteristic curves

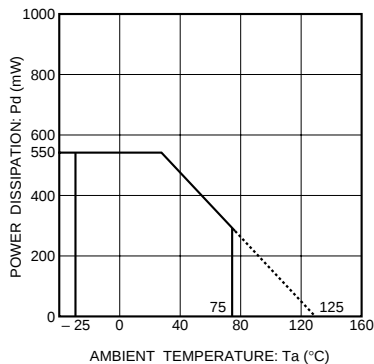


Fig.2 Power dissipation vs. ambient temperature

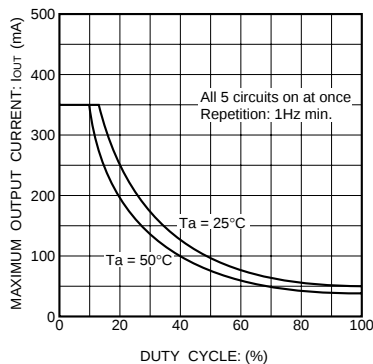


Fig.3 Output current vs. duty cycle

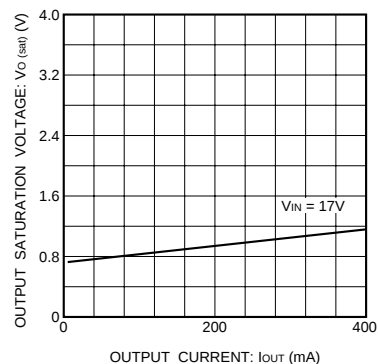


Fig.4 Output saturation voltage vs. output current

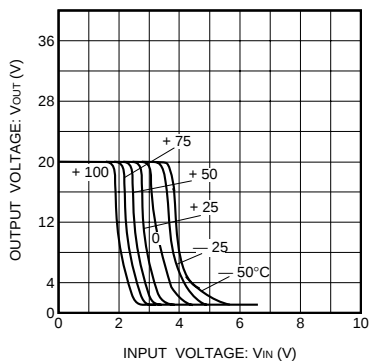


Fig.5 Output voltage vs. input voltage (temperature characteristic)

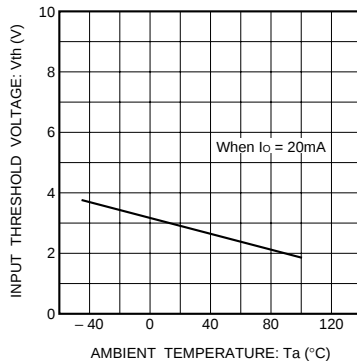


Fig.6 Input threshold voltage vs. ambient temperature

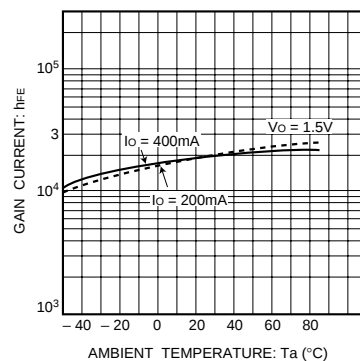


Fig.7 DC current amplification ratio vs. ambient temperature (I) (when Vo = 1.5V)

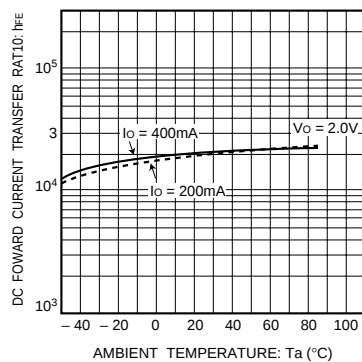


Fig.8 DC current amplification ratio vs. ambient temperature (II) (when Vo = 2V)

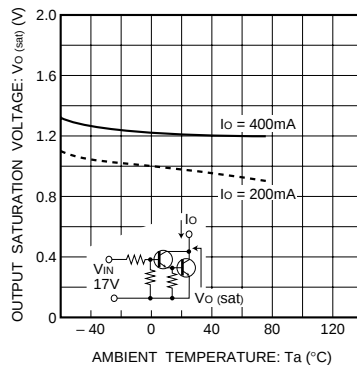


Fig.9 Output saturation voltage vs. ambient temperature

● Measurement circuit

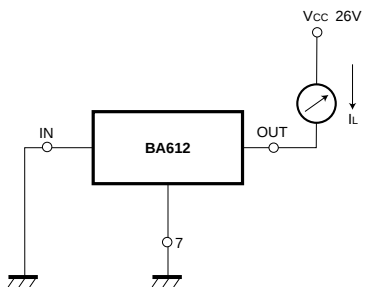


Fig.10

● Application example

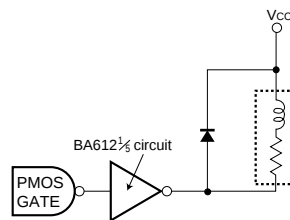


Fig.12

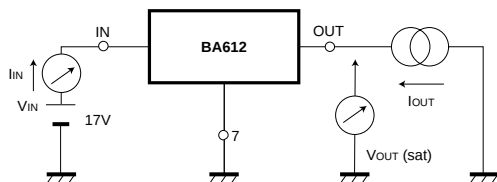
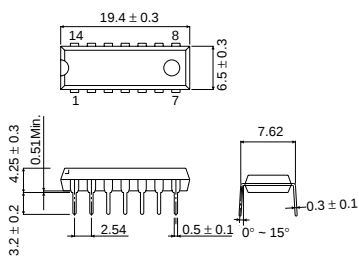


Fig.11

Connections should be made as shown in Figure 12 if inductive load is being driven.

A clamp diode has to be added in series with the load to suppress surges in the inductive load.

● External dimensions (Units: mm)



DIP14