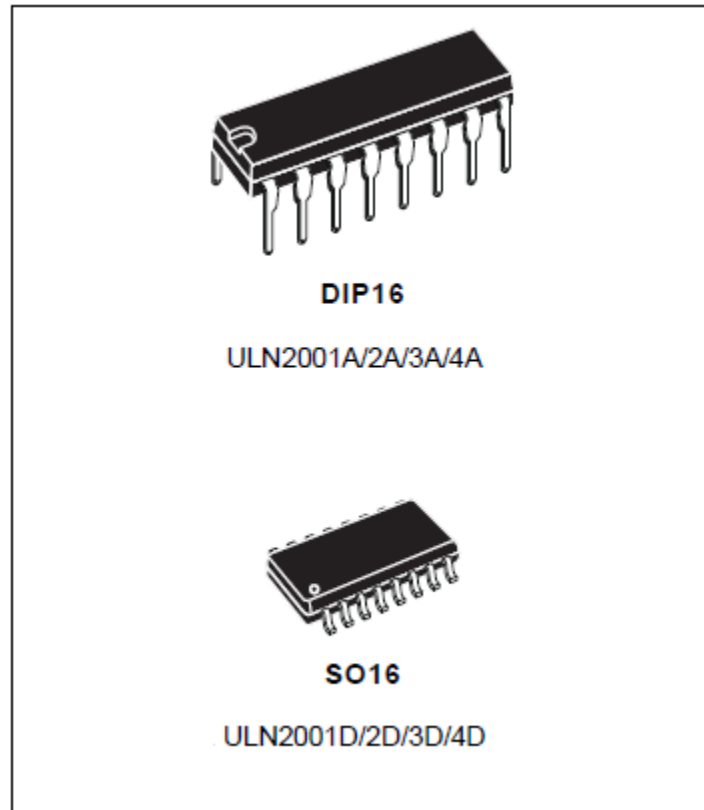


# Circuitos integrados para controle de motores

O ULN2001A, ULN2002A, ULN2003A, e ULN2004A são circuitos integrados compostos por sete pares de Transistor NPN Darlington de alta corrente, utilizado para o controle de motores de passo, motores DC e solenóides.



Pinos de conexão

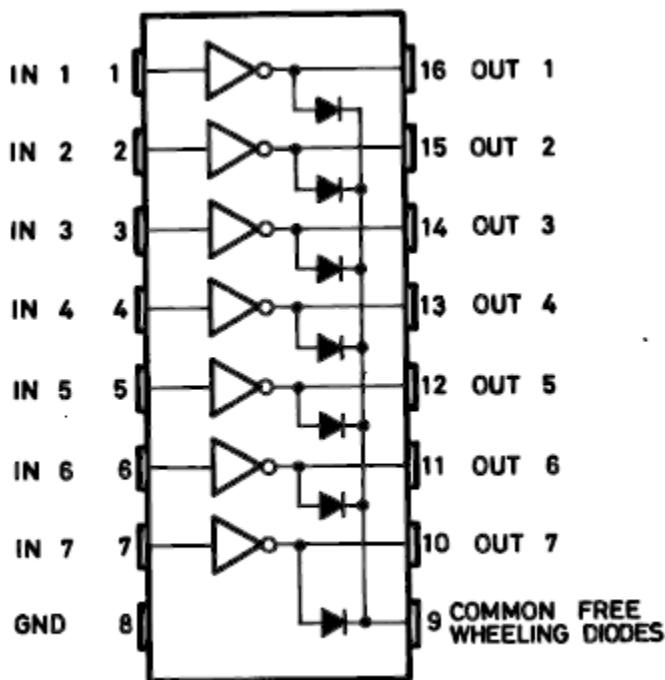
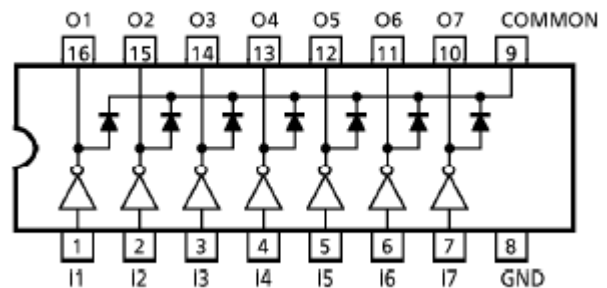


Diagrama lógico

PIN CONNECTION (TOP VIEW)



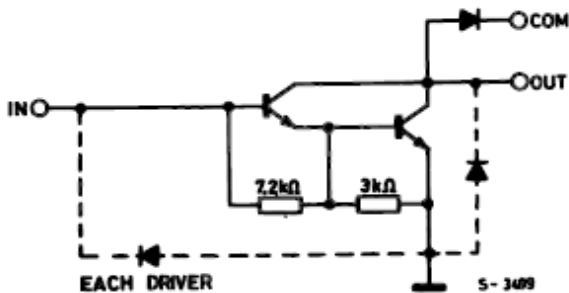
## Características:

Tensão de saída máxima: 50 V  
Corrente de coletor máxima: 500 mA  
Tensão máxima de entrada: 30 V

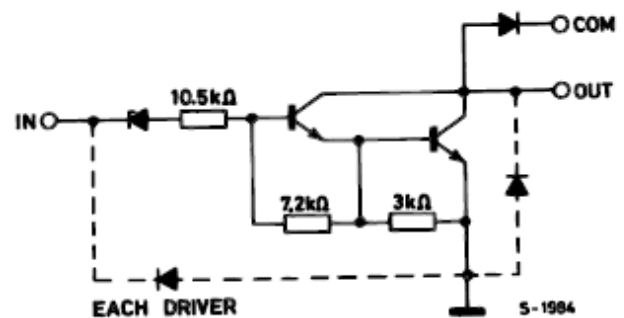
## Diferenças:

- ULN2001A - Para uso com tecnologia TTL/PMOS e CMOS
- ULN2002A - Com diodo zener interno é indicado para tecnologia PMOS de 14 a 25 V
- ULN2003A - Tem um resistor de 2,7 k em série com a entrada para operar com saídas TTL e CMOS
- ULN2004A - Usa resistor de entrada de 10k para operar com sistemas MOS de 8 a 18 V.

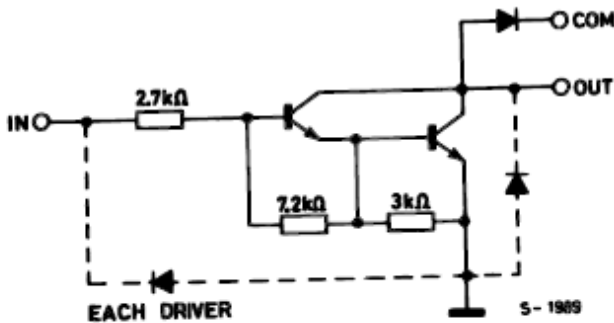
## Diagrama esquemático correspondente a cada tipo:



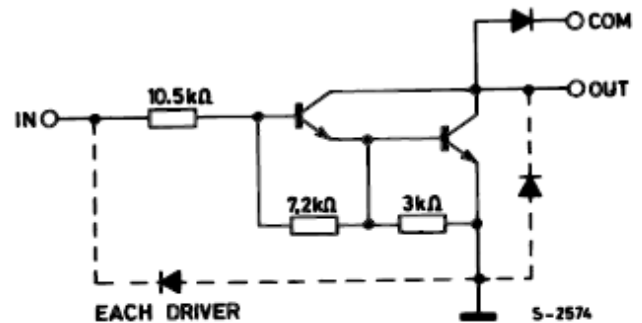
Series ULN-2001A  
(each driver)



Series ULN-2002A  
(each driver)



Series ULN-2003A  
(each driver)



Series ULN-2004A  
(each driver)