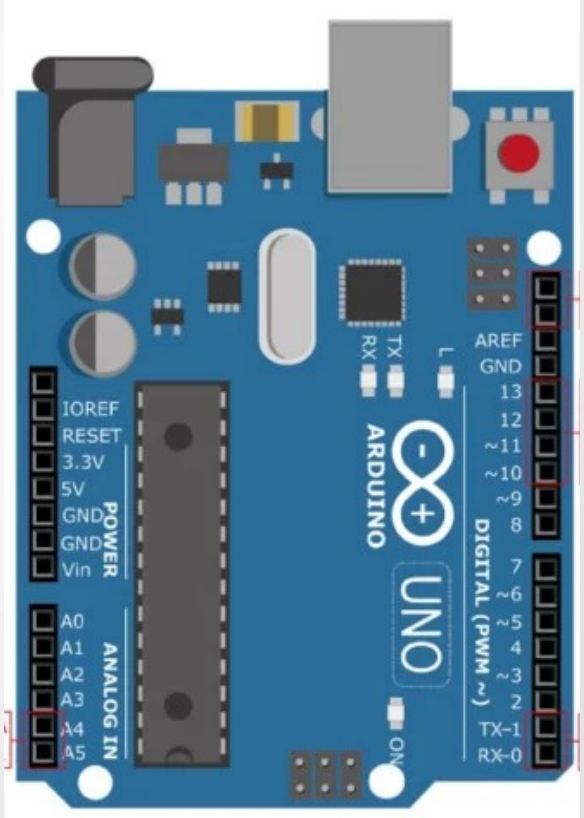
Interacción con el exterior

- Puertos de Entrada -Salida
- Puertos de comunicación (SCI-SPI I^2C,etc)
- Entradas y salidas analógicas



Puertos de Entrada Salida

Puertos de Entrada -Salida
Generalidades y aspectos prácticos

Temario

- Puertos de Salida
- Valores de tensión y corriente
- Conexión de un LED
- Conexión de un periférico
- Adaptadores de nivel
- Puertos de Entrada
- Valores admitidos
- Lectura de una tecla (rebote)

Configuración de los puertos

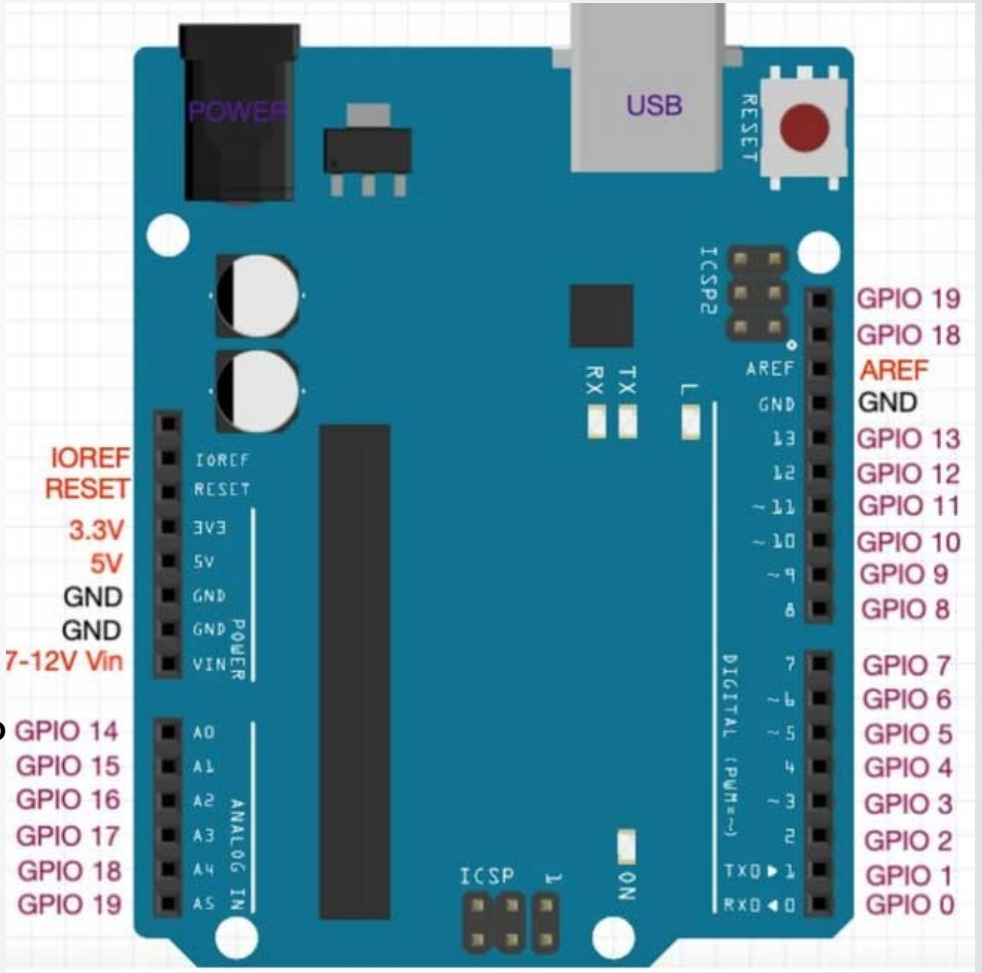
PinMode (2, INPUT);

PinMode (3, OUTPUT);

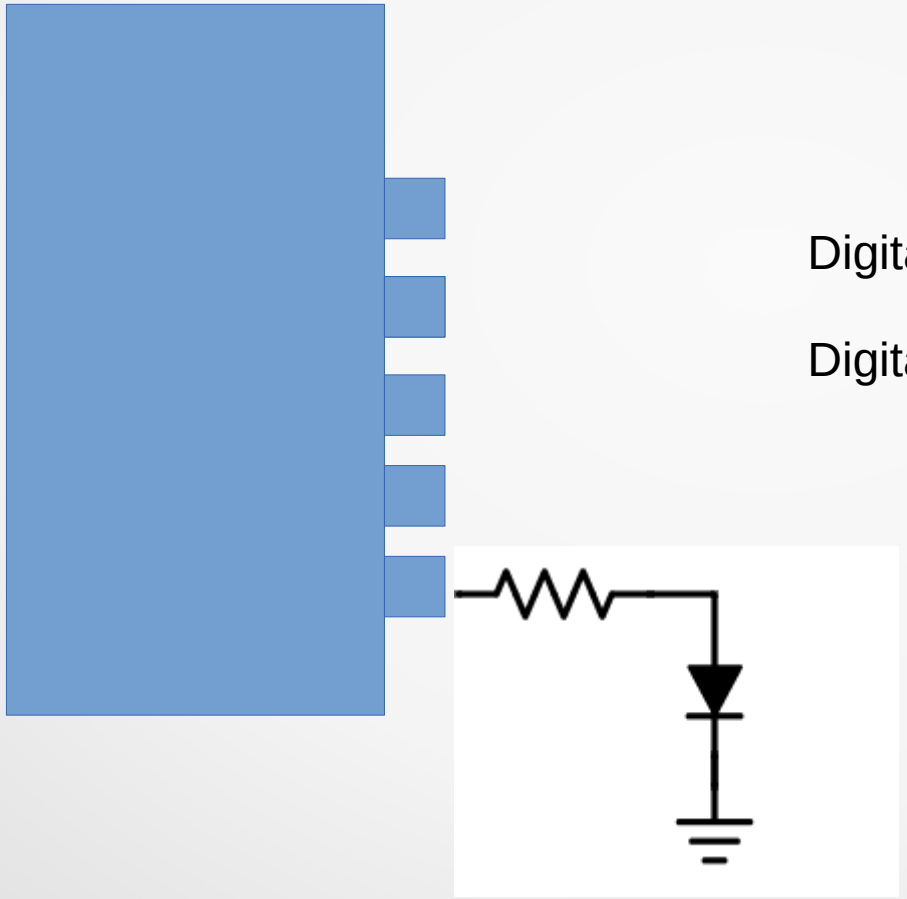
Palabra reservada

Número de pin
(identificador)

Modo:
INPUT
INPUT_PULLUP
OUTPUT

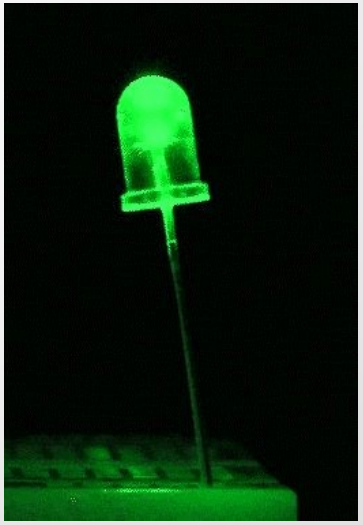


Puerto de salida



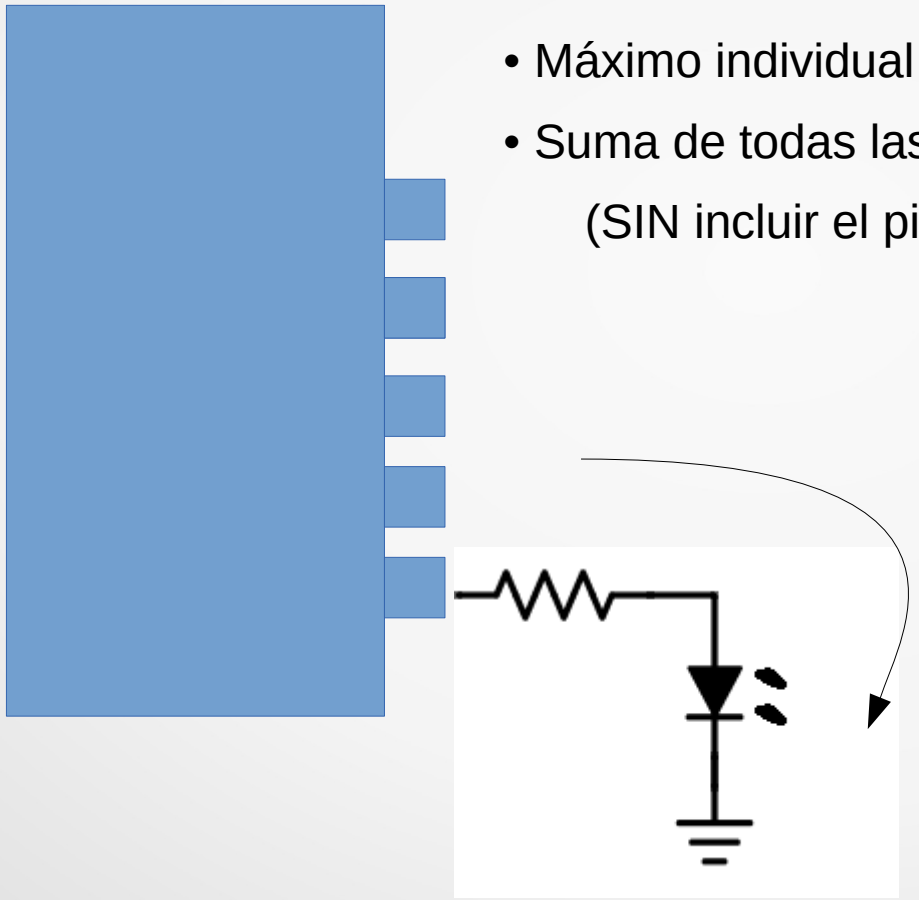
DigitalWrite (13 , HIGH);

DigitalWrite (13 , LOW);



Puerto de salida

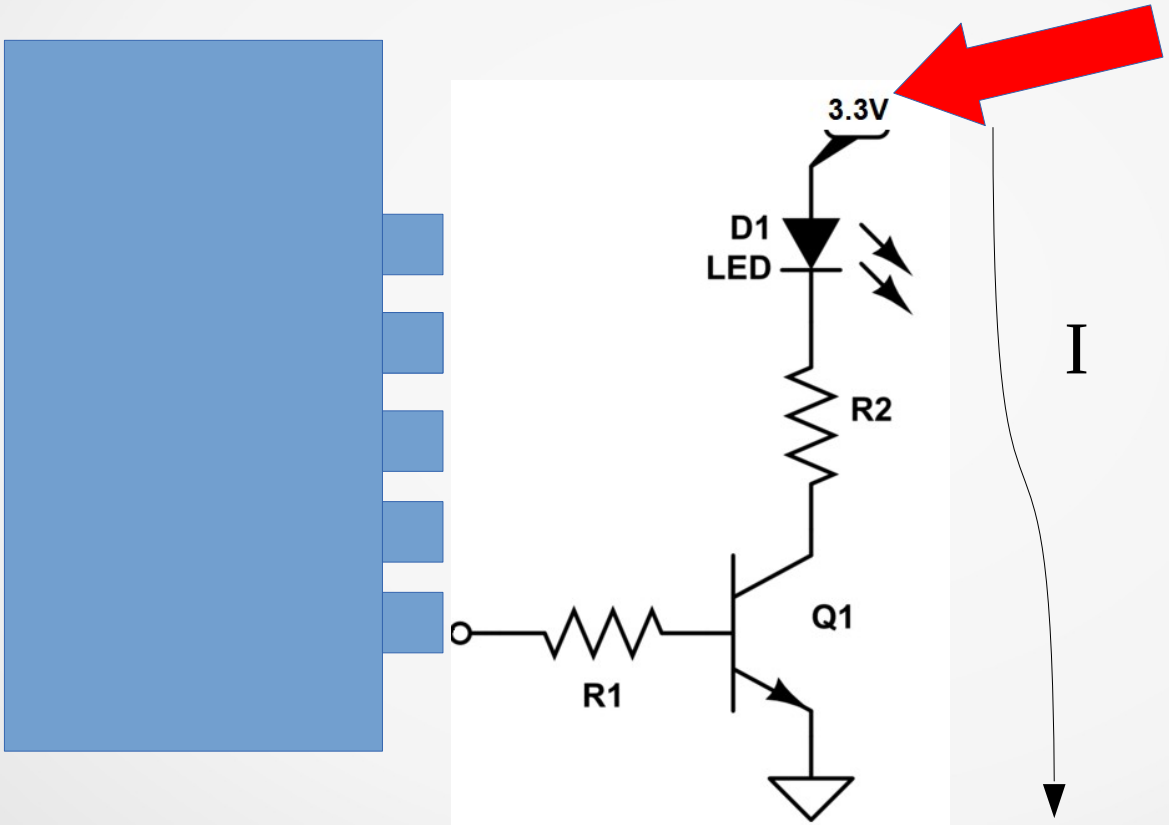
Qué pasa con la corriente???



- Máximo individual por pin de Entrada/Salida: 40 mA
- Suma de todas las Entradas/Salidas combinadas (SIN incluir el pin de “5V”): 200 mA

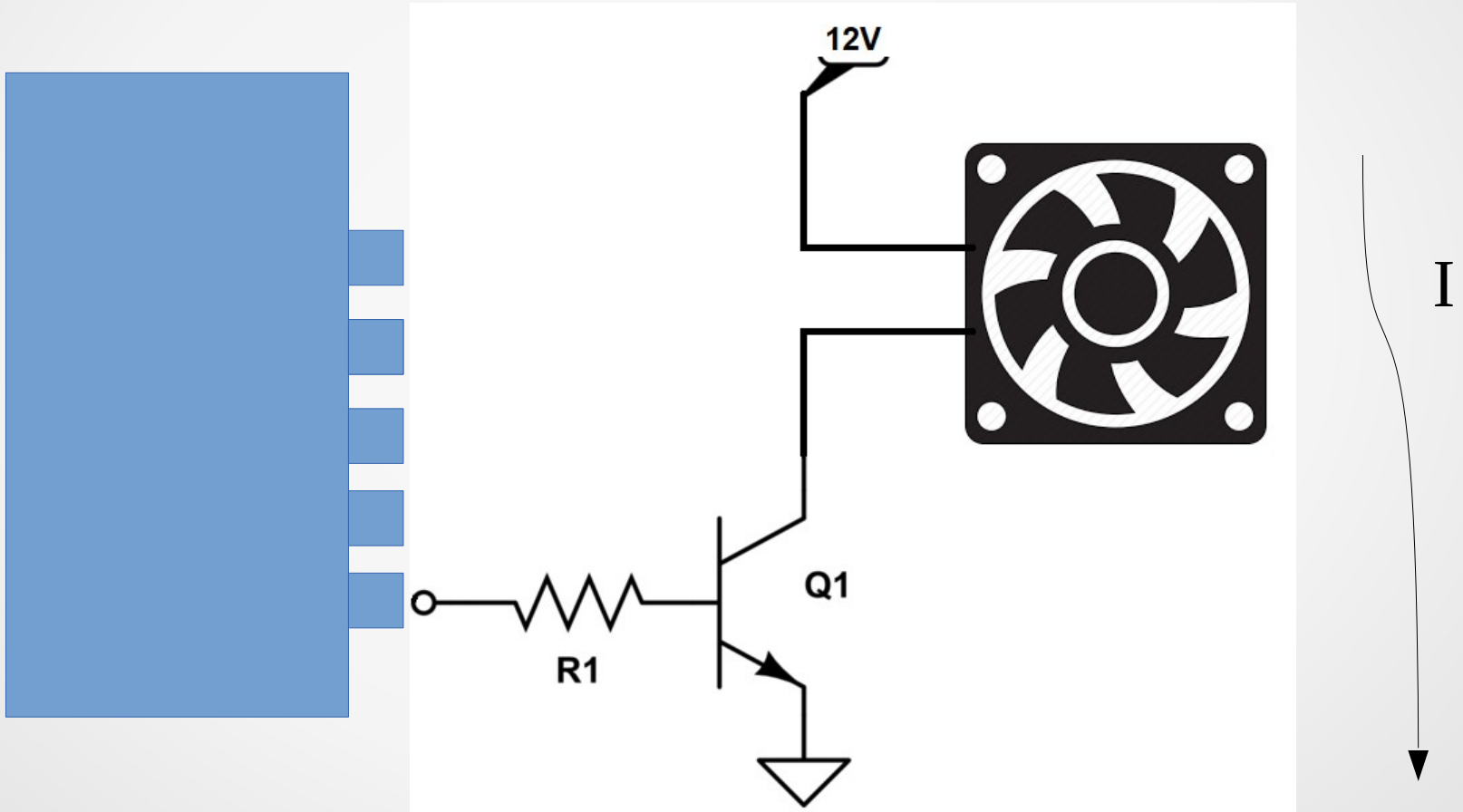
Puerto de salida

Qué pasa con la corriente???

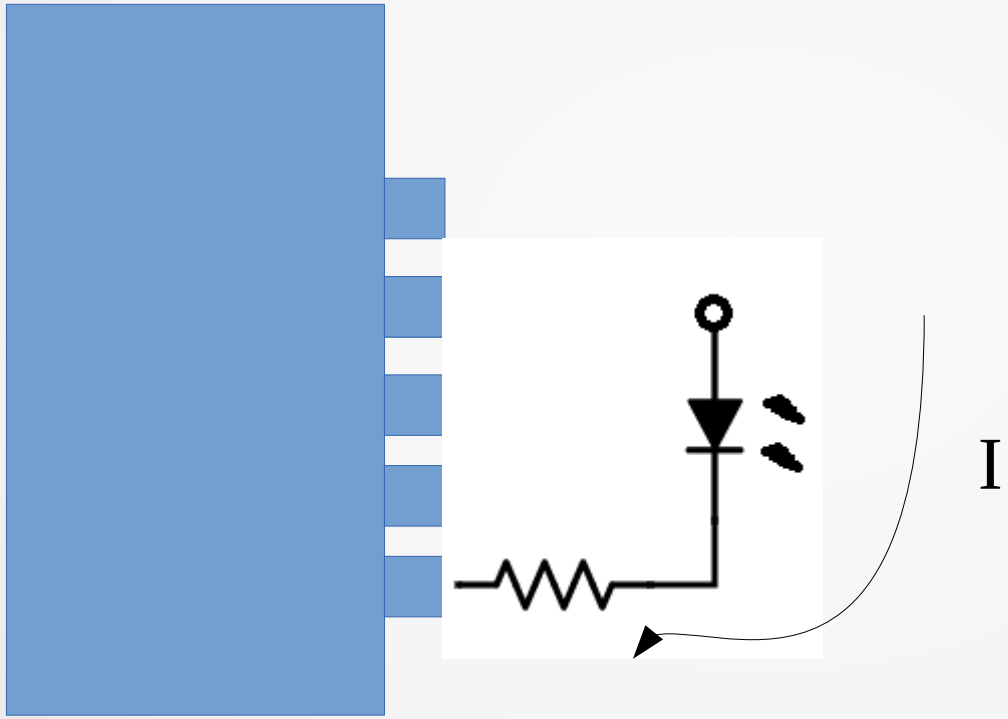


Puerto de salida

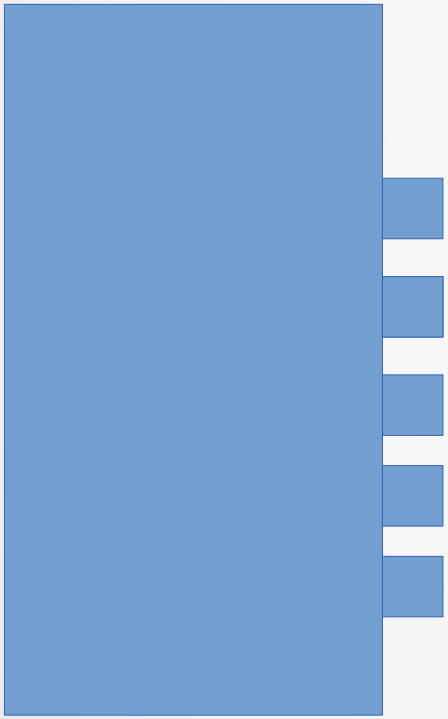
Qué pasa con la corriente???

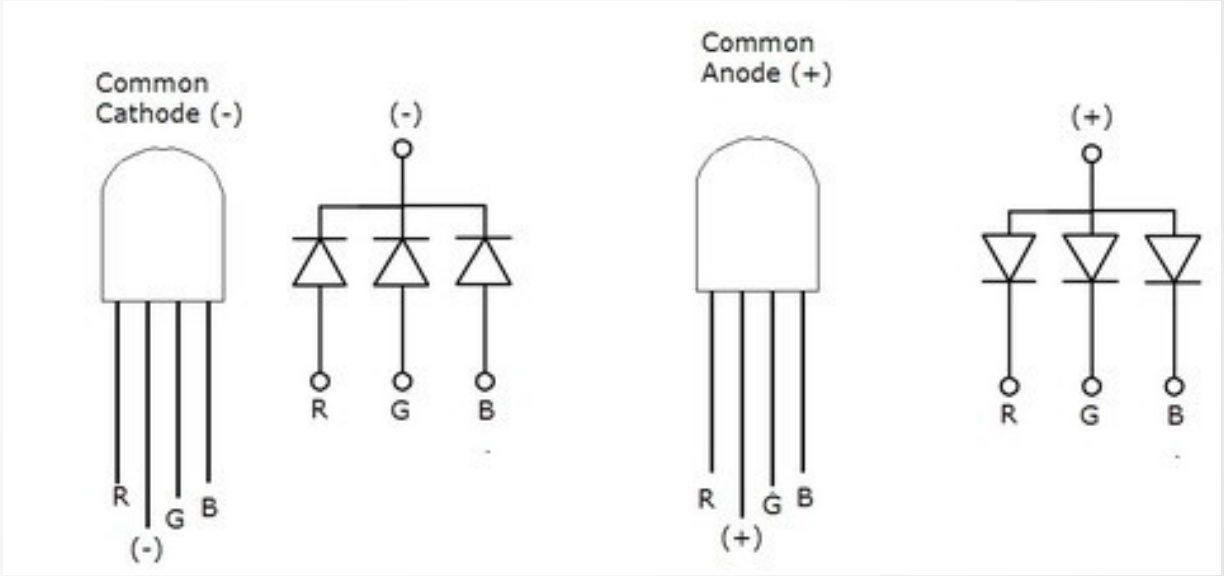


Puerto de salida

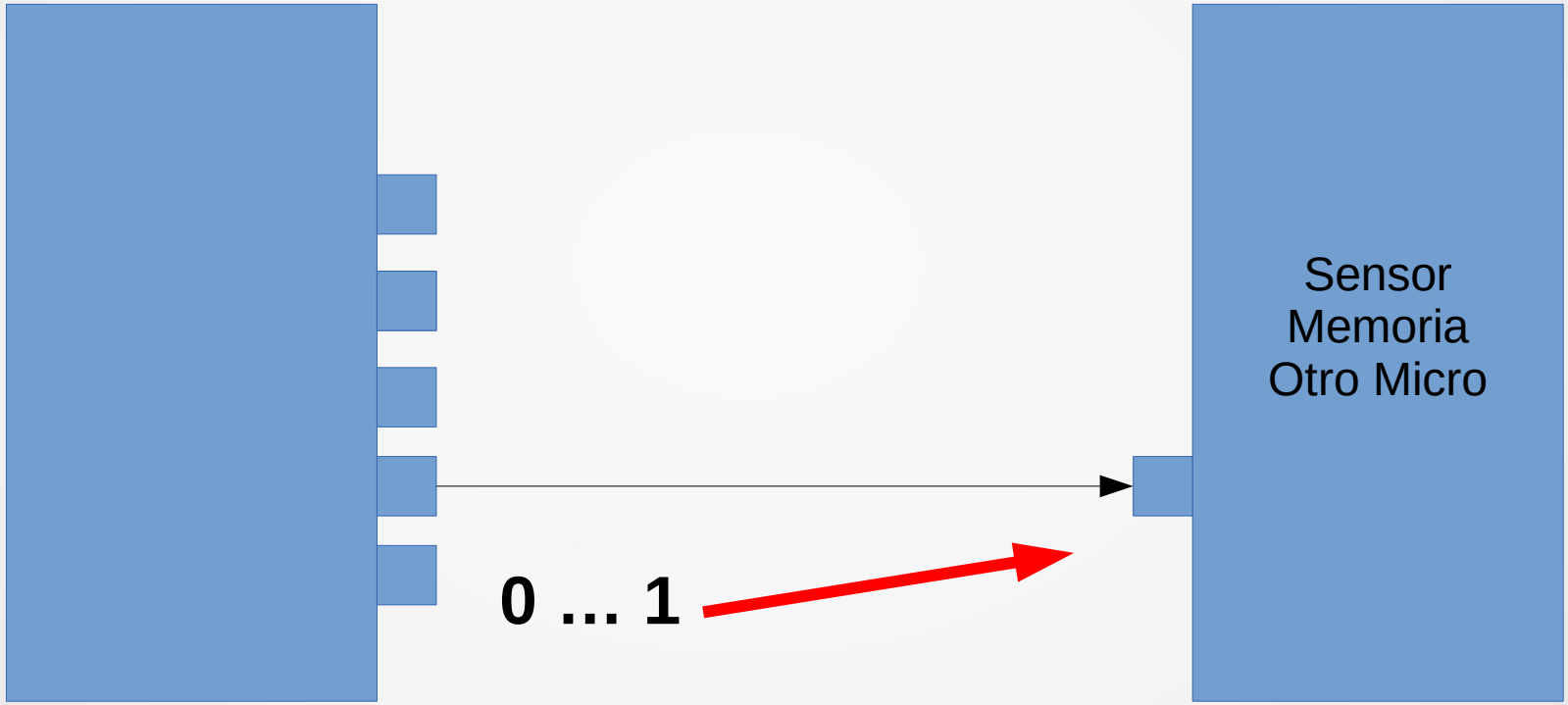


Puerto de salida

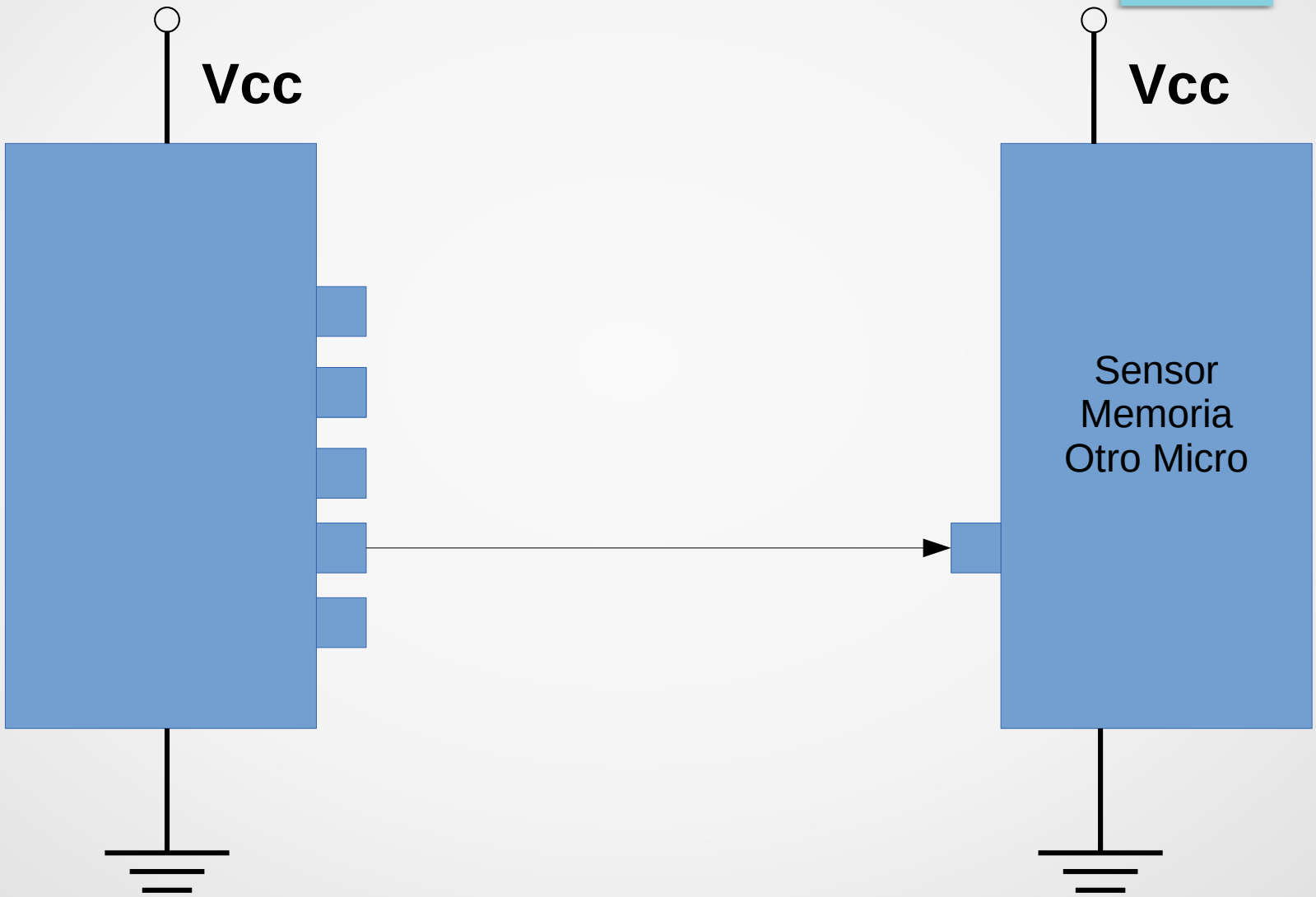




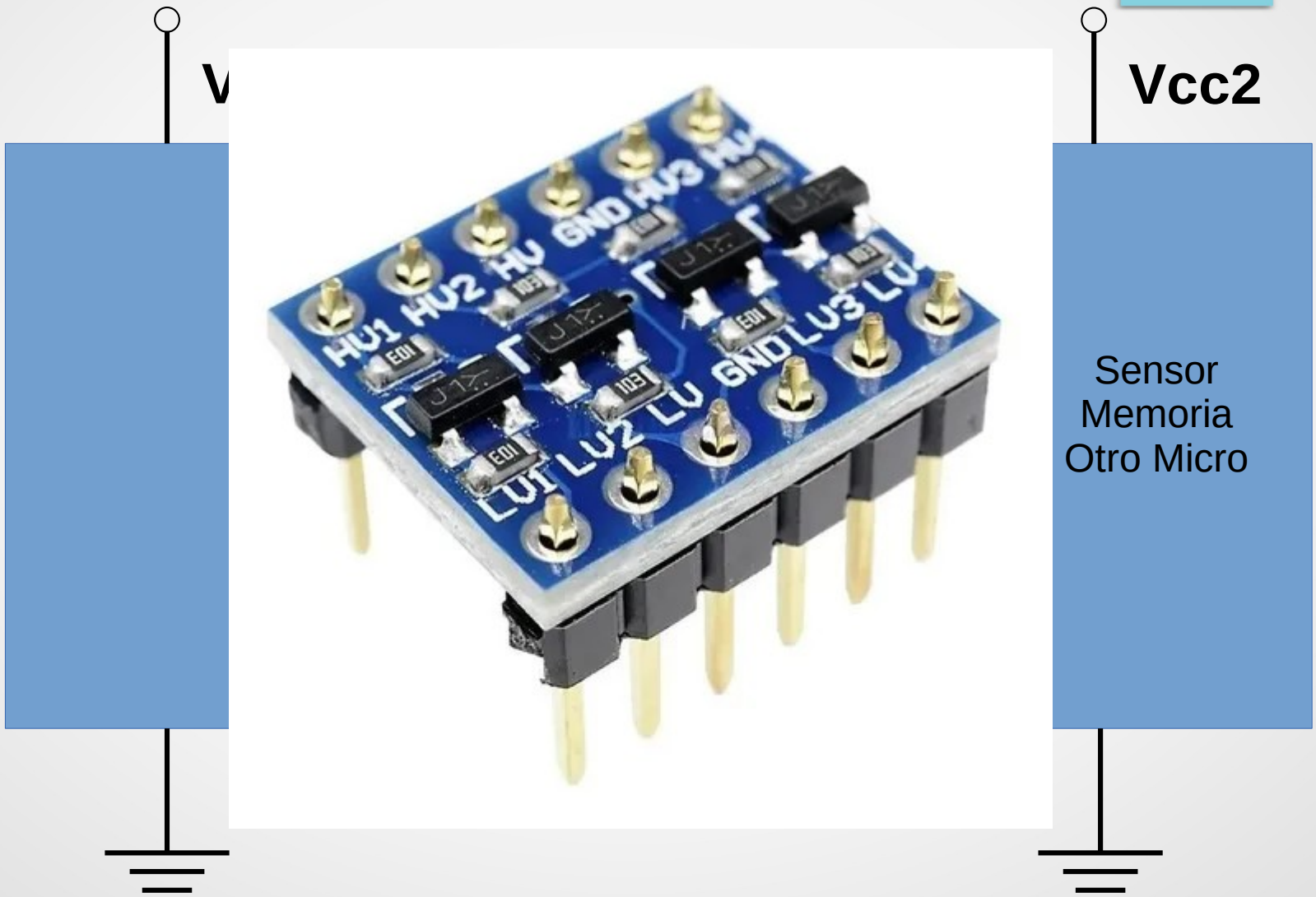
Puerto de salida



Puerto de salida



Puerto de salida

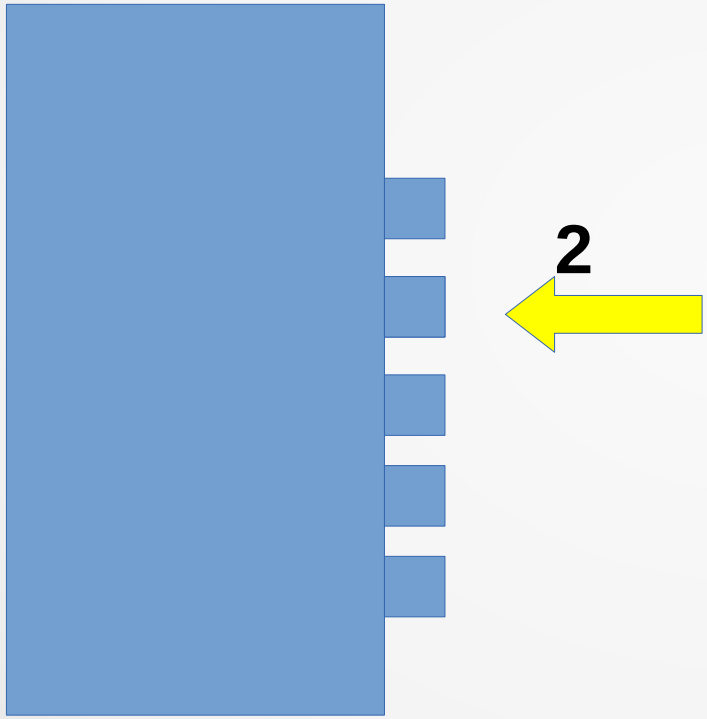


Puertos de Entrada Salida

Puertos de Entrada

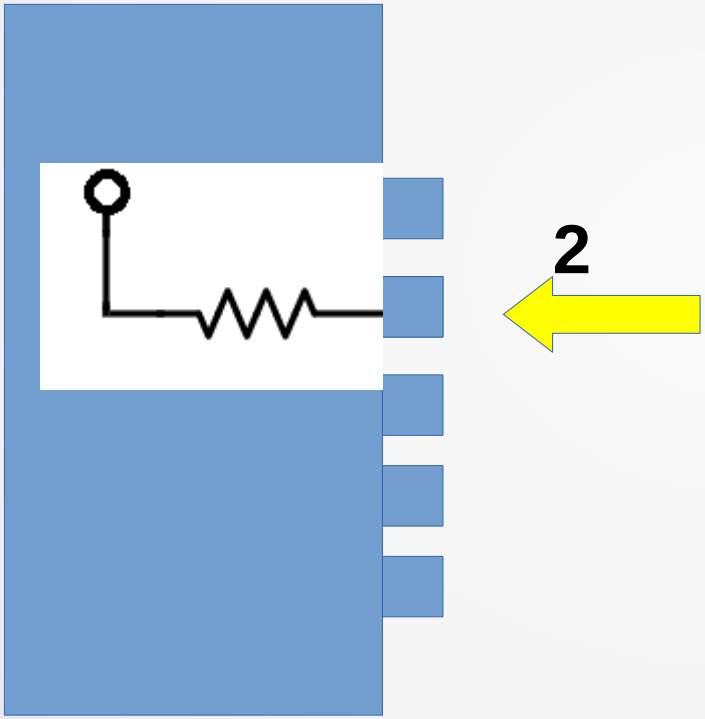
Puerto de entrada

PinMode (2, INPUT);



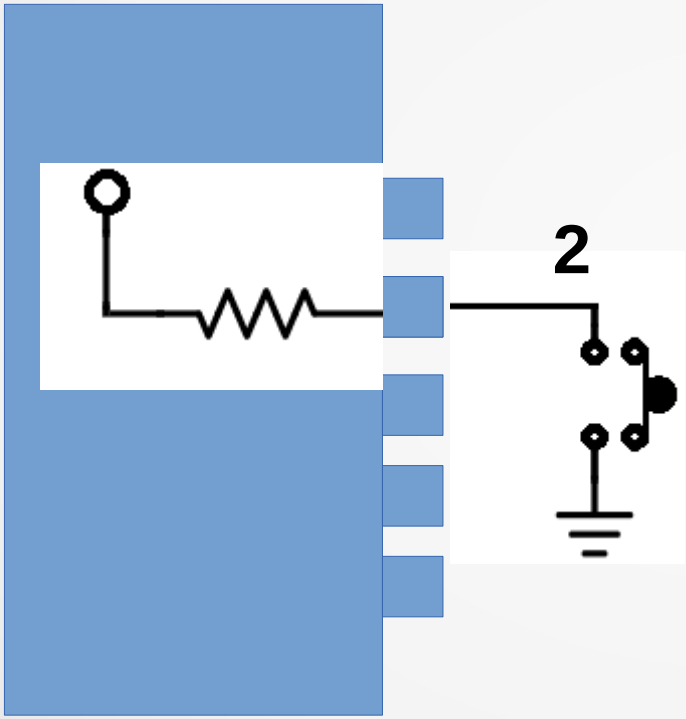
Puerto de entrada (PullUp)

PinMode (2, INPUT_PULLUP); (34,4k)



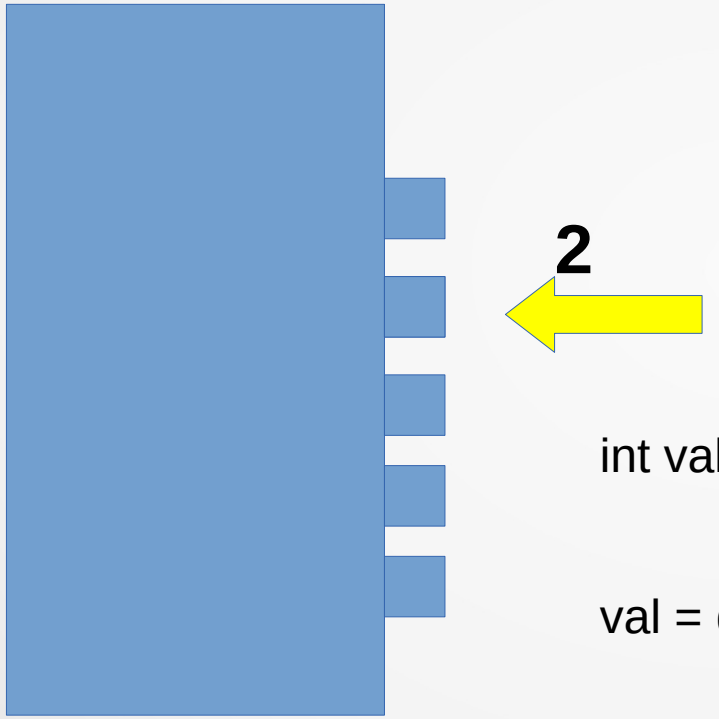
Puerto de entrada (PullUp)

PinMode (2, INPUT_PULLUP);



Puerto de entrada

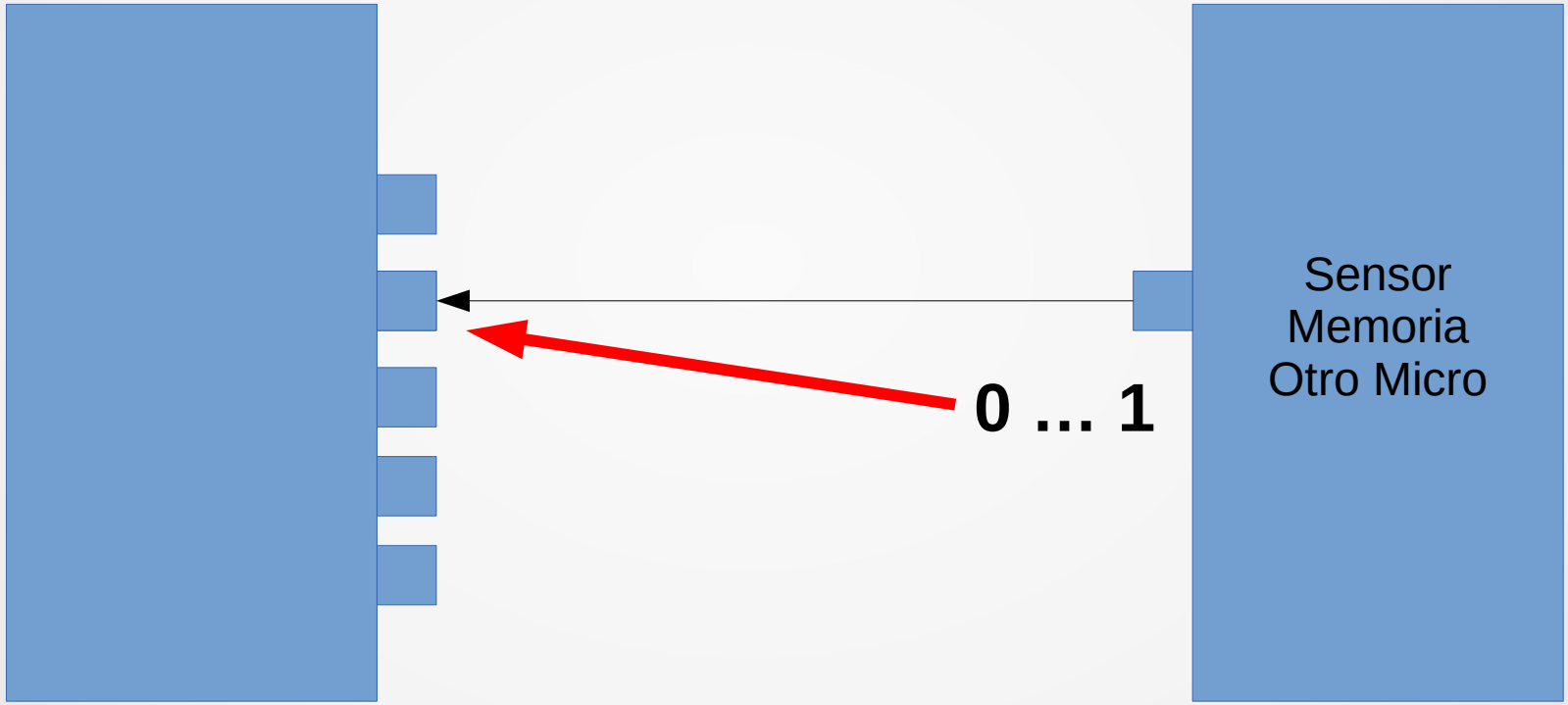
PinMode (2, INPUT_PULLUP);



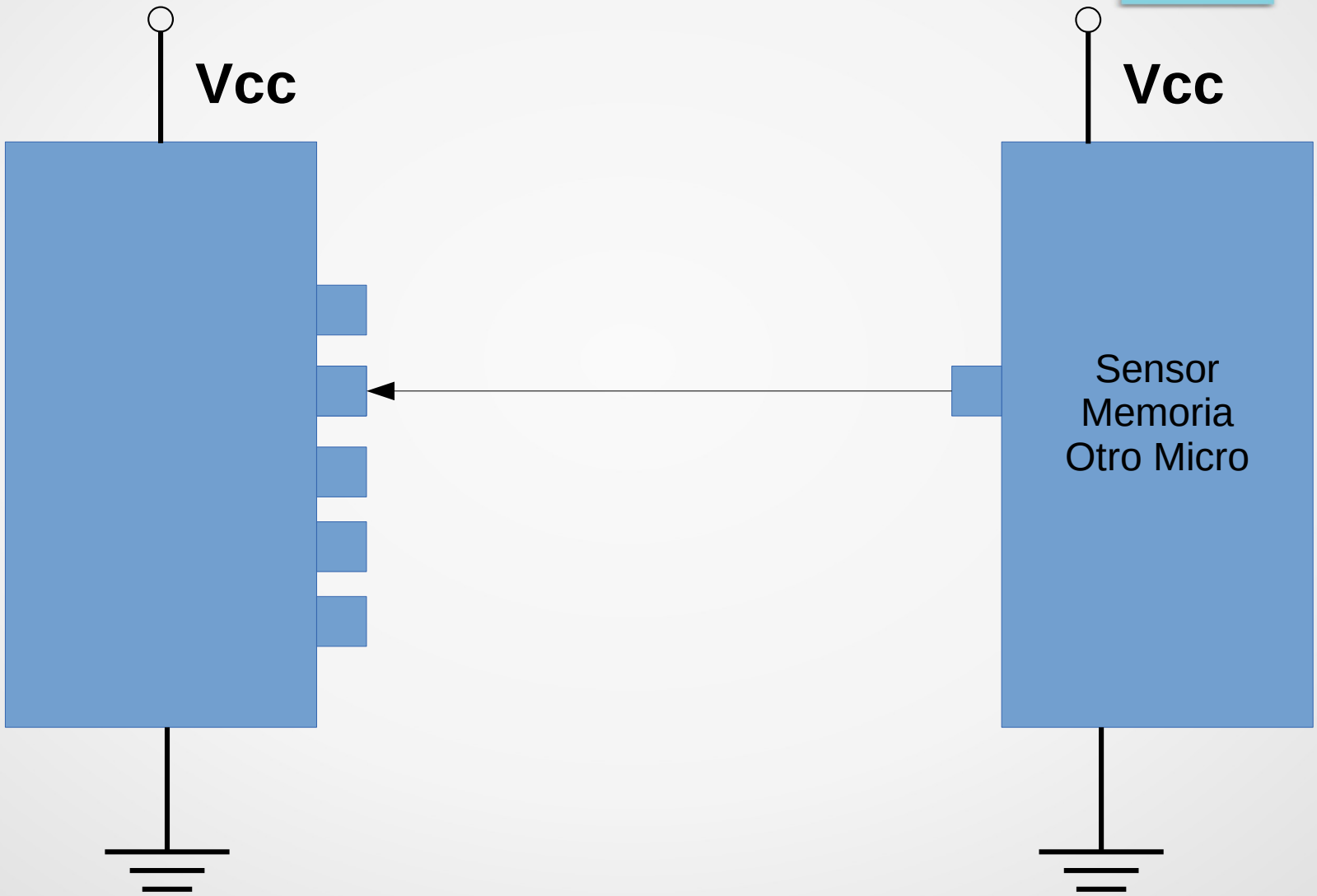

```
int val = 0;      // variable para almacenar el valor leído

val = digitalRead (2);    // lee el pin de entrada
```

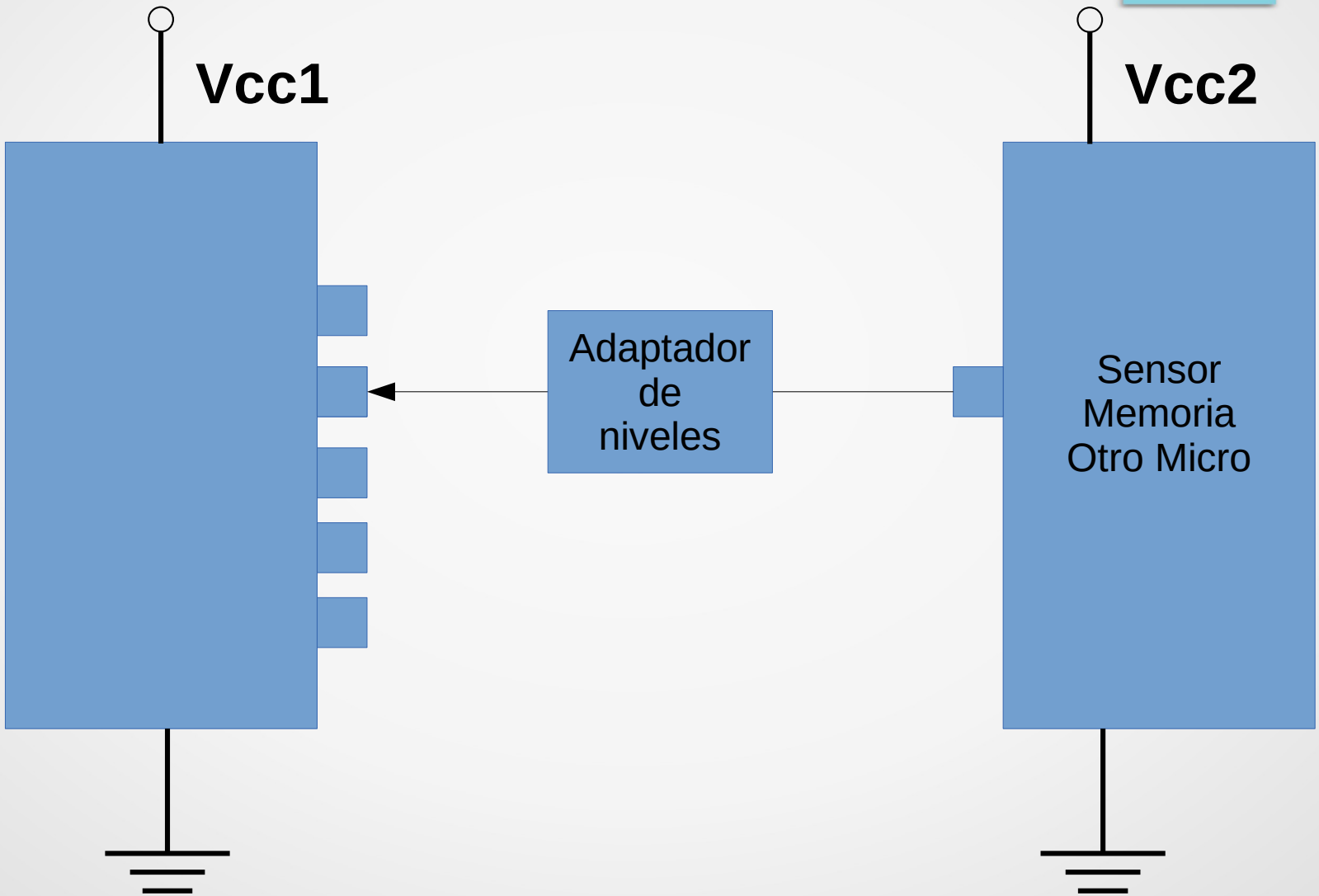
Puerto de entrada



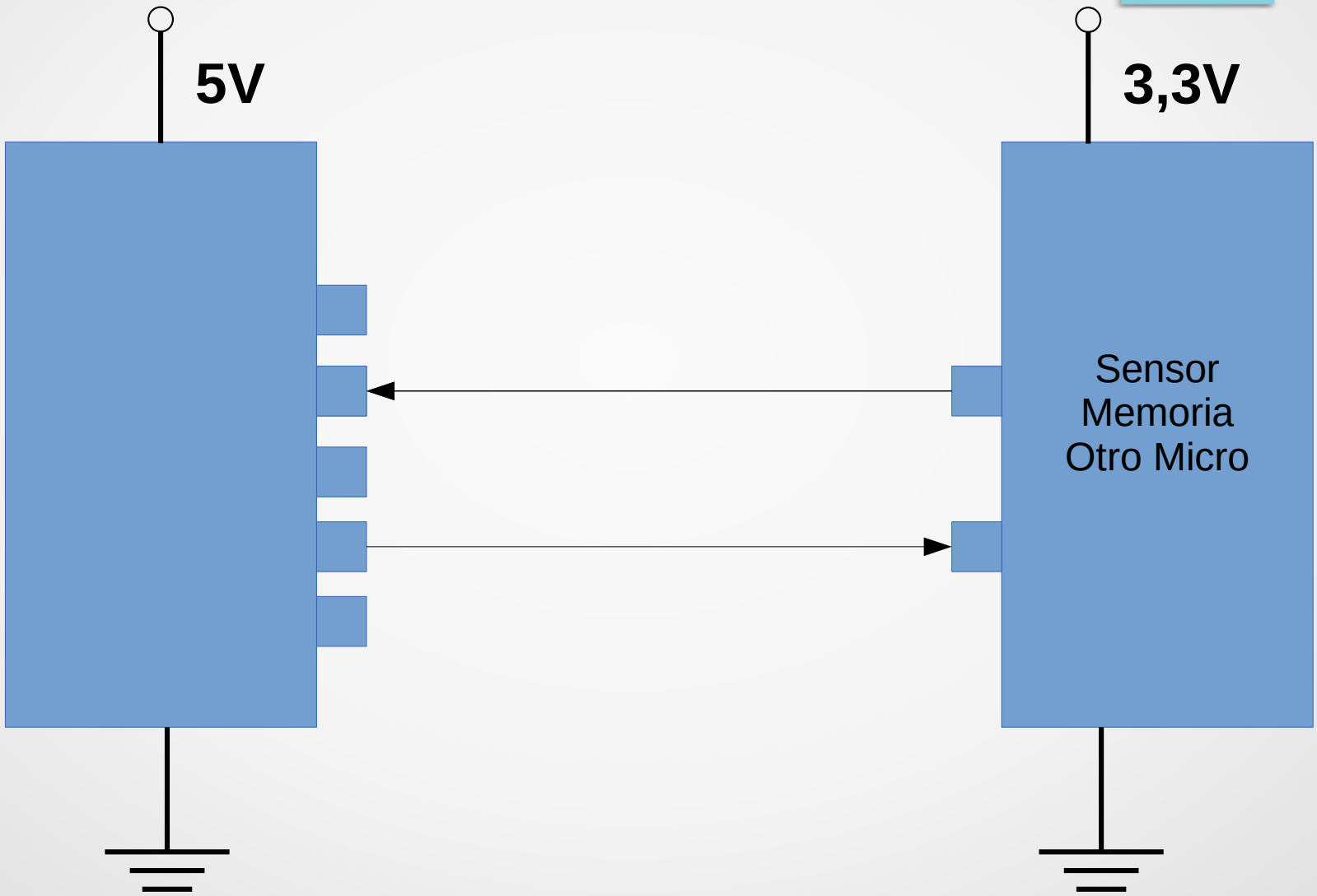
Puerto de entrada



Puerto de entrada



Conexión 5V 3,3V



Conexión 5V 3,3V

28.2 DC Characteristics

T_A = –40°C to +125°C, V_{CC} = 2.7V to 5.5V (unless otherwise noted)

Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Input low voltage, except XTAL1 and RESET pin	V_{CC} = 2.7V to 5.5V	V_{IL}	–0.5		$0.3V_{CC}$ (1)	V
Input high voltage, except XTAL1 and RESET pins	V_{CC} = 2.7V to 5.5V	V_{IH}	$0.6V_{CC}$ (2)		V_{CC} + 0.5	V
Input low voltage, XTAL1 pin	V_{CC} = 2.7V to 5.5V	V_{IL1}	–0.5		$0.1V_{CC}$ (1)	V
Input high voltage, XTAL1 pin	V_{CC} = 2.7V to 5.5V	V_{IH1}	$0.7V_{CC}$ (2)		V_{CC} + 0.5	V

Notes: 1. "Max" means the highest value where the pin is guaranteed to be read as low

2. "Min" means the lowest value where the pin is guaranteed to be read as high

Atmel

ATmega328P

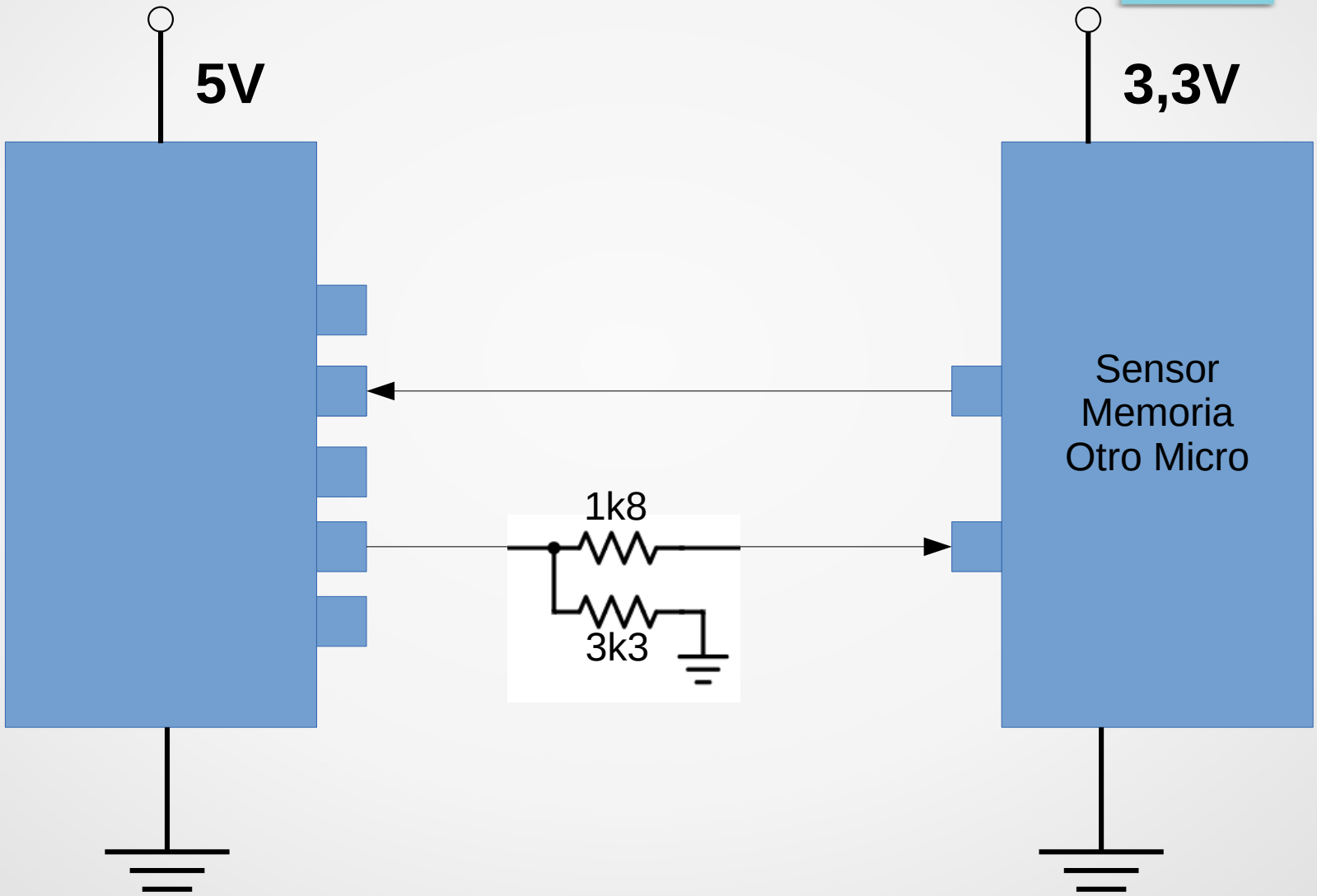
8-bit AVR Microcontroller with 32K Bytes In-System Programmable Flash

DATASHEET

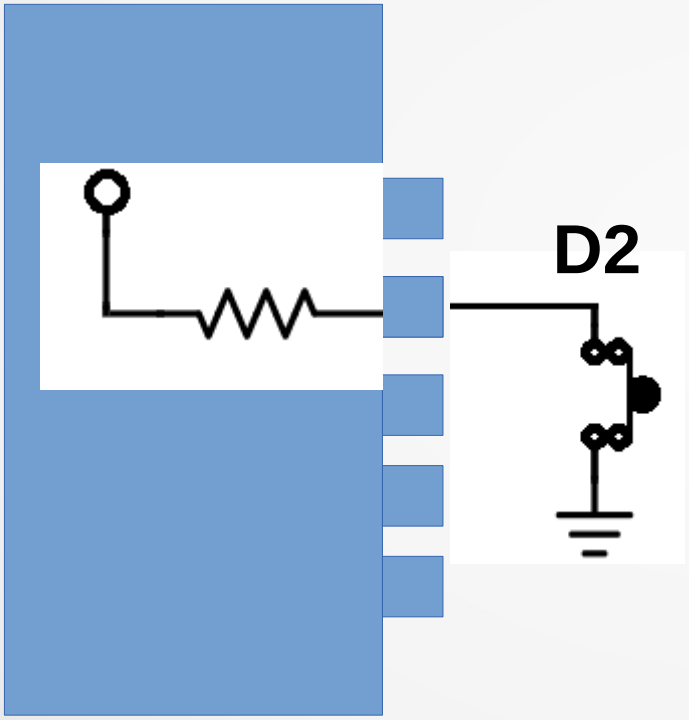
Conexión 5V 3,3V

¿Si no es 5 volt tolerant?

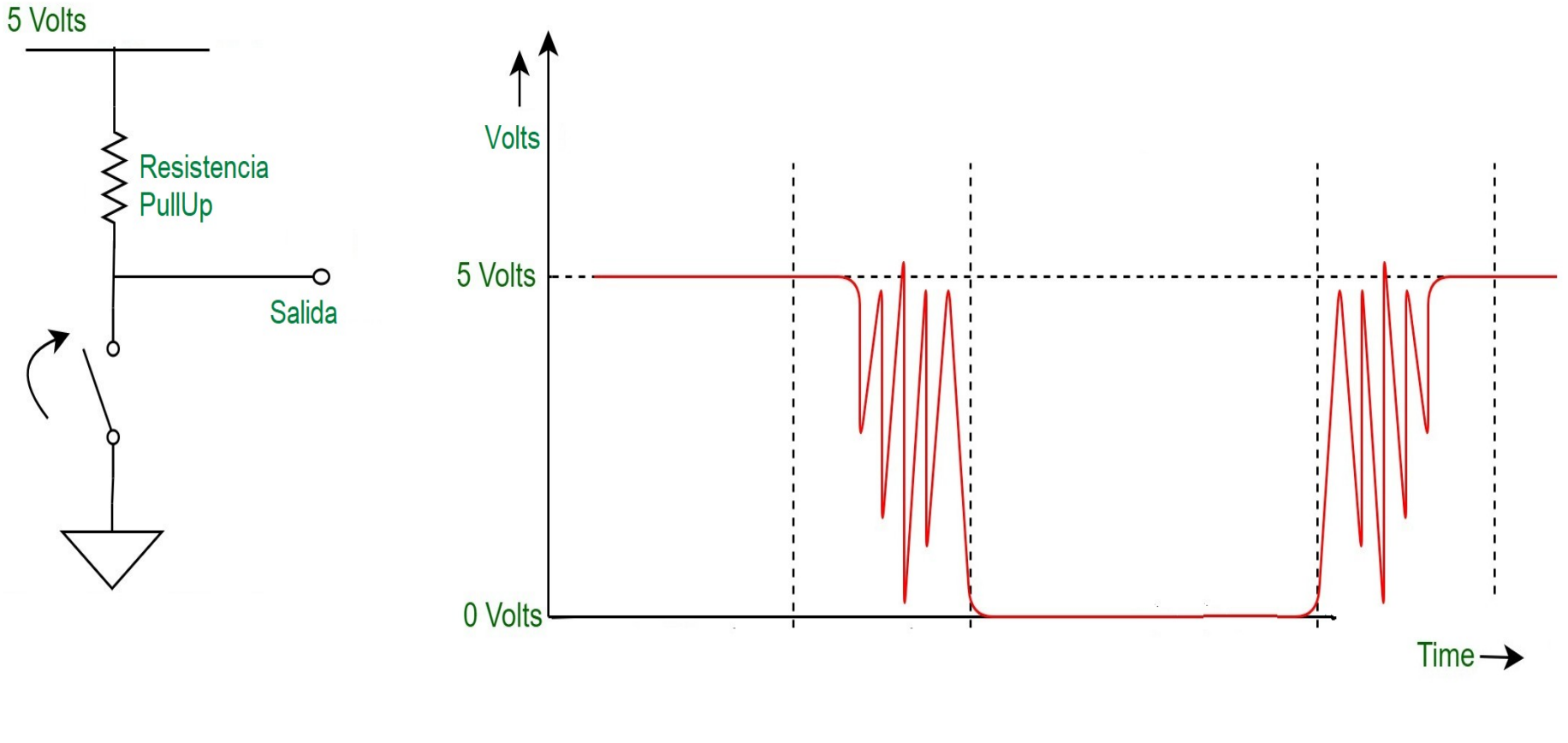
Conexión 5V 3,3V



Lectura de tecla



Lectura de tecla



Puertos de entrada y salida

Fin……