

# abc

ARDUINO BASIC CONNECTIONS



[www.pighixx.com](http://www.pighixx.com)

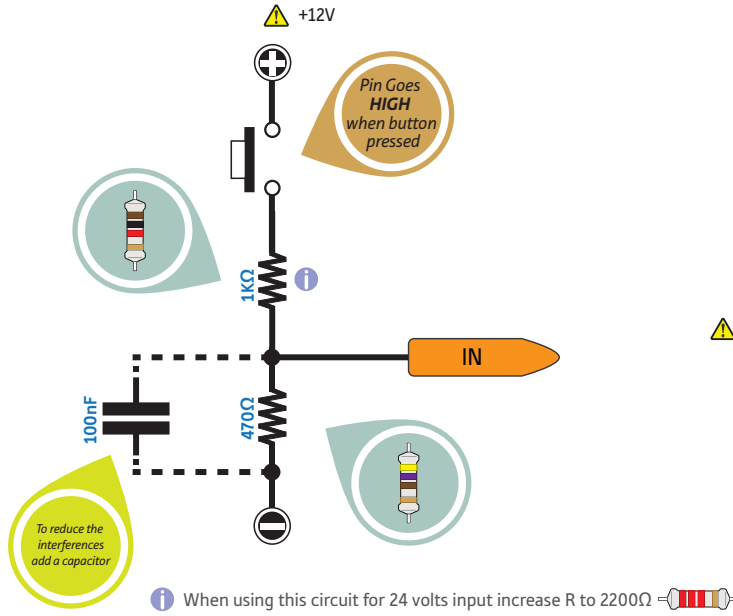


03 APR 2013

ver 1 rev 0

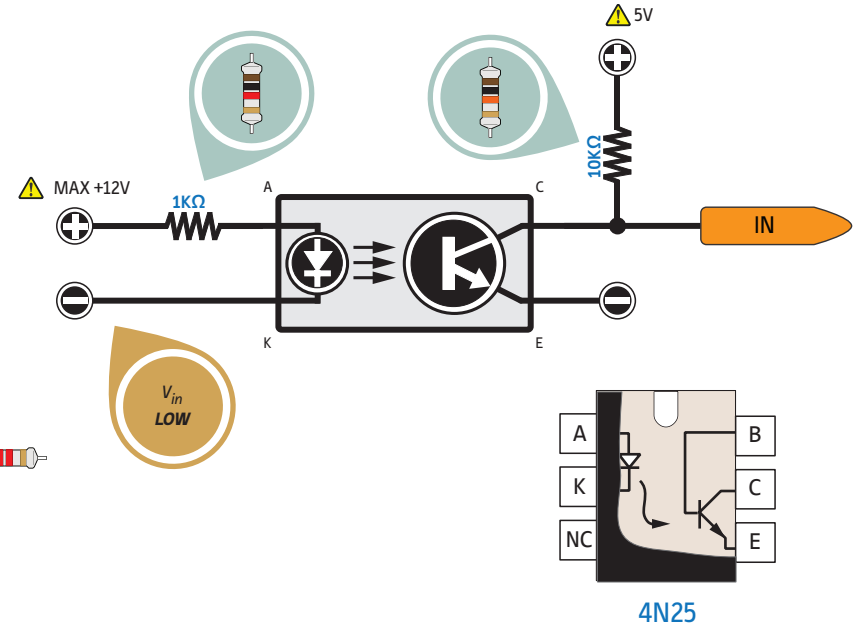
### Pushbutton to 12V

Should you need to connect Arduino inputs to a DC voltage higher than 5V

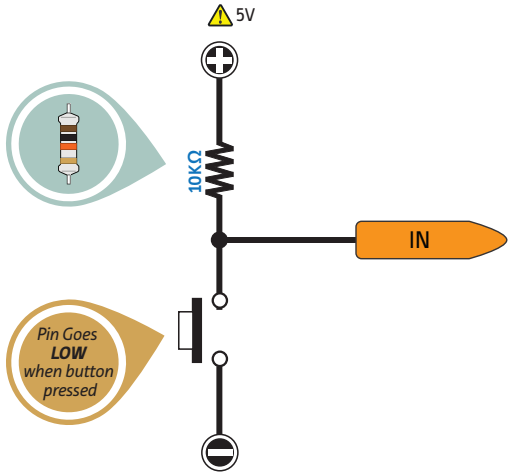


### Optocoupled inputs

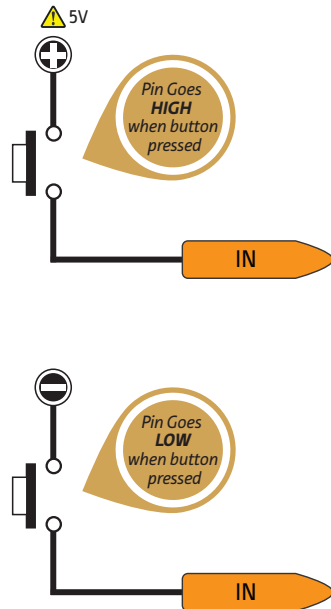
Used when galvanic separation between external circuitry and Arduino circuit is required



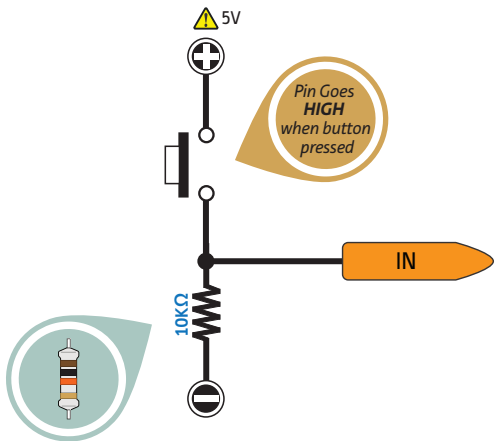
### Pushbutton to GND



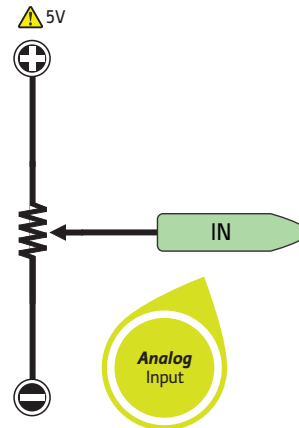
### Using Internal Pullup



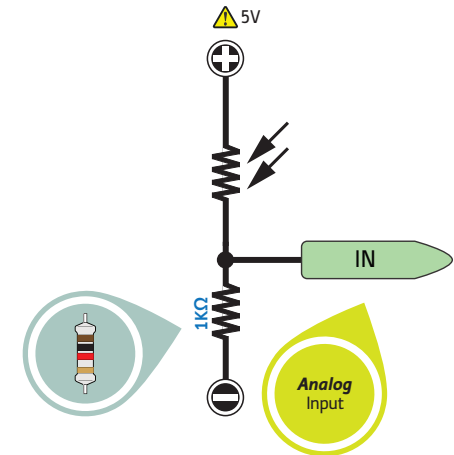
### Pushbutton to 5V



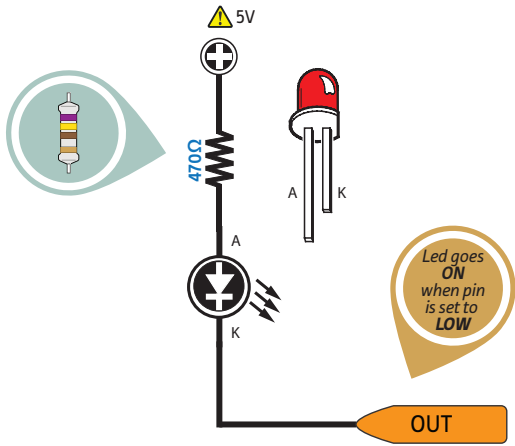
### Trimmer or Potentiometer



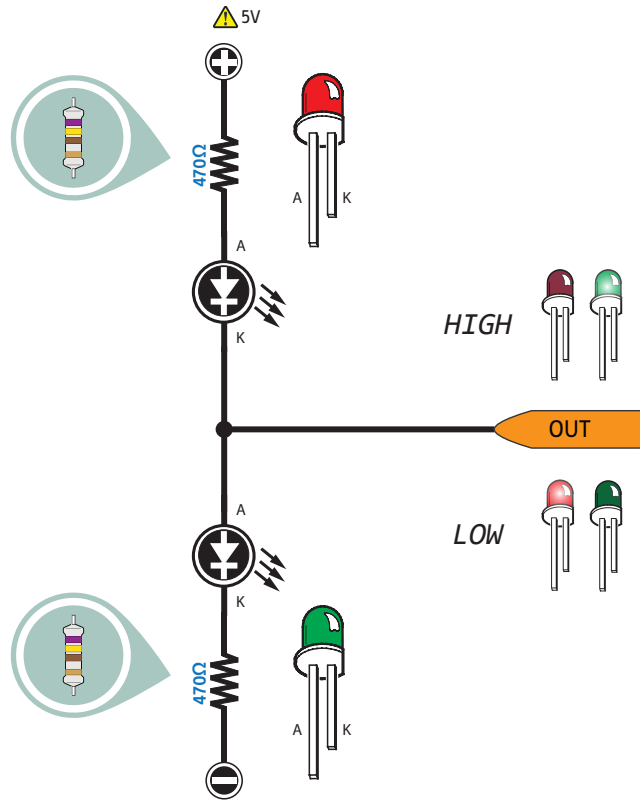
### Photoresistor



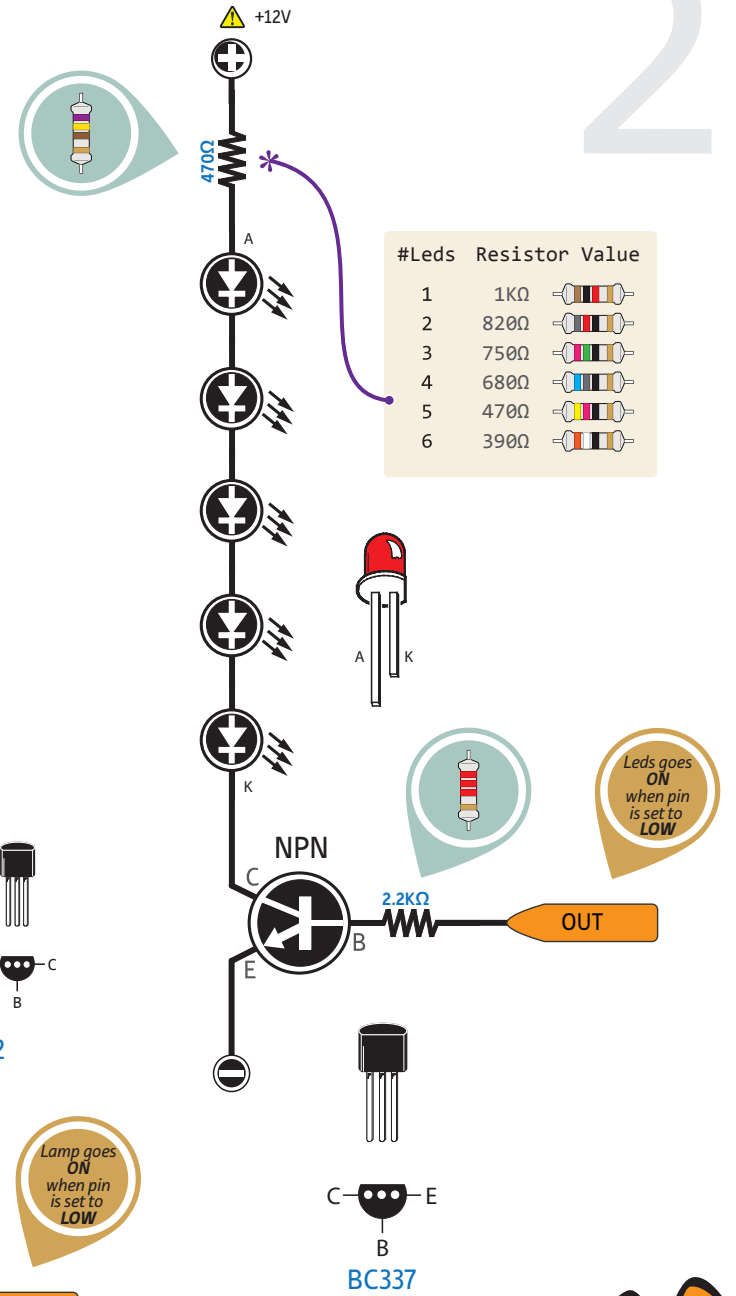
Connect a Led



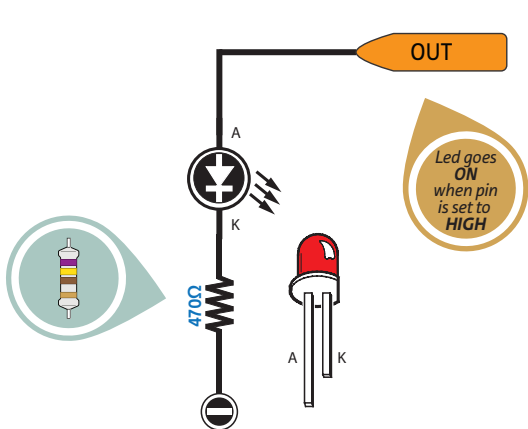
Dual LEDs or bi-color LED



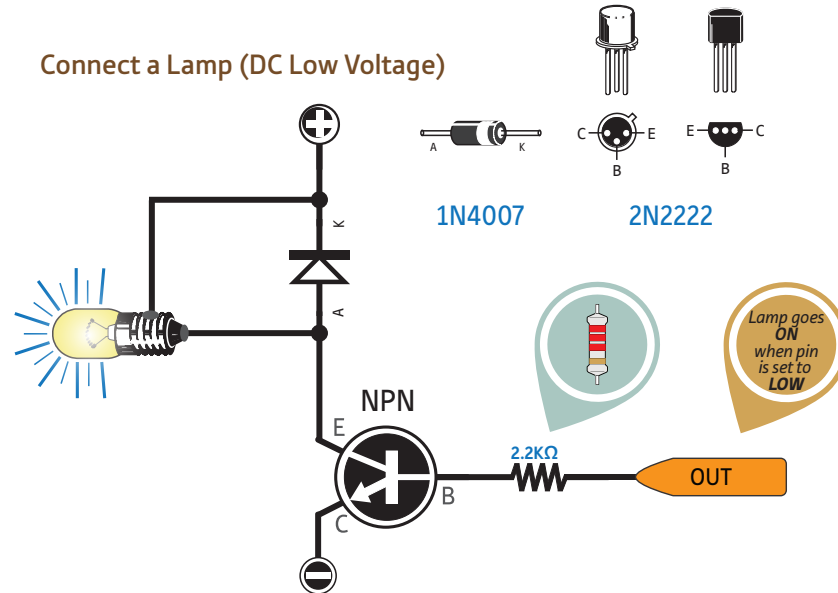
LED clusters



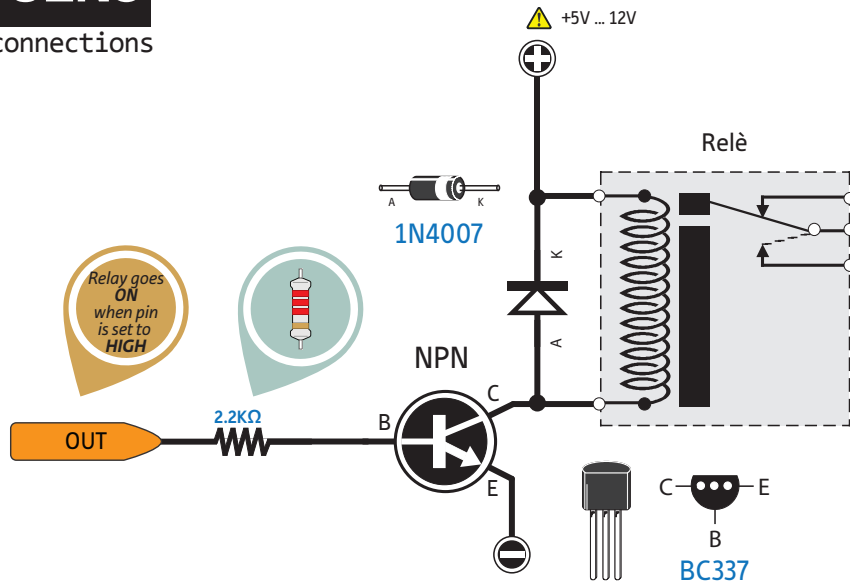
Connect a Led



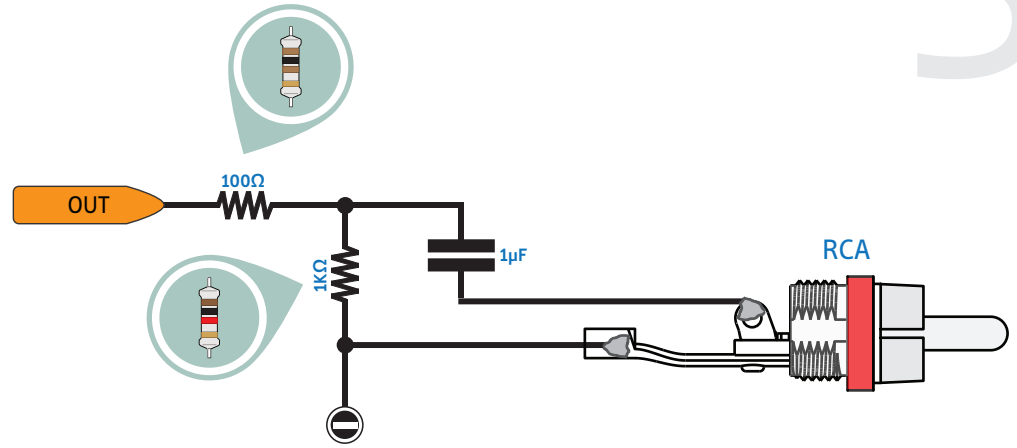
Connect a Lamp (DC Low Voltage)



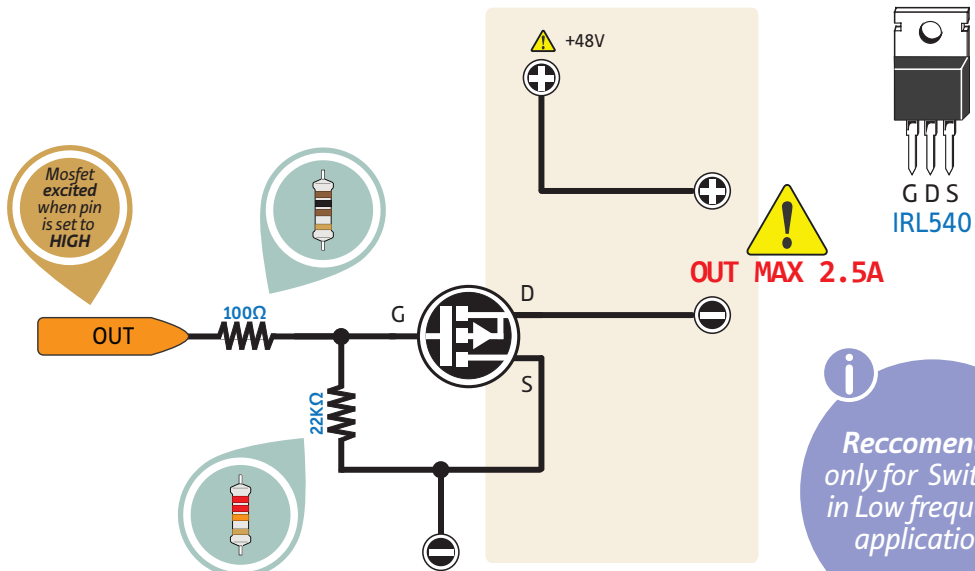
Connect a Relay



Connect an Audio Amplifier

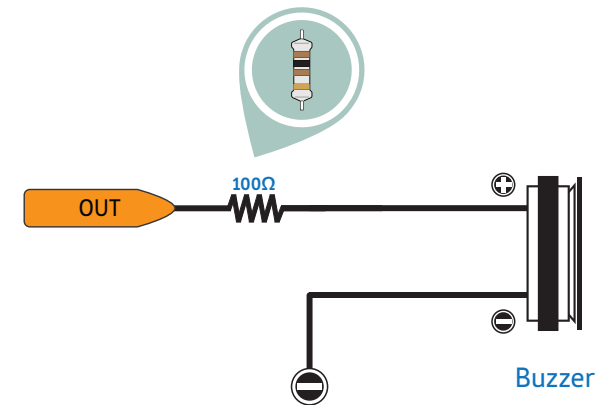


Connect a Mosfet

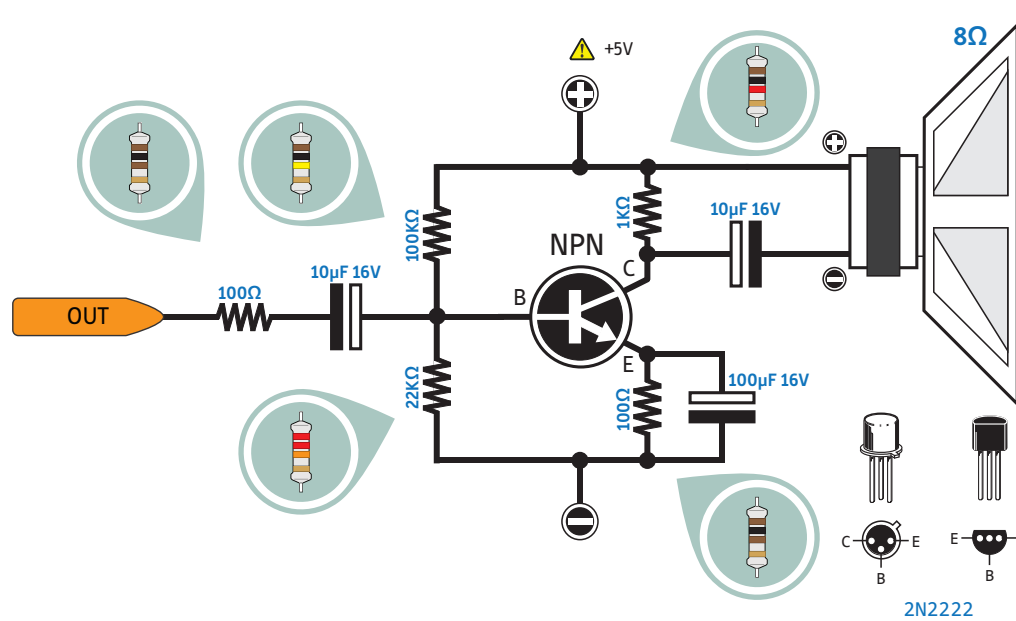


*Reccomended only for Switch or in Low frequency applications.*

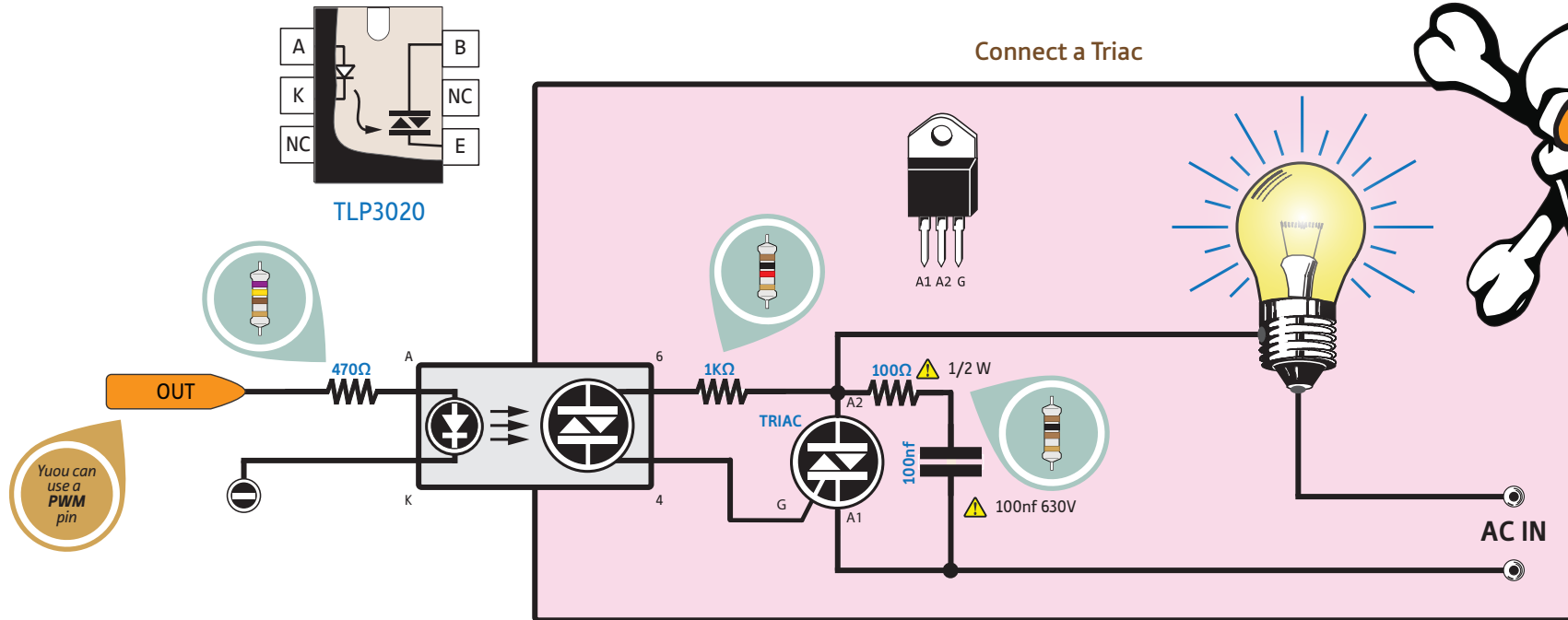
Connect a Buzzer



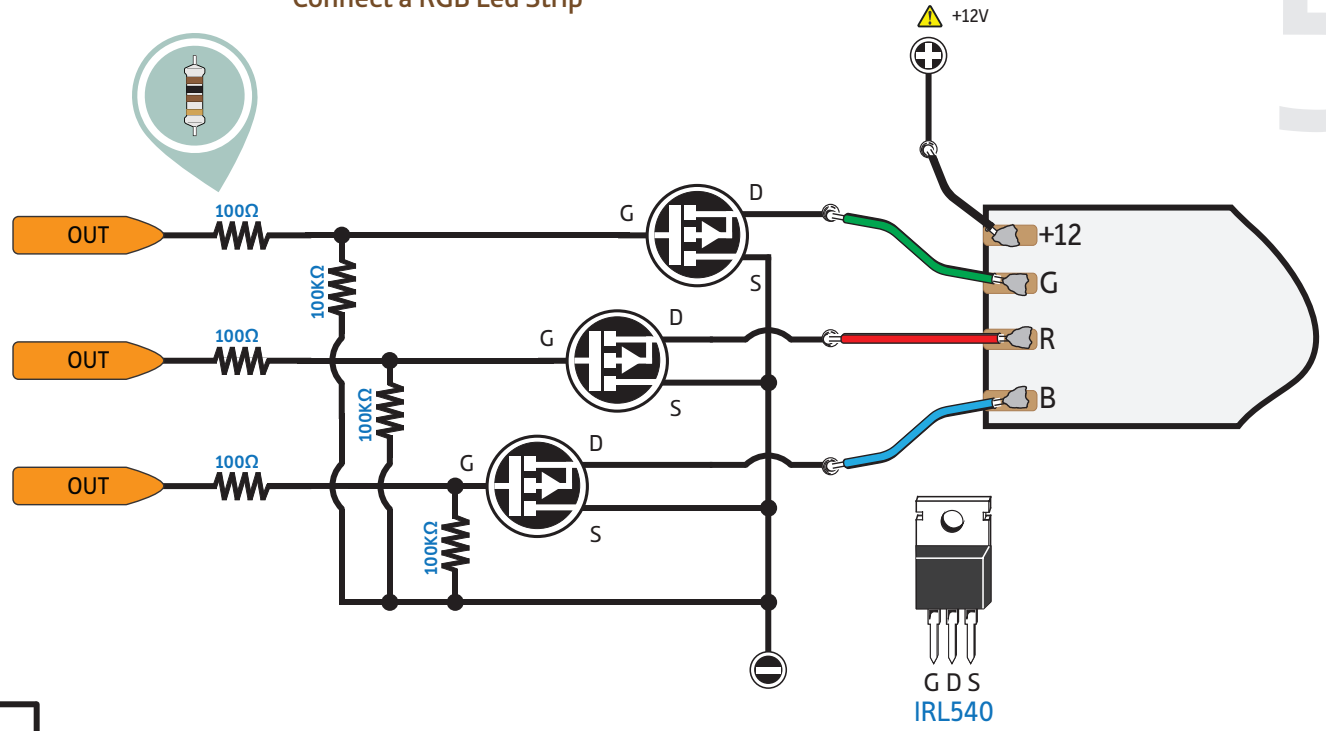
Connect a Speaker



Connect a Triac

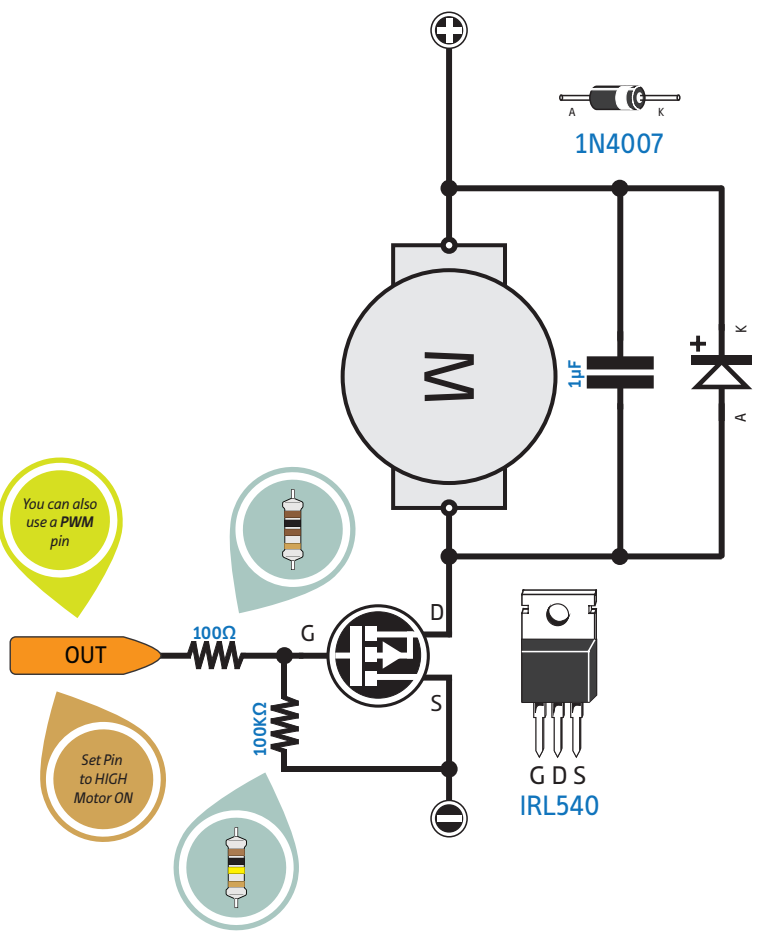


Connect a RGB Led Strip



You can also use a PWM pin

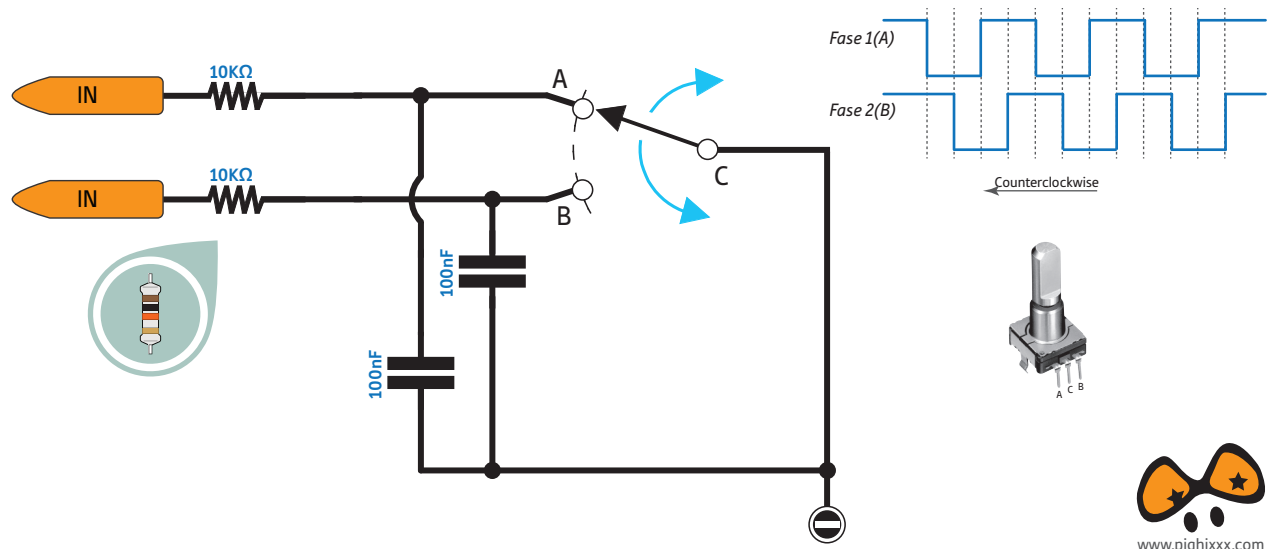
Connect a DC Motor



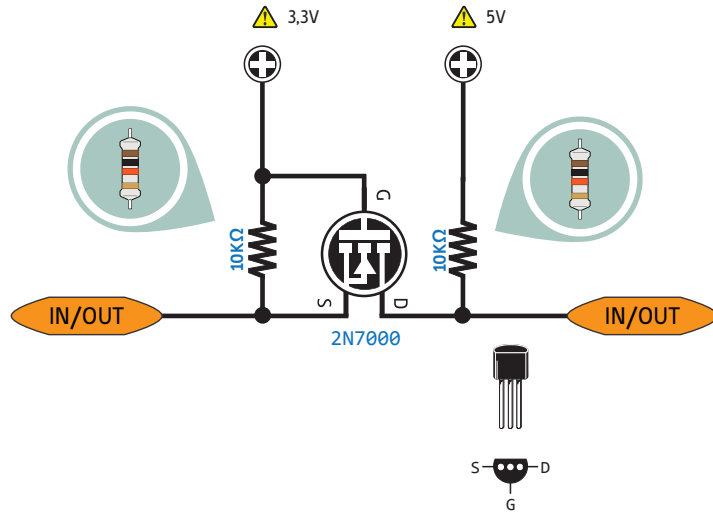
You can also use a PWM pin

Set Pin to HIGH Motor ON

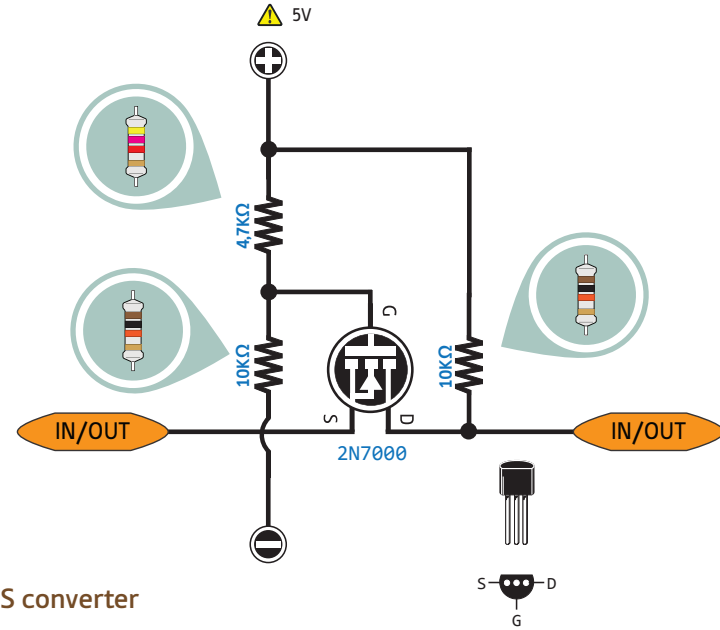
Connect an Encoder



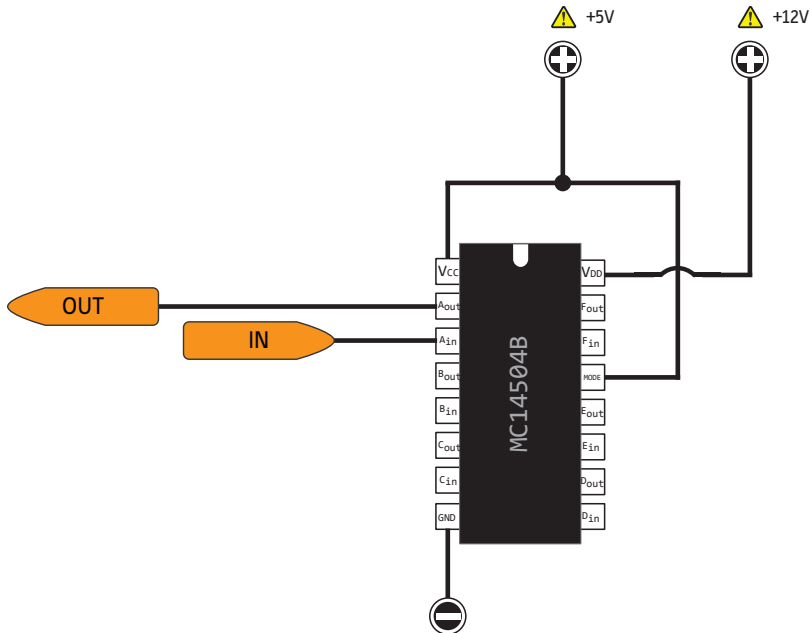
Bi-Directional Voltage Level Converter 3.3V to 5V



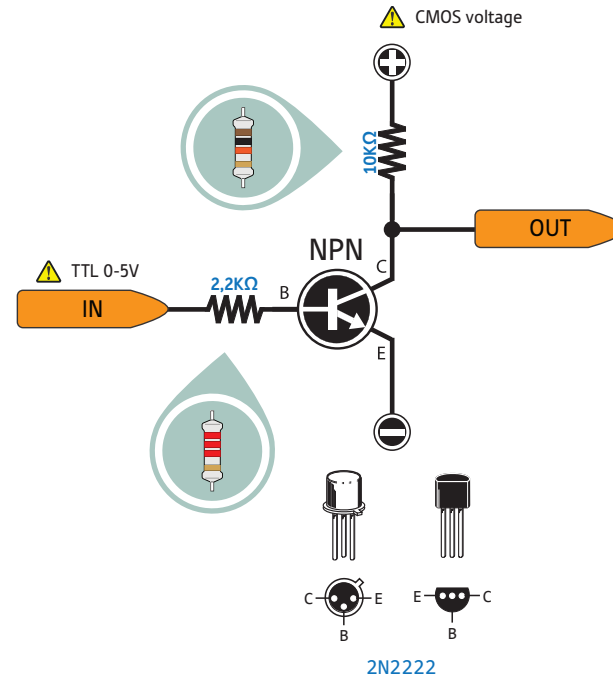
Bi-Directional Voltage Level Converter 3.3V to 5V with voltage divider



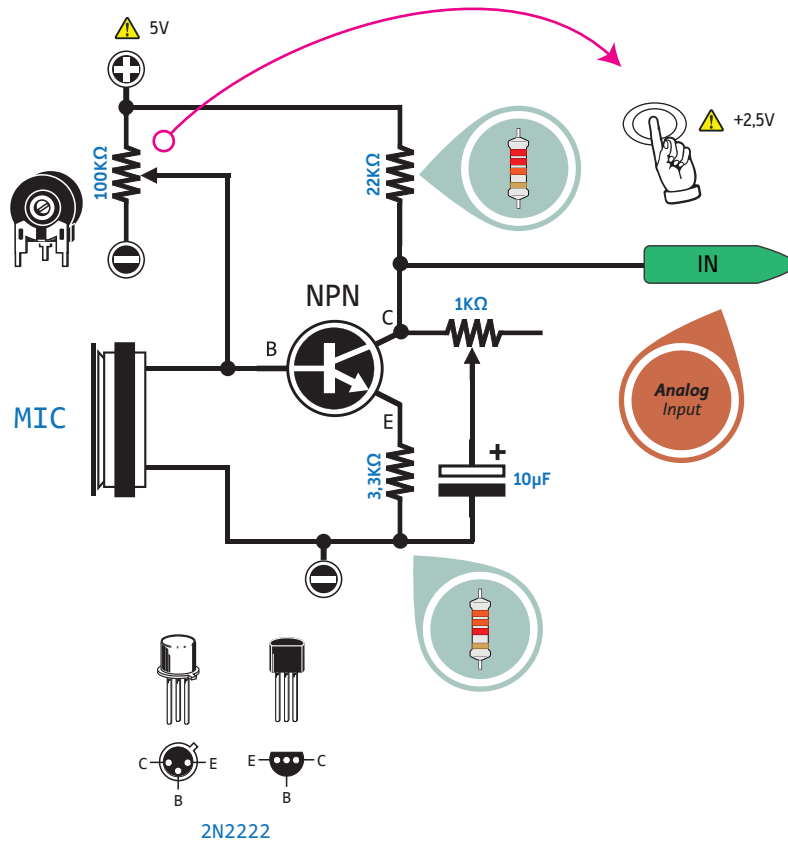
TTL / CMOS converter (6 inputs/outputs)



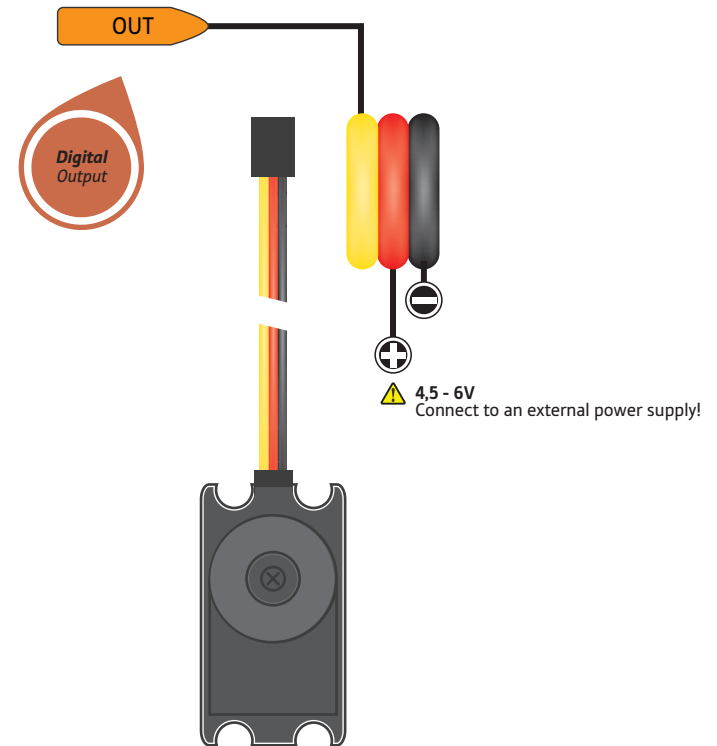
TTL / CMOS converter



Connect a Microphone

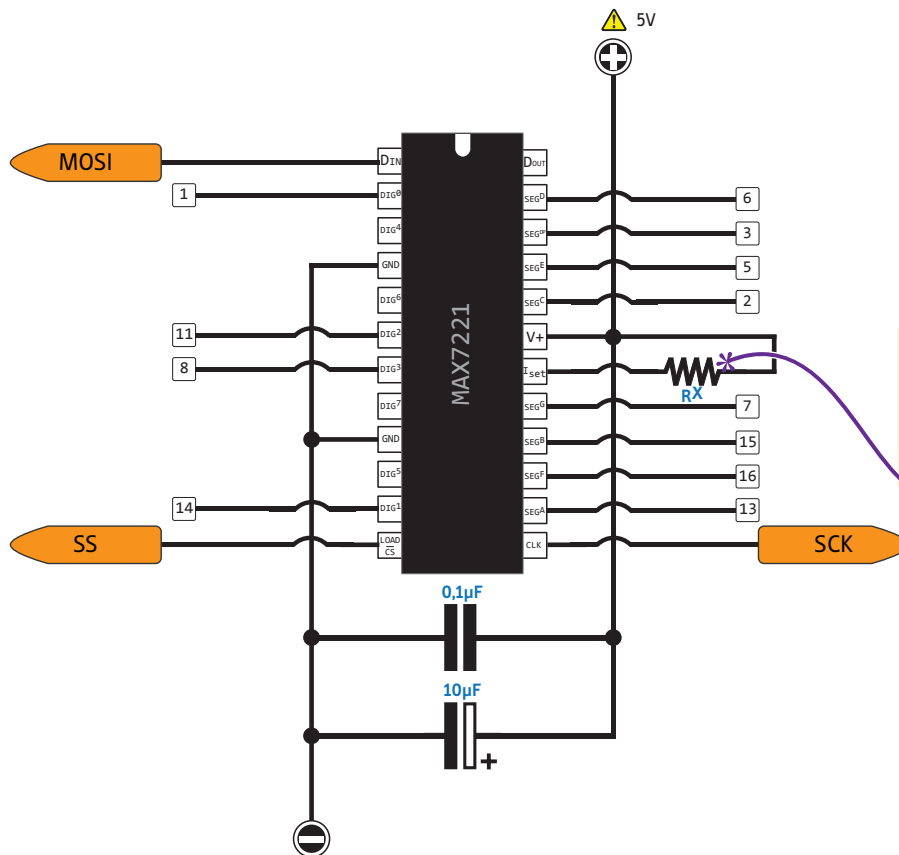
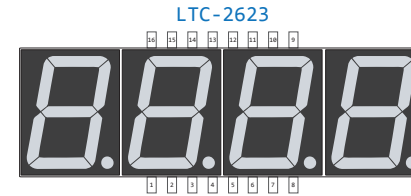
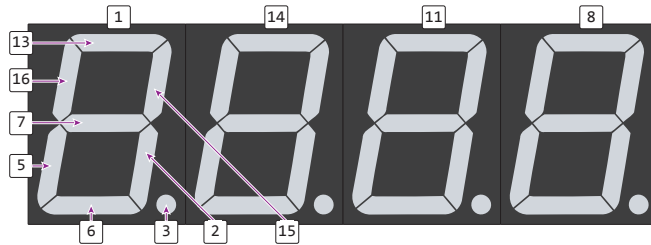


Connect a Servo

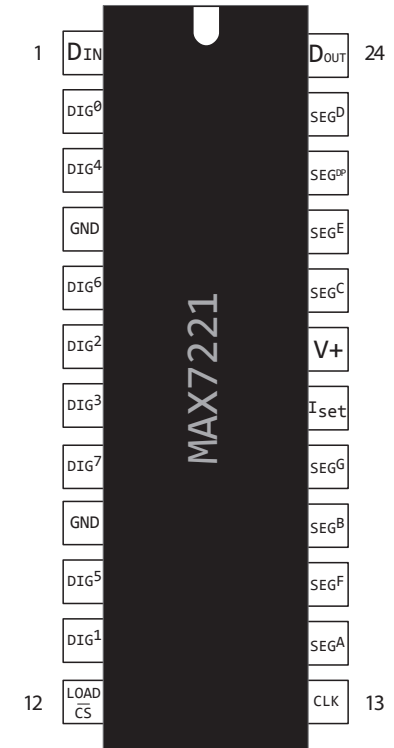




## 7 Segments Display (Common Anode) with MAX7221

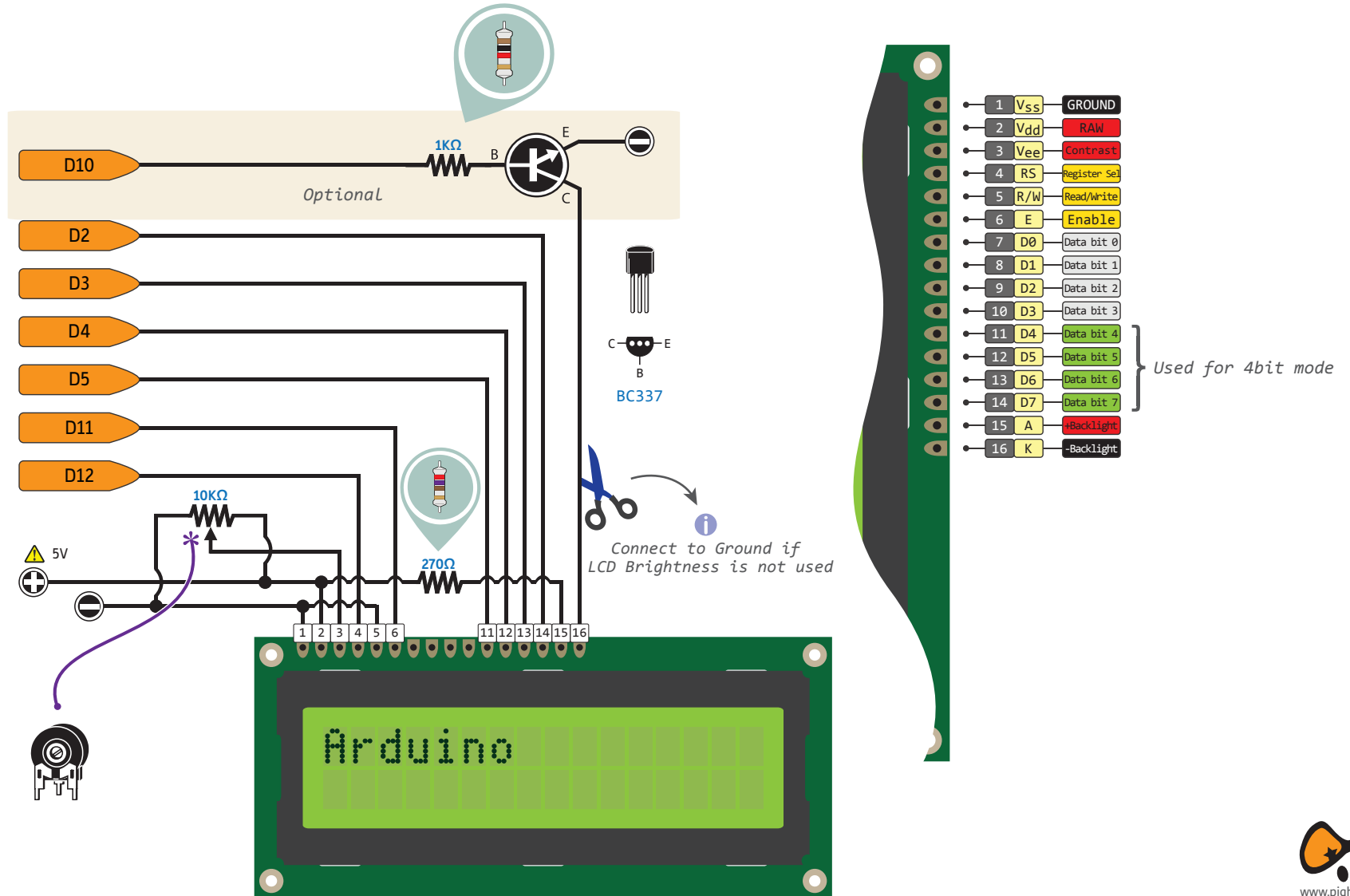


| Current | 1.5v | 2.0v | 2.5v | 3.0v | 3.5v |
|---------|------|------|------|------|------|
| 40ma    | 12KΩ | 12KΩ | 11KΩ | 10KΩ | 10KΩ |
| 30ma    | 18KΩ | 17KΩ | 16KΩ | 15KΩ | 14KΩ |
| 20ma    | 30KΩ | 28KΩ | 26KΩ | 24KΩ | 22KΩ |
| 10ma    | 68KΩ | 64KΩ | 60KΩ | 56KΩ | 51KΩ |

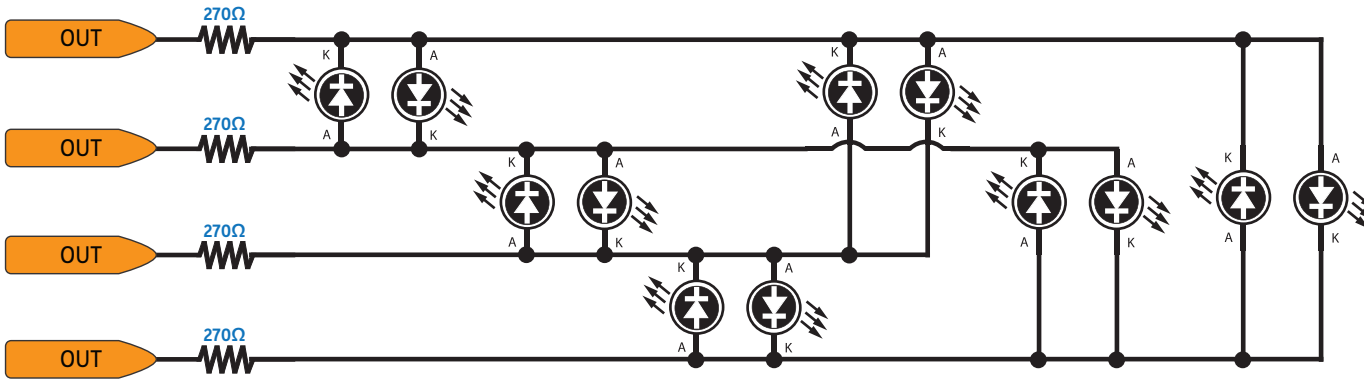
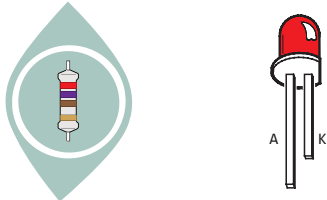
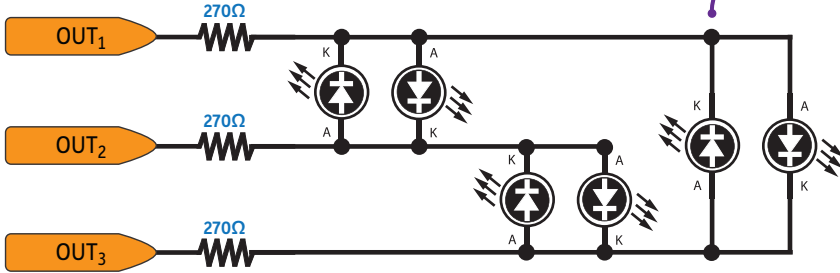


## Connect a LCD HITACHI 44780 compatible

use PWM  
to change  
LCD  
brightness



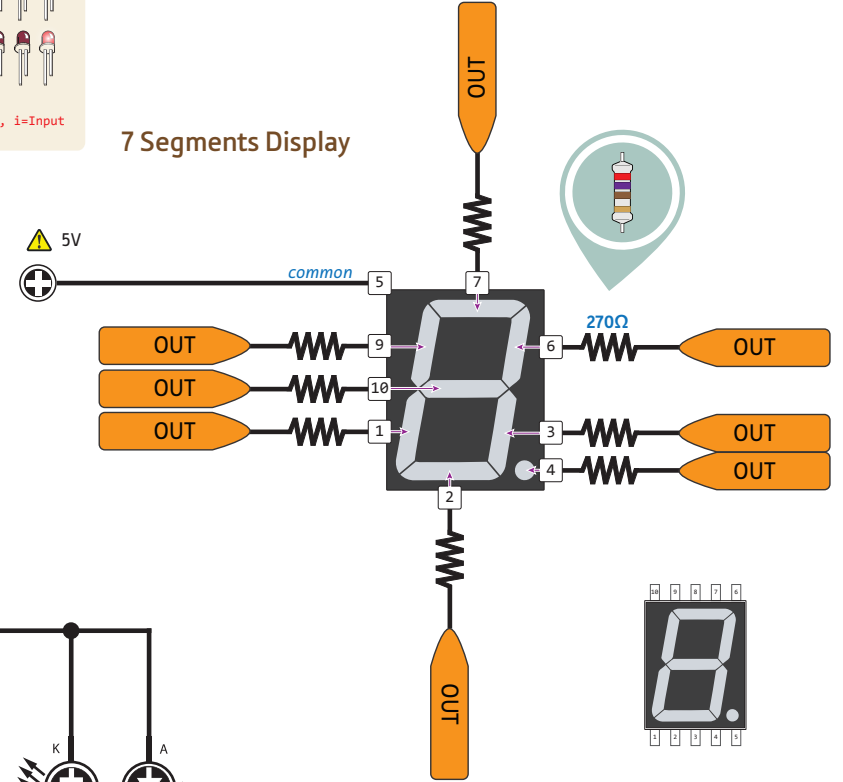
Charlieplexing



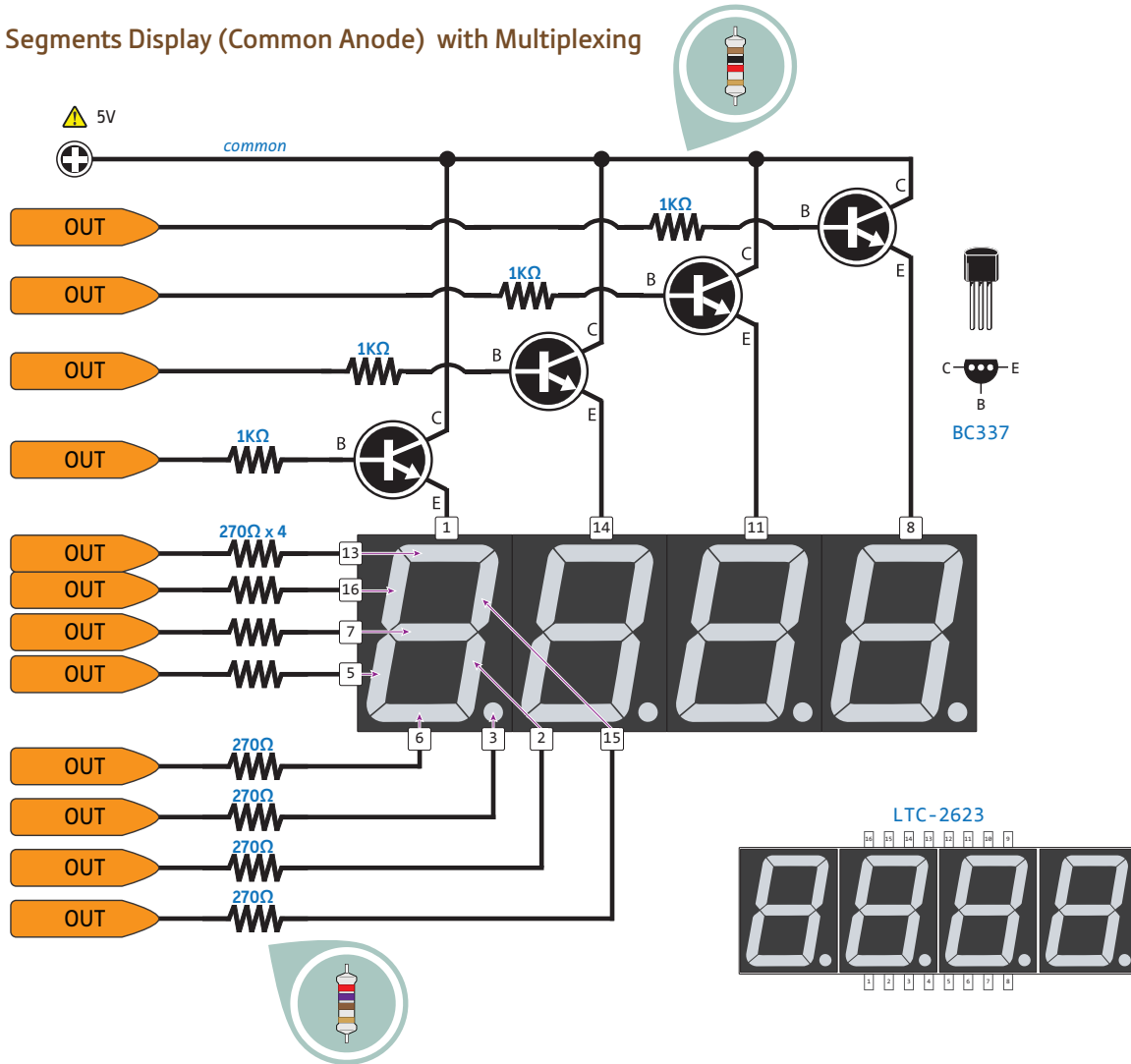
| Out <sub>1</sub> | Out <sub>2</sub> | Out <sub>3</sub> |  |
|------------------|------------------|------------------|--|
| L                | L                | L                |  |
| L                | H                | i                |  |
| H                | L                | i                |  |
| i                | L                | H                |  |
| i                | H                | L                |  |
| L                | i                | H                |  |
| H                | i                | L                |  |

H=High, L=Low, i=Input

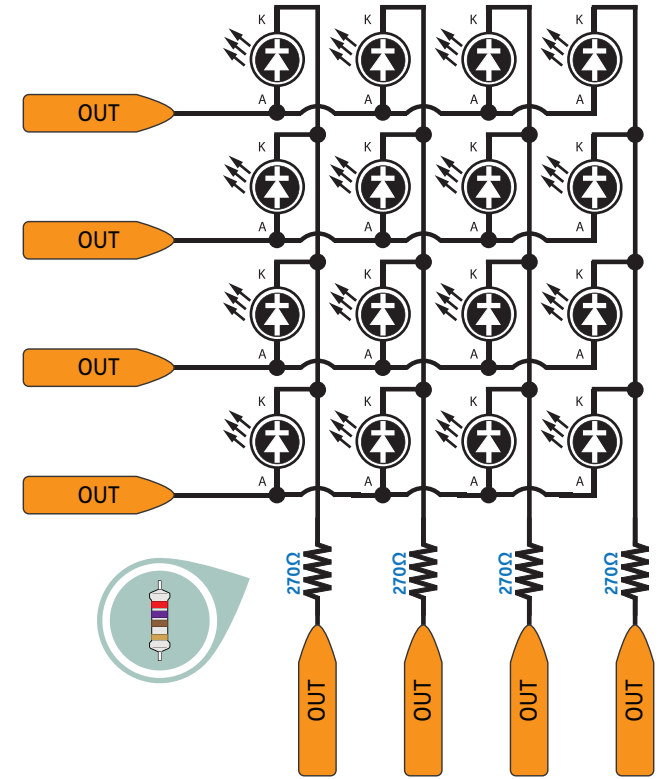
7 Segments Display



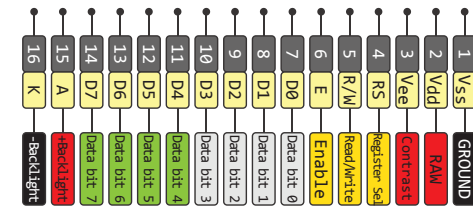
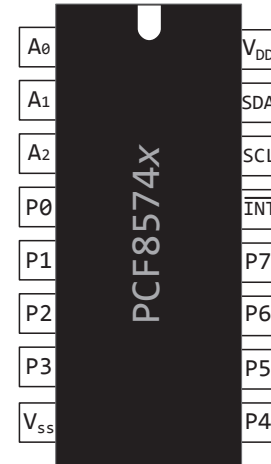
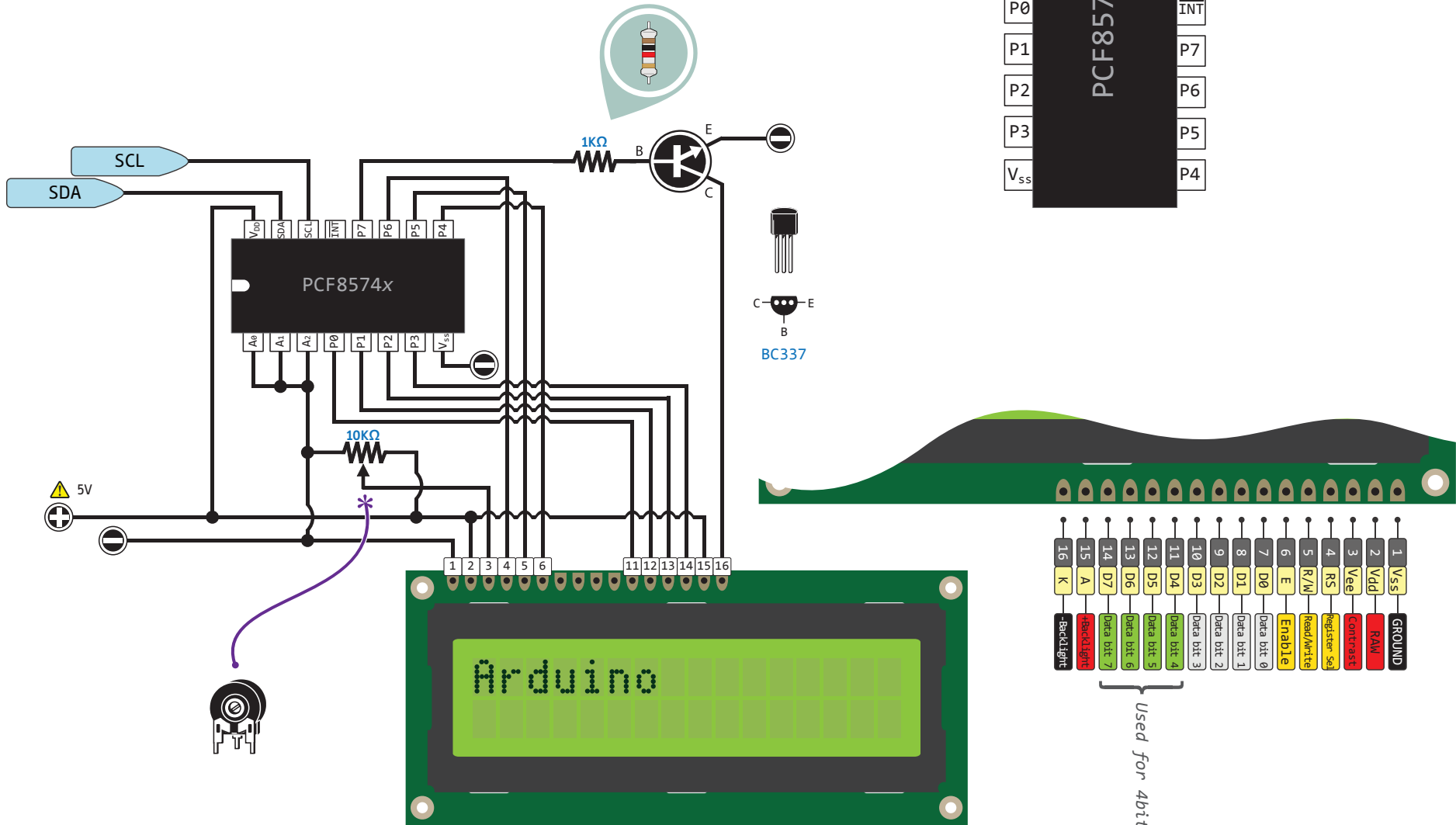
7 Segments Display (Common Anode) with Multiplexing



LED Array



Connect via I2C a LCD HITACHI 44780 compatible

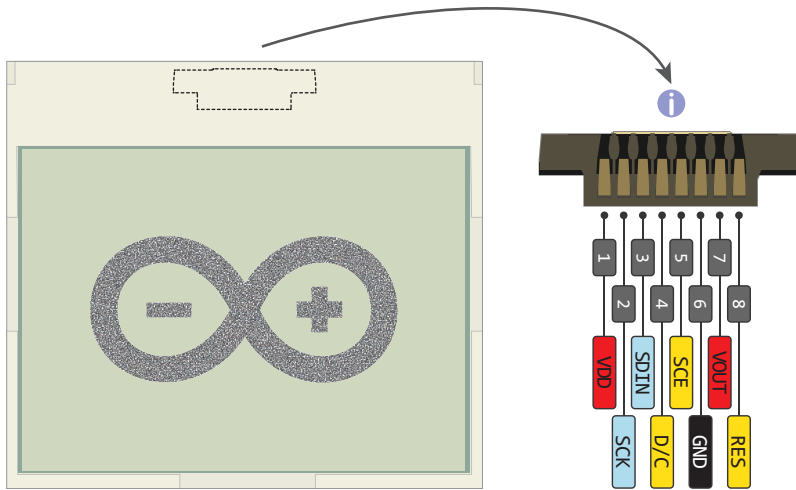


Used for 4bit mode

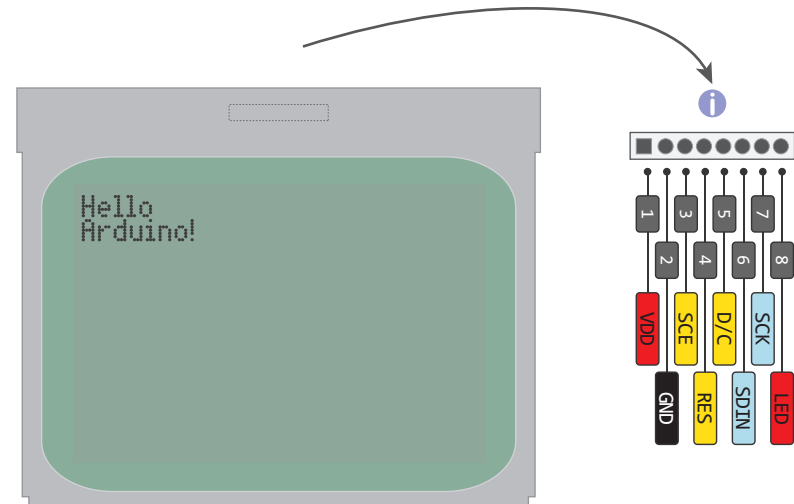


## Connect a NOKIA LCD (Basic)

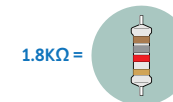
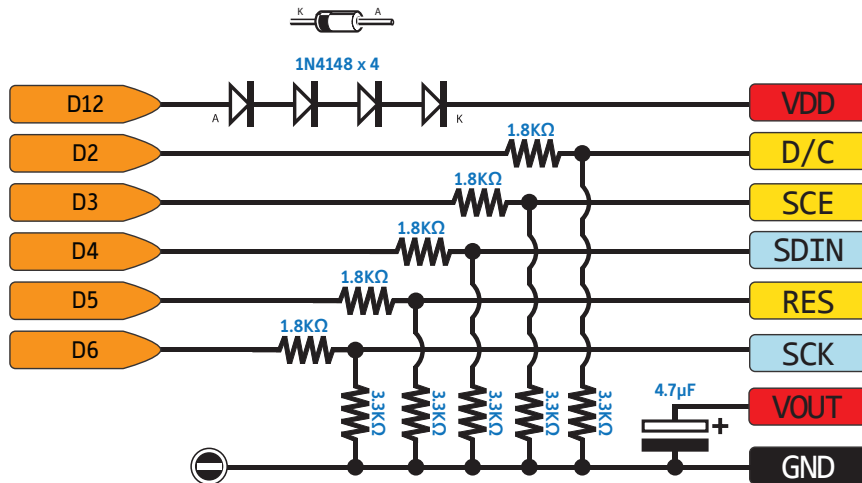
⚠ Only for 5V Arduino



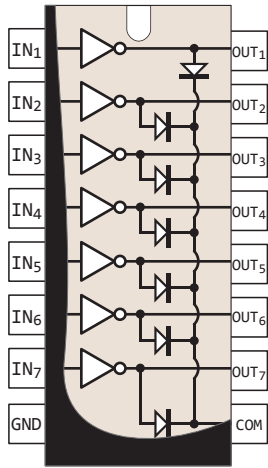
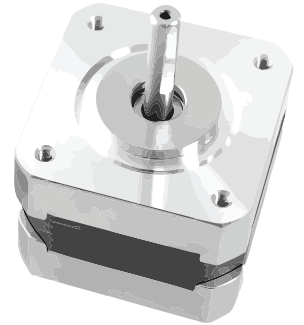
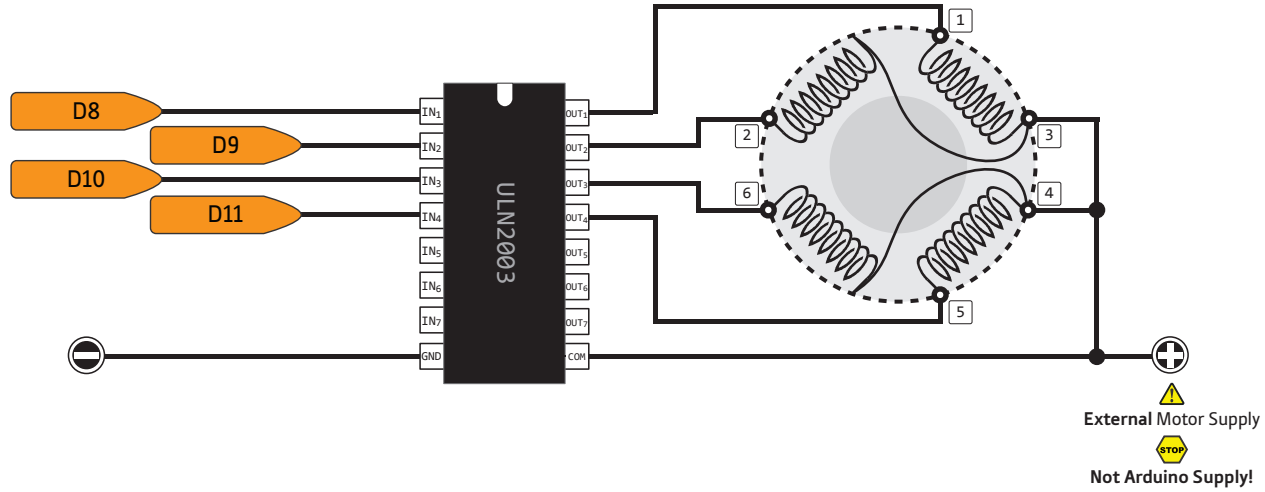
NOKIA 3110



NOKIA 5110

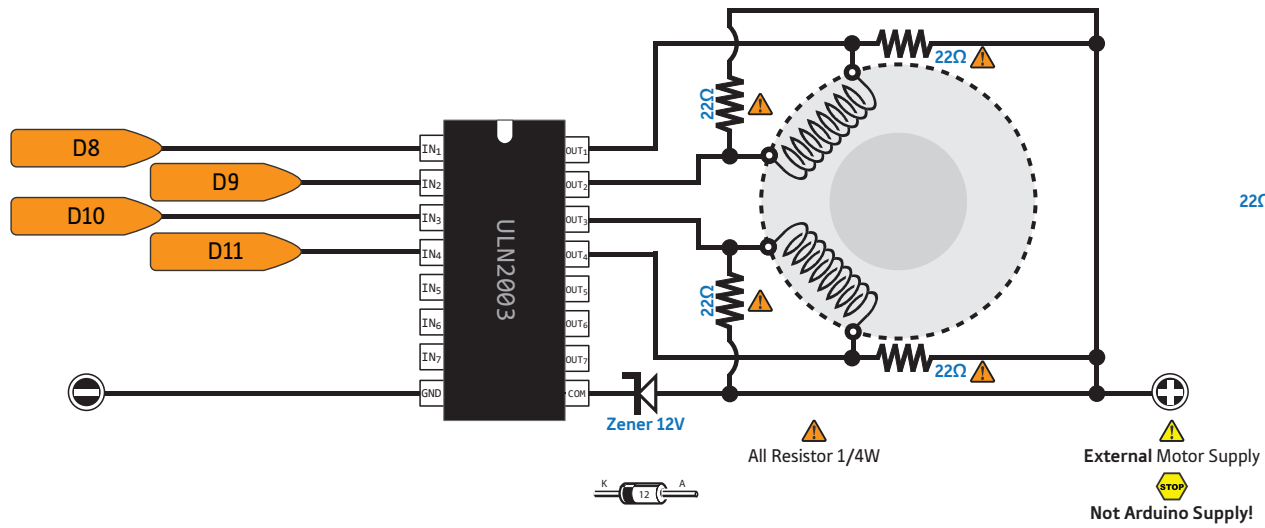


### Drive a Unipolar Stepper (Basic 1)

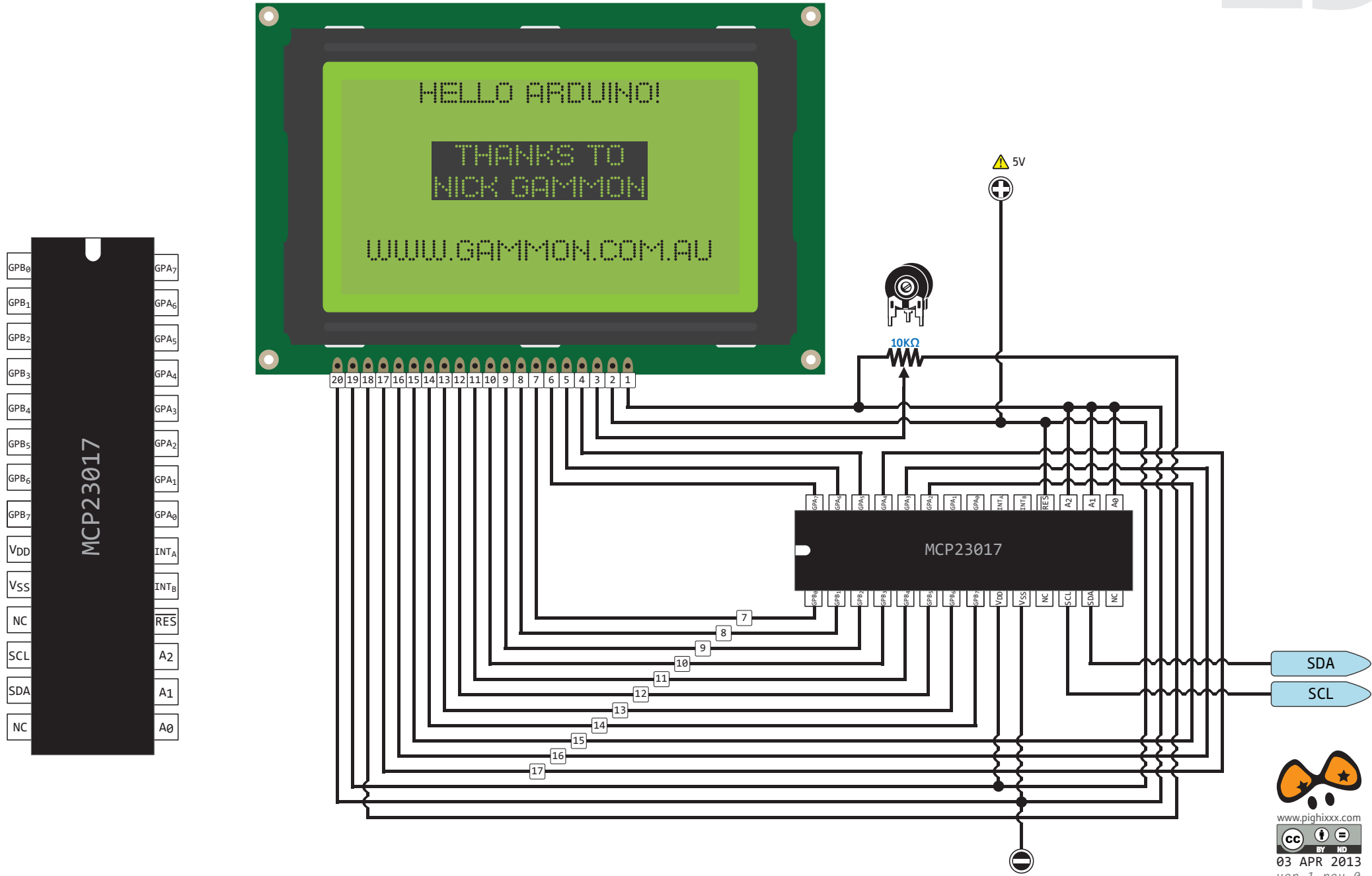


ULN2003

### Drive a Bipolar Stepper (Basic 1)

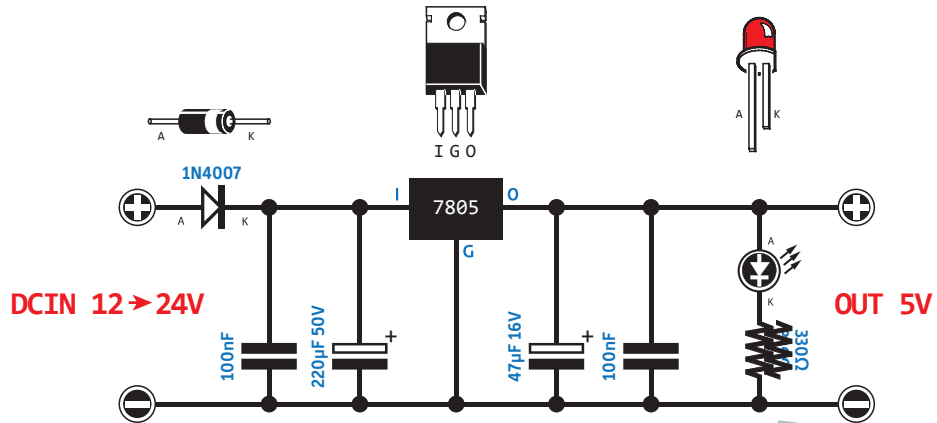


## Connect a graphical LCD via I2C

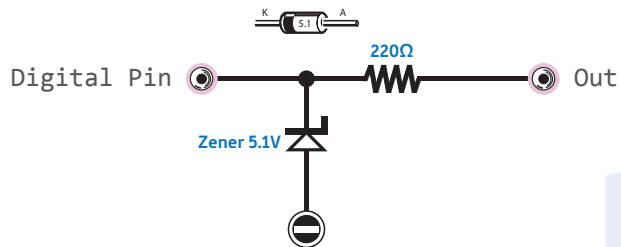




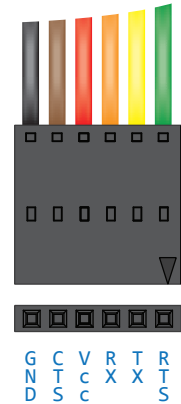
### Simple 5V Power Supply



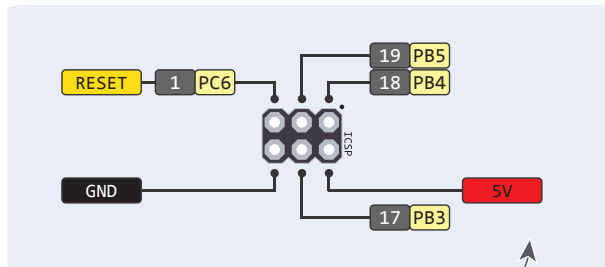
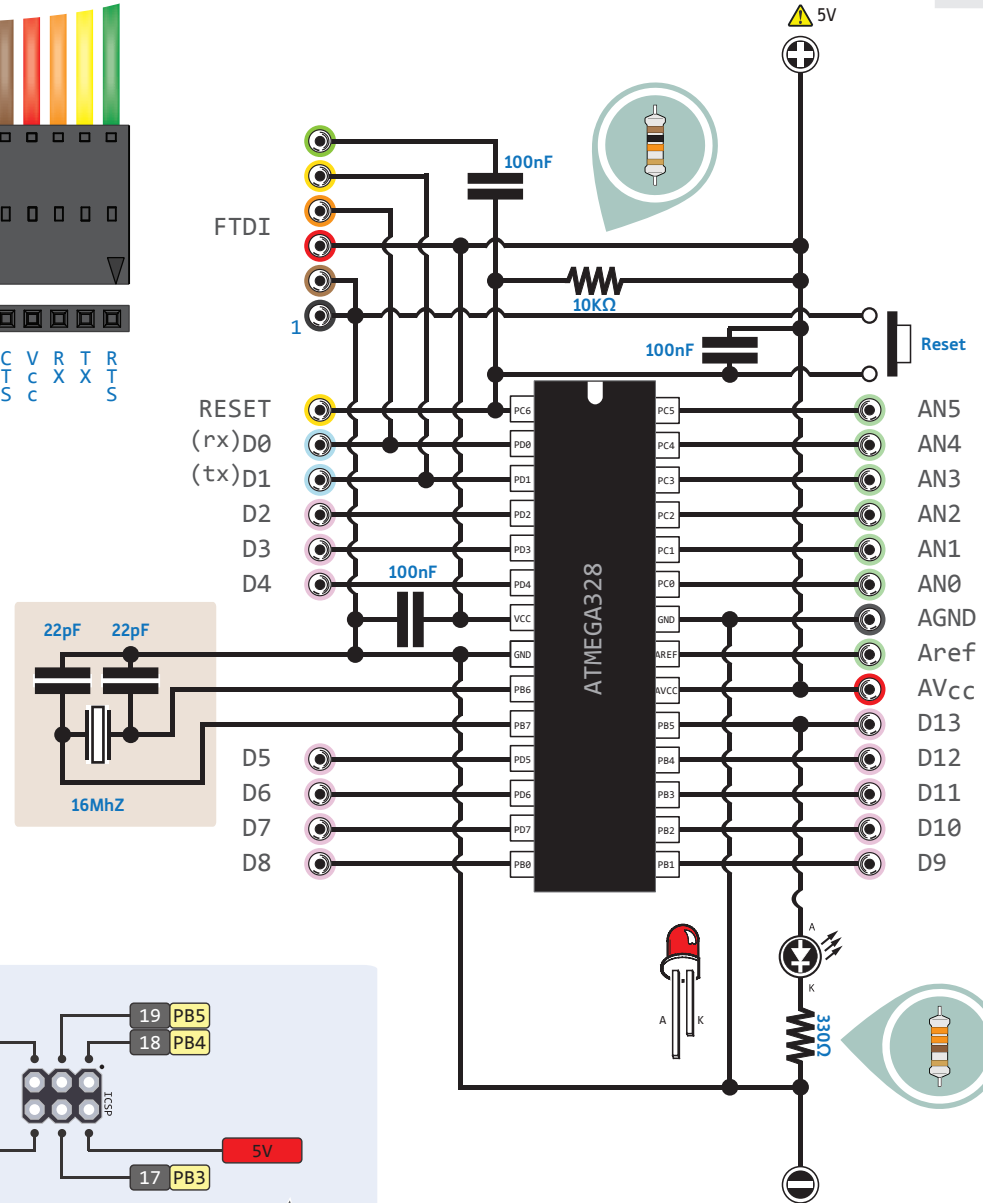
### Protect a I/O Pin



### FTDI Connector



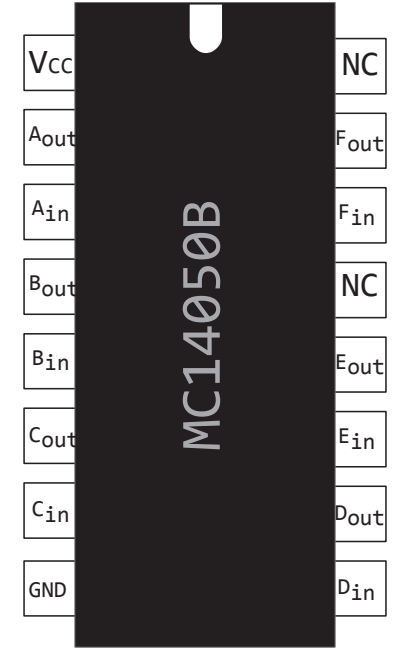
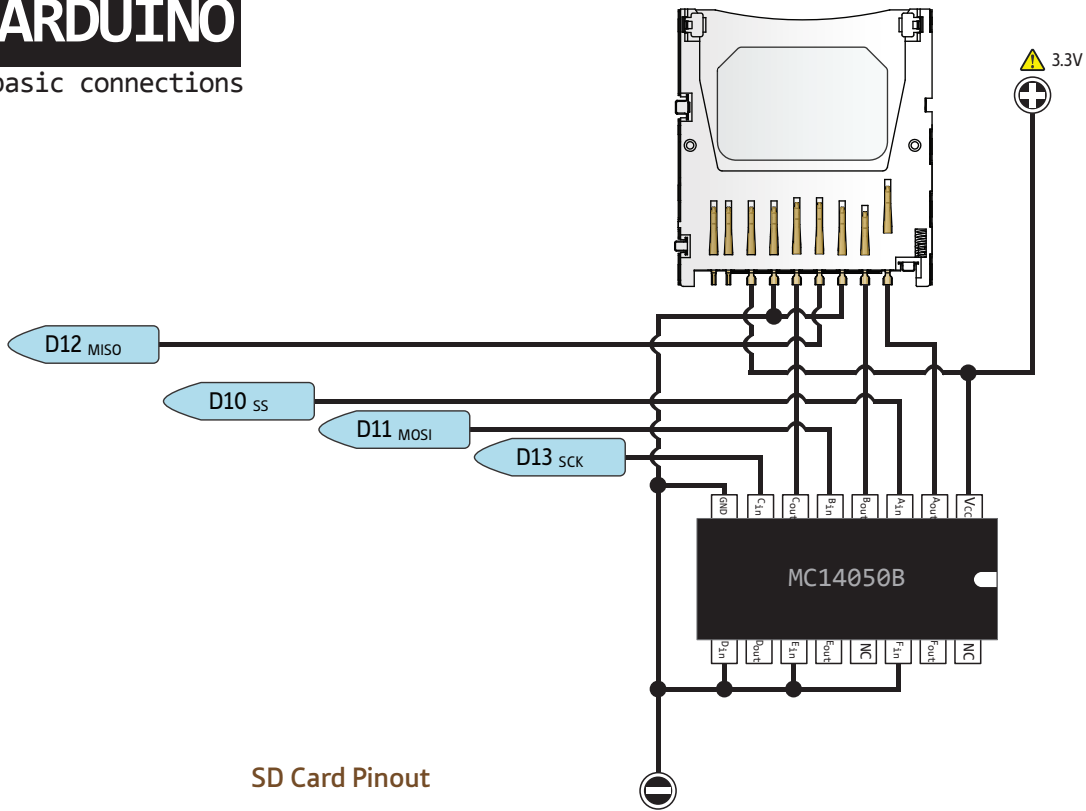
### DIY Arduino



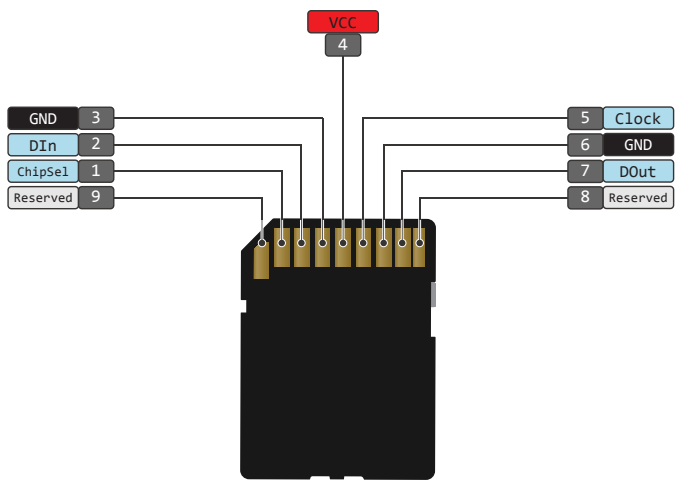
**i** Recommended ICSP pinout



Connect a SD Card

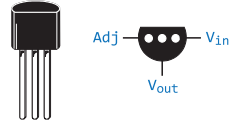
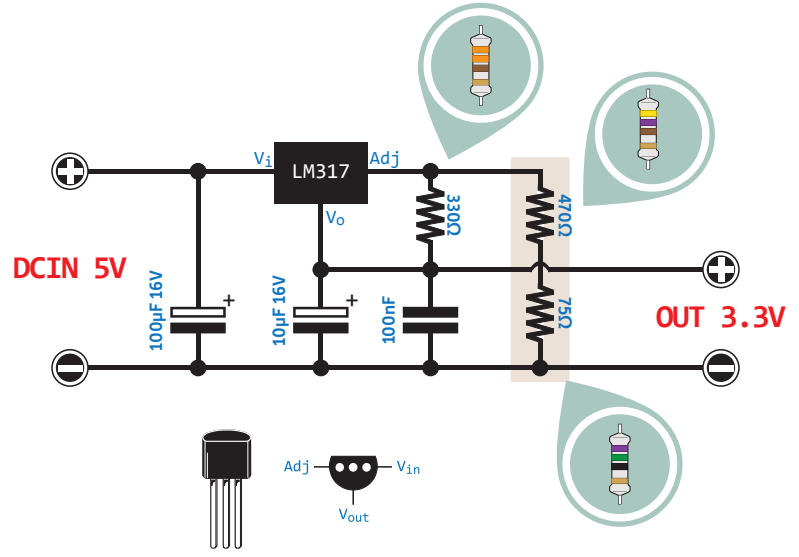


SD Card Pinout



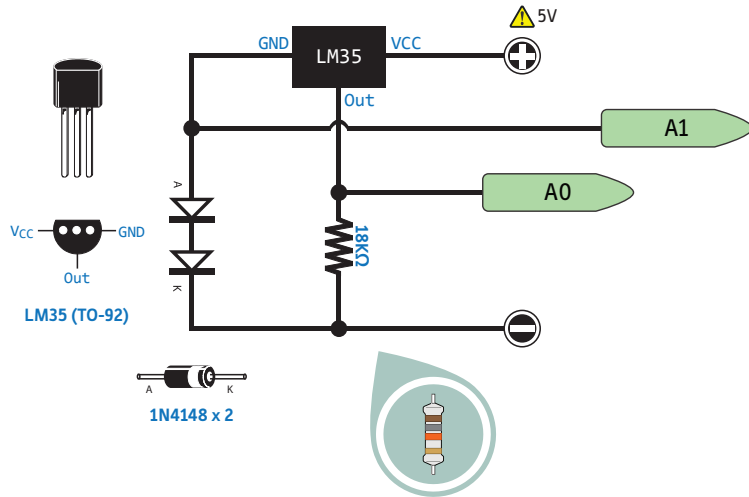
⚠ Only for 5V Arduino

Simple 3.3V Power Supply

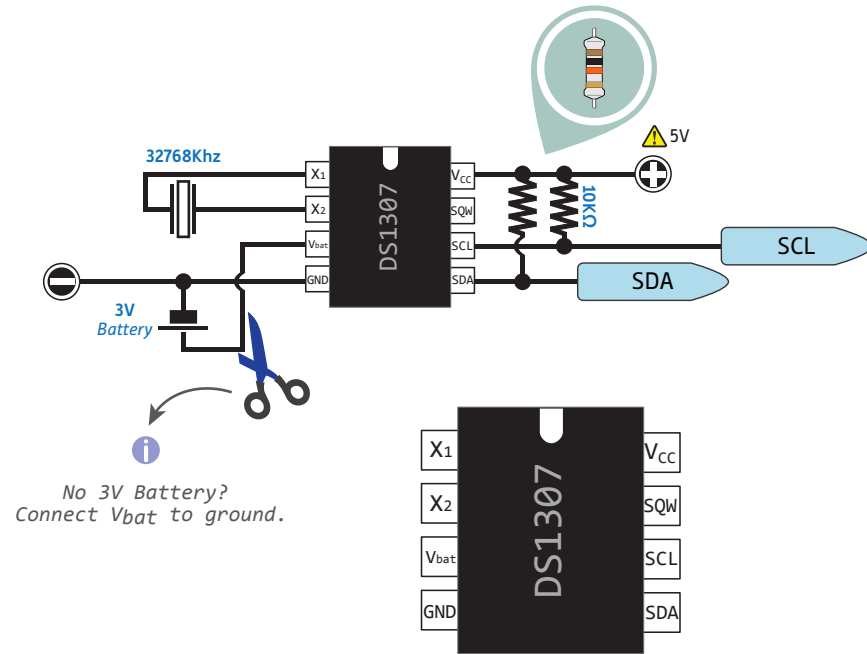


LM317 (TO-92)

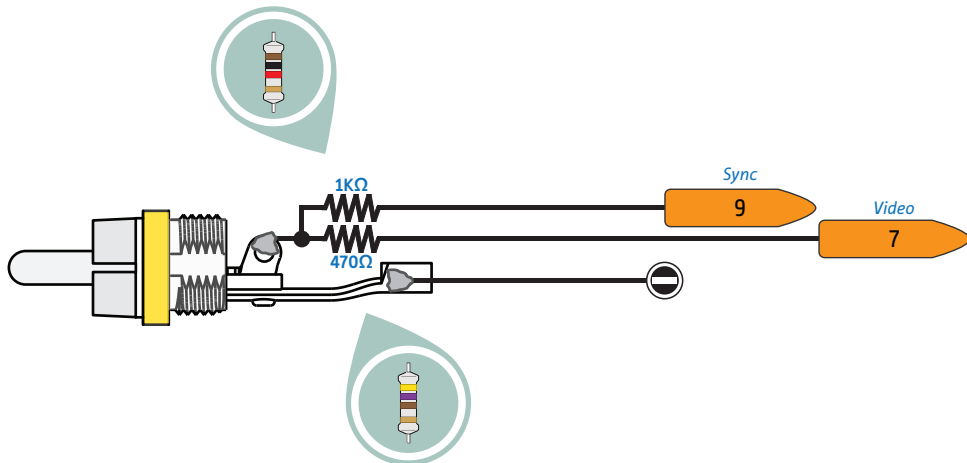
### Connect a Temperature Sensor (LM35)



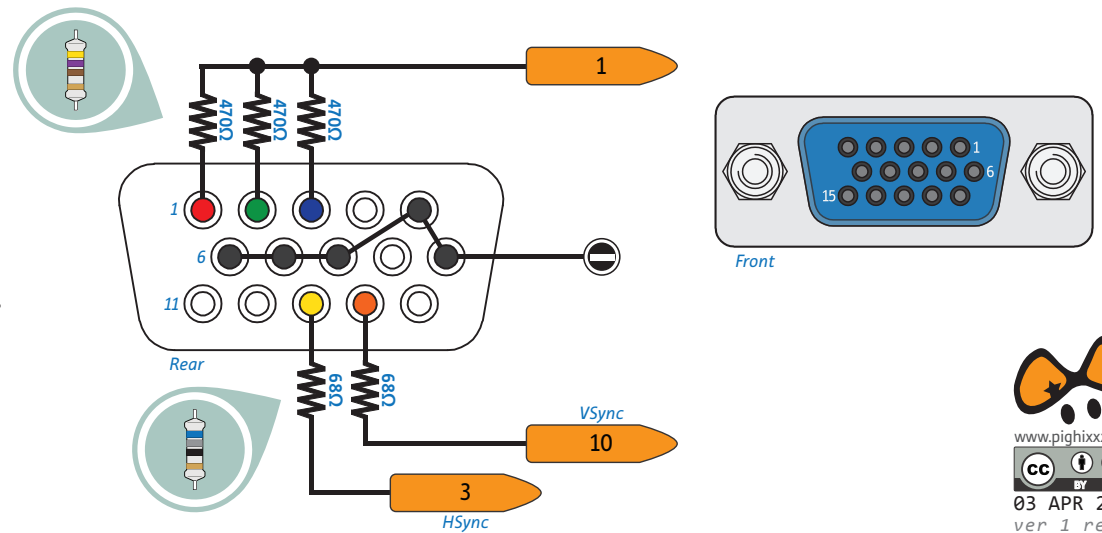
### Connect a RTC (DS1307)



### Connect to Composite Video

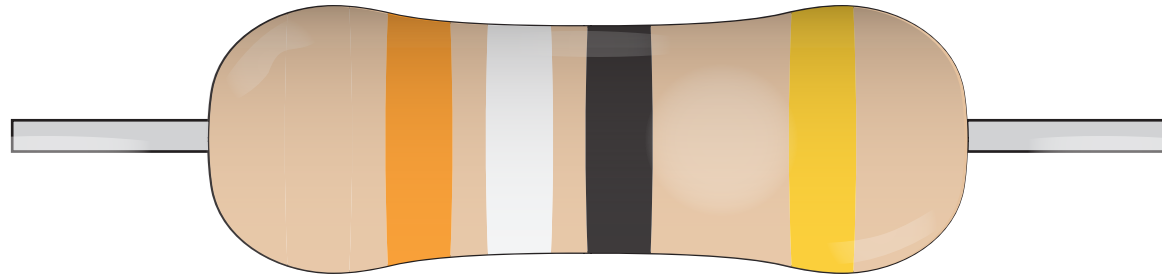


### Connect to VGA



TOLERANCE

|        |      |
|--------|------|
| GOLD   | ±5%  |
| SILVER | ±10% |



|        |   |   |             |
|--------|---|---|-------------|
| BLACK  | 0 | 0 | x1Ω         |
| BROWN  | 1 | 1 | x10Ω        |
| RED    | 2 | 2 | x100Ω       |
| ORANGE | 3 | 3 | x1,000Ω     |
| YELLOW | 4 | 4 | x10,000Ω    |
| GREEN  | 5 | 5 | x100,000Ω   |
| BLUE   | 6 | 6 | x1,000,000Ω |
| VIOLET | 7 | 7 |             |
| GRAY   | 8 | 8 |             |
| WHITE  | 9 | 9 |             |

**KΩ** = x1,000Ω

**MΩ** = x1,000,000Ω

MULTIPLIER

