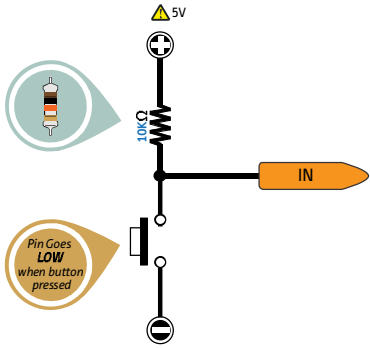


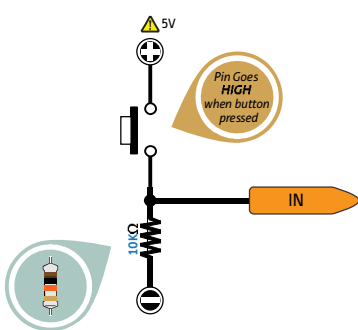
GRAB YOURS NOW, CLICK HERE!



Pushbutton to GND

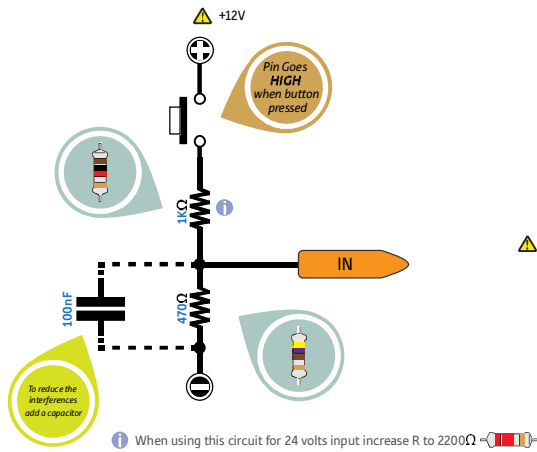


Pushbutton to 5V



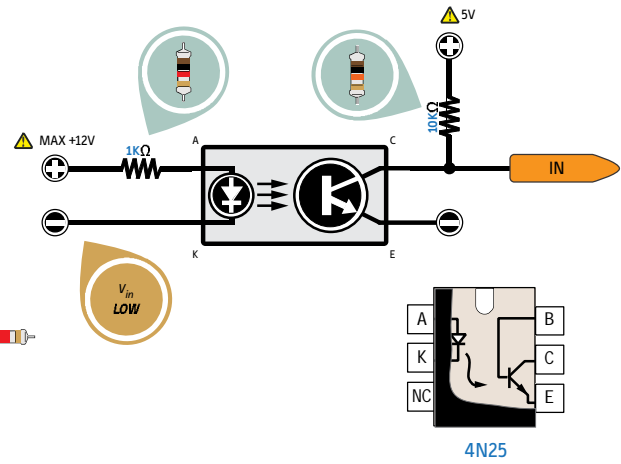
Pushbutton to 12V

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

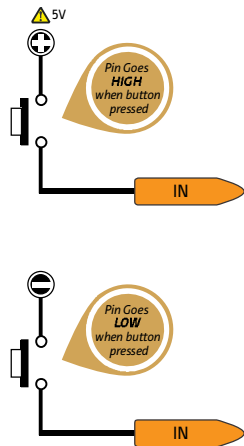


Optocoupled inputs

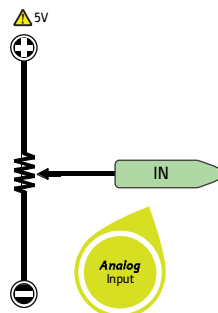
Used when galvanic separation between external circuitry and Arduino circuit is required



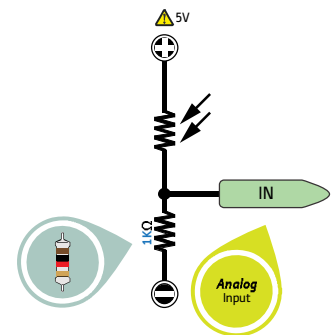
Using Internal Pullup



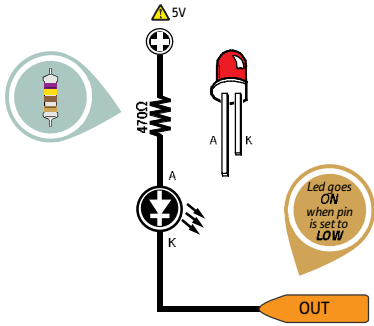
Trimmer or Potentiometer



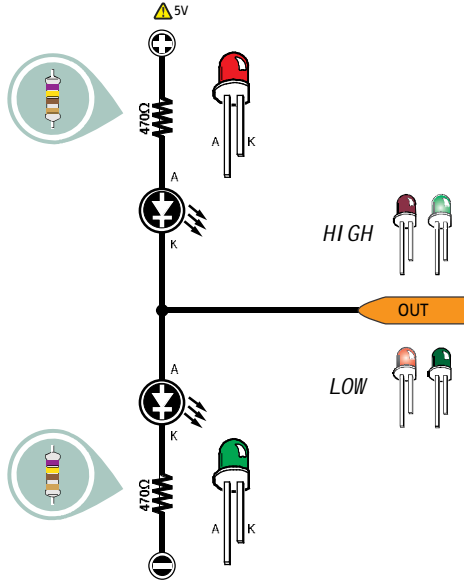
Photoresistor



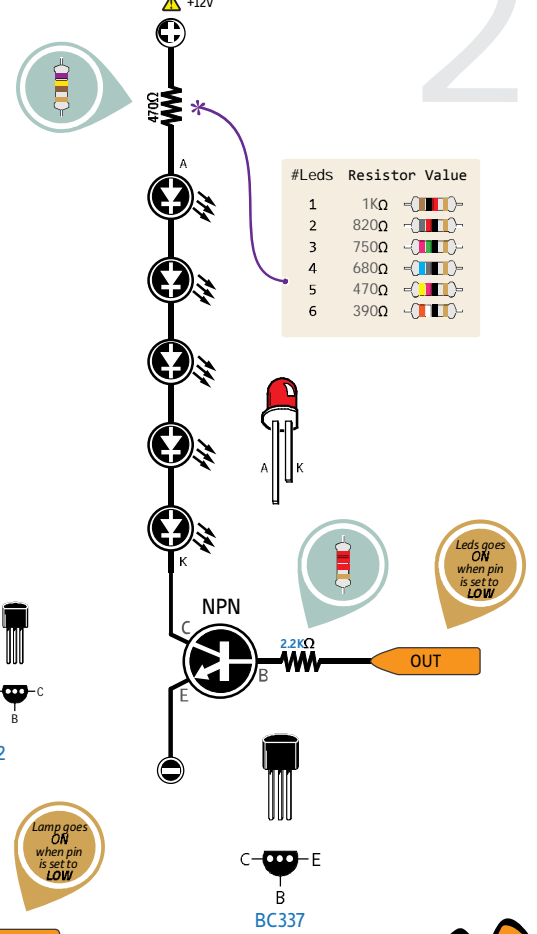
Connect a Led



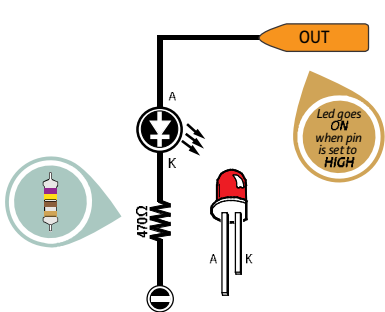
Dual LEDs or bi-color LED



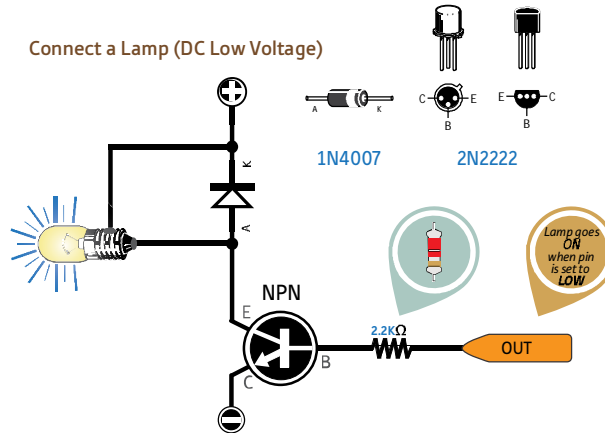
LED clusters



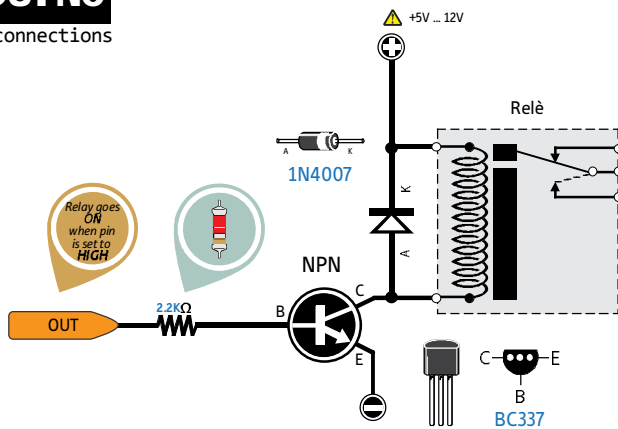
Connect a Led



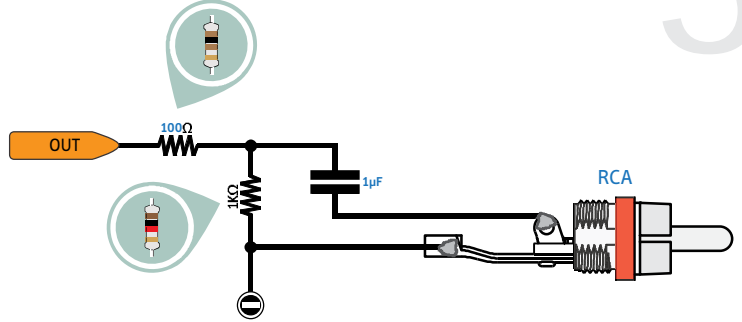
Connect a Lamp (DC Low Voltage)



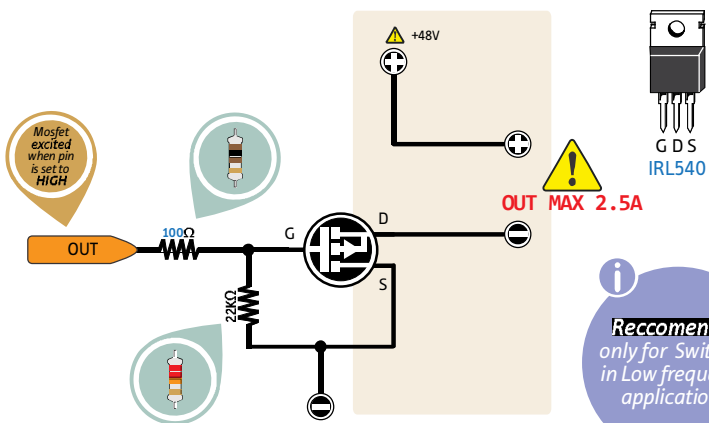
Connect a Relay



Connect an Audio Amplifier

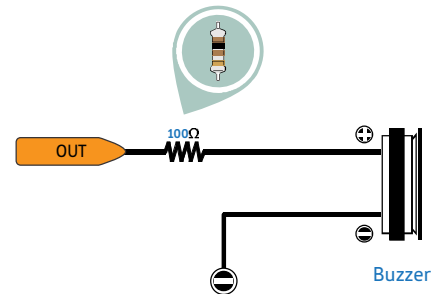


Connect a Mosfet

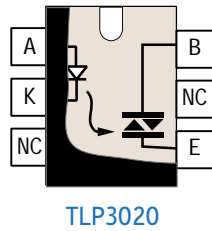
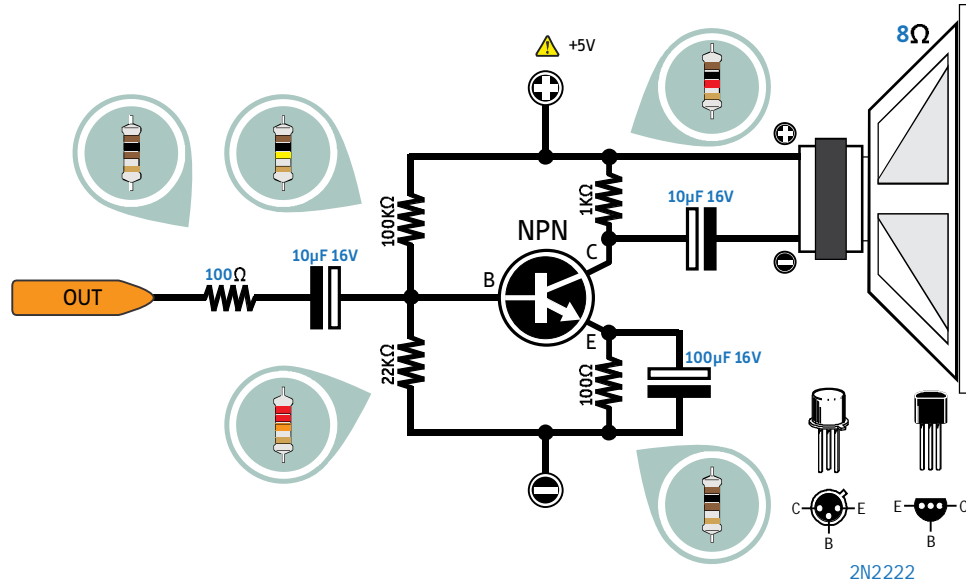


Recommended
 only for Switch or
 in Low frequency
 applications.

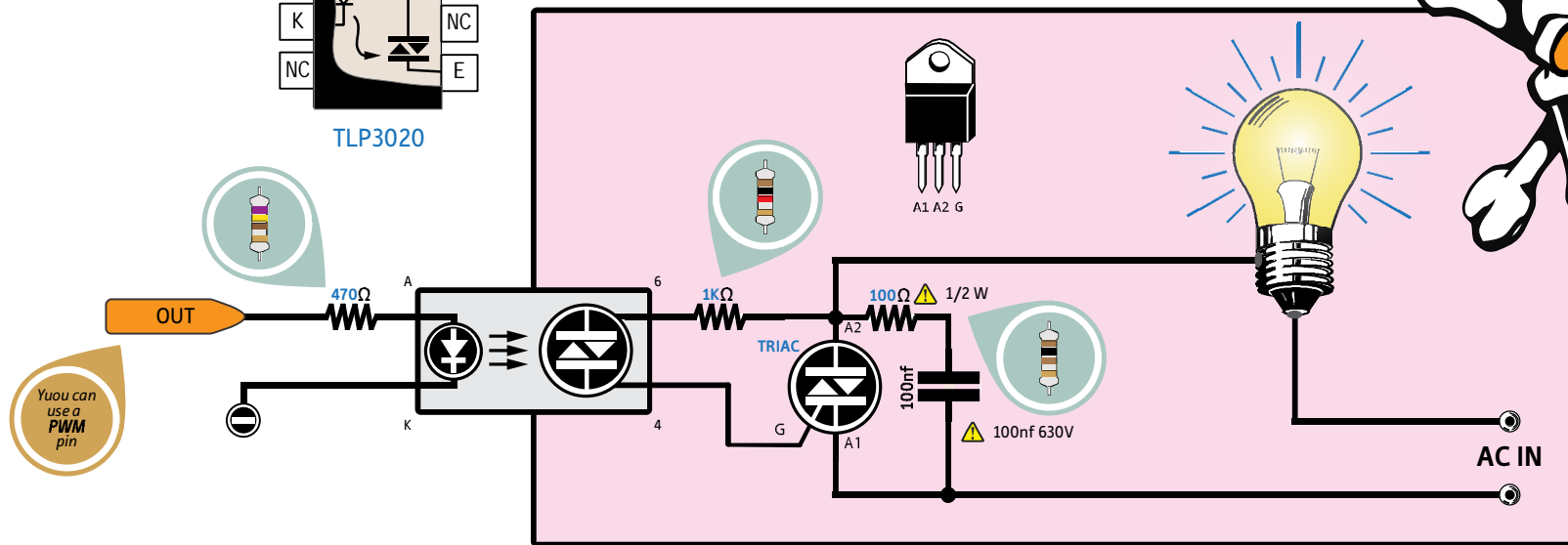
Connect a Buzzer



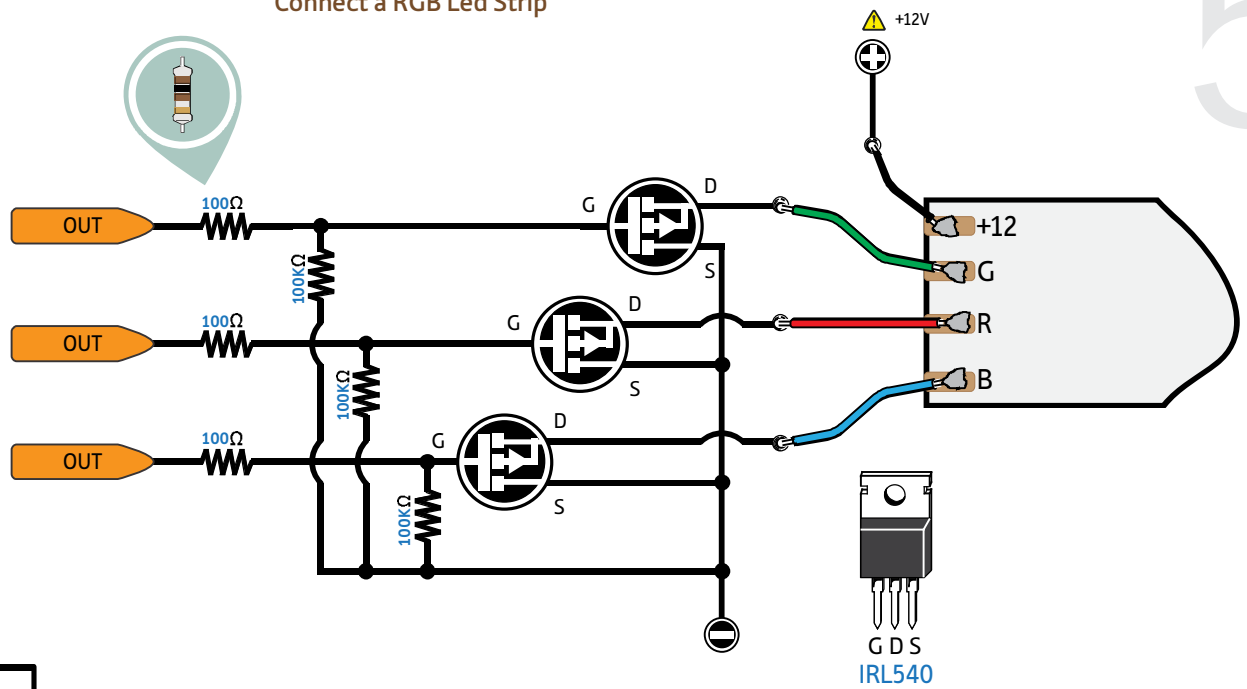
Connect a Speaker



Connect a Triac

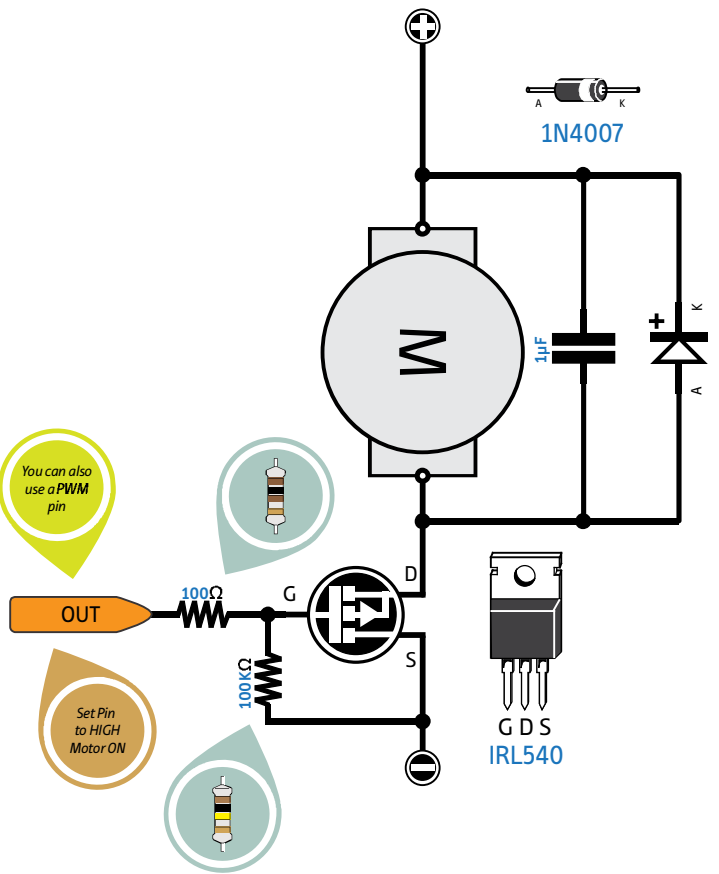


Connect a RGB Led Strip



You can also use a PWM pin

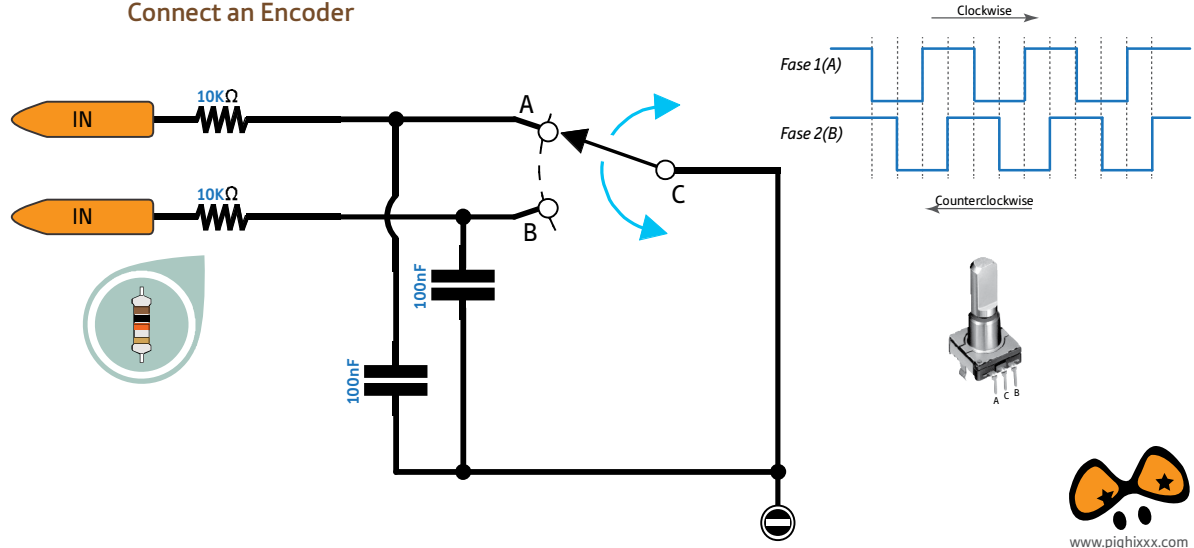
Connect a DC Motor



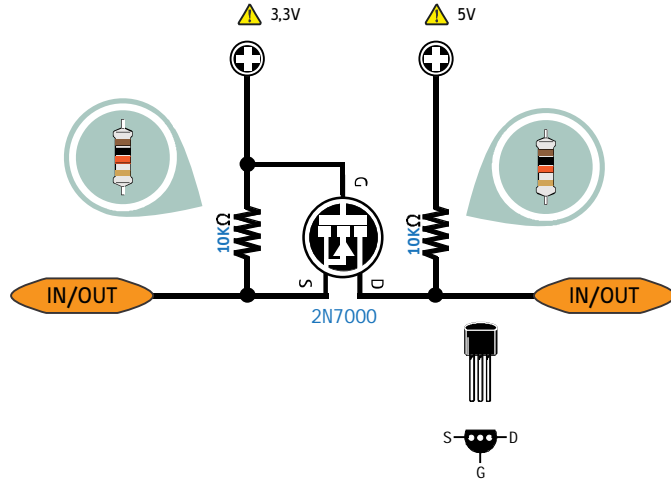
You can also use a PWM pin

Set Pin to HIGH Motor ON

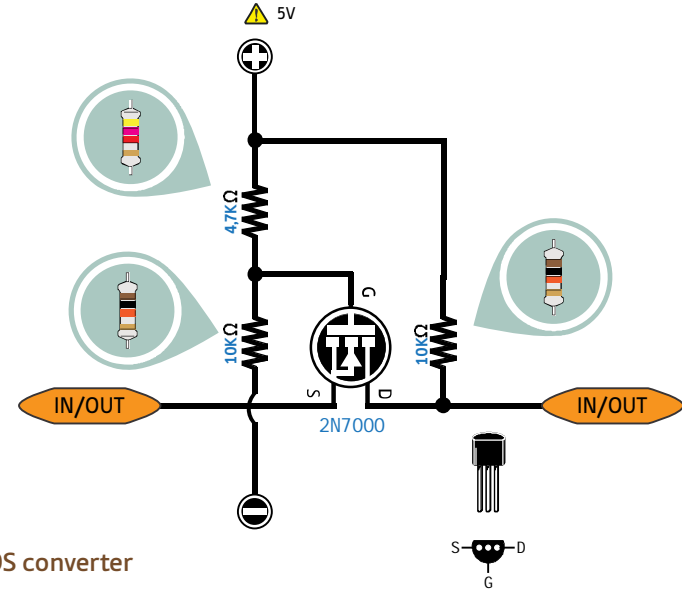
Connect an Encoder



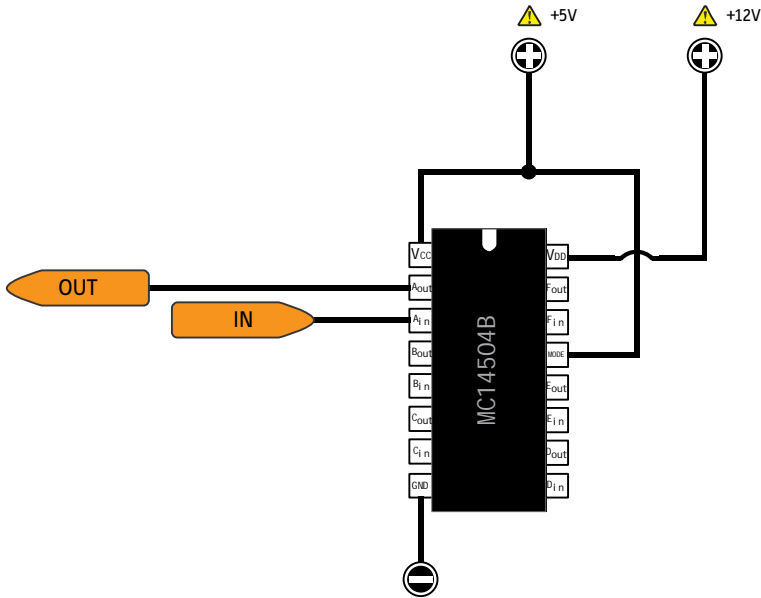
Bi-Directional Voltage Level Converter 3.3V to 5V



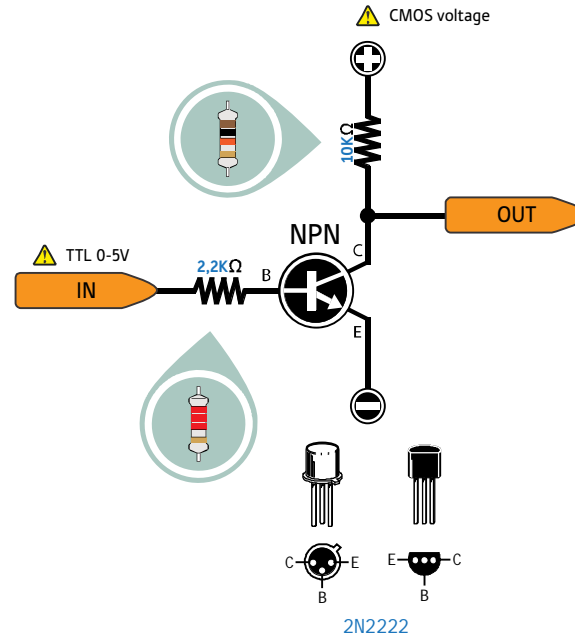
Bi-Directional Voltage Level Converter 3.3V to 5V with voltage divider



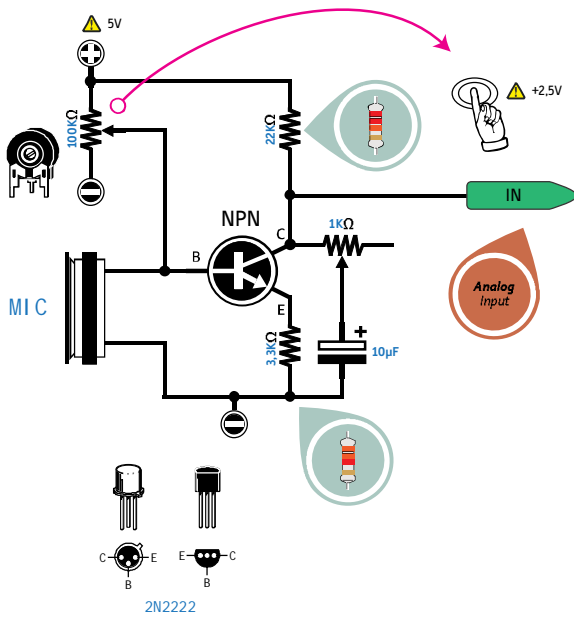
TTL / CMOS converter (6 inputs/outputs)



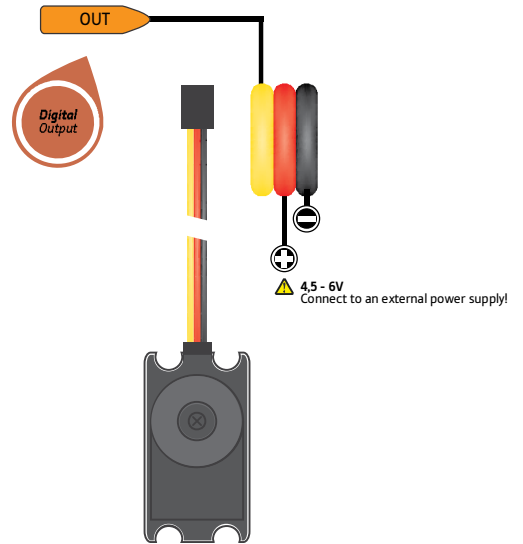
TTL / CMOS converter



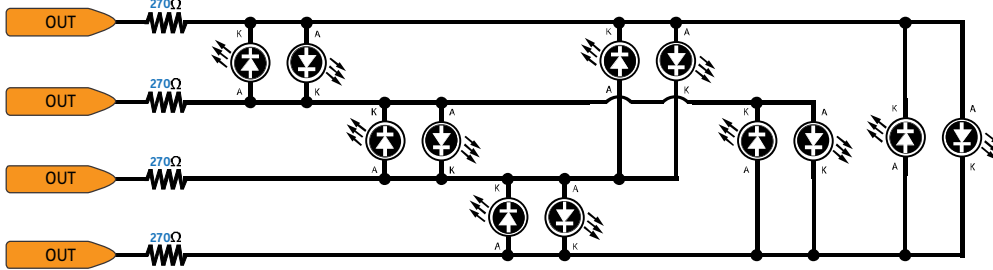
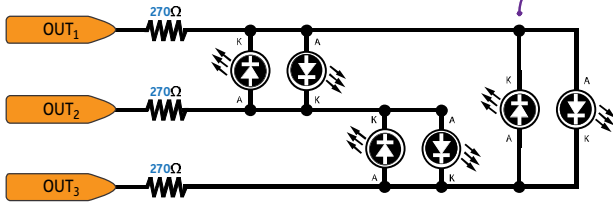
Connect a Microphone



Connect a Servo



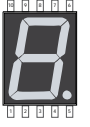
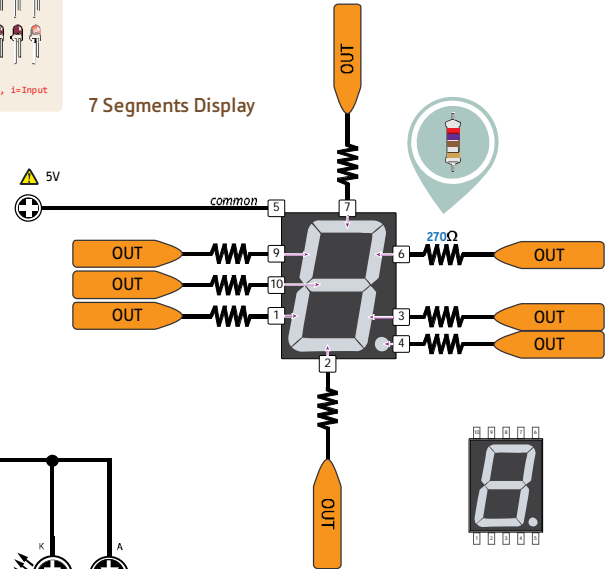
Charlieplexing



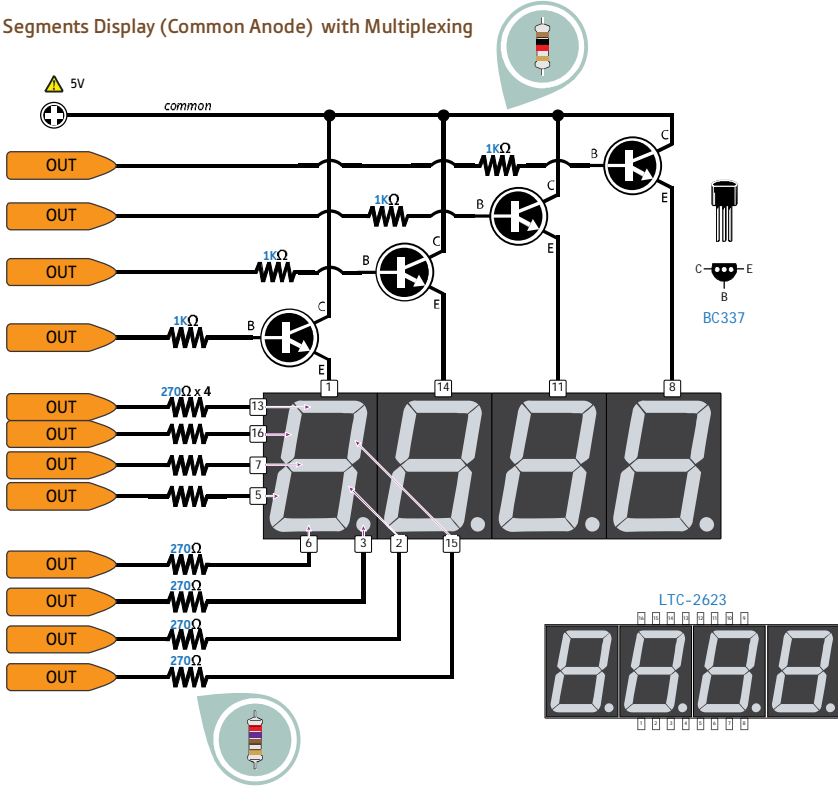
Out ₁	Out ₂	Out ₃						
L	L	L						
L	H	i						
H	L	i						
i	L	H						
i	H	L						
L	i	H						
H	i	L						

H=High, L=Low, i=Input

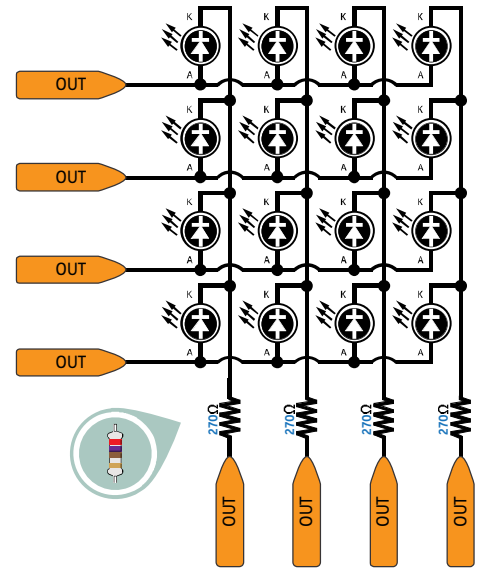
7 Segments Display



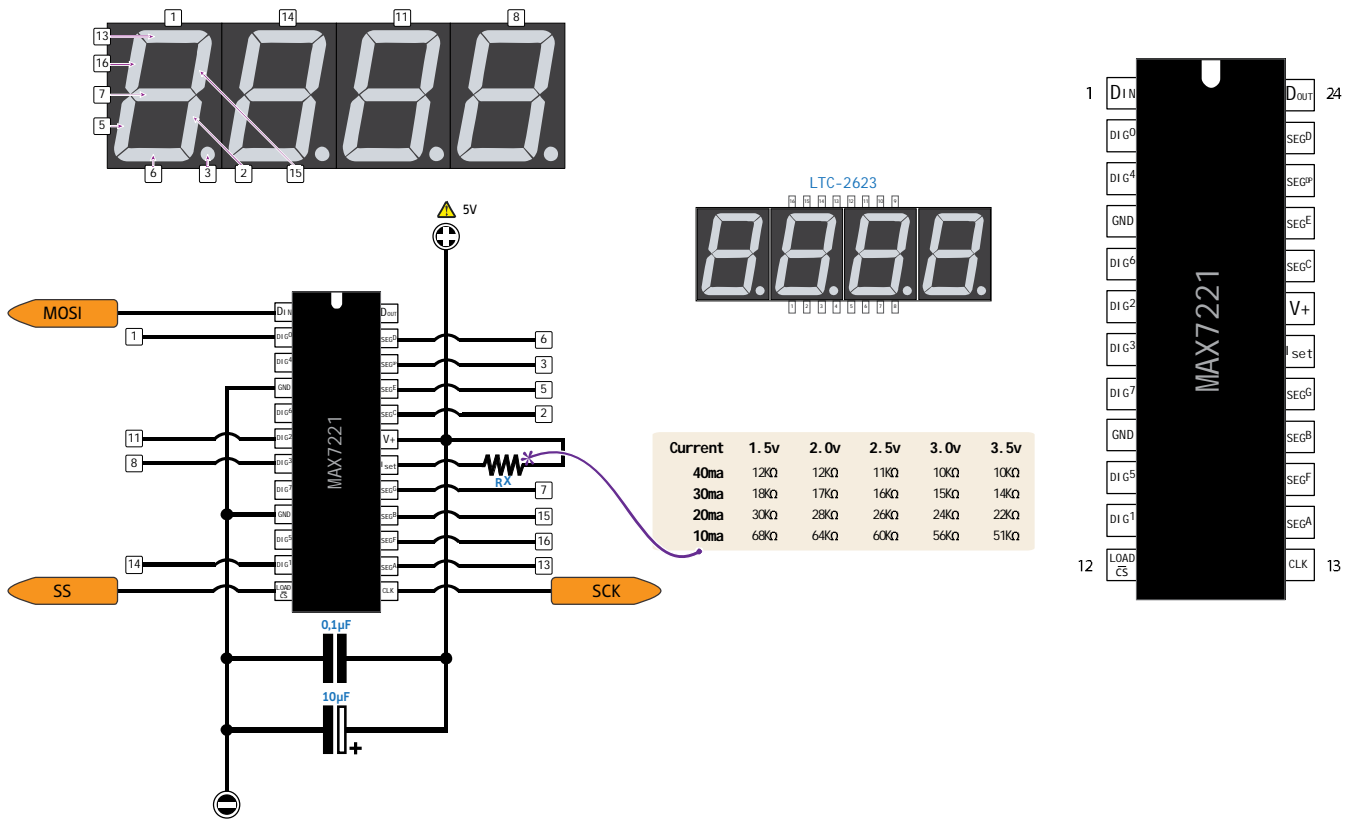
7 Segments Display (Common Anode) with Multiplexing



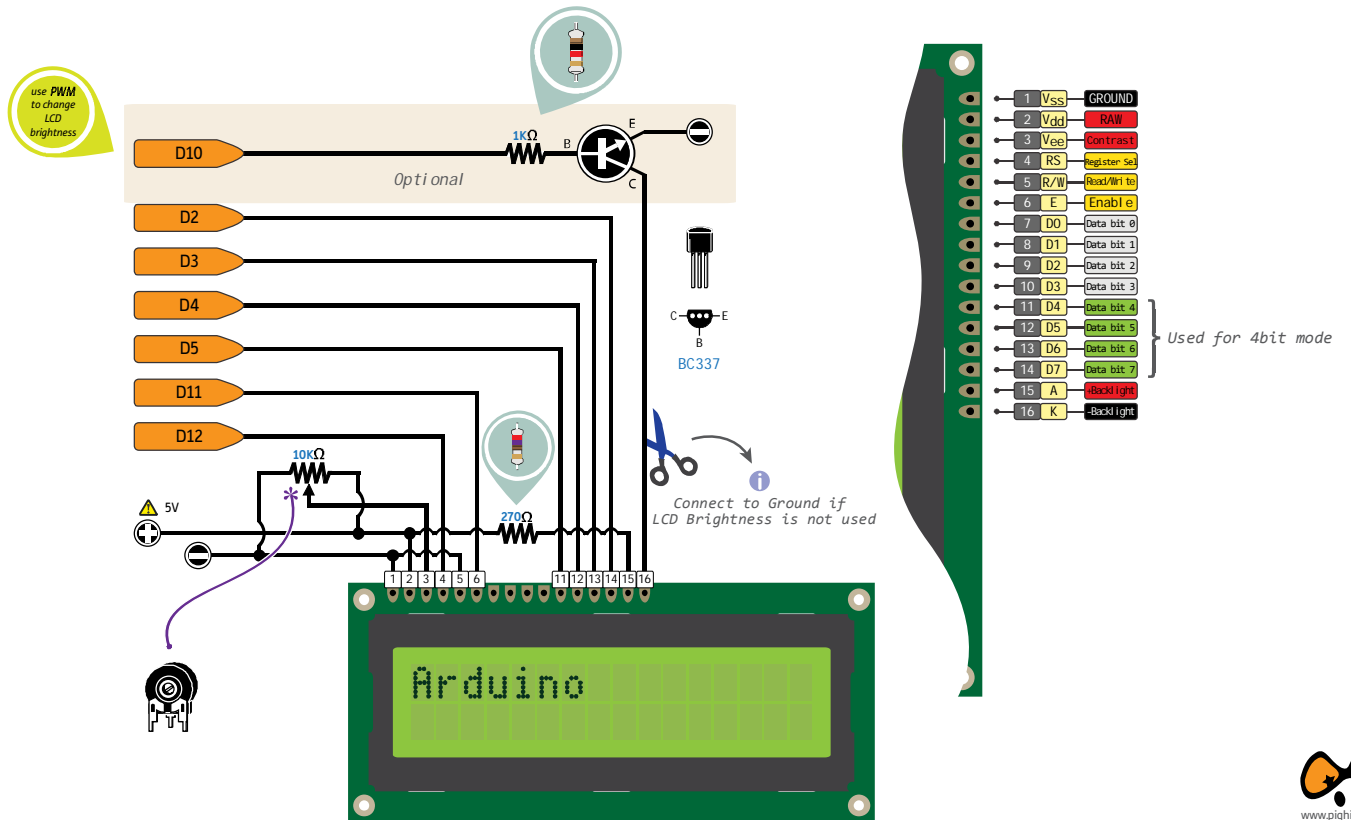
LED Array



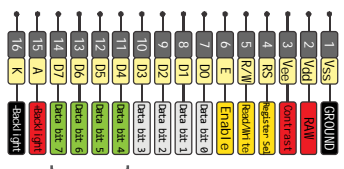
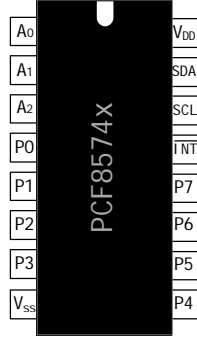
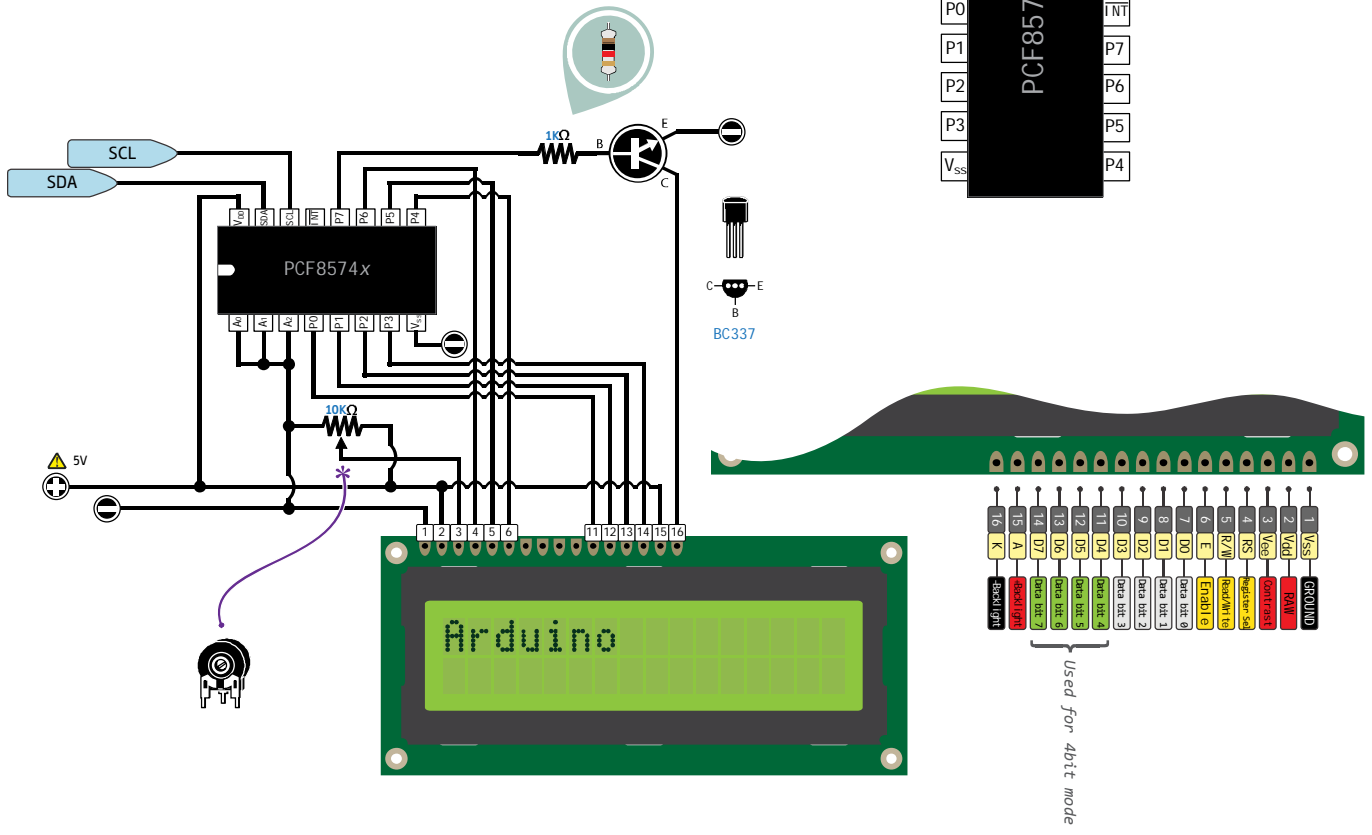
7 Segments Display (Common Anode) with MAX7221



Connect a LCD HITACHI 44780 compatible



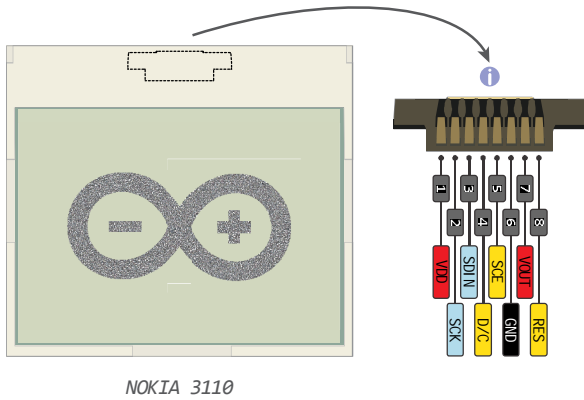
Connect via I2C a LCD HITACHI 44780 compatible



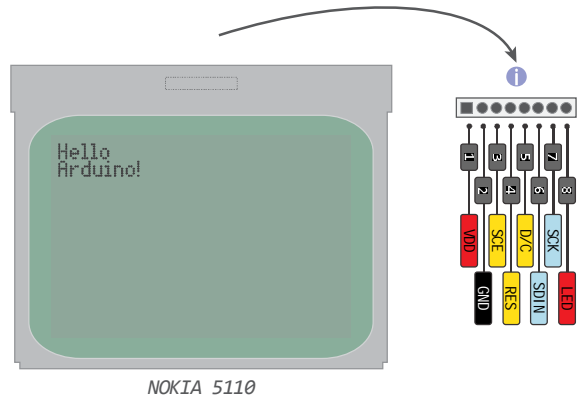
Used for 4bit mode

Connect a NOKIA LCD (Basic)

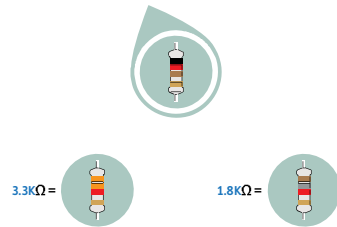
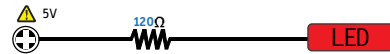
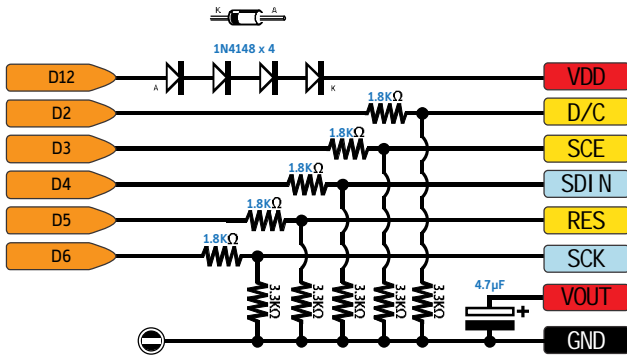
⚠ Only for 5V Arduino



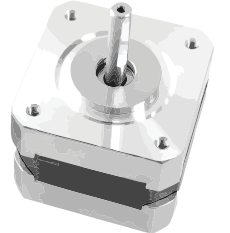
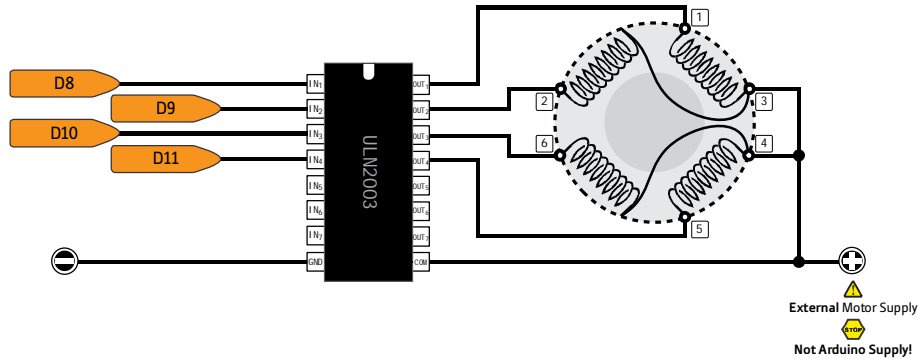
NOKIA 3110



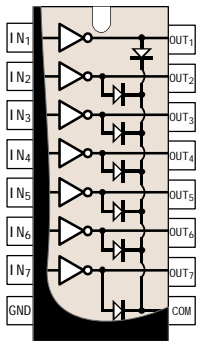
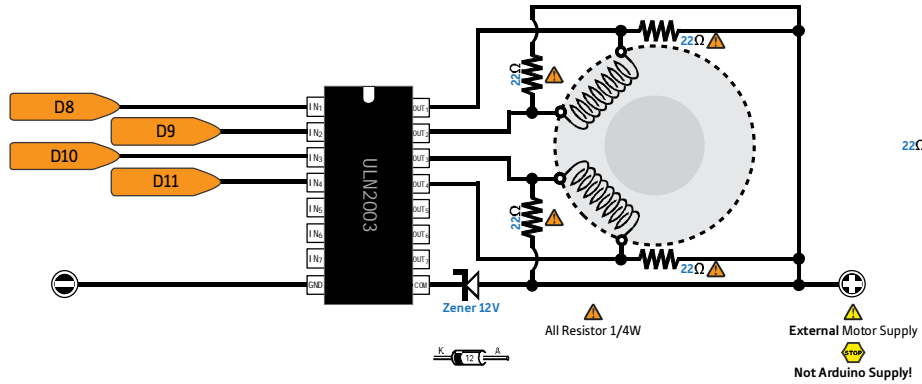
NOKIA 5110



Drive a Unipolar Stepper (Basic 1)

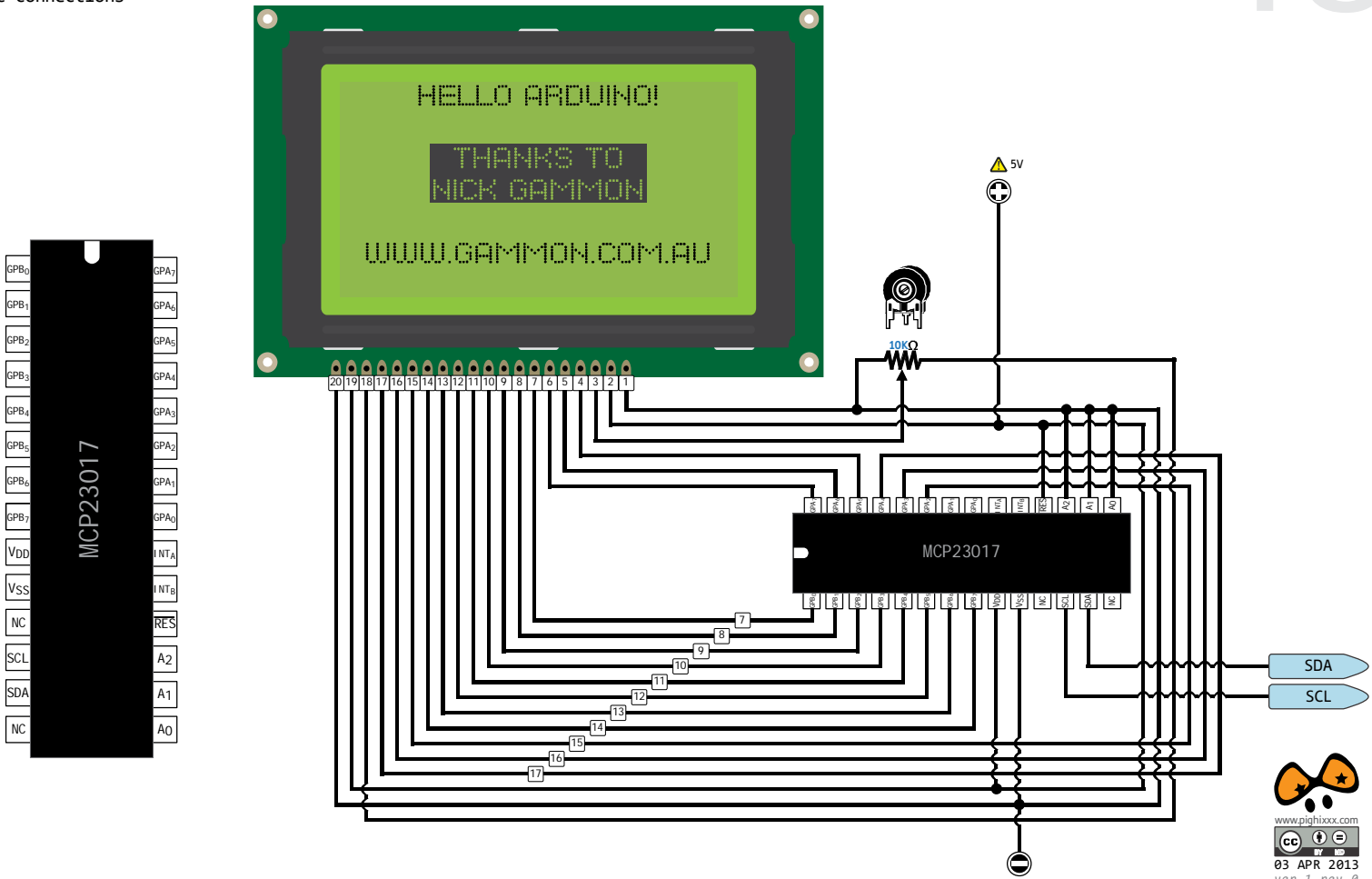


Drive a Bipolar Stepper (Basic 1)

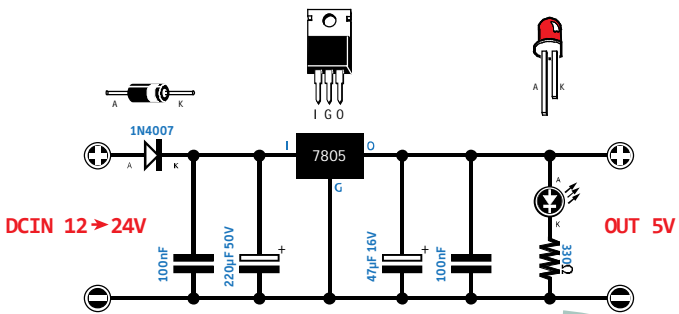


ULN2003

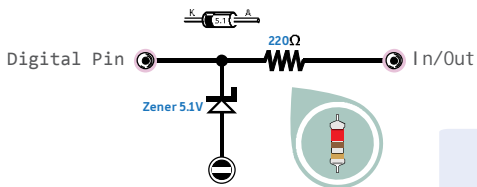
Connect a graphical LCD via I2C



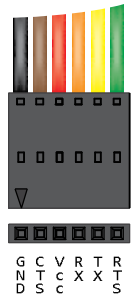
Simple 5V Power Supply



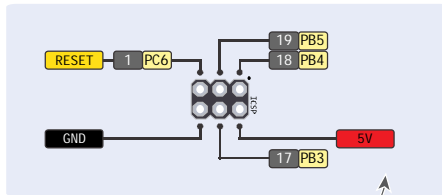
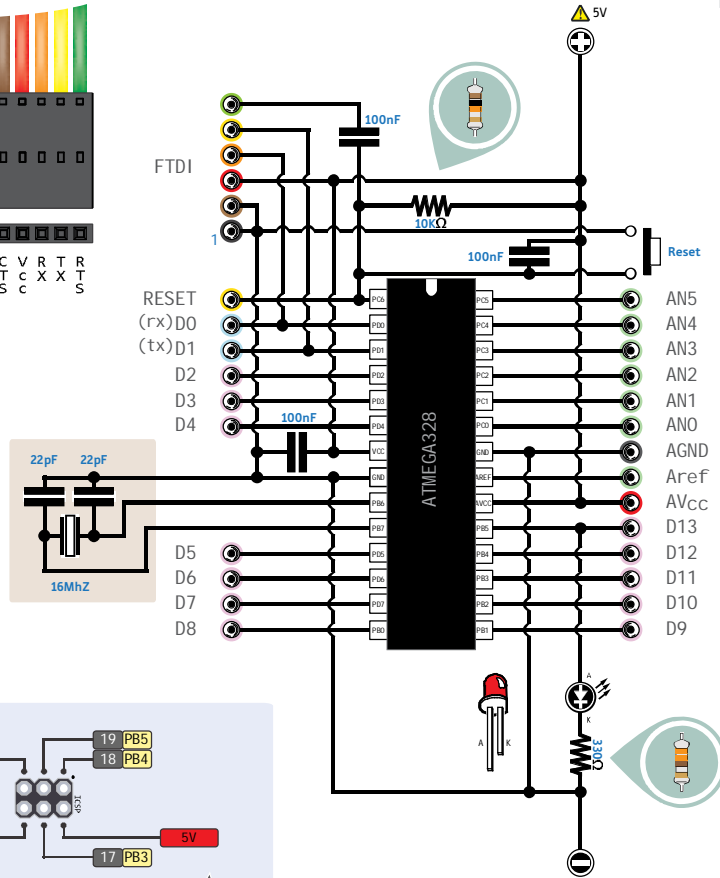
Protect a I/O Pin



FTDI Connector

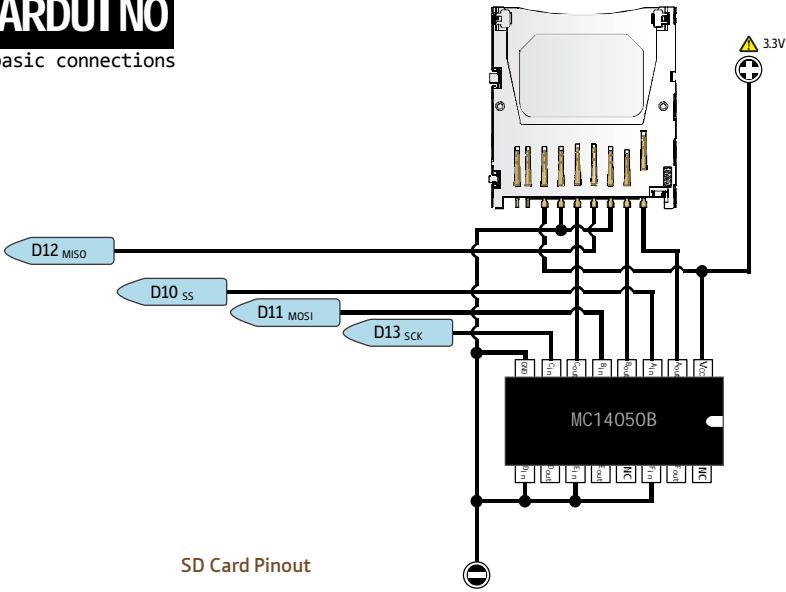


DIY Arduino



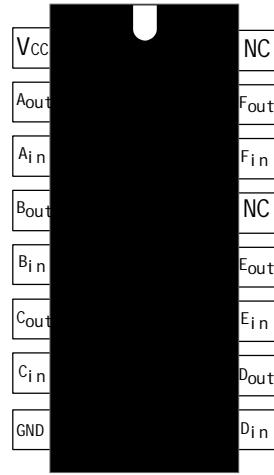
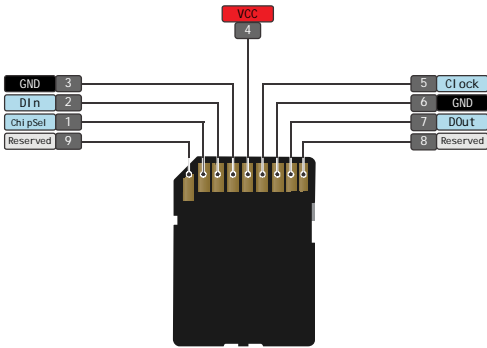
Recommended ICSP pinout

Connect a SD Card

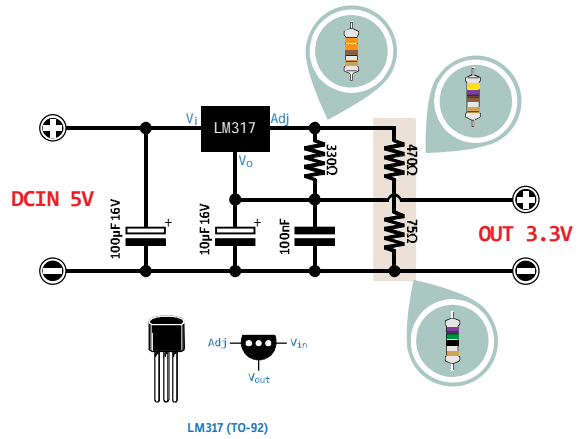


⚠ Only for 5V Arduino

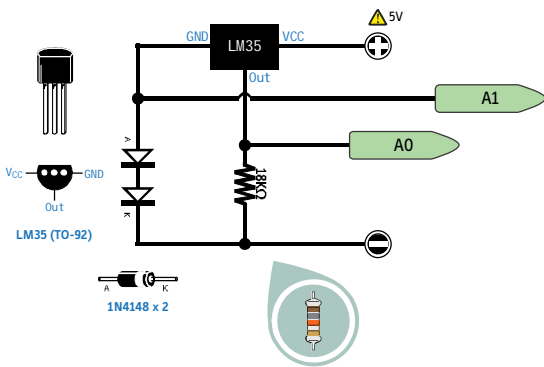
SD Card Pinout



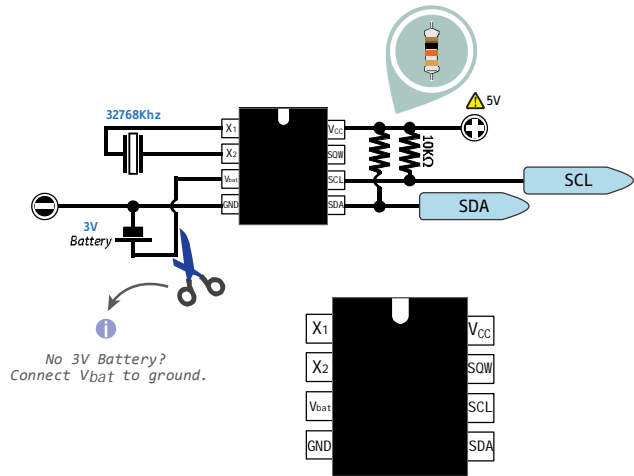
Simple 3.3V Power Supply



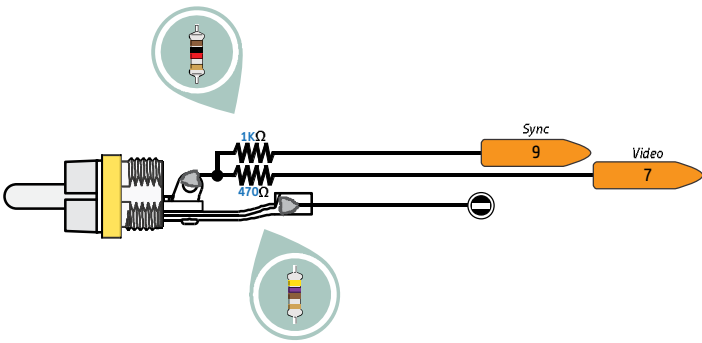
Connect a Temperature Sensor (LM35)



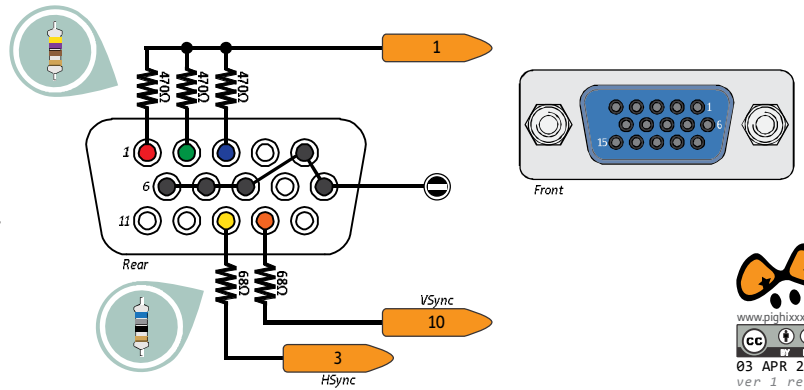
Connect a RTC (DS1307)



Connect to Composite Video

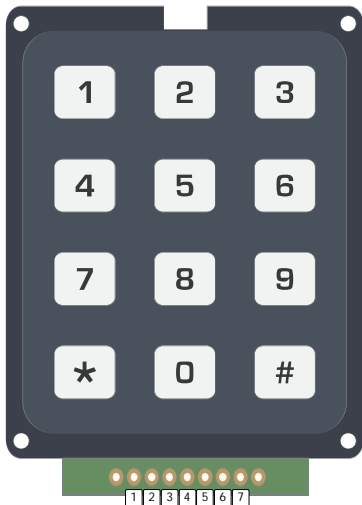


Connect to VGA

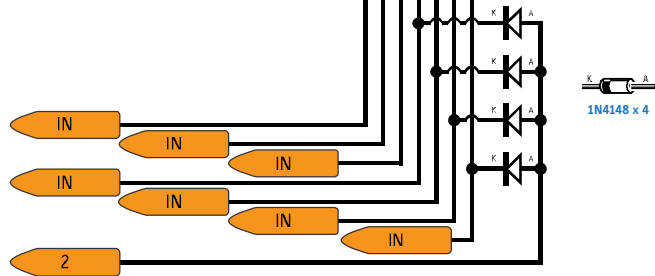
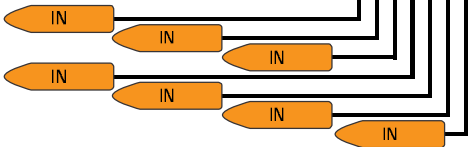
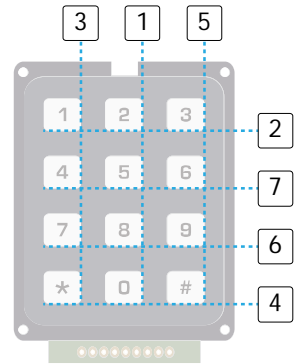


Connect a Keypad

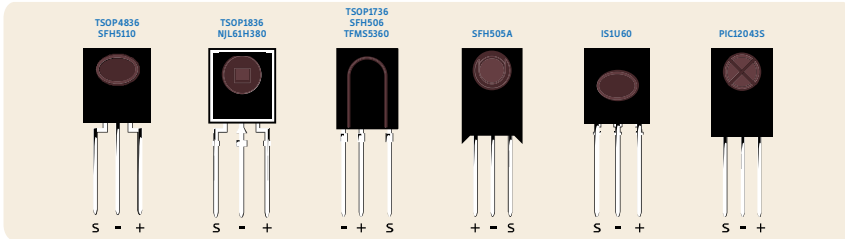
Connect a Keypad (with Interrupt)



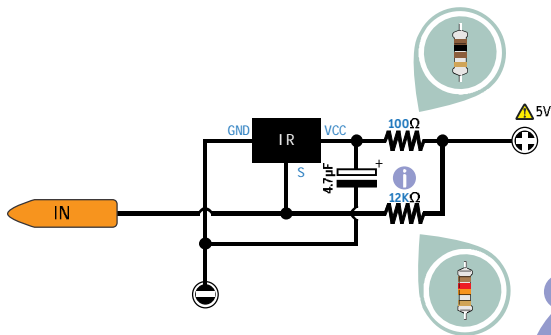
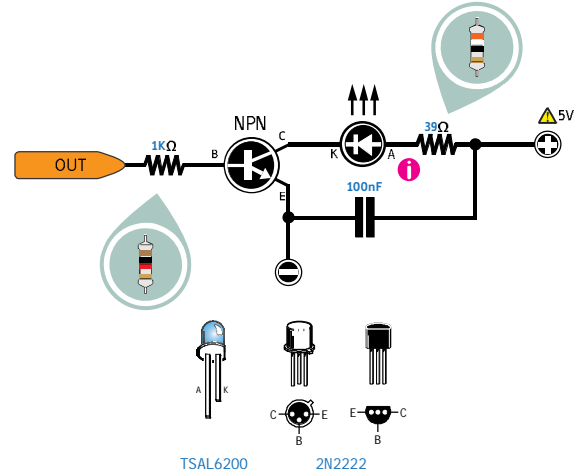
1	2 + 3
2	1 + 2
3	2 + 5
4	3 + 7
5	1 + 7
6	5 + 7
7	3 + 6
8	1 + 6
9	5 + 6
*	3 + 4
0	1 + 4
#	4 + 5



Connect a IR Sensor



Connect a IR Emitter

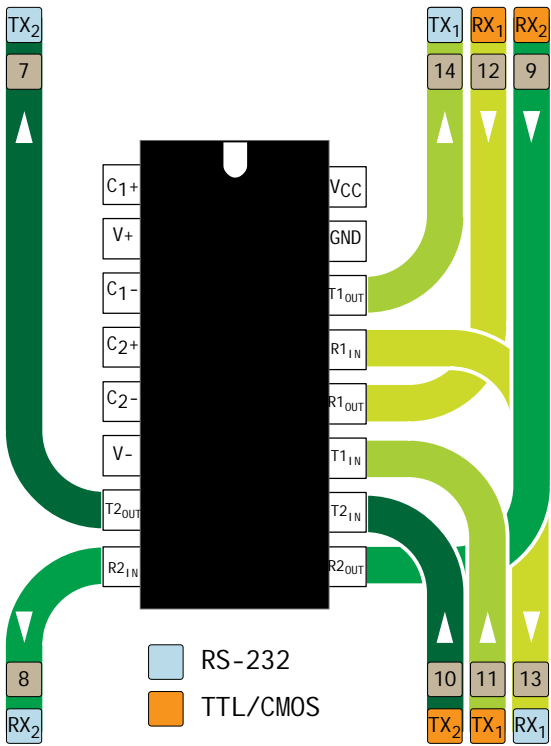


i
 Recommended
 to suppress
 power supply
 disturbances

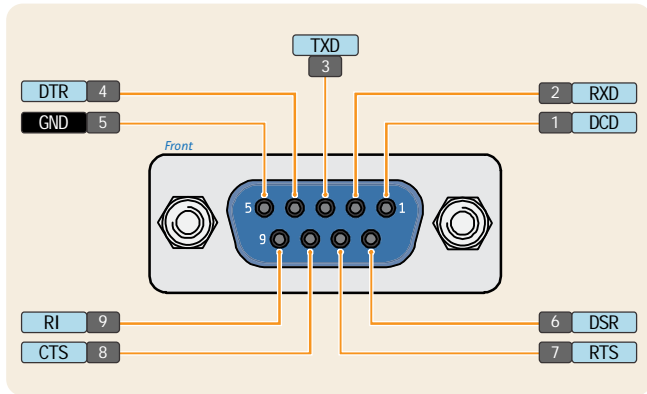
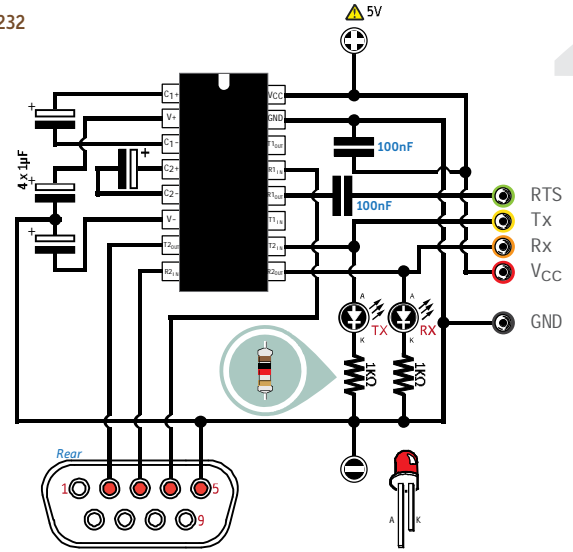
i

$$R_E = \frac{V_{in} - V_F}{I_F} * 1000$$

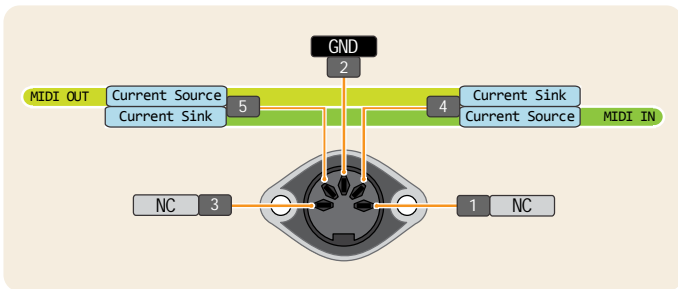
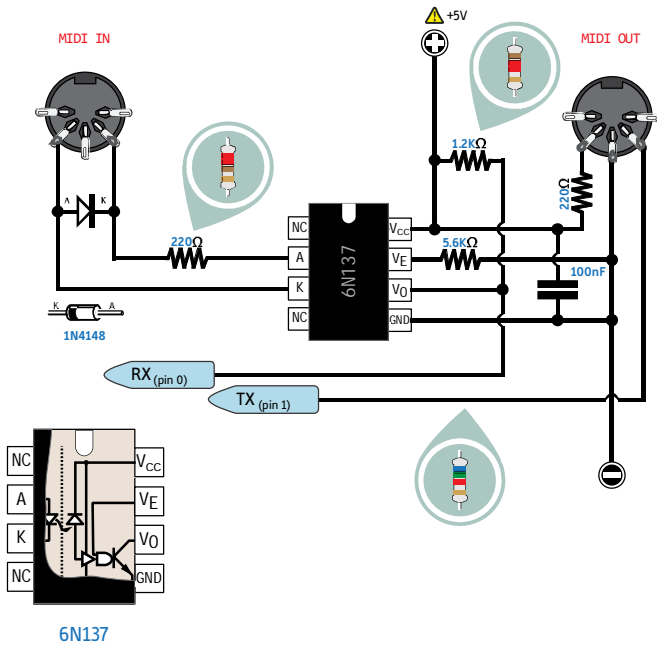
V_{in} Source Voltage
 V_F Forward Voltage Led
 I_F Forward Current Led



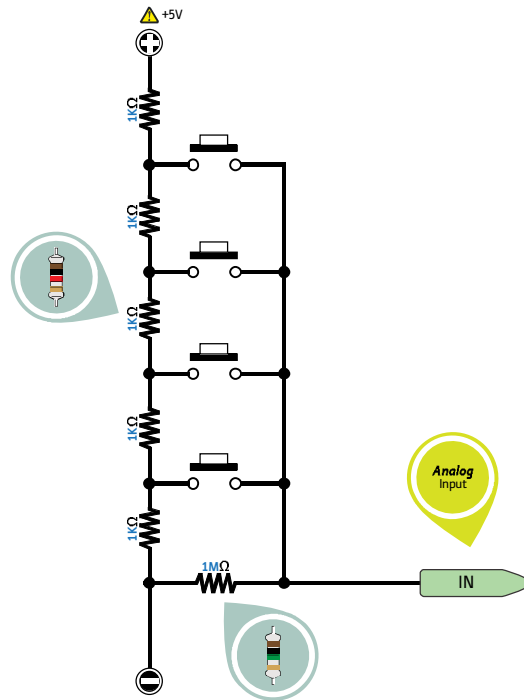
Connect a MAX232



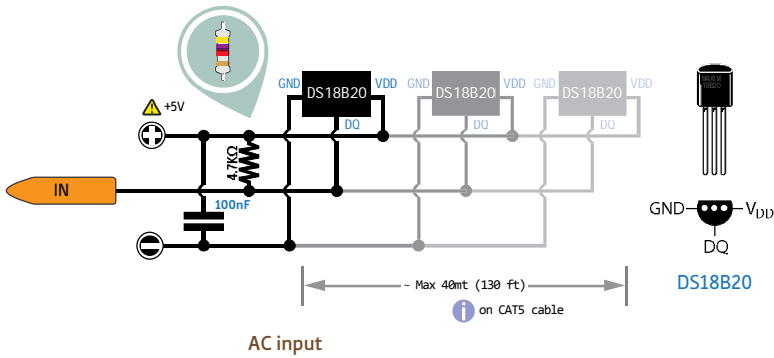
MIDI Interface



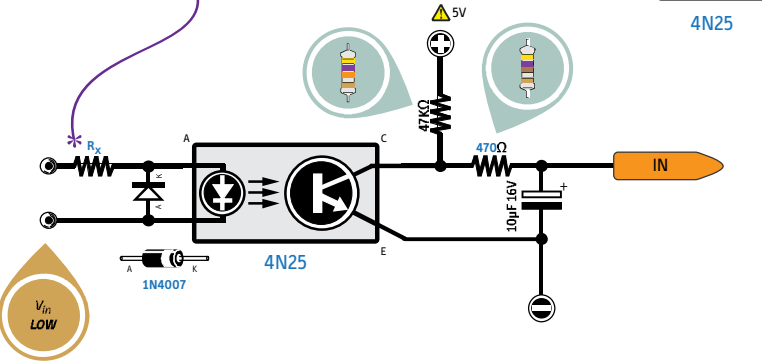
Multiple Buttons using 1 Analog Input



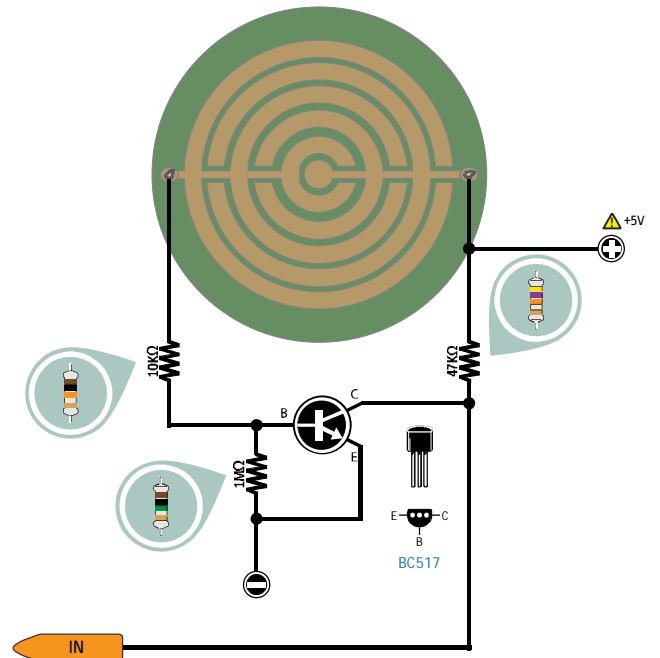
Connect a Digital Temperature Sensor (DS18B20)



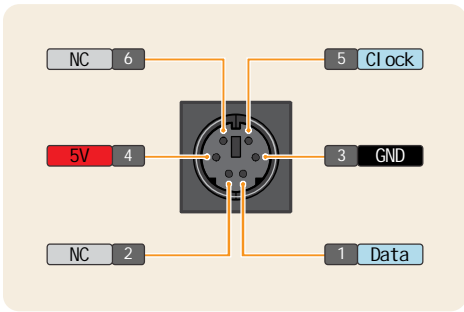
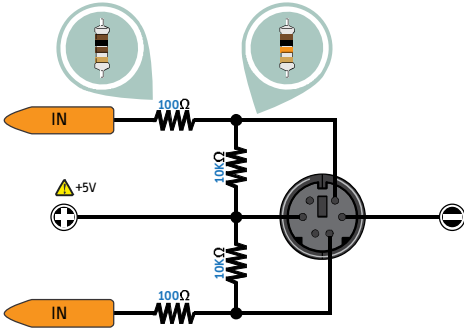
Volt t_{in}	Resistor Value
12	470Ω
24	1kΩ
48	2.2kΩ



A simple Rain Sensor with Arduino



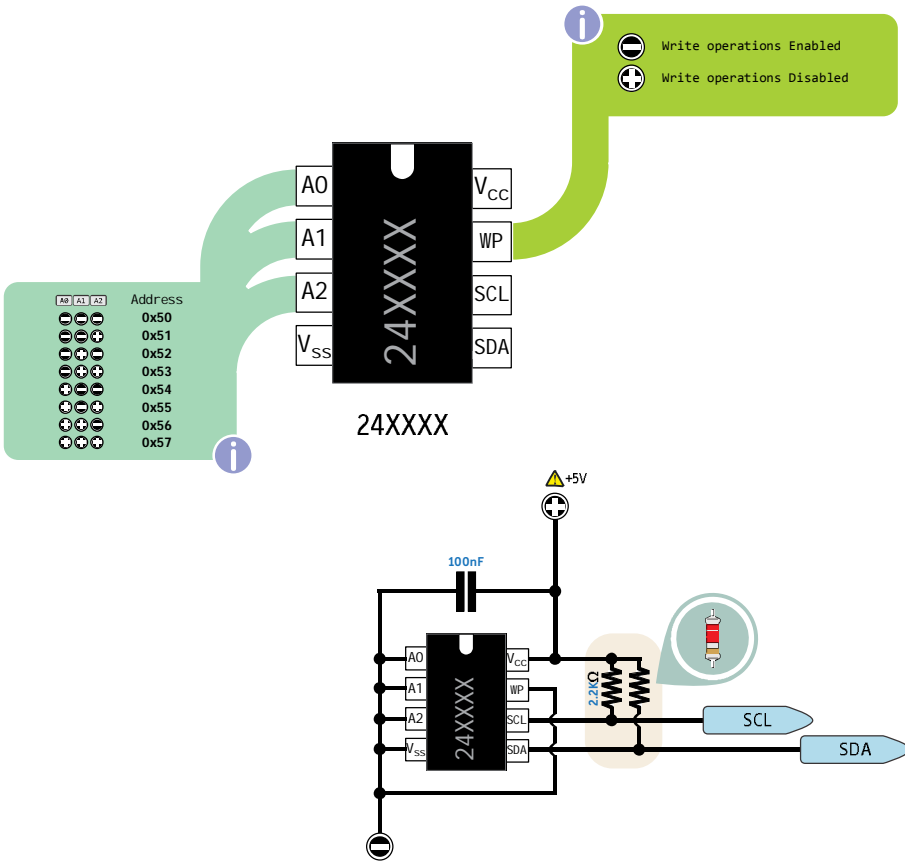
Connect a PS2 Keyboard



Scan Codes

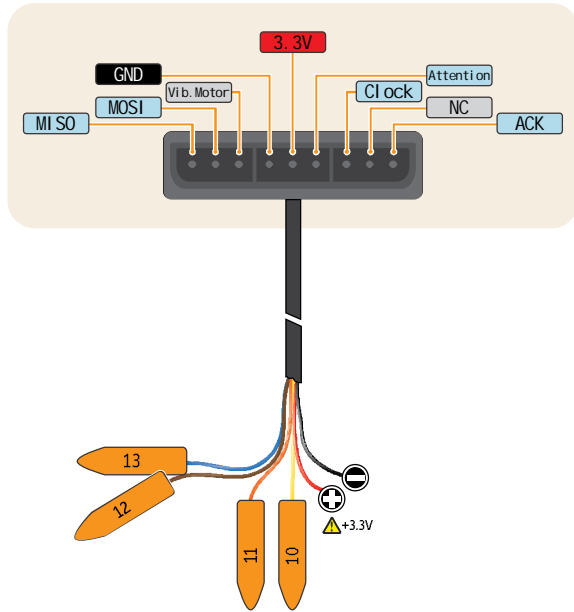


Connect a EEPROM via I2C

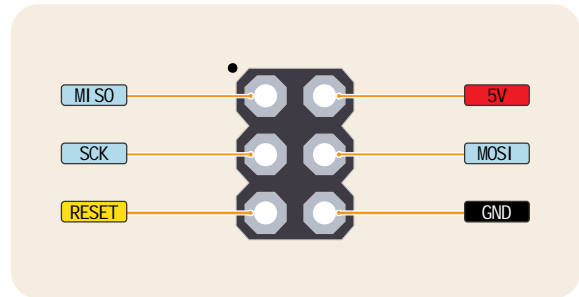
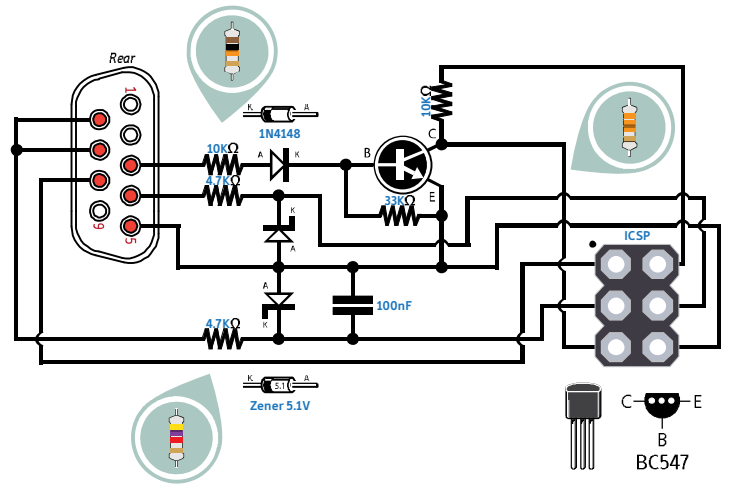


	1Kb		32Kb
	2Kb		64Kb
	4Kb		128Kb
	8Kb		256Kb
	16Kb		512Kb

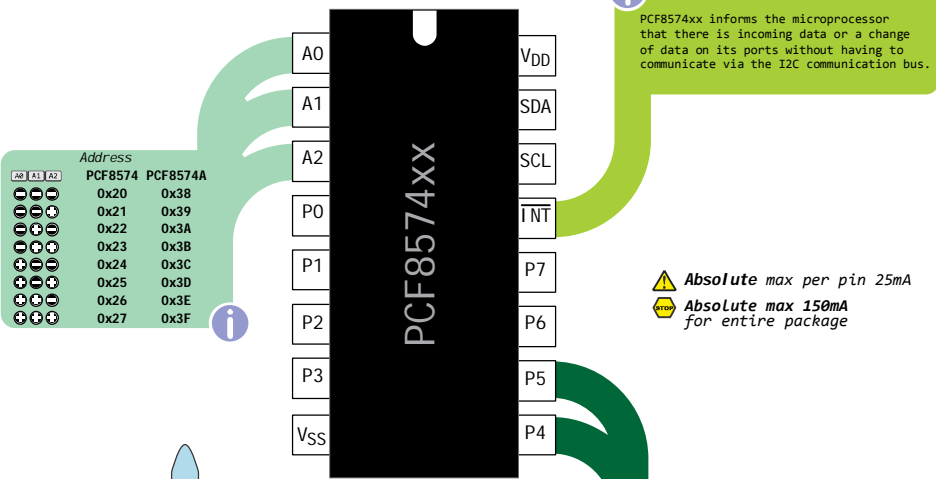
Connect a PS2 Dualshock® controller



A Simple programmer



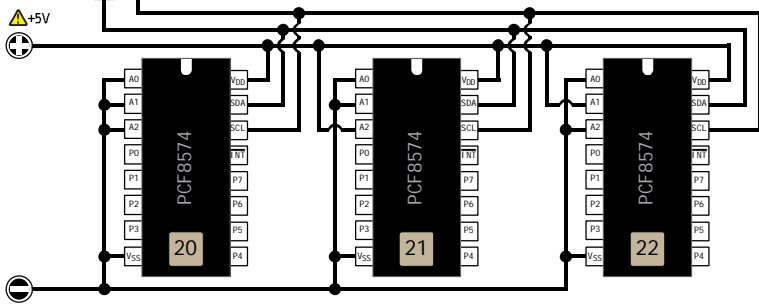
Port Expander (PCF8574xx)



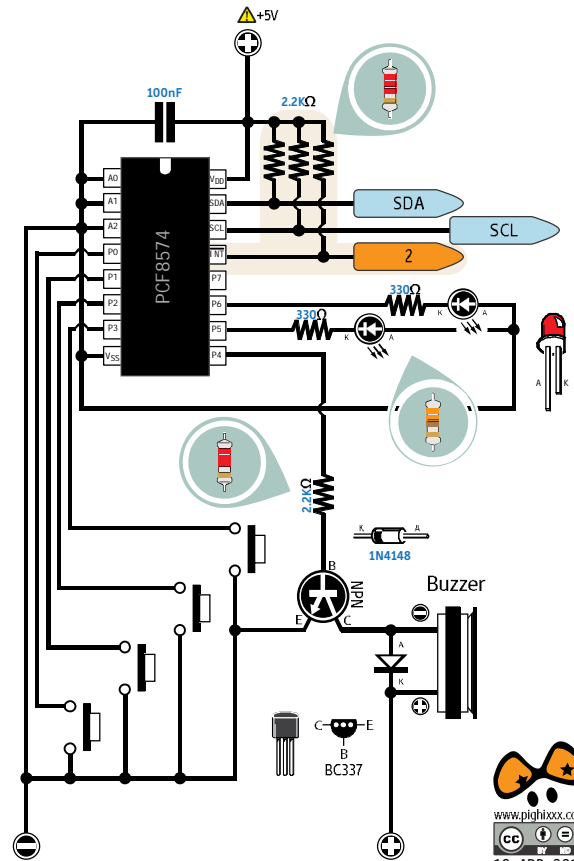
⚠ Absolute max per pin 25mA
⚠ Absolute max 150mA for entire package

In applications requiring additional drive, two port pins may be connected together to sink up to 50-mA current.

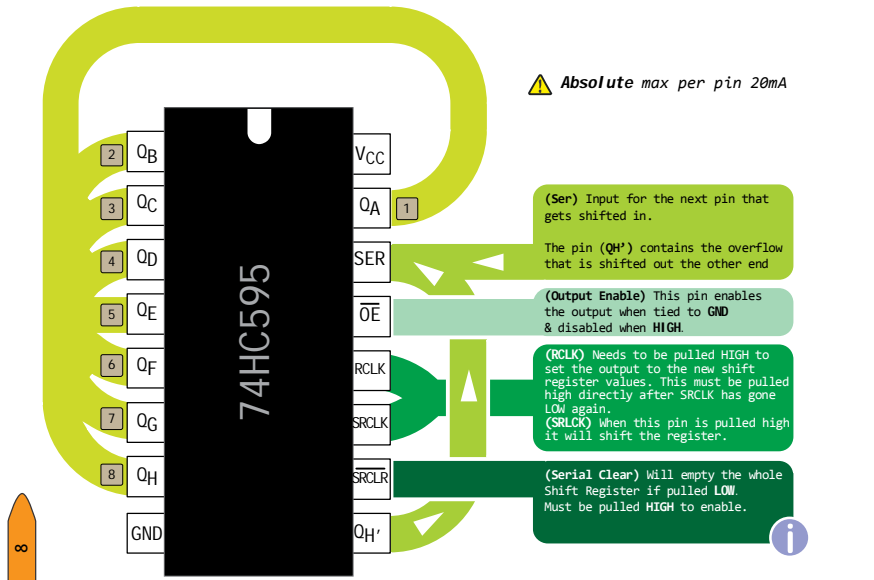
How to connect multiple devices



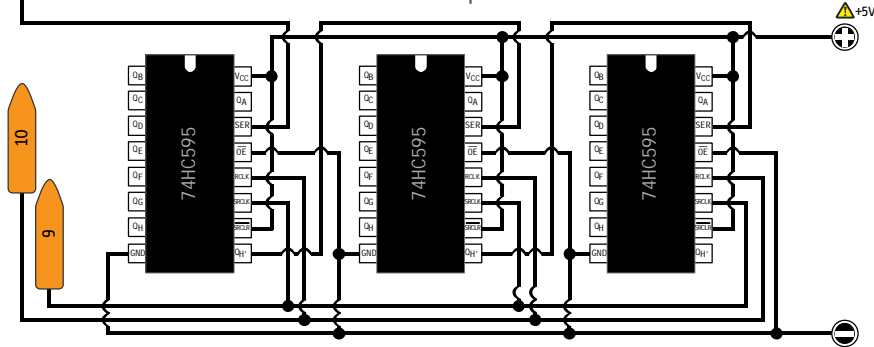
A typical Application



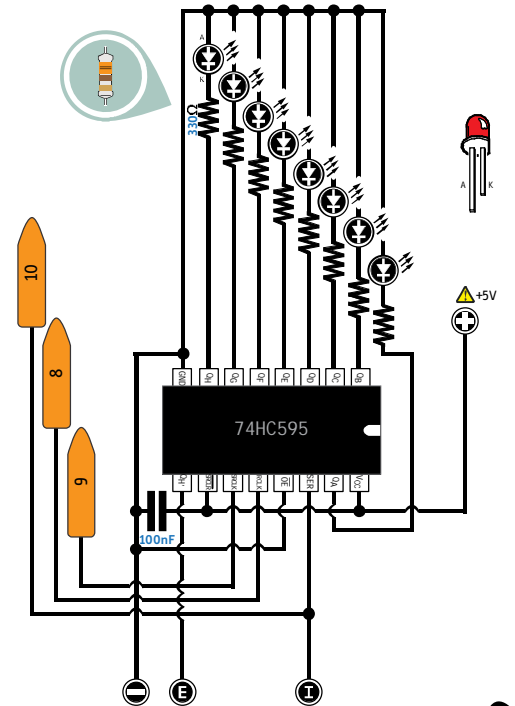
Shift Register (74HC595)



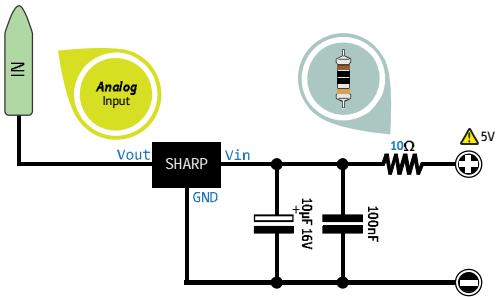
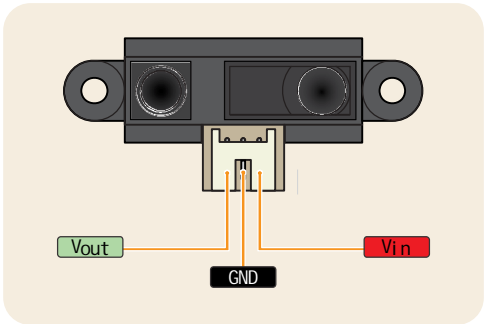
How to connect multiple devices



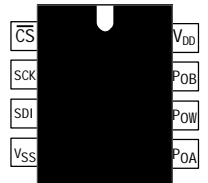
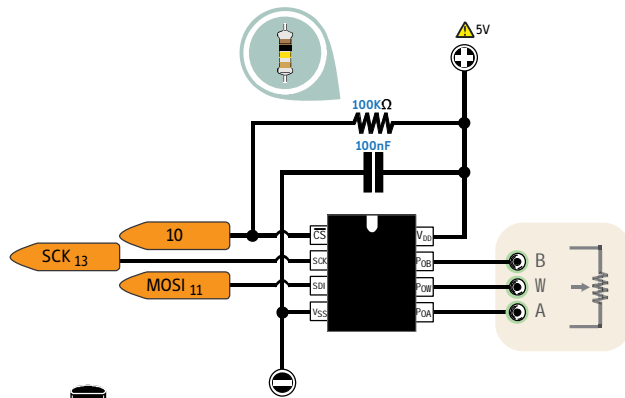
A typical Application



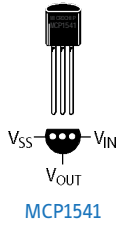
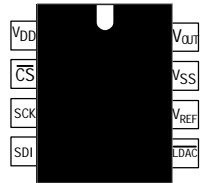
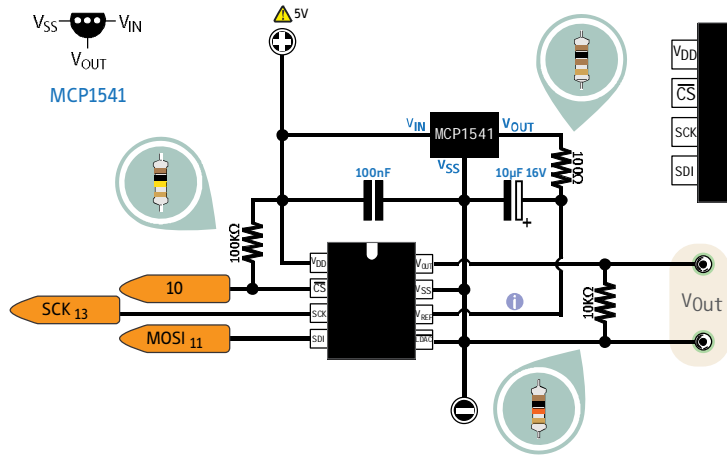
Connect a Distance Sensor (Sharp GP2Y0A21)



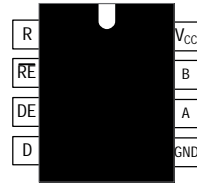
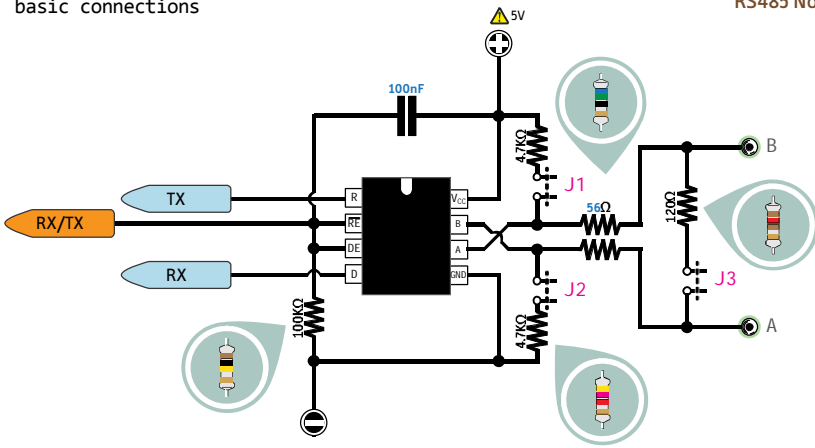
Connect a Digital Potentiometer (MCP4161)



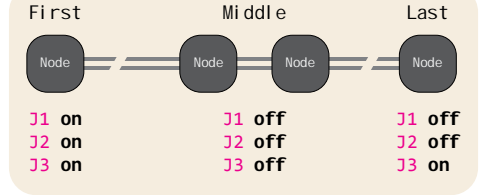
Connect a DAC (MCP4921)



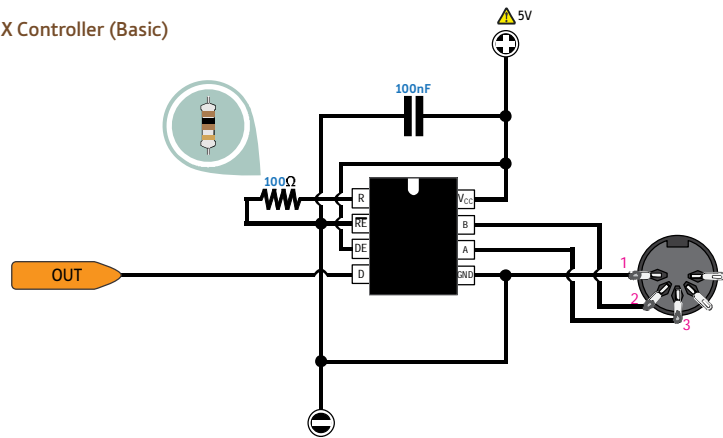
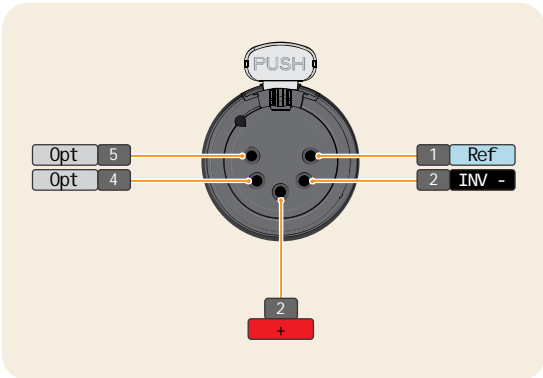
RS485 Node



Node termination jumpers config

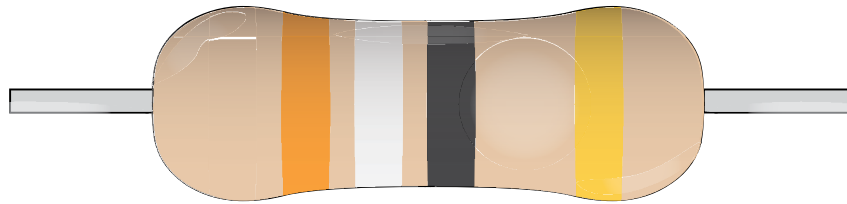


DMX Controller (Basic)



TOLERANCE

GOLD	±5%
SILVER	±10%



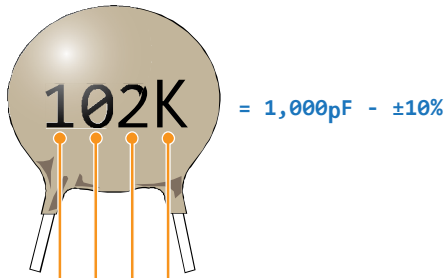
BLACK	0	0	x1Ω
BROWN	1	1	x10Ω
RED	2	2	x100Ω
ORANGE	3	3	x1,000Ω
YELLOW	4	4	x10,000Ω
GREEN	5	5	x100,000Ω
BLUE	6	6	x1,000,000Ω
VIOLET	7	7	
GRAY	8	8	
WHITE	9	9	

KΩ = x1,000Ω

MΩ = x1,000,000Ω

MULTIPLIER

Ceramic Capacitor Code



Significant Digits

1st

2nd

Multiplier

0	none
1	10
2	100
3	1,000
4	10,000
5	100,000
6	1,000,000
7	
8	
9	

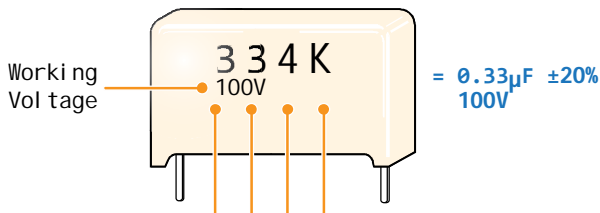
C	±0.25pF
J	±5%
K	±10%
M	±20%
D	±0.5pF
Z	+80% -20%

1,000 1 0.001

pF **nF** **µF**

1	1p0	1pF	10	10pF	101	n10	100pF
1.2	1p2	1.2pF	12	12pF	121	n12	120pF
1.5	1p5	1.5pF	15	15pF	151	n15	150pF
1.8	1p8	1.8pF	18	18pF	181	n18	180pF
2.2	2p2	2.2pF	22	22pF	221	n21	220pF
2.7	2p7	2.7pF	27	27pF	271	n27	270pF
3.3	3p3	3.3pF	33	33pF	331	n33	330pF
3.9	3p9	3.9pF	39	39pF	391	n39	390pF
4.7	4p7	4.7pF	47	47pF	471	n47	470pF
5.6	5p6	5.6pF	56	56pF	561	n56	560pF
6.8	6p8	6.8pF	68	68pF	681	n68	680pF
8.2	8p2	8.2pF	82	82pF	821	n82	820pF

Polyester Film-Mylar Capacitor Code



Significant Digit

1st	
2nd	

Multiplier

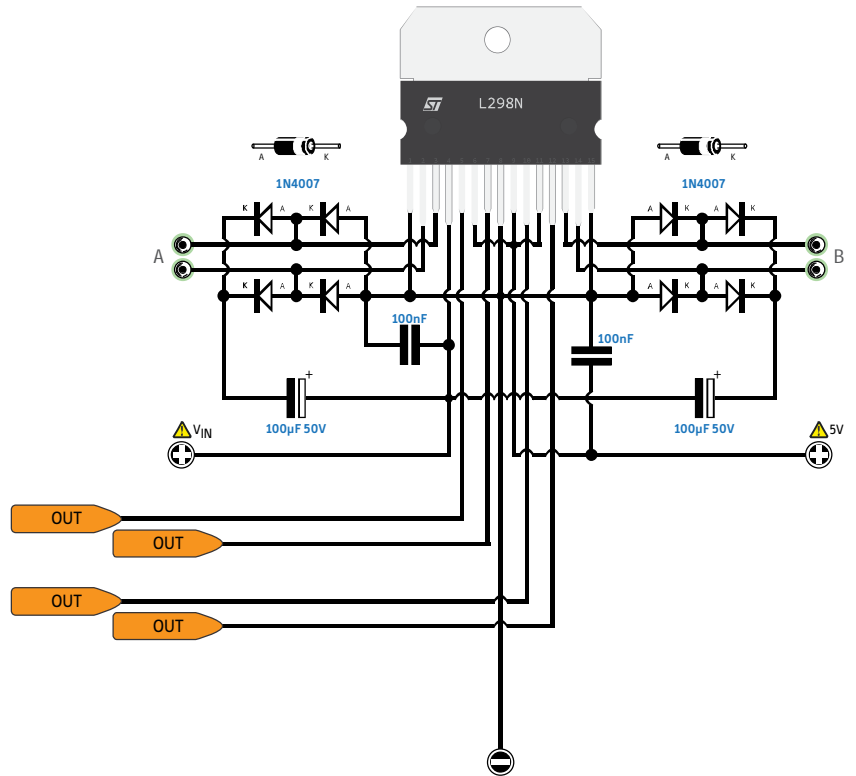
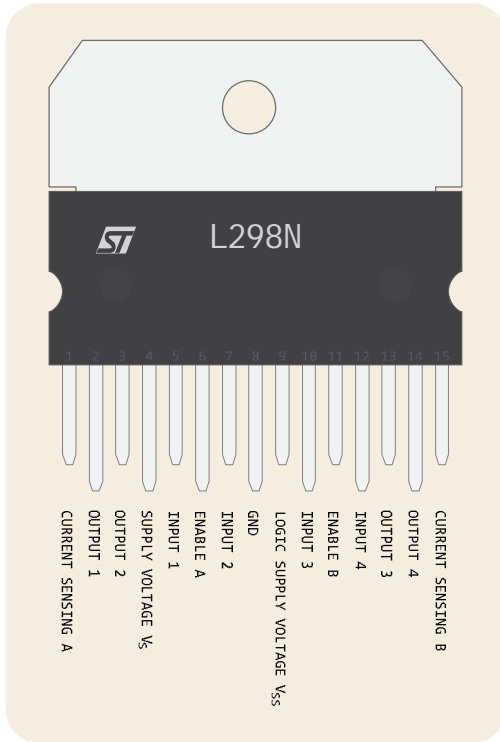
0	none
1	10
2	100
3	1,000
4	10,000
5	100,000
6	
7	
8	
9	

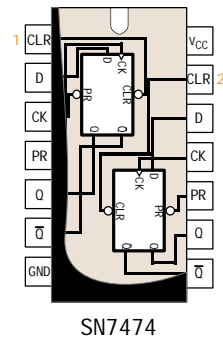
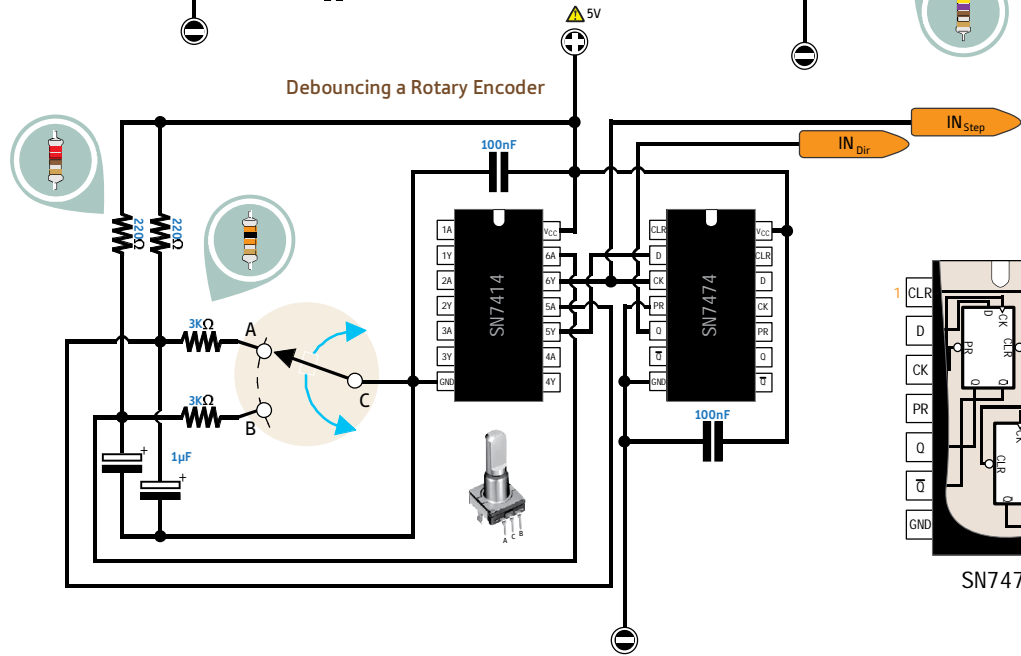
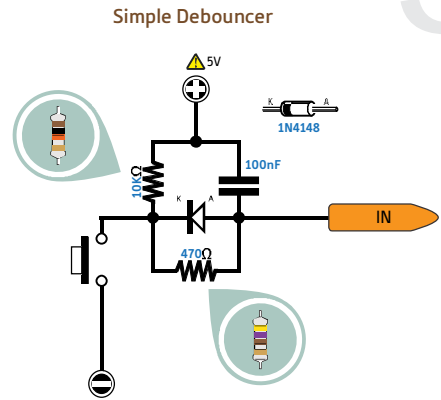
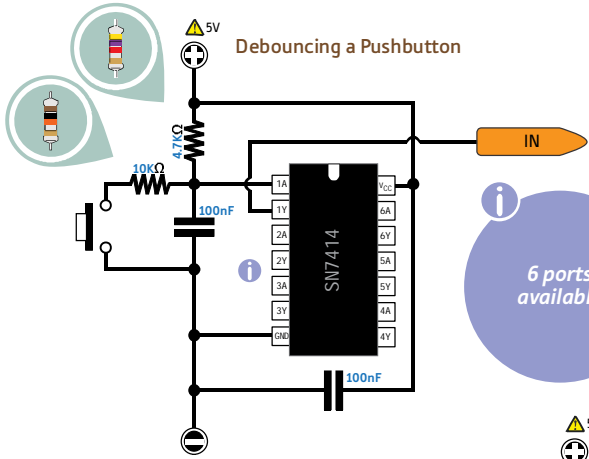
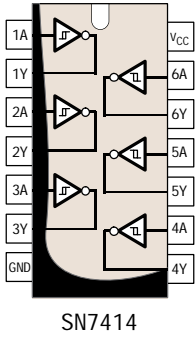
F	1~2%
G	2%
J	5%
K	10%
M	20%

1,000 pF 1 nF 0.001 µF

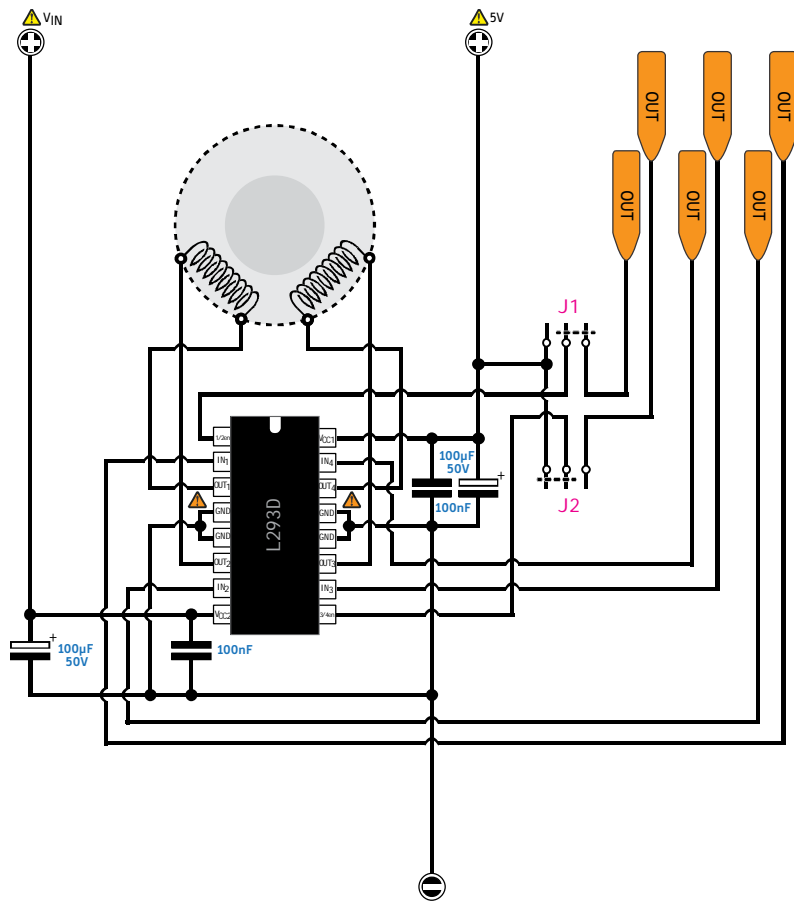
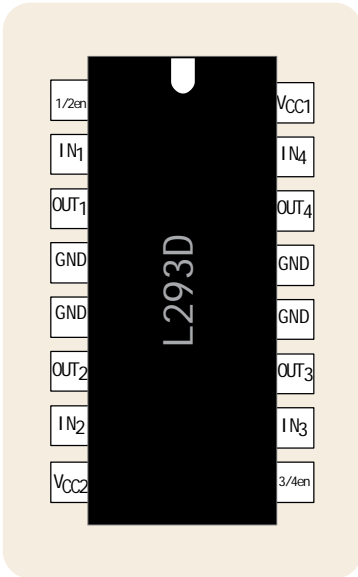
102	1n	.001	1,000pF	103	10n	.01	10,000pF	104	100n	.1	100,000pF
122	1n2	.0012	1,200pF	123	12n	.012	12,000pF	124	120n	.12	120,000pF
152	1n5	.0015	1,500pF	153	15n	.015	15,000pF	154	150n	.15	150,000pF
182	1n8	.0018	1,800pF	183	18n	.018	18,000pF	184	180n	.18	180,000pF
222	2n2	.0022	2,200pF	223	22n	.022	22,000pF	224	220n	.22	220,000pF
272	2n7	.0027	2,700pF	273	27n	.027	27,000pF	274	270n	.27	270,000pF
332	3n3	.0033	3,300pF	333	33n	.033	33,000pF	334	330n	.33	330,000pF
392	3n9	.0039	3,900pF	393	39n	.039	39,000pF	394	390n	.39	390,000pF
472	4n7	.0047	4,700pF	473	47n	.047	47,000pF	474	470n	.47	470,000pF
562	5n6	.0056	5,600pF	563	56n	.056	56,000pF	564	560n	.56	560,000pF
682	6n8	.0068	6,800pF	683	68n	.068	68,000pF	684	680n	.68	680,000pF
822	8n2	.0082	8,200pF	823	82n	.082	82,000pF	824	820n	.82	820,000pF

Drive a Motor (L298)

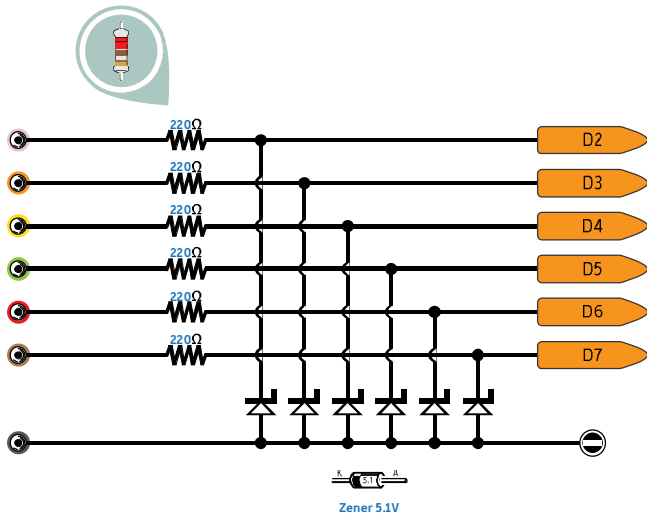




Drive a Stepper (L293)

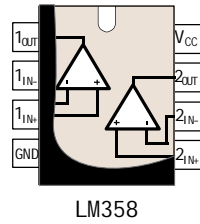
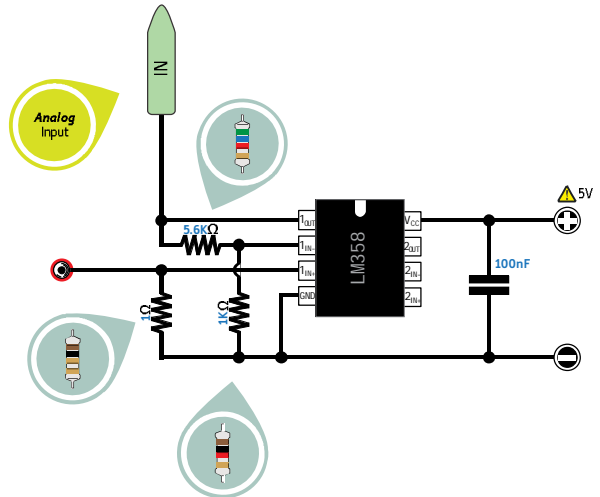


Arduino Logic Analyzer

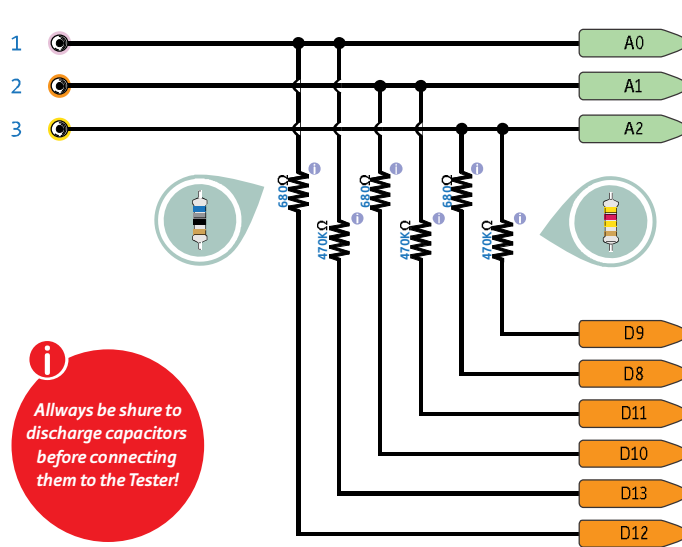


i
 See instructions
 at
la.pighixx.com

Current Sense



Arduino Component Tester (basic)



i
Always be shure to discharge capacitors before connecting them to the Tester!

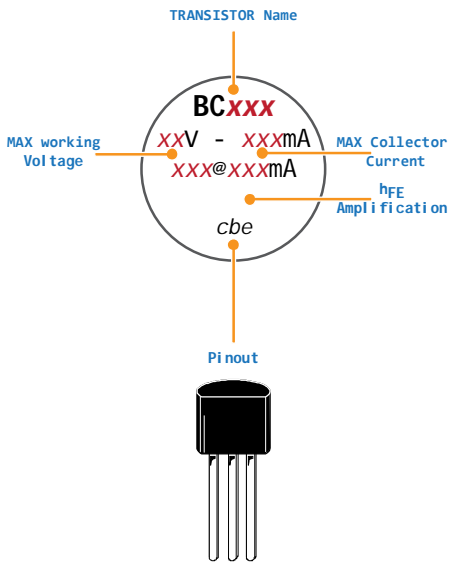
i
To get full accuracy use 1% tolerance resistors

i
Download sketch at at.pighixx.com

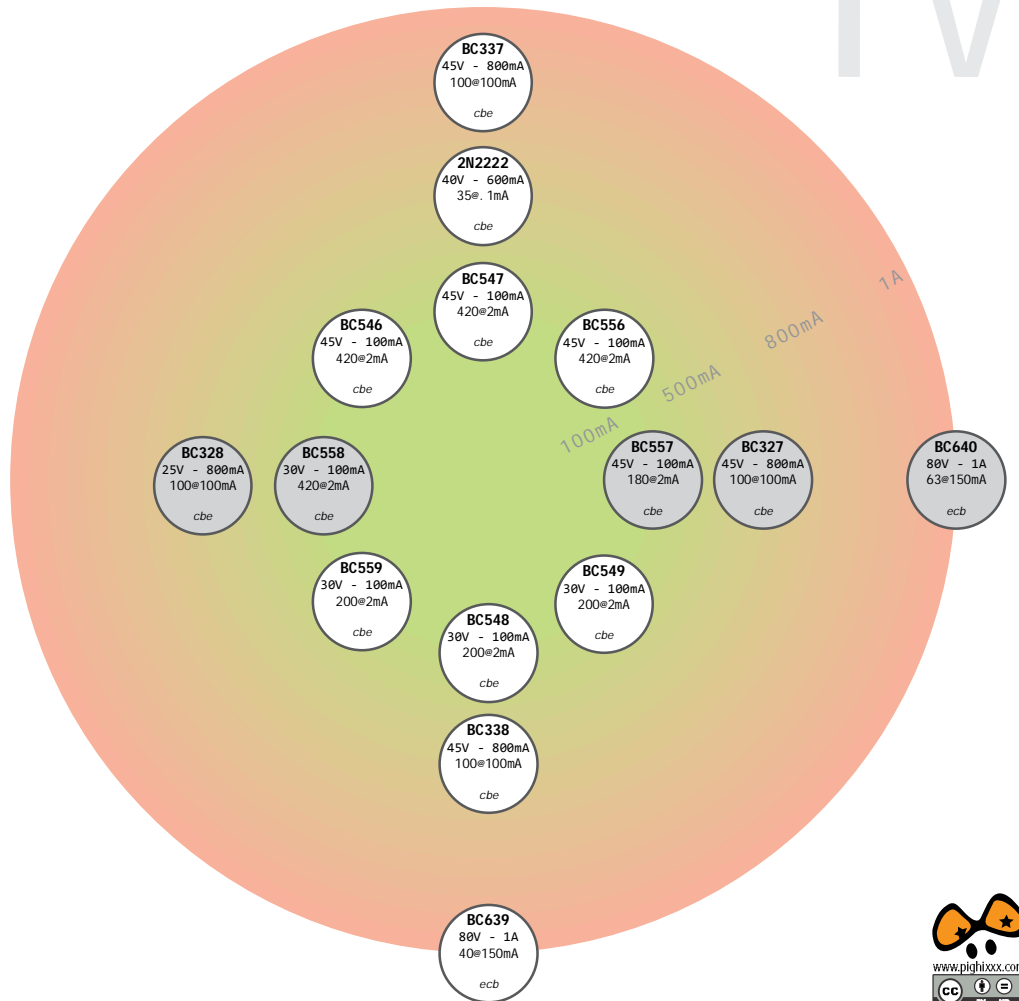
Original Project by Markus Frejek AVR-Transistortester, Embedded Projects Journal, 11. Ausgabe, 2011
Arduino version by PighiXXX

Simple Transistor Comparison Table

IV



- NPN
- PNP



The Prodigious Abacus

