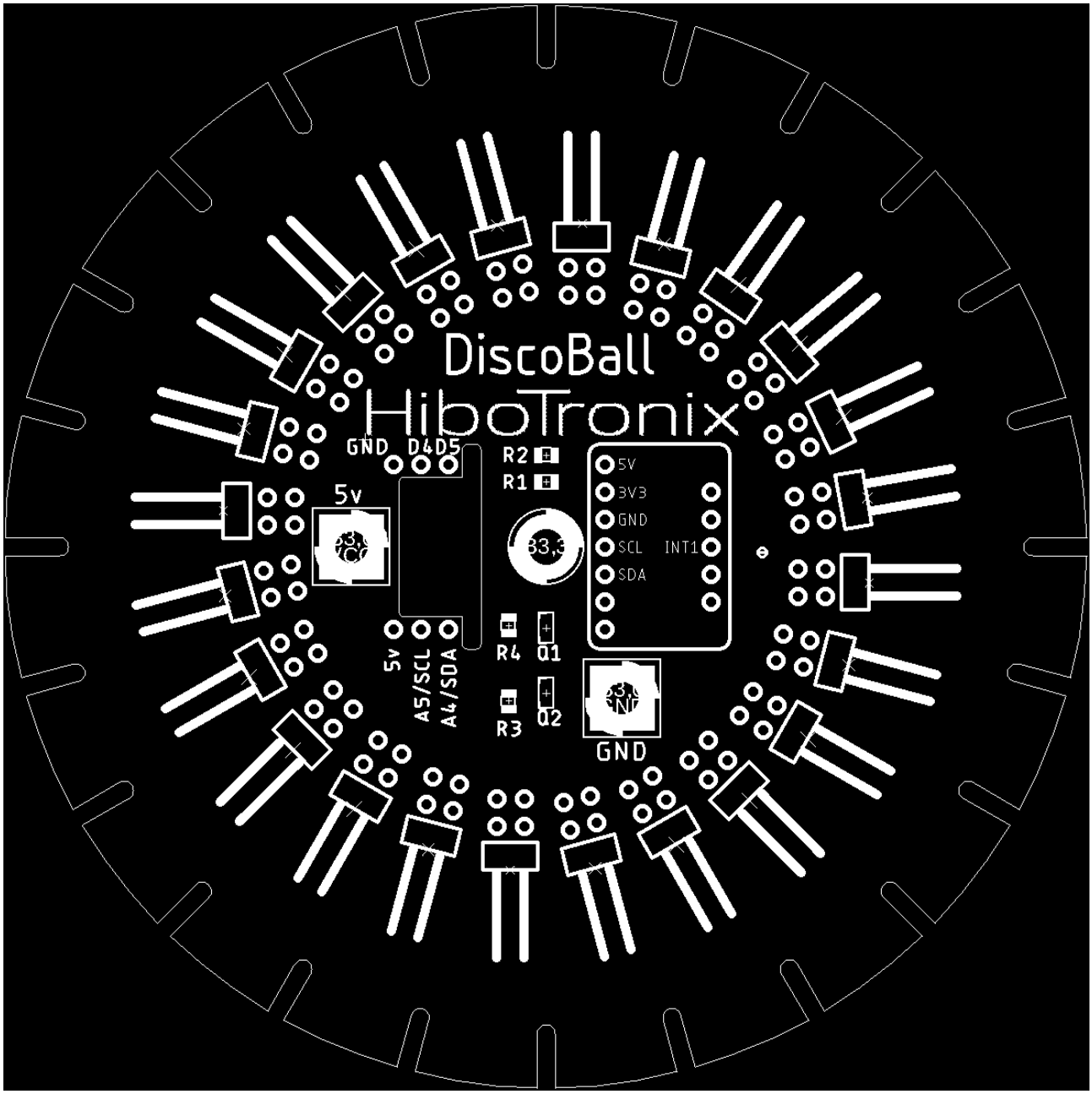
# HiboTronix **DiscoBall Assembly**




## Parts Required:

### SMD Components

| Designator | Part | Example Link |
|---|---|---|
| **R1,R2** | 0805 470Ω  RESISTOR | Digikey |
| **R3,R4** | 0805 10KΩ RESISTOR | Digikey |
| **Q1,Q2** | SOT-23-3 BSS138 N-TYPE MOSFET | Digikey |

## Through-hole Components

| Part | Example Link |
|---|---|
| Arduino Nano Every | Arduino |
| LSM6DS3 Acc/Gyro Module | Ebay.com |
| 2x2 Right Angle Pin Header (x24) | Digikey |

## Other Items

| Description | Qty |
|---|---|
| Aluminium Tube, 43mm long, 6mm(1/4in) OD, 3mm(1/8in) ID | 2 |
| 100mm(4in) M3(4-40) Threaded Rod | 1 |
| M3(4-40) Washers | 2 |
| M3(4-40) Nuts | 2 |
| Cutoff Resistor Legs Or Stiff Enamelled Equipment Wire, A Minimum Of 25mm Long. | 6 |

## PCB And Stencil

You need the following:

1x DiscoBall Centre PCB
2x DiscoBall Top & Bottom Alignment Cap PCBs
1x DiscoBall Centre SMD Stencil(Optional)
24x DiscoBall LED Ribs PCBs(Assembled)

Gerber files can be found on GitHub

Files for the PCB are in folder: DiscoBall_Centre_PCB.zip
Files for the SMD stencil are in folder: DiscoBall_Centre_Stencil.zip
Files for the top and bottom alignment caps are in folder: DiscBall_Caps_PCB.zip
Files for the LED Ribs are in folder: DiscBall_Rib_PCB.zip
Files for the SMD stencil are in folder: DiscoBall_Rib_Stencil.zip

# Assembly:

1) Paste and assemble SMD components to board
2) Solder headers to the LSM6DS3 module. Once complete, insert module into centre PCB footprint and solder this in.
3) Bend the 6 resistor legs at right angles roughly in the centre. With the centre PCB SMD components facing up, hold the Arduino Nano Every with the USB port facing down, insert the six resistor legs into D4,D5,A4,A5,GND & 5V on the Arduino. Slide the Arduino into the cutout in the centre PCB carefully passing the other end of the resistor legs through the corresponding pads on the centre PCB.
4) While holding the Arduino at 90deg to the centre PCB solder all resistor legs to bothe the Arduino and the centre PCB
5) Starting with the threaded rod, build up the centre support in the following order:
   NUT
   WASHER
   ALIGNMENT CAP PCB

43MM SPACER
CENTRE PCB
43MM SPACER
ALIGNMENT CAP PCB
WASHER
NUT
Make sure the assembly is central on the threaded rod and gently tighten the nuts.
DO NOT OVER-TIGHTEN!

6) Using an assembled DiscoBall Rib to help with alignment, solder all 4-pin headers(x24) to the centre PCB. Use the same Rib to align all headers, don't leave the ribs installed at this point as you won't be able to access the other terminals for soldering.
7) Time to test, use a multimeter to make sure you have no shorts. Plug Arduino into computer and test the basic sketches starting with the LSM6DS3 test sketch. The guide to the Arduino Sketches/Libraries and recommended settings is on GitHub in the Software folder.
8) Connect your power source to the large 5v & GND terminals on the centre PCB.
9) Assemble all ribs onto centre PCB making sure all slots are aligned.
10) Once Assembled tighten up the nuts a little more for rigidity.

If you have made it this far you're a HERO!

Enjoy your DiscoBall :)

Send me a picture on Twitter @HiboTronix.
I'm always looking for the tag #Discoball too.