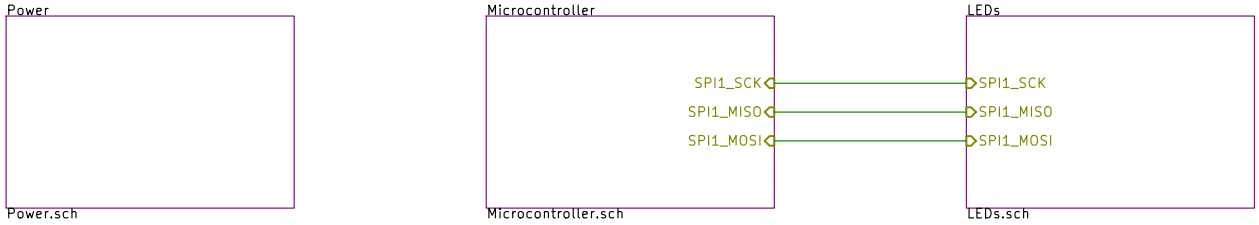


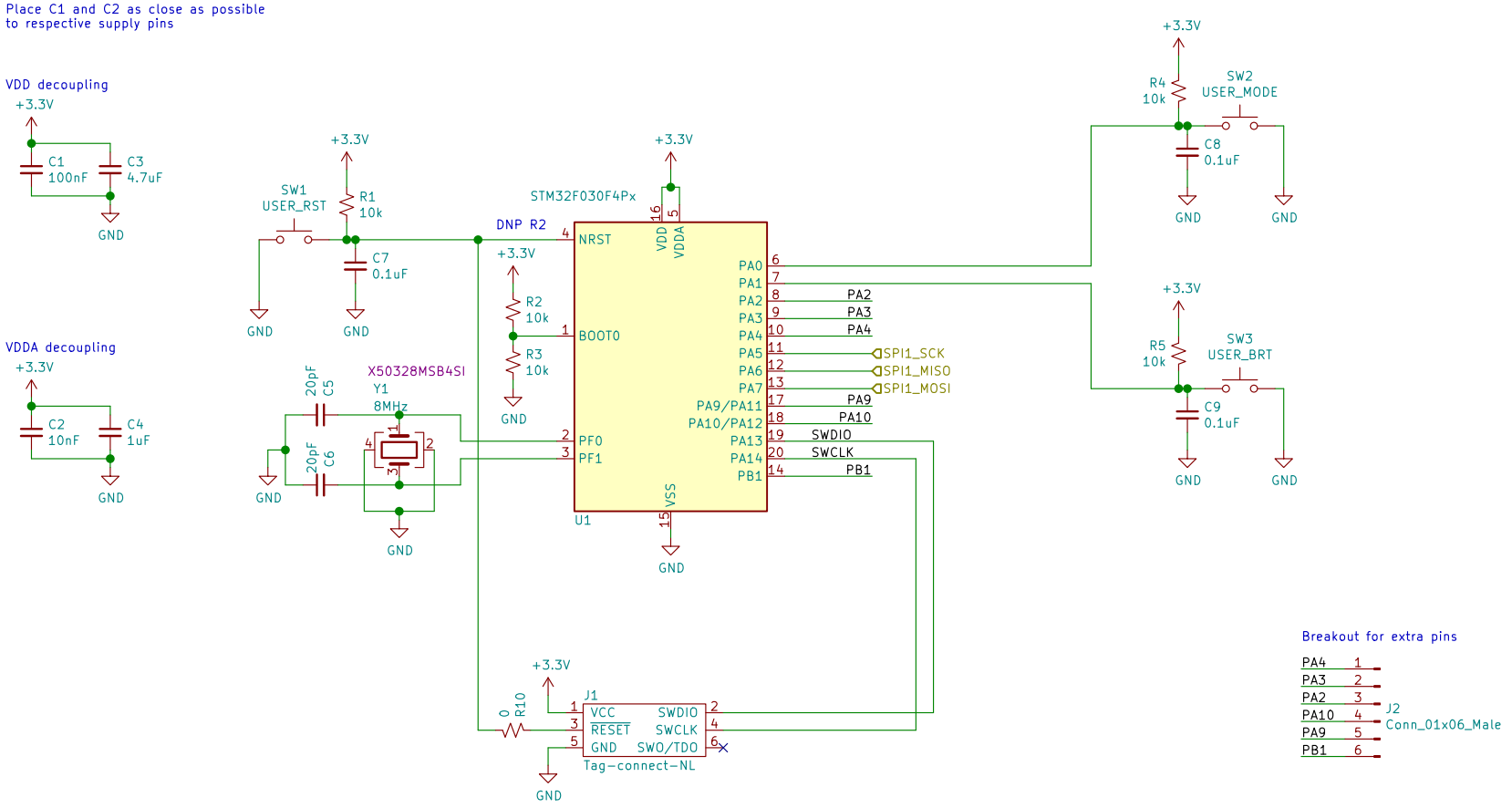
Schematic for the base layer of a PCB Christmas tree ornament, which uses 3 layers of PCBs in an "Oreo construction" style to create miniature lightboxes for 10 APA102 addressable RGB LEDs.

Designed by A. Ge

Sheet: /Top Level
File: Christmas Tree.sch

Title: **Oreo Ornament**

Size: A4	Date: 12/9/19	**Rev:** 1
KiCad E.D.A. kicad (5.1.2)-2		Id: 1/4



Designed by A. Ge

Sheet: /Microcontroller/
File: Microcontroller.sch

Title: **Oreo Ornament**

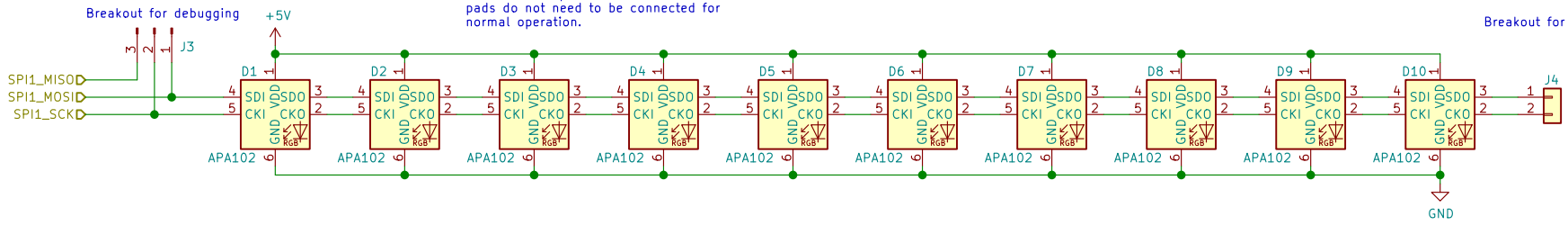
Size: A4	Date: 12/9/19	**Rev:** 1
KiCad E.D.A. kicad (5.1.2)-2		Id: 2/4

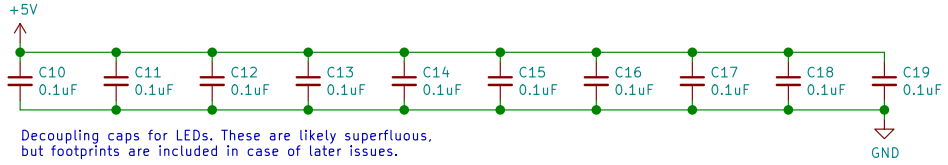
While a logic level shifter should technically
be used to convert uC 3.3V lines to 5V, testing
has shown that APA102 responds to 3.3V signals.

LEDs have 8 pads – however, testing has
shown that duplicated VDD and GND
pads do not need to be connected for
normal operation.

Breakout for debugging

Breakout for debugging





Decoupling caps for LEDs. These are likely superfluous,
but footprints are included in case of later issues.

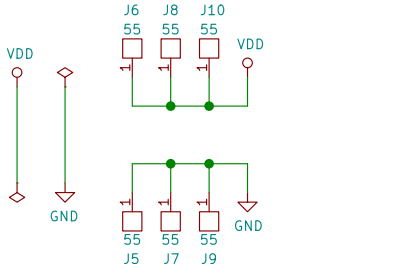
Designed by A. Ge

Sheet: /LEDs/
File: LEDs.sch

Title: **Oreo Ornament**

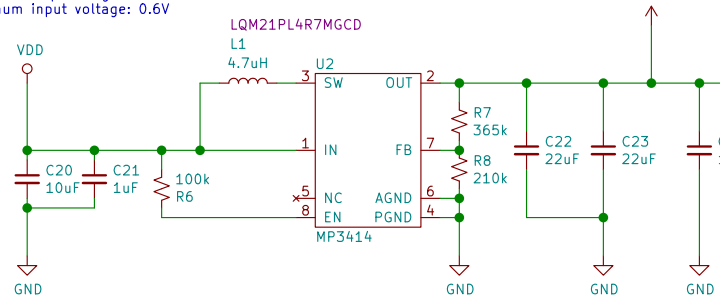
Size: A4	Date: 12/9/19	**Rev:** 1
KiCad E.D.A. kicad (5.1.2)-2		Id: 3/4

Refer to Keystone 55 datasheet for required part spacing

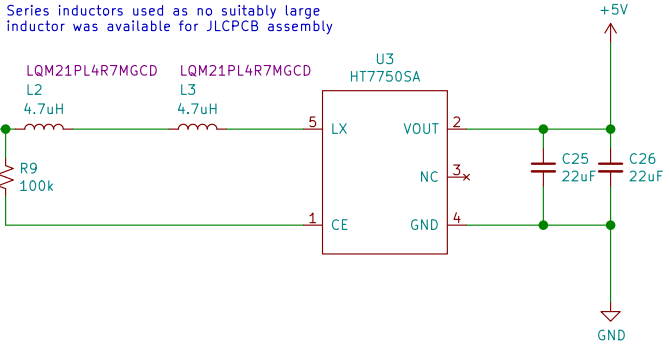


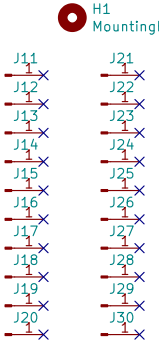
Battery clips for three parallel AAA batteries.
1.5V nominal voltage expected
In order to turn off ornaments,
batteries must be disconnected

Boost startup voltage: 0.8V
Minimum input voltage: 0.6V



Series inductors used as no suitably large
inductor was available for JLCPCB assembly





Soldering points to cutout layer PCB
DNP actual components

Designed by A. Ge

Sheet: /Power/
File: Power.sch

Title: **Oreo Ornament**

Size: A4	Date: 12/9/19	**Rev:** 1
KiCad E.D.A. kicad (5.1.2)-2		Id: 4/4