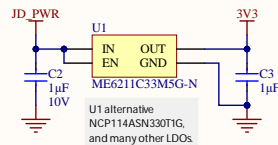


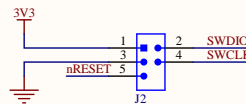
## 3V3 regulator

Recommendation: consider replacing ME6211C33M5G-N with an LDO that is robust to repeated spikes of 8V or more on its input in case there is noise on the Jaccad bus.

This component is a power-consumer.

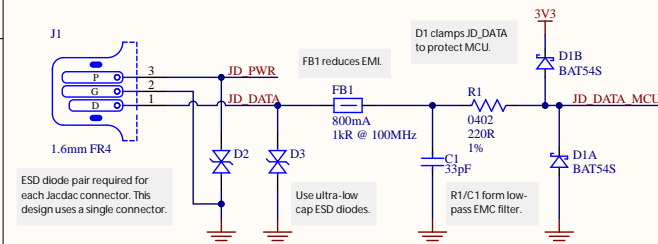


## Programming/debug connector



"Hack-connect" SWD adapter.  
<https://arcade.makecode.com/hardware/dbg>

## Jaccad connector



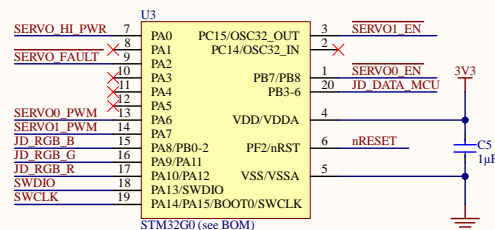
## MCU

U3 critical pin mappings (TIM17 is sys clk):

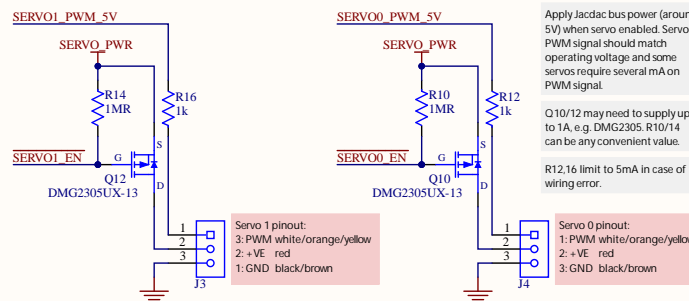
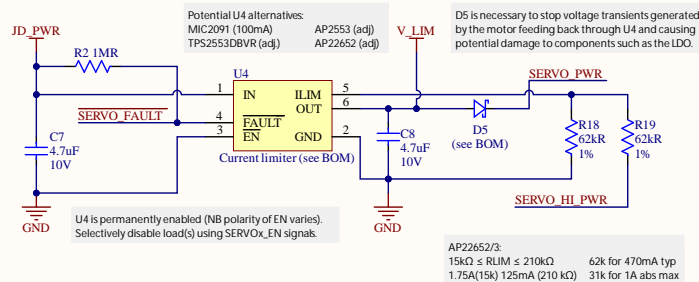
PA0 FT I/O for SERVO\_HL\_PWR  
PA2 FT I/O for SERVO\_FAULT  
PA6 TIM3\_CH1/TIM16\_CH1 for SERVO0  
PA7 TIM3\_CH2 for SERVO1  
PA8 TIM1\_CH1 for JD\_RGB\_B

PA9 TIM1\_CH2 for RGB\_G  
PA10 TIM1\_CH3 for RGB\_R  
PA13 SWD data  
PA14 SWD clock  
PB6 USART1\_TX for JD\_DATA\_MCU  
PB8 FT I/O for SERVO0\_EN  
PC15 FT I/O for SERVO1\_EN

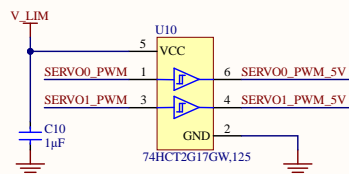
JD\_DATA doesn't need WAKEUP pin because deepest sleep isn't used.



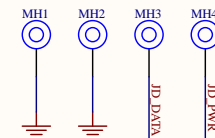
## Servo



Ensure U10 Vih is low enough for 3.3V MCU signalling. 74HCT2G17 & 2G34 work (Vih 2V @ Vcc 5V) but HC, LVC or others may not. Inverting alternatives are 74HCT2G04, 2G14.



## Mounting holes

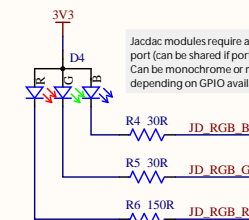


Mounting holes are electrically connected to the Jaccad bus nets so they can be used as an alternative to the PCB edge connector. Please use the following reference designators and net mapping.

MH1 & MH2: GND  
MH3: JD\_DATA  
MH4: JD\_PWR

This design uses PTH mounting holes with finished diameter of 3.1mm, annular copper ring of 4.4mm diameter & copper/component keepout of 7.0mm. The mounting holes must be on 10mm pitch. Mounting holes should have appropriate silkscreen marker, and MH1 should have a pin 1 marker in copper on the top side only.

## LEDs



Jaccad modules require a status LED per port (can be shared if ports are adjacent). Can be monochrome or multicolor depending on GPIO availability.

Tuoahan TZ-P4-1615RGBTCA1-056T RGB is footprint-compatible alternative for D4. If using alternative part recalculate R4-R6.

This reference design is a guideline. Please refer to the Jaccad docs online at <https://aka.ms/jaccad> for the definitive and most up-to-date information.

Silkscreen should include text to identify the module type and revision, and optionally a QR code.

This design uses a "enclosure compatible" board shape.

Silkscreen & layout notes

Block name

Design notes

This information is provided "as-is". You bear the risk of using it. Some information relates to pre-released specification which may change without notice. Microsoft makes no warranties, express or implied, with respect to the information provided here.

When this PDF is viewed with Adobe Reader, clicking on components shows part numbers and other details.

Microsoft

PROJECT DESCRIPTION  
Jaccad dual servo module

SHEET DESCRIPTION  
Complete design

SHEET FILENAME JaccadServoDual 23.SchDoc

PROJECT FILENAME JaccadServoDual 23.PrjPCB

PROJECT CODENAME JaccadServoDual

LICENCE Attribution 4.0 International (CC BY 4.0)

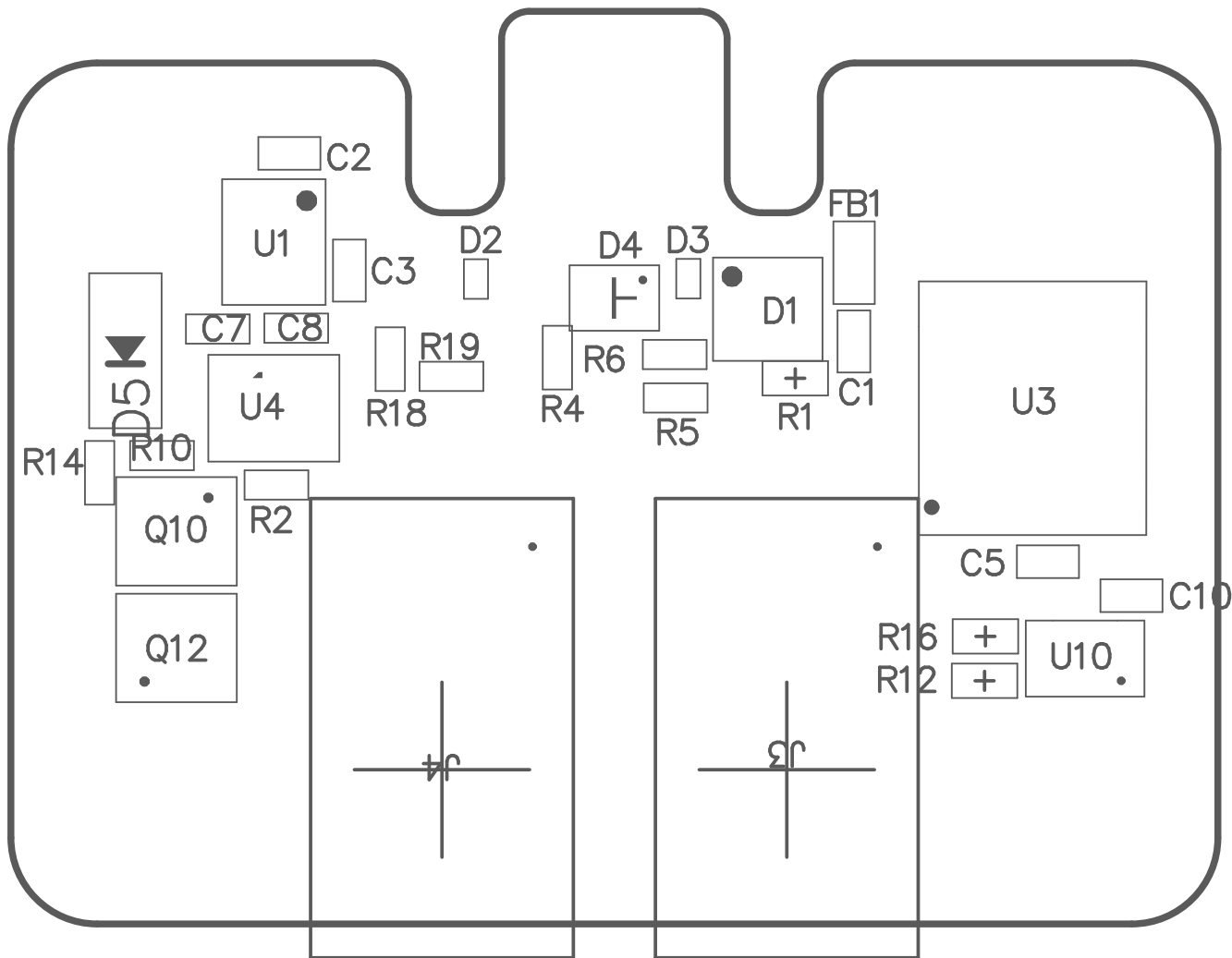
LASTMODIFIED 07/02/2022

PAGE 1 OF 1

DRAWN BY D. Gakure & S. Hodges

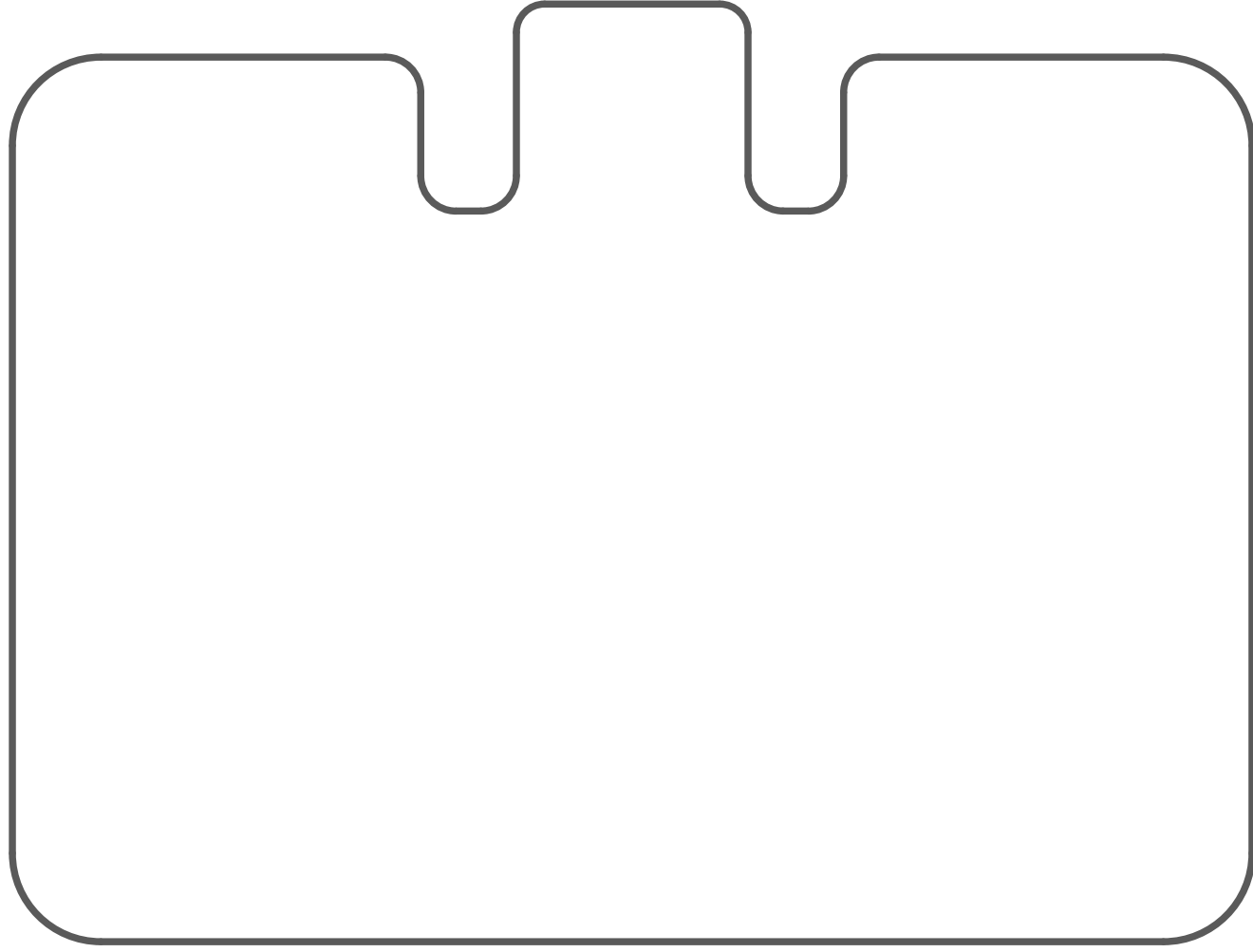
REVISION 2.0 PCB ID 23-2.0

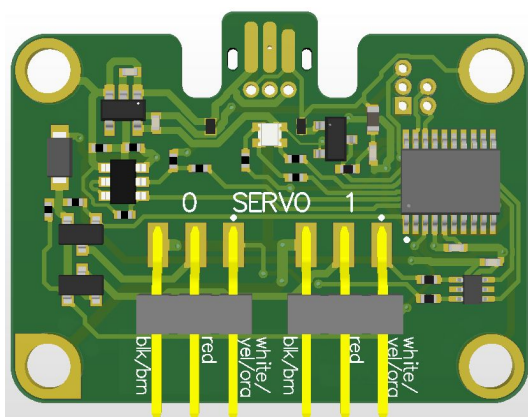
Board Outline  
Top Assy

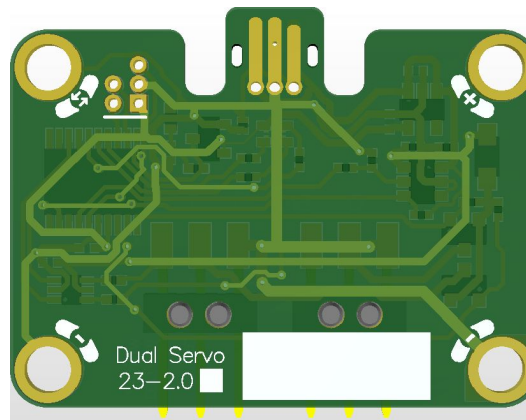


Board Outline

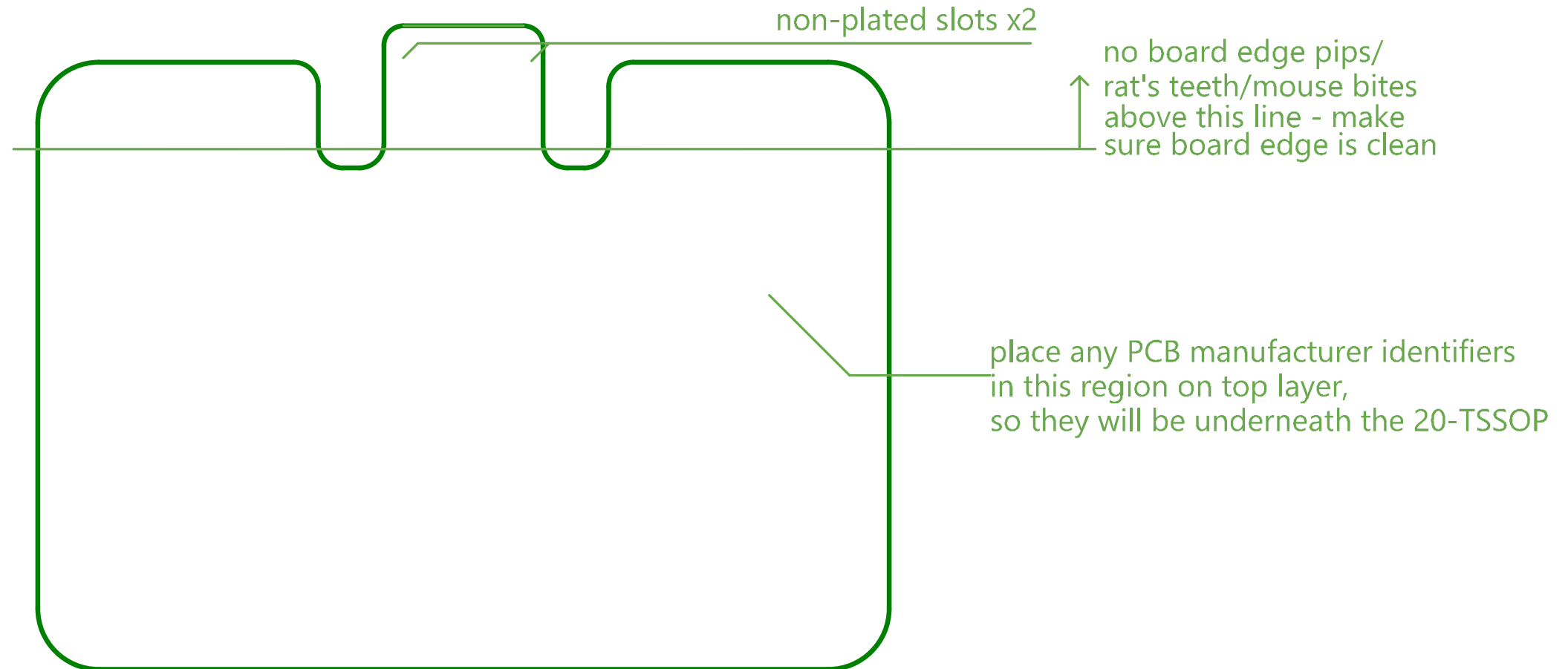
Bottom Assy





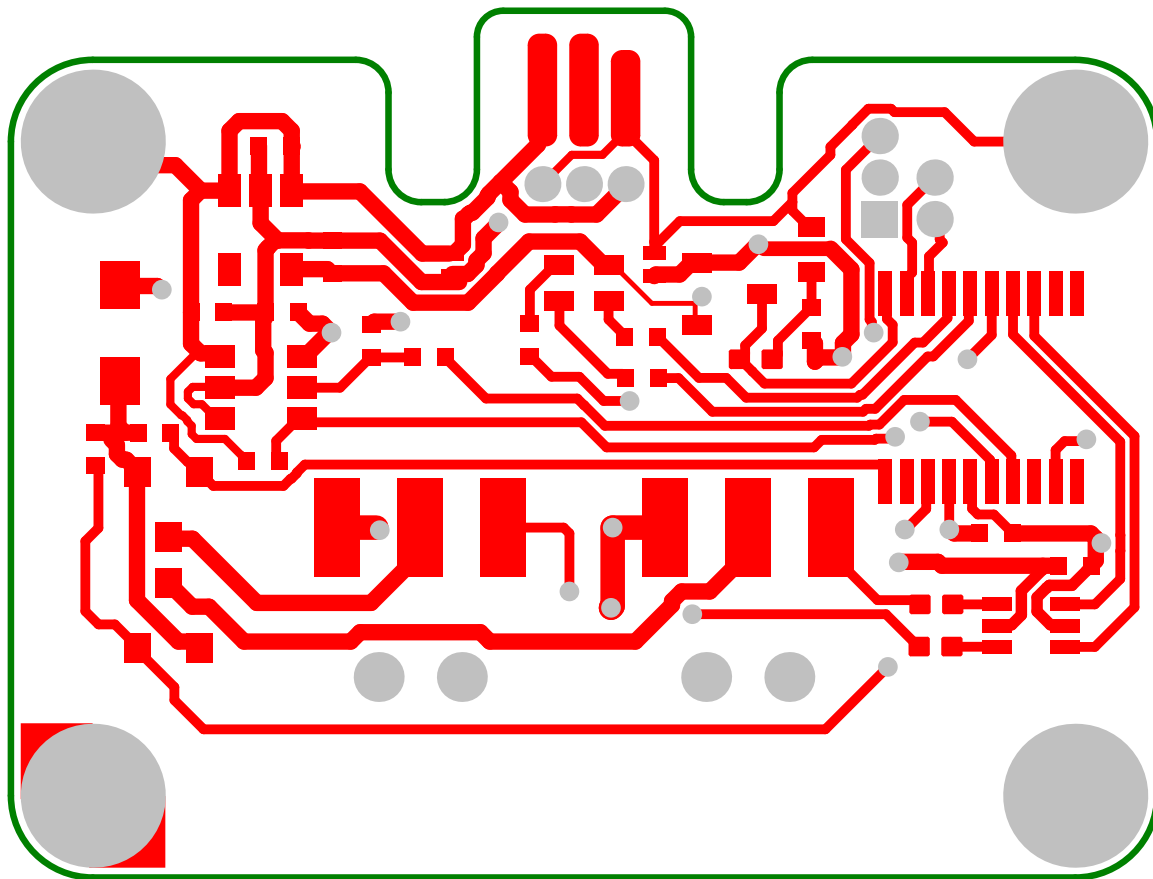


## Fabrication Notes Board Outline



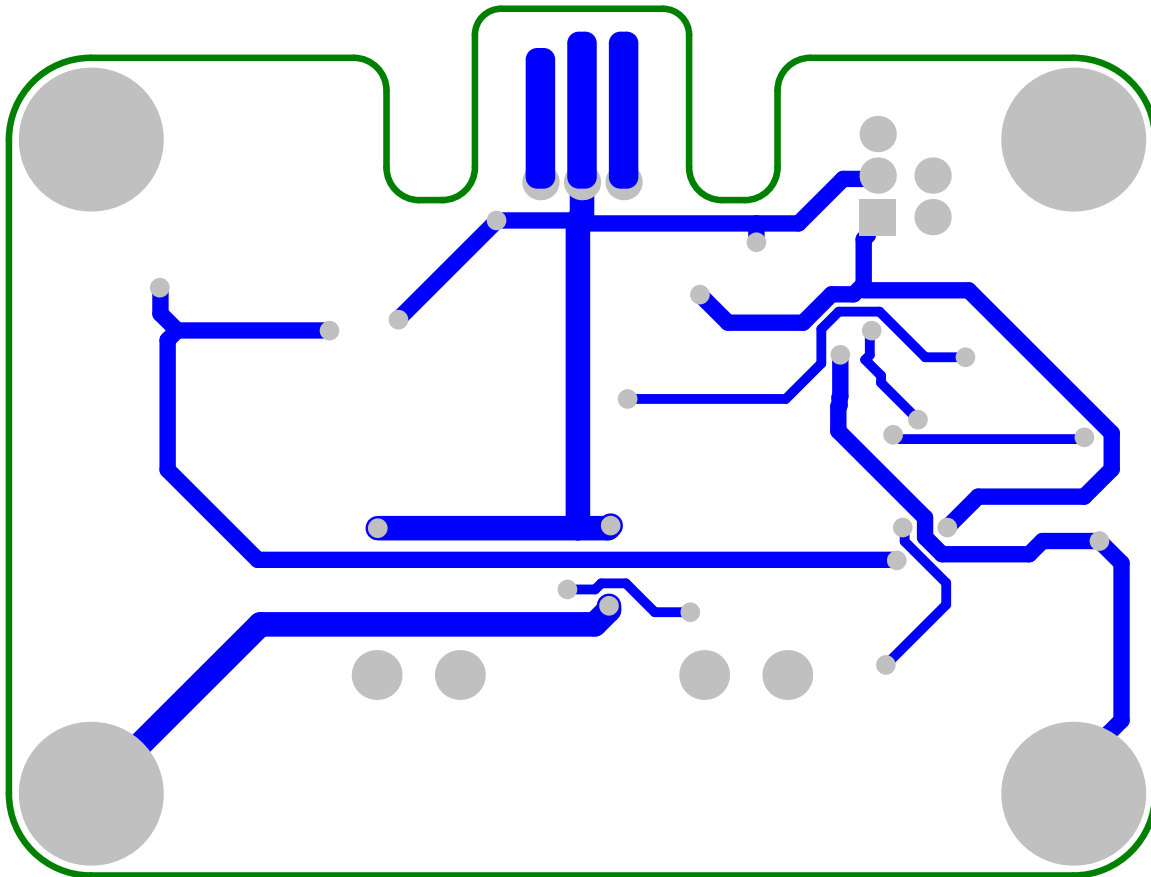
Top Layer

Board Outline



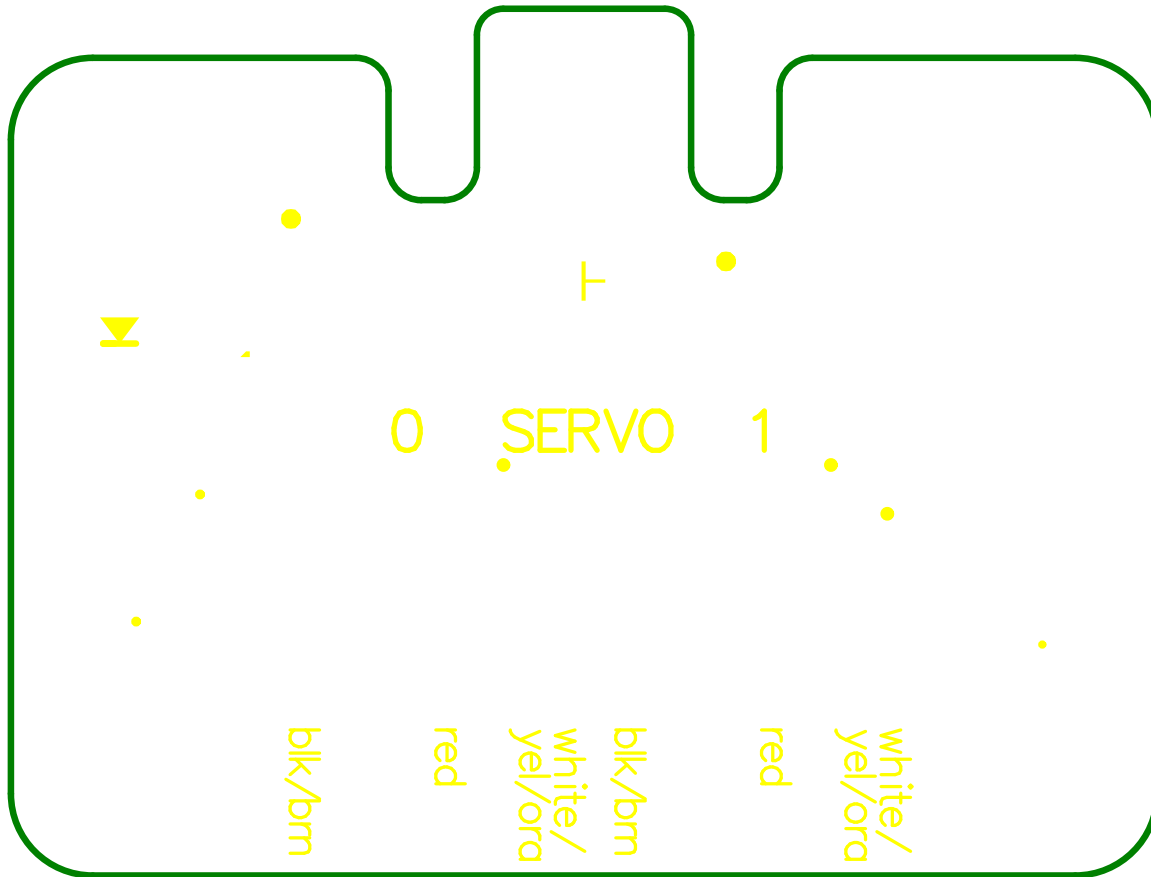
Bottom Layer

Board Outline



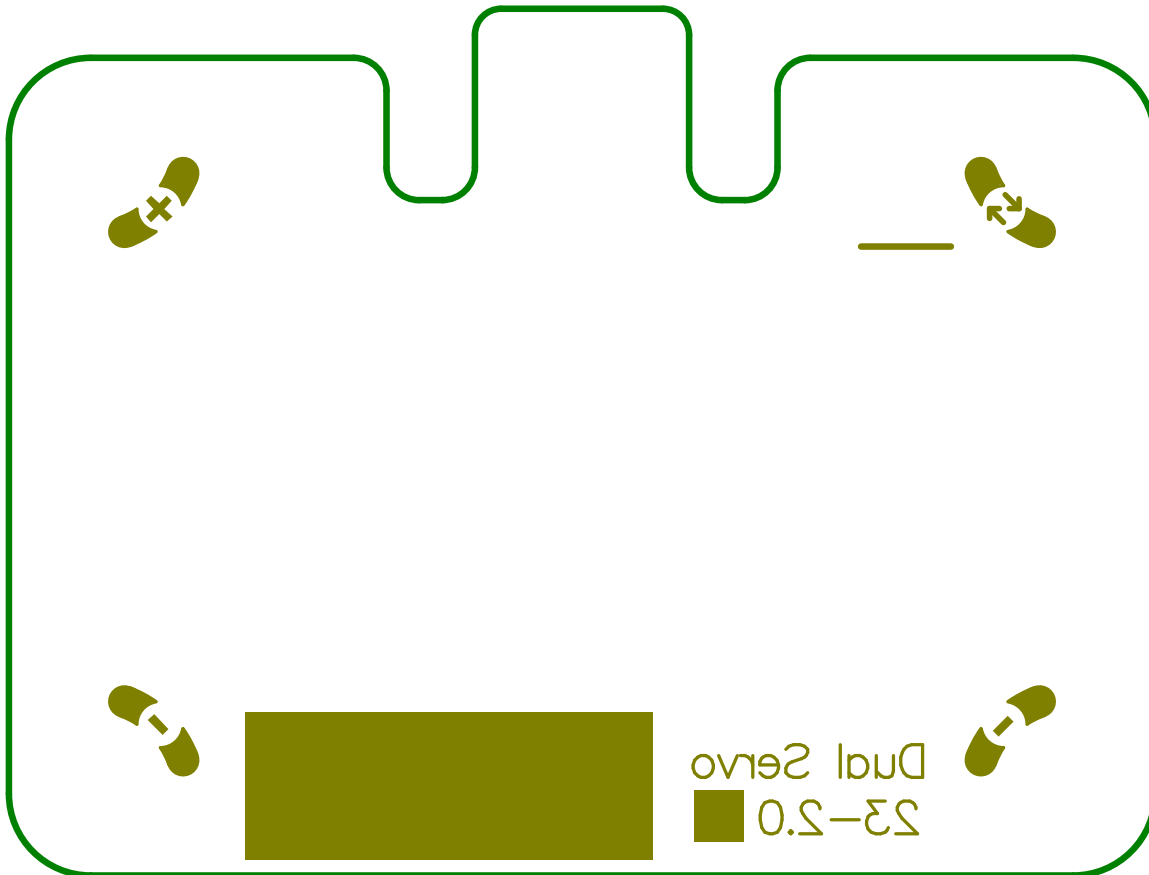


## Board Outline



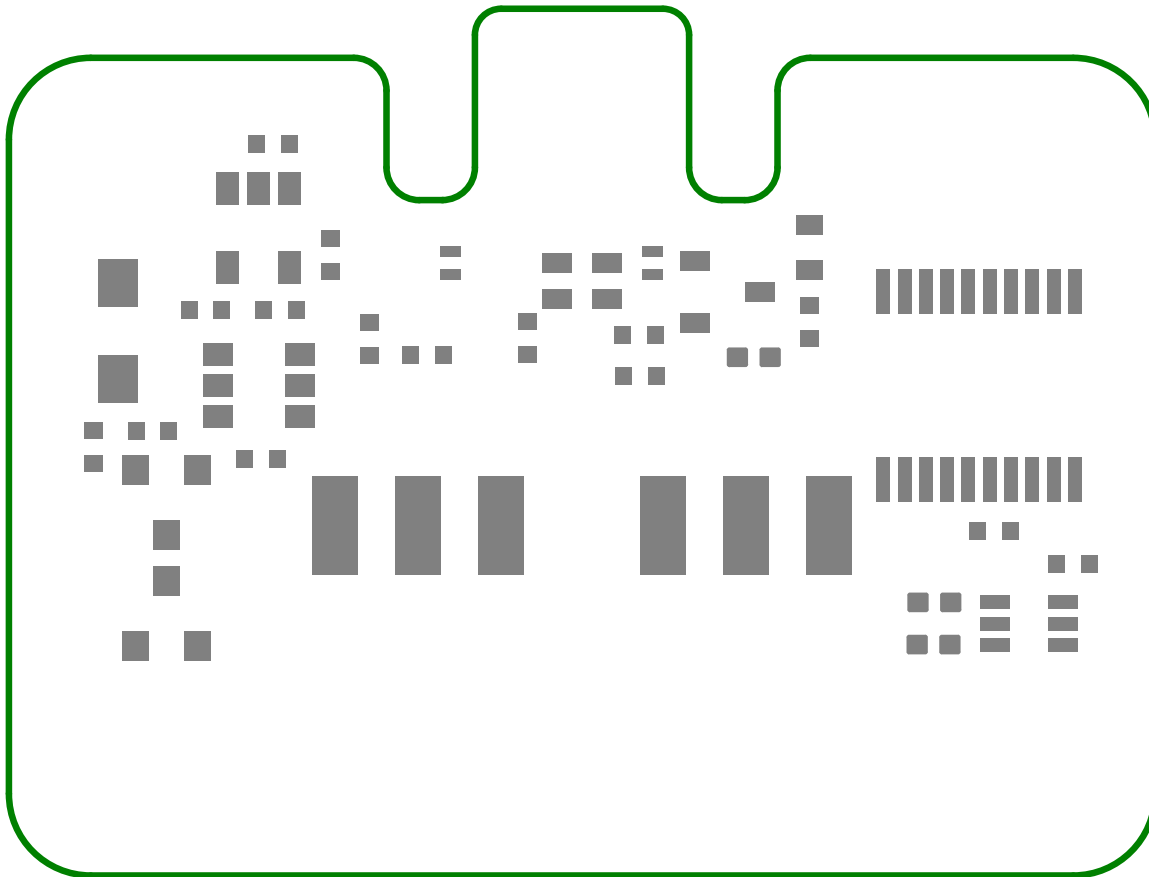
Board Outline

Bottom Overlay



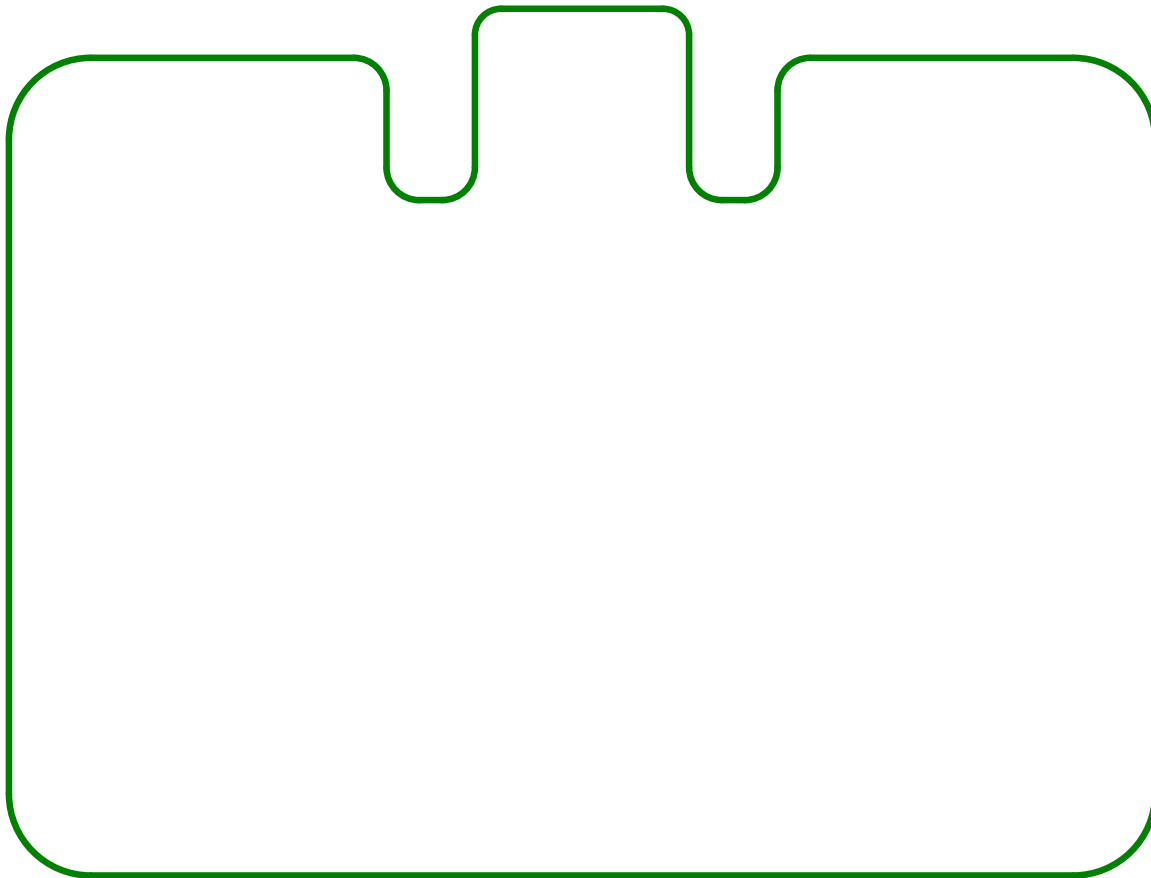
Board Outline

Top Paste



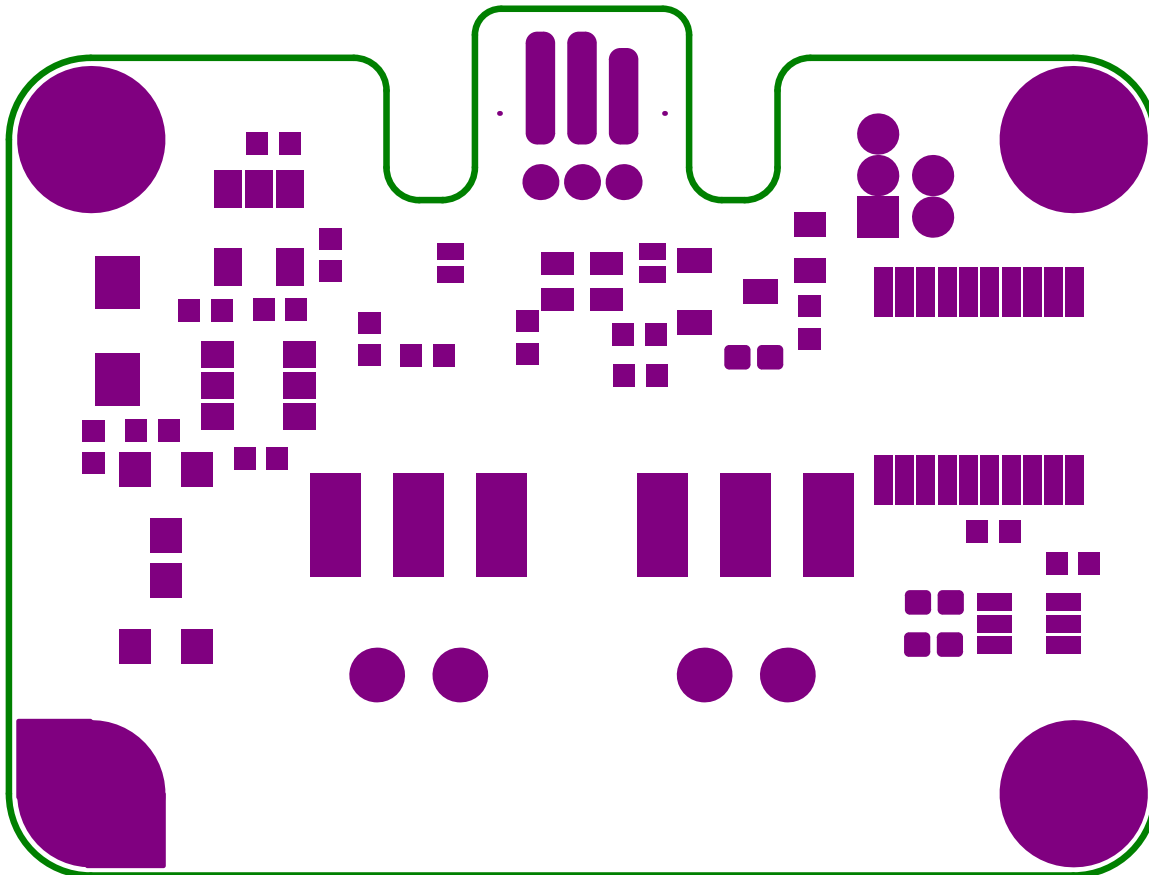
Board Outline

Bottom Paste



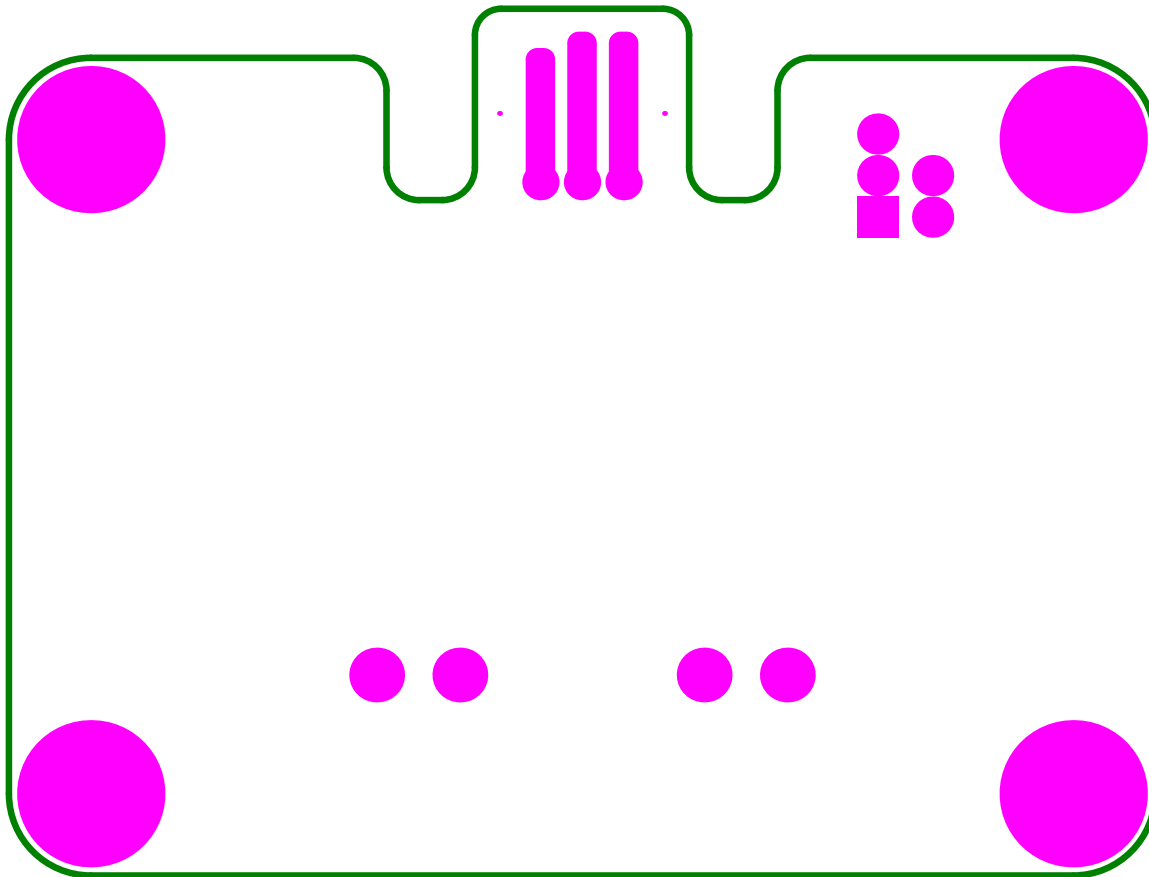
## Board Outline

## Top Solder (resist)



Board Outline

Bottom Solder (resist)



Board Outline

