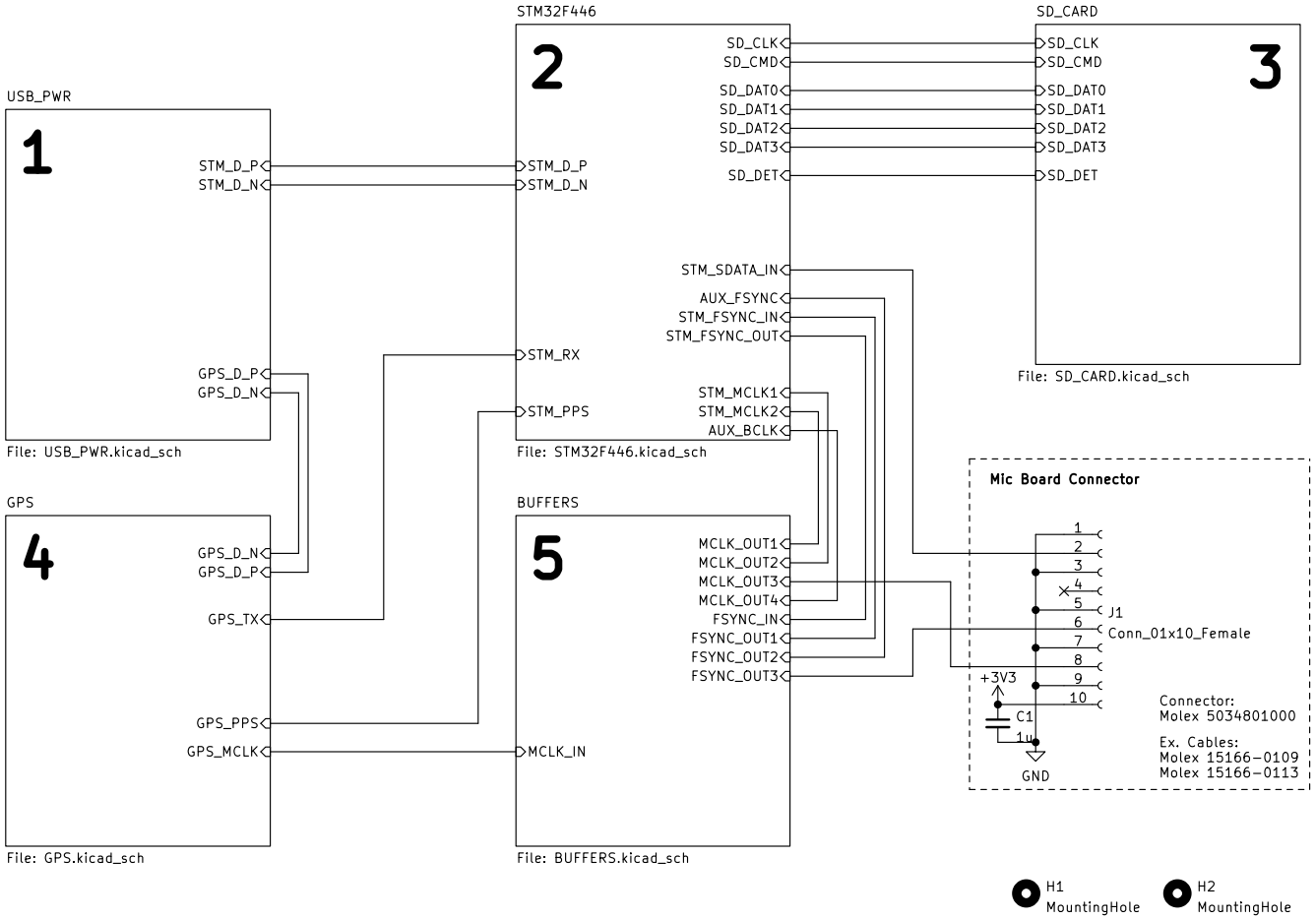
Low-Power Acoustic Array



Theory of Operation

The device is powered via USB or J101.
J101 voltage range between 4.5-13v DC.
Power source is selected with a header jumper on J101.

Micro SD card must be present for normal operation.
SD card is formatted as ExFAT.

USB port 1 (J102) is connected to the STM32 and enumerates as a serial port.
USB port 2 (J103) is connected to the GPS module.

There are two modes of operation (selected with MODE_SEL jumper on J201)
1. Start recording immediately when powered on. (no jumper)
2. Start/stop recording with pushbutton SW201. (jumper)

Microphone board can be connected to J1 or with headers on J201.
Microphone input format is 8-channel TDM with 32-bit frame length.

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Sheet: /
File: LowPowerArray.kicad_sch

Title: Low Power Array

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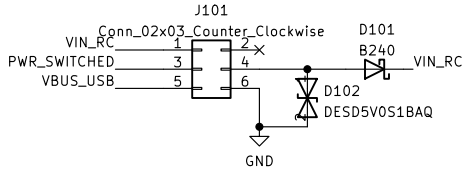
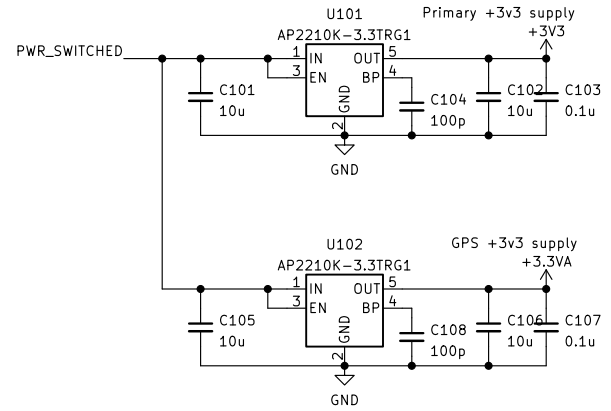
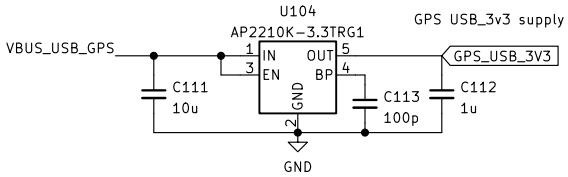
1

RC style connector
4.5 < Vin < 13

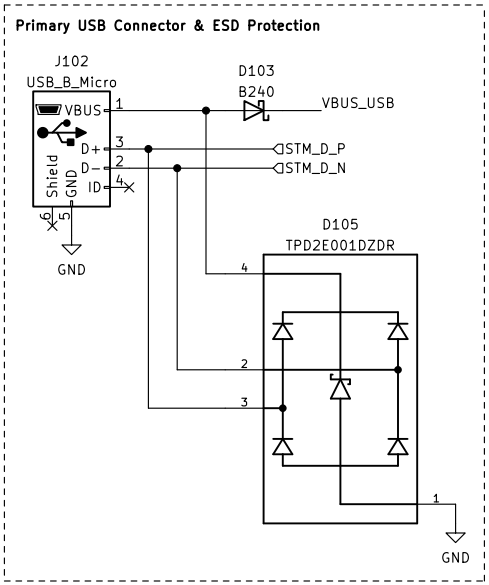


LDO Voltage Regulators

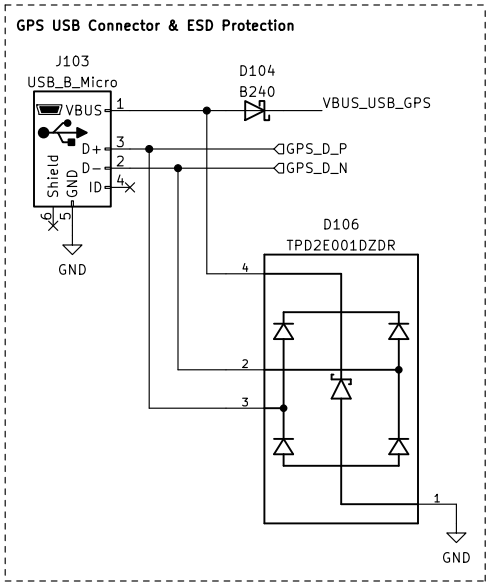




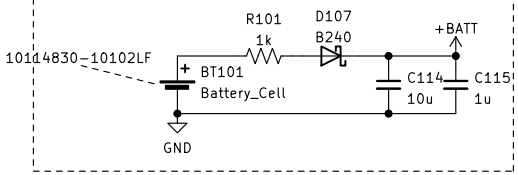
Primary USB Connector & ESD Protection



GPS USB Connector & ESD Protection



Coin Cell Backup Battery



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Title: USB & Power	
Size: USLetter | Date: 2023-02-01	**Rev: 1**
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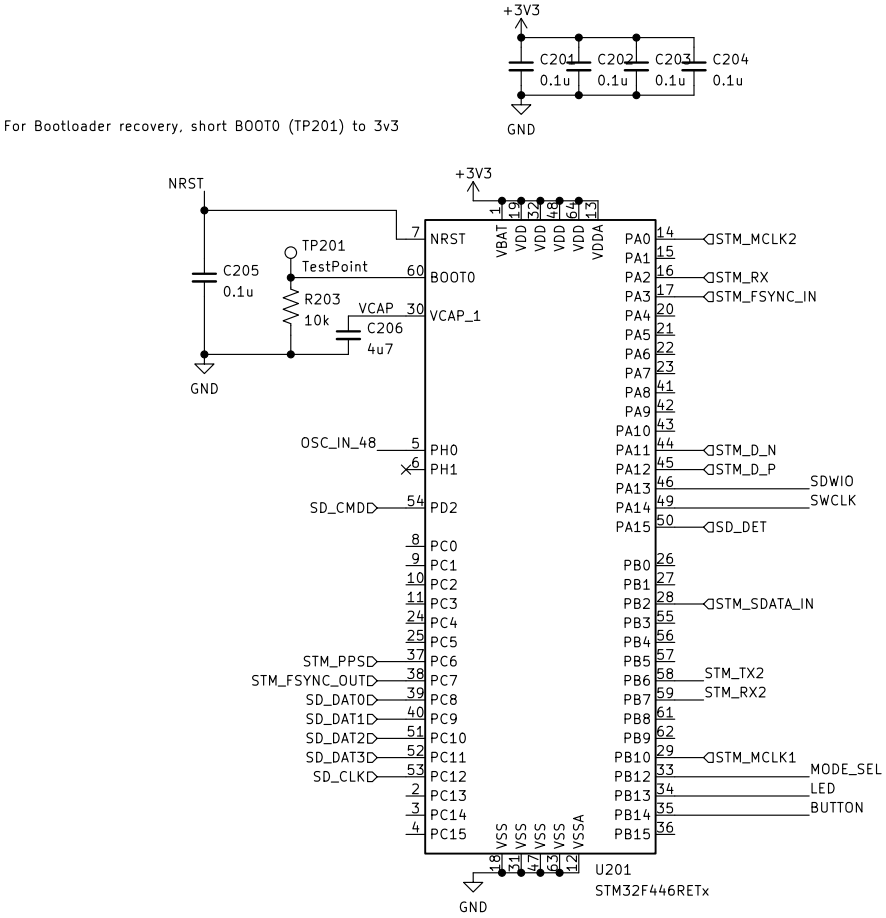

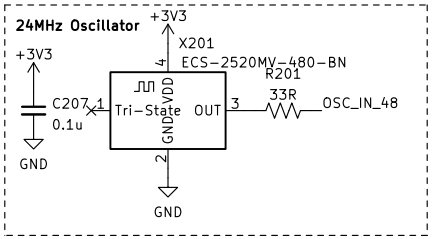

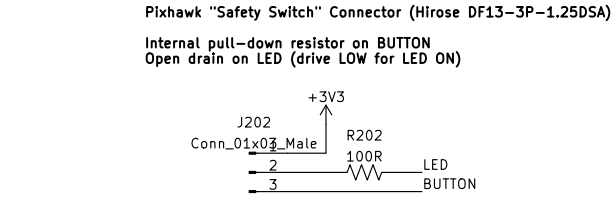

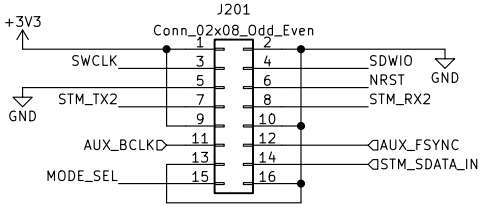

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Title: STM32F446

Size: USLetter	Date: 2023-02-01	**Rev: 1**
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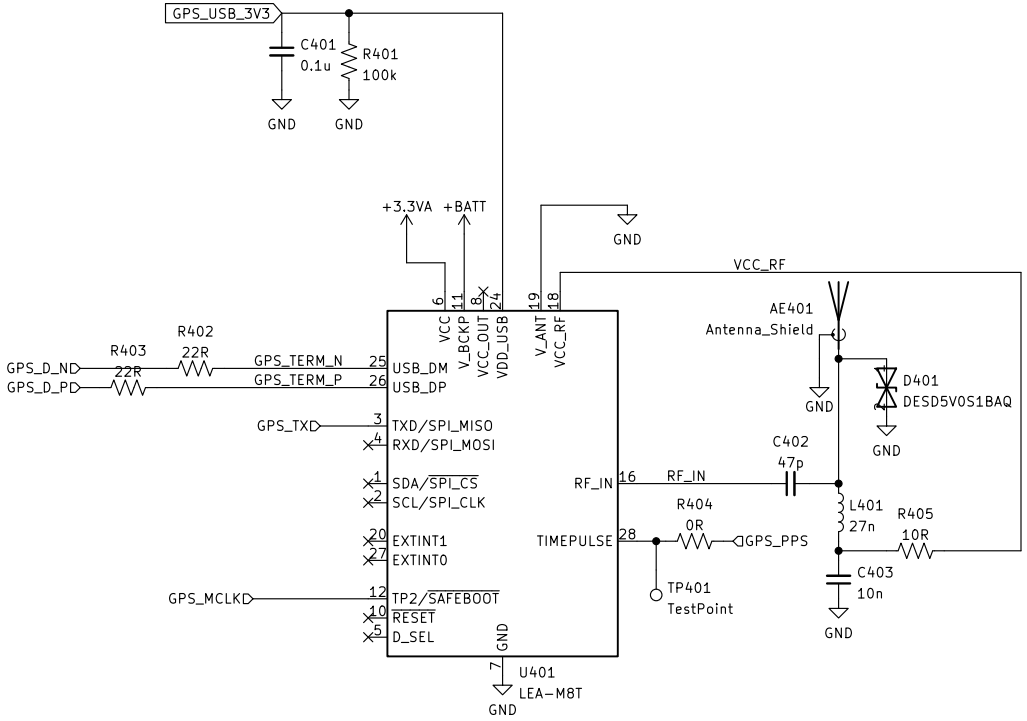

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Size: USLetter	Date: 2023-02-01	**Rev: 1**
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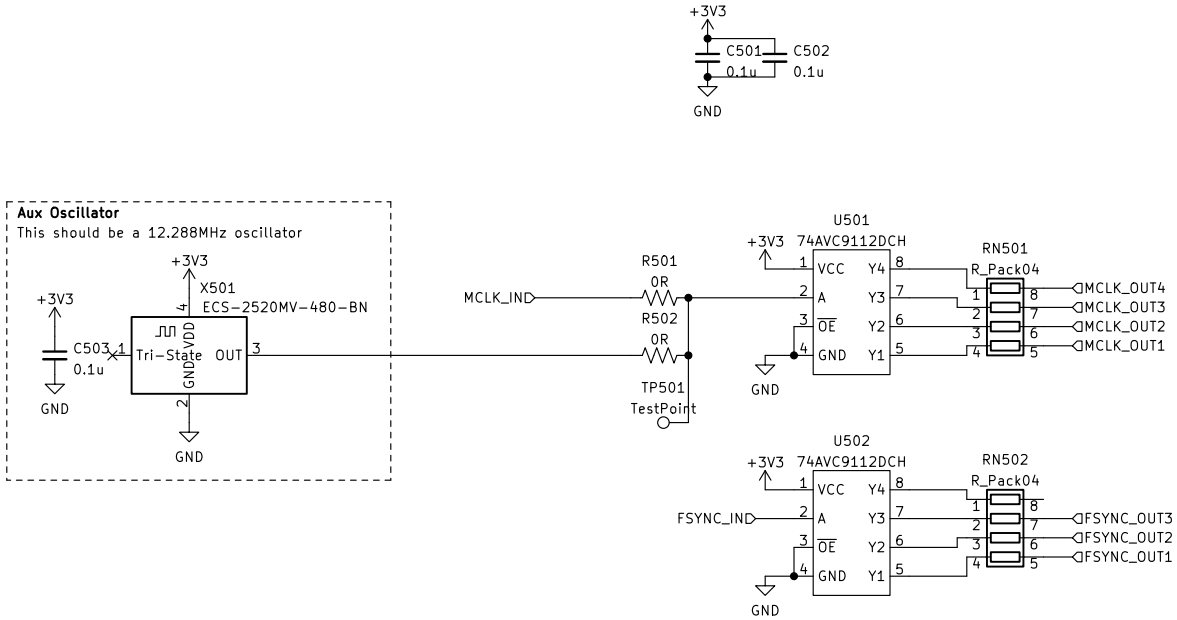

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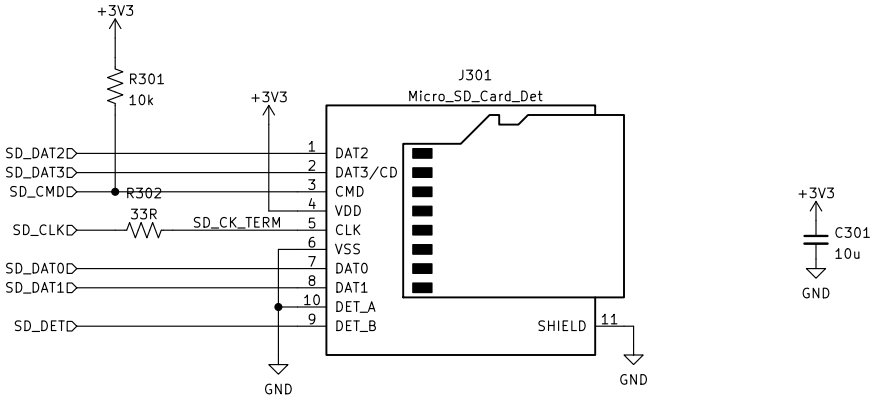
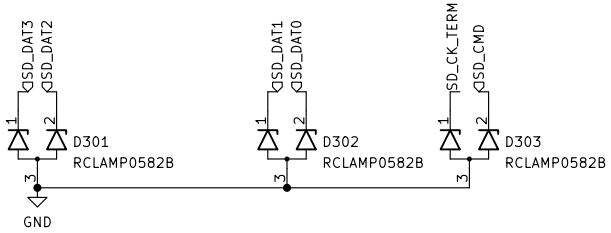
Size: USLetter | Date: 2023-02-01	**Rev: 1**
KiCad E.D.A. kicad (6.0.0-0)	Id: 6/6

3





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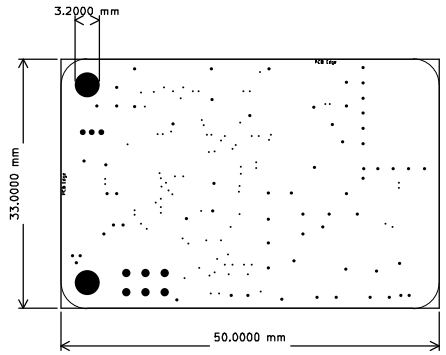
Size: USLetter | Date: 2023-02-01	**Rev: 1**
KiCad E.D.A. kicad (6.0.0-0)	Id: 7/6

Use Sunstone 6-layer stackup (0.062") L06-062-1ozHoz

Layer 1: Signal
Layer 2: GND
Layer 3: PWR
Layer 4: GND
Layer 5: GND
Layer 6: Signal



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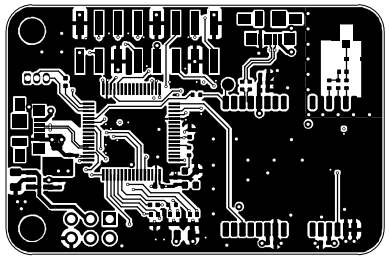
File: LowPowerArray.kicad_pcb

Title: LowPowerArray

Size: USLetter	Date: 2023-02-01	**Rev: 1**
KiCad E.D.A. kicad (6.0.0-0)		Id: 1/1

Layer 1



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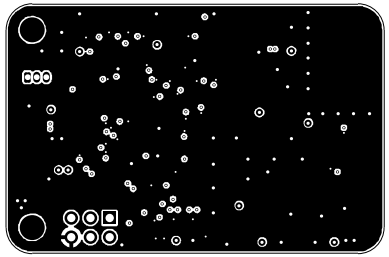
Size: USLetter	Date: 2023-02-01	**Rev: 1**
KiCad E.D.A. kicad (6.0.0-0)		Id: 1/1

Layer 2



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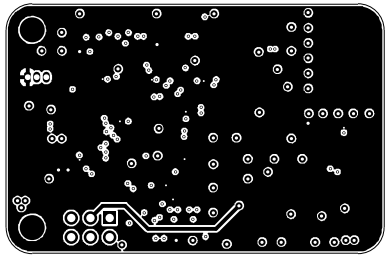
Layer 3



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Sheet:

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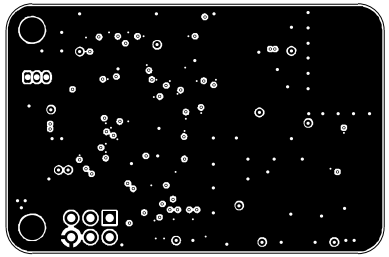
Title: LowPowerArray

Size: USLetter	Date: 2023-02-01	**Rev: 1**
KiCad E.D.A. kicad (6.0.0-0)		Id: 1/1

Layer 4



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Sheet:

File: LowPowerArray.kicad_pcb

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Size: USLetter	Date: 2023-02-01	**Rev: 1**
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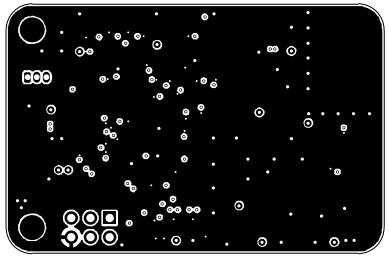
Layer 5



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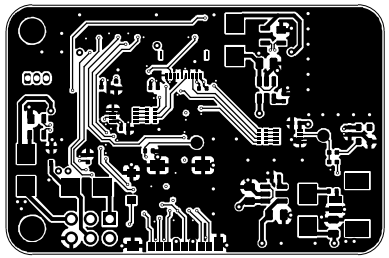
Layer 6



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Sheet:

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