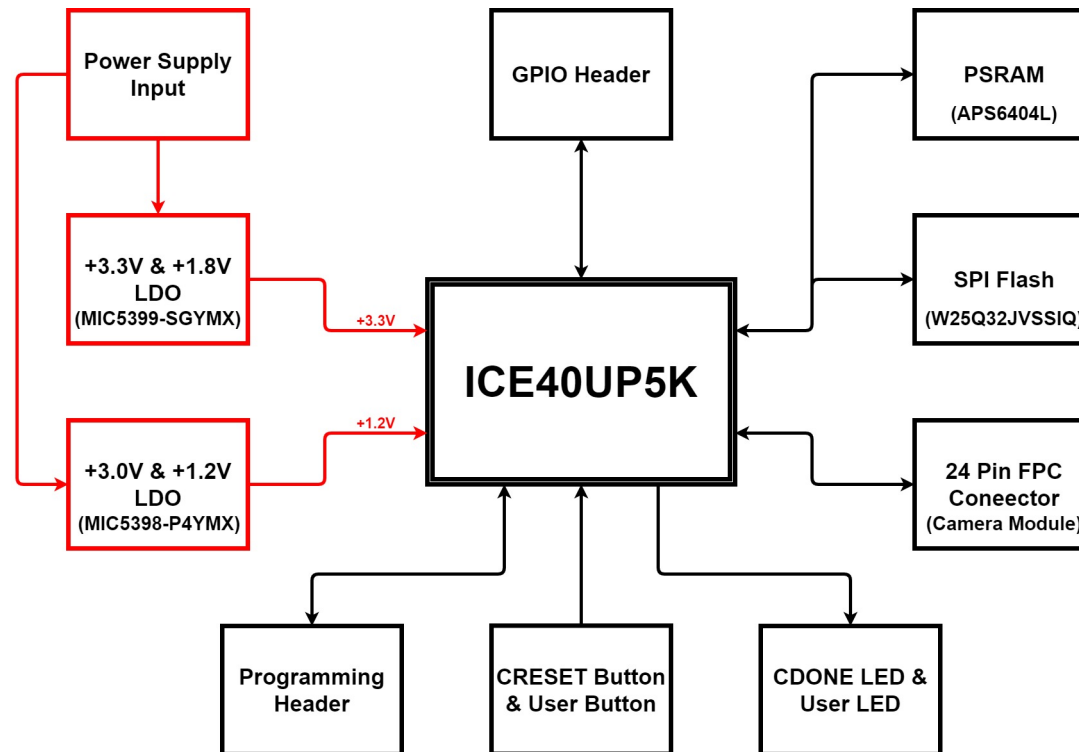


## Block Diagram



Sheet: power\_supply

File: power\_supply.sch

Sheet: ICE40UP5K

File: ICE40UP5K\_SG481TR.sch

Sheet: io\_headers

File: io\_headers.sch

Sheet: OV7670\_spi-flash\_SRAM

File: OV7670\_spi-flash\_SRAM.sch



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Sheet: /

File: fpga-play.sch

**Title: fpga.play**

Size: A4 Date: 2020-06-19

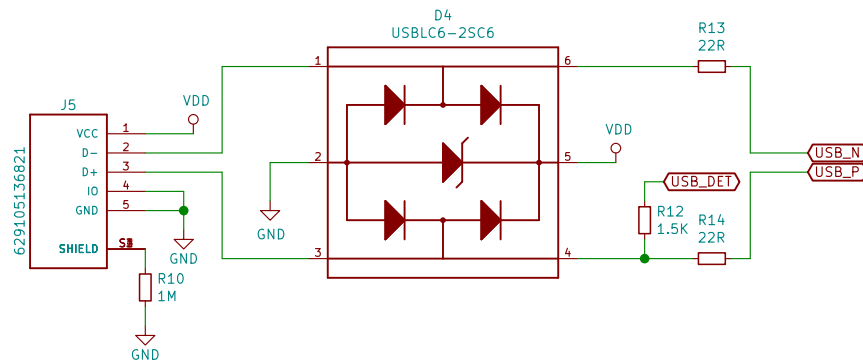
KiCad E.D.A. kicad (5.1.5)-3

**Rev: 0.1**

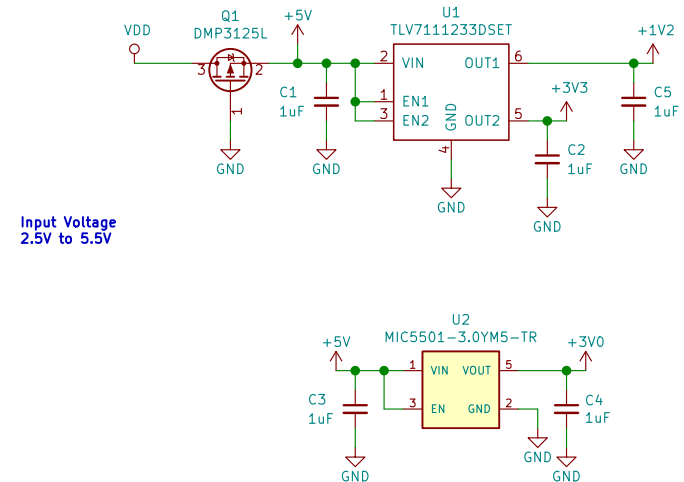
Id: 1/5



## USB Bootloader



## Power Supply



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Sheet: /power\_supply/  
 File: power\_supply.sch

**Title: fpga.play**

Size: A4 Date: 2020-06-19

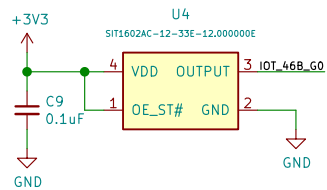
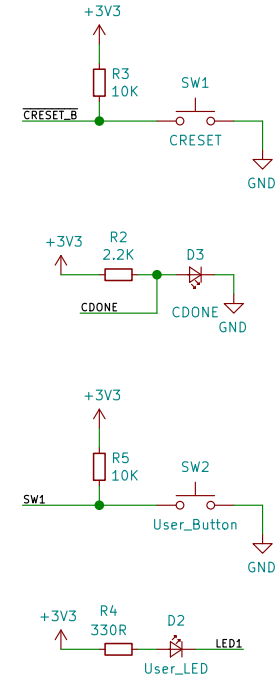
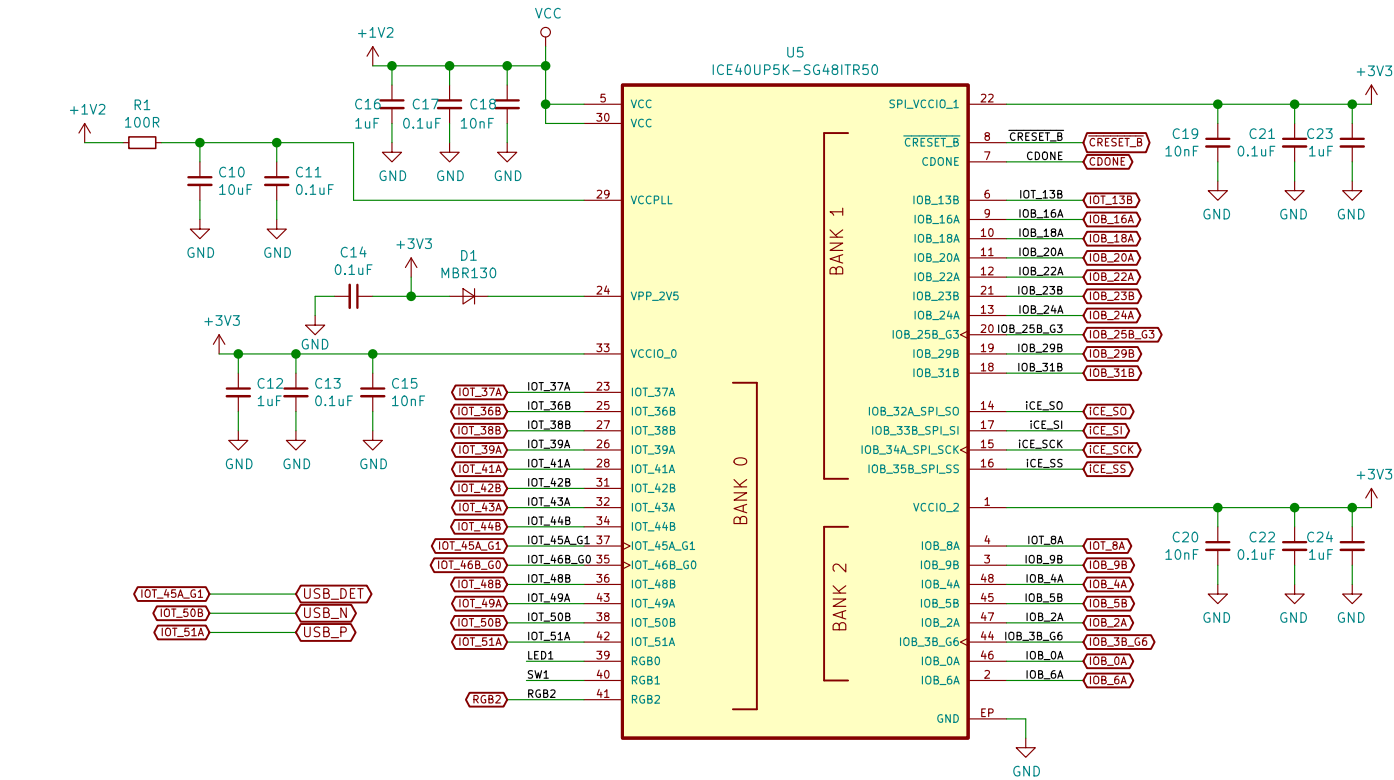
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**Rev: 0.1**

Id: 2/5



# ICE40UP5K



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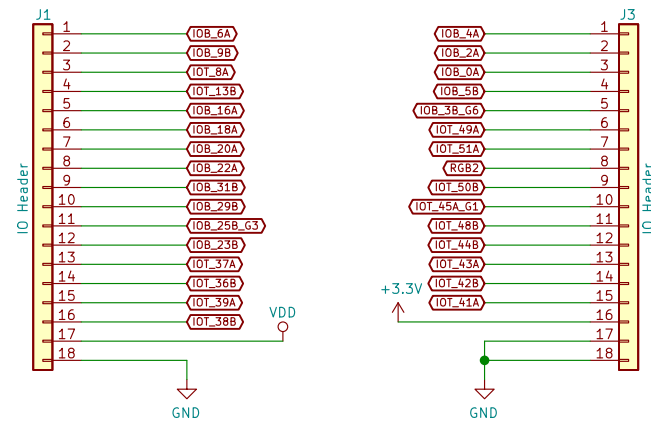
**Electronut Labs**  
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 File: ICE40UP5K\_SG48ITR.sch

**Title: fpga.play**

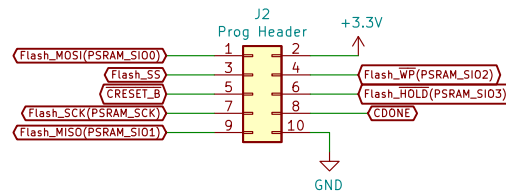
Size: A4 | Date: 2020-06-19  
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**Rev: 0.1**  
 Id: 3/5

## GPIO Header



## Programming Header



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Sheet: /io\_headers/  
 File: io\_headers.sch

**Title: fpga.play**

Size: A4 Date: 2020-06-19

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**Rev: 0.1**

Id: 4/5

**PSRAM**

U7  
ESP-PSRAM64

VCC 8  
CE 1  
SCLK 6  
SI/SIO(0) 5  
SO/SIO(1) 2  
SIO(2) 3  
SIO(3) 7  
VSS 4

PSRAM\_CE PSRAM\_CE  
R11 10K  
R6 10K  
R7 10K  
R8 10K  
R9 10K

+3V3  
C25 0.1uF  
GND

**Flash Memory**

U6  
W25Q32JVSSIQ

VCC 8  
CS 1  
CLK 6  
DI(100) 5  
DO(101) 2  
WP(102) 3  
HOLD/1RST(103) 7  
GND 4

JP1: Cut the 1-2 trace for programming FPGA RAM

Flash\_SS Flash\_SS  
Flash\_SCK(PSRAM\_SCK) Flash\_SCK(PSRAM\_SCK)  
Flash\_MOSI(PSRAM\_SIO0) Flash\_MOSI(PSRAM\_SIO0)  
Flash\_MISO(PSRAM\_SIO1) Flash\_MISO(PSRAM\_SIO1)  
Flash\_WP(PSRAM\_SIO2) Flash\_WP(PSRAM\_SIO2)  
Flash\_HOLD(PSRAM\_SIO3) Flash\_HOLD(PSRAM\_SIO3)

+3V3  
C26 0.1uF  
GND

**24 Pin FPC Connector**

J4  
687124183622

AVDD 4  
INT 18  
AVDD 11  
SCL 21  
IOVDD 10  
SDA 22  
VSYSNC 6  
HSYSNC 16  
TRIG 7  
MCLK 8  
PCLK0/\_SCK 17  
GND 2  
GND 15  
NC 1  
NC 24

+3V3  
R15 10K  
R16 10K

IOB\_6A  
IOB\_8A  
IOB\_25B\_G3  
IOB\_18A  
IOB\_0A  
IOB\_20A  
IOB\_38\_G6  
IOB\_31B  
IOB\_2A  
IOB\_29B  
IOB\_5B  
IOB\_37A  
IOB\_48B

IOB\_9B  
IOB\_16A  
IOB\_24A  
IOB\_23B  
IOB\_4A

PSRAM\_CE  
ICE\_SS  
ICE\_SCK  
IOB\_45A\_G1  
IOB\_46B\_G0  
RGB2  
Flash\_SS  
Flash\_SCK(PSRAM\_SCK)  
Flash\_HOLD(PSRAM\_SIO3)  
Flash\_WP(PSRAM\_SIO2)

Flash\_MOSI(PSRAM\_SIO0) ICE\_S0  
Flash\_MISO(PSRAM\_SIO1) ICE\_S1

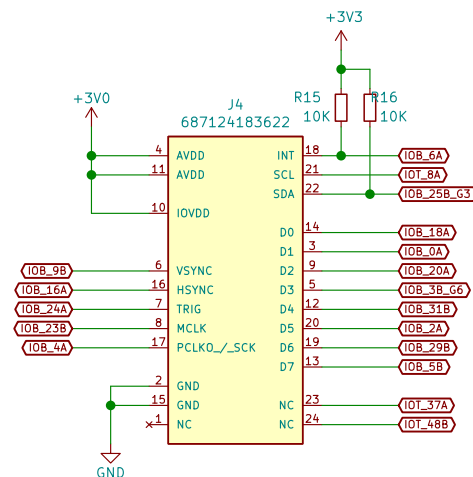
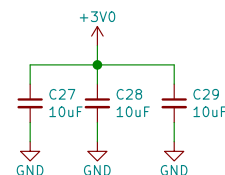
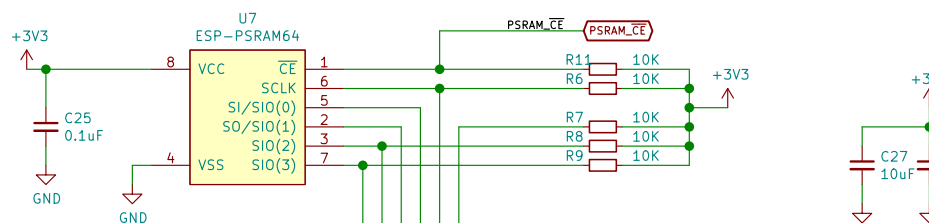
JP2  
JP3

For programming Flash  
For programming FPGA RAM

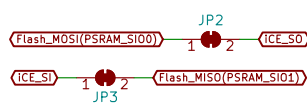
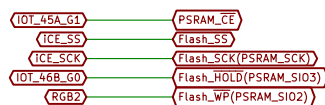
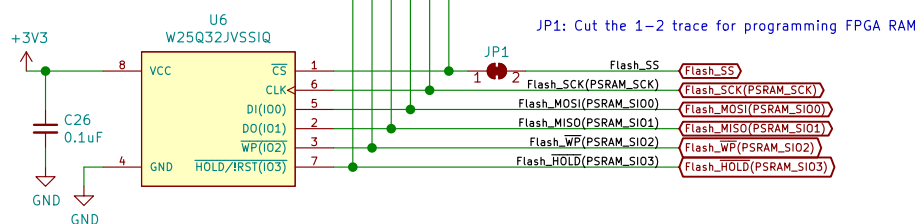
For programming FPGA RAM directly cut the 1-2 traces from JP2 and JP3 and connect them as 1-1 and 2-2.

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**Electronut Labs**  
Sheet: /OV7670\_spi-flash\_SRAM/  
File: OV7670\_spi-flash\_SRAM.sch  
**Title: fpga.play**  
Size: A4 Date: 2020-06-19 Rev: 0.1  
KiCad E.D.A. kicad (5.1.5)-3 Id: 5/5

## 24 Pin FPC Connector



## Flash Memory



- == For programming Flash
- || For programming FPGA RAM

For programming FPGA RAM directly cut the 1-2 traces from JP2 and JP3 and connect them as 1-1 and 2-2.

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## Electronut Labs

Sheet: /OV7670\_spi-flash\_SRAM/  
File: OV7670\_spi-flash\_SRAM.sch

**Title:** fpga.play

|          |                  |
|----------|------------------|
| Size: A4 | Date: 2020-06-19 |
|----------|------------------|

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Rev: 0.1

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