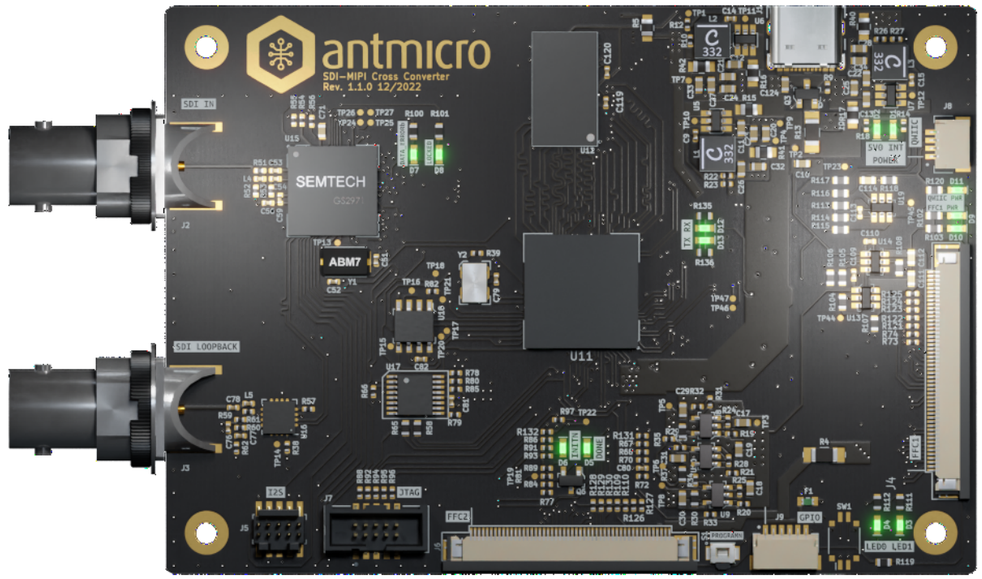

SDI

File: sdi.kicad_sch

FPGA

File: fpga.kicad_sch

FPGA Power

File: FPGA_Power.kicad_sch

Power Supply

File: supply.kicad_sch

DDR3

File: ddr3.kicad_sch

Peripherals

File: peripherals.kicad_sch

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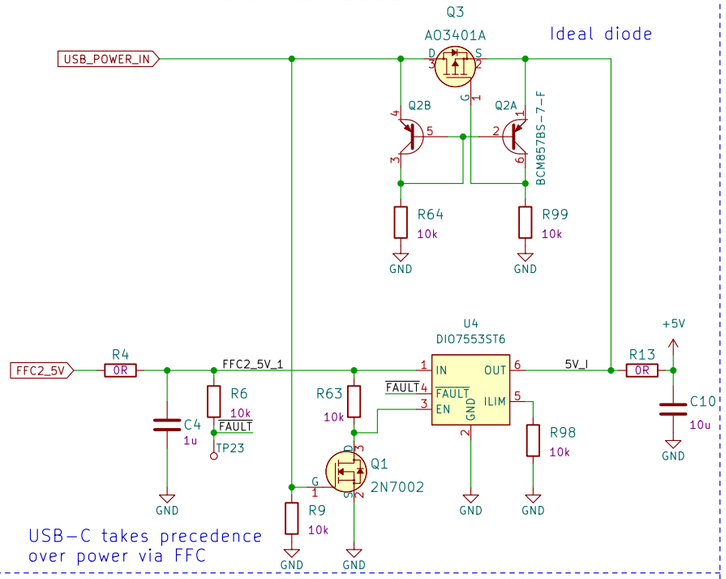
Sheet: /
File: sdi–mipi–video–converter.kicad_sch

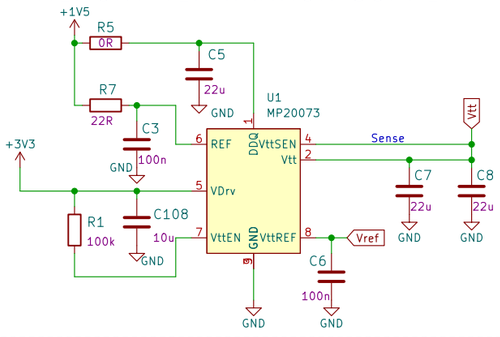
Title: SDI–MIPI Video Converter

Size: A3	Date: 2022–12–20	**Rev: 1.1.0**
KiCad E.D.A.	eeschema 6.0.5+dfsg–1~bpo11+1	Id: 1/7

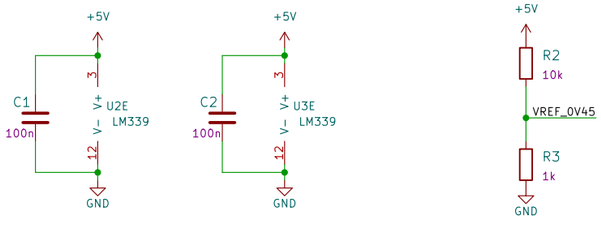
SUPPLY SELECTION



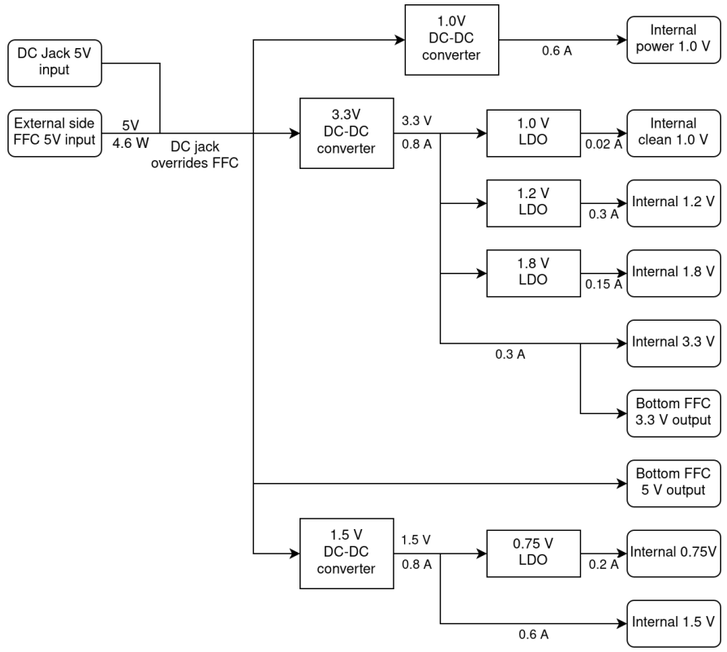
DDR MEMORY TERMINATION SUPPLY



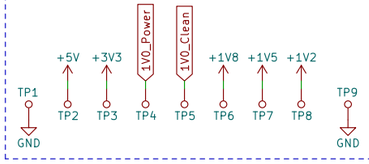
POWER INDICATORS



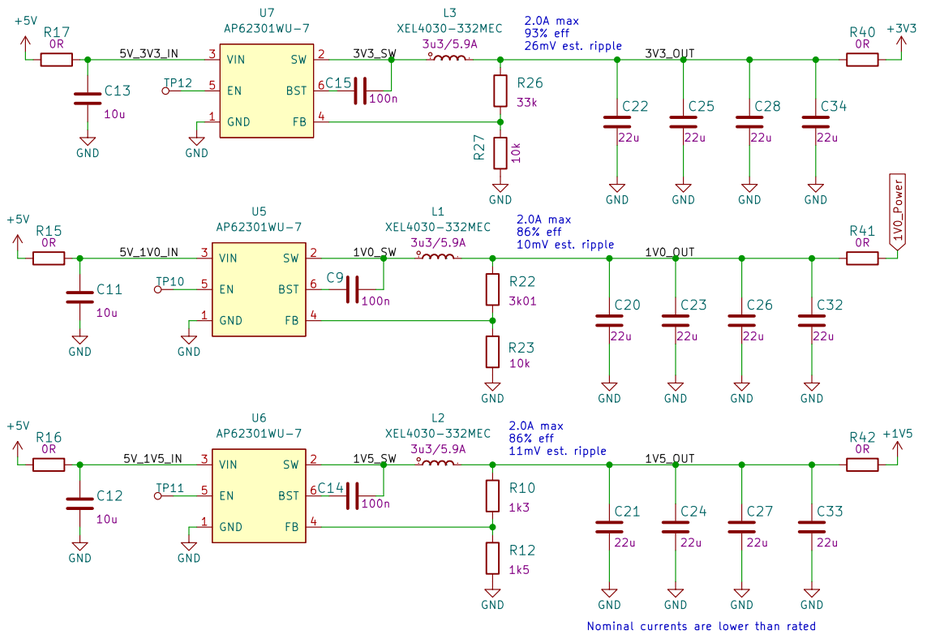
PS BLOCK DIAGRAM



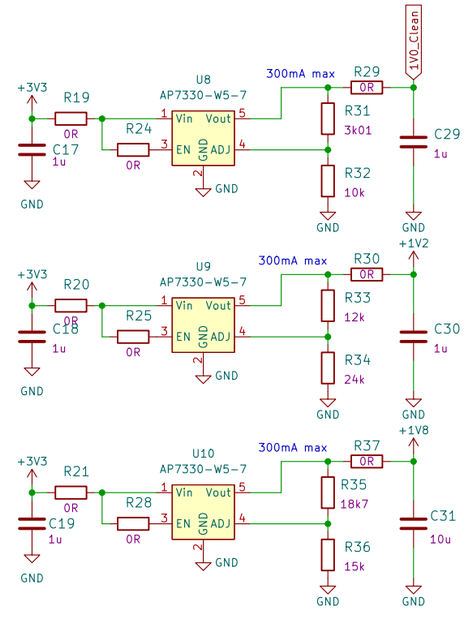
TEST POINTS



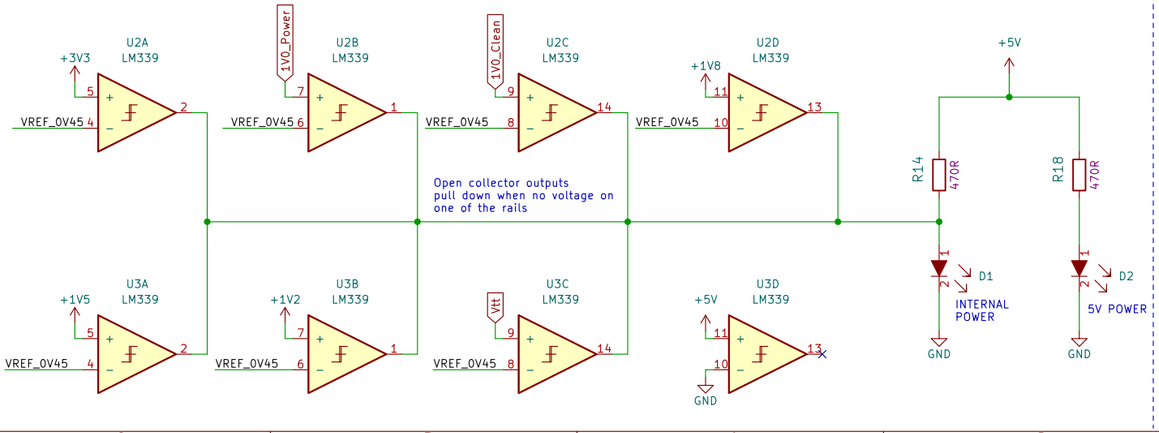
CONVERTERS



LDOs



POWER INDICATORS (continued)



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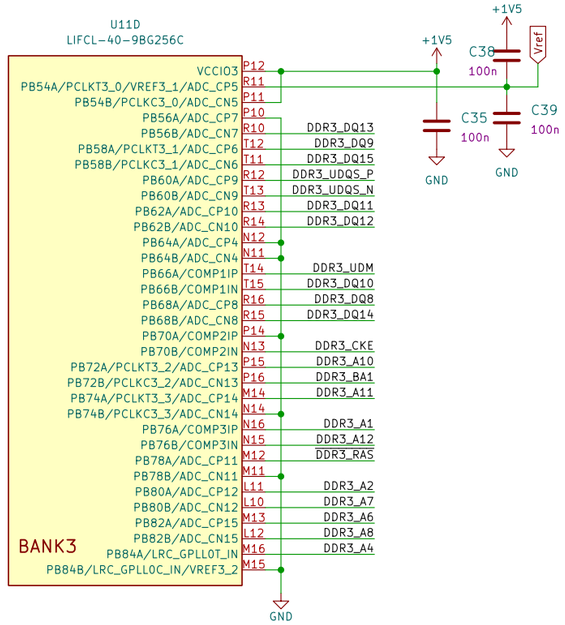
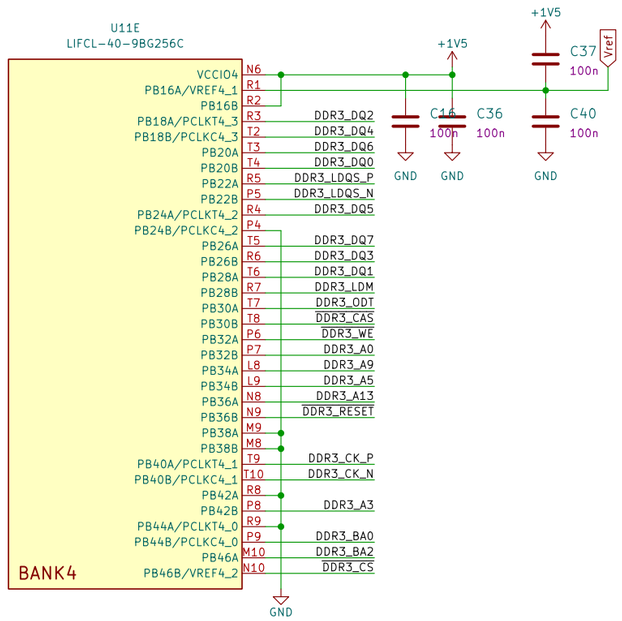
Sheet: /Power Supply/
File: supply.kicad_sch

Title: SDI-MIPI Video Converter

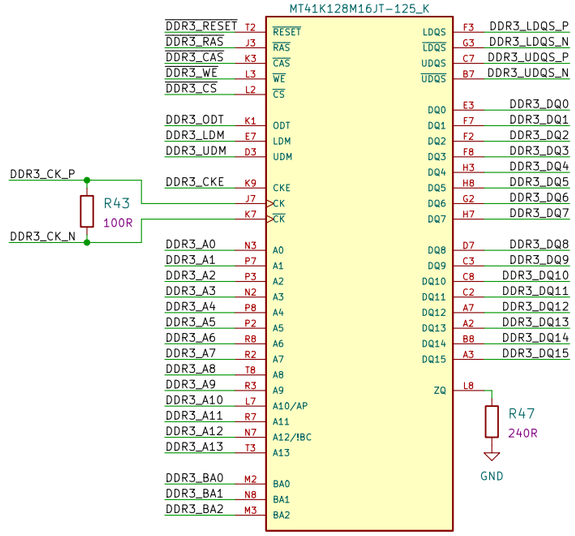
Size: A3	Date: 2022-12-20	**Rev: 1.1.0**
KiCad E.D.A. eeschema 6.0.5+dfsg-1~bpo11+1		Id: 2/7

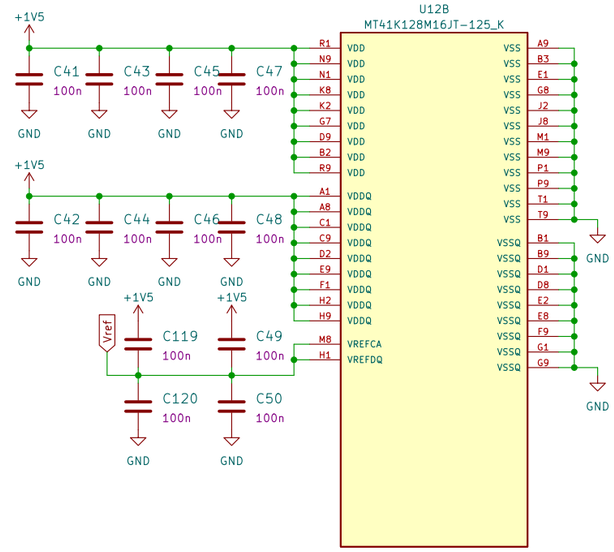
FPGA



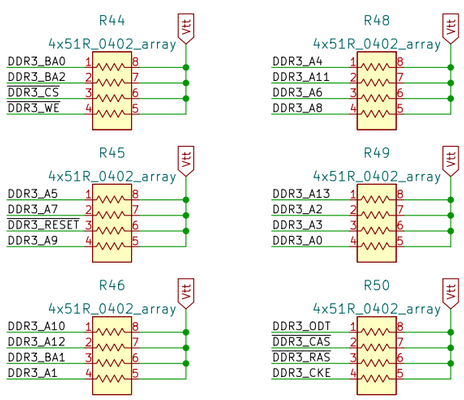


RAM





TERMINATION



Signal terminations can be rearanged for easier routing

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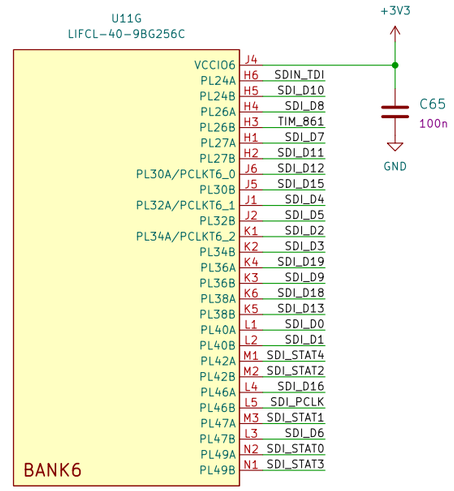
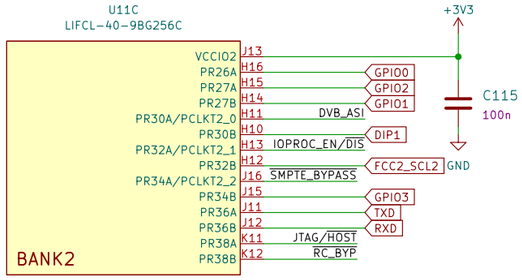
Sheet: /DDR3/
File: ddr3.kicad_sch

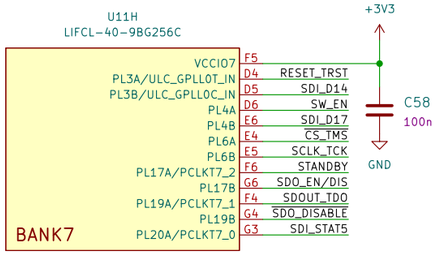
Title: SDI-MIPI Video Converter

Size: A3	Date: 2022-12-20	**Rev: 1.1.0**
KiCad E.D.A.	eeschema 6.0.5+dfsg-1~bpo11+1	Id: 3/7

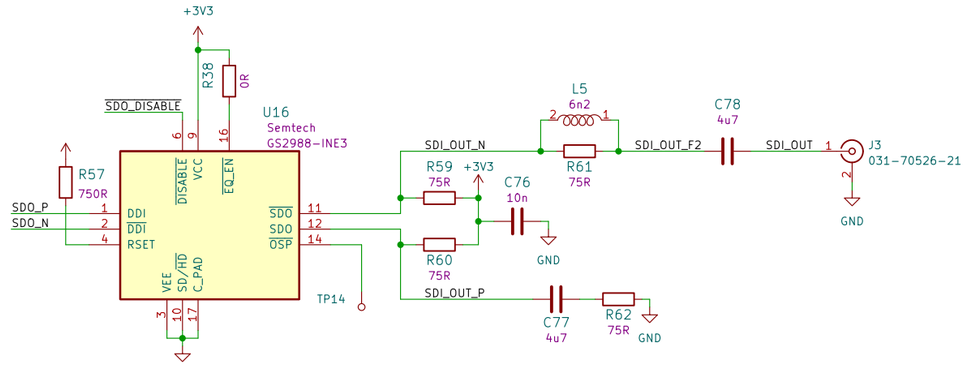
FPGA



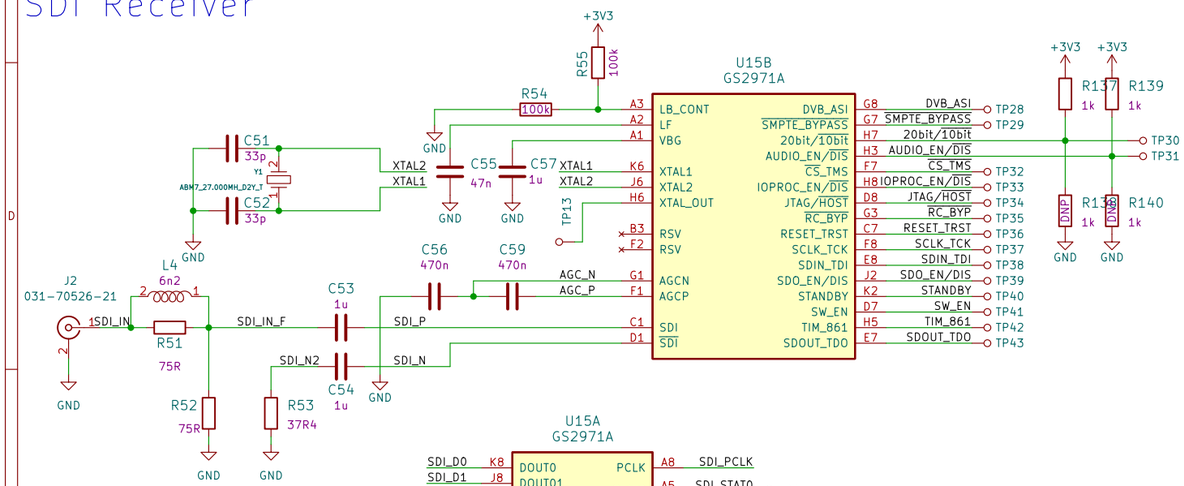


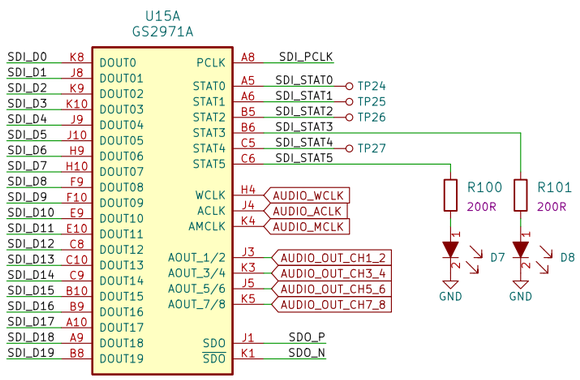


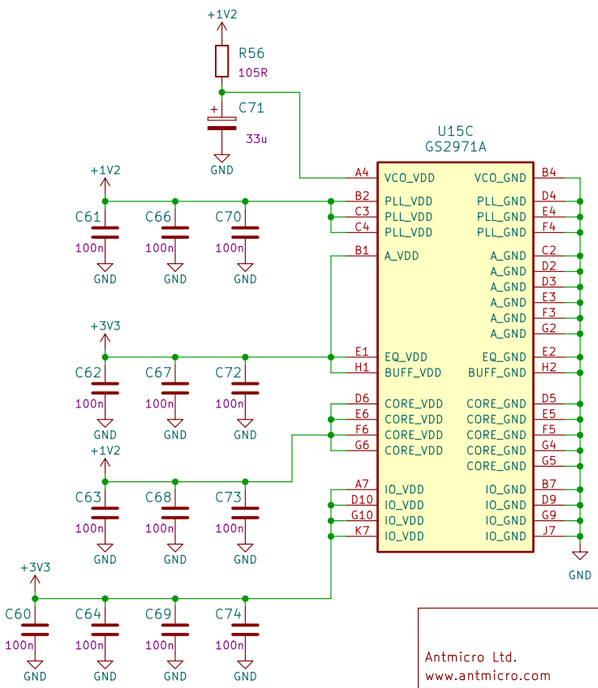
Cable driver



SDI Receiver







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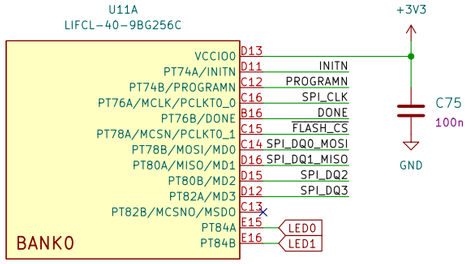
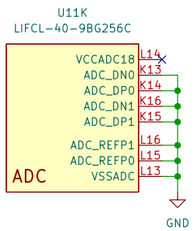
Sheet: /SDI/
File: sdi.kicad_sch

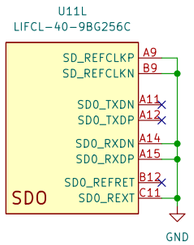
Title: SDI–MIPI Video Converter

Size: A3	Date: 2022–12–20	**Rev: 1.1.0**
KiCad E.D.A.	eeschema 6.0.5+dfsg–1~bpo11+1	Id: 5/7

FPGA

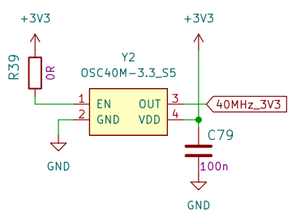






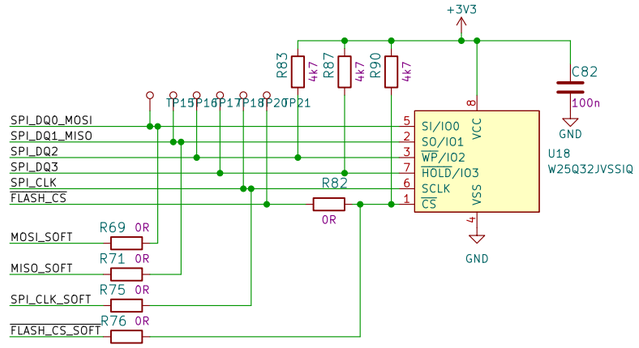
OSCILLATOR

OPTIONAL, NORMALLY DNP

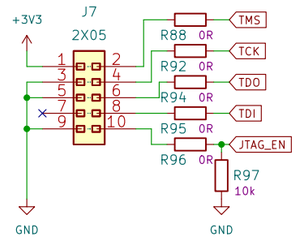


FPGA CONFIGURATION

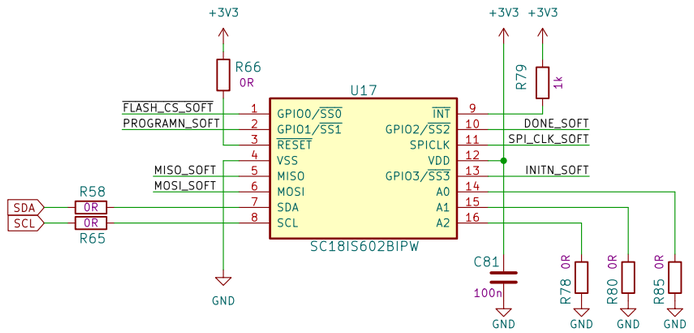
CONFIGURATION FLASH



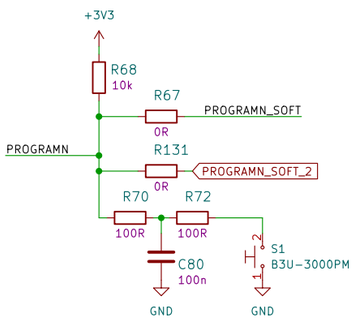
JTAG CONNECTOR



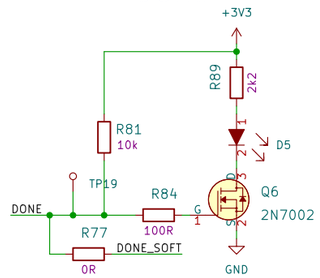
I2C TO SPI BRIDGE



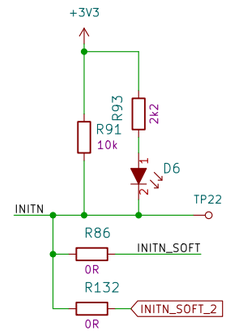
PROGRAMN



DONE



INITN



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Sheet: /FPGA/ File: fpga.kicad_sch	
Title: SDI-MIPI Video Converter	
Size: A3 | Date: 2022-12-20	**Rev: 1.1.0**
KiCad E.D.A. eeschema 6.0.5+dfsg-1~bpo11+1	Id: 6/7

FPGA

Hard CSI

U11I
LIFCL-40-9BG256C

PHY0
DPHY0_CKN D2 MIPI0_CLK_N
DPHY0_CKP D1 MIPI0_CLK_P
DPHY0_DN0 E2 MIPI0_D0_N
DPHY0_DP0 E1 MIPI0_D0_P
DPHY0_DN1 C2 MIPI0_D1_N
DPHY0_DP1 C1 MIPI0_D1_P
DPHY0_DN2 F2 MIPI0_D2_N
DPHY0_DP2 F1 MIPI0_D2_P
DPHY0_DN3 B2 MIPI0_D3_N
DPHY0_DP3 B1 MIPI0_D3_P

U11J
LIFCL-40-9BG256C

PHY1
DPHY1_CKN B5 MIPI1_CLK_N
DPHY1_CKP A5 MIPI1_CLK_P
DPHY1_DN0 B4 MIPI1_D0_N
DPHY1_DP0 A4 MIPI1_D0_P
DPHY1_DN1 B6 MIPI1_D1_N
DPHY1_DP1 A6 MIPI1_D1_P
DPHY1_DN2 B3 MIPI1_D2_N
DPHY1_DP2 A3 MIPI1_D2_P
DPHY1_DN3 B7 MIPI1_D3_N
DPHY1_DP3 A7 MIPI1_D3_P

Soft CSI

U11F
LIFCL-40-9BG256C

BANK5
VCCIO5 N5
PB4A/CDR_RXP0/VREF5_1/ADC_CP0/COMP1P P3 MIPI2_D0_P
PB4B/CDR_RXN0/ADC_CN0/COMP1N N3 MIPI2_D0_N
PB6A/PCLKT5_0/CDR_RXP1/ADC_CP1/COMP2P N4 MIPI2_D1_P
PB6B/PCLKC5_0/CDR_RXN1/ADC_CN1/COMP2N M4 MIPI2_D1_N
PB8A/PCLKT5_1/LLC_GPLL0T_IN/ADC_CP3 L7 MIPI2_D2_P
PB8B/PCLKC5_1/LLC_GPLL0C_IN/ADC_CN3 M7 MIPI2_D2_N
PB10A/PCLKT5_2/ADC_CP2/COMP3P L6 MIPI2_D3_P
PB10B/PCLKC5_2/ADC_CN2/COMP3N K7 MIPI2_D3_N
PB12A/PCLKT5_3 P1 MIPI2_CLK_P
PB12B/PCLKC5_3/VREF5_2 P2 MIPI2_CLK_N

+1V2
C83 100n
GND

U11B
LIFCL-40-9BG256C

BANK1
VCCIO1 F13
JTAG_EN D10 JTAG_EN
PR3B F9 FFC2_VSYNC0
PR4A E9 FFC2_RESET
PR4B E10 FFC2_VSYNC1
PR6A E12 FFC1_PEN
PR6B/TMS/SCSN E11 TMS
PR8A F10 FFC1_RESET
PR8B/TDI/SSI F11 TDI
PR10A E13 FFC2_SDA2
PR10B/TDO/SSO E14 TDO
PR11A/SDA/USER_SDA G9 SDA
PR11B/SCL/USER_SCL G10 SCL
PR13A/TCK/SCLK F14 TCK
PR13B F15 DIP0
PR15A G11 FFC1_SDA1
PR15B G12 FFC1_SCL1
PR17A/PCLKT1_2 G13 FFC1_SDA2
PR17B G14 FFC1_SCL2
PR19A/PCLKT1_1 F16 FFC1_VSYNC0
PR19B G16 FFC1_VSYNC1
PR20A/PCLKT1_0 G15 40MHz_3V3

+3V3
C84 100n
GND

CSI Connectors

FFC1
POWER SOURCE

J4
WE_687150144522_ONE-SIDE

MIPI0_D3_N 1
MIPI0_D3_P 2
MIPI0_D2_N 3
MIPI0_D2_P 4
MIPI0_D1_N 5
MIPI0_D1_P 6
MIPI0_D0_N 7
MIPI0_D0_P 8
9
MIPI0_CLK_N 10
MIPI0_CLK_P 11
12
13
14
15
16
17
MIPI2_D3_N 19
MIPI2_D3_P 20
MIPI2_D2_N 21
MIPI2_D2_P 22
MIPI2_D1_N 23
MIPI2_D1_P 24
MIPI2_D0_N 25
MIPI2_D0_P 26
27
MIPI2_CLK_N 28
MIPI2_CLK_P 29
30
FFC1_VSYNC0 R73 OR 31
FFC1_RESET R74 OR 32
FFC1_VSYNC1 R121 OR 33
34
35
36
37
38
FCC1_SDA1 R122 OR 39
FCC1_SCL1 OR 40
FCC1_SDA2 R123 OR 41
FCC1_SCL2 R124 OR 42
R125 OR 43
44
45
46
47
48
49
50
SH

FFC1_3V3
FFC1_5V
R102 200R
R103 470R
D9
D10
C111 1u
C112 1u
GND

FFC2
POWER SINK

J6
WE_687150144522_ONE-SIDE

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
MIPI1_D3_N 19
MIPI1_D3_P 20
MIPI1_D2_N 21
MIPI1_D2_P 22
MIPI1_D1_N 23
MIPI1_D1_P 24
MIPI1_D0_N 25
MIPI1_D0_P 26
27
MIPI1_CLK_N 28
MIPI1_CLK_P 29
30
FFC2_VSYNC0 R128 OR 31
FFC2_RESET R129 OR 32
FFC2_VSYNC1 R130 OR 33
34
35
36
37
38
SDA R109 OR 39
SCL OR 40
R110 41
FCC2_SDA2 R126 OR 42
FCC2_SCL2 OR 43
R127 OR 44
45
46
47
FFC2_3V3
48
FFC2_5V 49
To power supply 50
SH

GND

I2S CONNECTOR

J5
FTSH-105-01-F-DV-K

AUDIO_ACLK 1 2 AUDIO_ACLK
AUDIO_WCLK 3 4 AUDIO_WCLK
AUDIO_OUT_CH1_2 5 6 AUDIO_OUT_CH5_6
AUDIO_OUT_CH3_4 7 8 AUDIO_OUT_CH7_8
9 10 AUDIO_MCLK
GND

GPIO CONNECTOR

+3V3 F1 04671.25NR
3V3_MISC
GPIO0
GPIO1
GPIO2
GPIO3
QWIIC_PEN R119 0R
GND

J9
SM06B-SRSS-TB(LF)(SN)
1 2 3 4 5 6
S2 SHIELD

J10
DNP
TSM-106-01-T-SH
1 2 3 4 5 6

USER LEDs

LED0
LED1
R111 200R
R112 200R
D3
D4
GND

USER SWITCH

DIP0
DIP1
SW1
CVS-02B
GND

QWIIC CONNECTOR

QWIIC_3V3
J8
SM04B-SRSS-TB-LF-SN
1 2 3 4
S2 SHIELD
SDA R116 0R
SCL 0R R117
GND

QWIIC_3V3
R120 200R
D11
GND

+3V3
U19
DIO7553ST6
IN OUT
FAULT ILIM
EN GND
C113 100n
QWIIC_PEN
R114 10k
QW_FLT
R115 DNP 10k
R118 15k
C114 1u
QWIIC_3V3
GND

+3V3
R113 10k
TP45
QW_FLT

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FFC1 POWER SWITCH

+3V3
C109 100n
R104 10k
U13
DIO7553ST6
IN OUT
FAULT ILIM
EN GND
R105 10k
FFC1_PEN
R107 15k
FFC1_3V3
GND

+5V
C110 100n
TP44
U14
DIO7553ST6
R106 DNP 10k
R108 15k
FFC1_5V
GND

USB-C CONNECTOR

J1
USB4105-GF-A
VBUS A4
CC1 A5 R11 5k1
CC2 B5 5k1 R8
D- A7
D- B7 USB_DN
D+ A6
D+ B6 USB_DP
SBU1 A8
SBU2 B8
SHIELD S1
GND A1
GND

C124 1u
C122 100n
USB_POWER_IN
FTDI_VCCIO
R133 27R USB_D2N
27R USB_D2P
R134
C117 47p
C121 47p
C123 100n

U20
FT230XQ-R
3V3OUT VCCIO
VCC
USBDM
USBDP
RESET
GND GND GND
TXD
RXD
RTS
CTS
CBUS0
CBUS1
CBUS2
CBUS3
PROGRAMN_SOFT_2
INITN_SOFT_2
TP46
TP47
R135 200R RX D12
R136 200R TX D13

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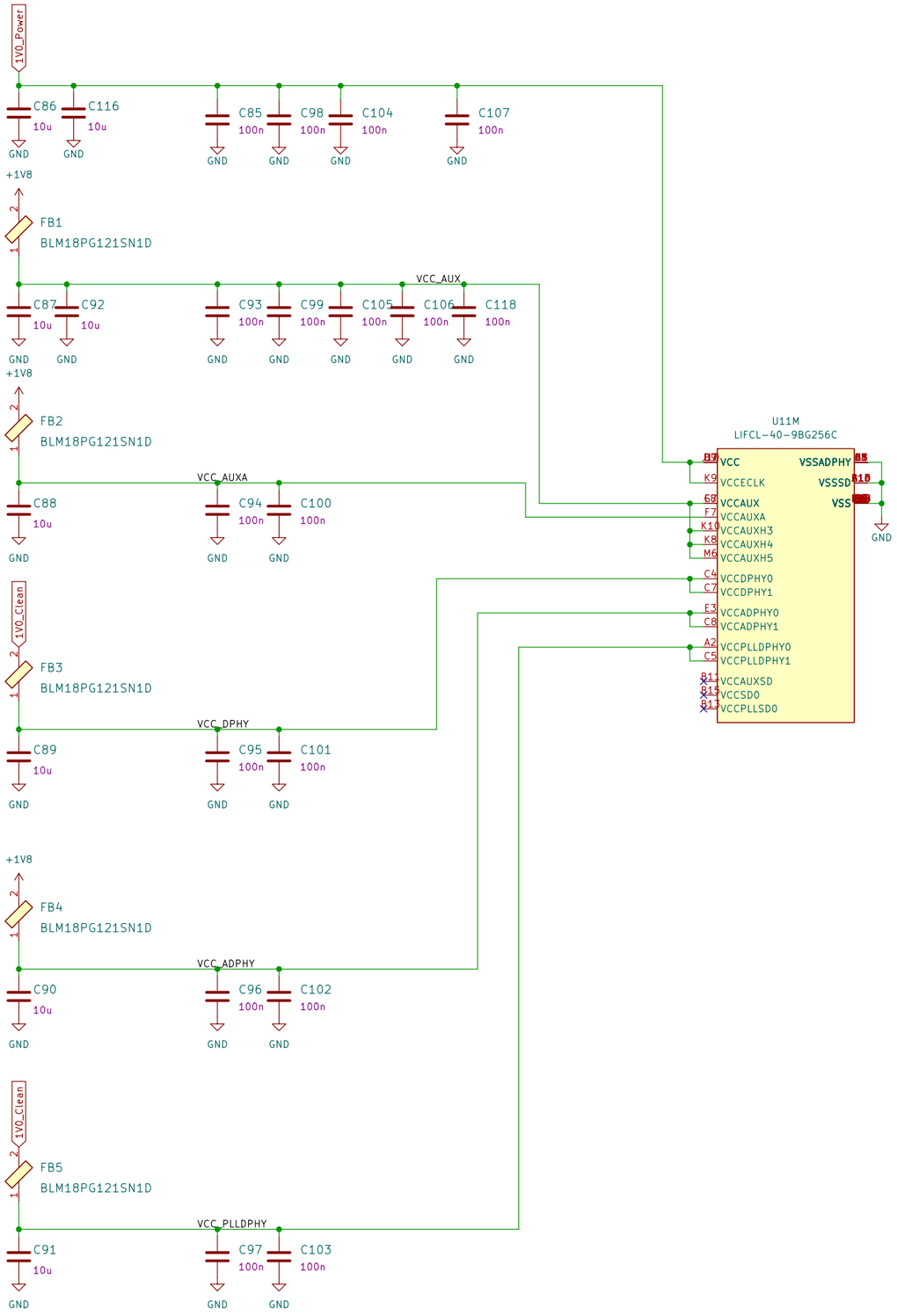
Sheet: /Peripherals/
File: peripherals.kicad_sch

Title: SDI-MIPI Video Converter

Size: A3	Date: 2022-12-20	**Rev: 1.1.0**
KiCad E.D.A.	eeschema 6.0.5+dfsg-1~bpo11+1	Id: 6/7



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Sheet: /FPGA Power/
File: FPGA_Power.kicad_sch

Title: SDI–MIPI Video Converter

Size: A3	Date: 2022-12-20	**Rev: 1.1.0**
KiCad E.D.A.	eeschema 6.0.5+dfsg-1~bpo11+1	Id: 7/7