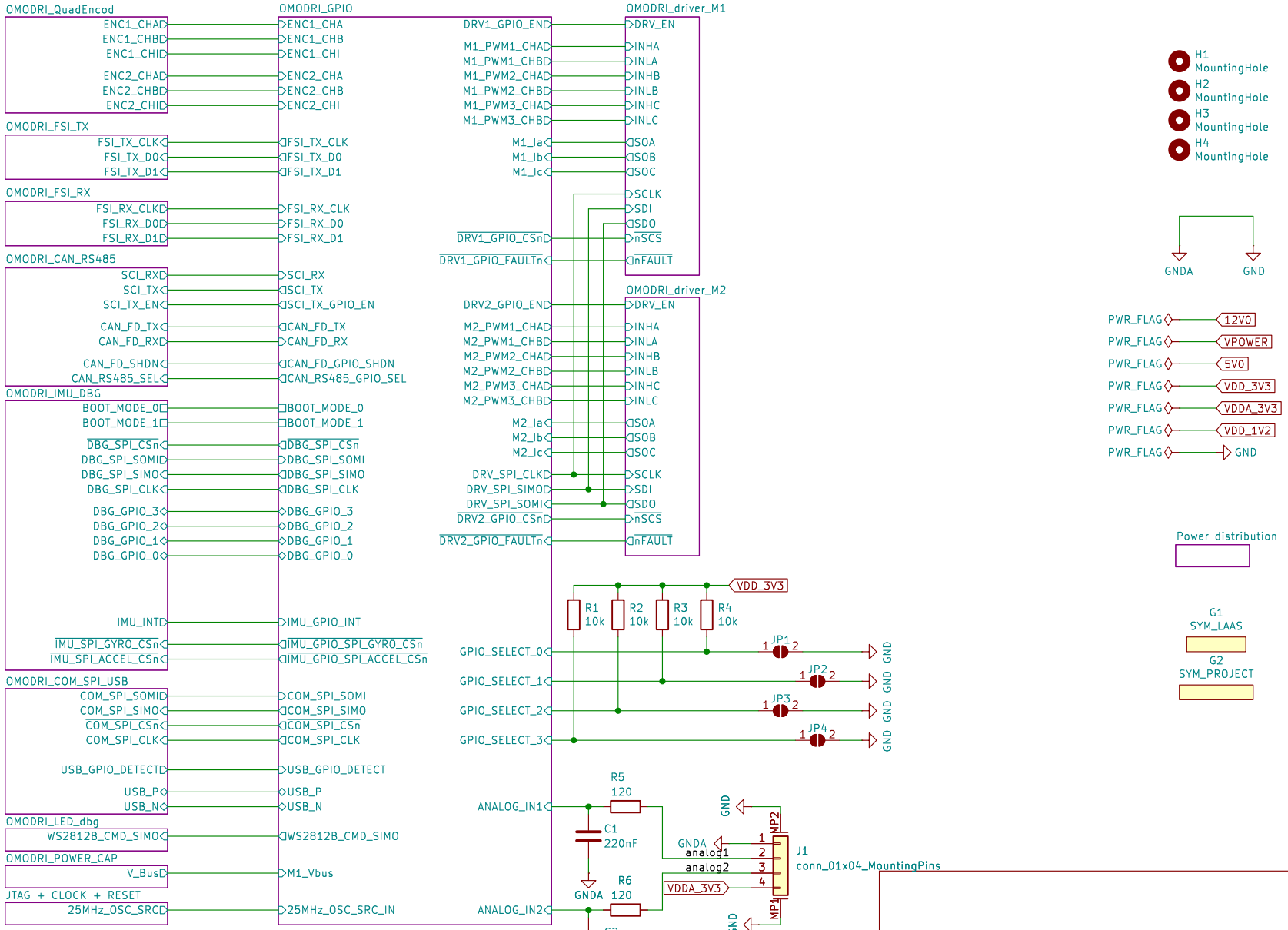


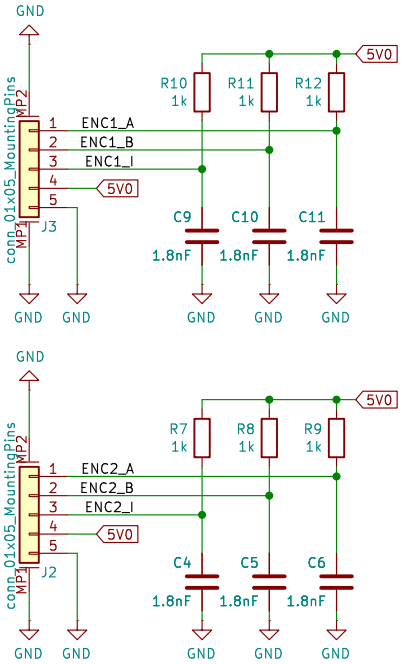
LAAS/CNRS

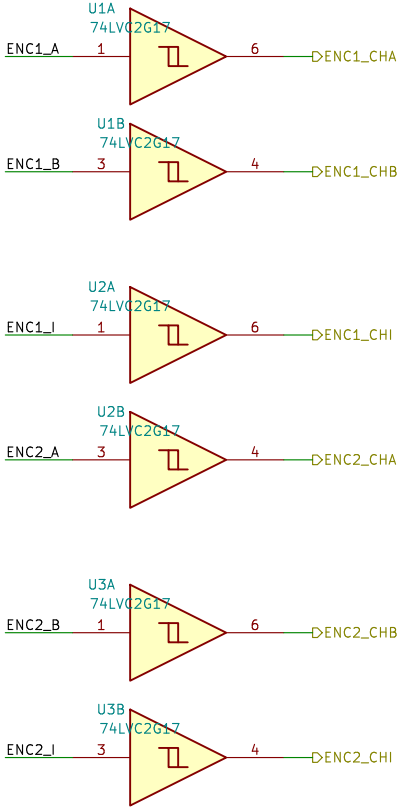
Sheet: /

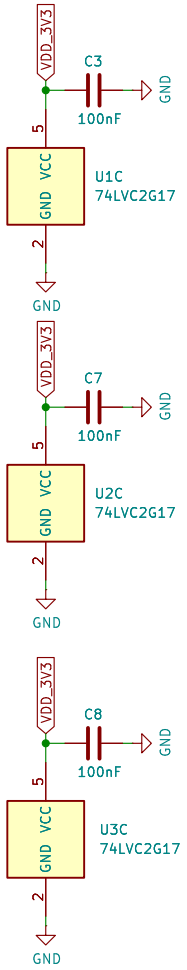
File: omodri_laas.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 1/22







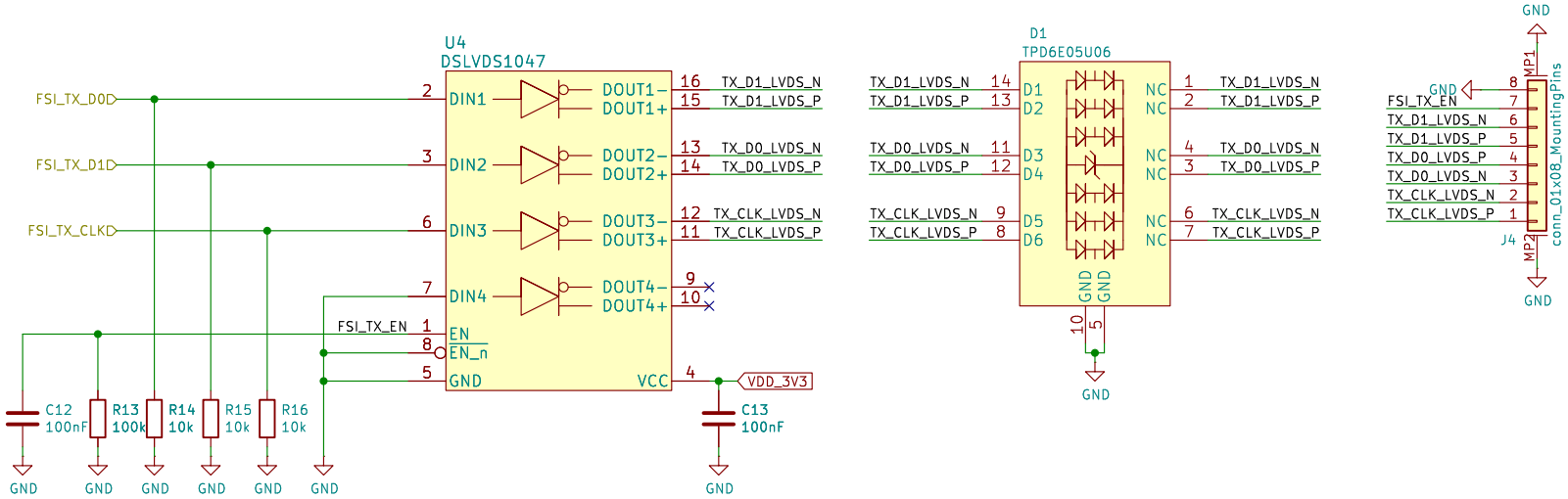
LAAS/CNRS

Sheet: /OMODRI_QuadEncod/

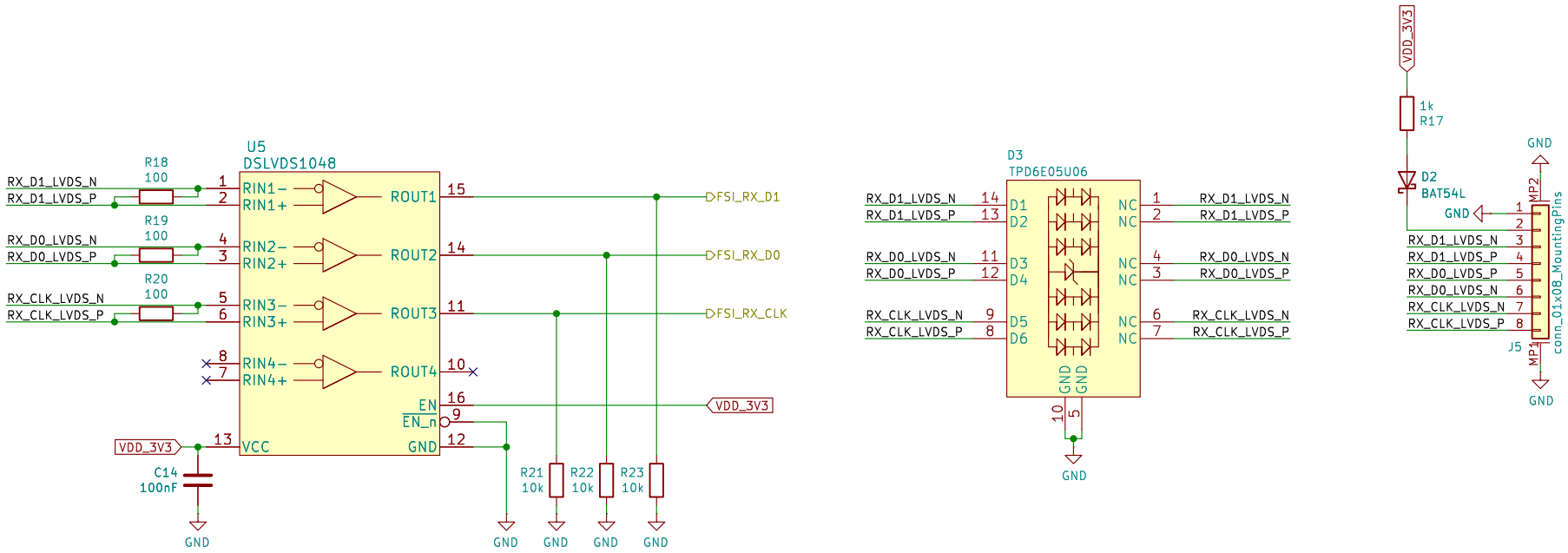
File: OMODRI_QuadEncod.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

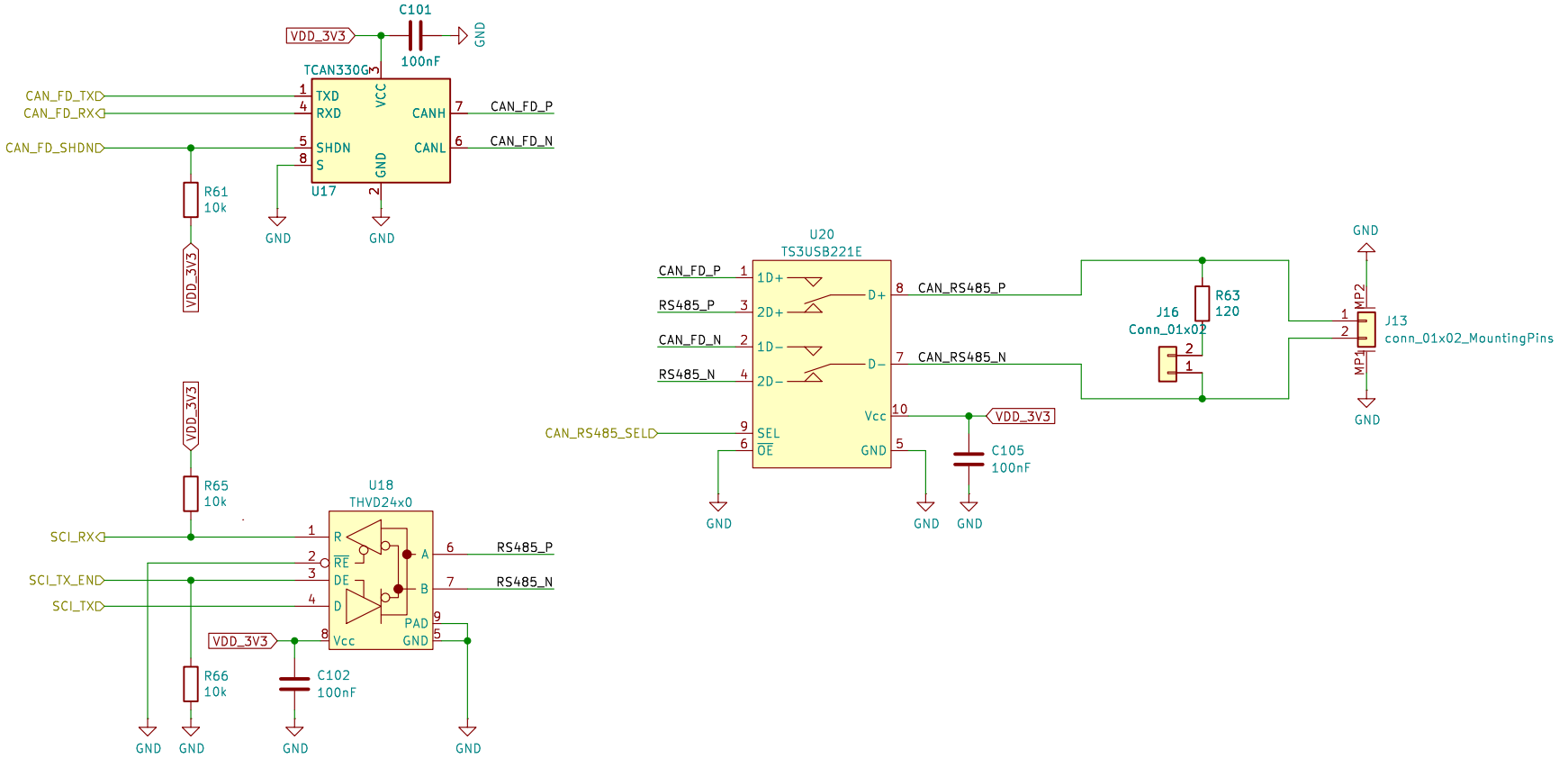
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 2/22



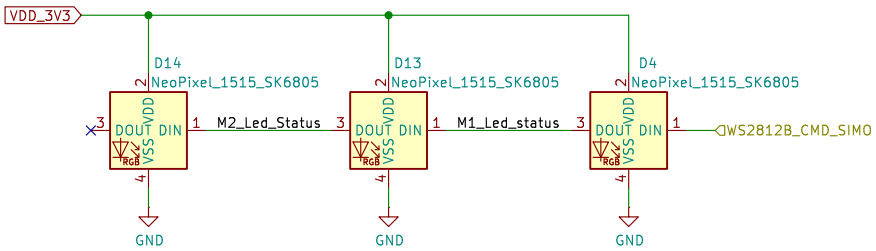
LAAS/CNRS	
Sheet: /OMODRI_FSI_TX/	
File: OMODRI_FSI_TX.kicad_sch	
Title: Open MOtor DRiver Initiative (OMODRI)	
Size: A4	Date: 2024-05-03
KiCad E.D.A. 8.0.2	Id: 3/22
	Rev: 3.1



LAAS/CNRS	
Sheet: /OMODRI_FSI_RX/	
File: OMODRI_FSI_RX.kicad_sch	
Title: Open MOtor DRiver Initiative (OMODRI)	
Size: A4	Date: 2024-05-03
KiCad E.D.A. 8.0.2	Id: 4/22
	Rev: 3.1



LAAS/CNRS		
Sheet: /OMODRI_CAN_RS485/		
File: OMODRI_CAN_RS845.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 5/22



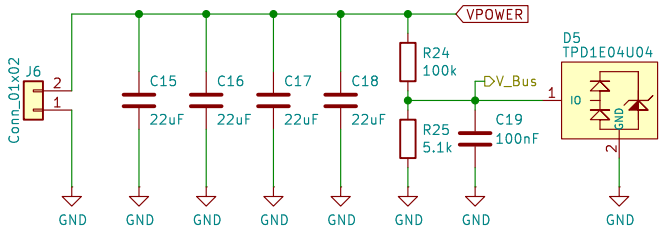
LAAS/CNRS

Sheet: /OMODRI_LED_dbg/

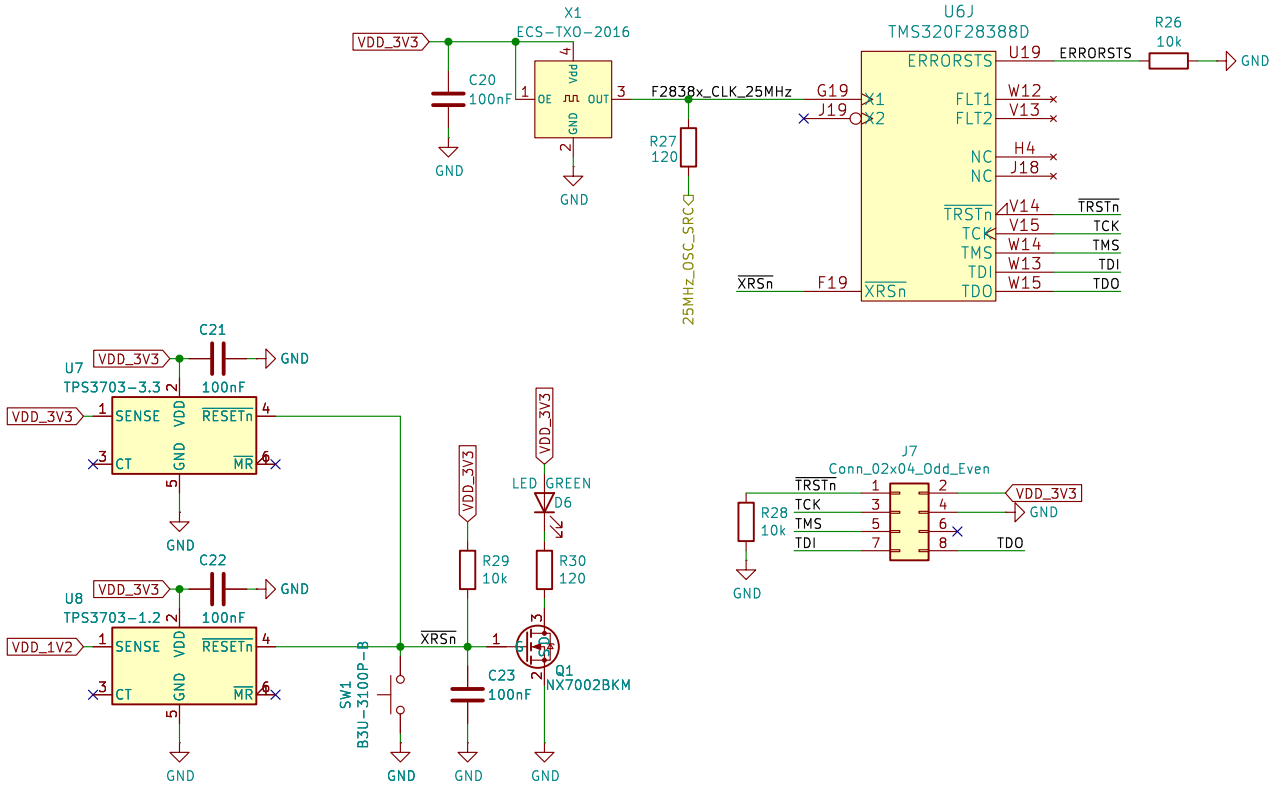
File: OMODRI_LED_dbg.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

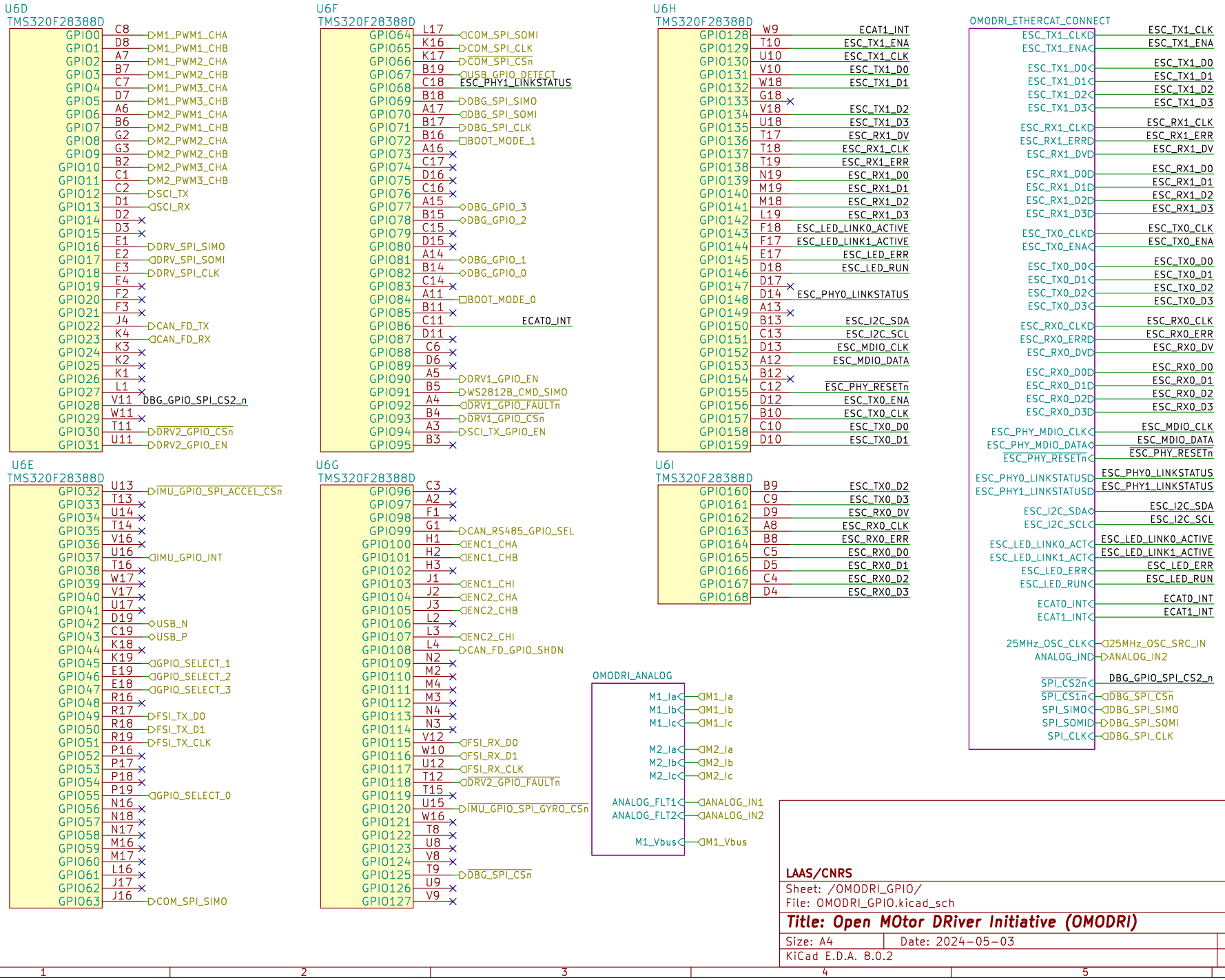
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 6/22

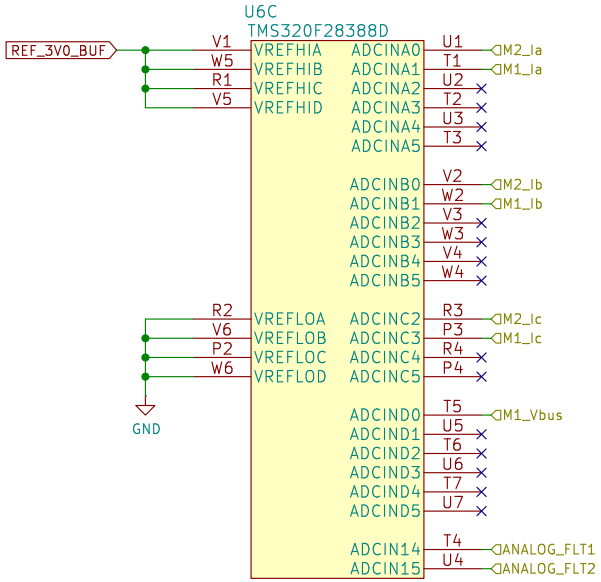


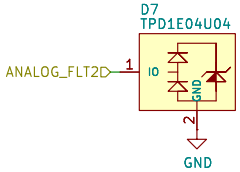
LAAS/CNRS		
Sheet: /OMODRI_POWER_CAP/		
File: OMODRI_POWER_CAP.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 7/22

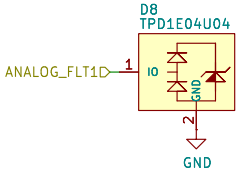


LAAS/CNRS	
Sheet: /JTAG + CLOCK + RESET/	
File: OMODRI_JTAG_OSC_RST.kicad_sch	
Title: Open MOtor DRiver Initiative (OMODRI)	
Size: A4	Date: 2024-05-03
KiCad E.D.A. 8.0.2	Id: 8/22
	Rev: 3.1


U6D
TMS320F28388D
GPIO0 C8 M1_PWM1_CHA
GPIO1 D8 M1_PWM1_CHB
GPIO2 A7 M1_PWM2_CHA
GPIO3 B7 M1_PWM2_CHB
GPIO4 C7 M1_PWM3_CHA
GPIO5 D7 M1_PWM3_CHB
GPIO6 A6 M2_PWM1_CHA
GPIO7 B6 M2_PWM1_CHB
GPIO8 G2 M2_PWM2_CHA
GPIO9 G3 M2_PWM2_CHB
GPIO10 B2 M2_PWM3_CHA
GPIO11 C1 M2_PWM3_CHB
GPIO12 C2 SCI_TX
GPIO13 D1 SCI_RX
GPIO14 D2
GPIO15 D3
GPIO16 E1 DRV_SPI_SIMO
GPIO17 E2 DRV_SPI_SOMI
GPIO18 E3 DRV_SPI_CLK
GPIO19 E4
GPIO20 F2
GPIO21 F3
GPIO22 J4 CAN_FD_TX
GPIO23 K4 CAN_FD_RX
GPIO24 K3
GPIO25 K2
GPIO26 K1
GPIO27 L1
GPIO28 V11 DBG_GPIO_SPI_CS2_n
GPIO29 W11
GPIO30 T11 DRV2_GPIO_CSn
GPIO31 U11 DRV2_GPIO_EN
U6E
TMS320F28388D
GPIO32 U13 IMU_GPIO_SPI_ACCEL_CSn
GPIO33 T13
GPIO34 U14
GPIO35 T14
GPIO36 V16
GPIO37 U16 IMU_GPIO_INT
GPIO38 T16
GPIO39 W17
GPIO40 V17
GPIO41 U17
GPIO42 D19 USB_N
GPIO43 C19 USB_P
GPIO44 K18
GPIO45 K19 GPIO_SELECT_1
GPIO46 E19 GPIO_SELECT_2
GPIO47 E18 GPIO_SELECT_3
GPIO48 R16
GPIO49 R17 FSI_TX_D0
GPIO50 R18 FSI_TX_D1
GPIO51 R19 FSI_TX_CLK
GPIO52 P16
GPIO53 P17
GPIO54 P18
GPIO55 P19 GPIO_SELECT_0
GPIO56 N16
GPIO57 N18
GPIO58 N17
GPIO59 M16
GPIO60 M17
GPIO61 L16
GPIO62 J17
GPIO63 J16 COM_SPI_SIMO
U6F
TMS320F28388D
GPIO64 L17 COM_SPI_SOMI
GPIO65 K16 COM_SPI_CLK
GPIO66 K17 COM_SPI_CSn
GPIO67 B19 USB_GPIO_DETECT
GPIO68 C18 ESC_PHY1_LINKSTATUS
GPIO69 B18 DBG_SPI_SIMO
GPIO70 A17 DBG_SPI_SOMI
GPIO71 B17 DBG_SPI_CLK
GPIO72 B16 BOOT_MODE_1
GPIO73 A16
GPIO74 C17
GPIO75 D16
GPIO76 C16
GPIO77 A15 DBG_GPIO_3
GPIO78 B15 DBG_GPIO_2
GPIO79 C15
GPIO80 D15
GPIO81 A14 DBG_GPIO_1
GPIO82 B14 DBG_GPIO_0
GPIO83 C14
GPIO84 A11 BOOT_MODE_0
GPIO85 B11
GPIO86 C11 ECAT0_INT
GPIO87 D11
GPIO88 C6
GPIO89 D6
GPIO90 A5 DRV1_GPIO_EN
GPIO91 B5 WS2812B_CMD_SIMO
GPIO92 A4 DRV1_GPIO_FAULTn
GPIO93 B4 DRV1_GPIO_CSn
GPIO94 A3 SCI_TX_GPIO_EN
GPIO95 B3
U6G
TMS320F28388D
GPIO96 C3
GPIO97 A2
GPIO98 F1
GPIO99 G1 CAN_RS485_GPIO_SEL
GPIO100 H1 ENC1_CHA
GPIO101 H2 ENC1_CHB
GPIO102 H3
GPIO103 J1 ENC1_CHI
GPIO104 J2 ENC2_CHA
GPIO105 J3 ENC2_CHB
GPIO106 L2
GPIO107 L3 ENC2_CHI
GPIO108 L4 CAN_FD_GPIO_SHDN
GPIO109 N2
GPIO110 M2
GPIO111 M4
GPIO112 M3
GPIO113 N4
GPIO114 N3
GPIO115 V12 FSI_RX_D0
GPIO116 W10 FSI_RX_D1
GPIO117 U12 FSI_RX_CLK
GPIO118 T12 DRV2_GPIO_FAULTn
GPIO119 T15
GPIO120 U15 IMU_GPIO_SPI_GYRO_CSn
GPIO121 W16
GPIO122 T8
GPIO123 U8
GPIO124 V8
GPIO125 T9 DBG_SPI_CSn
GPIO126 U9
GPIO127 V9
U6H
TMS320F28388D
GPIO128 W9 ECAT1_INT
GPIO129 T10 ESC_TX1_ENA
GPIO130 U10 ESC_TX1_CLK
GPIO131 V10 ESC_TX1_D0
GPIO132 W18 ESC_TX1_D1
GPIO133 G18
GPIO134 V18 ESC_TX1_D2
GPIO135 U18 ESC_TX1_D3
GPIO136 T17 ESC_RX1_DV
GPIO137 T18 ESC_RX1_CLK
GPIO138 T19 ESC_RX1_ERR
GPIO139 N19 ESC_RX1_D0
GPIO140 M19 ESC_RX1_D1
GPIO141 M18 ESC_RX1_D2
GPIO142 L19 ESC_RX1_D3
GPIO143 F18 ESC_LED_LINK0_ACTIVE
GPIO144 F17 ESC_LED_LINK1_ACTIVE
GPIO145 E17 ESC_LED_ERR
GPIO146 D18 ESC_LED_RUN
GPIO147 D17
GPIO148 D14 ESC_PHY0_LINKSTATUS
GPIO149 A13
GPIO150 B13 ESC_I2C_SDA
GPIO151 C13 ESC_I2C_SCL
GPIO152 D13 ESC_MDIO_CLK
GPIO153 A12 ESC_MDIO_DATA
GPIO154 B12
GPIO155 C12 ESC_PHY_RESETn
GPIO156 D12 ESC_TX0_ENA
GPIO157 B10 ESC_TX0_CLK
GPIO158 C10 ESC_TX0_D0
GPIO159 D10 ESC_TX0_D1
U6I
TMS320F28388D
GPIO160 B9 ESC_TX0_D2
GPIO161 C9 ESC_TX0_D3
GPIO162 D9 ESC_RX0_DV
GPIO163 A8 ESC_RX0_CLK
GPIO164 B8 ESC_RX0_ERR
GPIO165 C5 ESC_RX0_D0
GPIO166 D5 ESC_RX0_D1
GPIO167 C4 ESC_RX0_D2
GPIO168 D4 ESC_RX0_D3
OMODRI_ETHERCAT_CONNECT
ESC_TX1_CLK ESC_TX1_CLK
ESC_TX1_ENA ESC_TX1_ENA
ESC_TX1_D0 ESC_TX1_D0
ESC_TX1_D1 ESC_TX1_D1
ESC_TX1_D2 ESC_TX1_D2
ESC_TX1_D3 ESC_TX1_D3
ESC_RX1_CLK ESC_RX1_CLK
ESC_RX1_ERR ESC_RX1_ERR
ESC_RX1_DV ESC_RX1_DV
ESC_RX1_D0 ESC_RX1_D0
ESC_RX1_D1 ESC_RX1_D1
ESC_RX1_D2 ESC_RX1_D2
ESC_RX1_D3 ESC_RX1_D3
ESC_TX0_CLK ESC_TX0_CLK
ESC_TX0_ENA ESC_TX0_ENA
ESC_TX0_D0 ESC_TX0_D0
ESC_TX0_D1 ESC_TX0_D1
ESC_TX0_D2 ESC_TX0_D2
ESC_TX0_D3 ESC_TX0_D3
ESC_RX0_CLK ESC_RX0_CLK
ESC_RX0_ERR ESC_RX0_ERR
ESC_RX0_DV ESC_RX0_DV
ESC_RX0_D0 ESC_RX0_D0
ESC_RX0_D1 ESC_RX0_D1
ESC_RX0_D2 ESC_RX0_D2
ESC_RX0_D3 ESC_RX0_D3
ESC_PHY_MDIO_CLK ESC_MDIO_CLK
ESC_PHY_MDIO_DATA ESC_MDIO_DATA
ESC_PHY_RESETn ESC_PHY_RESETn
ESC_PHY0_LINKSTATUS ESC_PHY0_LINKSTATUS
ESC_PHY1_LINKSTATUS ESC_PHY1_LINKSTATUS
ESC_I2C_SDA ESC_I2C_SDA
ESC_I2C_SCL ESC_I2C_SCL
ESC_LED_LINK0_ACT ESC_LED_LINK0_ACTIVE
ESC_LED_LINK1_ACT ESC_LED_LINK1_ACTIVE
ESC_LED_ERR ESC_LED_ERR
ESC_LED_RUN ESC_LED_RUN
ECAT0_INT ECAT0_INT
ECAT1_INT ECAT1_INT
25MHz_OSC_CLK 25MHz_OSC_SRC_IN
ANALOG_IN ANALOG_IN2
SPI_CS2n DBG_GPIO_SPI_CS2_n
SPI_CS1n DBG_SPI_CSn
SPI_SIMO DBG_SPI_SIMO
SPI_SOMI DBG_SPI_SOMI
SPI_CLK DBG_SPI_CLK
OMODRI_ANALOG
M1_Ia M1_Ia
M1_Ib M1_Ib
M1_Ic M1_Ic
M2_Ia M2_Ia
M2_Ib M2_Ib
M2_Ic M2_Ic
ANALOG_FLT1 ANALOG_IN1
ANALOG_FLT2 ANALOG_IN2
M1_Vbus M1_Vbus
LAAS/CNRS
Sheet: /OMODRI_GPIO/
File: OMODRI_GPIO.kicad_sch
Title: Open MOtor DRiver Initiative (OMODRI)
Size: A4
Date: 2024-05-03
Rev: 3.1
KiCad E.D.A. 8.0.2
Id: 9/22





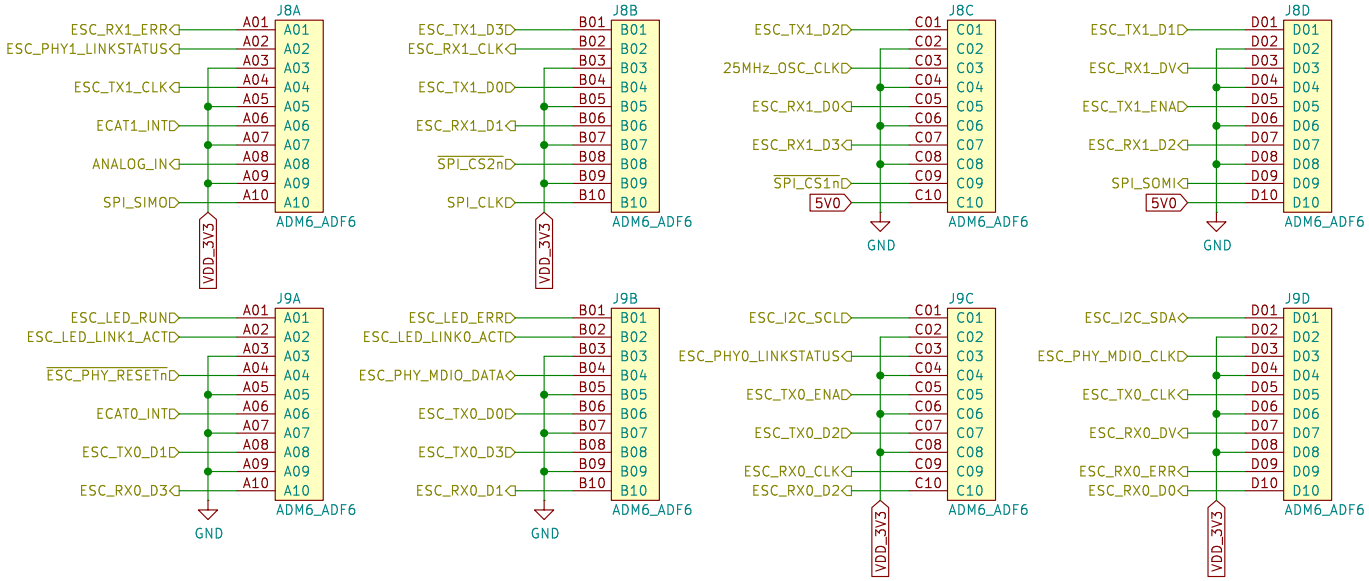


LAAS/CNRS

Sheet: /OMODRI_GPIO/OMODRI_ANALOG/
File: OMODRI_ANALOG.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 10/22



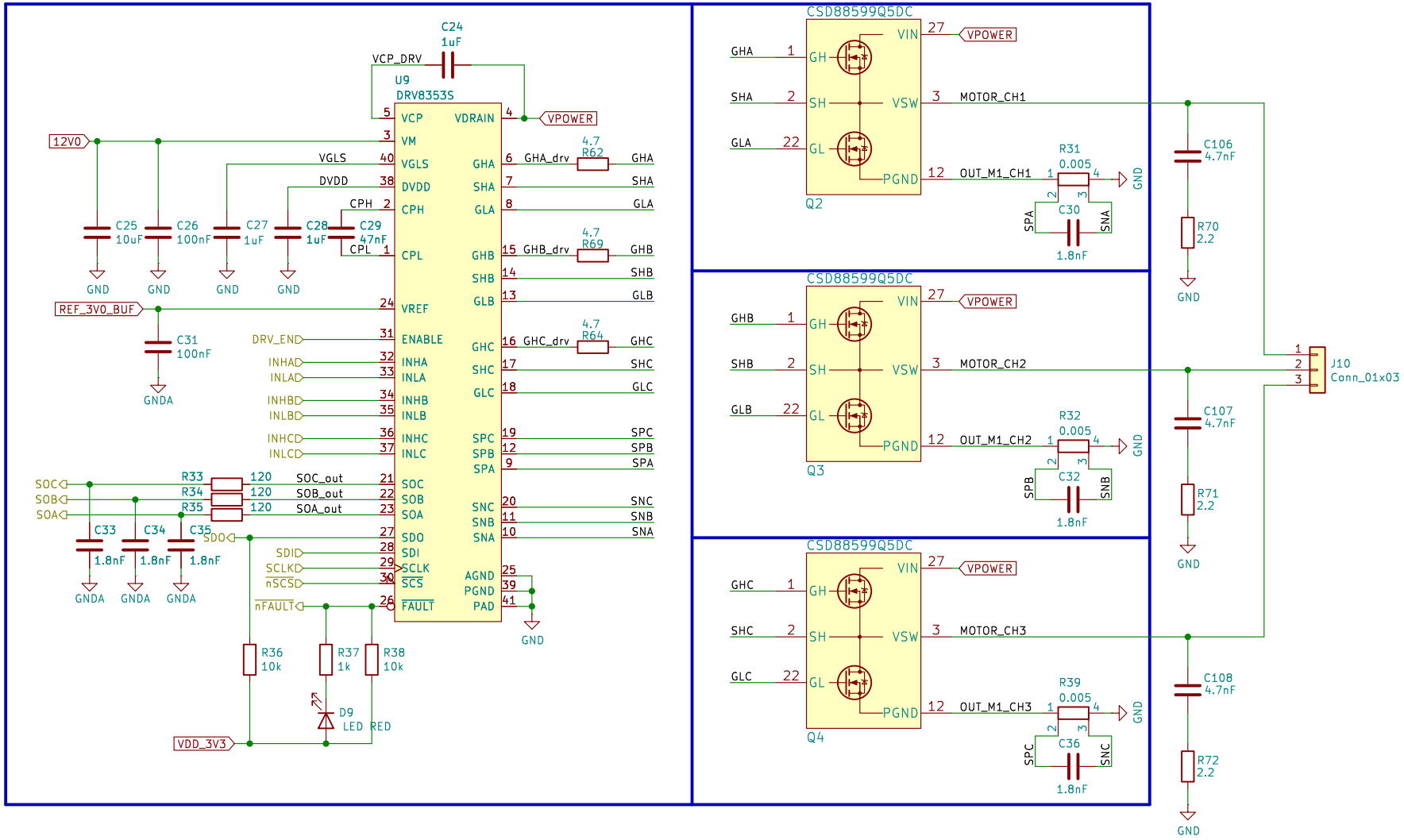
LAAS/CNRS

Sheet: /OMODRI_GPIO/OMODRI_ETHERCAT_CONNECT/

File: OMODRI_ETHERCAT_CONNECT.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 11/22



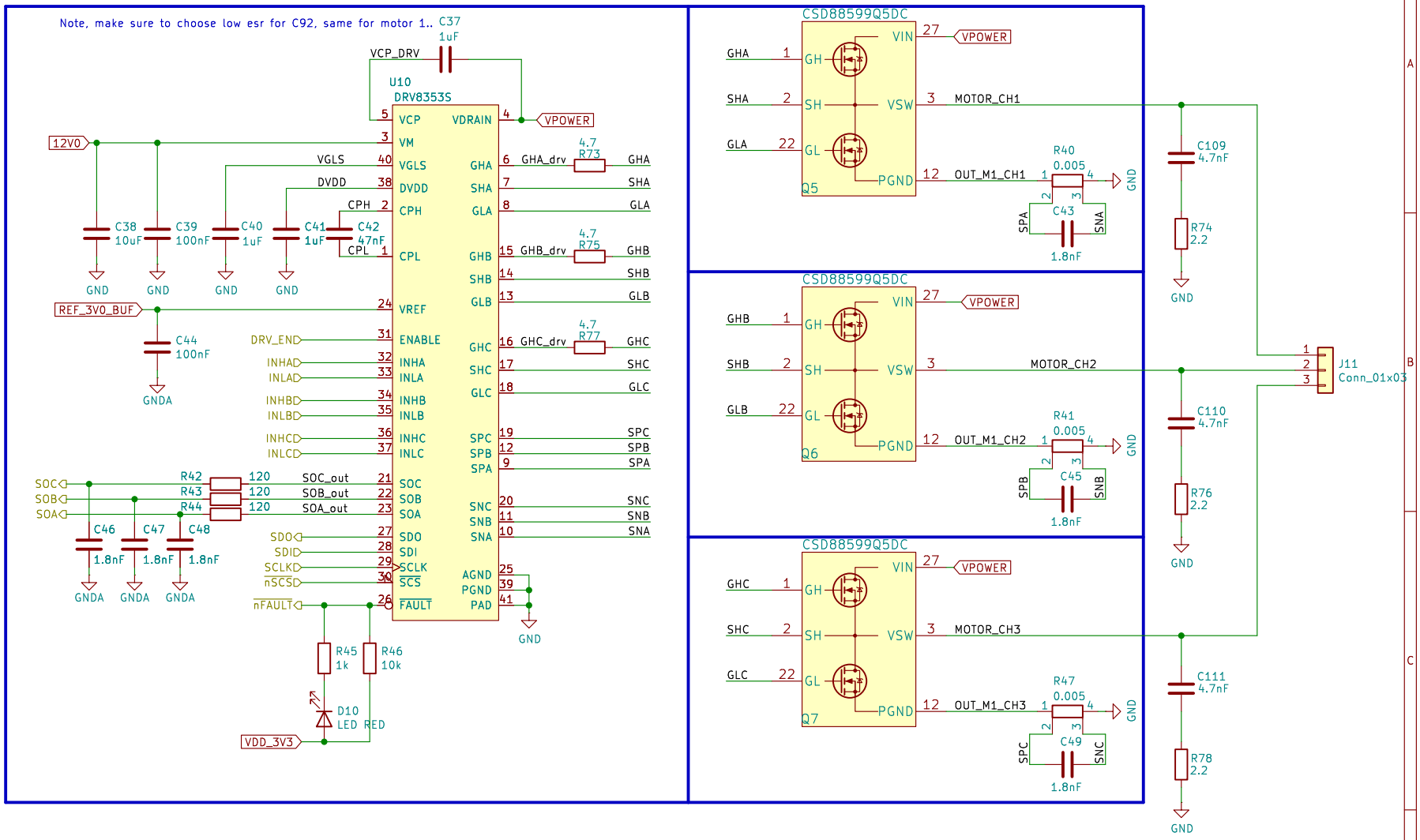
LAAS/CNRS

Sheet: /OMODRI_driver_M1/

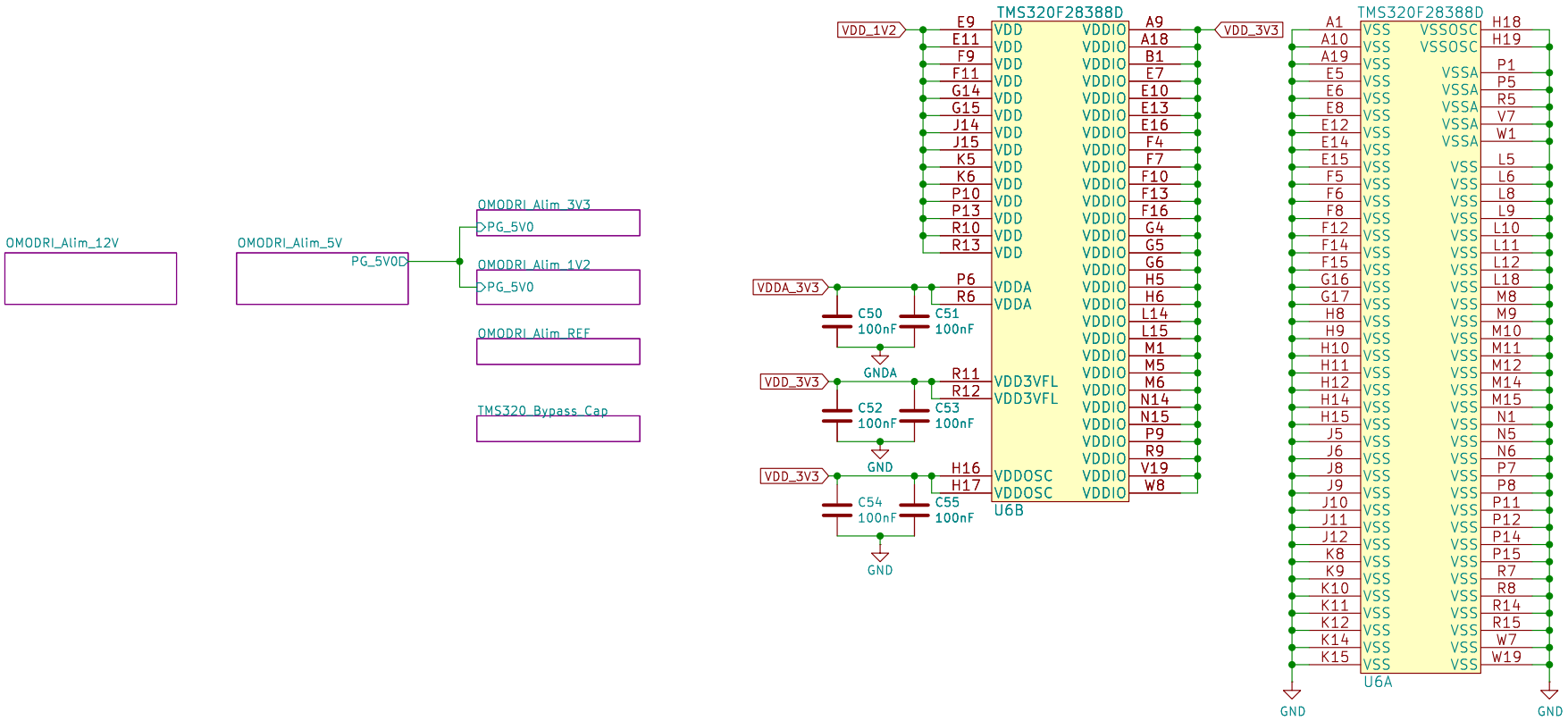
File: OMODRI_driver_M1.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 12/22



LAAS/CNRS	
Sheet: /OMODRI_driver_M2/	
File: OMODRI_driver_M2.kicad_sch	
Title: Open MOtor DRiver Initiative (OMODRI)	
Size: A4	Date: 2024-05-03
KiCad E.D.A. 8.0.2	Id: 13/22
	Rev: 3.1



LAAS/CNRS	
Sheet: /Power distribution/	
File: OMODRI_power.kicad_sch	
Title: Open MOtor DRiver Initiative (OMODRI)	
Size: A4	Date: 2024-05-03
KiCad E.D.A. 8.0.2	Id: 14/22
	Rev: 3.1

TODO note: change references link and MPN for all resistor and capa

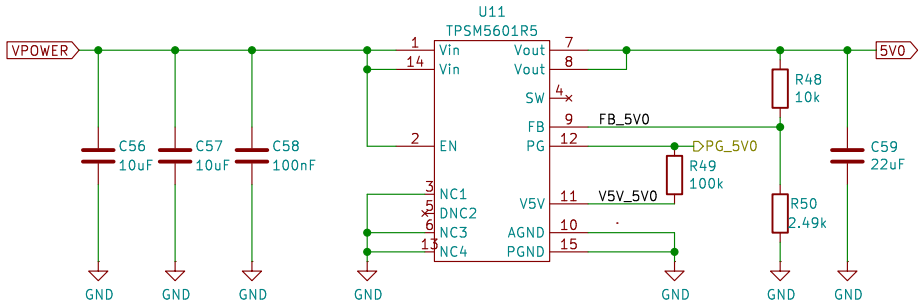
TODO note:

U11.4 : SW – Switch node. Do not place any external component on this pin or connect this pin to any signal.
U11.5 : DNC – Do not connect. Do not connect this pin to ground, to another pin, or to any other voltage. This pin is connected to the internal bootstrap capacitor. This pin must be soldered to an isolated pad.
U11.3, U11.6, U11.13 : NC – these pins to the PGND plane can help enhance shielding and thermal performance.
U11.12 : PGOOD – A 10–kohm to 100–kohm pullup resistor is required and can be tied to the V5V pin or other DC voltage less than 18V.

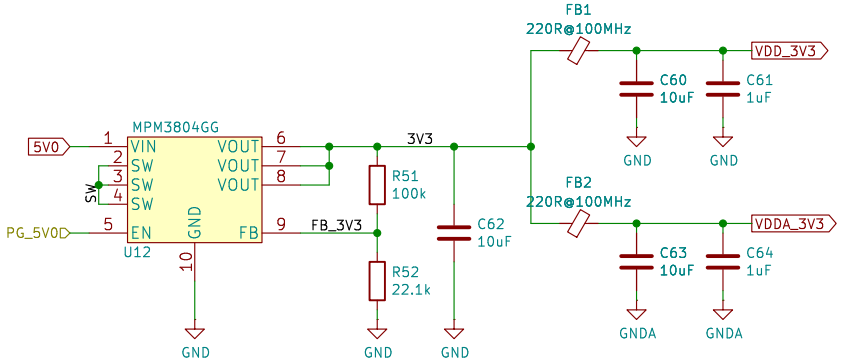
R48 = 10kohm (recommended)
R50 = 2.49kohm (R50 = R48 / (5V – 1))

Cin > 9.4uF
C56 + C57 + C58 = (10uF + 10uF + 100nF) rated @ 75V.

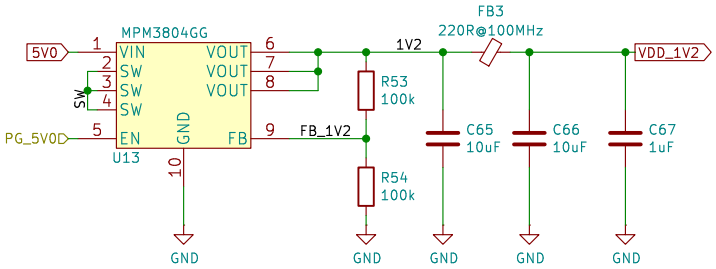
Cout > 15uF (according figure 7–2 in datasheet SLVSG72 / TPSM560R6H)
C59 = 22uF/25V



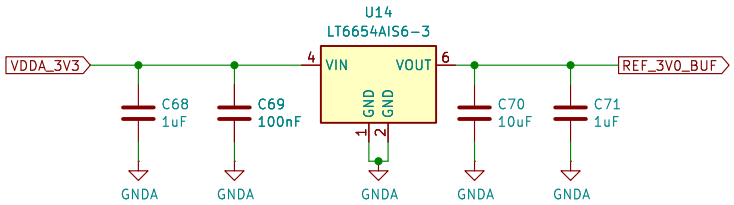
LAAS/CNRS		
Sheet: /Power distribution/OMODRI_Alim_5V/		
File: OMODRI_Alim_5V.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024–05–03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 15/22



LAAS/CNRS		
Sheet: /Power distribution/OMODRI_Alim_3V3/		
File: OMODRI_Alim_3V3.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 16/22



LAAS/CNRS		
Sheet: /Power distribution/OMODRI_Alim_1V2/		
File: OMODRI_Alim_1V2.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 17/22

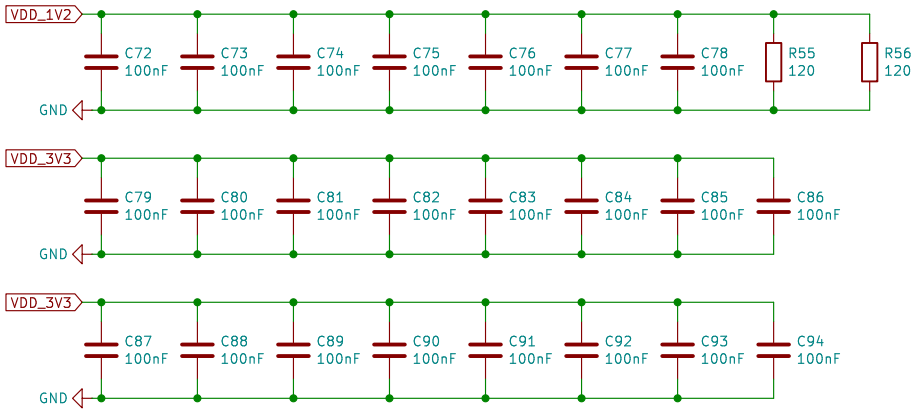


LAAS/CNRS

Sheet: /Power distribution/OMODRI_Alim_REF/
File: OMODRI_Alim_REF.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 18/22



LAAS/CNRS

Sheet: /Power distribution/TMS320_Bypass_Cap/

File: TMS320_Bypass_Cap.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 19/22

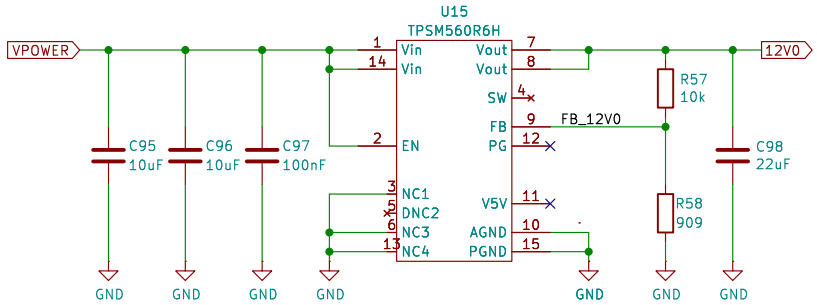
TODO note:

U15.4 : SW – Switch node. Do not place any external component on this pin or connect this pin to any signal.
U15.5 : DNC – Do not connect. Do not connect this pin to ground, to another pin, or to any other voltage. This pin is connected to the internal bootstrap capacitor. This pin must be soldered to an isolated pad.
U15.3, U15.6, U15.13 : NC – these pins to the PGND plane can help enhance shielding and thermal performance.
U15.12 : PGOOD – If not used, this pin can be left open or connected to PGND.

R57 = 10kohm (recommended)
R58 = 909ohm (R58 = R57 / (12V – 1))

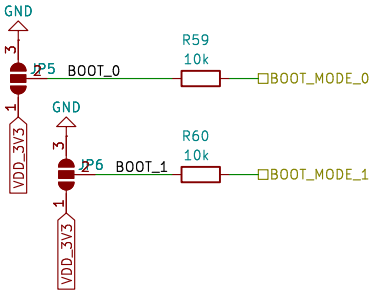
Cin > 9.4uF
C95 + C96 + C97 = (10uF + 10uF + 100nF) rated @ 75V.

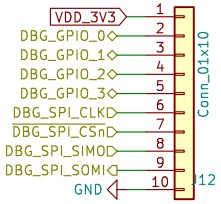
Cout > 15uF (according figure 7-2 in datasheet SLVSG72 / TPSM560R6H)
C98 = 22uF/25V

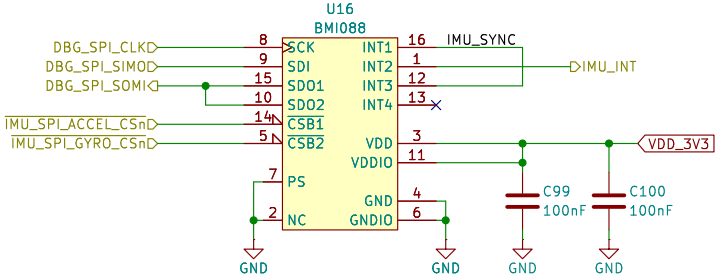


LAAS/CNRS		
Sheet: /Power distribution/OMODRI_Alim_12V/		
File: OMODRI_Alim_12V.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 20/22

JP2	JP1	BOOT Mode
0	0	Parallel IO
0	1	SCI / Wait Boot
1	0	CAN
1	1	Flash / USB







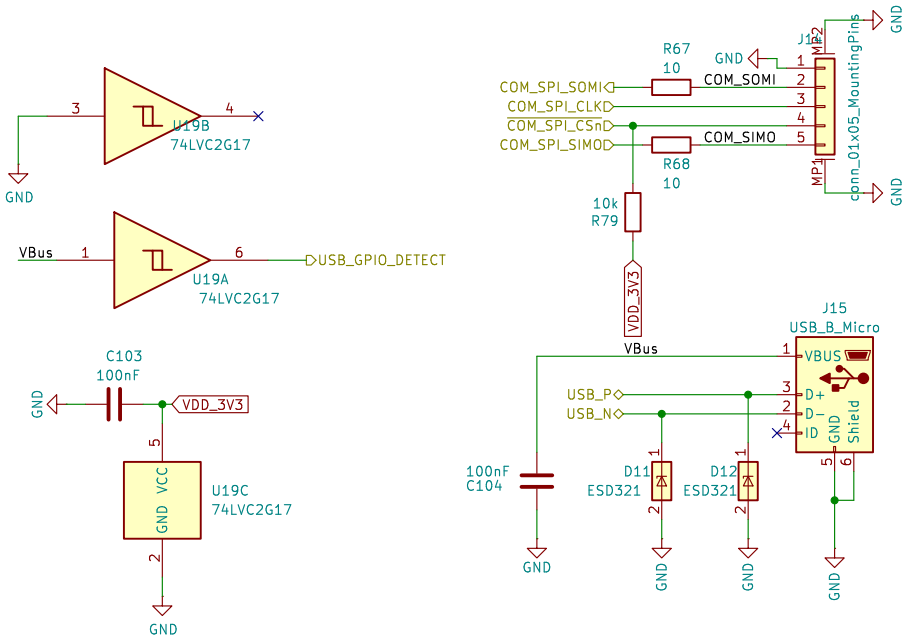
LAAS/CNRS

Sheet: /OMODRI_IMU_DBG/

File: OMODRI_IMU_DBG.kicad_sch

Title: Open MOtor DRiver Initiative (OMODRI)

Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 21/22



LAAS/CNRS		
Sheet: /OMODRI_COM_SPI_USB/		
File: OMODRI_COM_SPI_USB.kicad_sch		
Title: Open MOtor DRiver Initiative (OMODRI)		
Size: A4	Date: 2024-05-03	**Rev: 3.1**
KiCad E.D.A. 8.0.2		Id: 22/22