

PBA-BG-41 (PD-050)

FPSC Featureset Gamma Rev. 1

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Project: FPSC Featureset Gamma		Department : F&E Author: M.Poschmann, T.Metz	
07.11.2025	PCB-No.: 1618.2	Revision : 007	Sheet 1 of 31

Overview

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I2C2 Device / Connector	7-Bit Address
STUSB4500QTR (U1)	0x2B
M.2 Key-M (X54)	-
Factory EEPROM (U57)	0x51
User EEPROM (U80)	0x52
TCAL6416RTW (U58)	0x21
phyCAM-M CSI2 VM-016 (X34)	0x18, 0x57
phyCAM-M CSI2 VM-017 (X34)	0x37, 0x57
phyCAM-M CSI2 VM-020 (X34)	0x18, 0x57
MIPI-DSI / PEB-AV-12 (X39)	0x10, 0x24, 0x2C, 0x2E

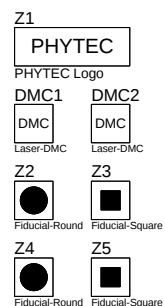
I2C3 Device / Connector	7-Bit Address
TUSB8042A (U21)	0x44
phyCAM-M CSI1 VM-016 (X32)	0x10, 0x56
phyCAM-M CSI1 VM-017 (X32)	0x36, 0x56
phyCAM-M CSI1 VM-020 (X32)	0x10, 0x56
LVDS 1 connector (X43)	-
M.2 Key-E (X52)	-
PCA9533/01 (U55)	0x62
TCAL6416RTW (U72)	0x21
HD3SS3220I (U66)	0x47
LVDS2 / PEB-AV-10 (X50)	0x18, 0x57, 0x5F
LVDS2 / PEB-AV-13 (X50)	0x34

I2C4 Device / Connector	7-Bit Address
SFP+ (X113)	0xA0, 0xA2

I2C5 Device / Connector	7-Bit Address
P3T1750DPZ (U56)	0x4F
P3T1750DPZ I3C (U56)	0x9E

MDIO Device	Address
ETH1 SOM on-board PHY	0x0
ETH2 Carrier Board PHY	0x1

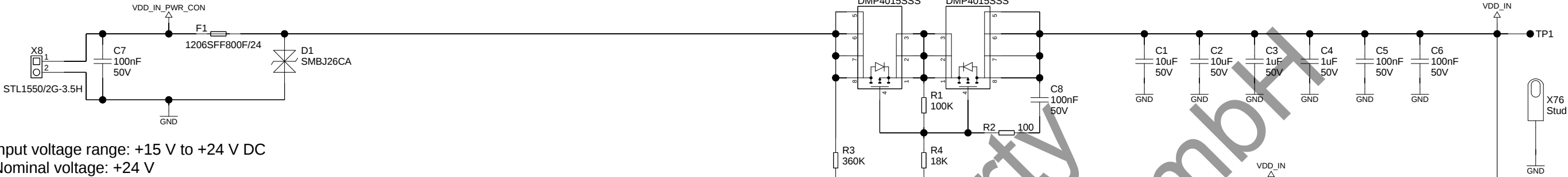
Notes:
Operating temperature range: -40 °C to +85 °C unless noted otherwise
Parts with property 'nm' are not mounted on PCB



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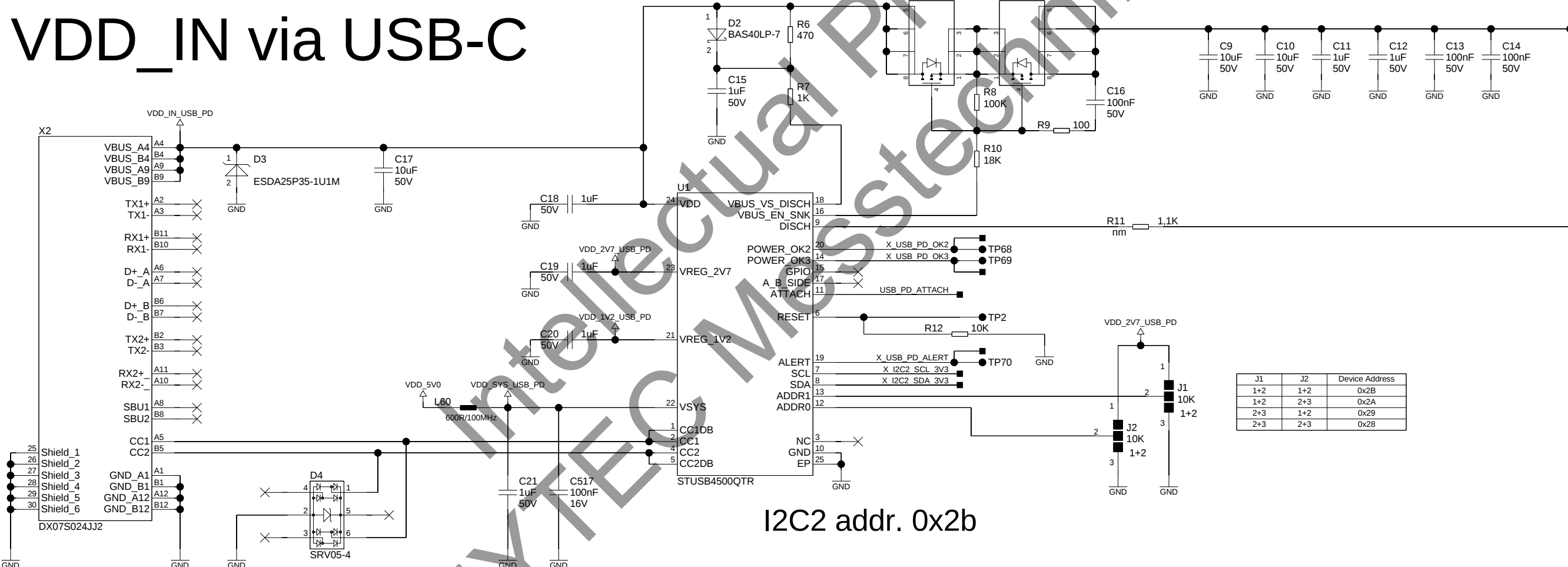
VDD_IN via Power Connector

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Input voltage range: +15 V to +24 V DC
Nominal voltage: +24 V

VDD_IN via USB-C

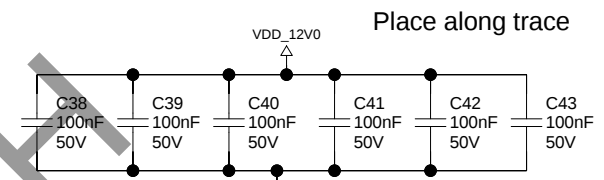


I2C2 addr. 0x2b

J1	J2	Device Address
1+2	1+2	0x2B
1+2	2+3	0x2A
2+3	1+2	0x29
2+3	2+3	0x28

VDD_IN to VDD_12V0

Switching Frequency	526 kHz
VDD_12V0 nominal	11,99 V
VDD_12V0 tolerance +	12,21 V
VDD_12V0 tolerance -	11,77 V
Soft start	3 ms
Off time	3,45 ms
UVLO threshold	15 V



A

A

B

B

12V to VDD_SOM

VDD_SOM	3.3 V	5 V
R28	43k	22k
R29	9,53k	3k
Tolerance +	3,396 V	5,089 V
Tolerance -	3,221 V	4,913 V

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Author: M.Poschmann, T.Metz

C

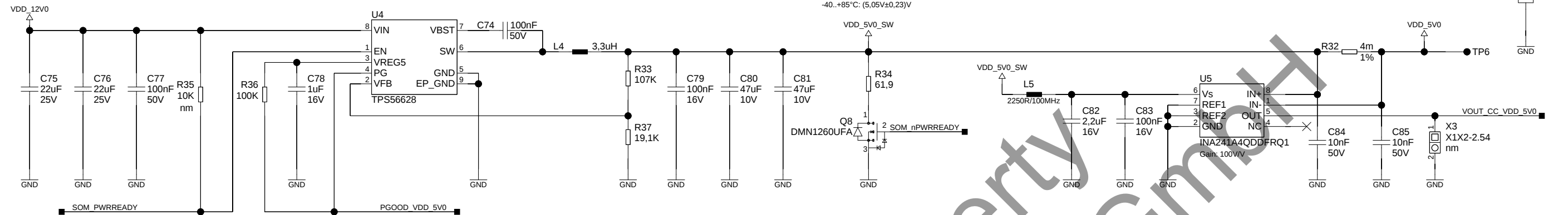
C

D

D

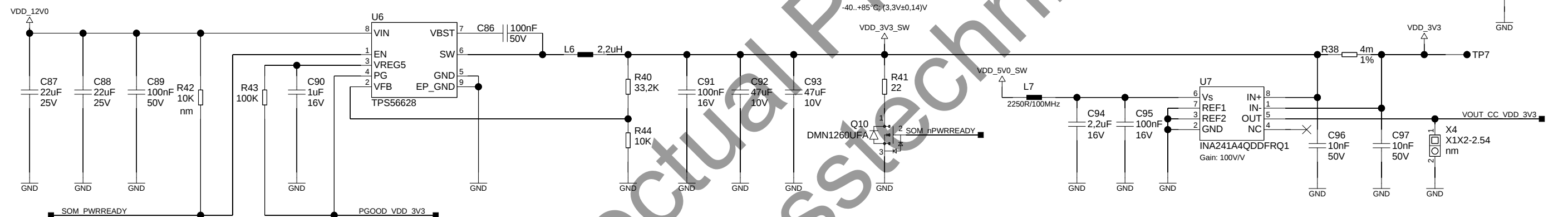
Peripheral VDD_5V0

Switching Frequency	650 kHz
VDD_5V0 nominal	5,05 V
VDD_5V0 tolerance +	5,14 V
VDD_5V0 tolerance -	4,97 V



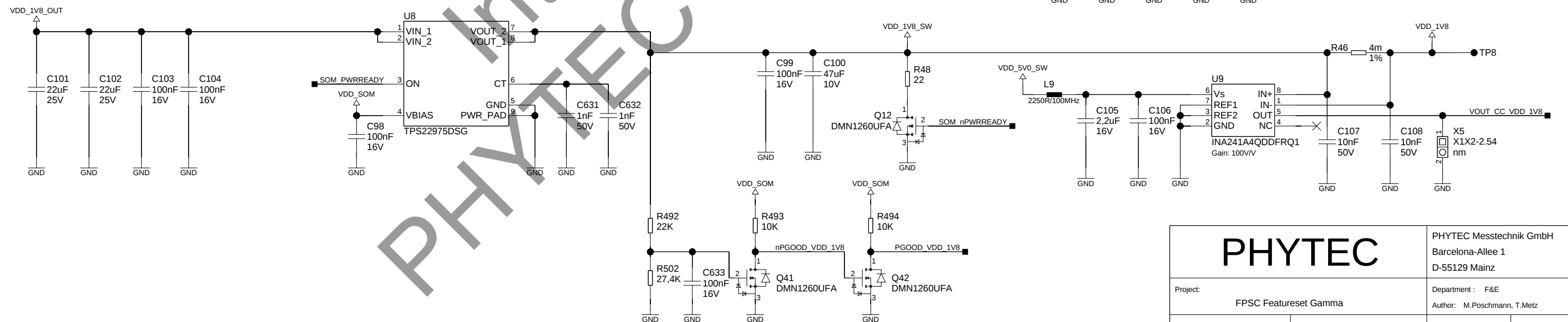
Peripheral VDD_3V3

Switching Frequency	650 kHz
VDD_3V3 nominal	3,30 V
VDD_3V3 tolerance +	3,36 V
VDD_3V3 tolerance -	3,25 V



Peripheral VDD_1V8

Switching Frequency	650 kHz
VDD_1V8 nominal	1,80 V
VDD_1V8 tolerance +	1,85 V
VDD_1V8 tolerance -	1,75 V



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JTAG 1V8

The diagram illustrates the FPSC Gamma Size L connector assembly. On the left, a vertical connector labeled 'X1' is shown with pins 5, 7, 9, 11, 13, 6, 8, 10, and 12. These pins are connected to a central component labeled 'FPSC Gamma Size L'. The component has 'HOLE1' through 'HOLE8' on the left and 'Anchor-Joints' on the right. The component is also labeled 'Heatsink Mounting Holes'. On the right, a component labeled 'Z6' is shown, which is an 'FPSC Phytec Socket'. It has pins 1, 2, 3, and 4. The entire assembly is connected to 'GND' at the bottom.

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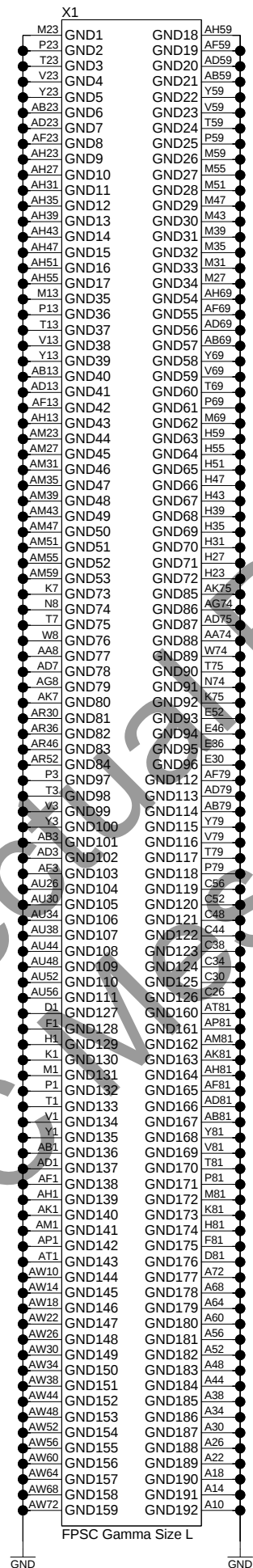
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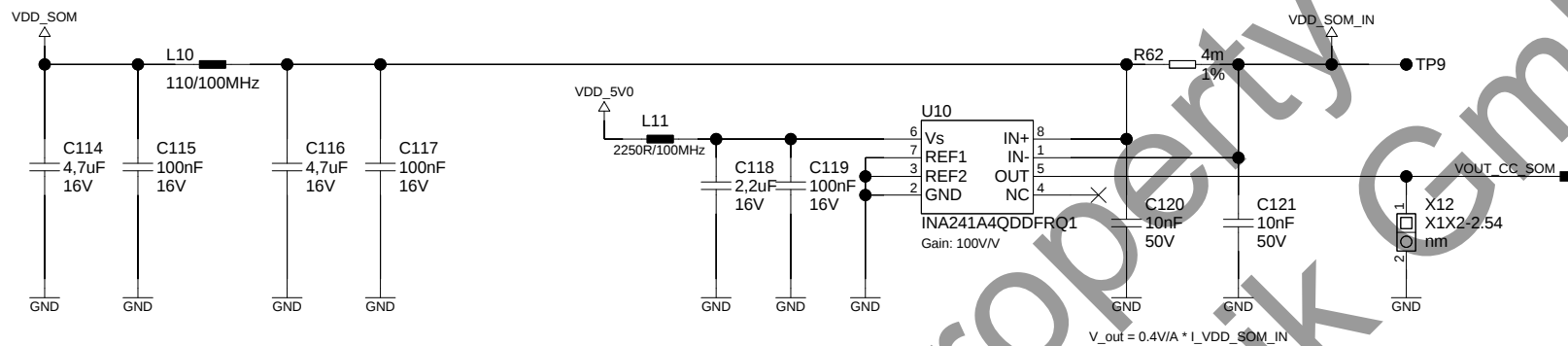
SOM Ground

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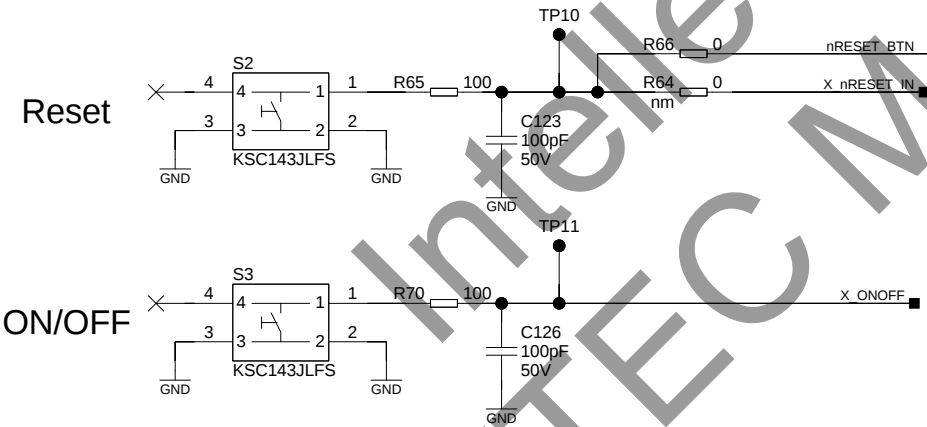


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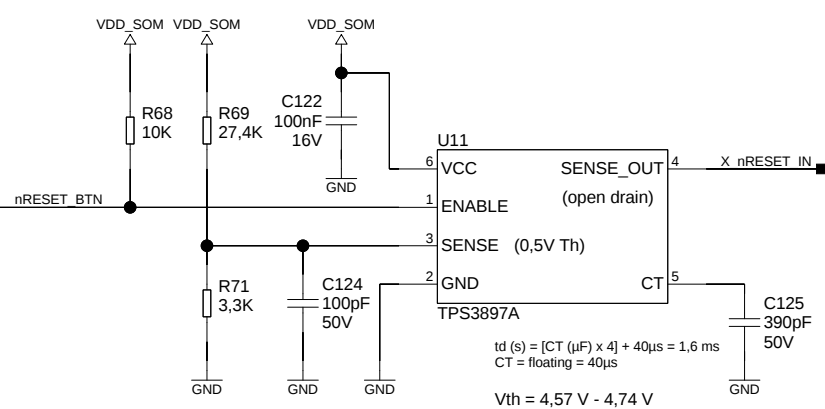
SOM voltage current measuring



Buttons



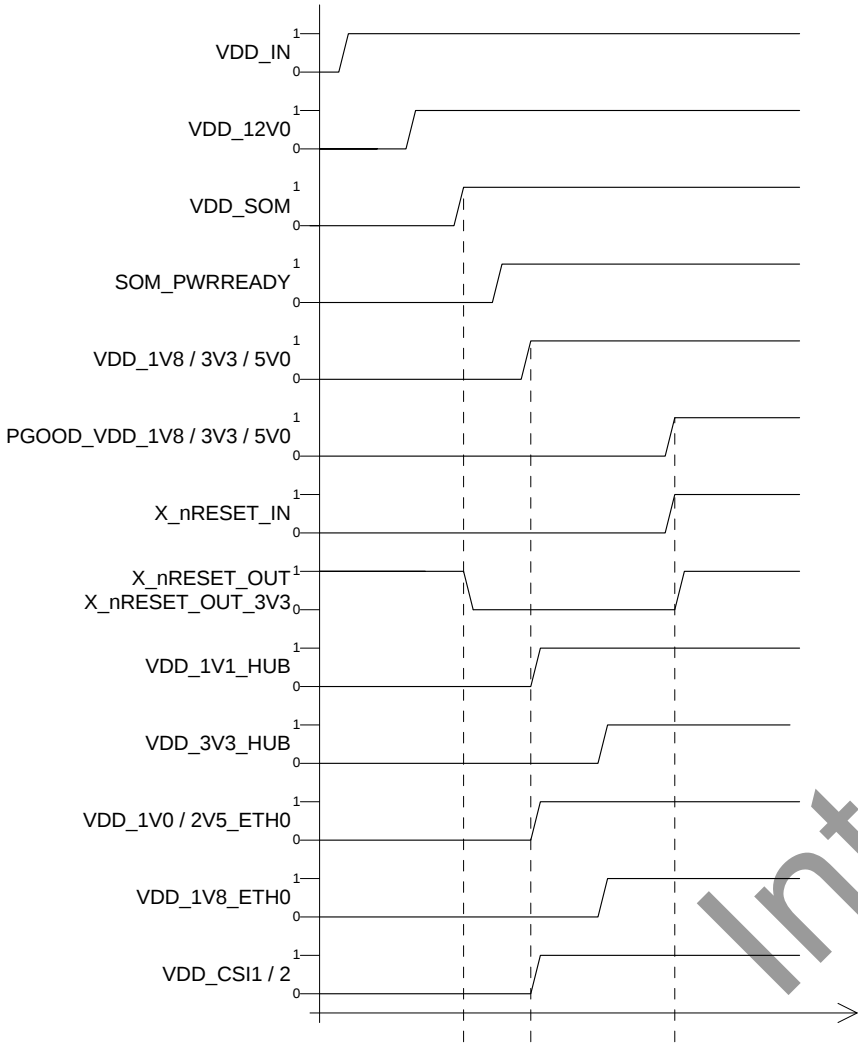
Voltage Supervisor



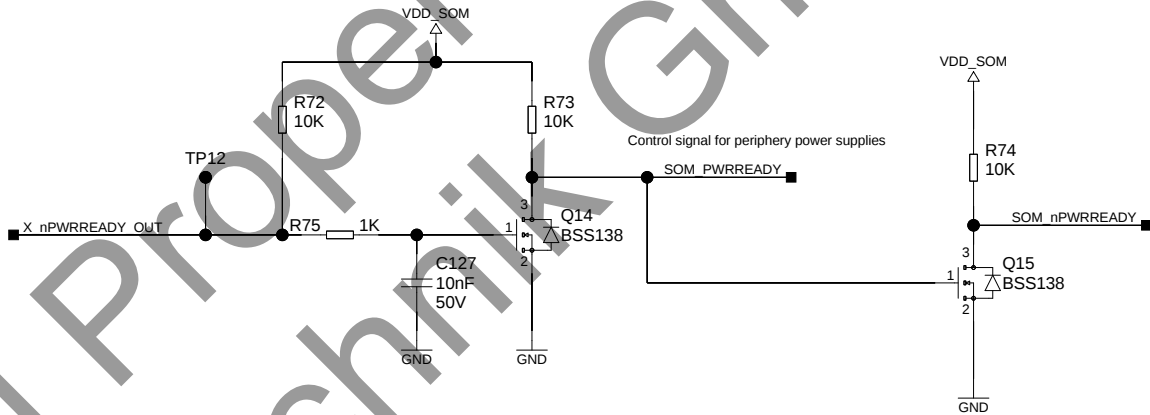
Power Sequencing

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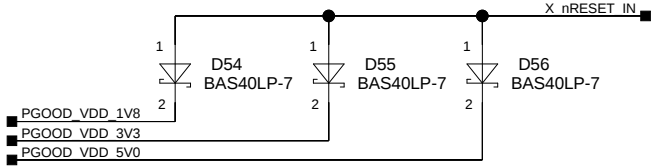
Power up diagram



SOM voltage power ready signal



Reset Delay



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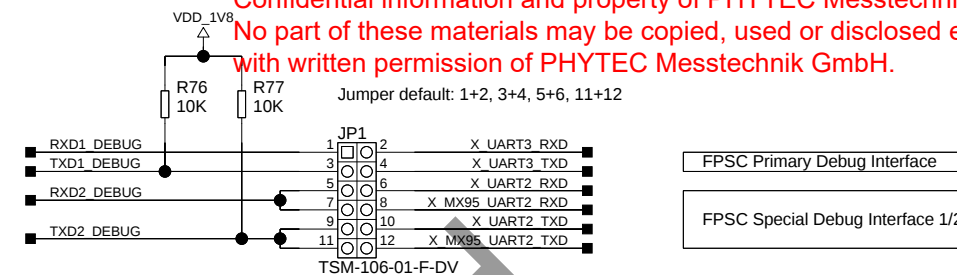
USB Debug

Factory use only
Option to connect Primary Debug Interface to RS232 Transceiver

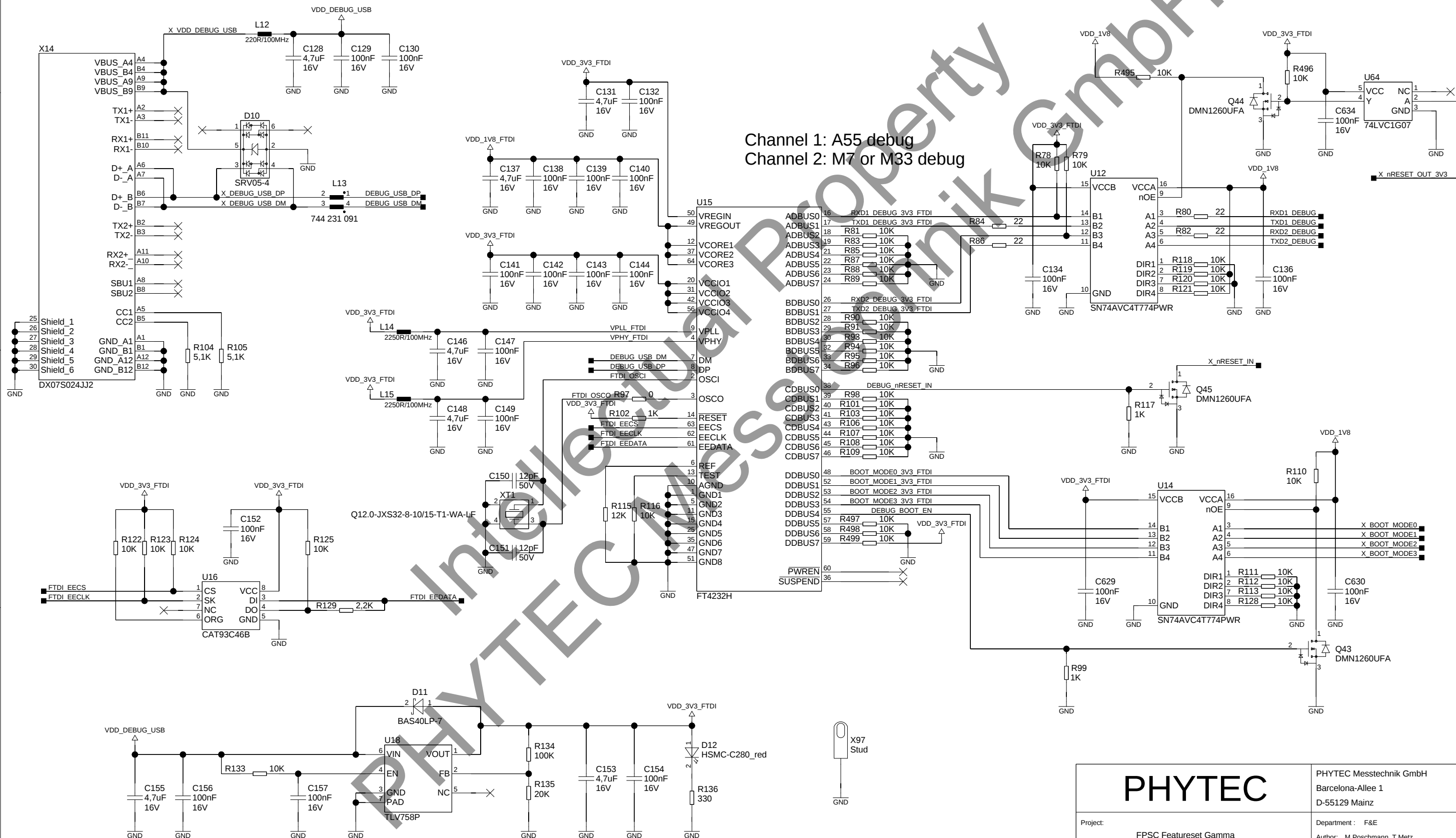


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Jumper default: 1+2, 3+4, 5+6, 11+12



Channel 1: A55 debug
Channel 2: M7 or M33 debug



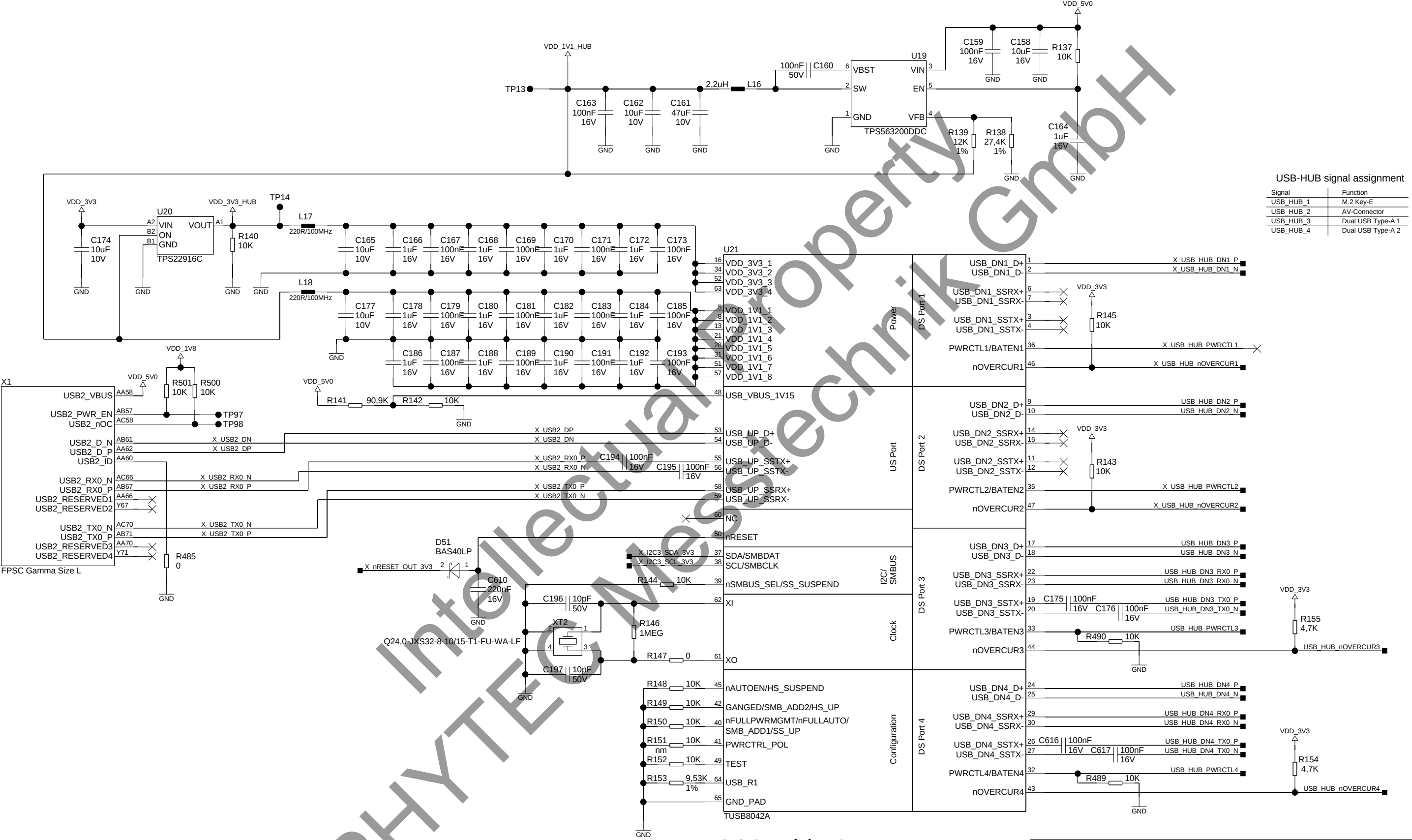
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USB Hub

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USB-HUB signal assignment

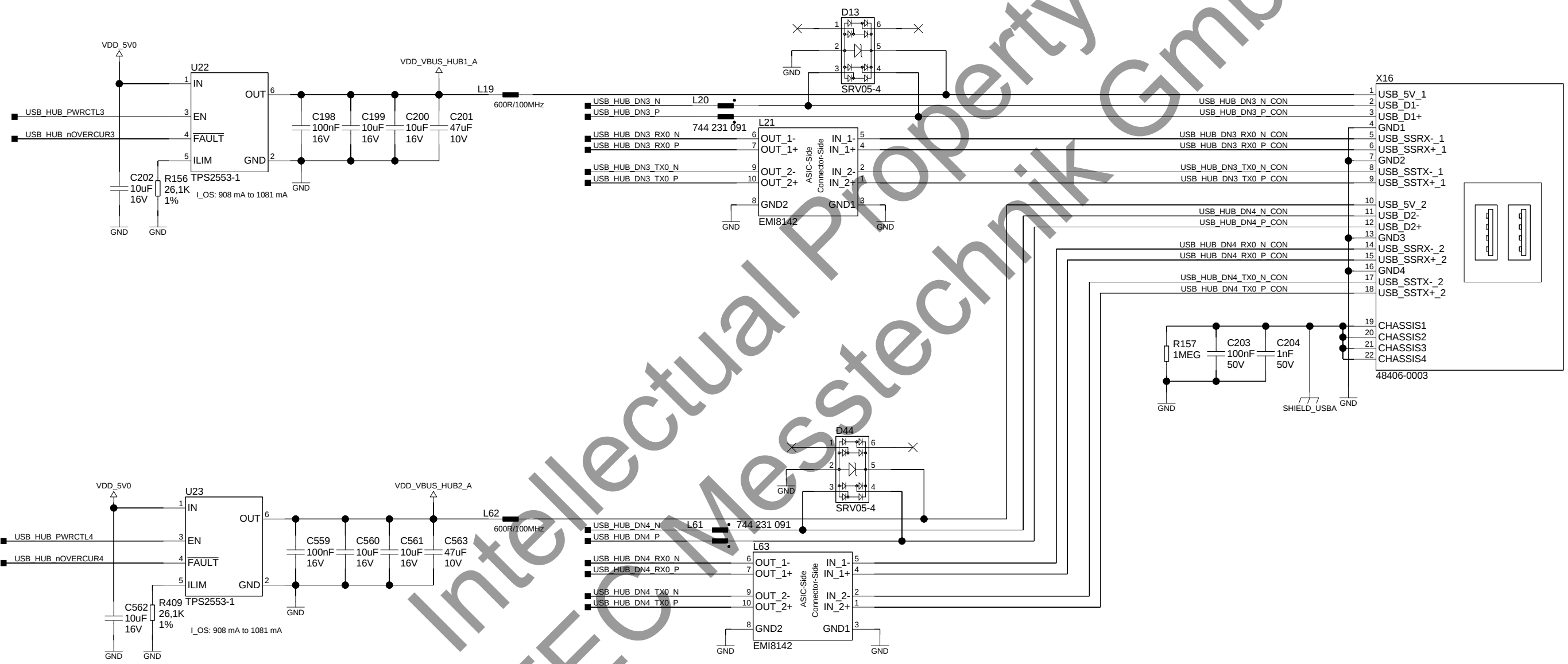
Signal	Function
USB_HUB_1	M.2 Key-E
USB_HUB_2	AV-Connector
USB_HUB_3	Dual USB Type-A 1
USB_HUB_4	Dual USB Type-A 2

I2C3 addr. 0x44

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Dual USB Type-A 3.0

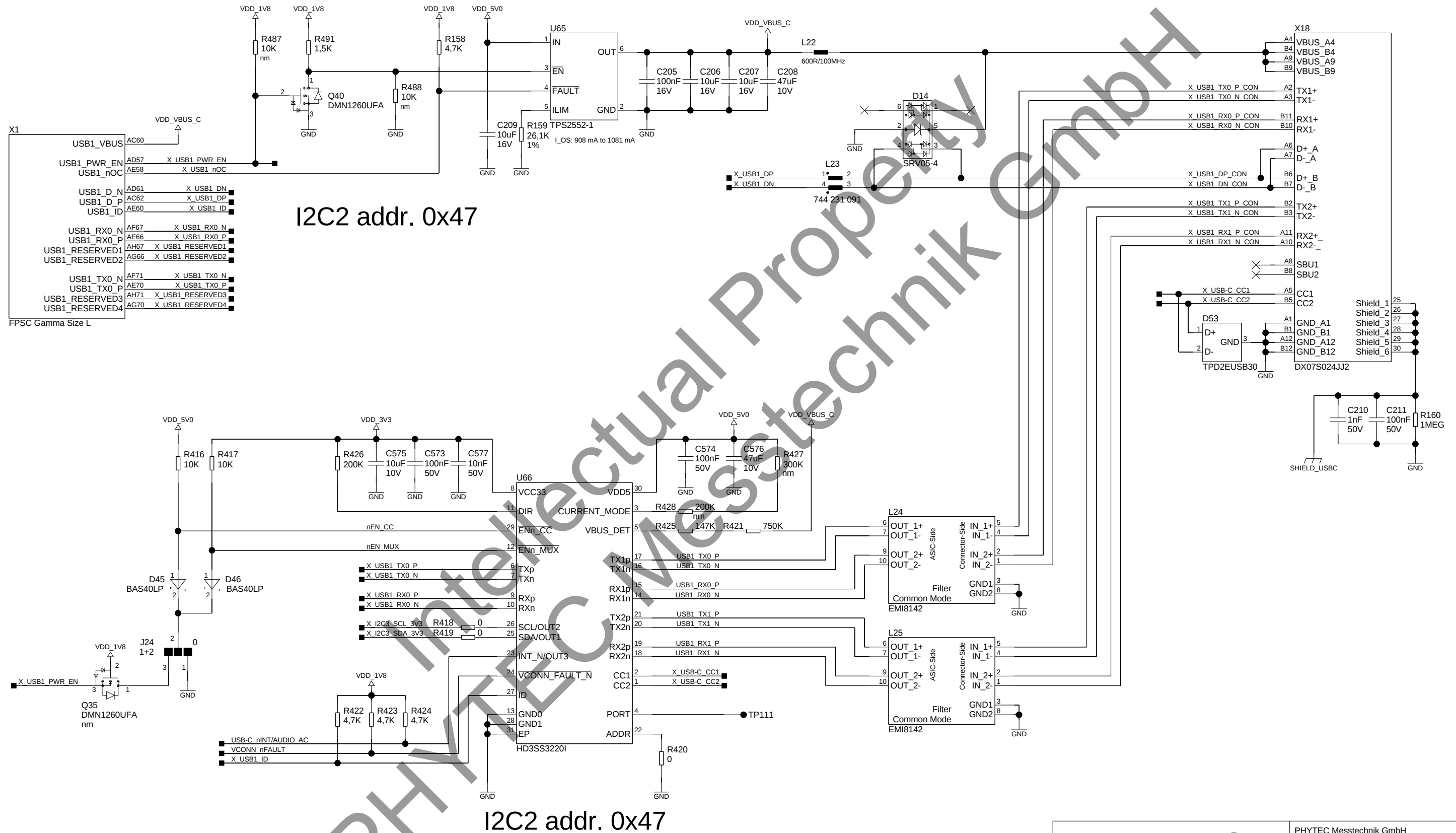
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USB Type-C

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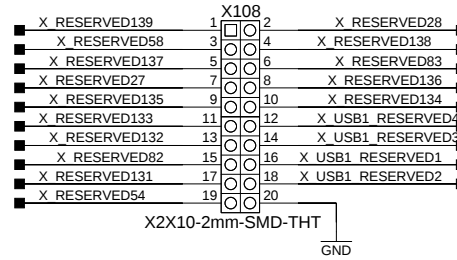
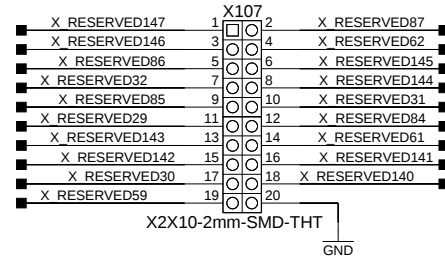
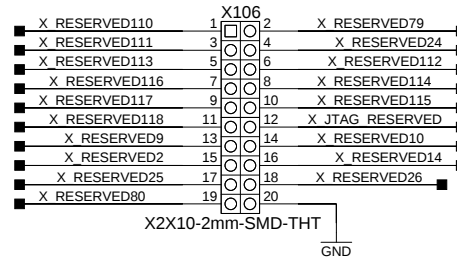
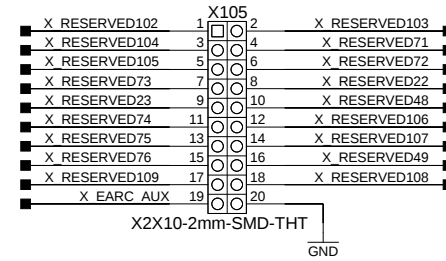
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Reserved / Unused headers

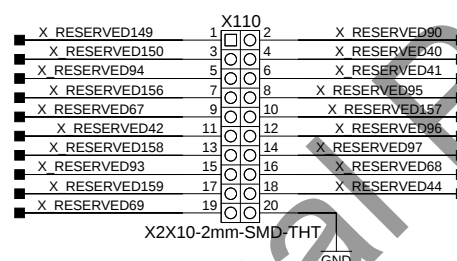
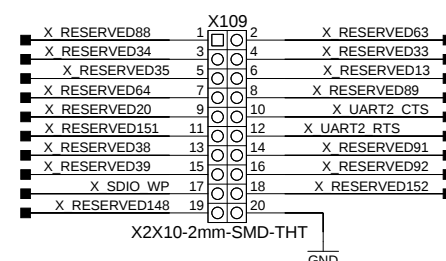
FPSC reserved / Test pins

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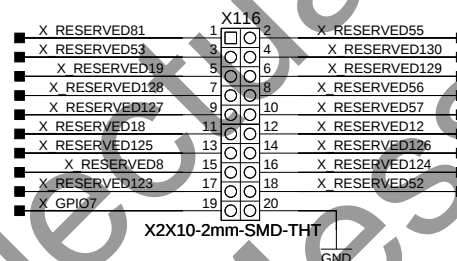
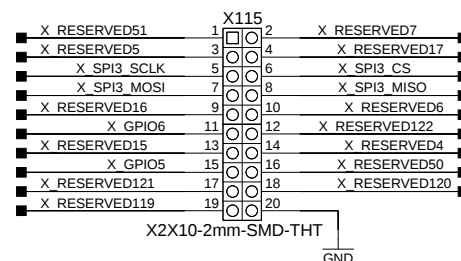
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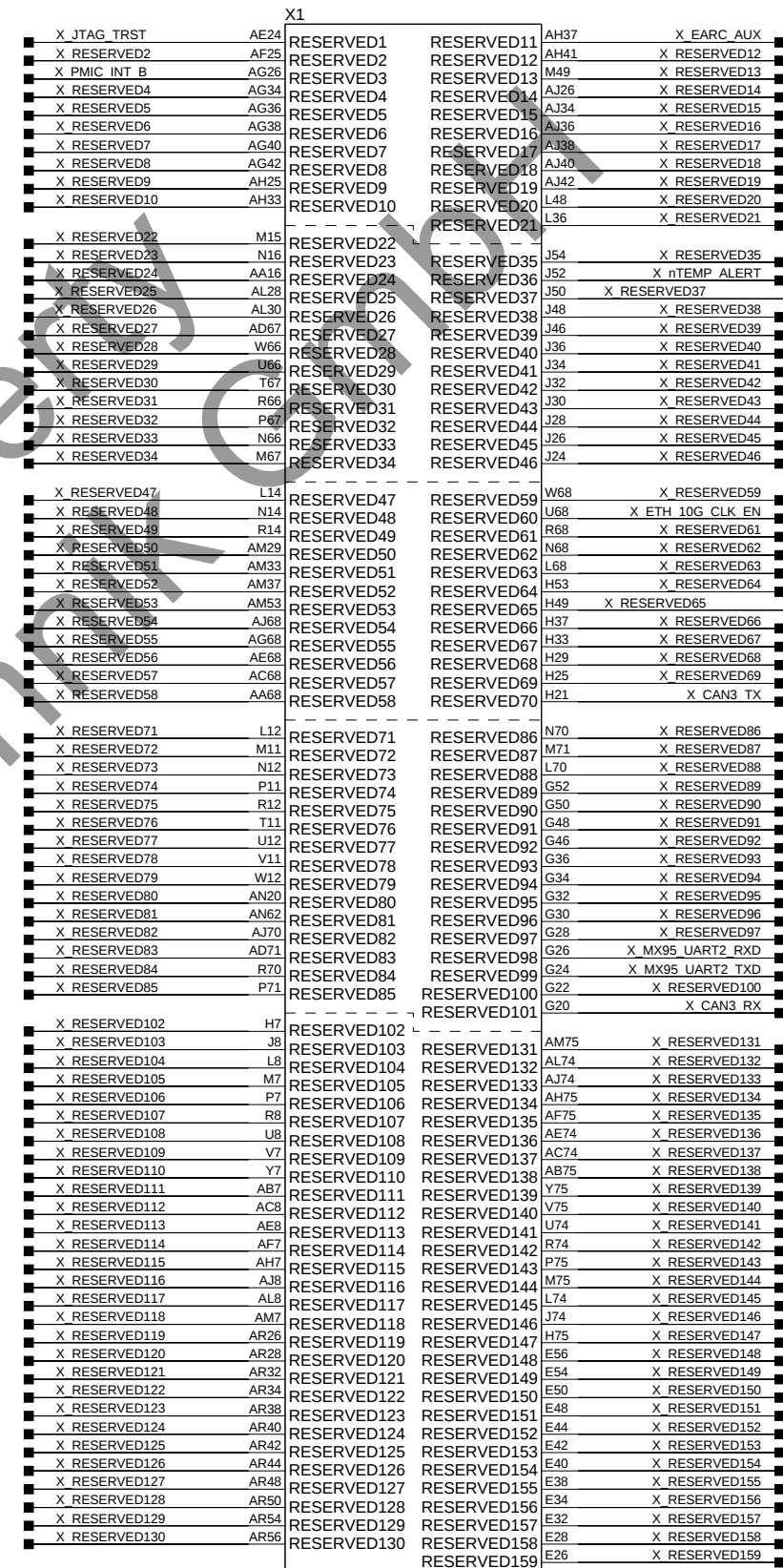
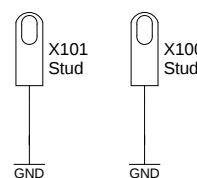
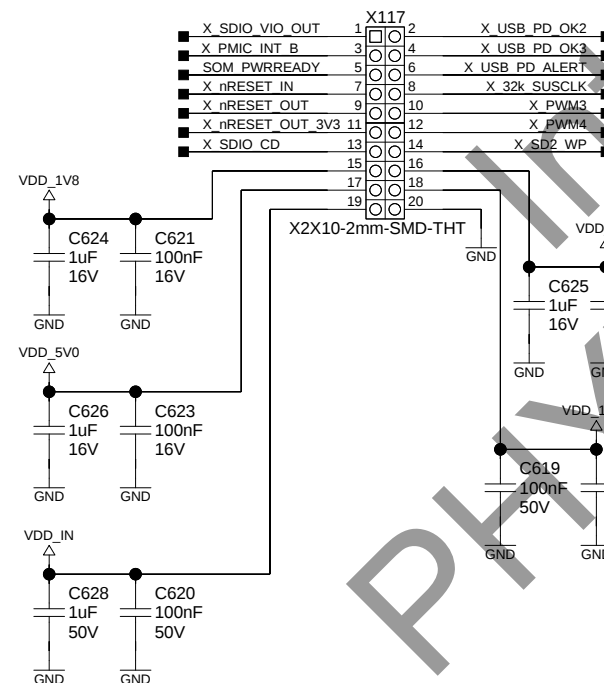
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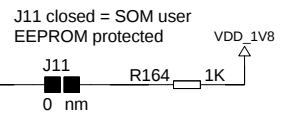
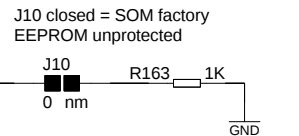
C



D



FPSC Gamma Size L



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FPSC Featureset Gamma

Department: F&E

Author: M.Poschmann, T.Metz

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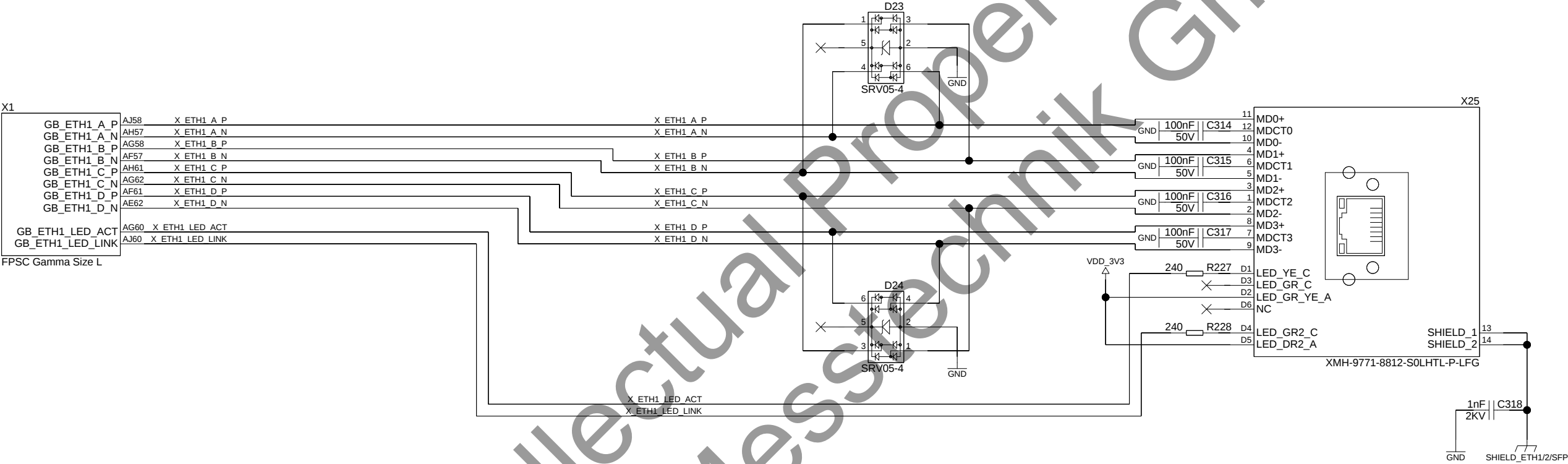
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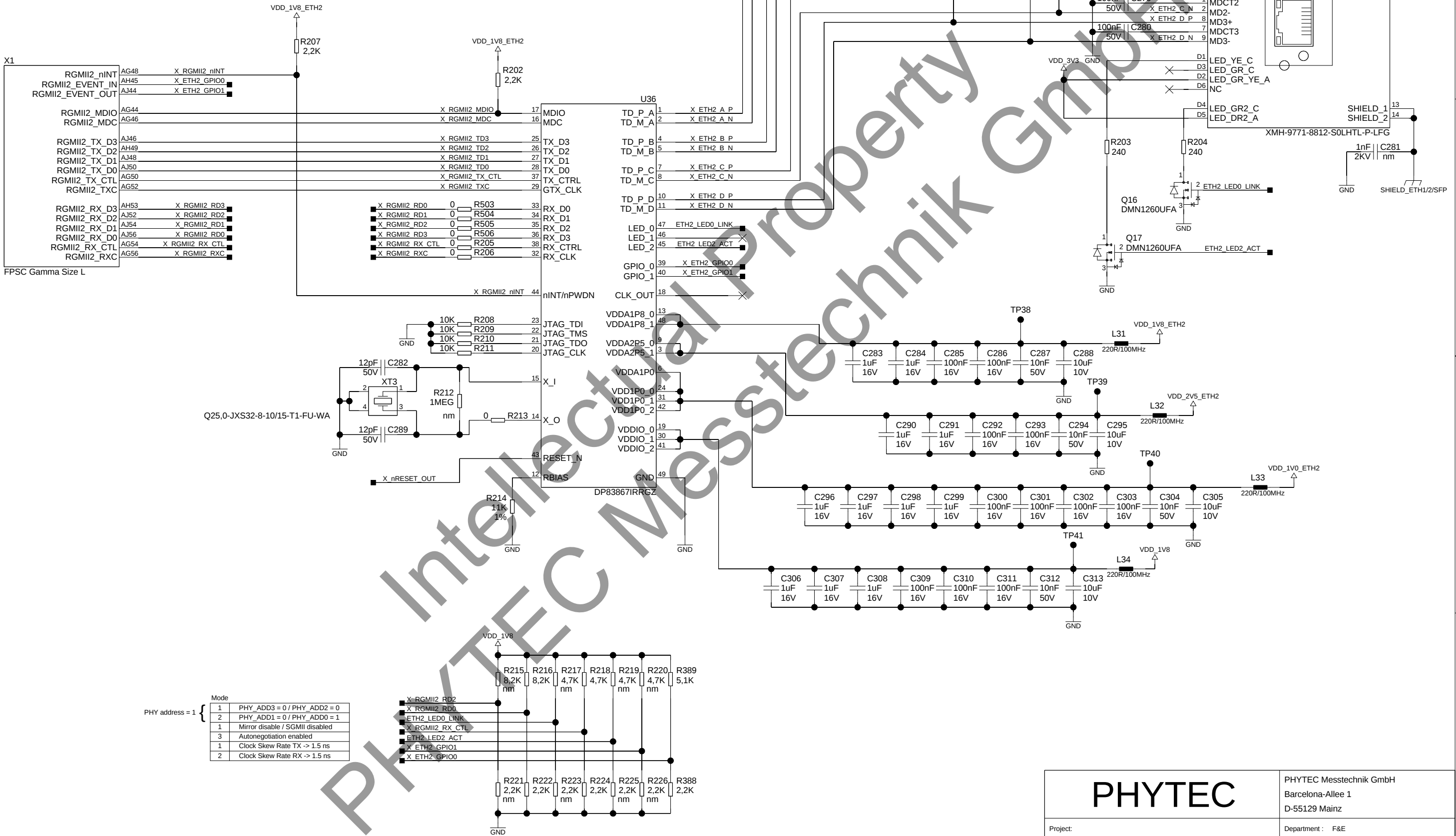
Ethernet1

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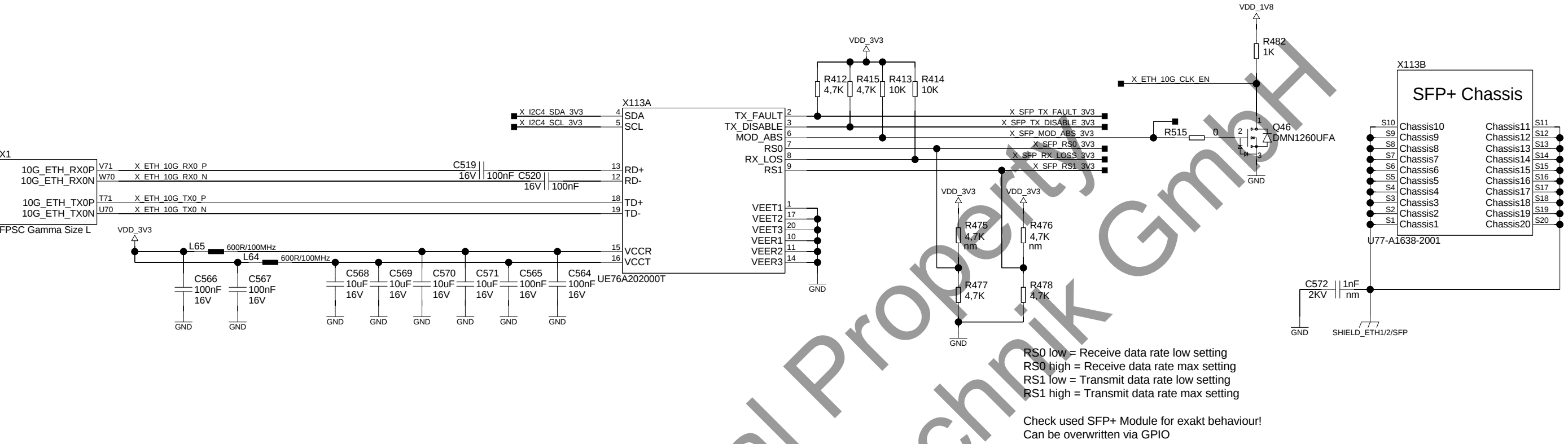
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Ethernet2

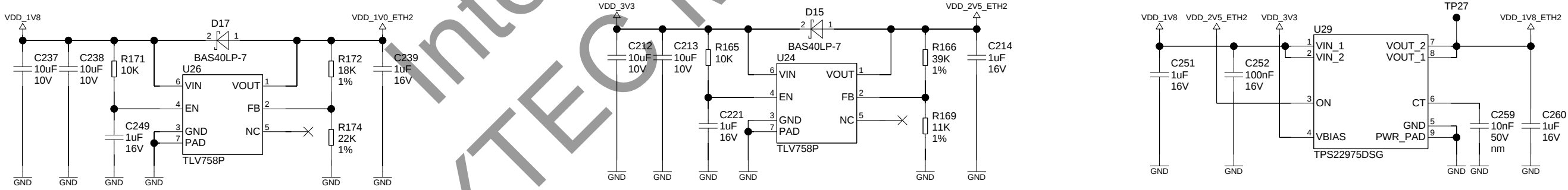


SFP+

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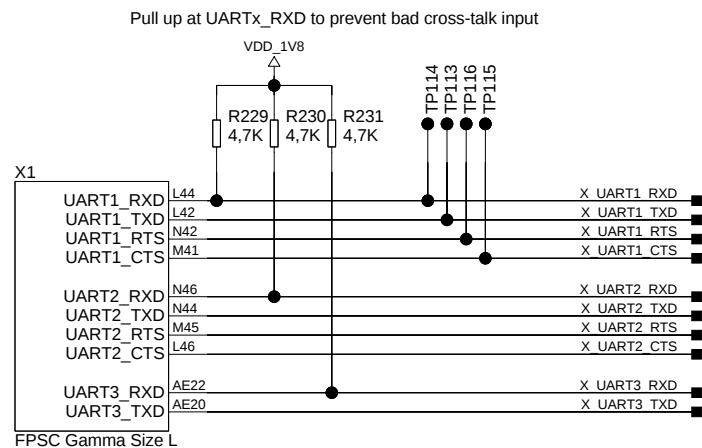


ETH2 Power

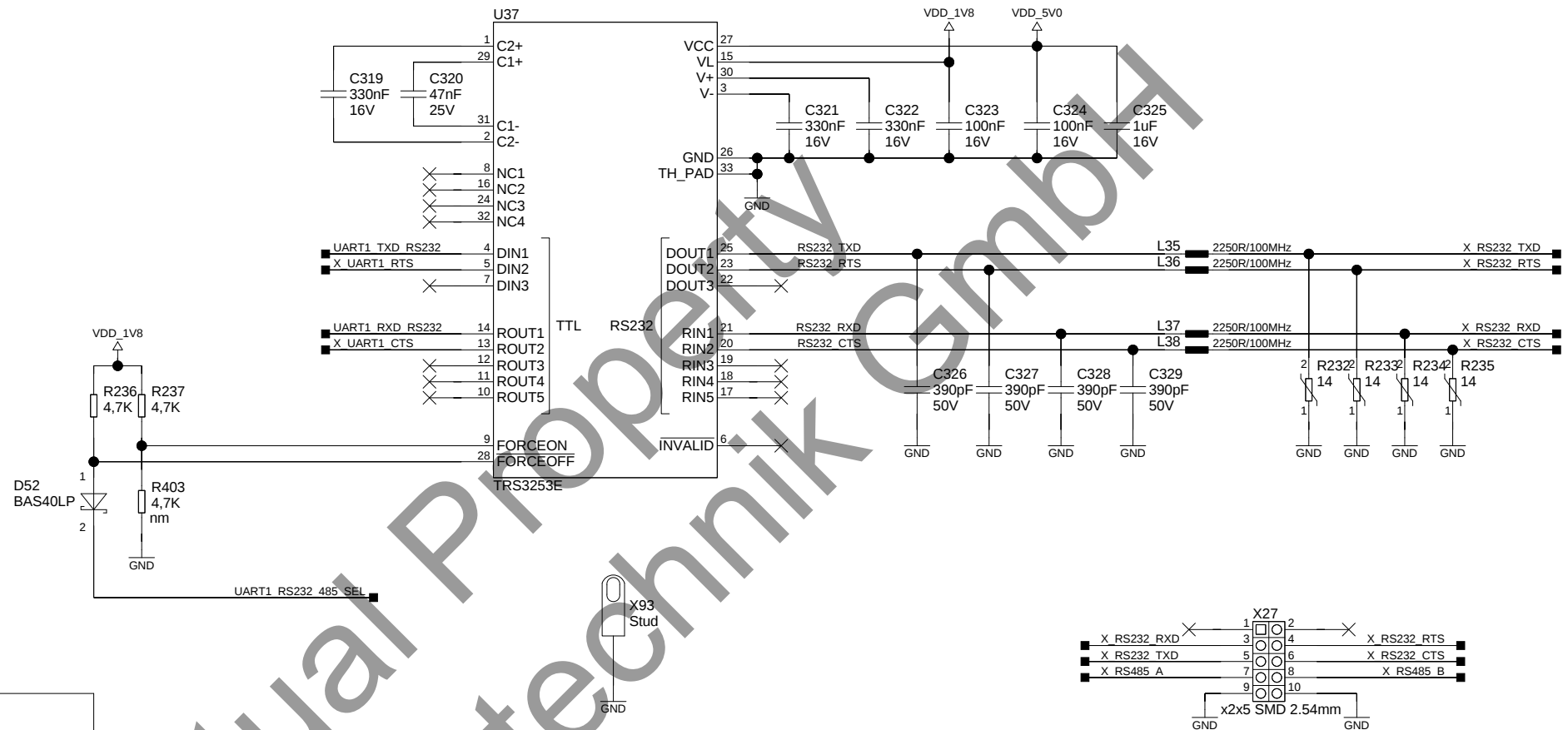


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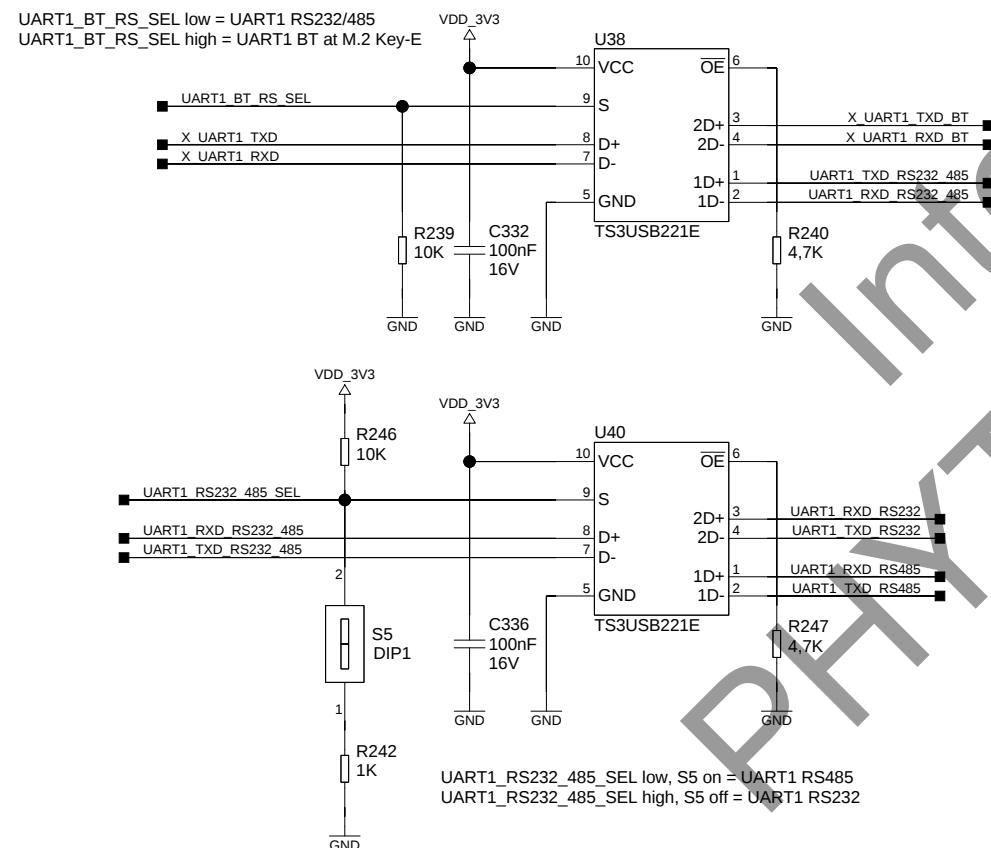
RS-232 / RS-485



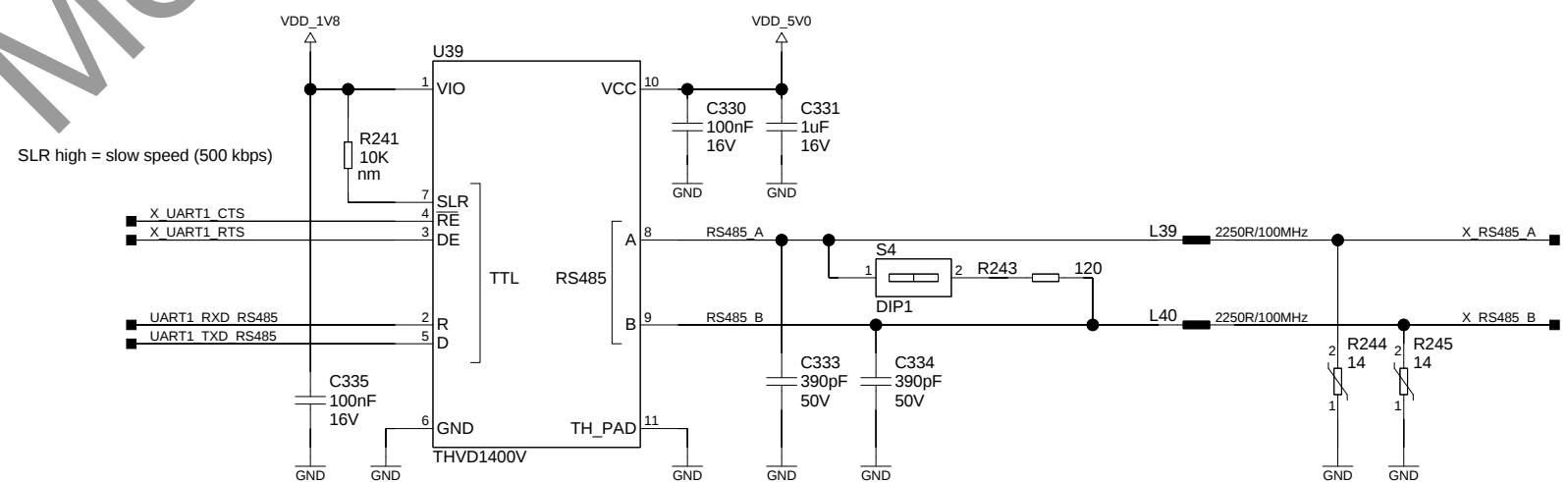
RS 232



UART1 Routing



RS 485



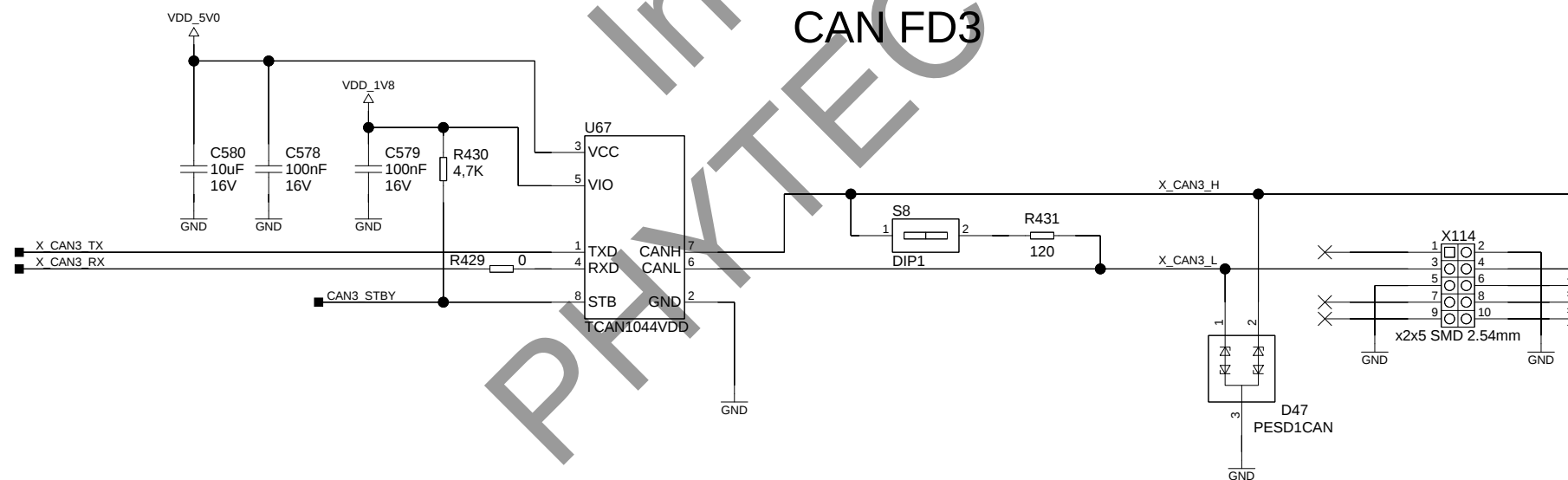
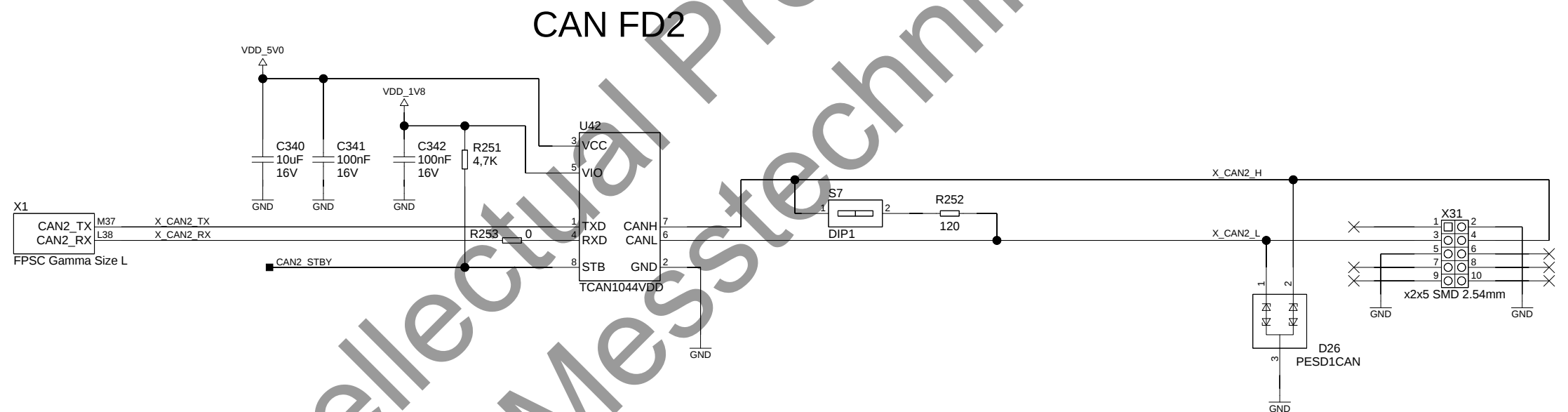
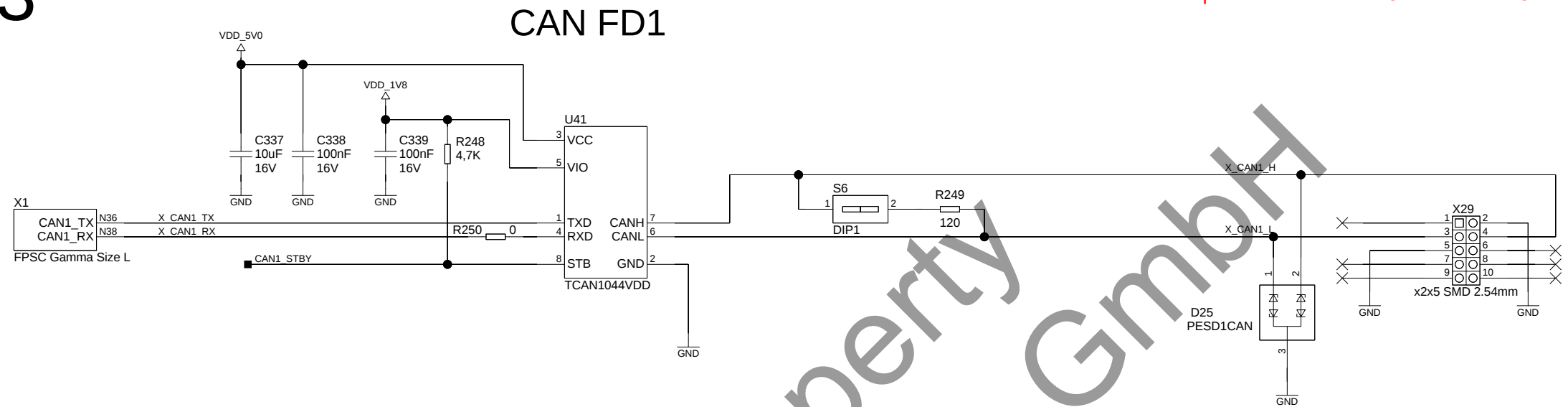
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CAN FD1/2/3

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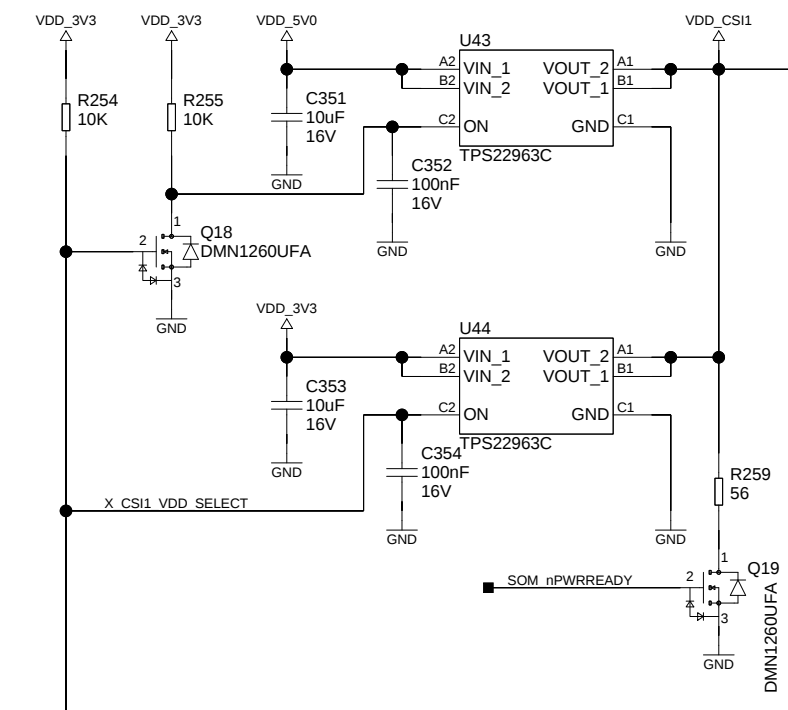
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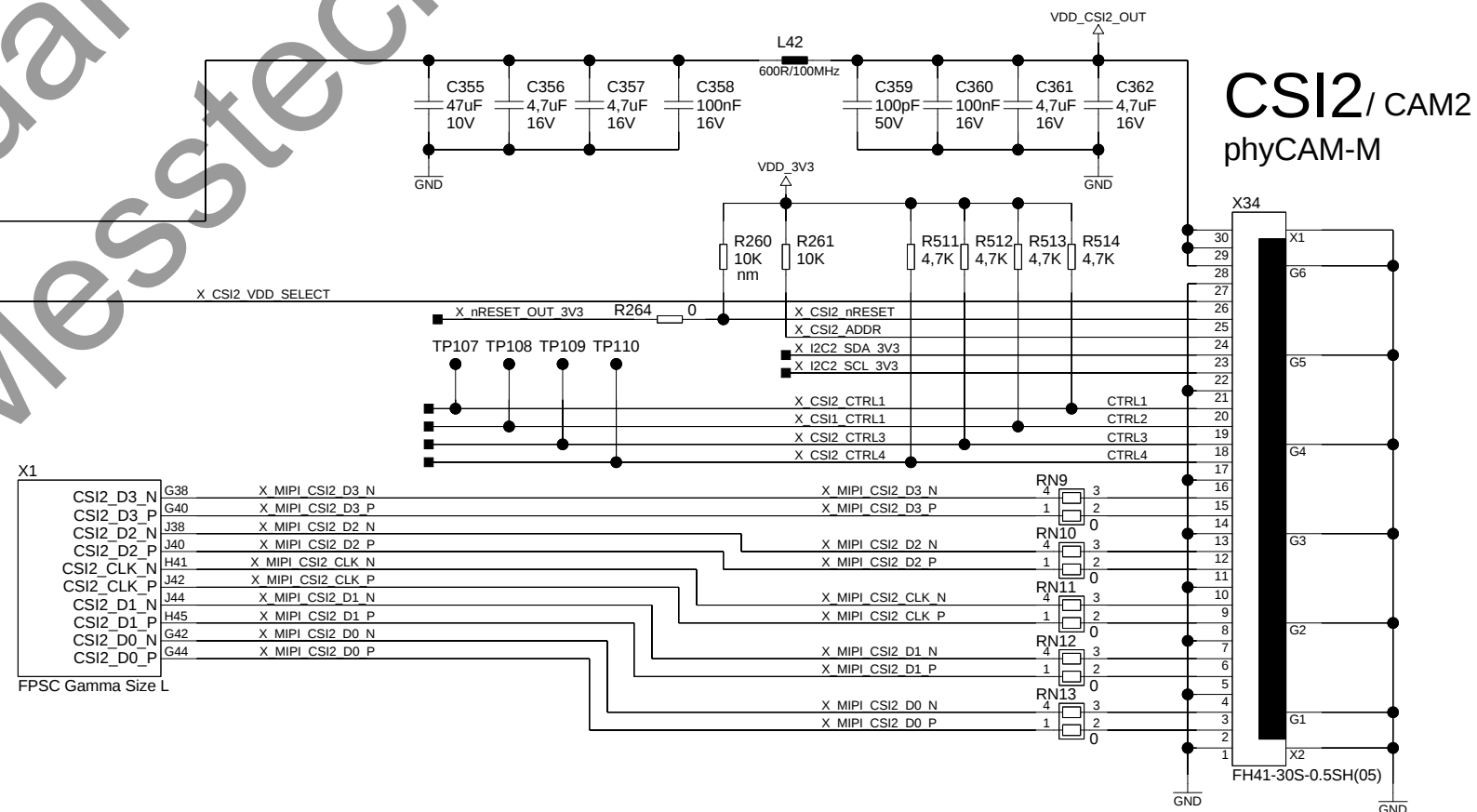
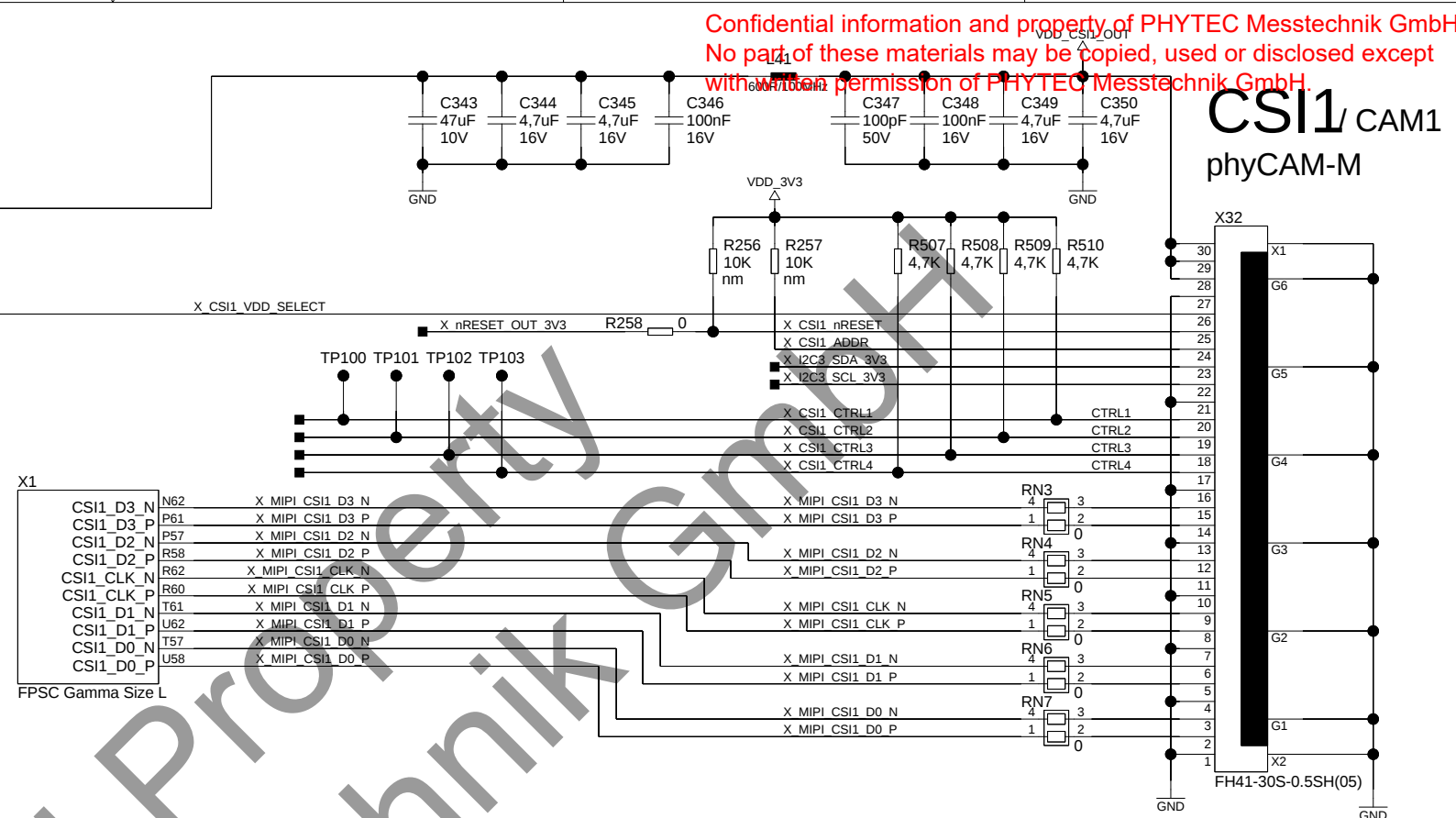
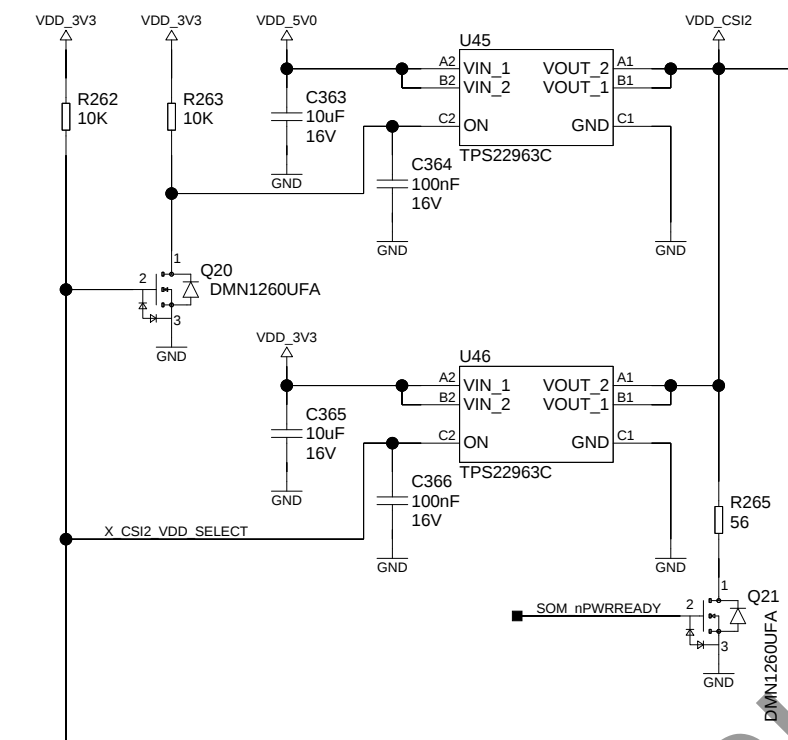
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phyCAM-M 1/2



VDD_SELECT	VDD_CSI
0	5 V
1	3.3 V



Mount J12 for synchronized trigger of CSI1 und CSI2

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CSI1/CAM1
phyCAM-M

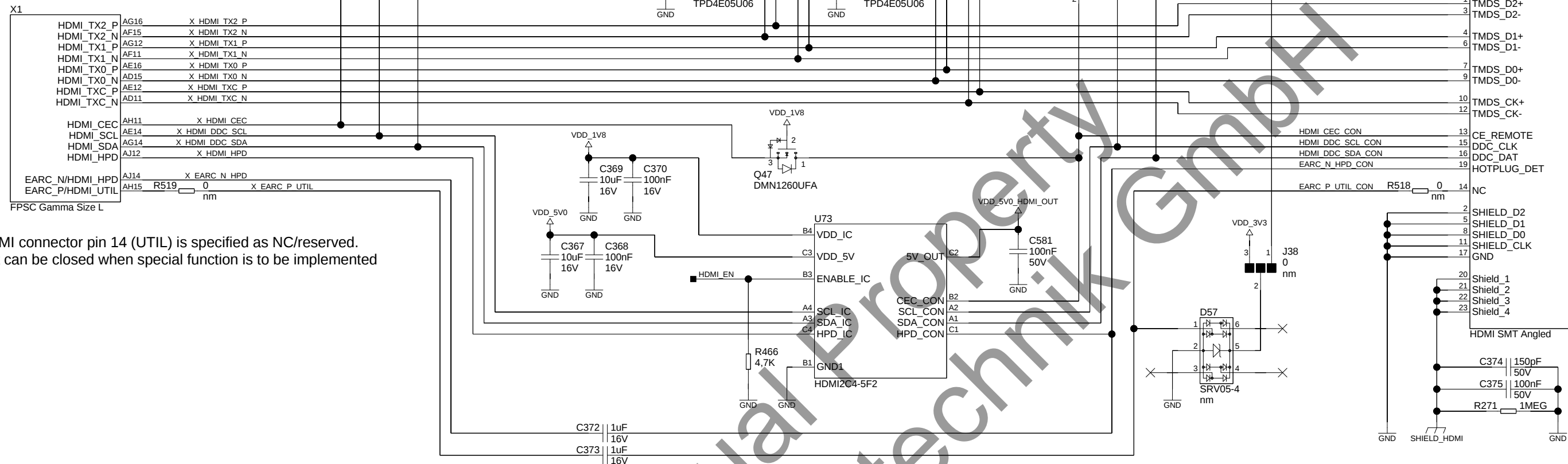
CSI2/CAM2
phyCAM-M

PHYTEC

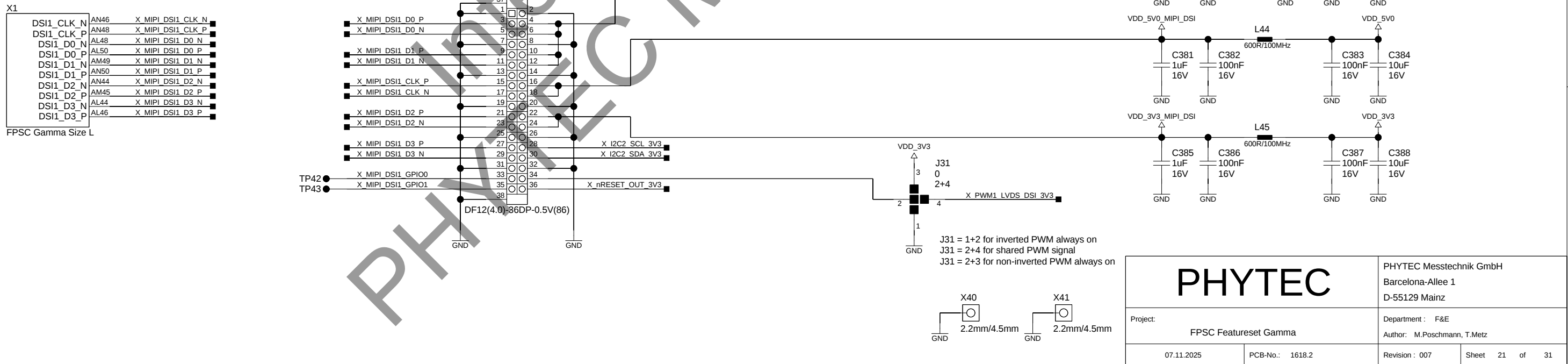
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Barcelona-Allee 1
D-55129 Mainz

Project:	FPSC Featureset Gamma	Department :	F&E
07.11.2025	PCB-No.: 1618.2	Author:	M.Poschmann, T.Metz
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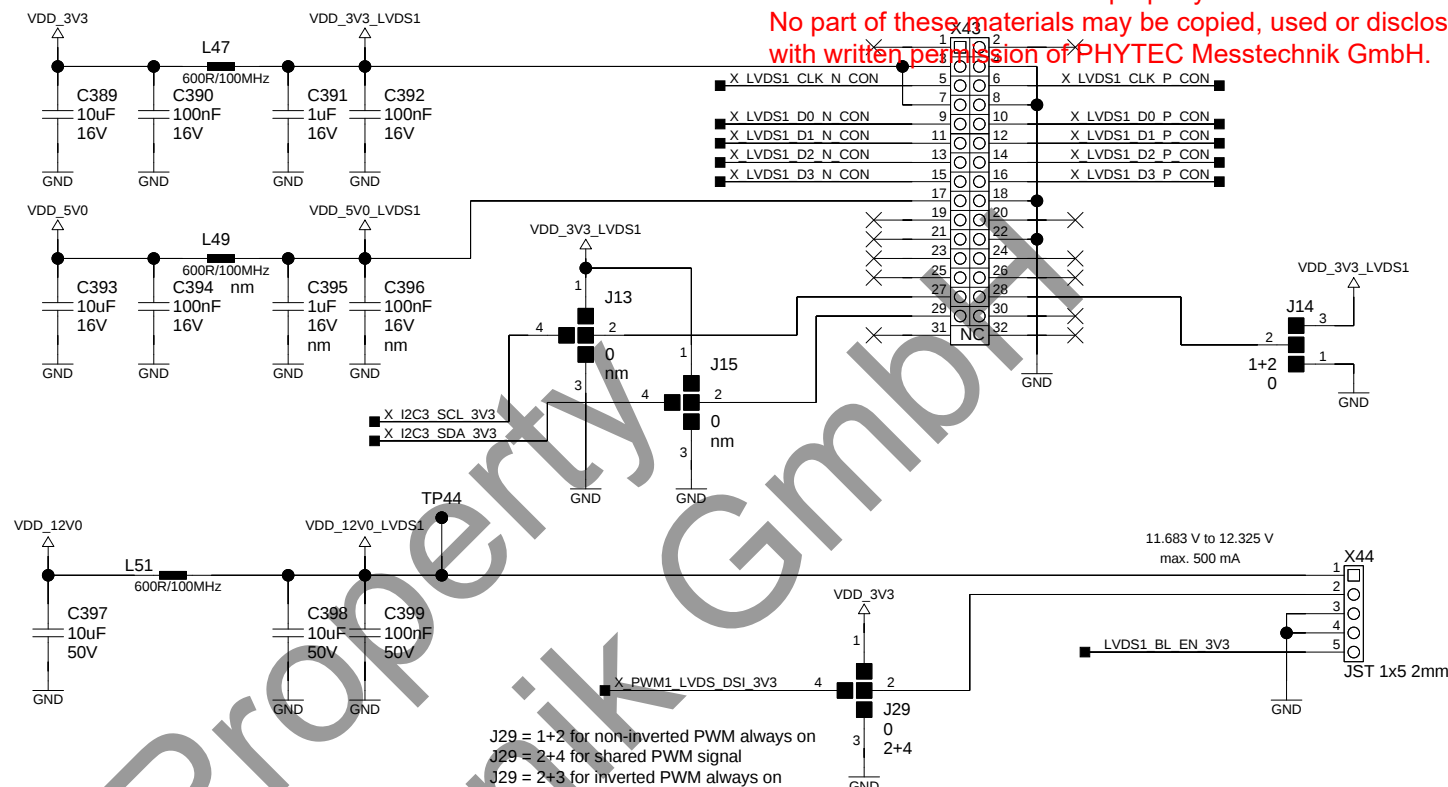
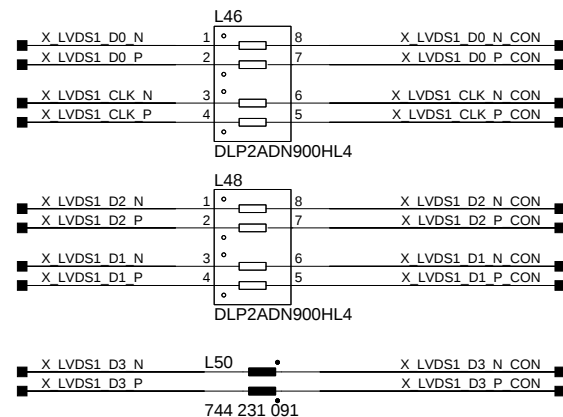
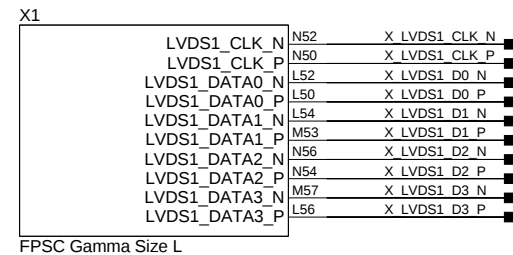
HDMI



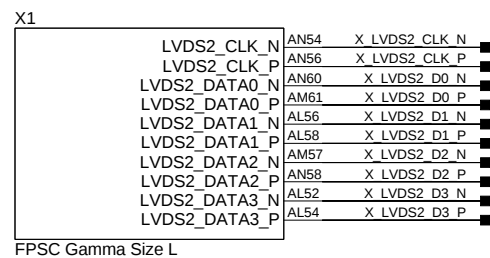
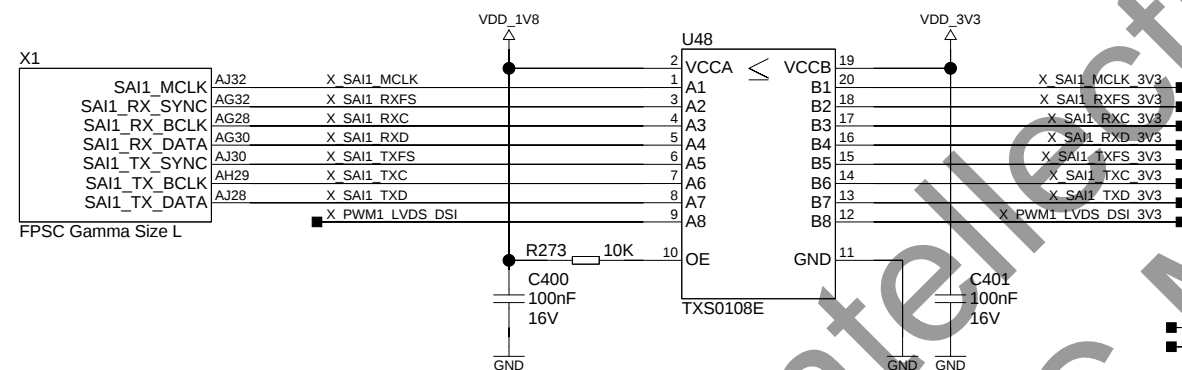
MIPI-DSI / PEB-AV-12 Connector



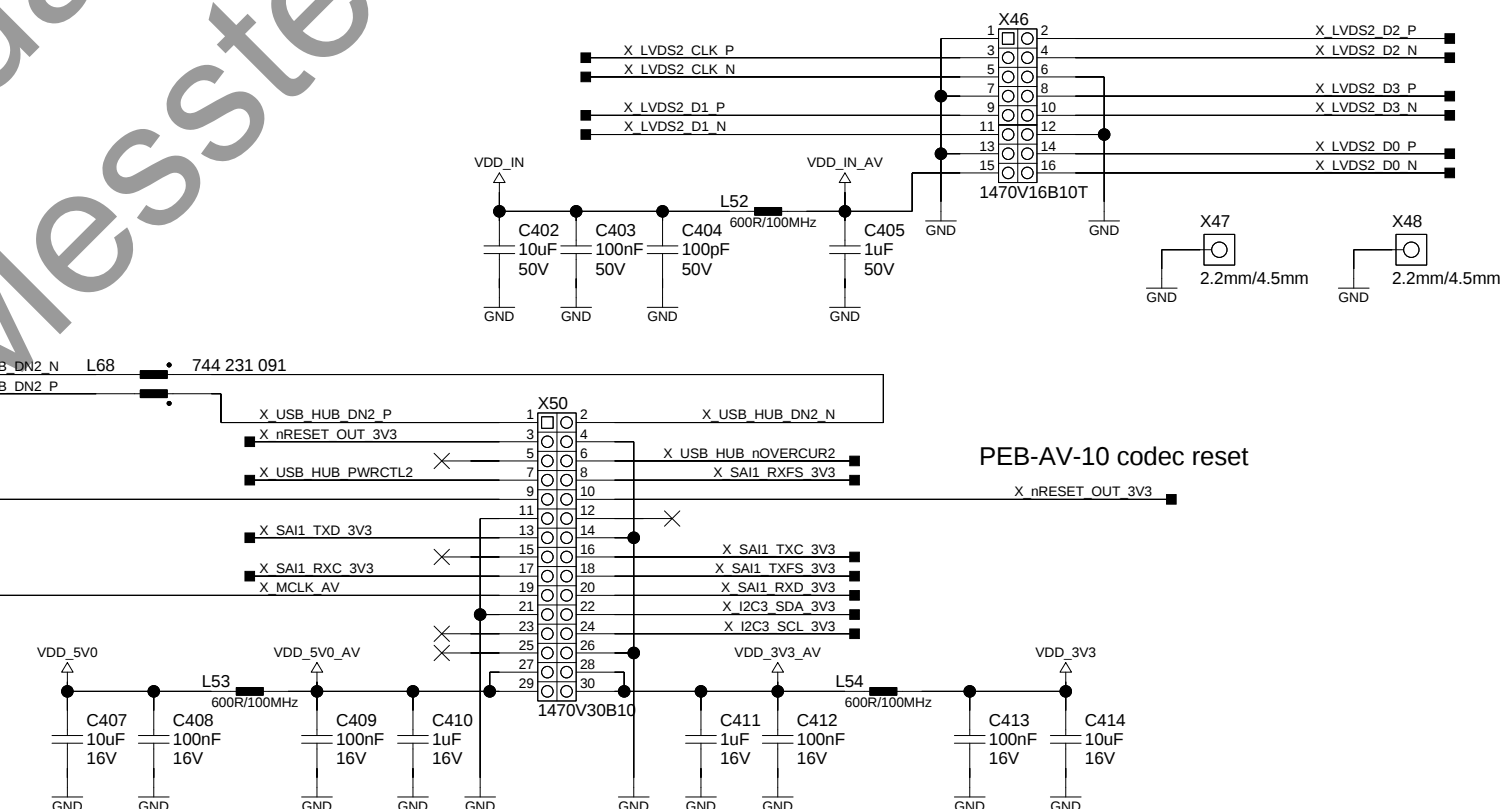
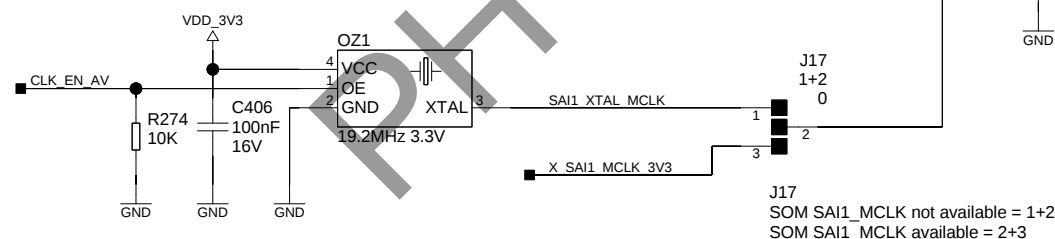
LVDS1



LVDS2 / PEB-AV-10/13 Connector



J30 = 1+2 for non-inverted PWM always on
J30 = 2+4 for shared PWM signal
J30 = 2+3 for inverted PWM always on



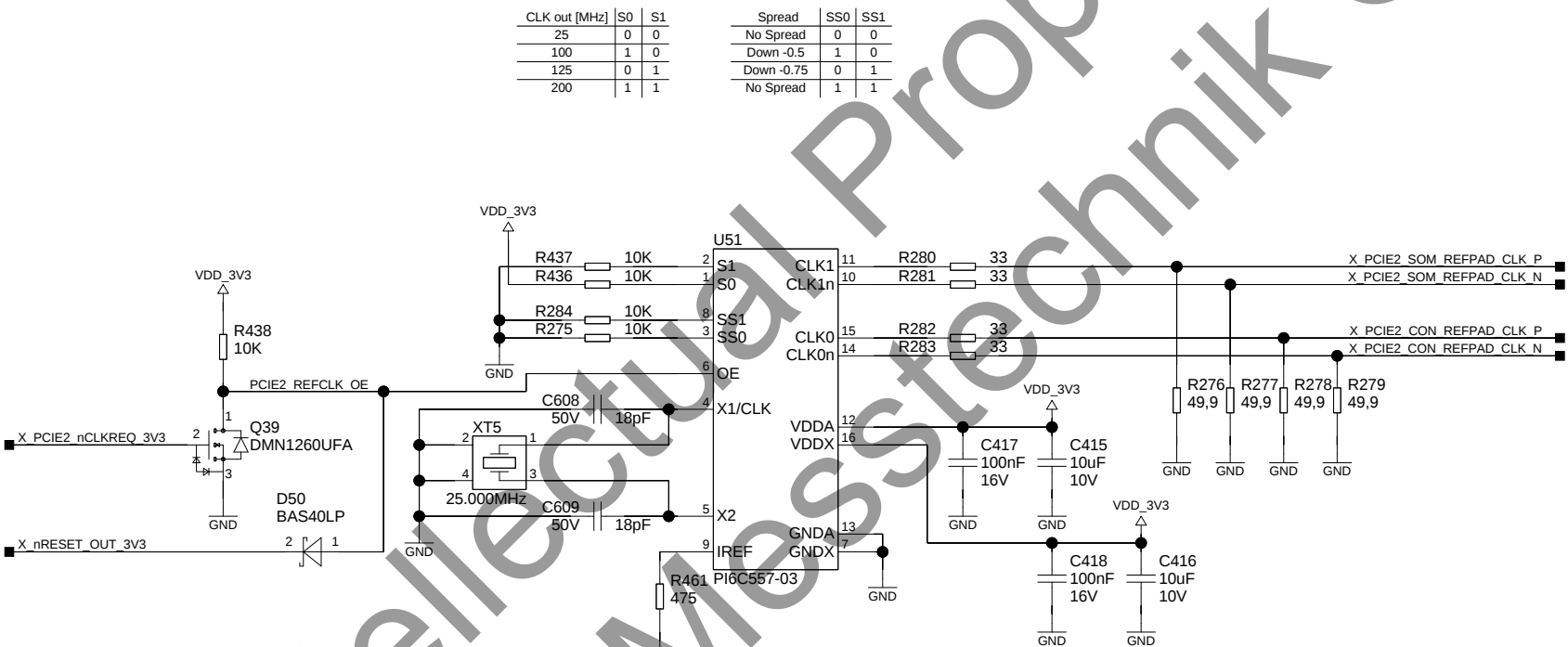
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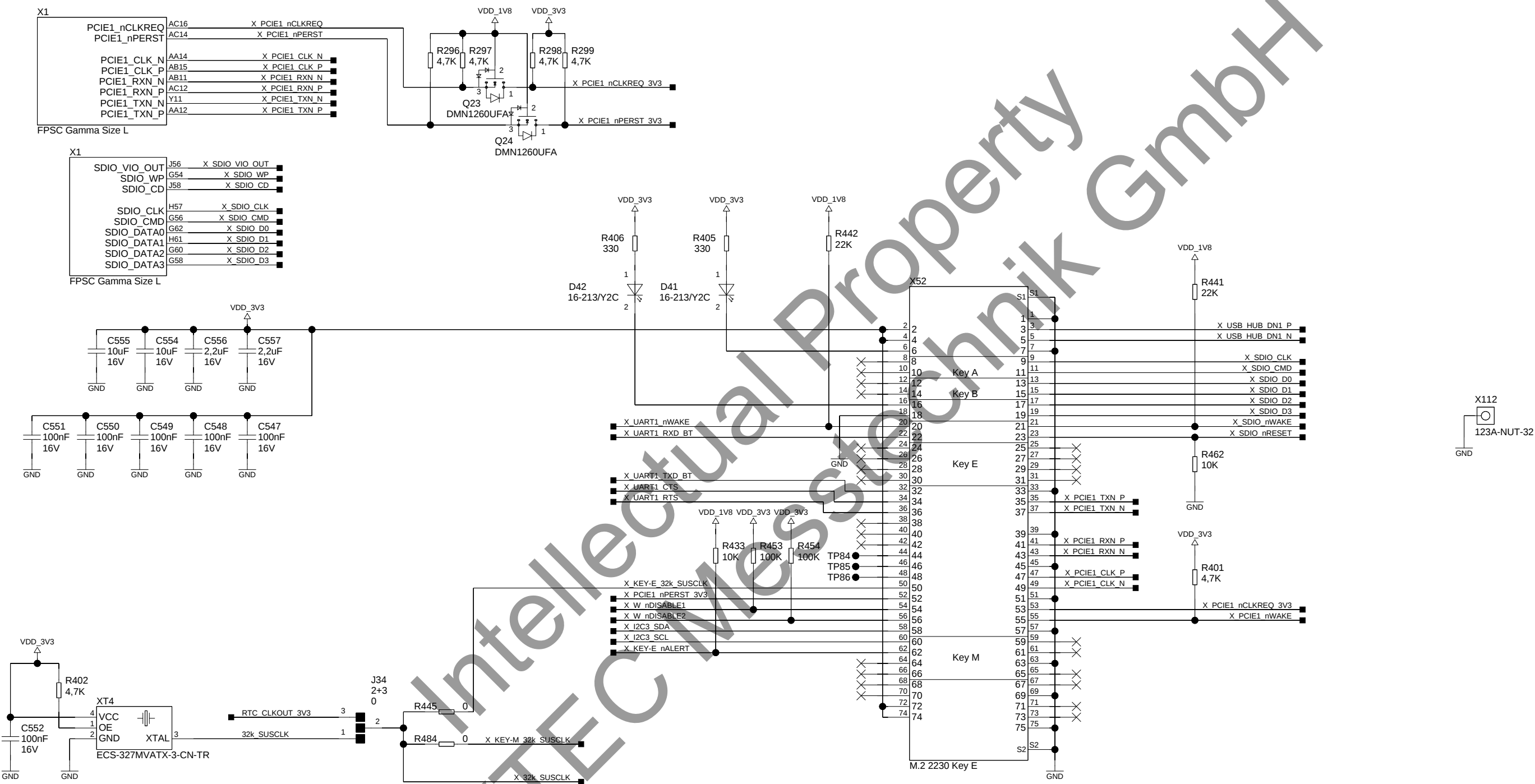
PCIe clock management

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M.2 Key-E

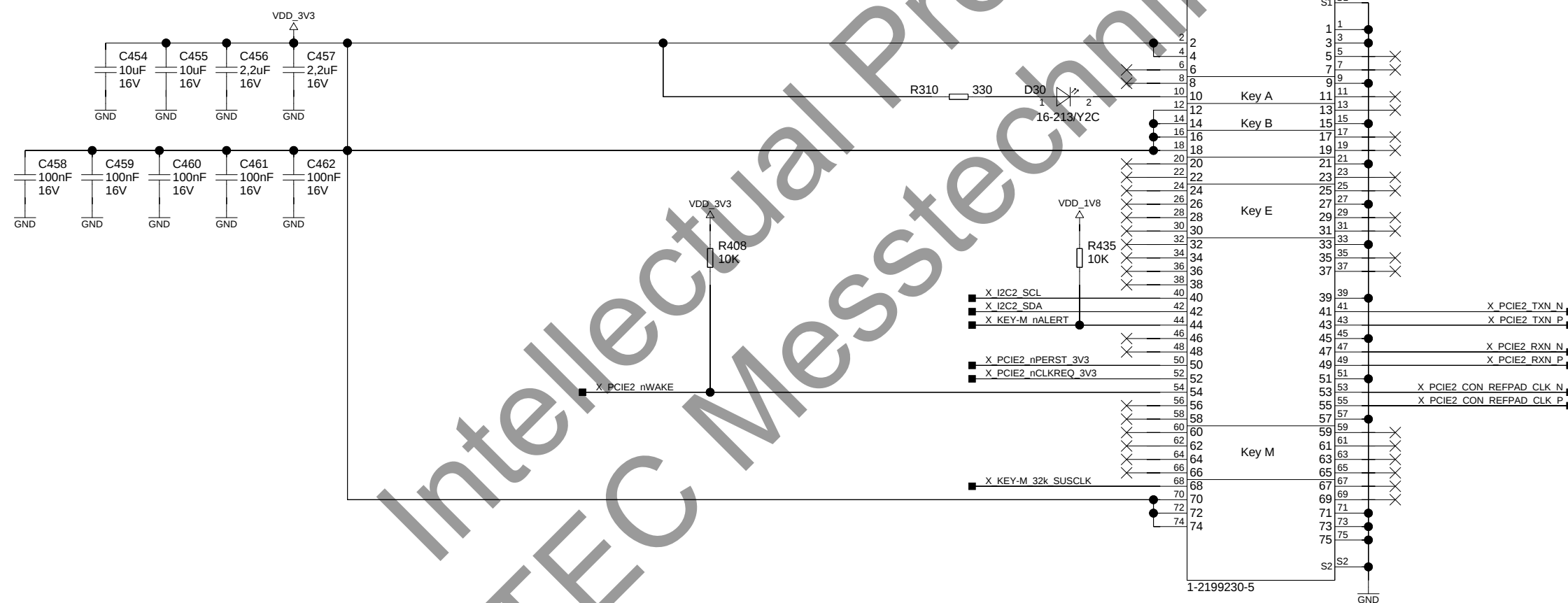
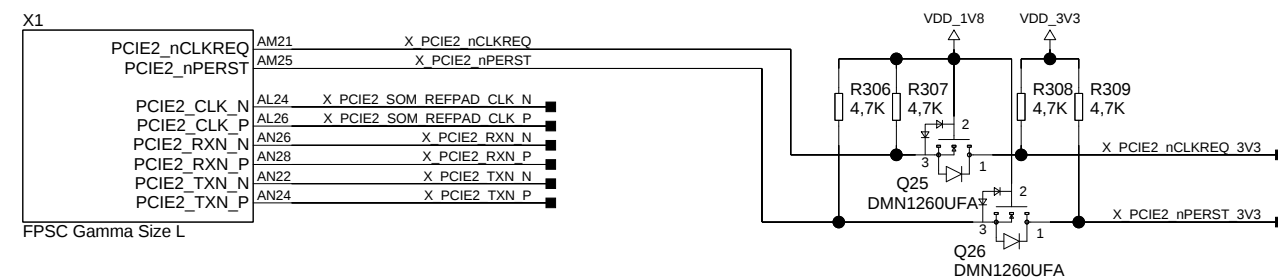
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M.2 Key-M

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FPSC Featureset Gamma

Department : F&E
Author: M.Poschmann, T.Metz

07.11.2025

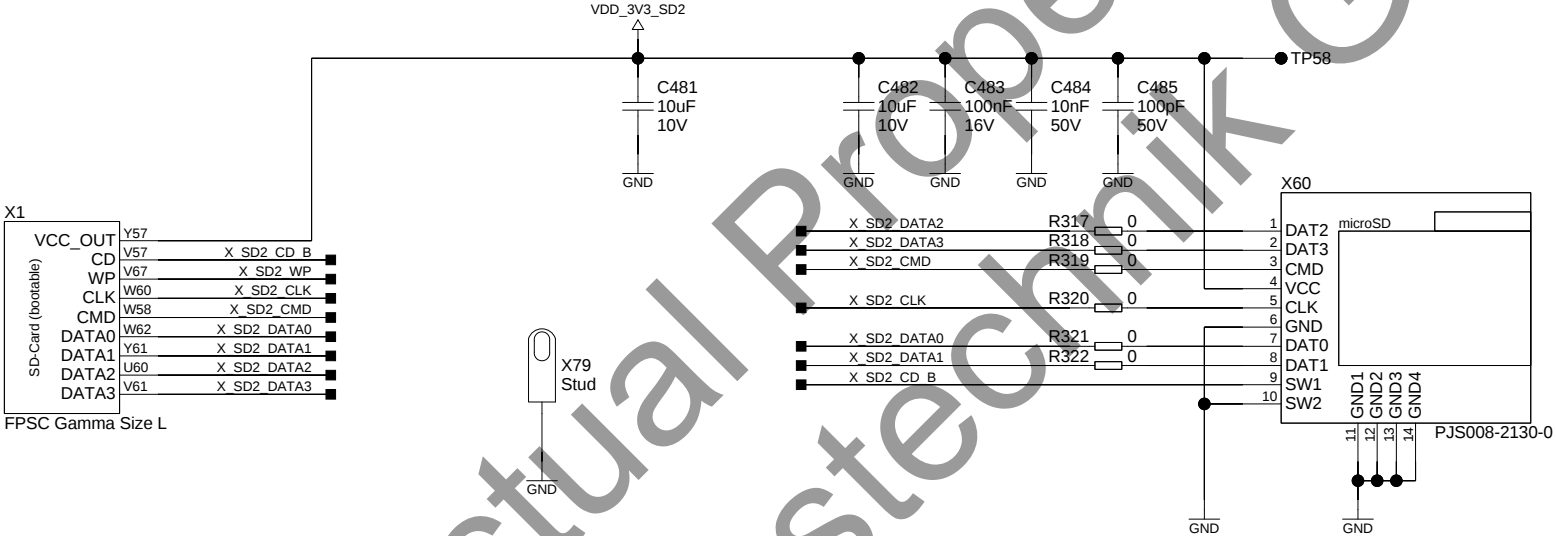
PCB-No.: 1618.2

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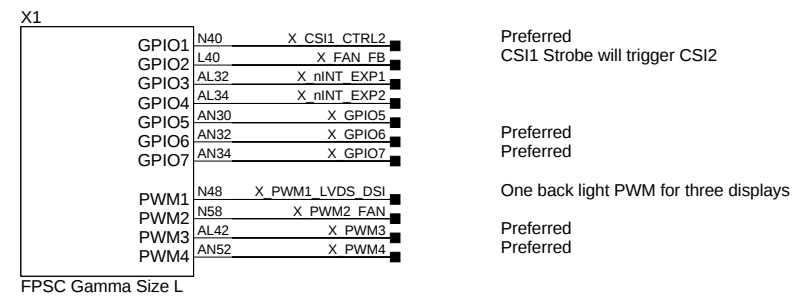
μSD-Card

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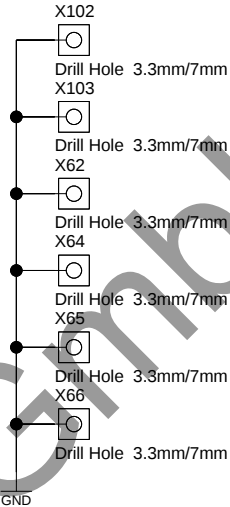


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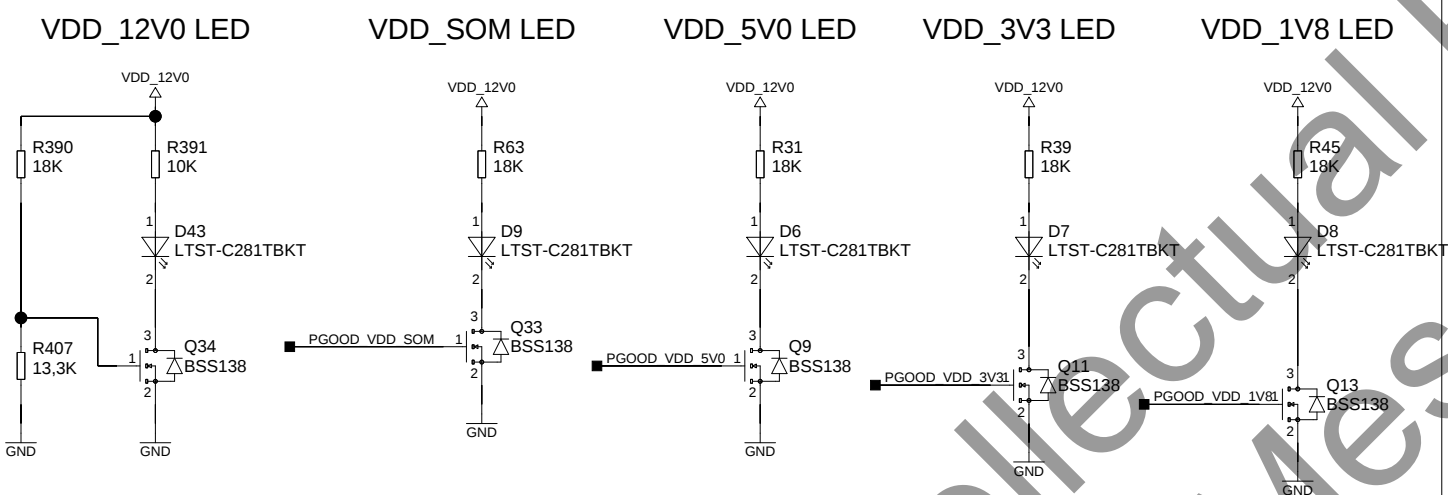
GPIO/PWM



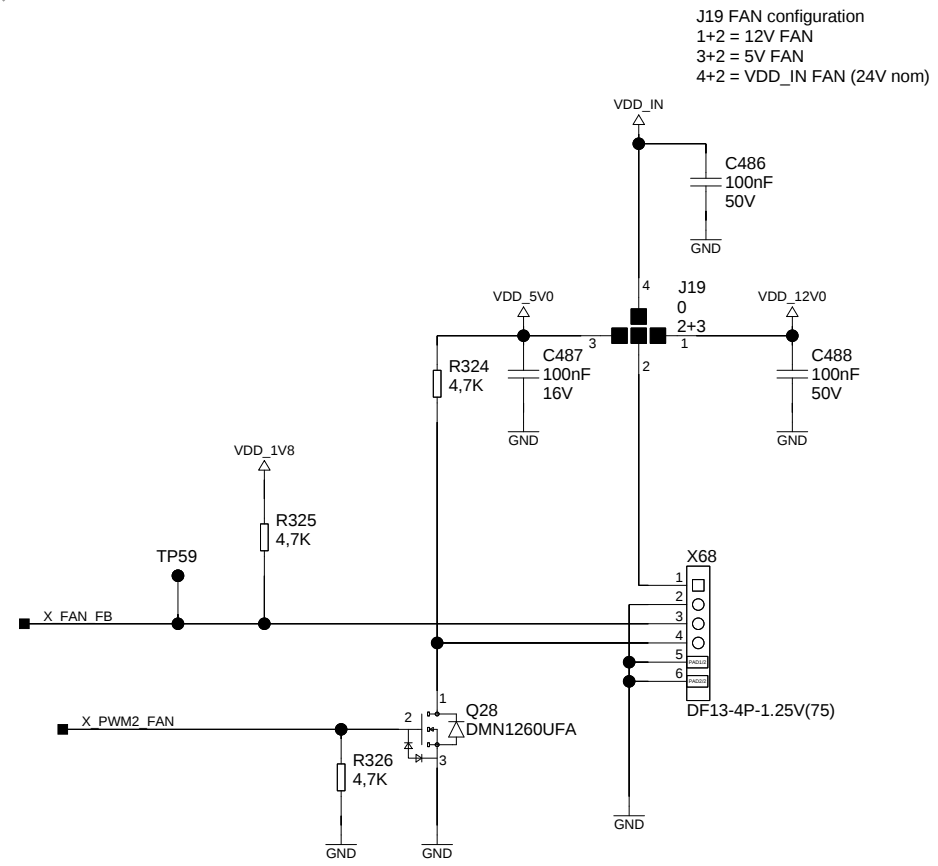
Mounting holes



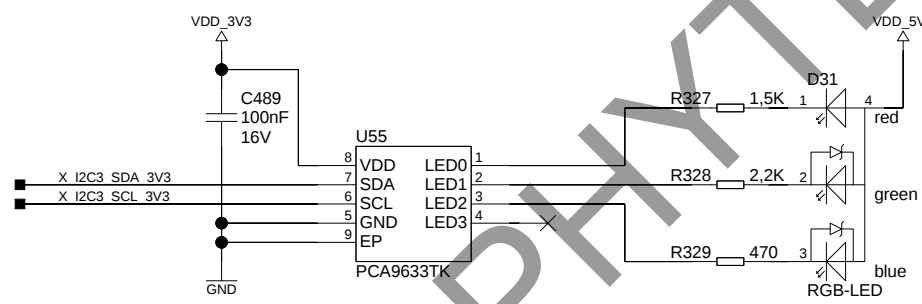
PGOOD LED



Fan Connector



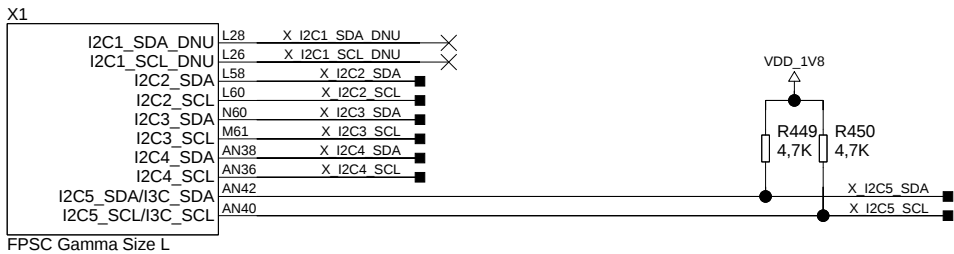
RGB LED



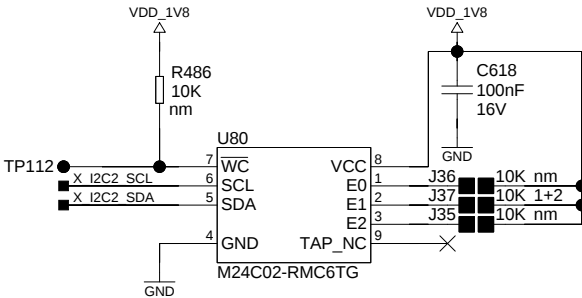
I2C Addr: 0x62

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I2C / I3C / EEPROM

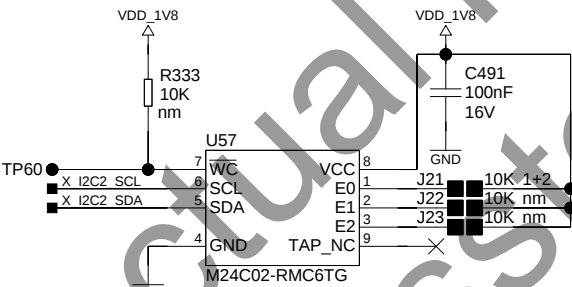


User EEPROM



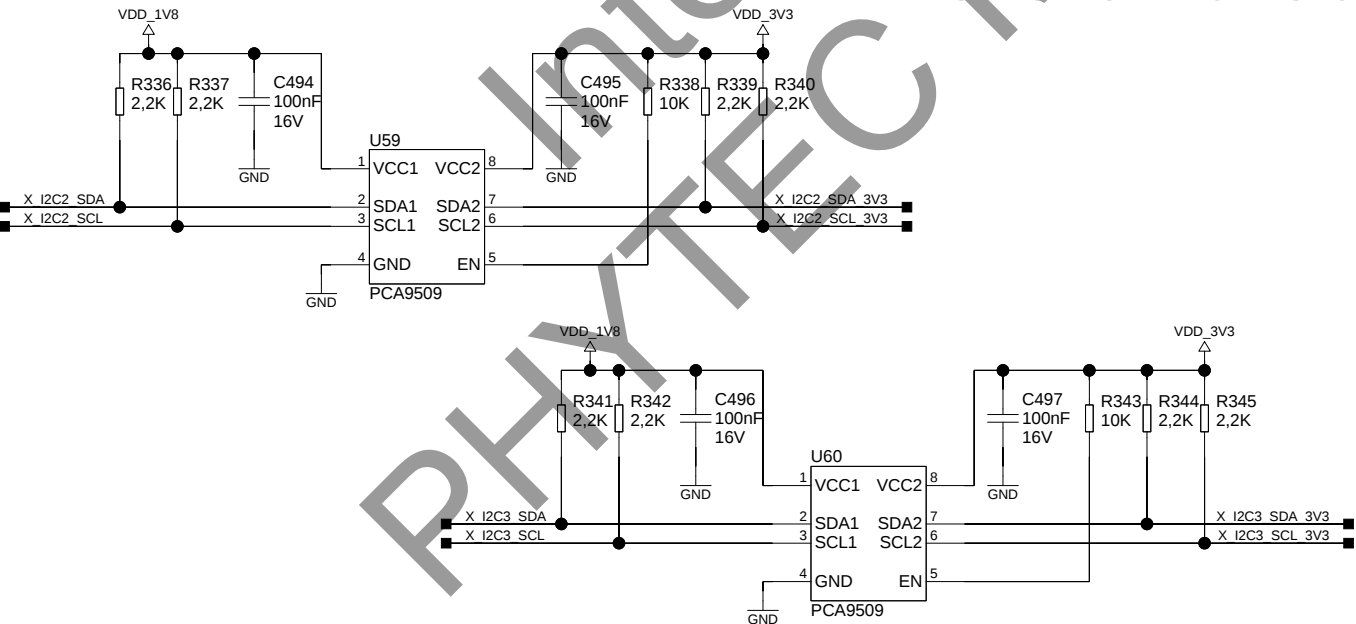
I2C2 addr. 0x52

Factory EEPROM

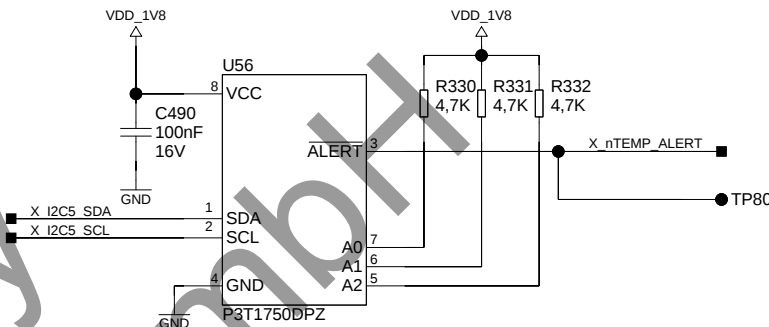


I2C2 addr. 0x51

I2C level translation

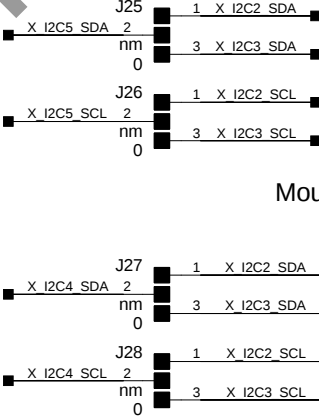


Temperature sensor



I2C5 I2C addr. 0x4F
I2C5 provisional I3C ID 0x9E

I2C optional interconnect

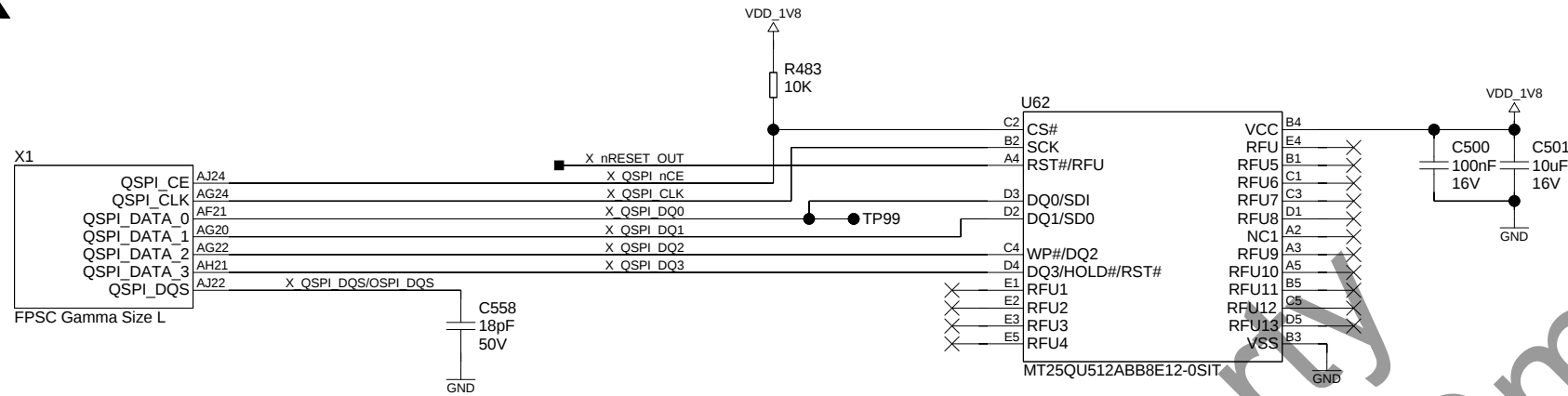


Mount J25 / J26 / J27 / J28 in case populated SOM does not provide all preferred I2Cs

If I2C interconnect is used remove redundant pull-ups

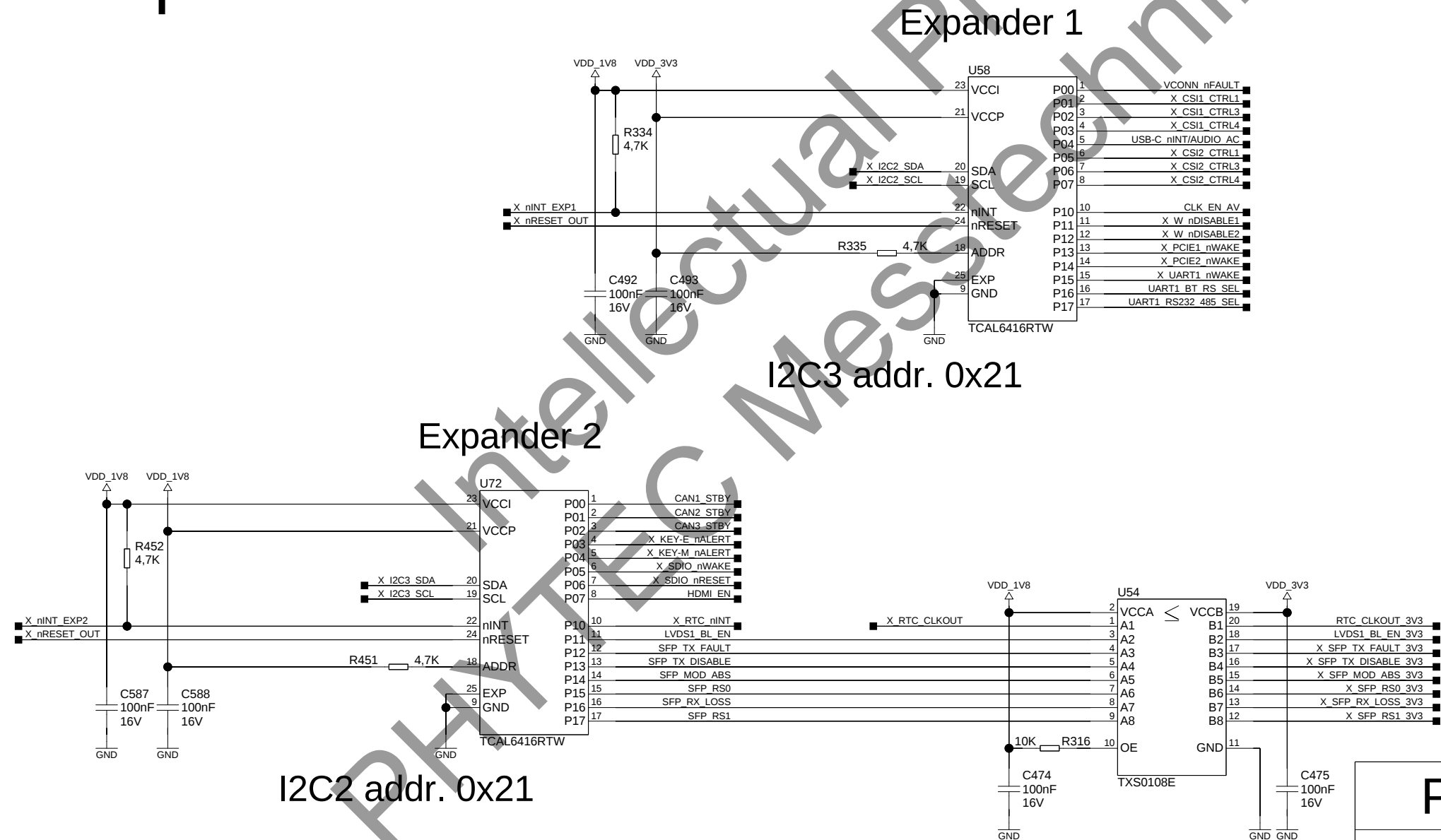
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QSPI NOR



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GPIO Expander



I2C2 addr. 0x21

Expander 1

I2C3 addr. 0x21

Expander 2

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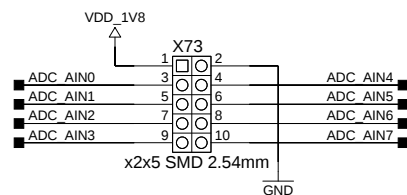
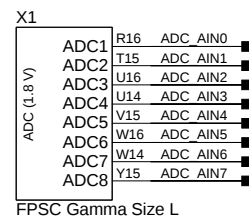
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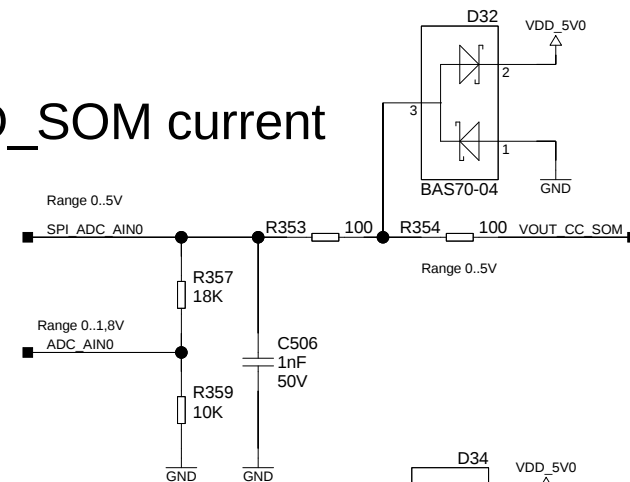
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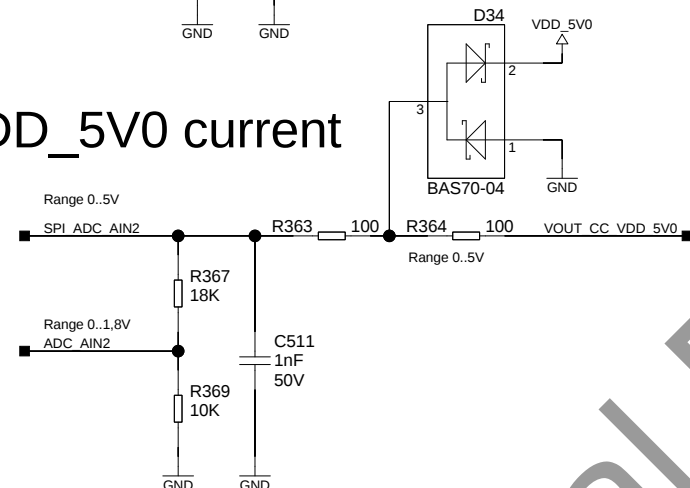
ADC



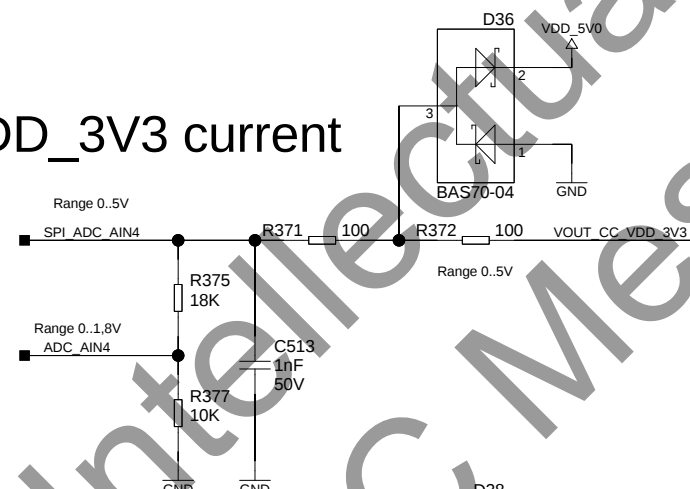
VDD_SOM current



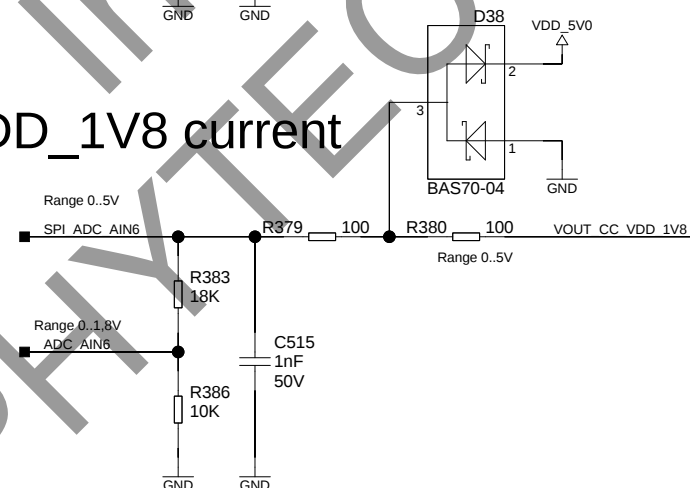
VDD_5V0 current



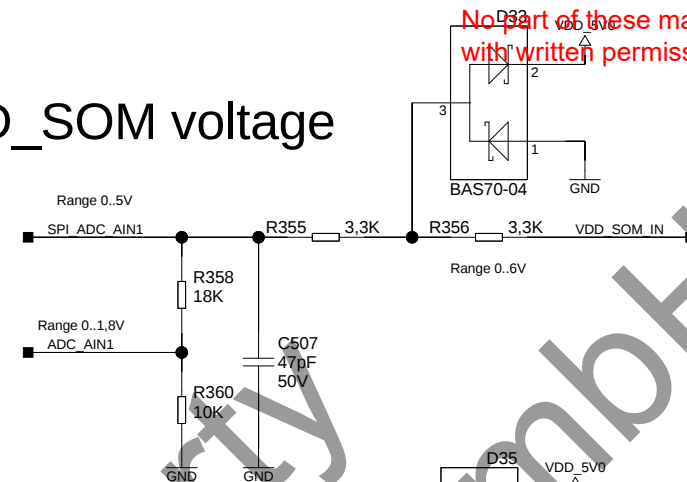
VDD_3V3 current



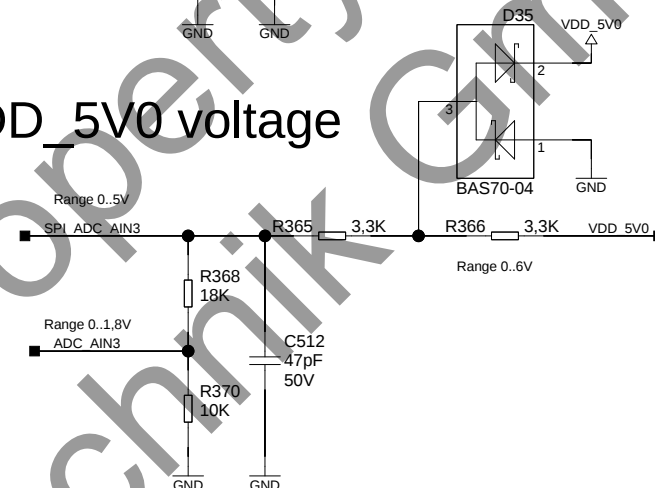
VDD_1V8 current



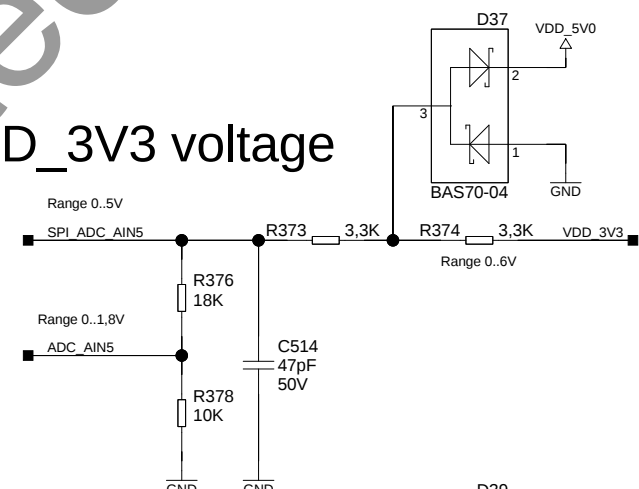
VDD_SOM voltage



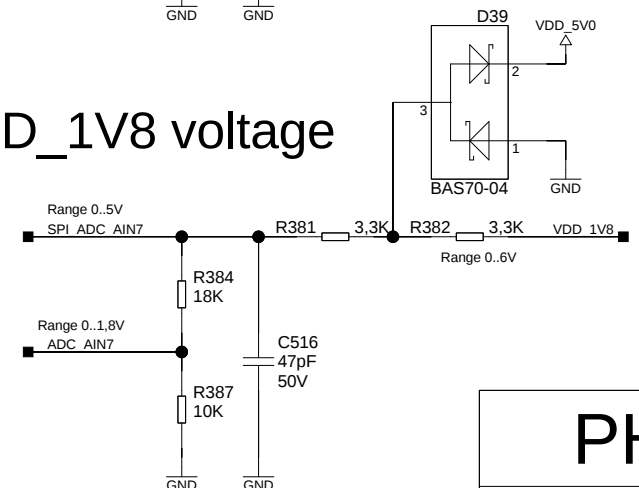
VDD_5V0 voltage



VDD_3V3 voltage



VDD_1V8 voltage



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Department : F&E
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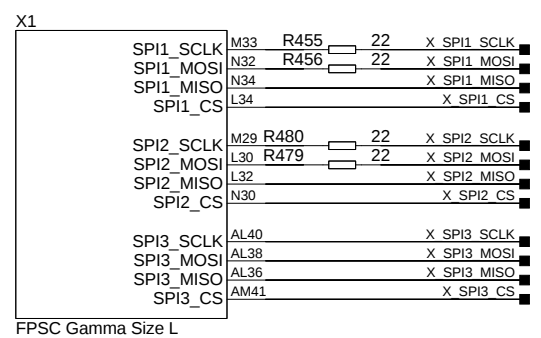
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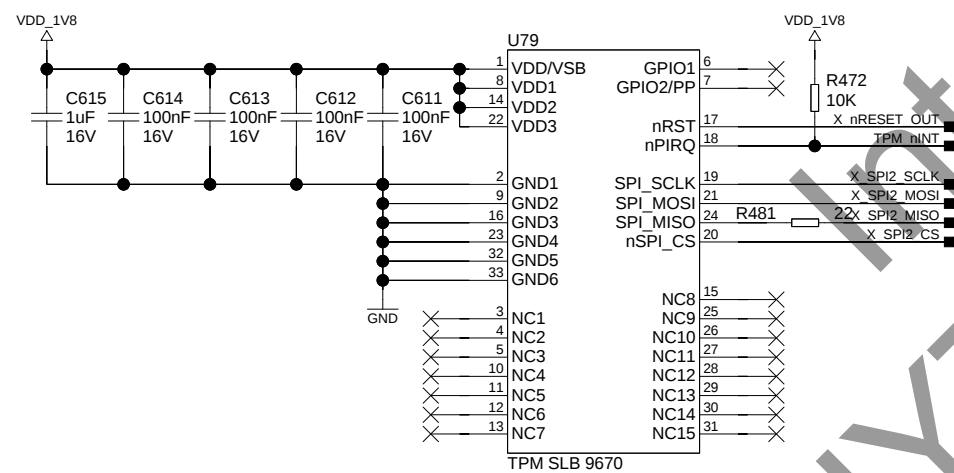
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SPI

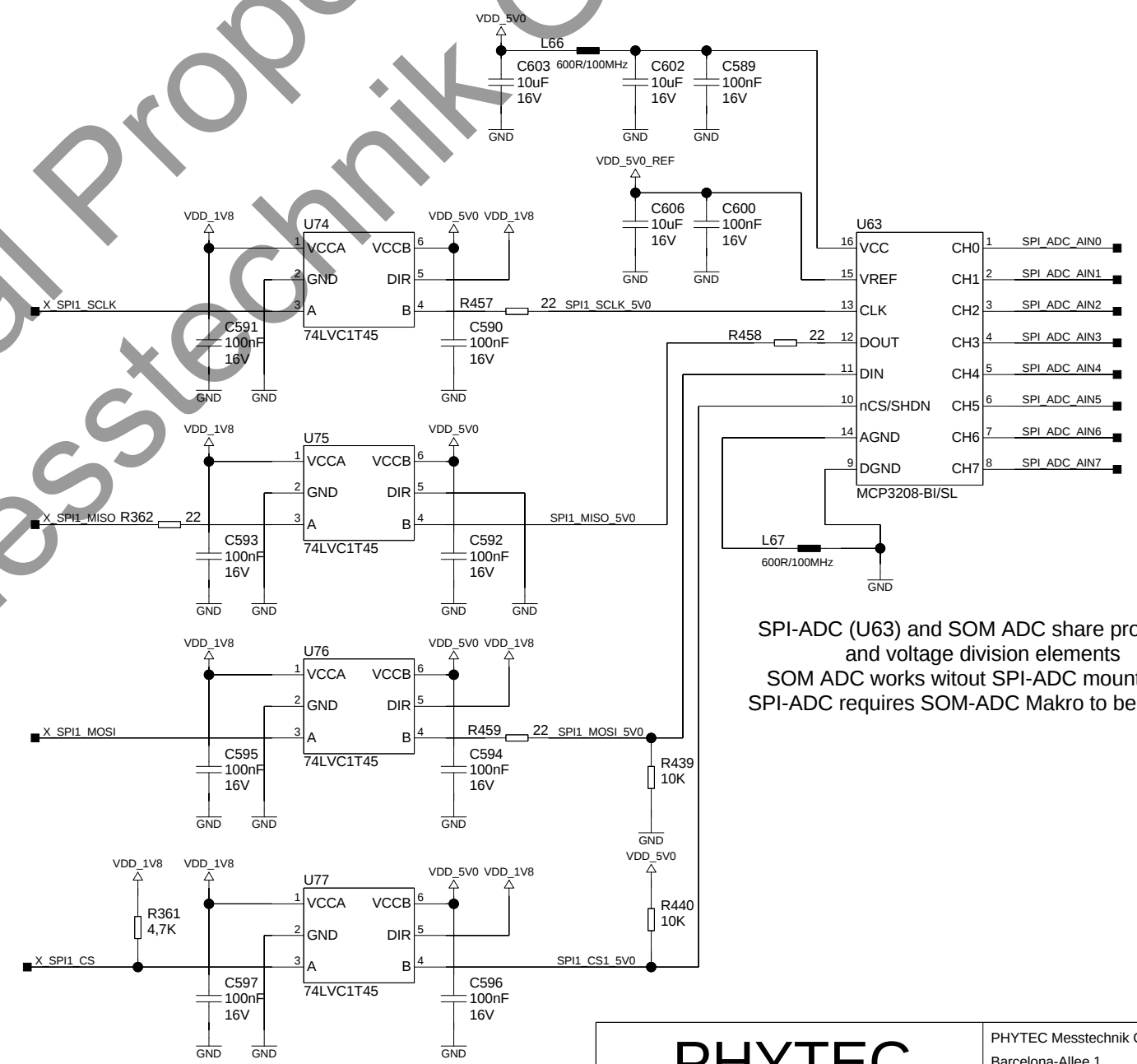
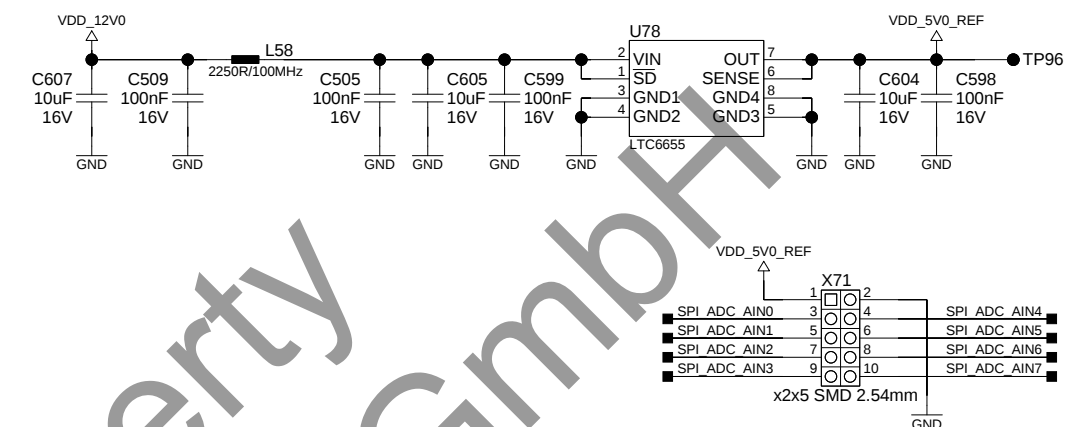


TPM



SPI-ADC

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SPI-ADC (U63) and SOM ADC share protection
and voltage division elements
SOM ADC works without SPI-ADC mounted but
SPI-ADC requires SOM-ADC Makro to be mounted

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