

PBA-BG-41 (PD-050)

FPSC Featureset Gamma Rev. 1

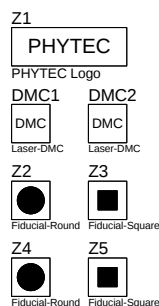
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Project: FPSC Featureset Gamma		Department : F&E Author: M.Poschmann, T.Metz	
17.03.2026	PCB-No.: 1618.3	Revision : 004	Sheet 1 of 31

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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)	0x36, 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

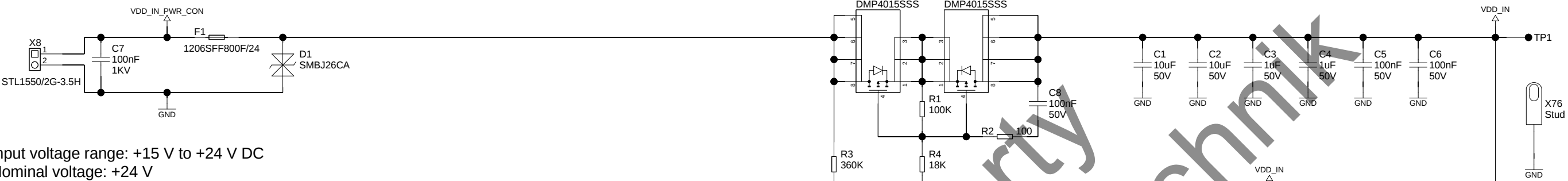
Notes:
Operating temperature range: -40 °C to +85 °C unless noted otherwise
Parts with property 'nm' are not mounted on PCB

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VDD_IN via Power Connector

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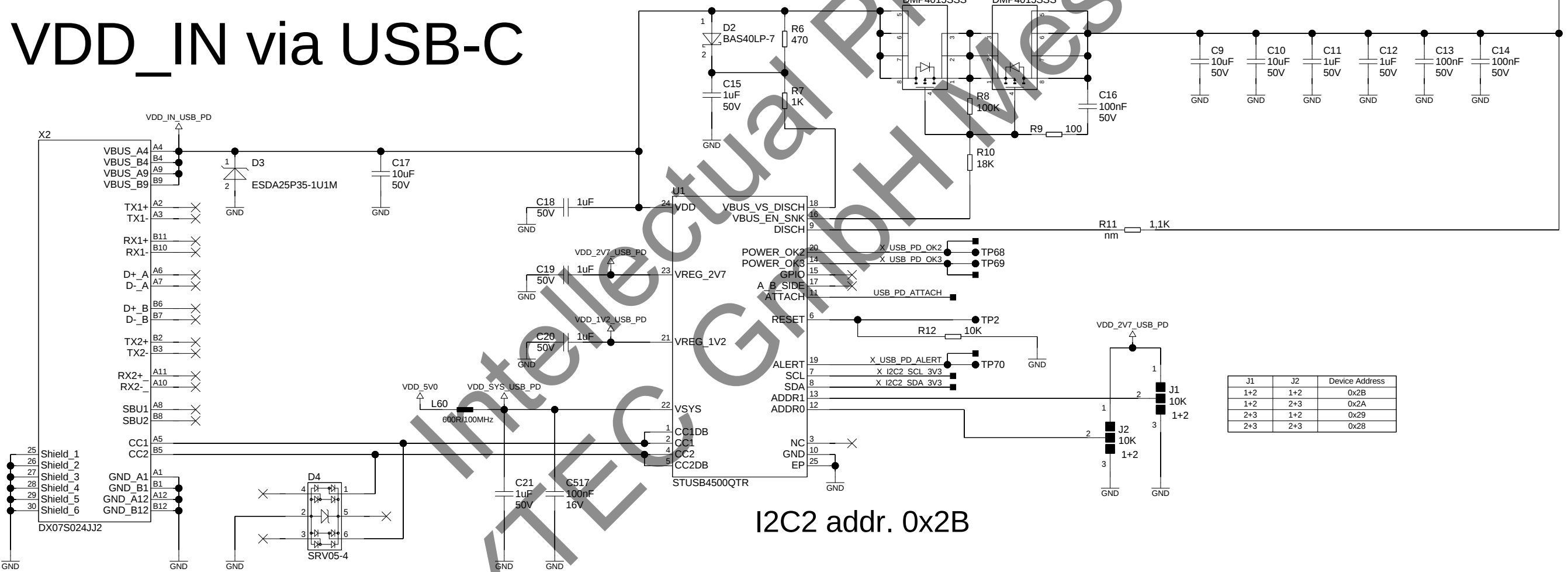
A



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

B

VDD_IN via USB-C



I2C2 addr. 0x2B

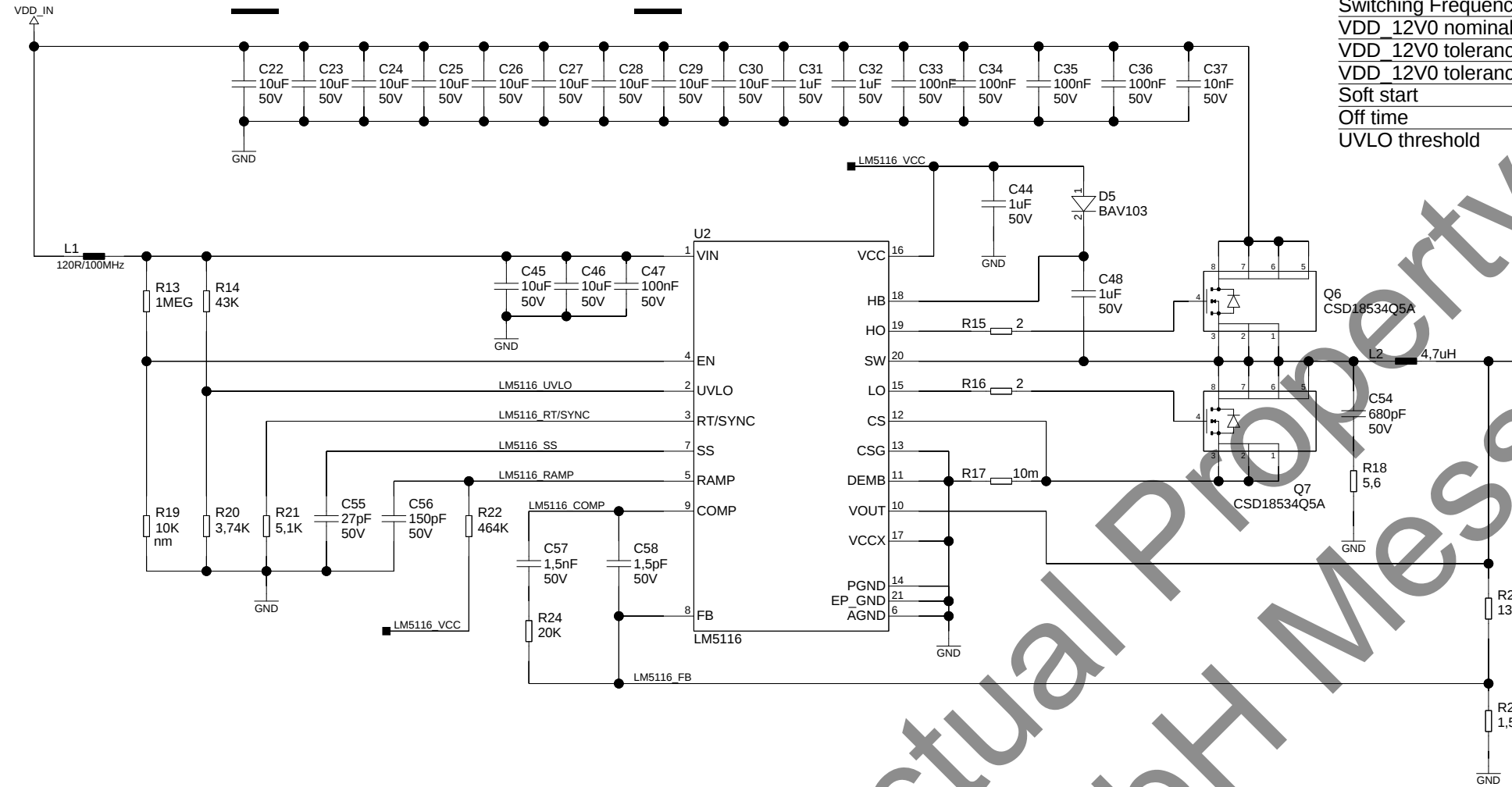
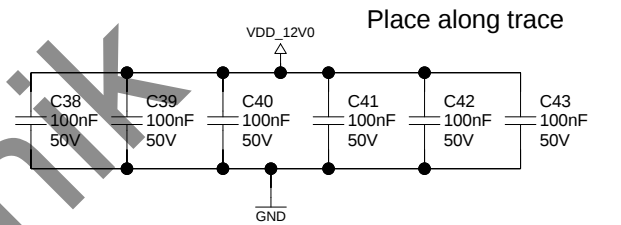
J1	J2	Device Address
1+2	1+2	0x2B
1+2	2+3	0x2A
2+3	1+2	0x29
2+3	2+3	0x28

D

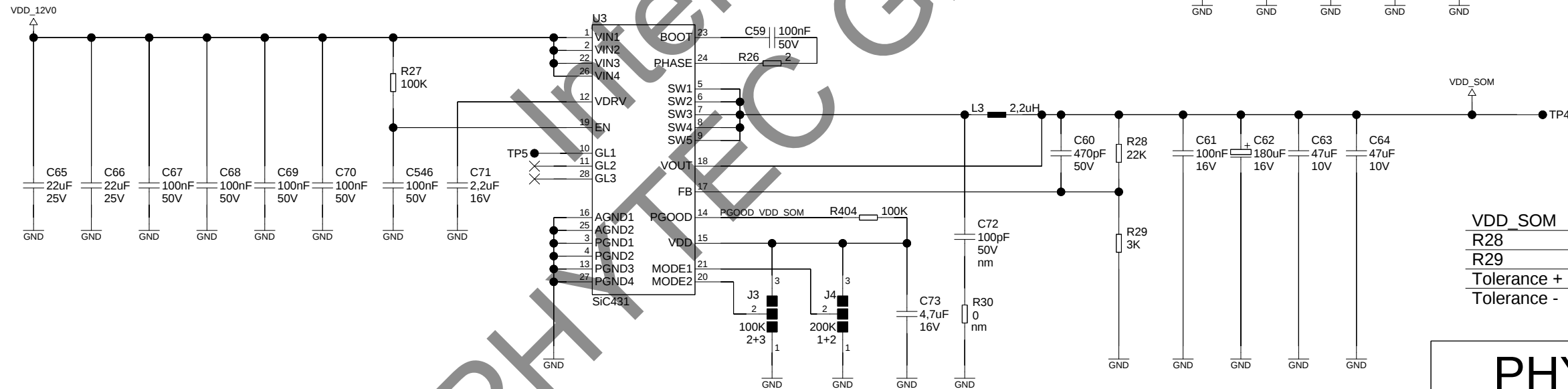
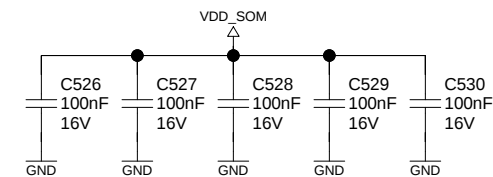
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VDD_IN to VDD_12V0

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



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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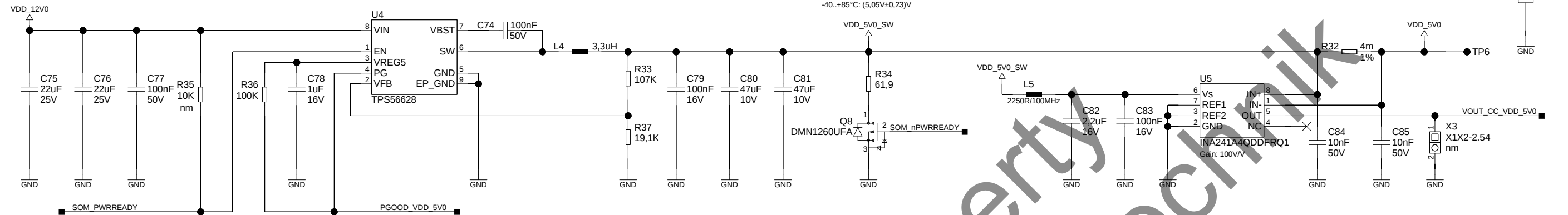
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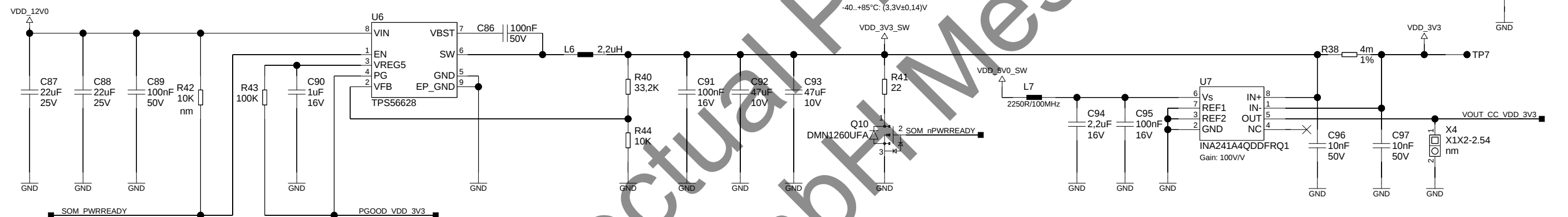
Peripheral VDD_5V0

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



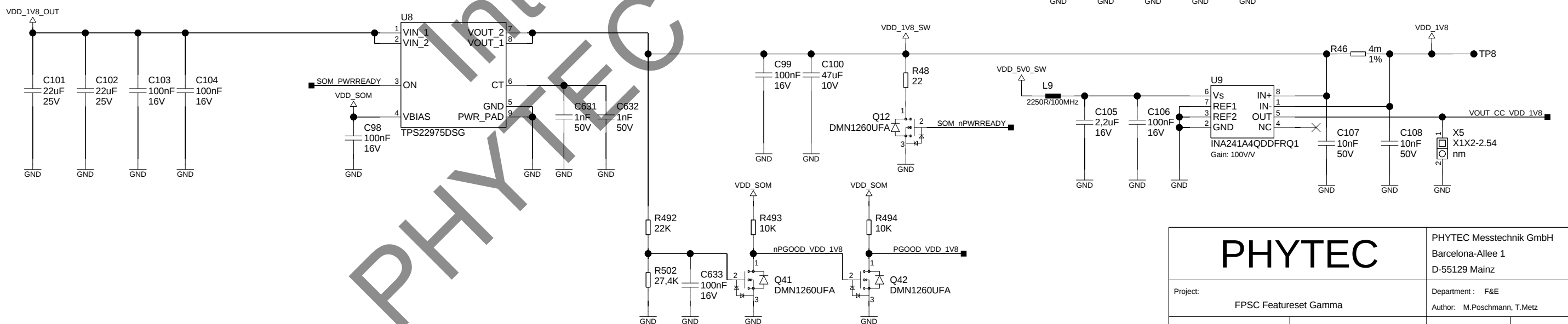
Peripheral VDD_3V3

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



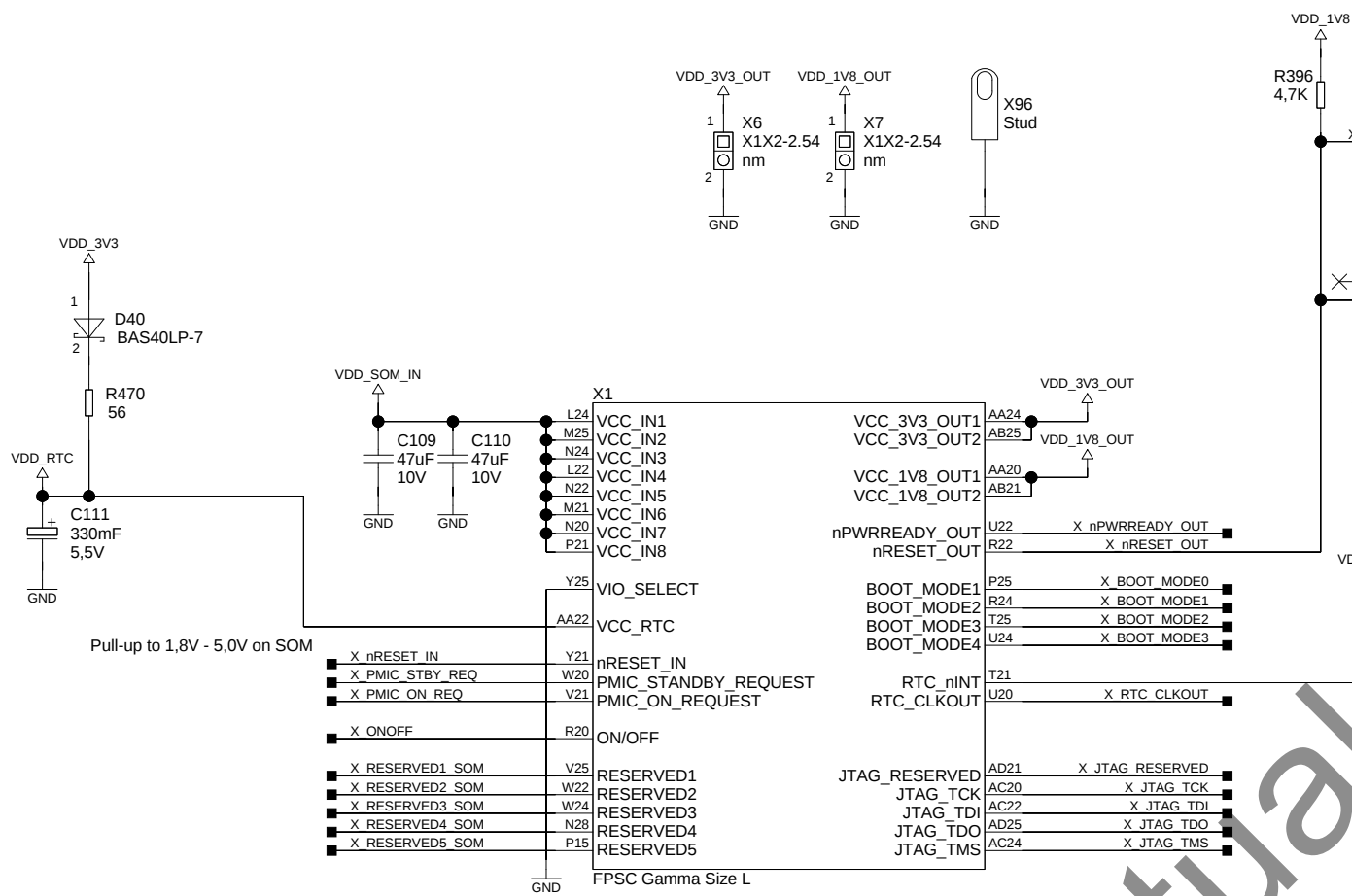
Peripheral VDD_1V8

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

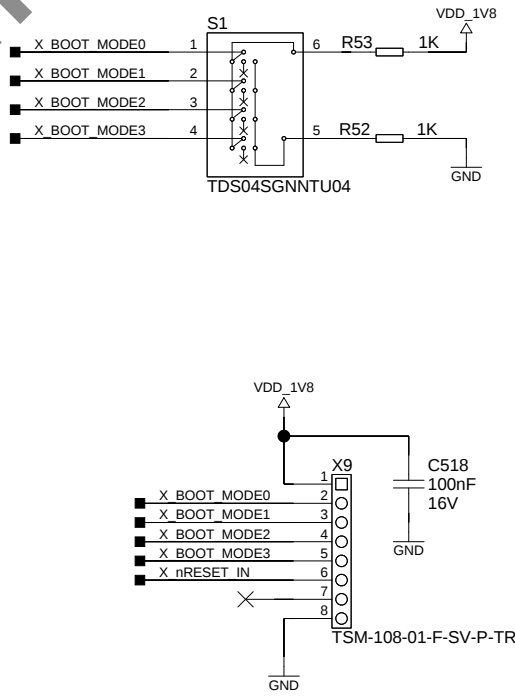


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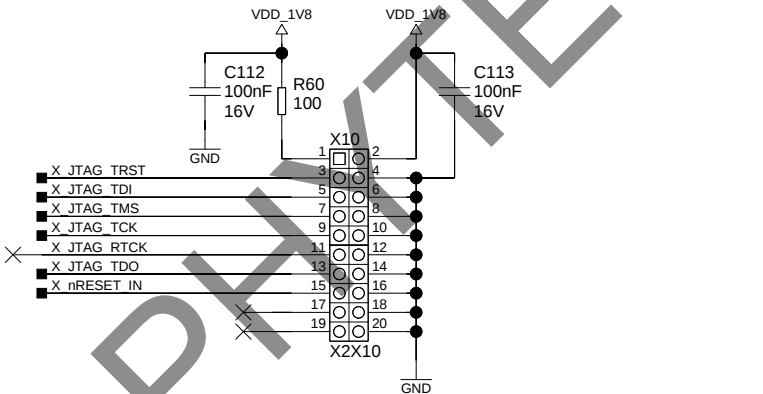
Power SOM / Boot



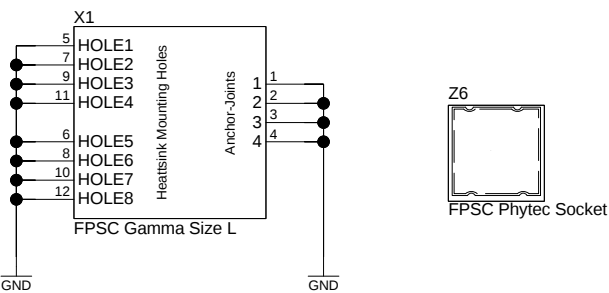
Boot control



JTAG 1V8



SOM mechanical



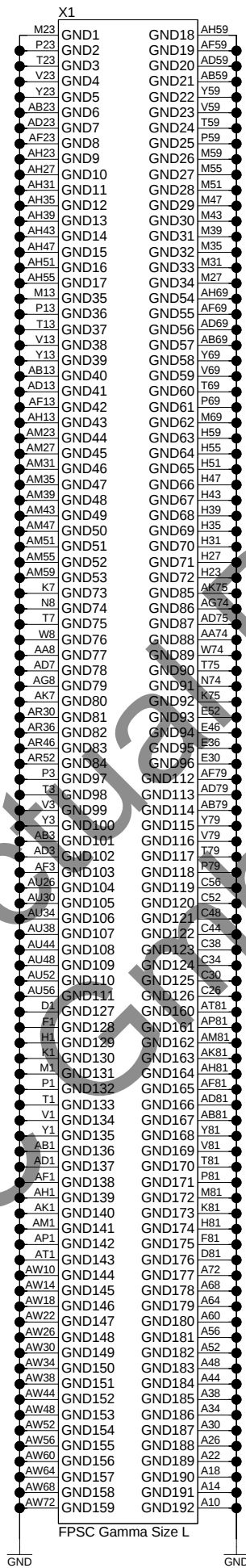
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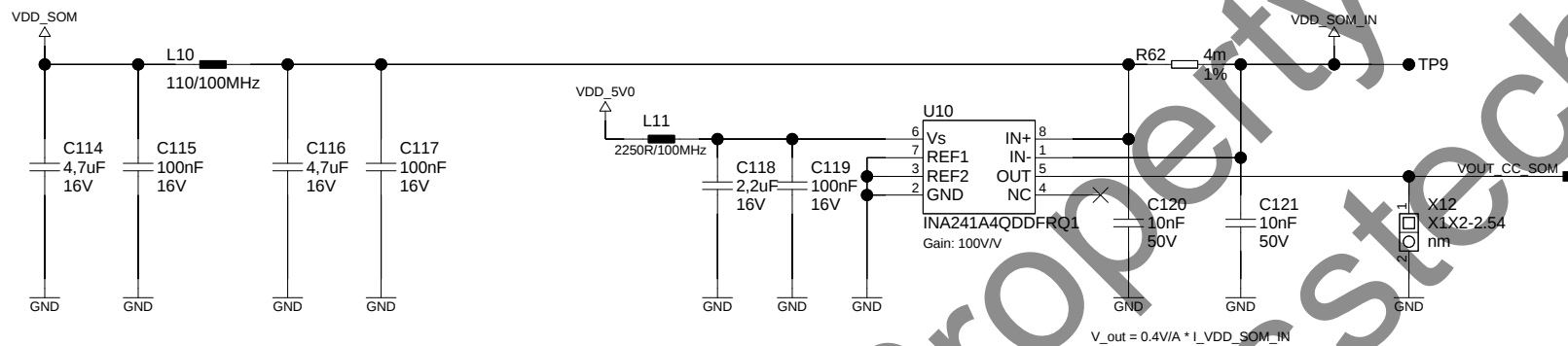
SOM Ground

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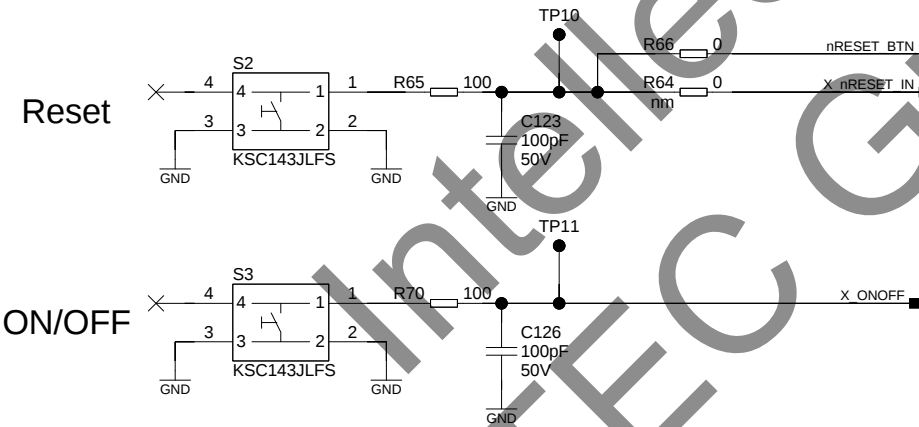


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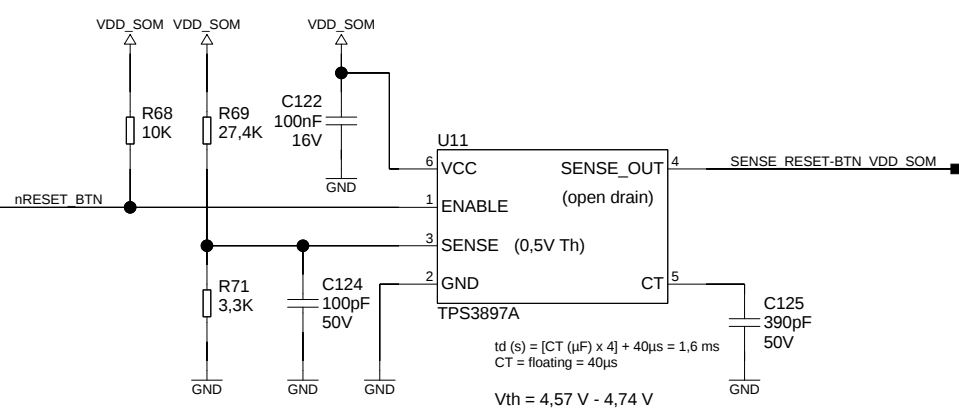
SOM voltage current measuring



Buttons



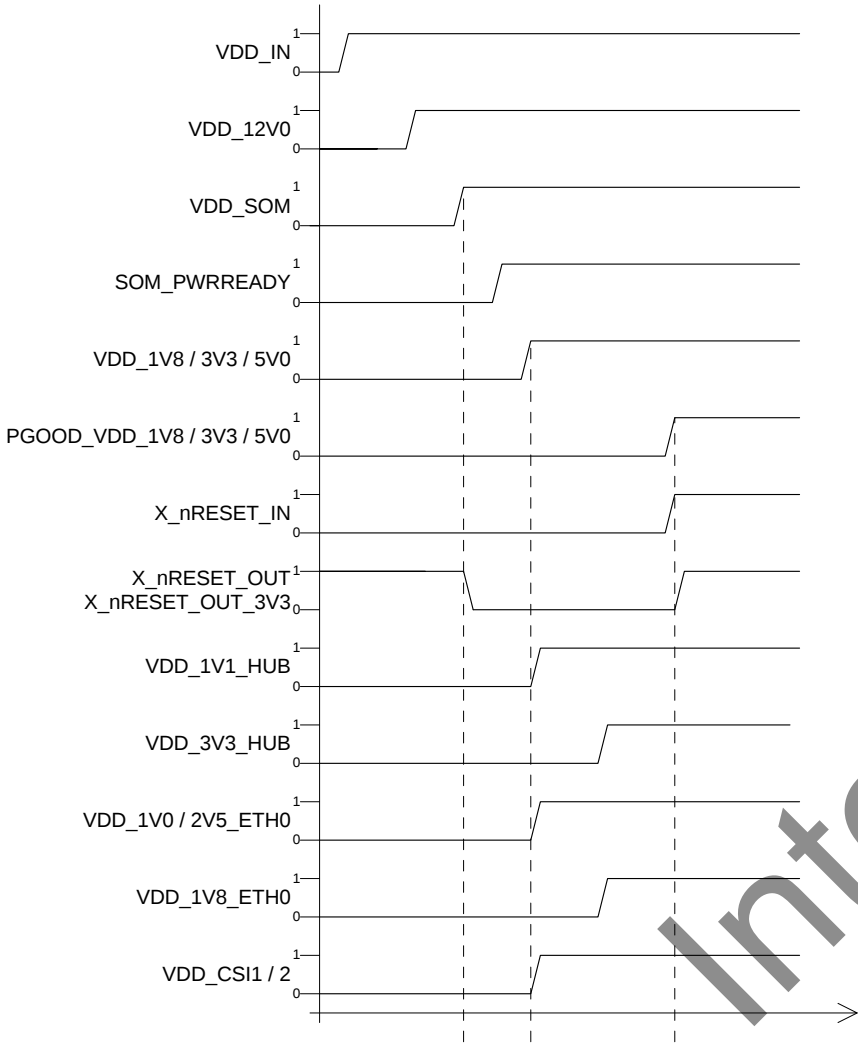
Voltage Supervisor



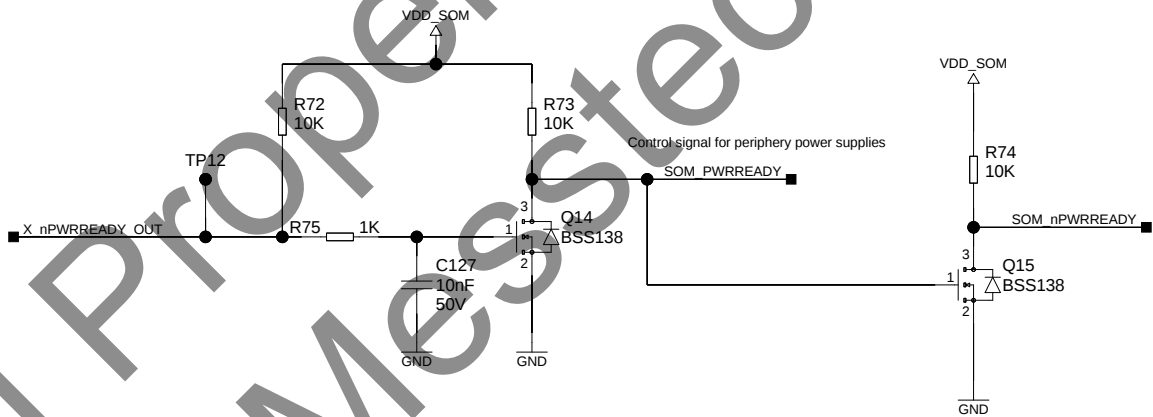
Power Sequencing

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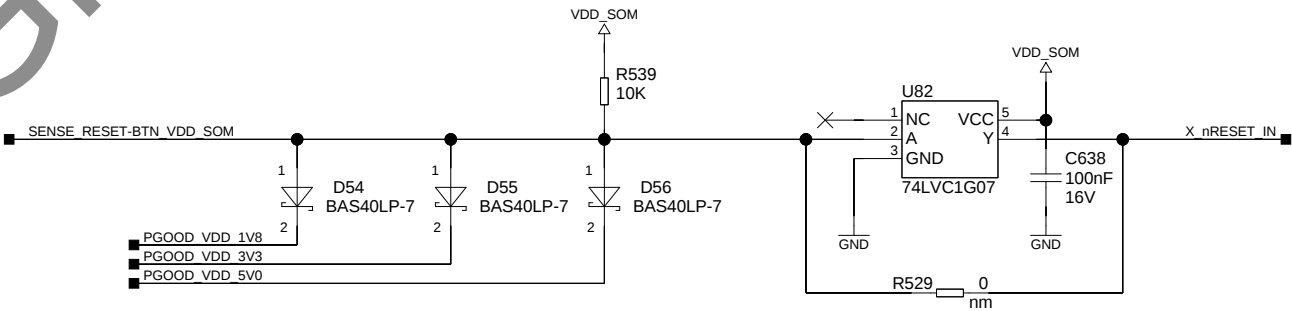
Power up diagram



SOM voltage power ready signal



Reset Delay



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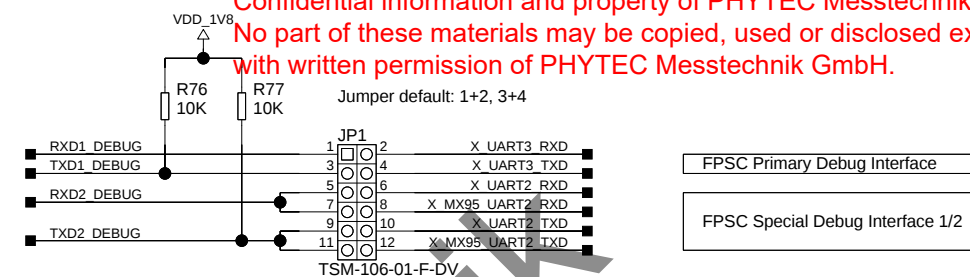
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USB Debug

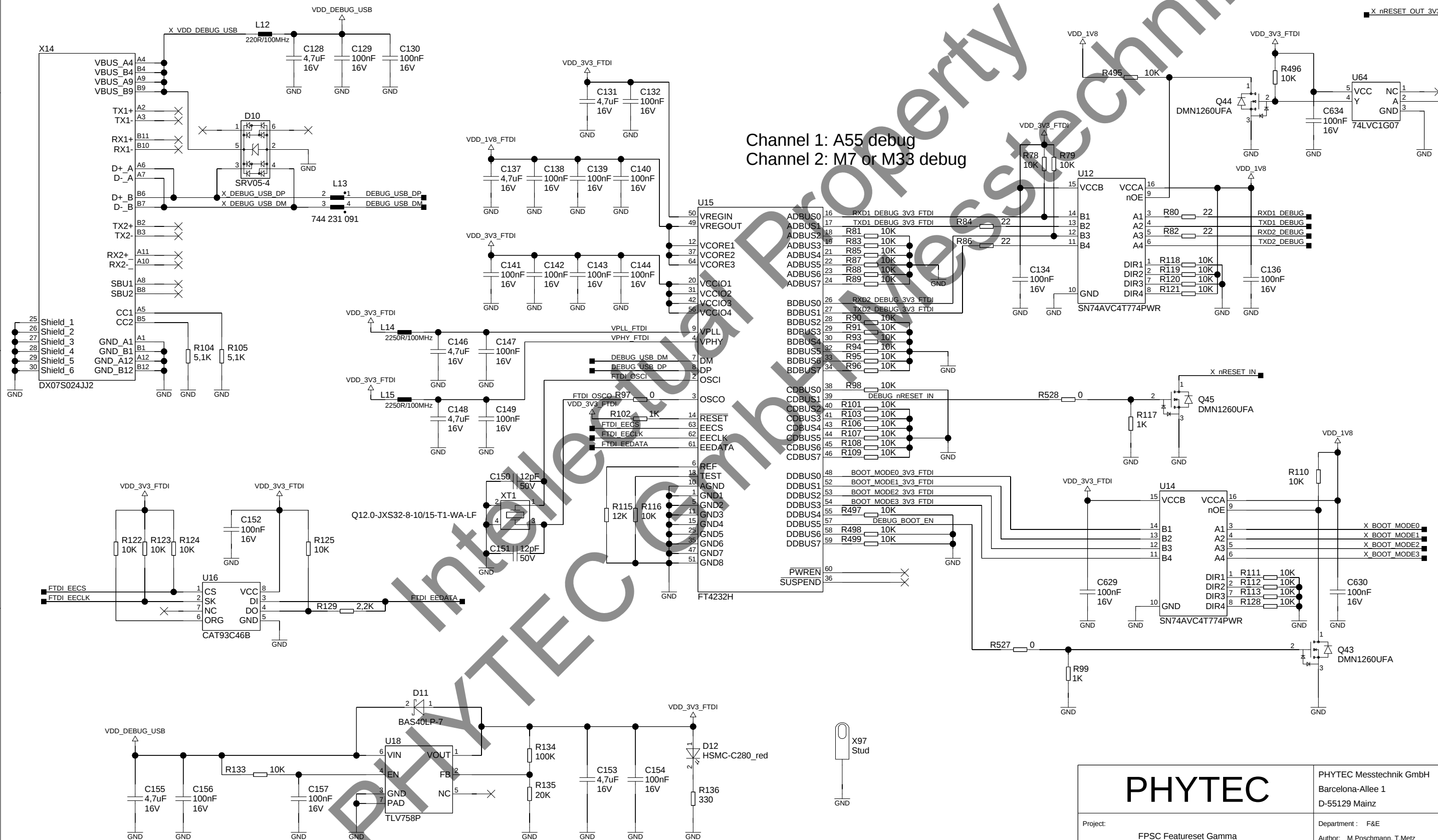
Factory use only
Option to connect Primary Debug Interface to RS232 Transceiver



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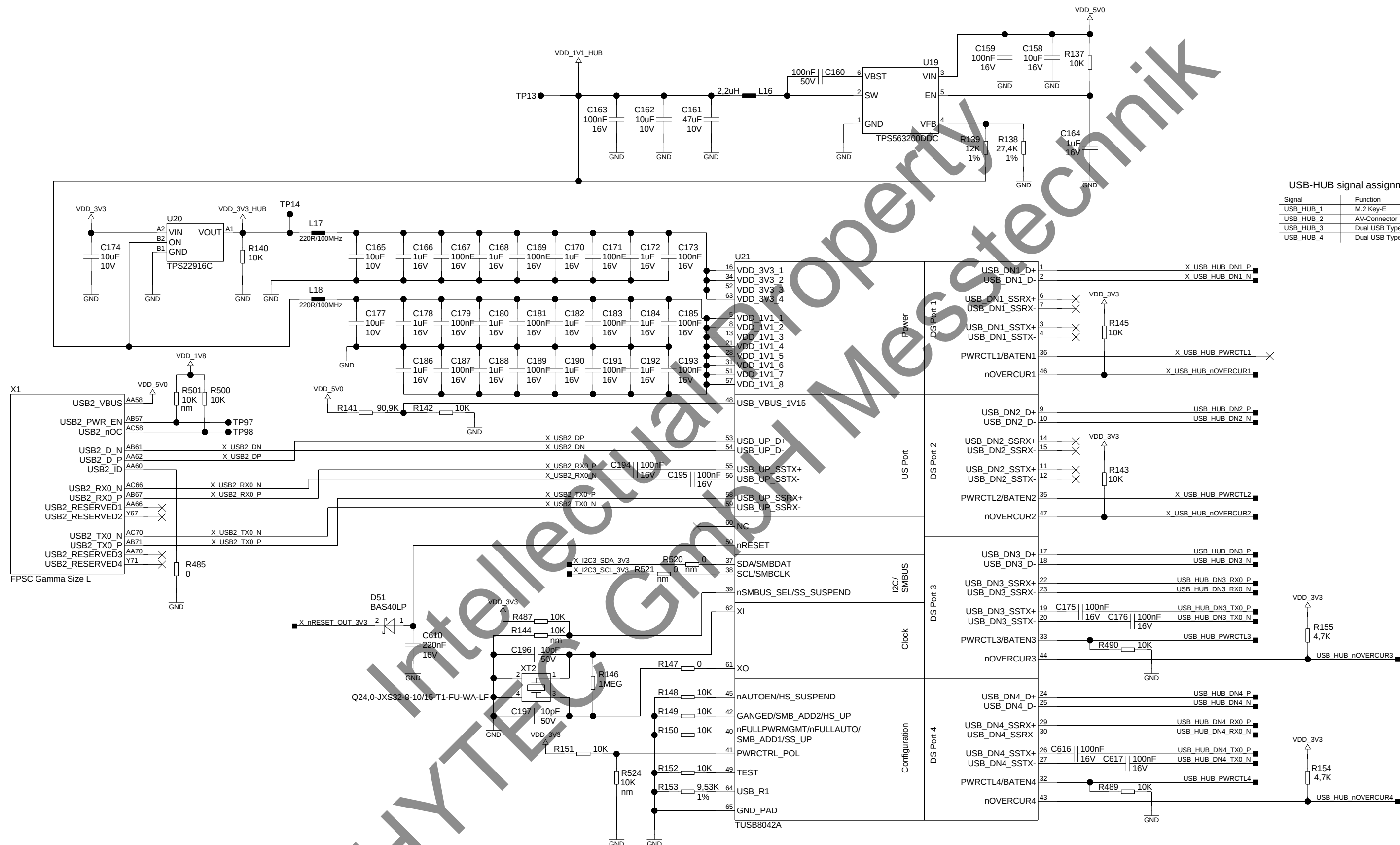
Channel 1: A55 debug
Channel 2: M7 or M33 debug



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USB Hub

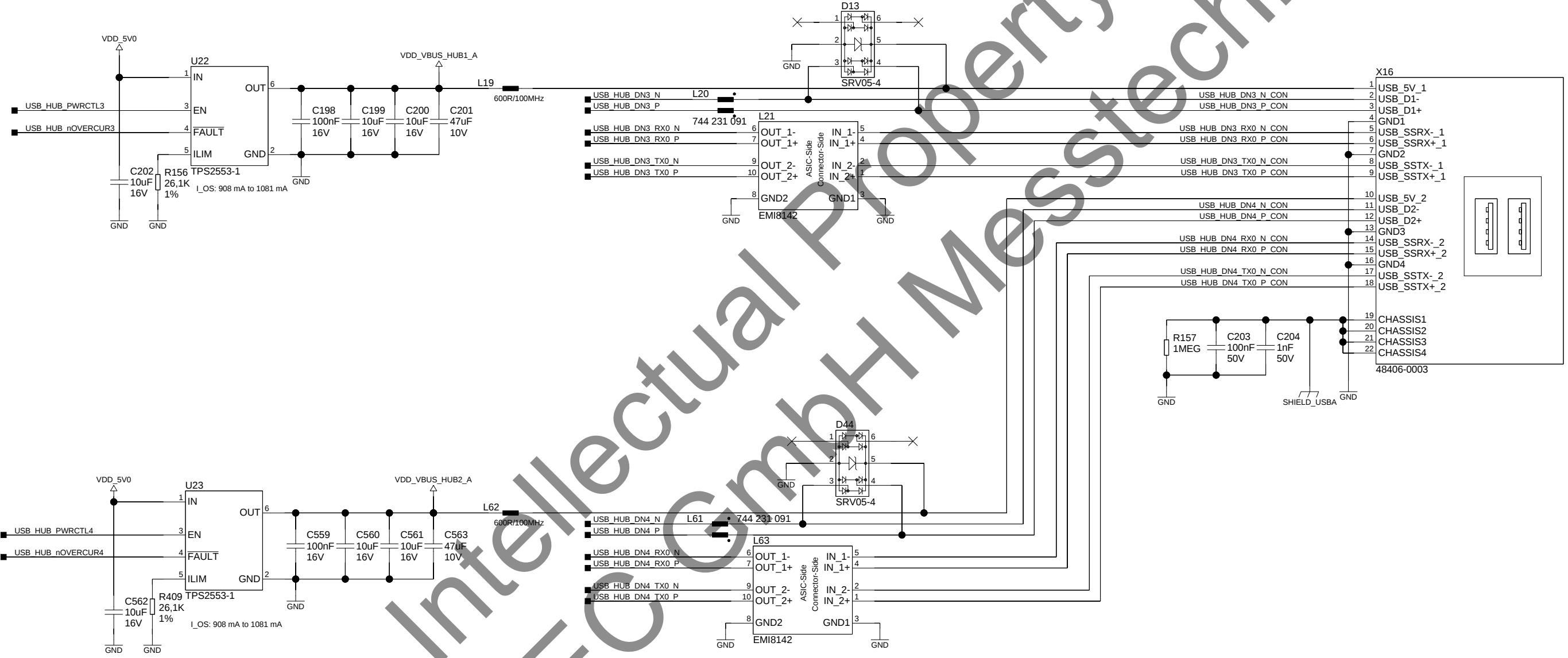
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I2C3 addr. 0x44

Dual USB Type-A 3.0

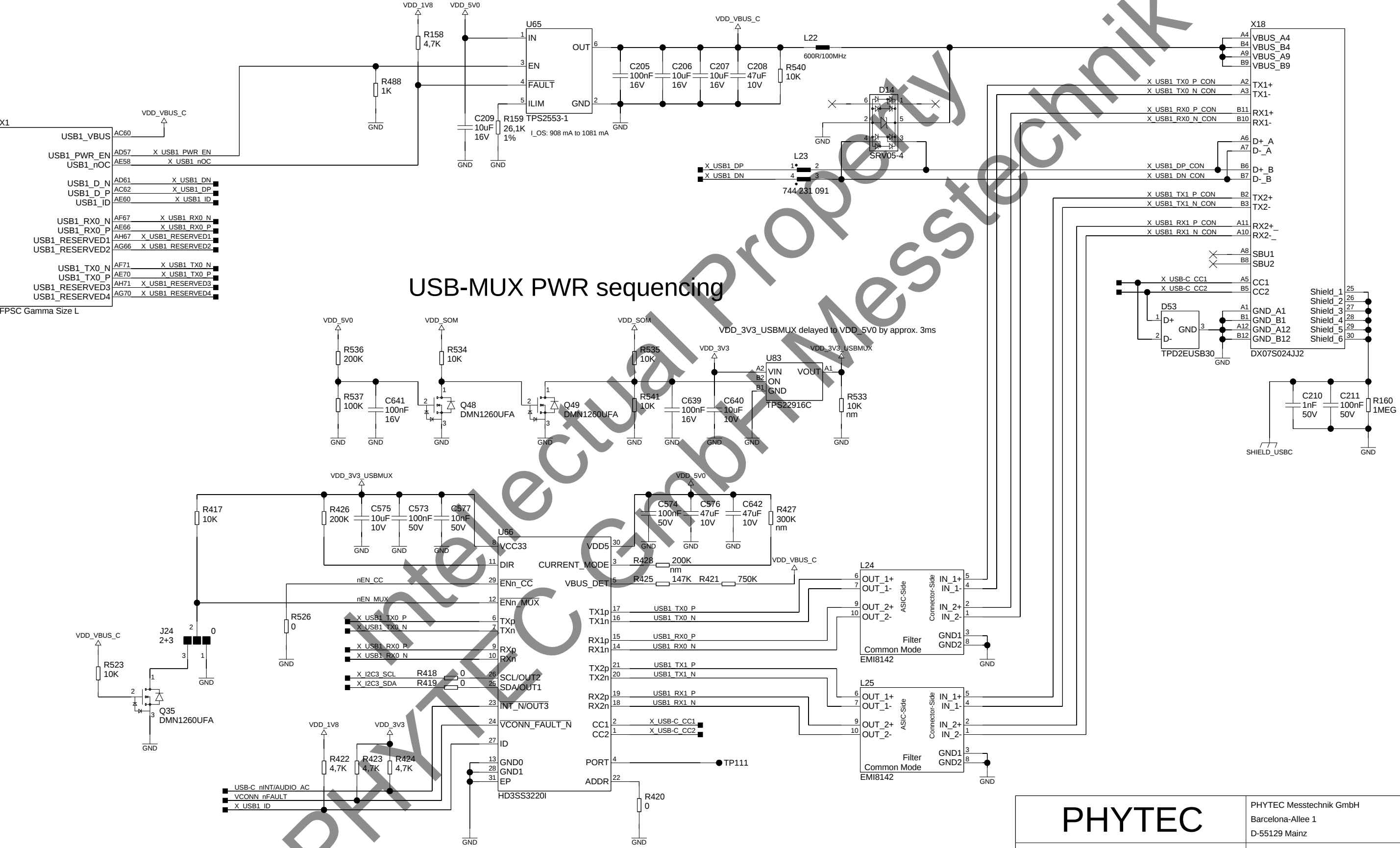
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USB Type-C

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USB-MUX PWR sequencing

I2C2 addr. 0x47

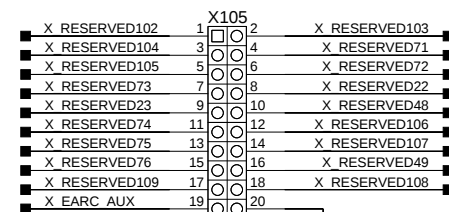
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Reserved / Unused headers

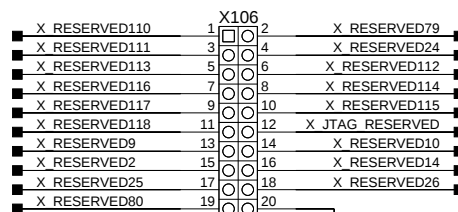
FPSC reserved / Test pins

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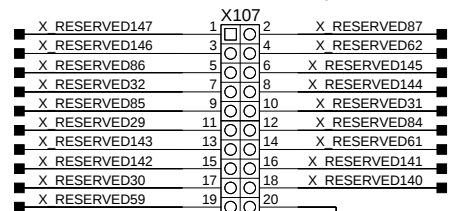
A



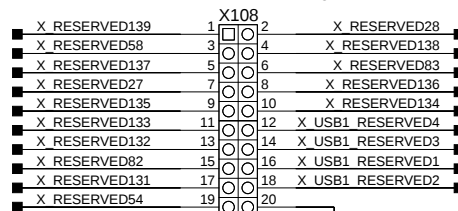
GND



GND

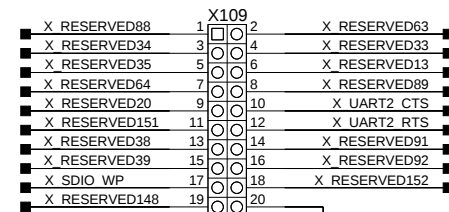


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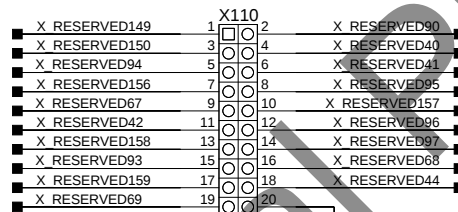


GND

B

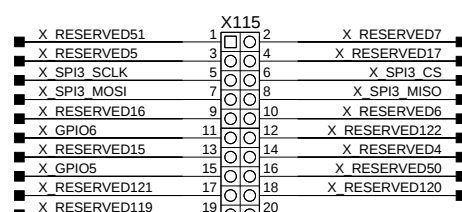


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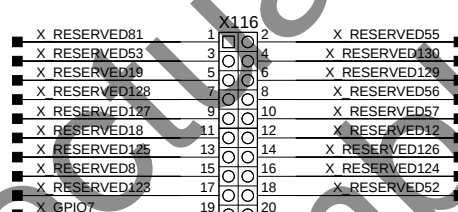


GND

C

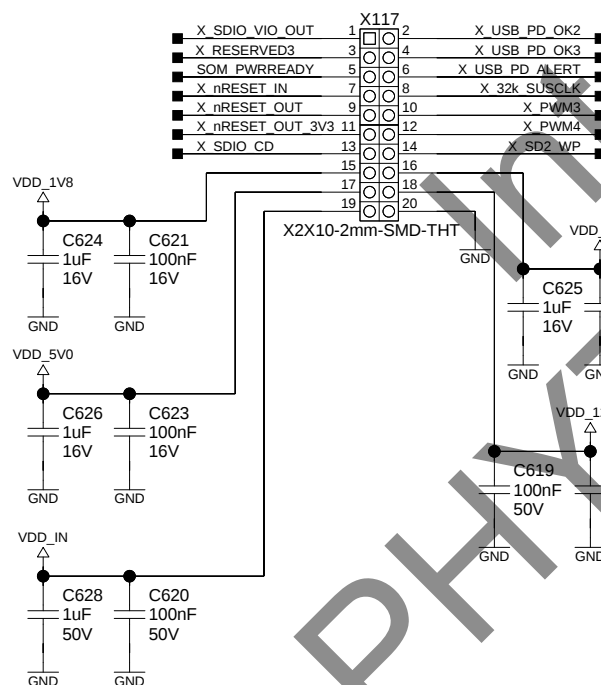


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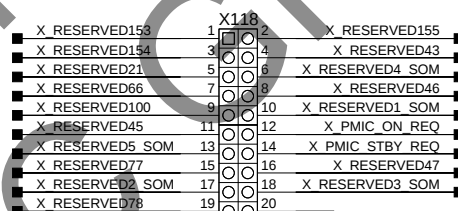


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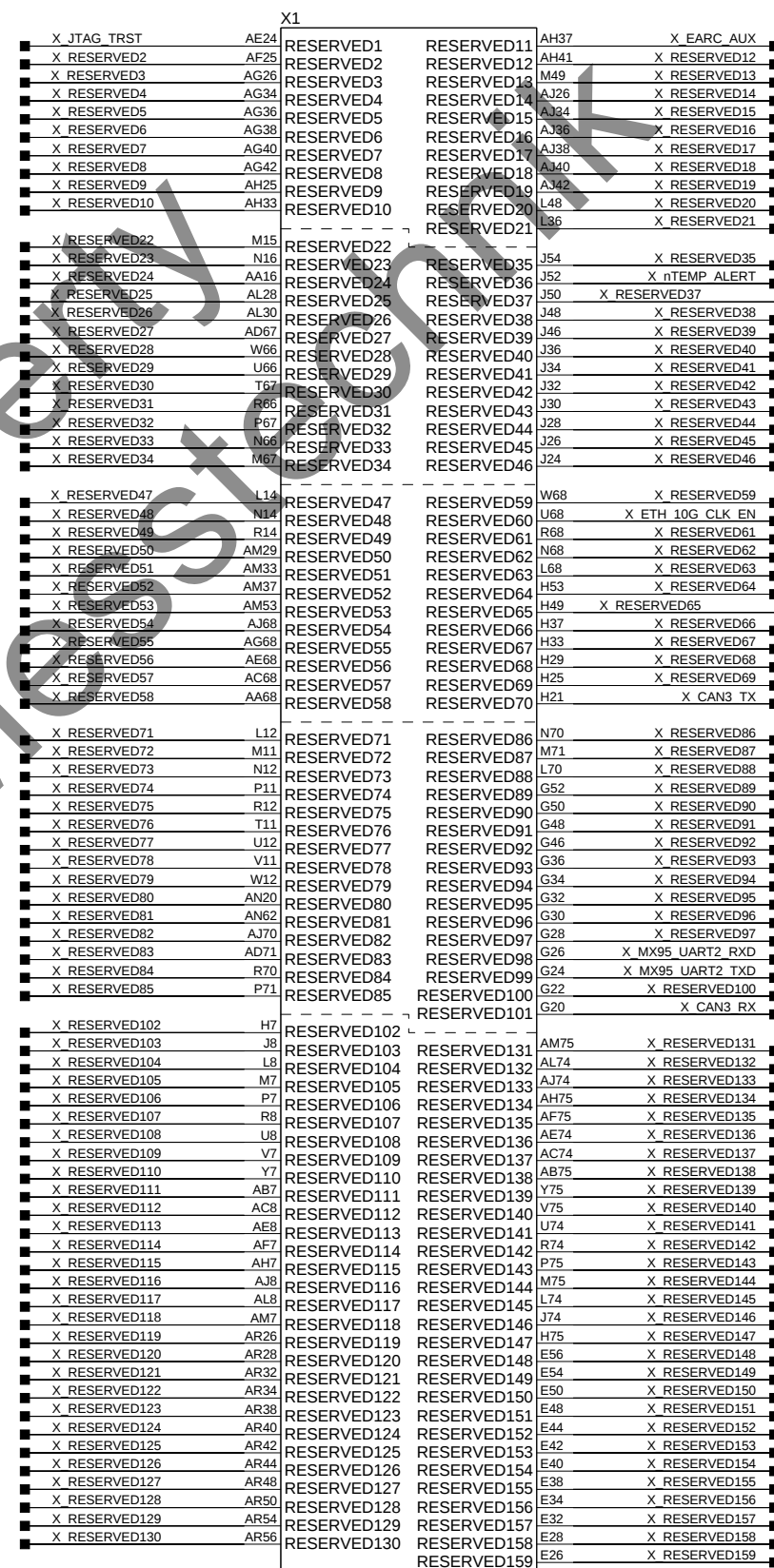
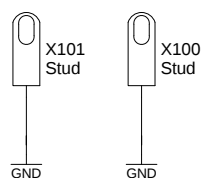
D



GND

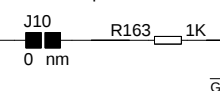


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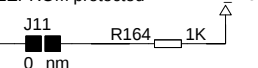


FPSC Gamma Size L

J10 closed = SOM factory
EEPROM unprotected



J11 closed = SOM user
EEPROM protected



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Department: F&E

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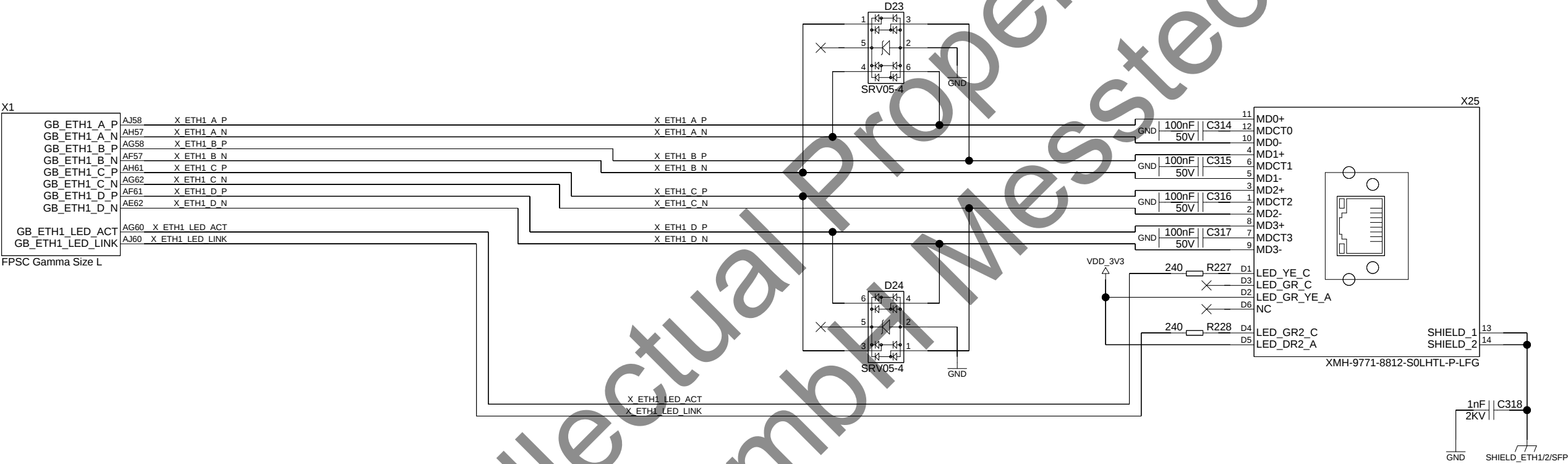
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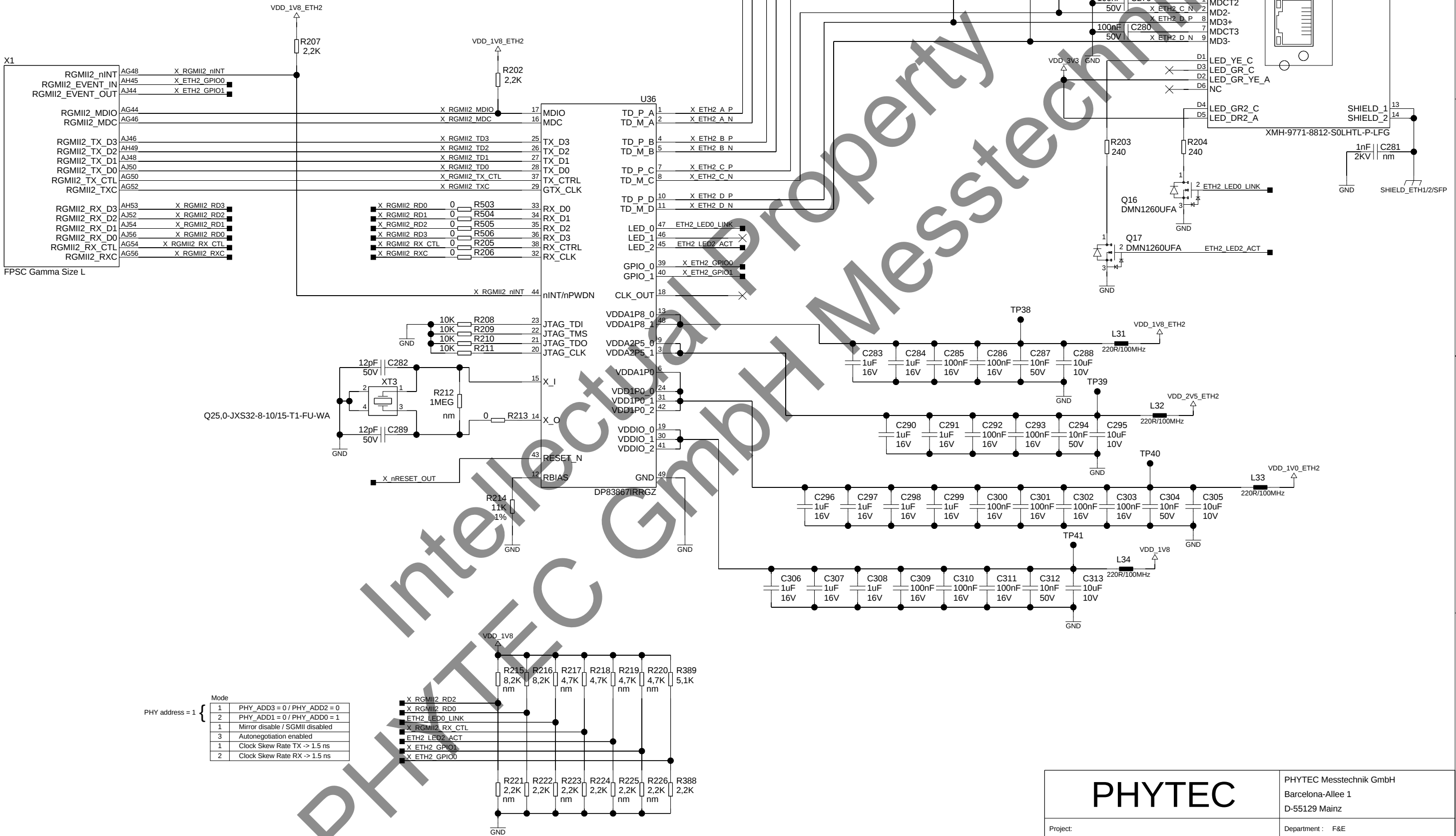
Ethernet1

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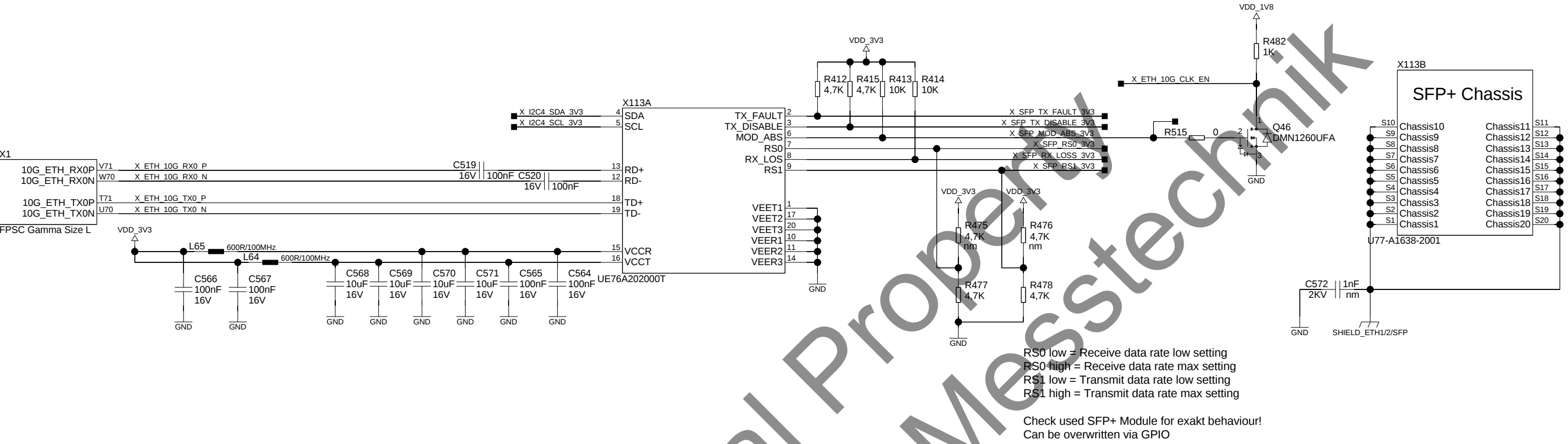
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Ethernet2

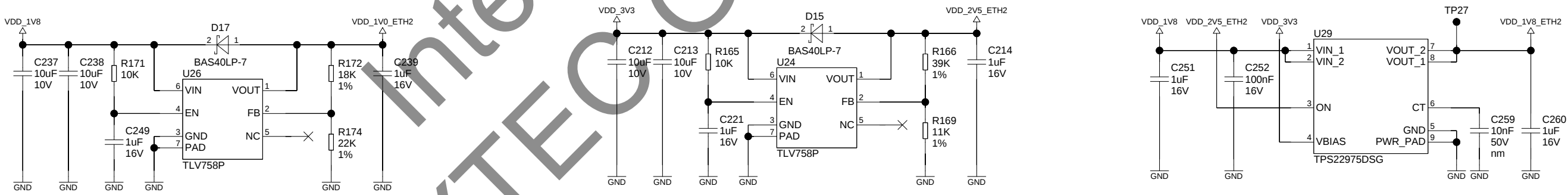


SFP+

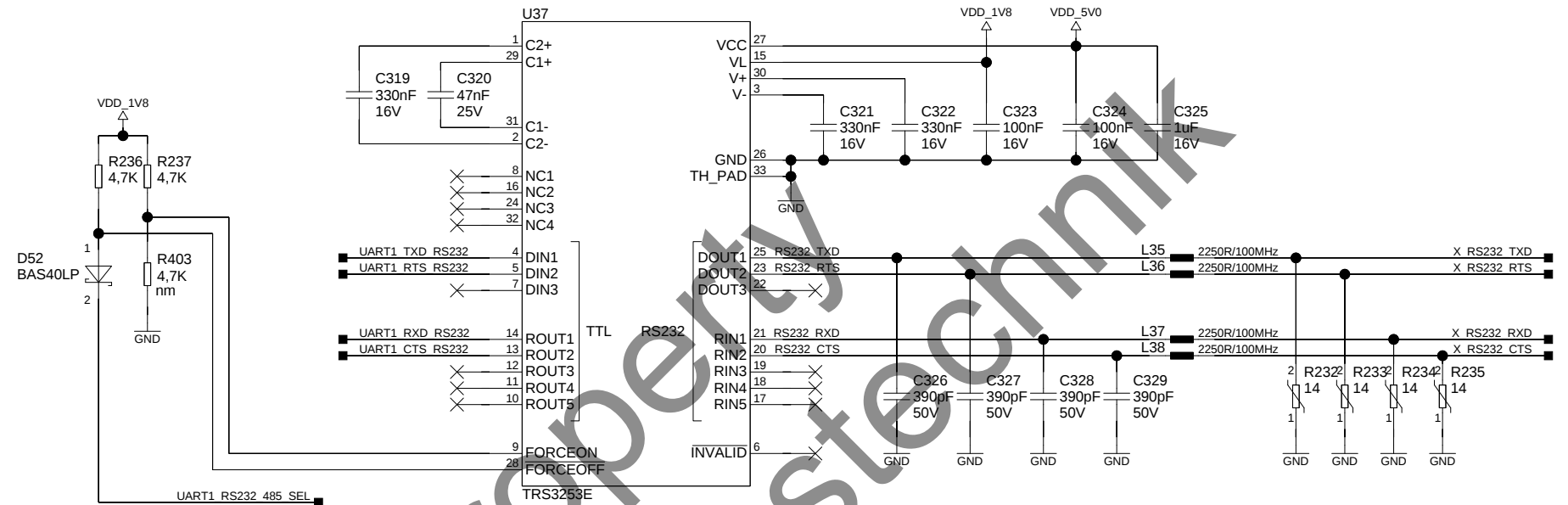
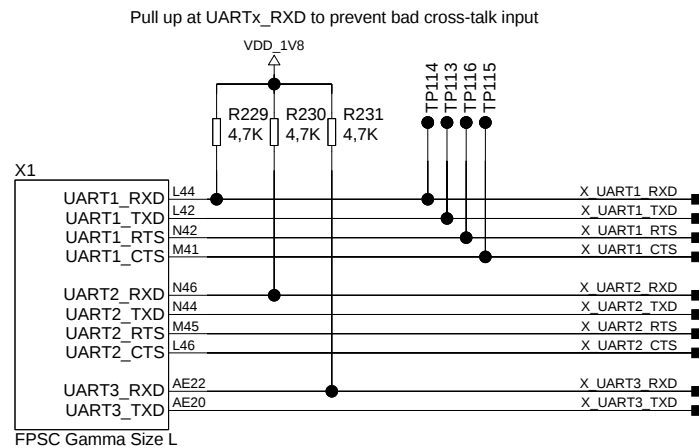
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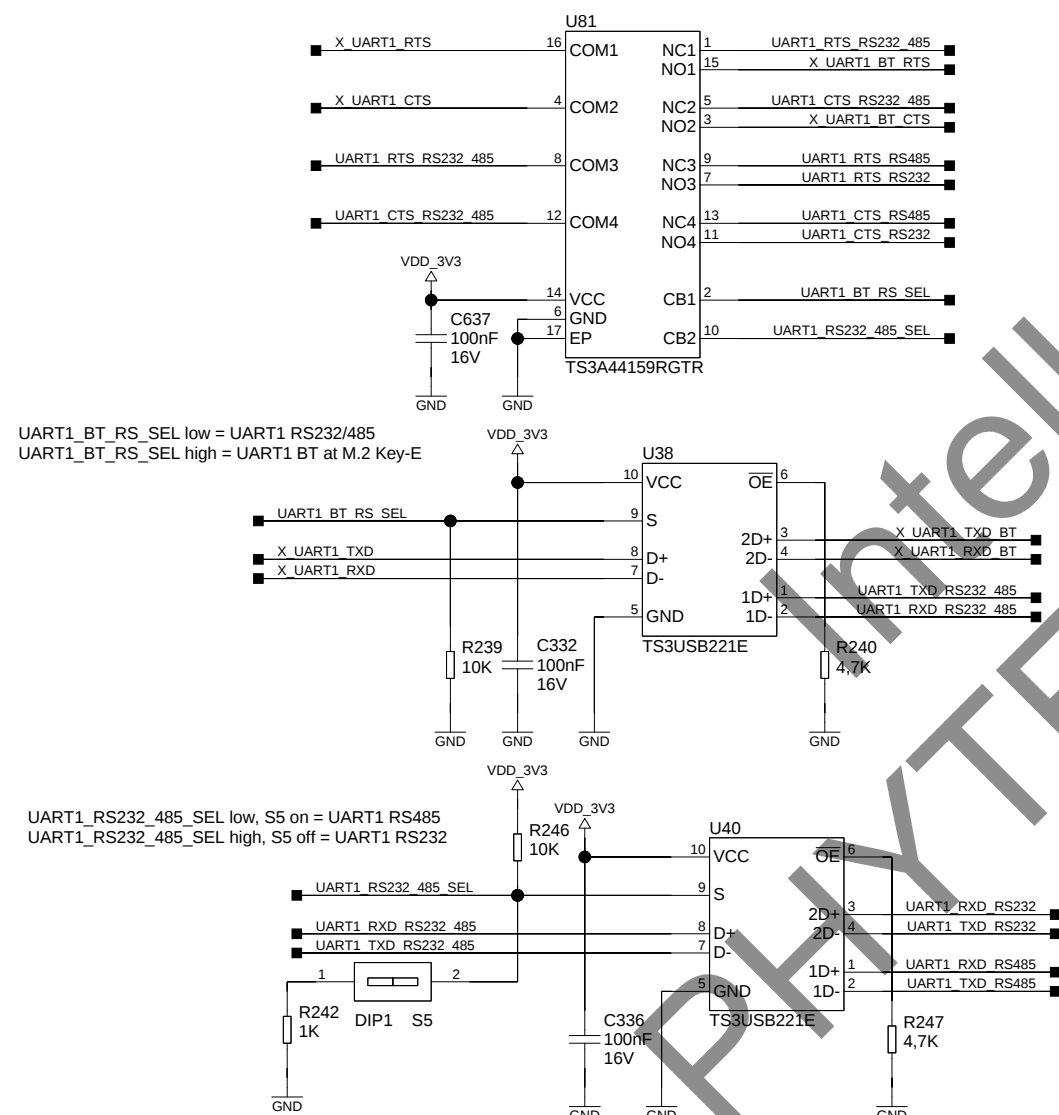
ETH2 Power



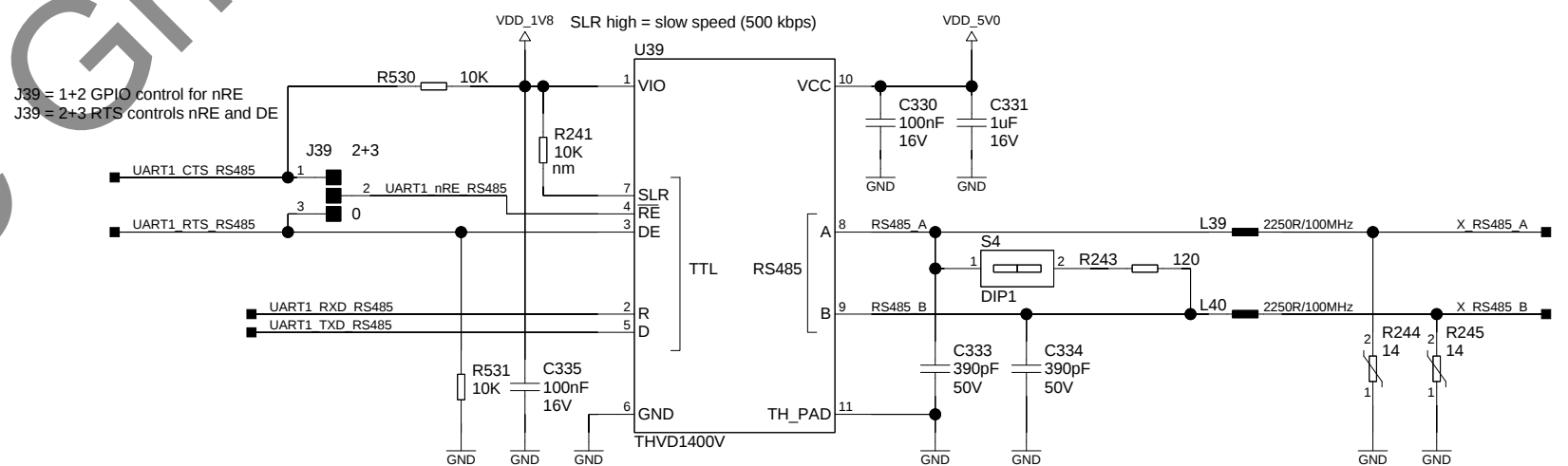
RS-232 / RS-485



UART1 Routing



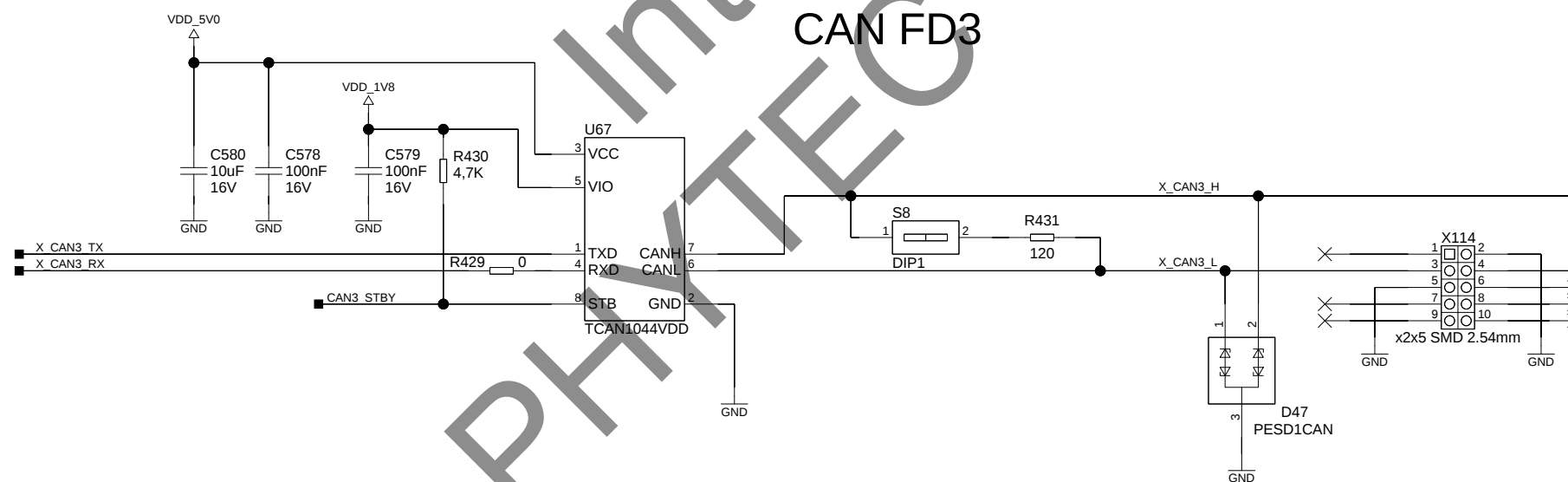
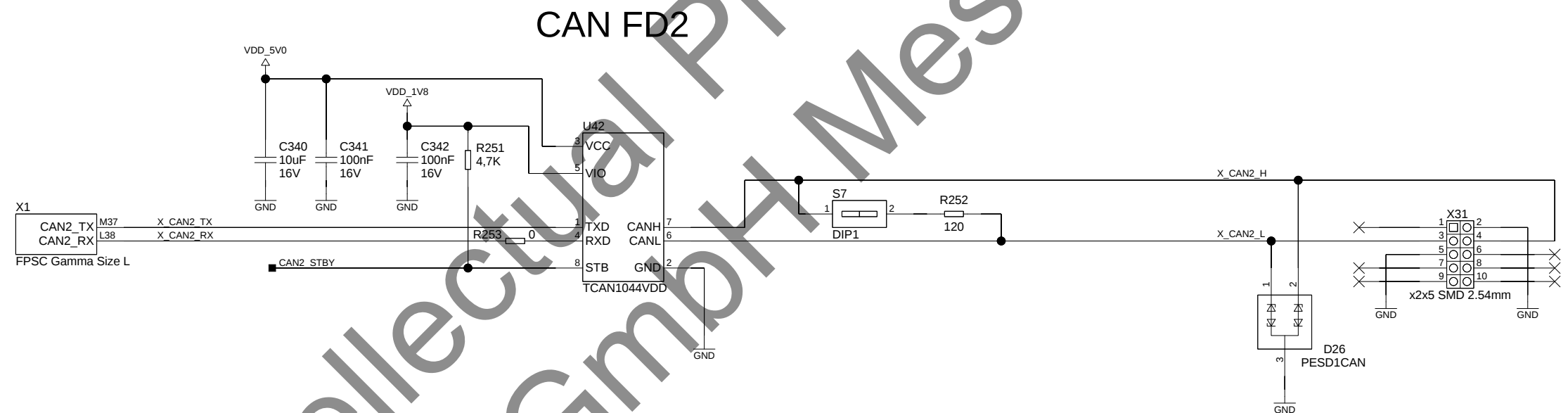
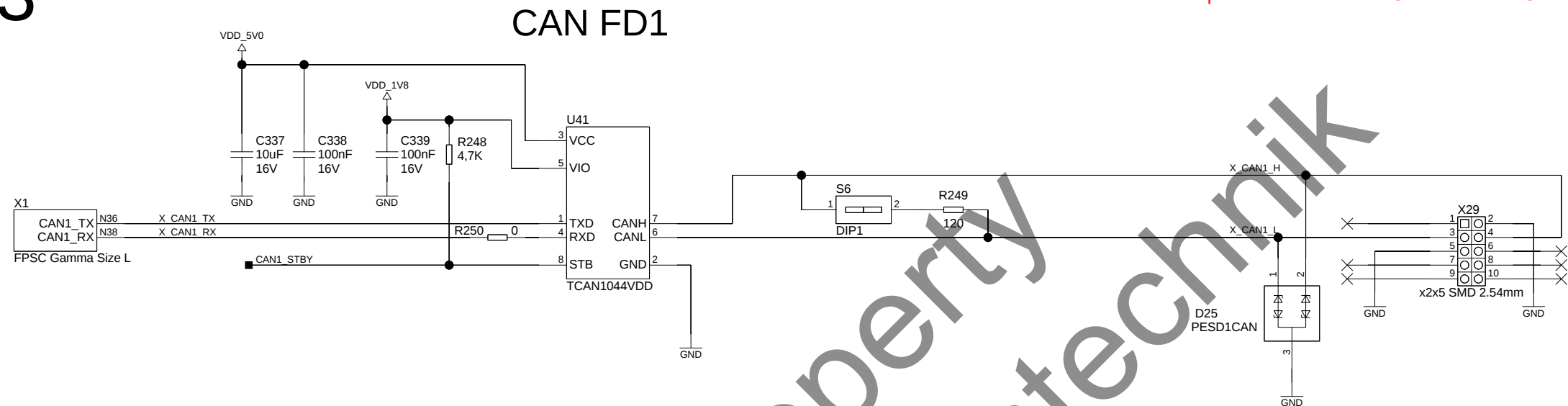
RS 485



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CAN FD1/2/3

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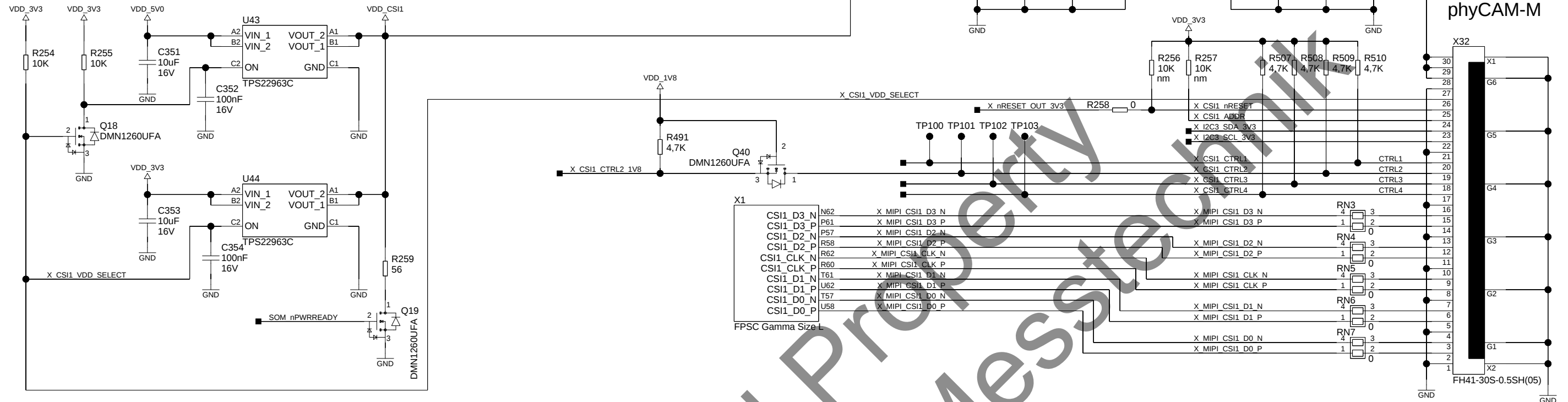


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phyCAM-M 1/2

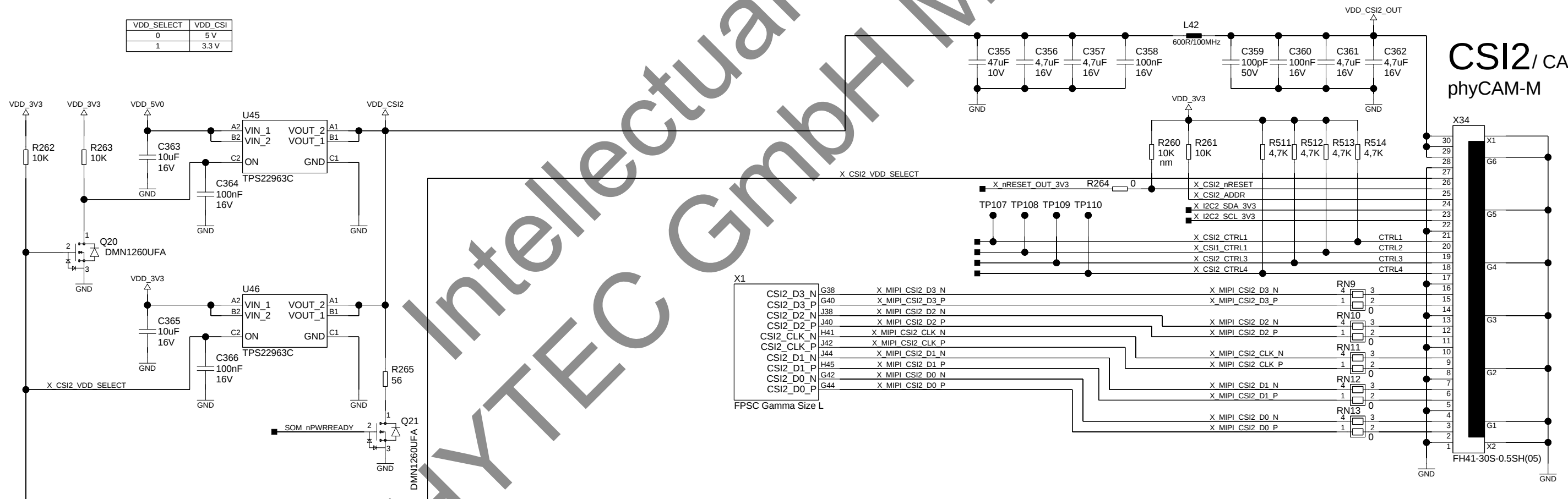
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CSI1/ CAM1 phyCAM-M



VDD_SELECT	VDD_CSI
0	5 V
1	3.3 V

CSI2/ CAM2 phyCAM-M

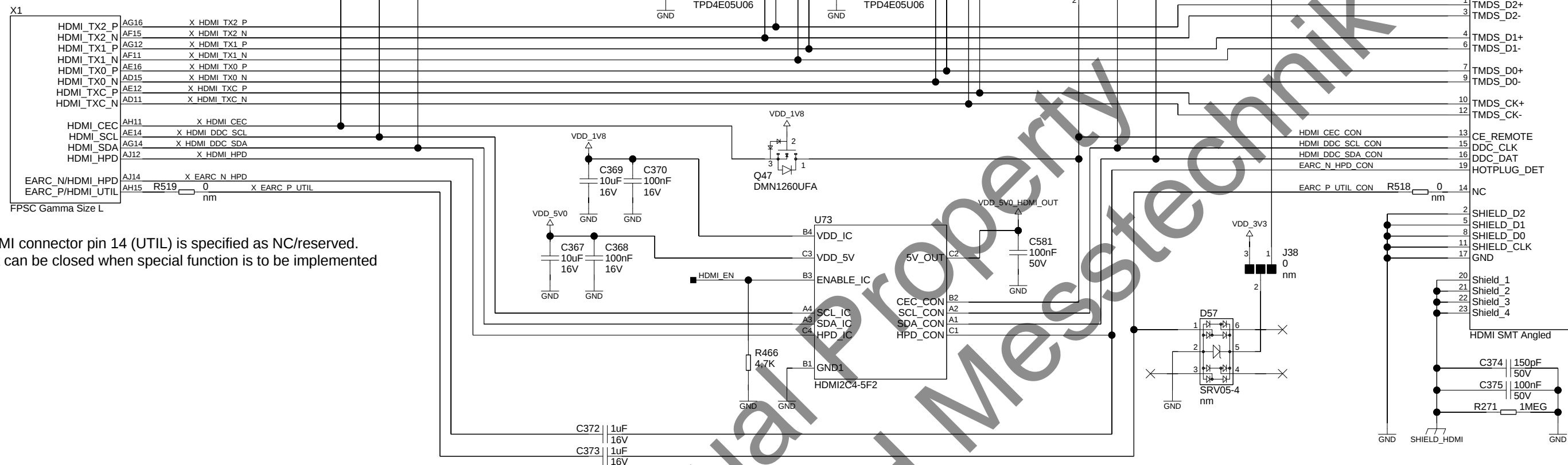


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HDMI

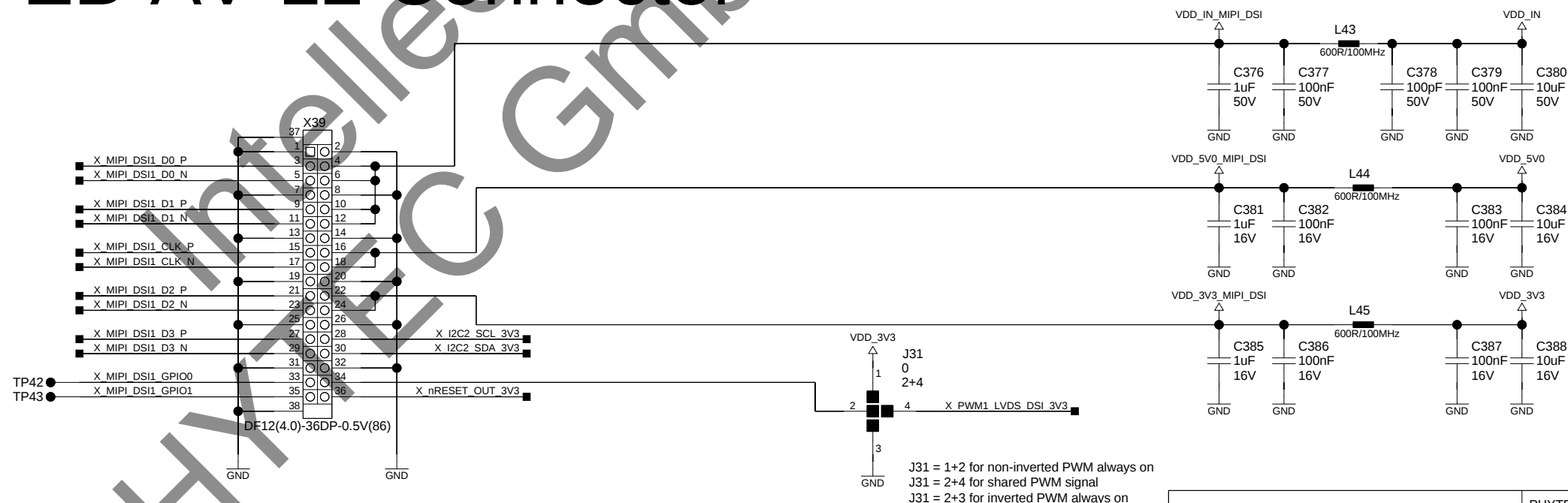


MIPI-DSI / PEB-AV-12 Connector

X1

DSI1_CLK_N	AN46	X MIPI DSI1 CLK N
DSI1_CLK_P	AN48	X MIPI DSI1 CLK P
DSI1_D0_N	AL48	X MIPI DSI1 D0 N
DSI1_D0_P	AL50	X MIPI DSI1 D0 P
DSI1_D1_N	AM49	X MIPI DSI1 D1 N
DSI1_D1_P	AN50	X MIPI DSI1 D1 P
DSI1_D2_N	AN44	X MIPI DSI1 D2 N
DSI1_D2_P	AM45	X MIPI DSI1 D2 P
DSI1_D3_N	AL44	X MIPI DSI1 D3 N
DSI1_D3_P	AL46	X MIPI DSI1 D3 P

FPSC Gamma Size L

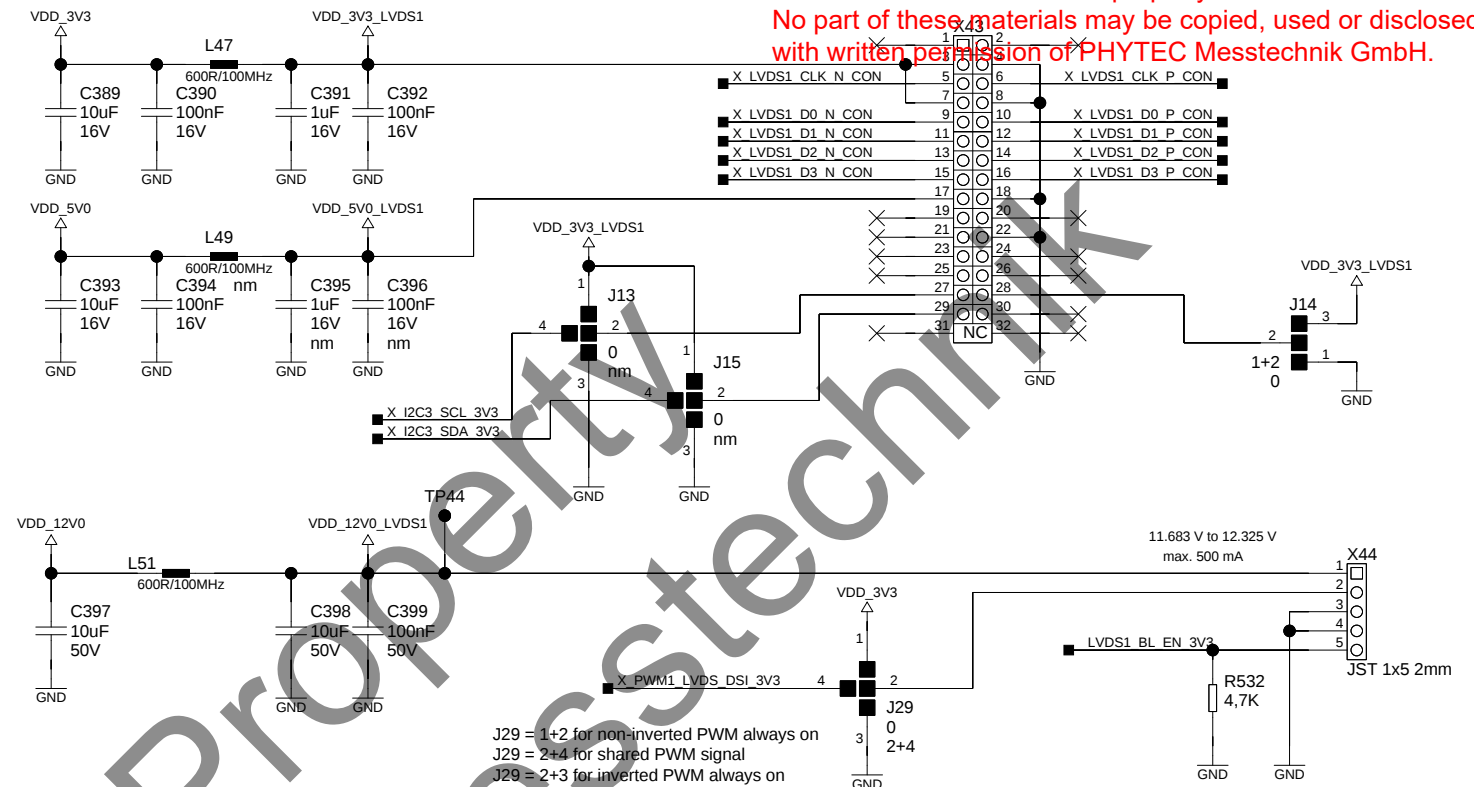
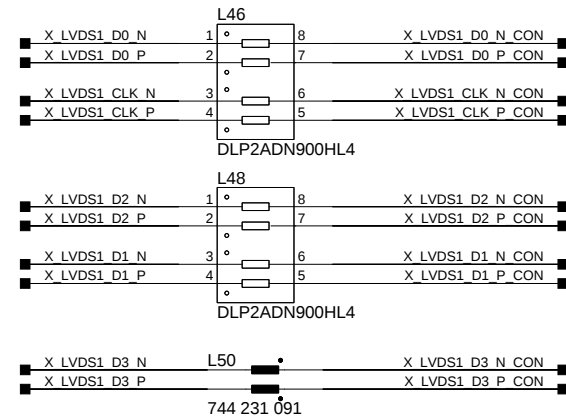
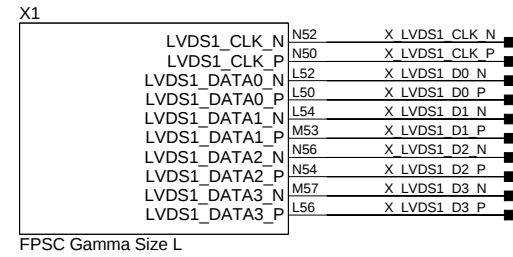


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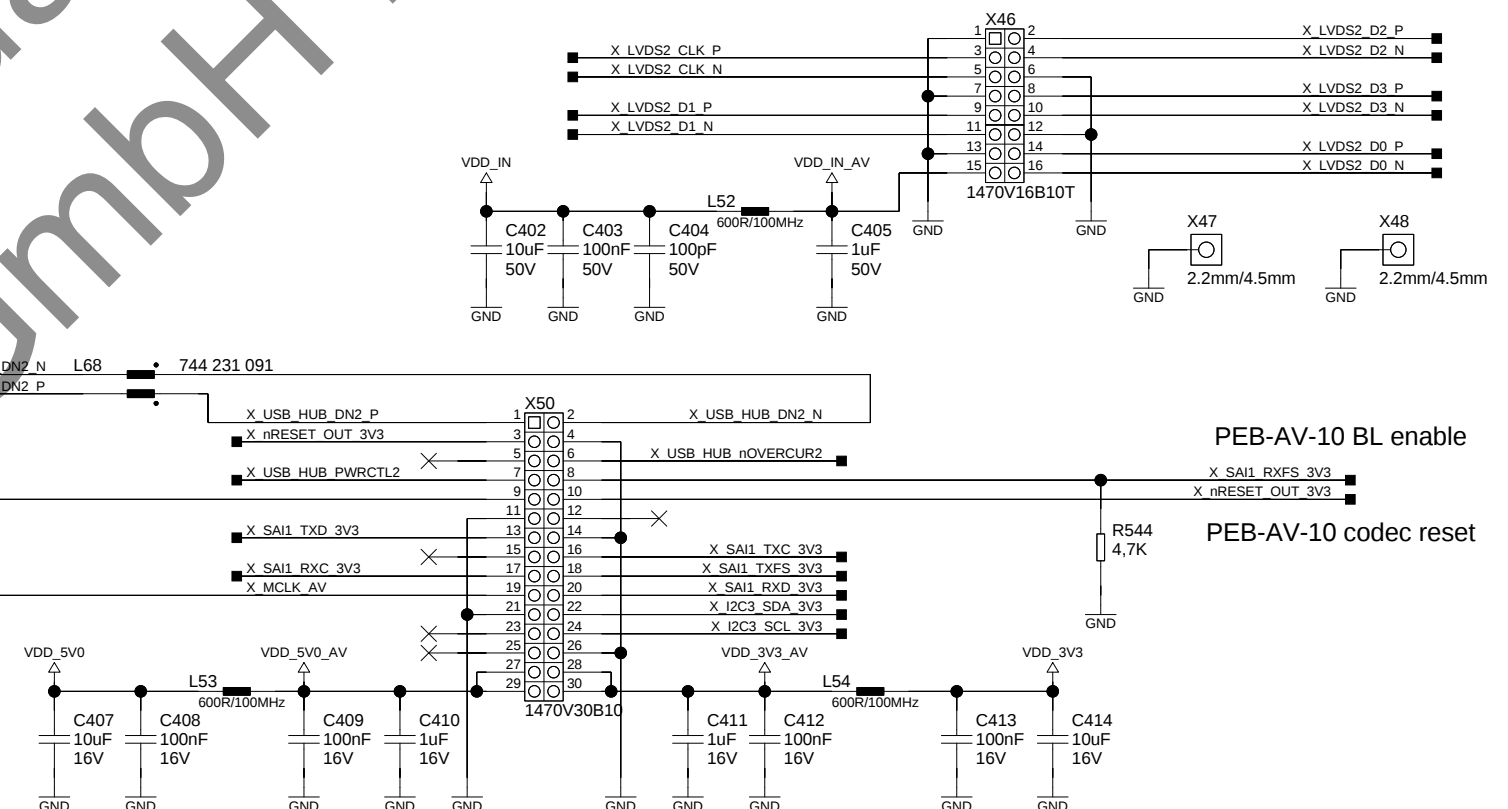
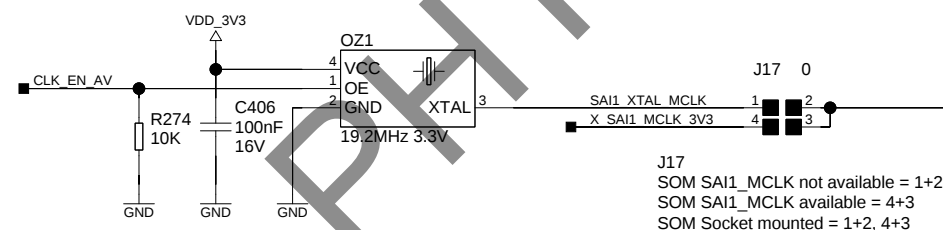
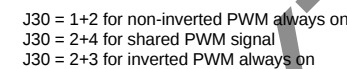
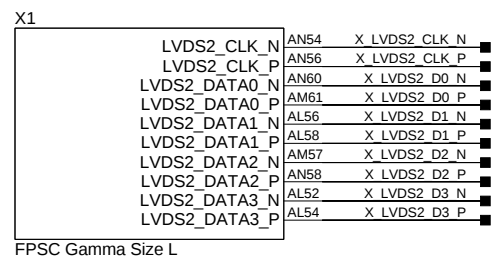
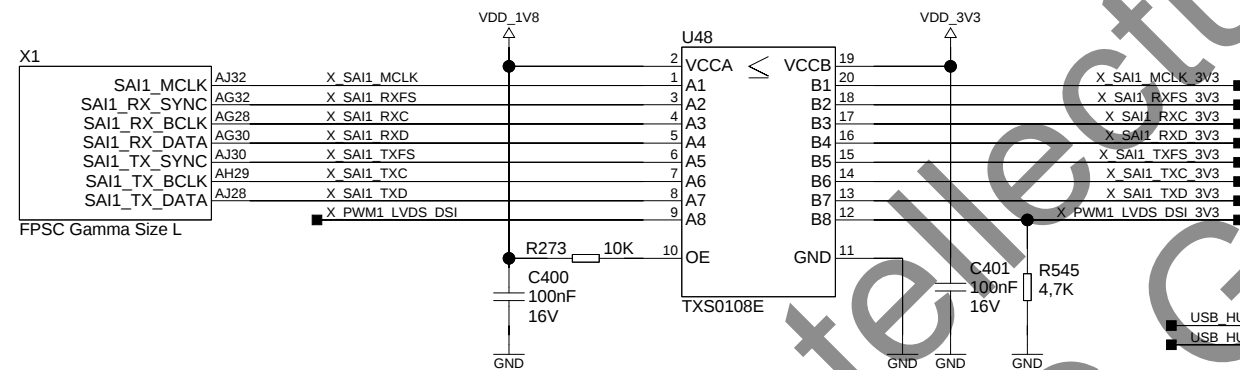
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LVDS1



LVDS2 / PEB-AV-10/13 Connector



J17
SOM SAI1_MCLK not available = 1+2
SOM SAI1_MCLK available = 4+3
SOM Socket mounted = 1+2, 4+3

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Author: M.Poschmann, T.Metz

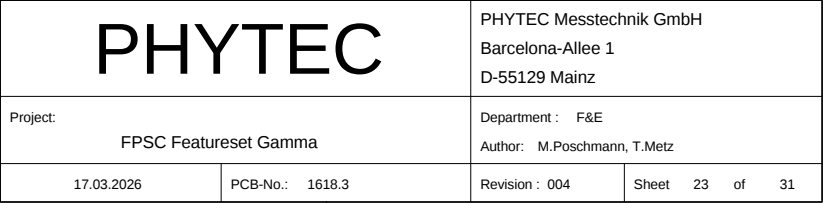
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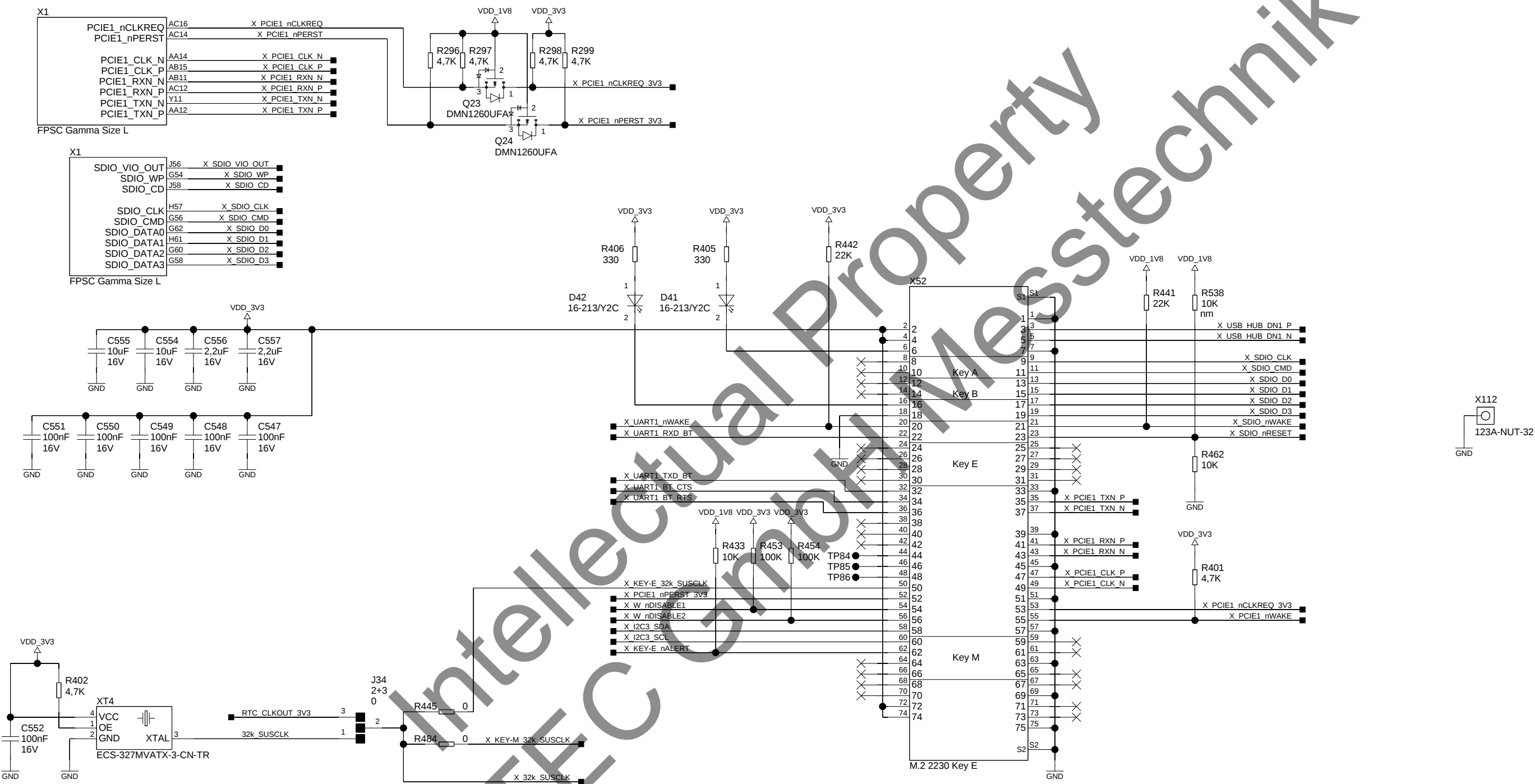
Sheet 22

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M.2 Key-E

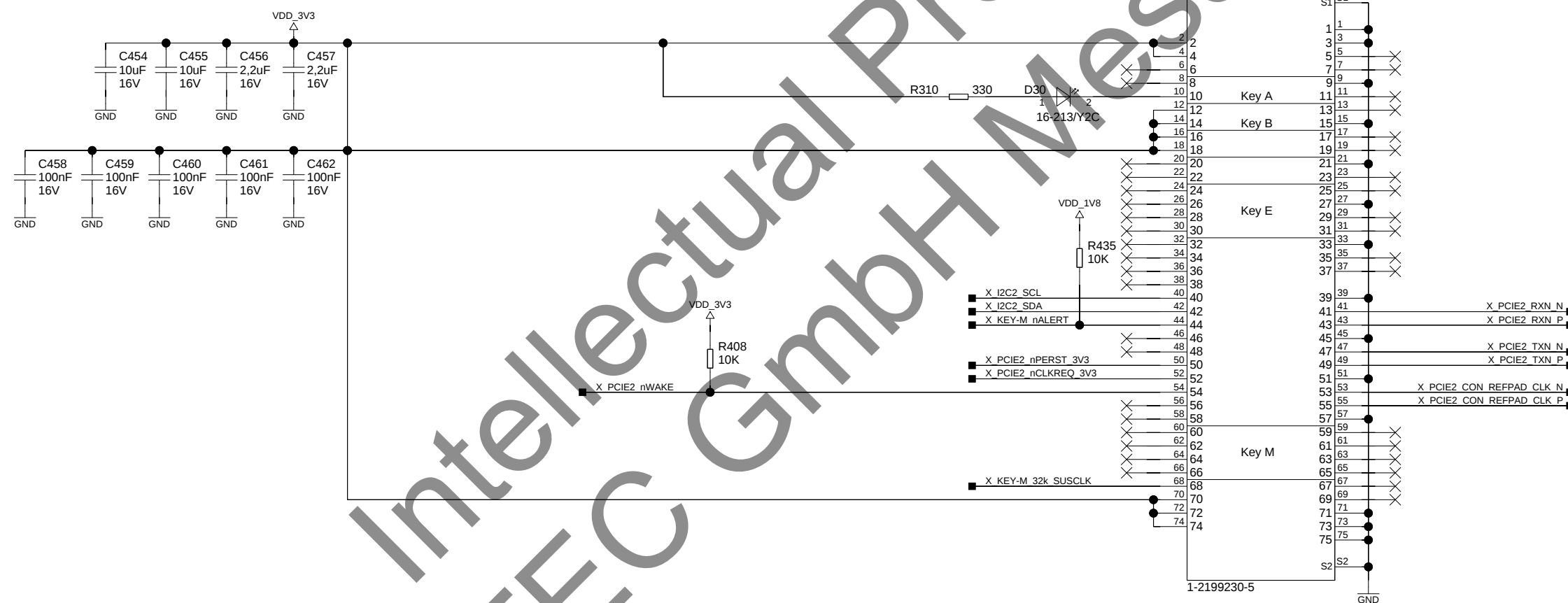
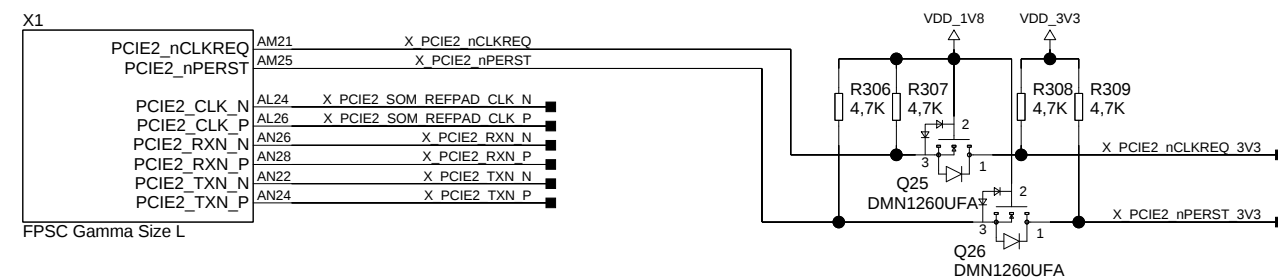
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M.2 Key-M

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

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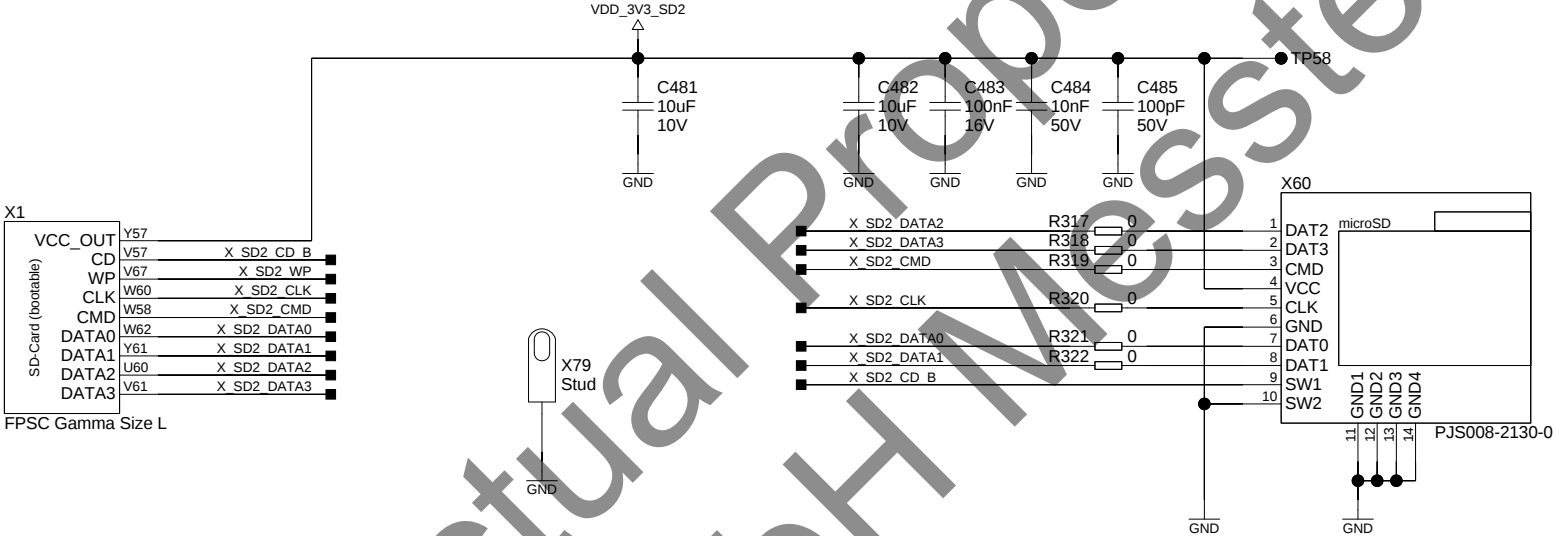
PCB-No.: 1618.3

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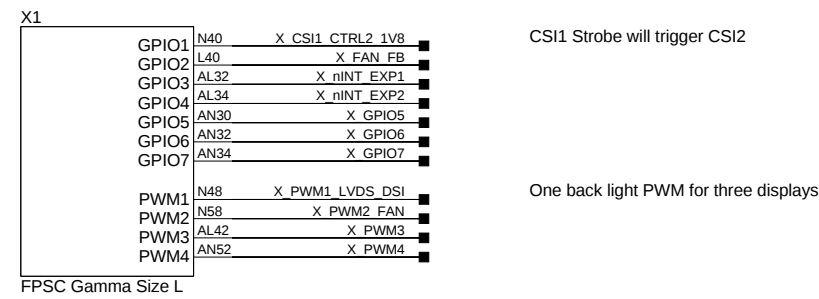
μSD-Card

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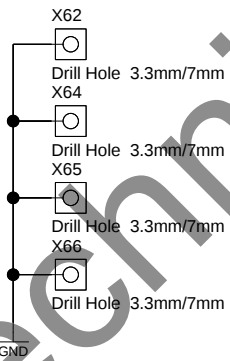
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17.03.2026	PCB-No.: 1618.3	Revision : 004	Sheet 26 of 31

GPIO/PWM

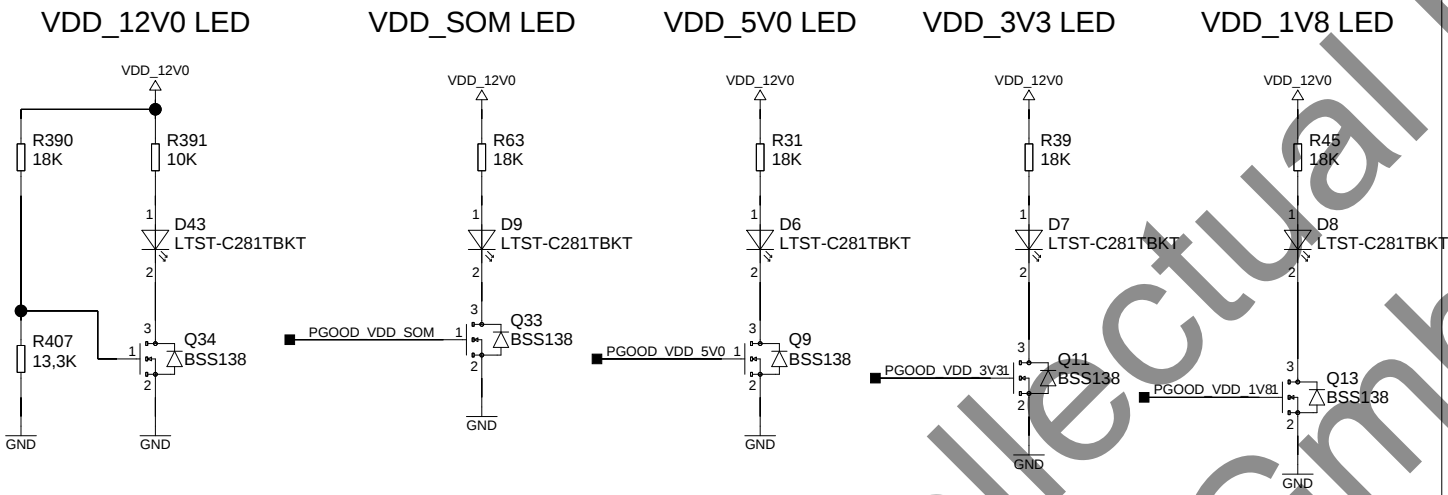


Mounting holes

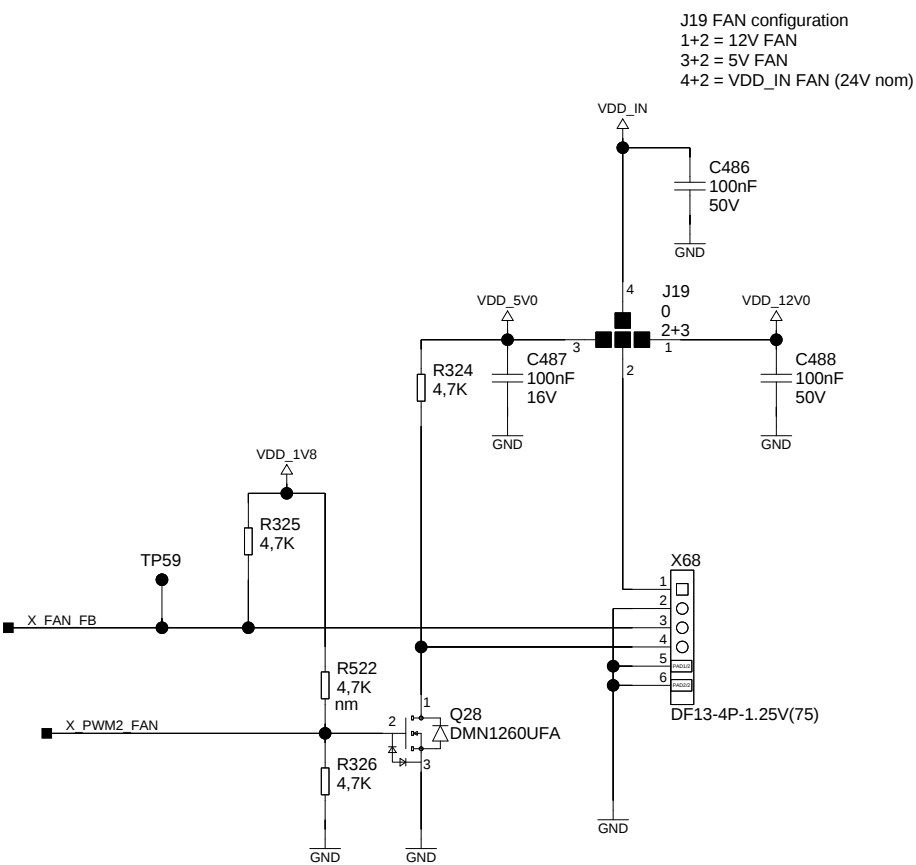
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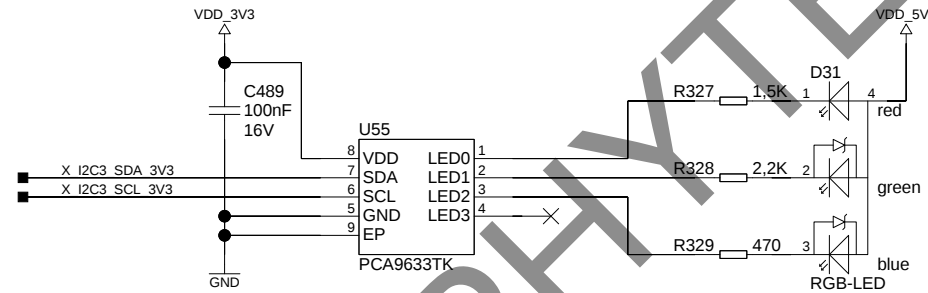
PGOOD LED



Fan Connector



RGB LED

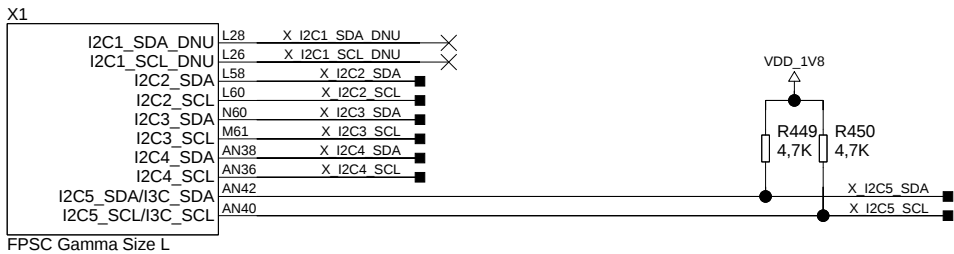


I2C Addr: 0x62

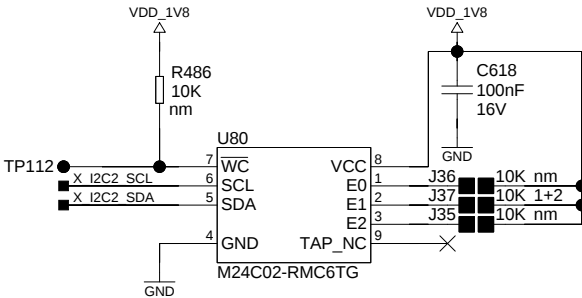
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I2C / I3C / EEPROM

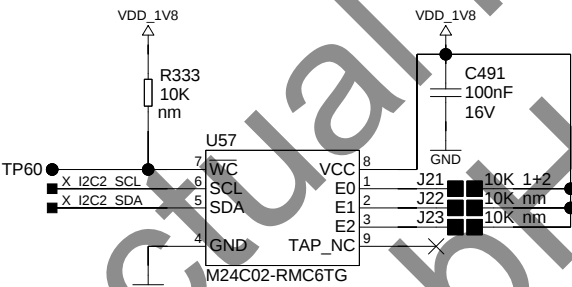


User EEPROM



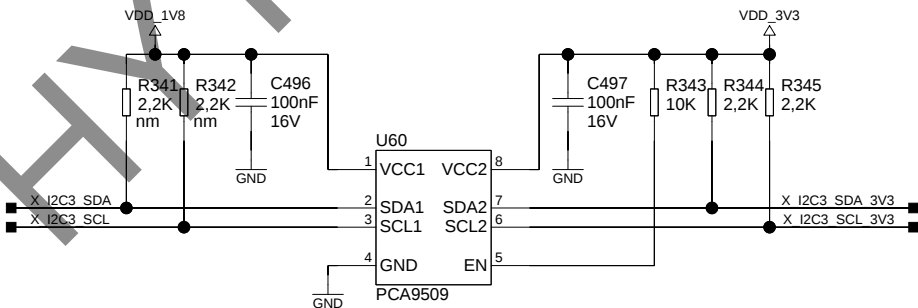
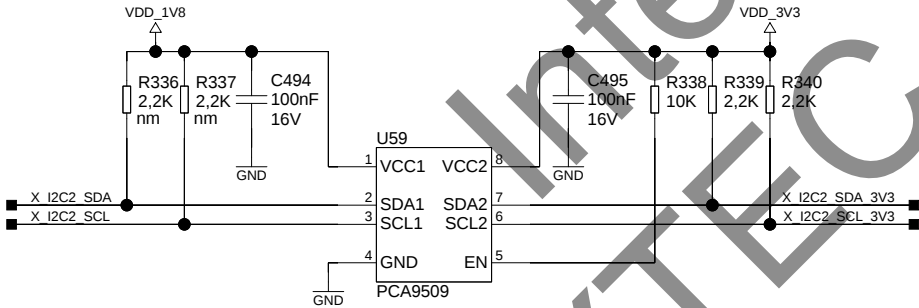
I2C2 addr. 0x52

Factory EEPROM

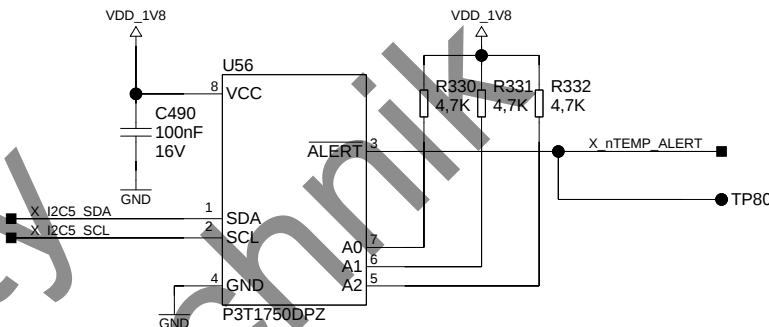


I2C2 addr. 0x51

I2C level translation

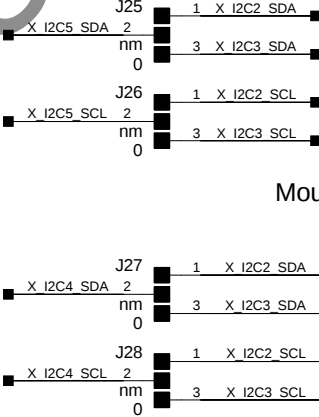


Temperature sensor



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

I2C optional interconnect

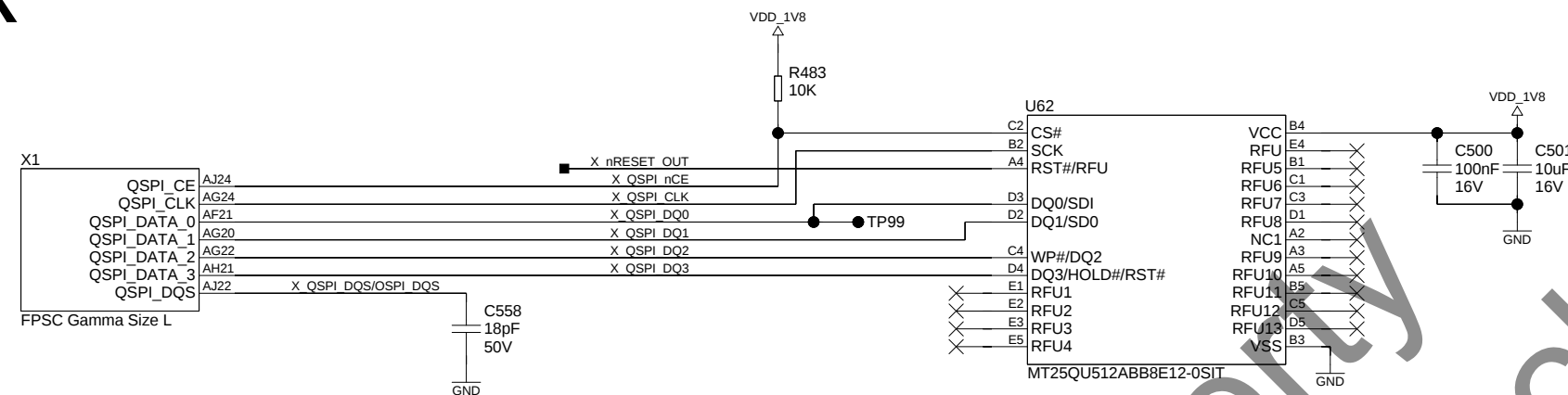


Mount J25 / J26 / J27 / J28 in case populated SOM does not provide all preferred I2Cs

If I2C interconnect is used remove redundant pull-ups

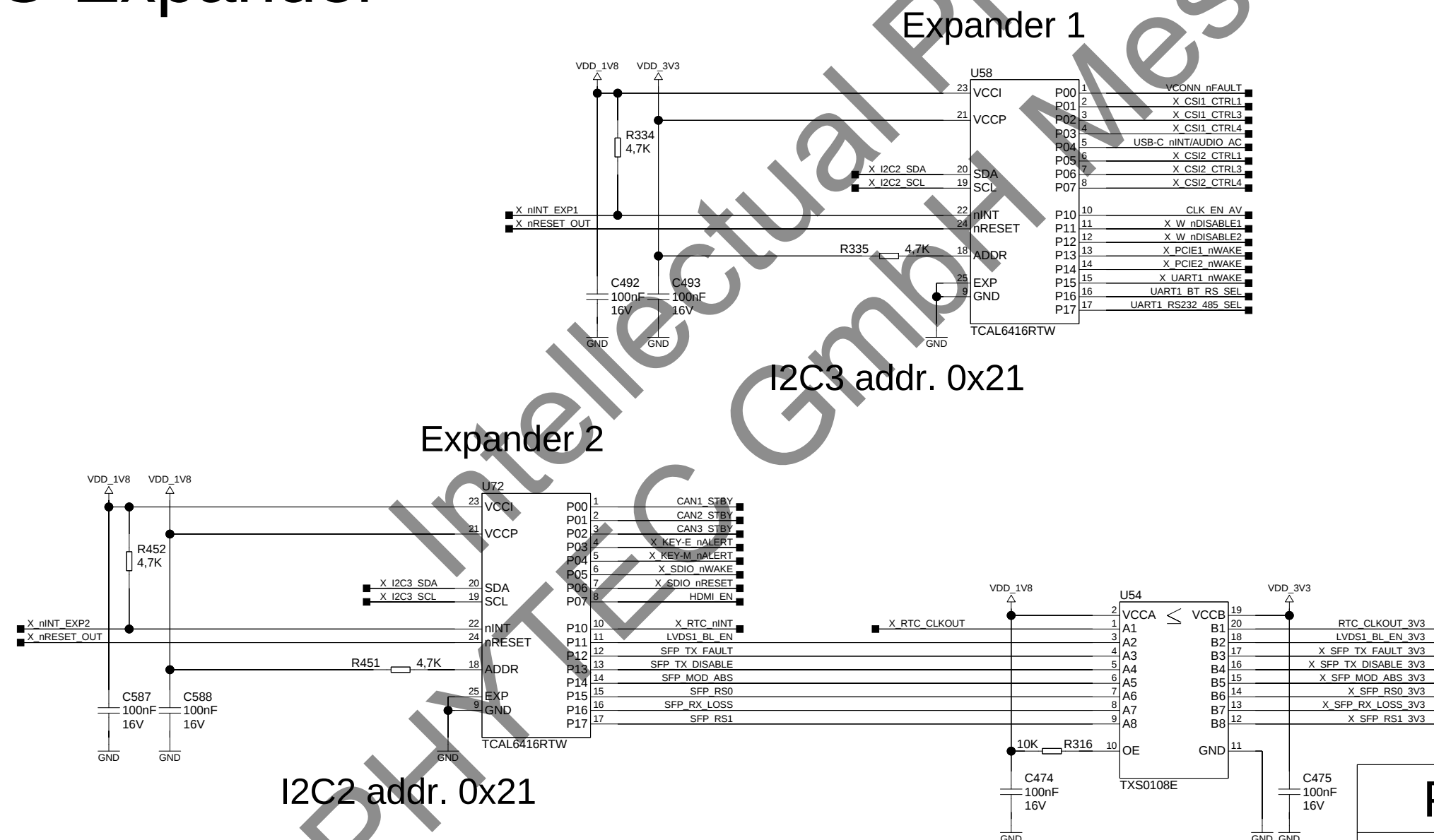
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QSPI NOR



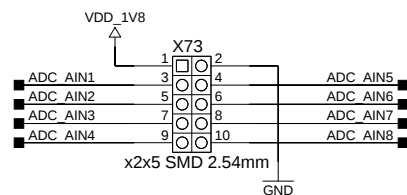
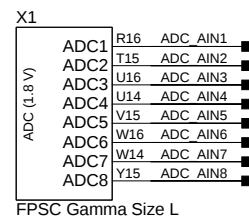
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GPIO Expander

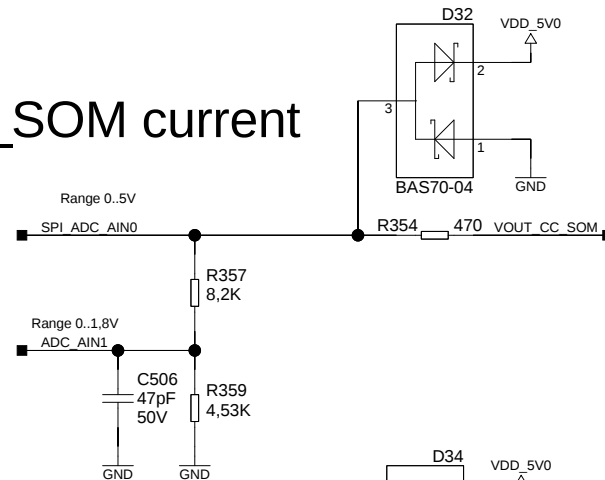


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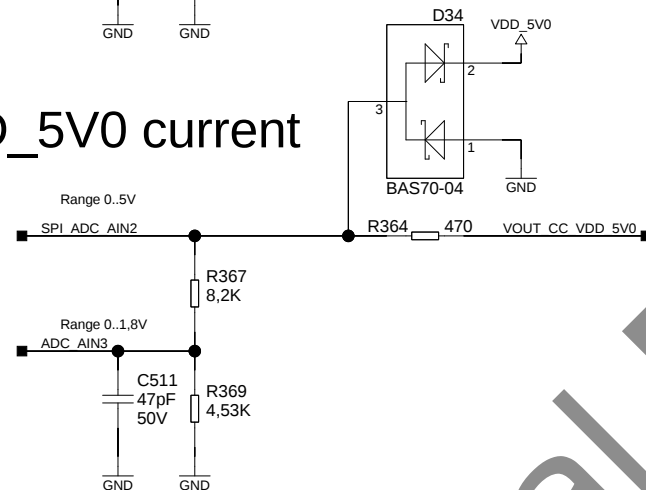
ADC



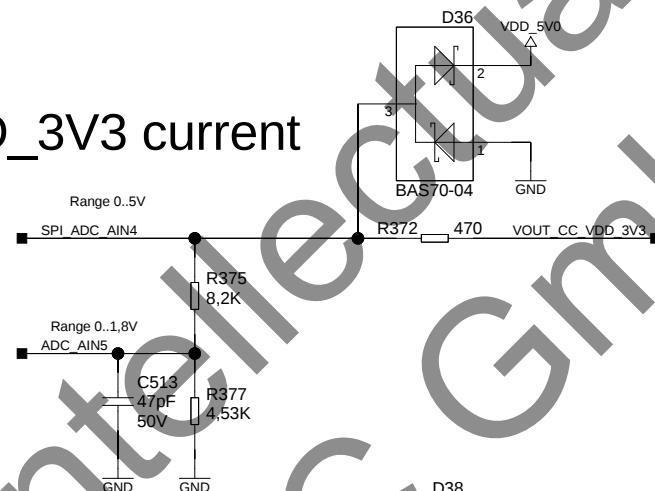
VDD_SOM current



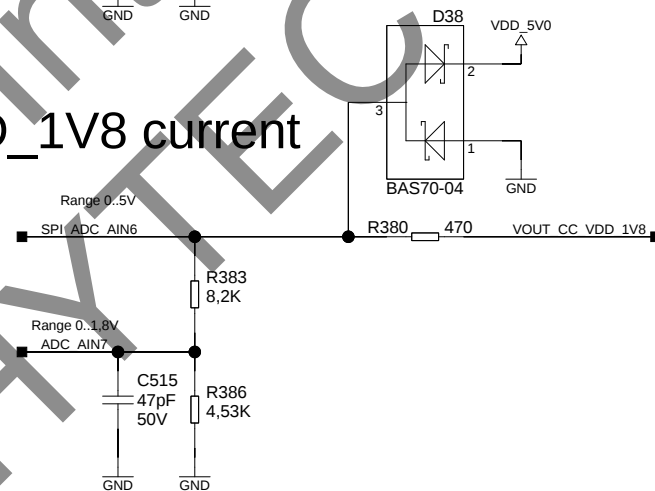
VDD_5V0 current



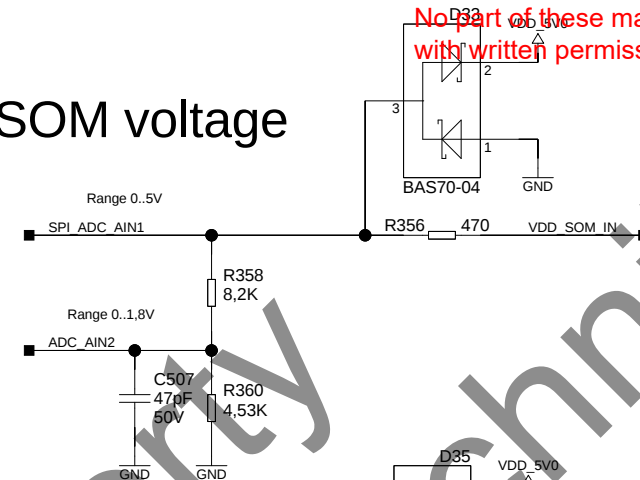
VDD_3V3 current



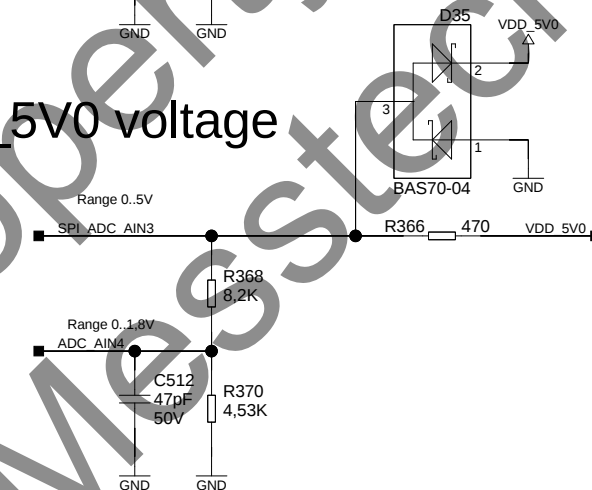
VDD_1V8 current



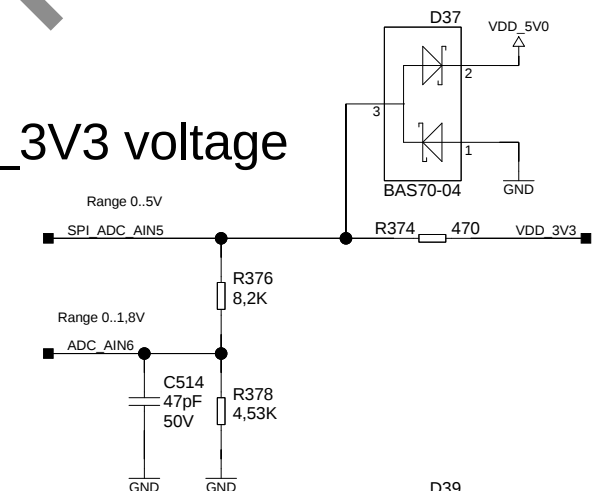
VDD_SOM voltage



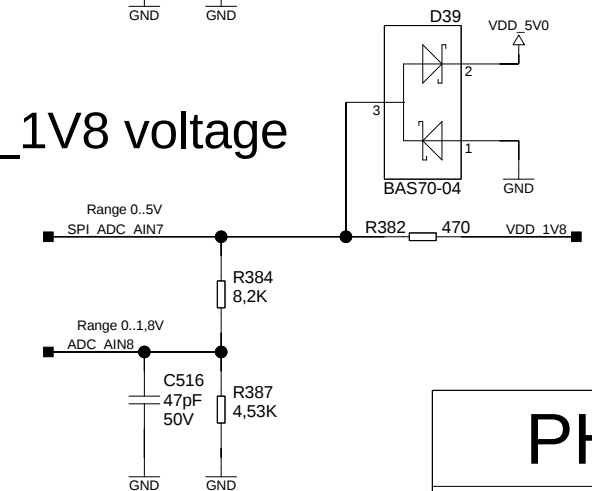
VDD_5V0 voltage



VDD_3V3 voltage



VDD_1V8 voltage



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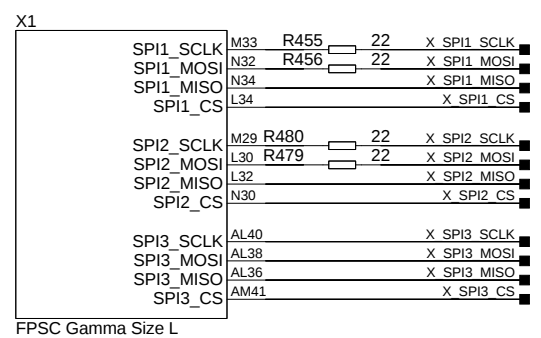
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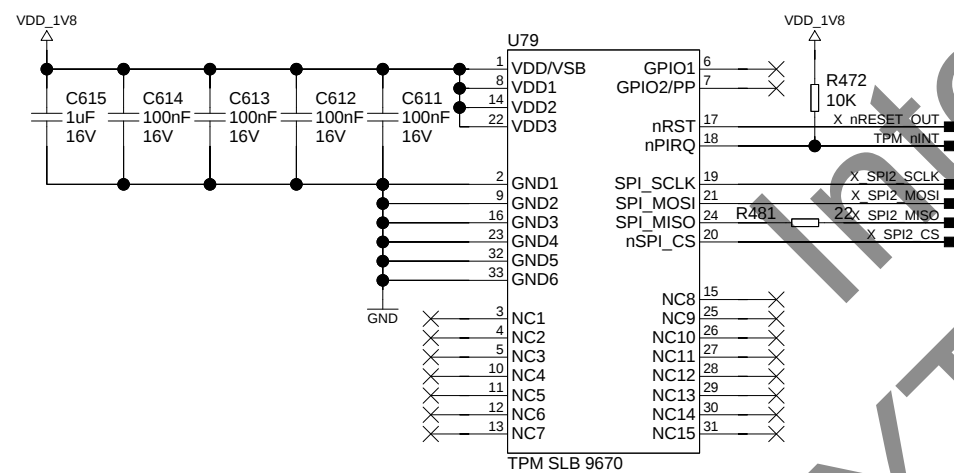
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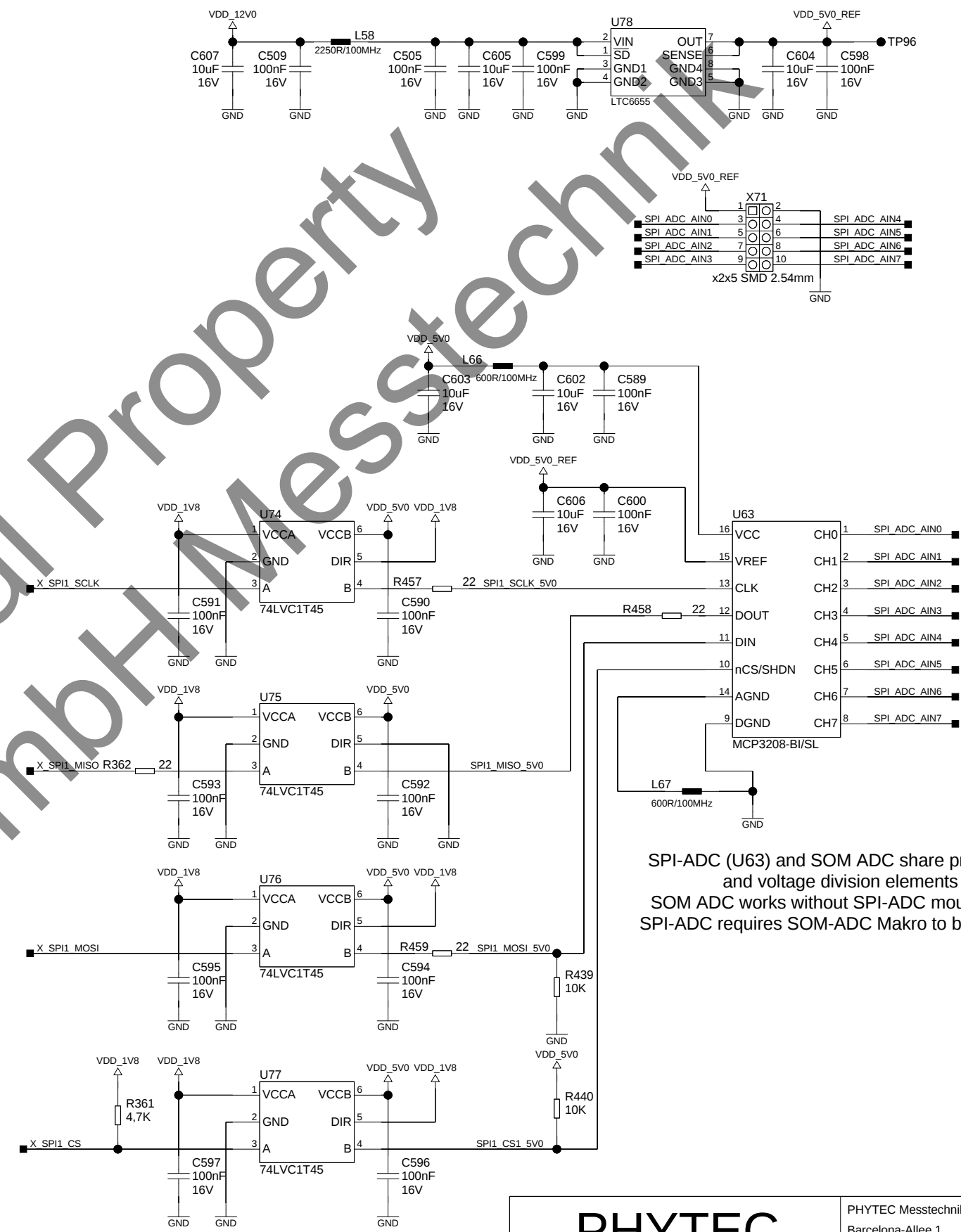
SPI



TPM



SPI-ADC



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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