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PBA-CD-33

phyBOARD-Nash-i.MX 91/93

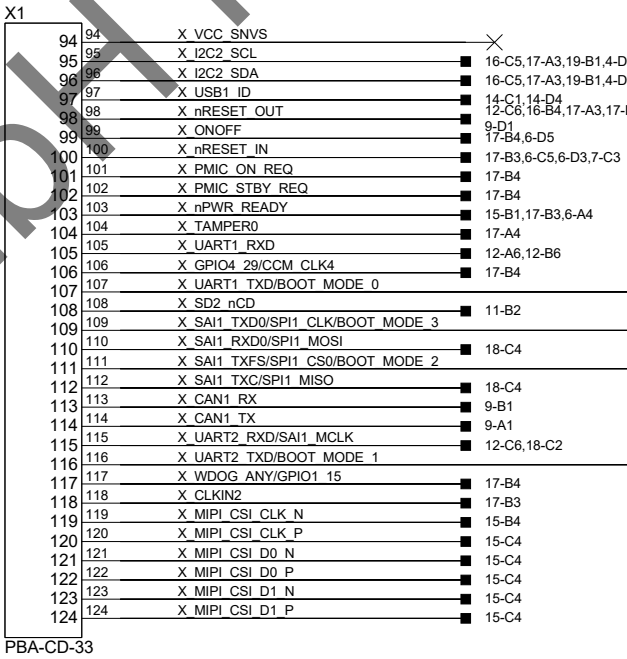
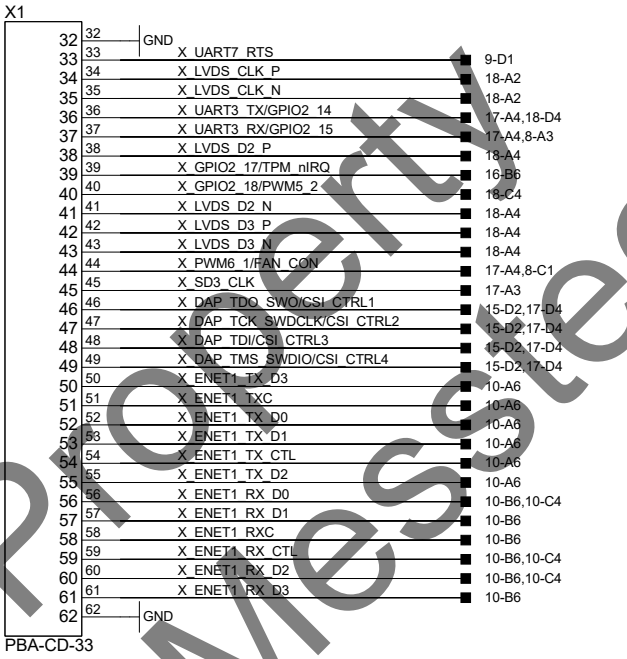
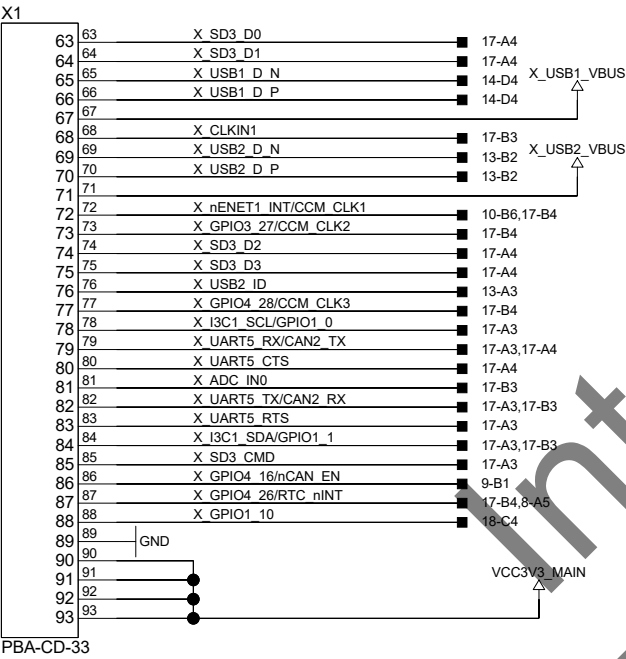
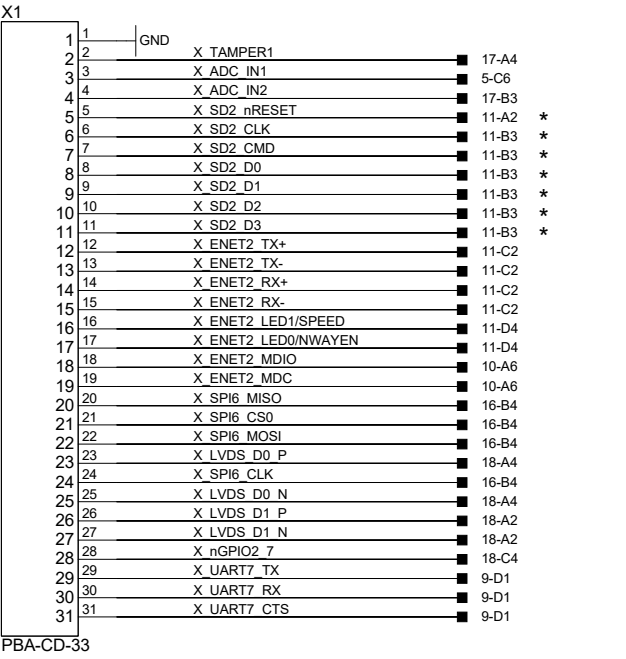
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phyCORE-i.MX 91/93 Connectors

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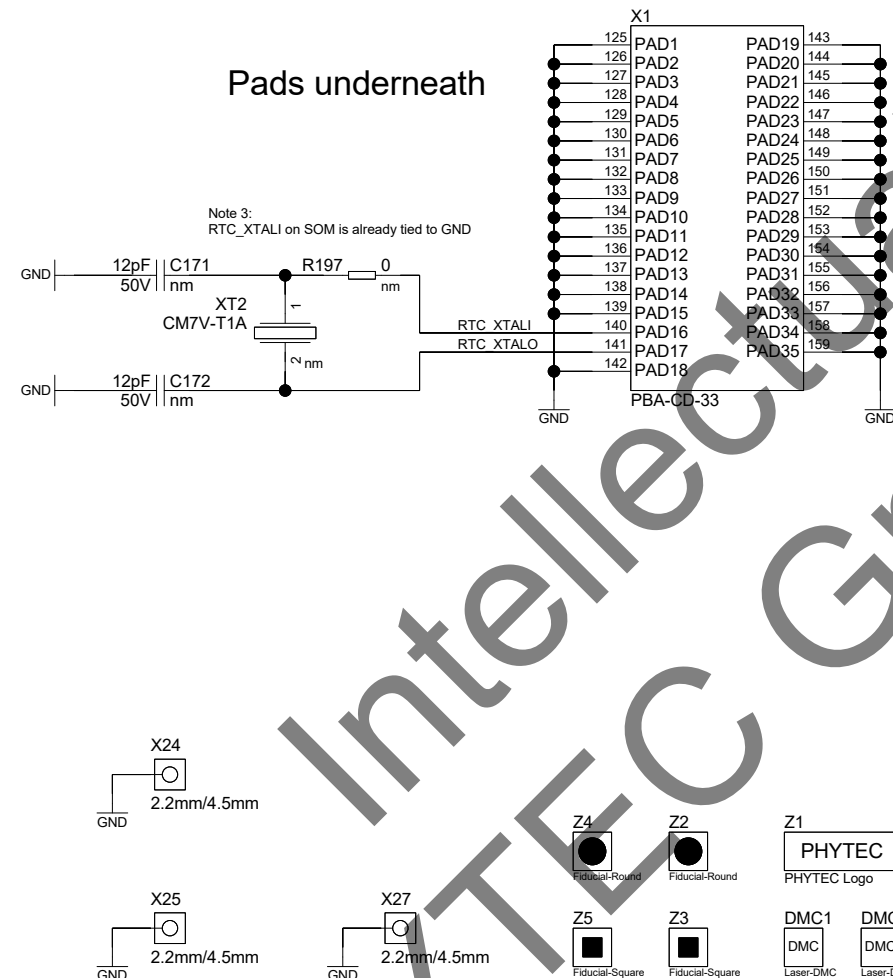


Note: all signals have 1.8 V voltage level

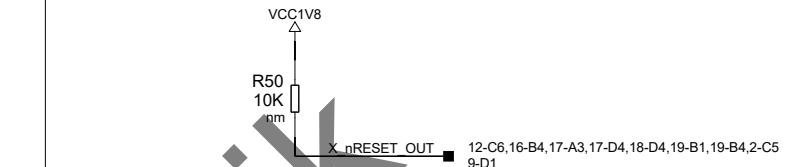
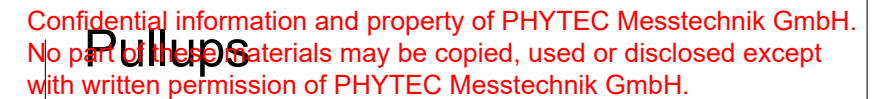
* Note: SD2 signal voltage level depending on NVCC_SD2 and can be 1.8 V or 3.3 V

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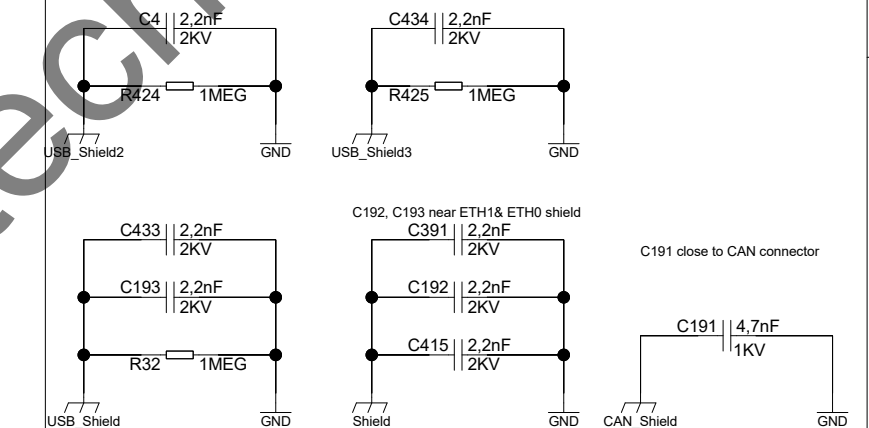
phyCORE-i.MX 91/93 Connectors



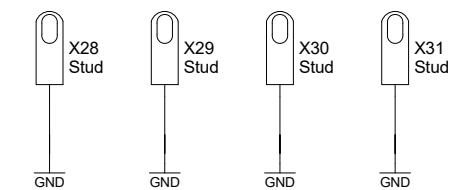
I2C addresses used on SOM:	I2C2
- EEPROM on SOM Memory Area	0x50
- EEPROM on SOM ID Page	0x58
Onboard used I2C addresses:	
- Expansion Connector	-
- EEPROM Memory Area	0x54
- EEPROM ID Page	0x5C
- External RTC	0x52
- A/V Connector	-
- USB-C PD STUSB4500	0x28



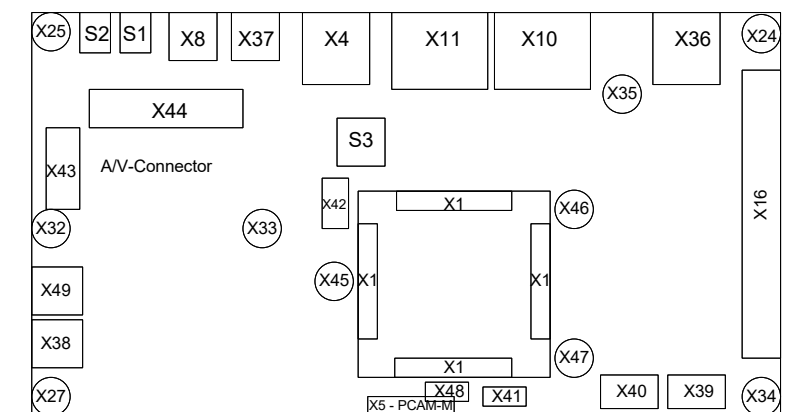
Shield Coupler



GND for Measurement



Drill Hole Placement



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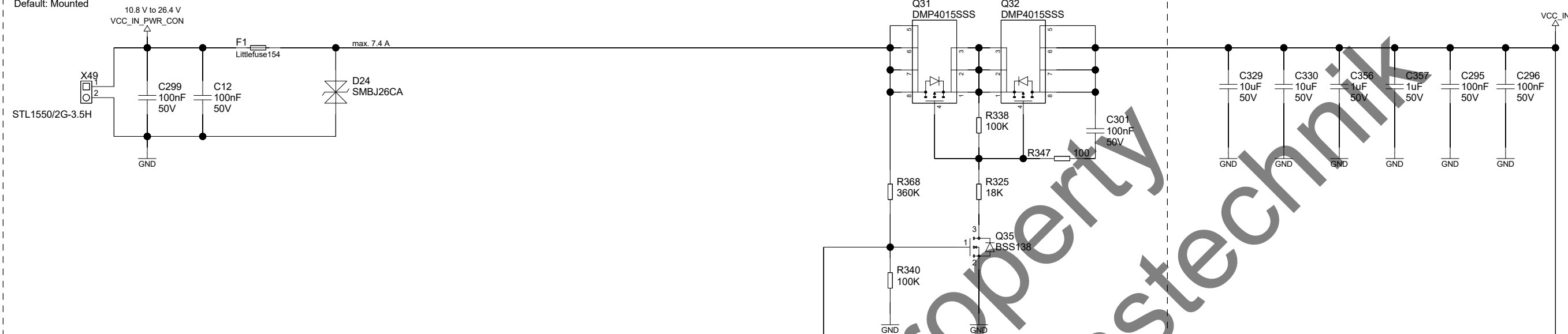
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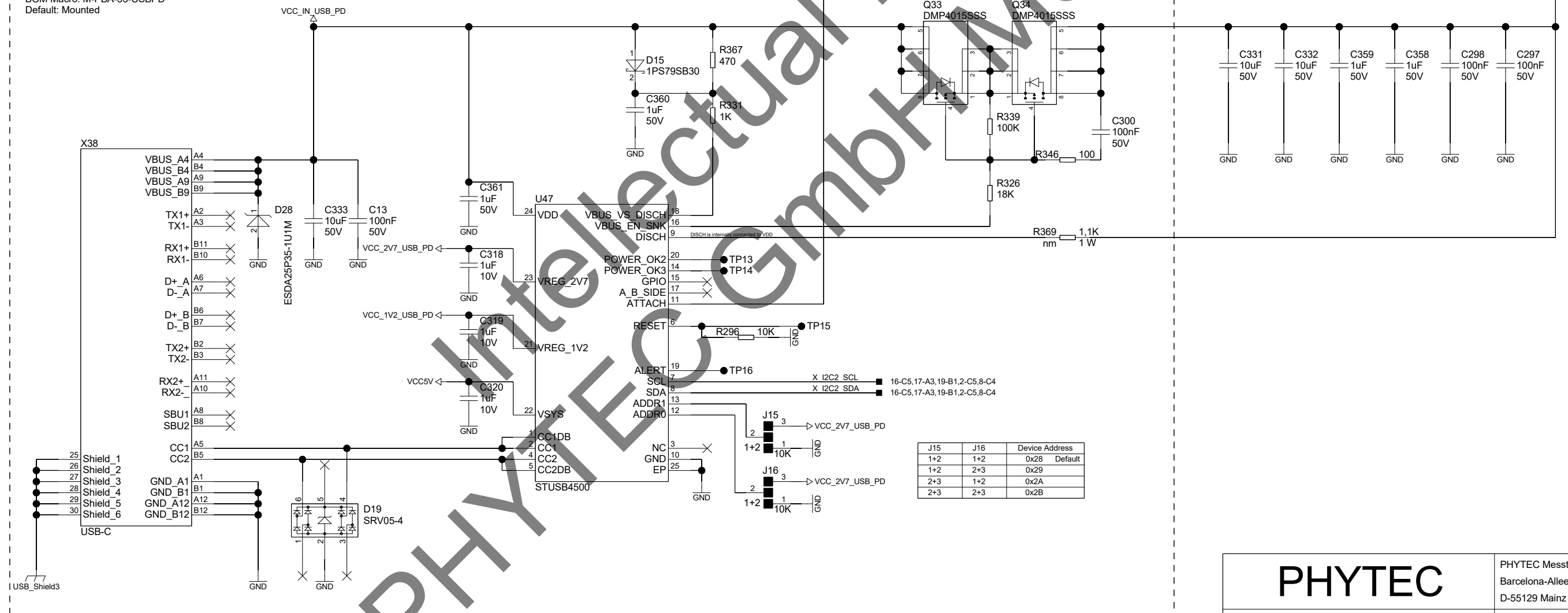
VCC_IN via Power Connector

BOM Macro: M-PBA-33-PWRCN
Default: Mounted



VCC_IN via USB-PD

BOM Macro: M-PBA-33-USBPD
Default: Mounted



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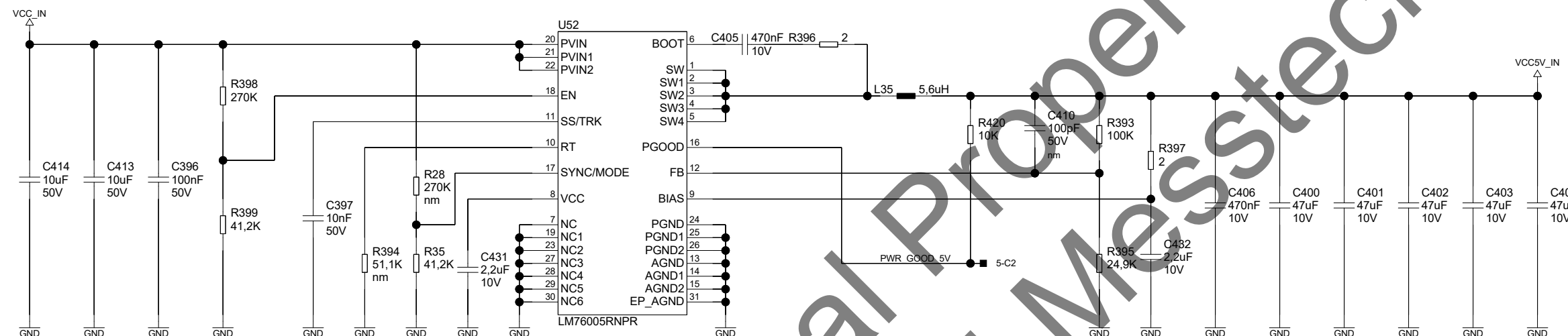
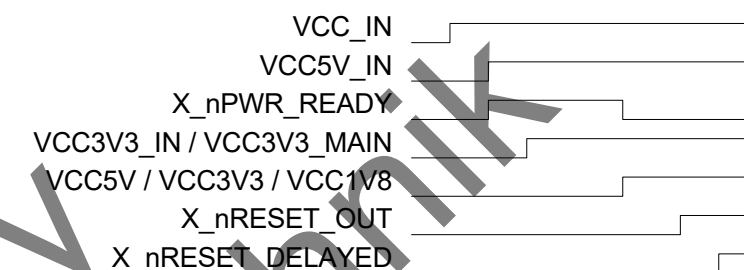
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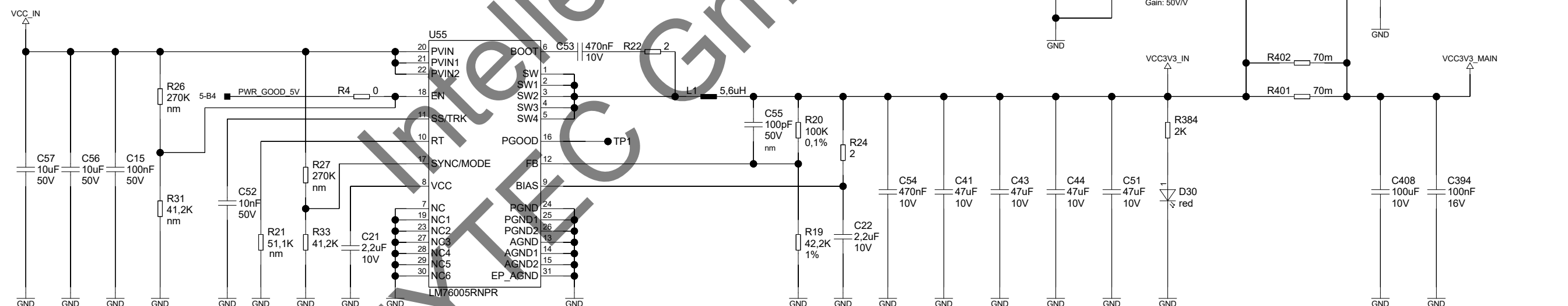
VCC_IN to VCC5V_IN @ 5A

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Power sequencing diagram



VCC_IN to VCC3V3_IN @ 5A



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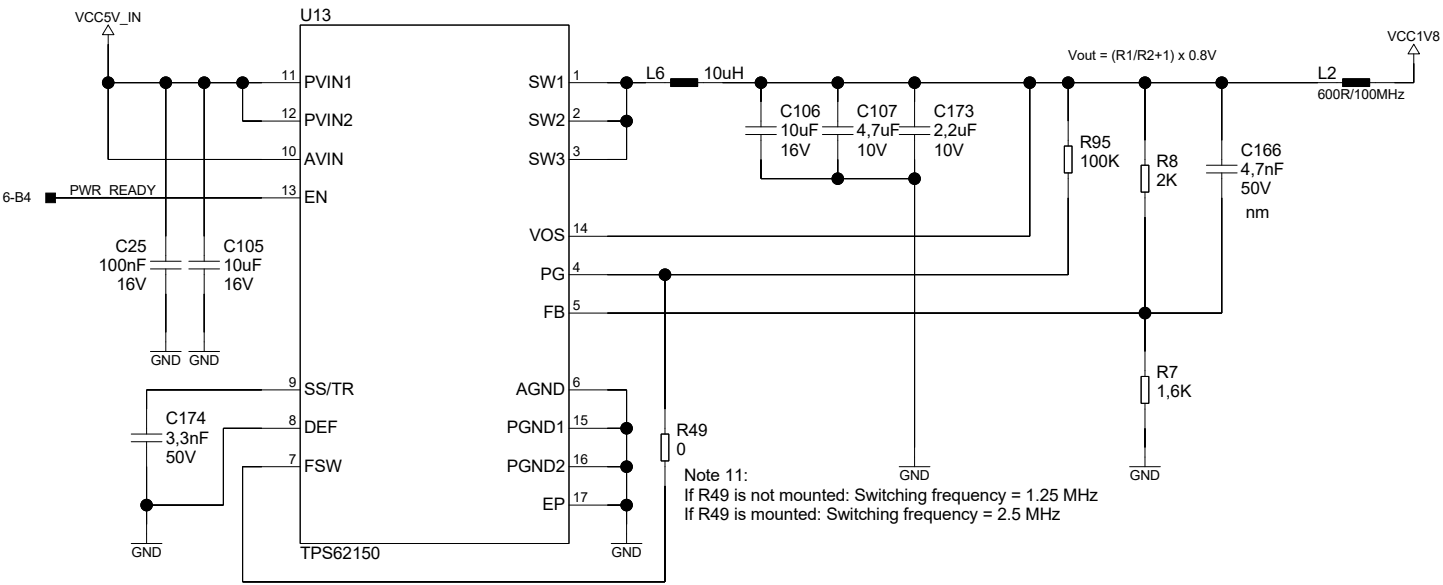
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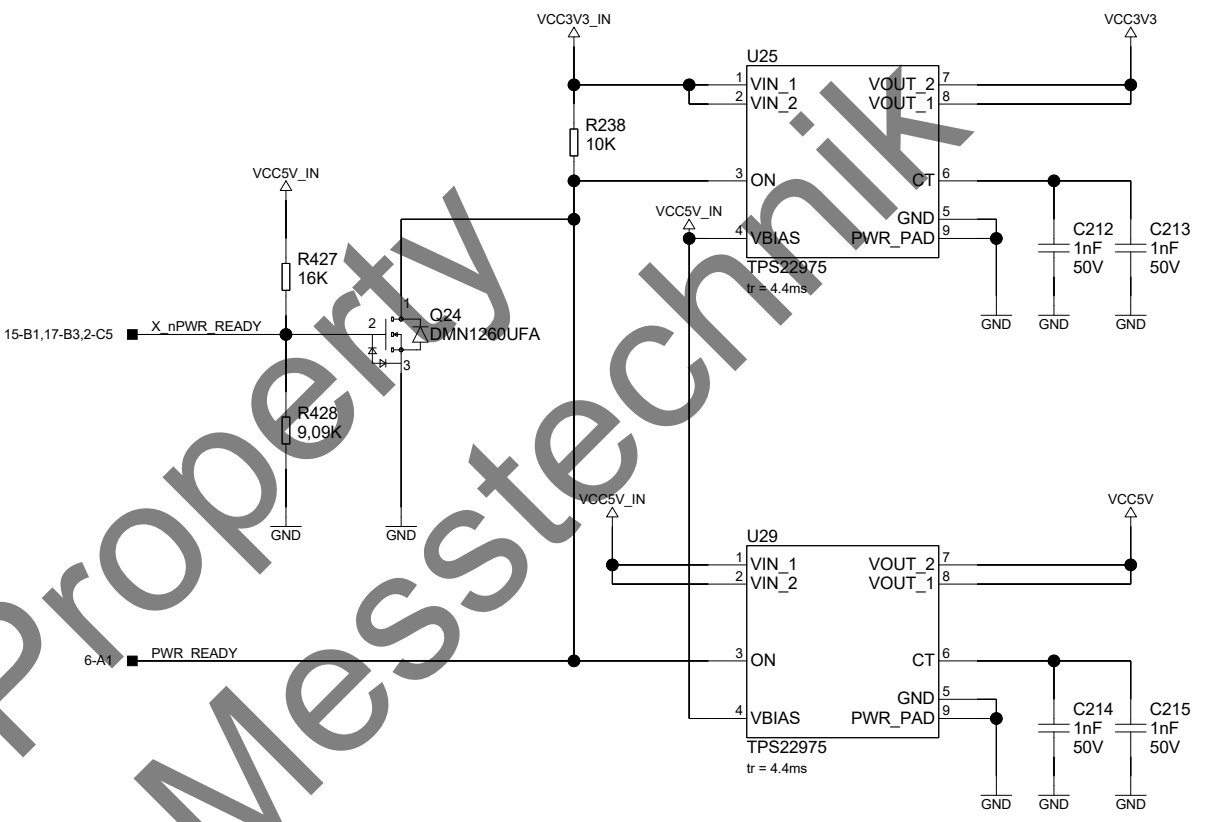
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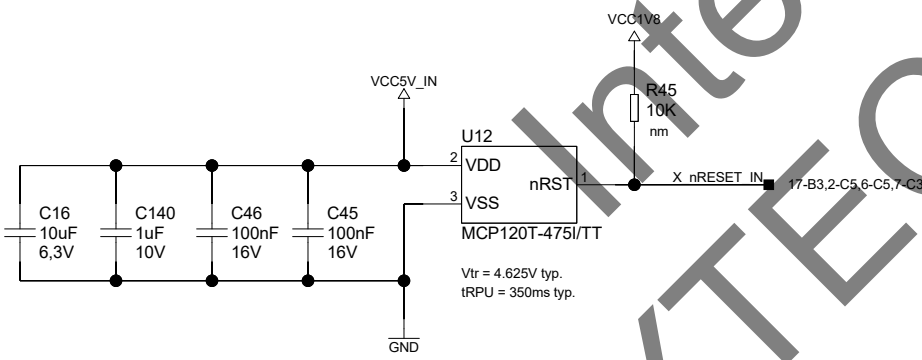
1.8V Power Supply



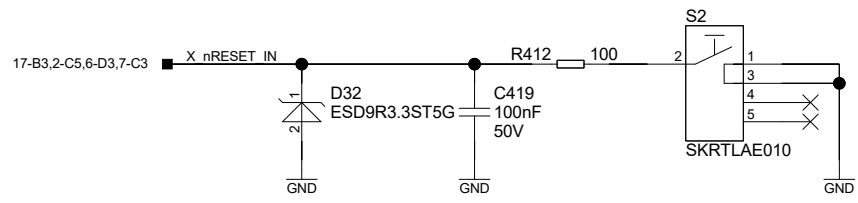
Power Switch



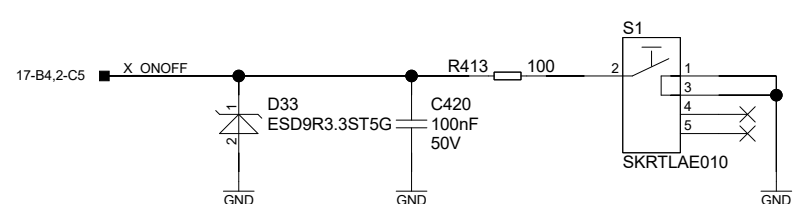
Voltage Supervisor



System Reset Button



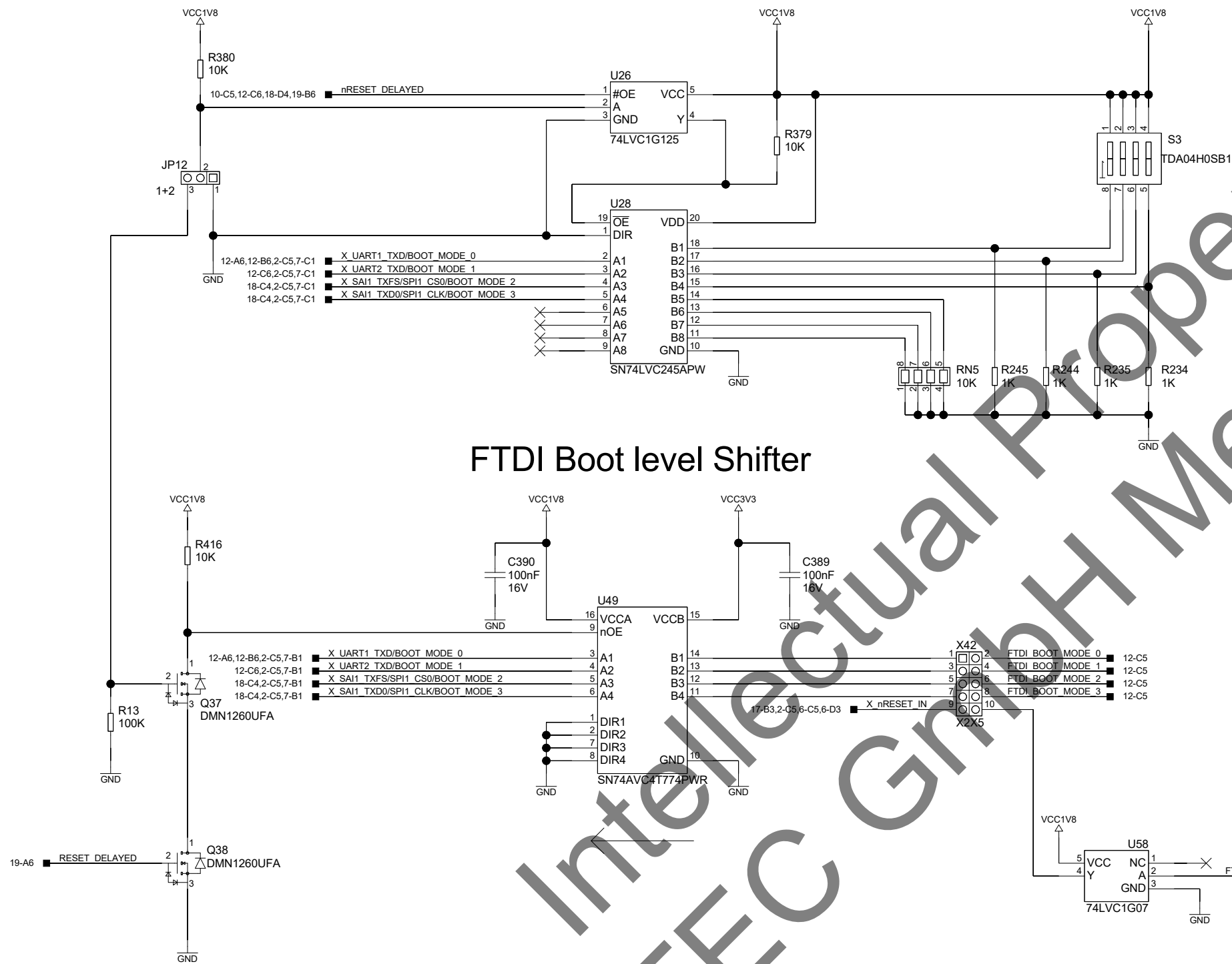
CPU ON/OFF Button



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Boot Mode i.MX 91/93

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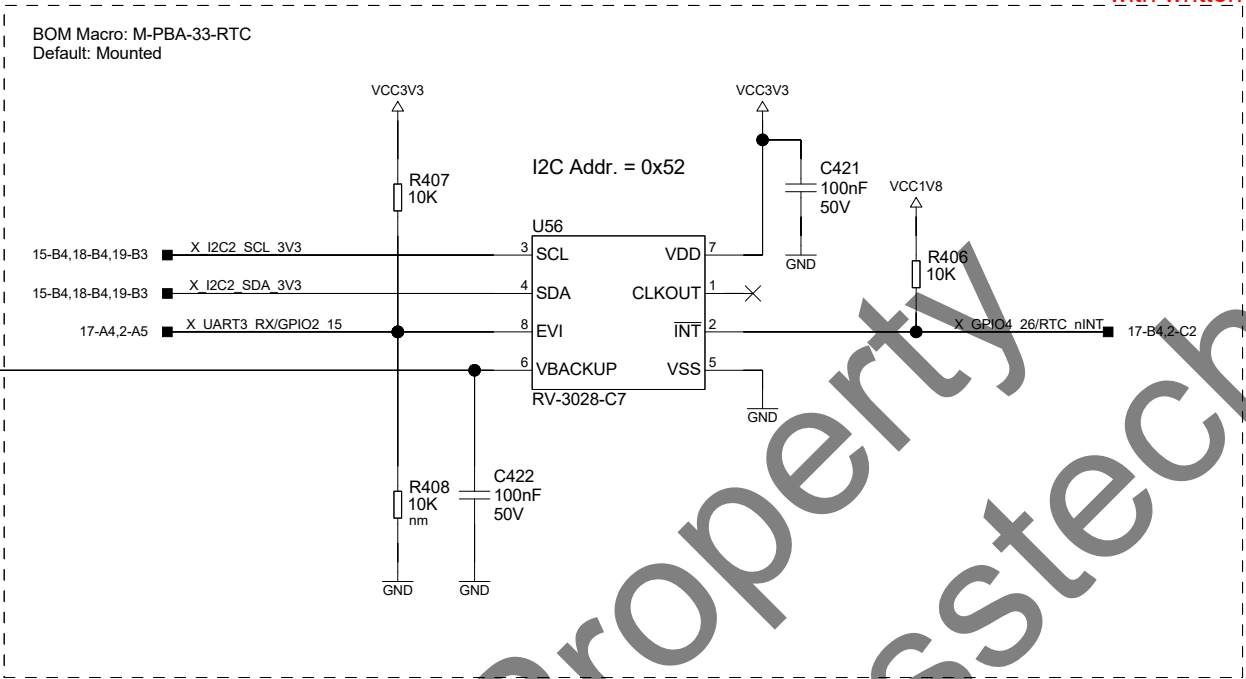
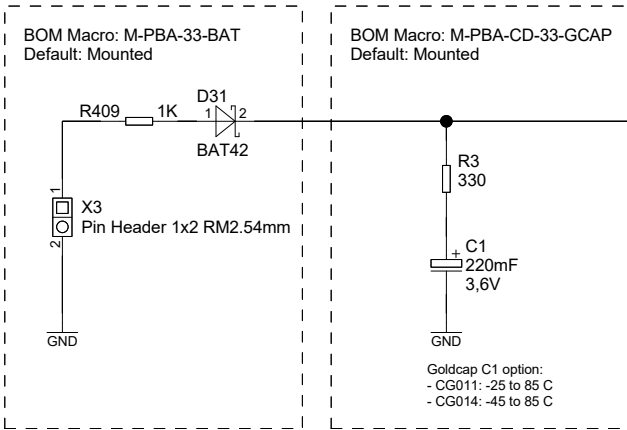


Supported Boot Modes of SOM phyCORE-i.MX 93	
BOOT_MODE[3:0]	Description
0000	Boot from internal fuses
0001	Serial Download (USB1)
0010	uSDHC1 8-bit eMMC 5.1 (default from Module)
0011	uSDHC2 4-bit SD 3.0
1000	LPB: Boot from internal fuses
1001	LPB: Serial Download (USB1)
1010	LPB: uSDHC1 8-bit eMMC 5.1
1011	LPB: uSDHC2 4-bit SD 3.0

FTDI Boot level Shifter

The boot mode will be selected from the following options		
Configuration		Description
J12	X42	
1+2	X	Boot from Dip Switches (S3)
2+3	1	Boot from FTDI or extern
nm	X	Boot from pull-up/down on the module (eMMC)

RTC

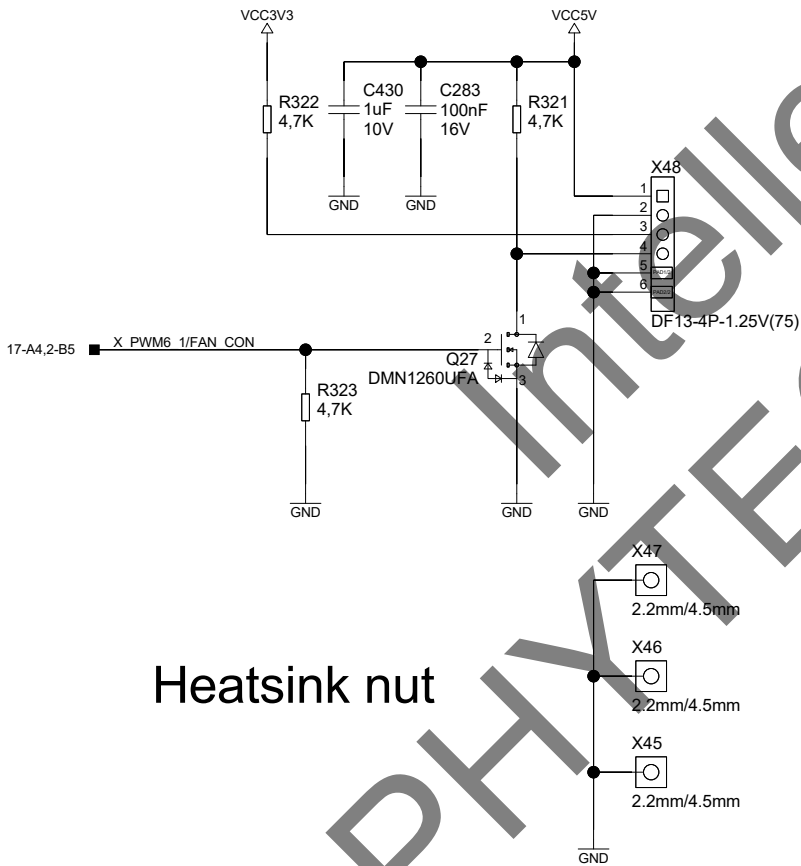


Note 5:
Internal RTC:
Current consumption time keeping mode at 3V: 500uA
Timekeeping down to 2.4V

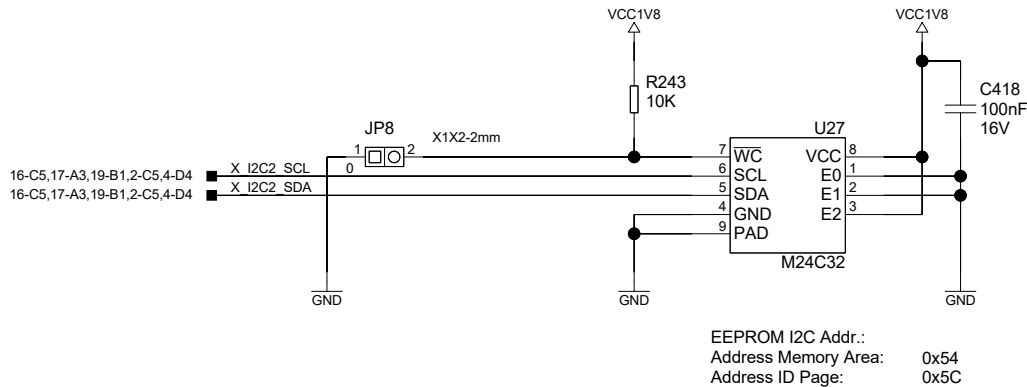
BAT42: Forward current 2mA,
Forward Voltage 0.33V @ 25degree

External RTC:
Current consumption during access: 5uA
Current consumption time keeping mode at 3V: 40nA
Timekeeping down to 1.1V

Fan Connector



EEPROM



EEPROM I2C Addr.:
Address Memory Area: 0x54
Address ID Page: 0x5C

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CAN-FD

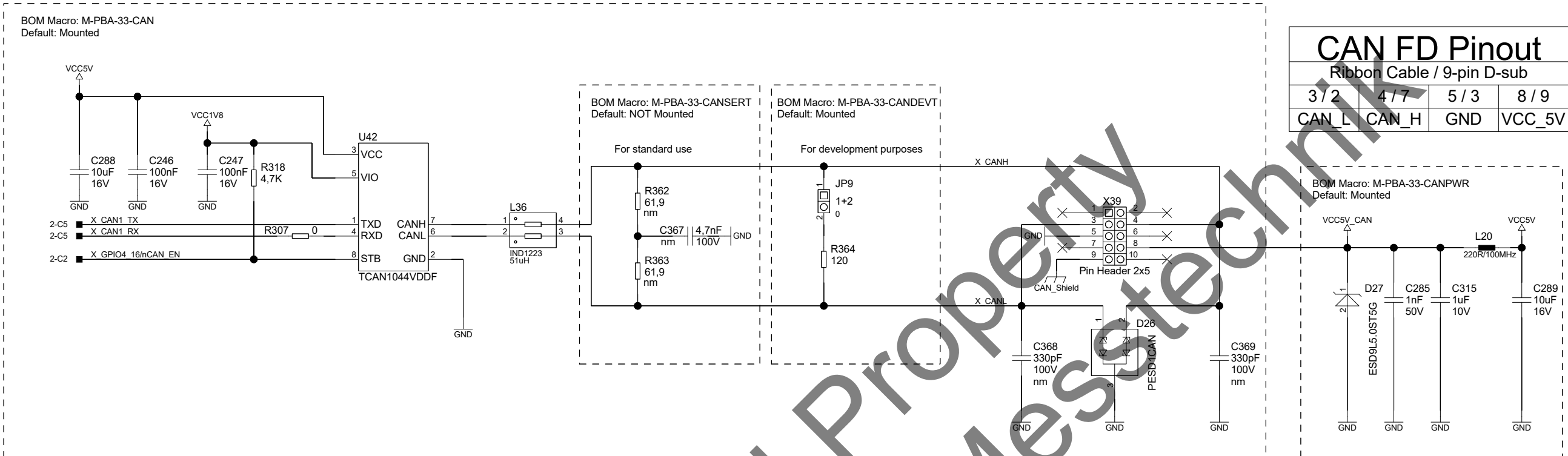
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A

B

A

B



RS-232 / RS-485

RS-232 / RS-485 Pinout

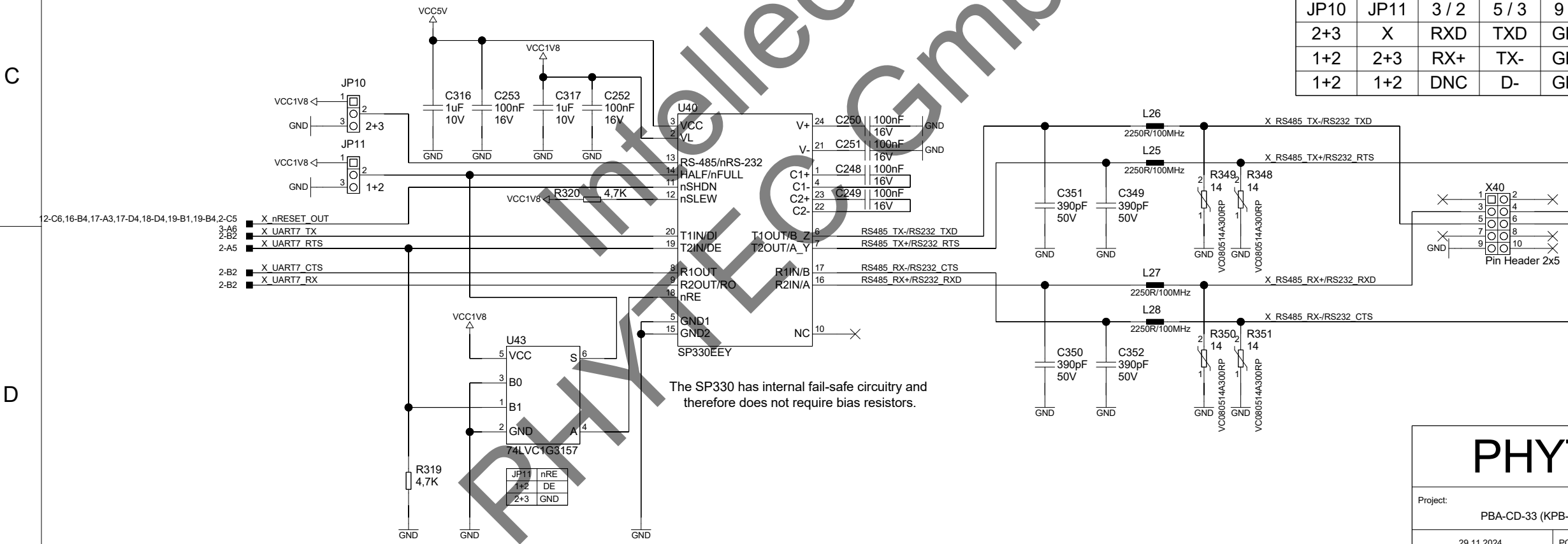
Configuration		Ribbon cable / 9-pin D-sub					Mode
JP10	JP11	3 / 2	5 / 3	9 / 5	4 / 7	6 / 8	
2+3	X	RXD	TXD	GND	RTS	CTS	RS-232 (DTE)
1+2	2+3	RX+	TX-	GND	TX+	RX-	RS-485 Full Duplex
1+2	1+2	DNC	D-	GND	D+	DNC	RS-485 Half Duplex

C

C

D

D



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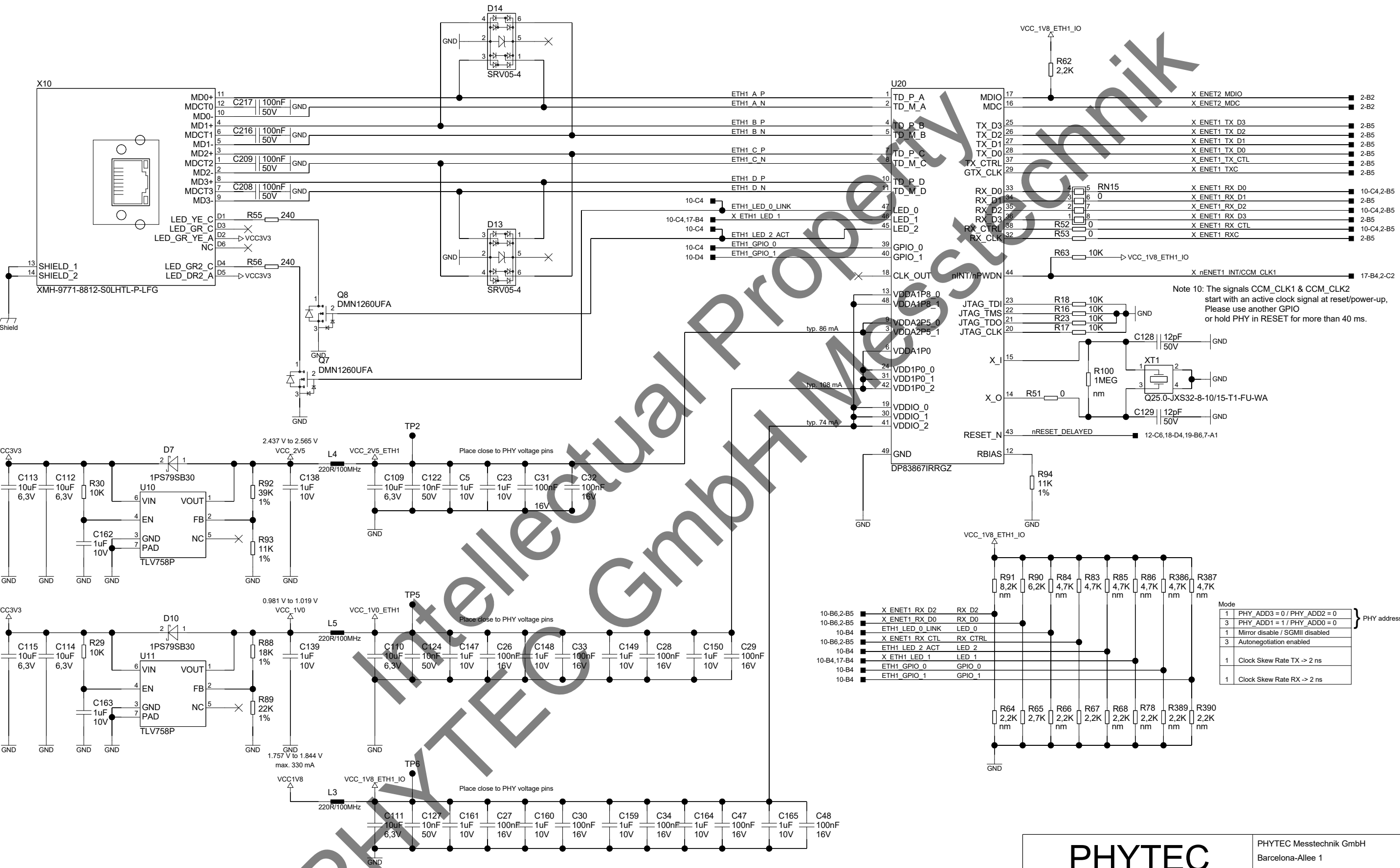
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Ethernet1

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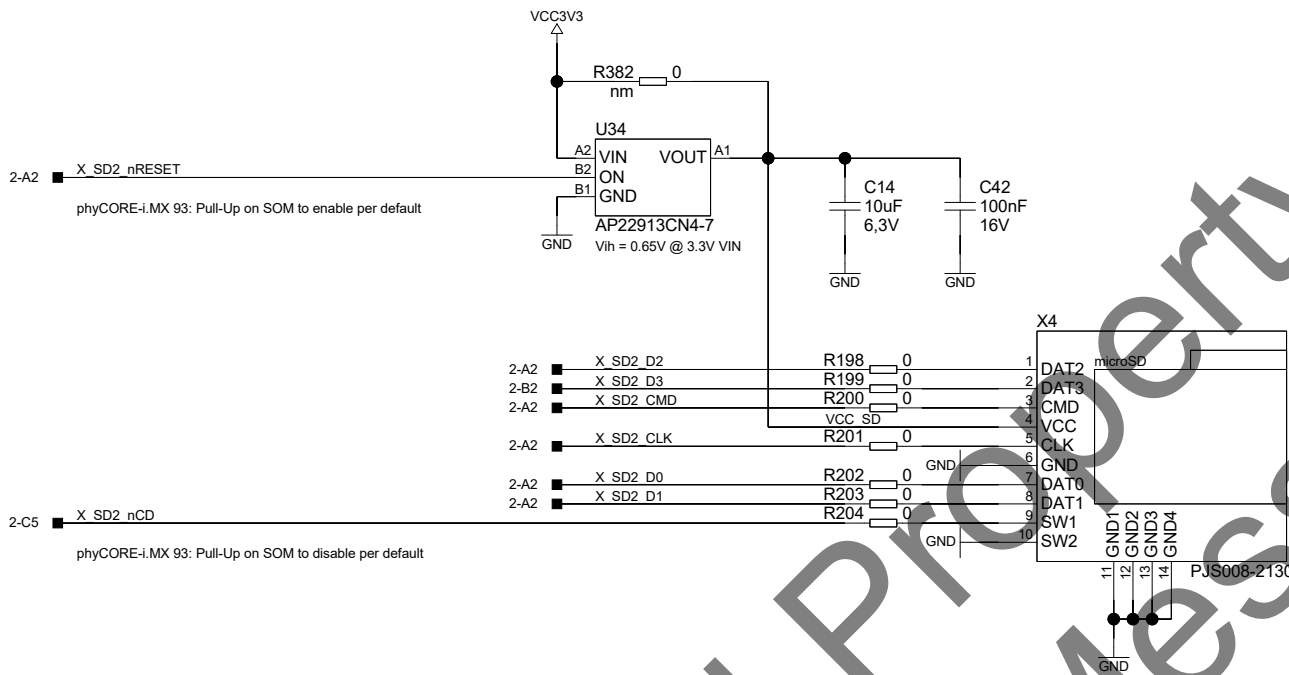
Note 10: The signals CCM_CLK1 & CCM_CLK2
start with an active clock signal at reset/power-up,
Please use another GPIO
or hold PHY in RESET for more than 40 ms.

Mode	
1	PHY_ADD3 = 0 / PHY_ADD2 = 0
3	PHY_ADD1 = 1 / PHY_ADD0 = 0
1	Mirror disable / SGMII disabled
3	Autonegotiation enabled
1	Clock Skew Rate TX -> 2 ns
1	Clock Skew Rate RX -> 2 ns

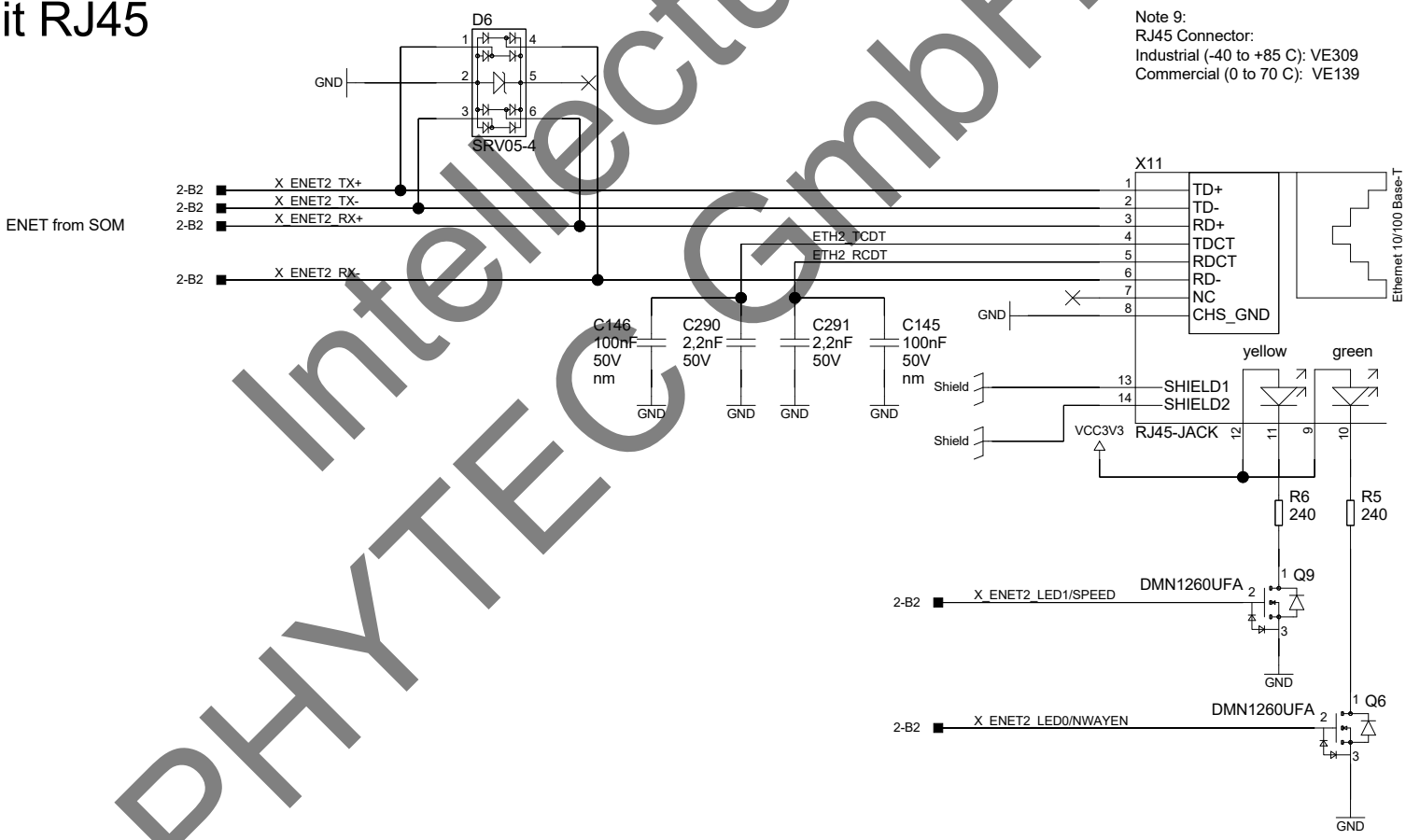
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Micro SD Card

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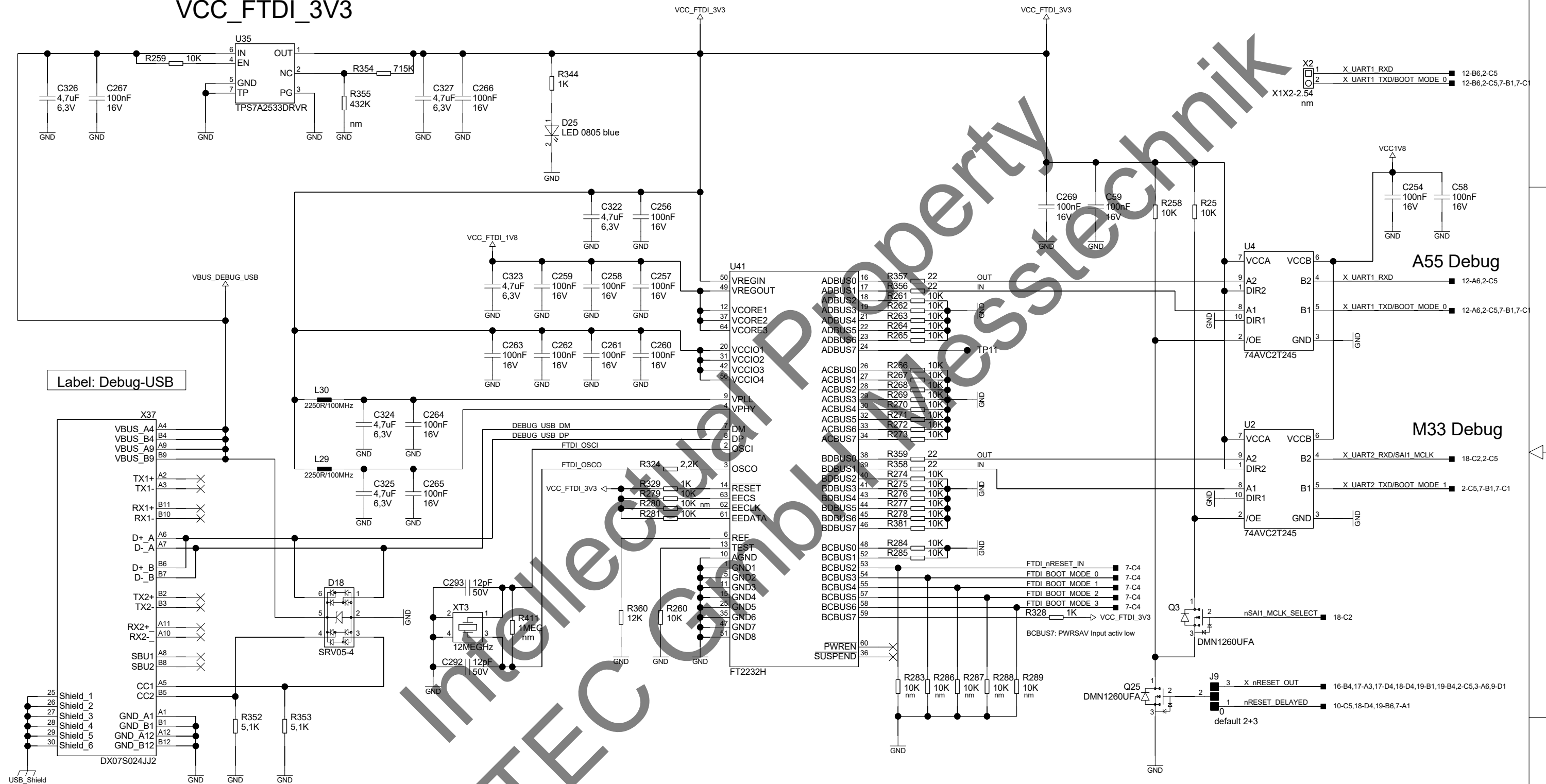
Ethernet 2 10/100Mbit RJ45



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USB Debug

VCC_FTDI_3V3



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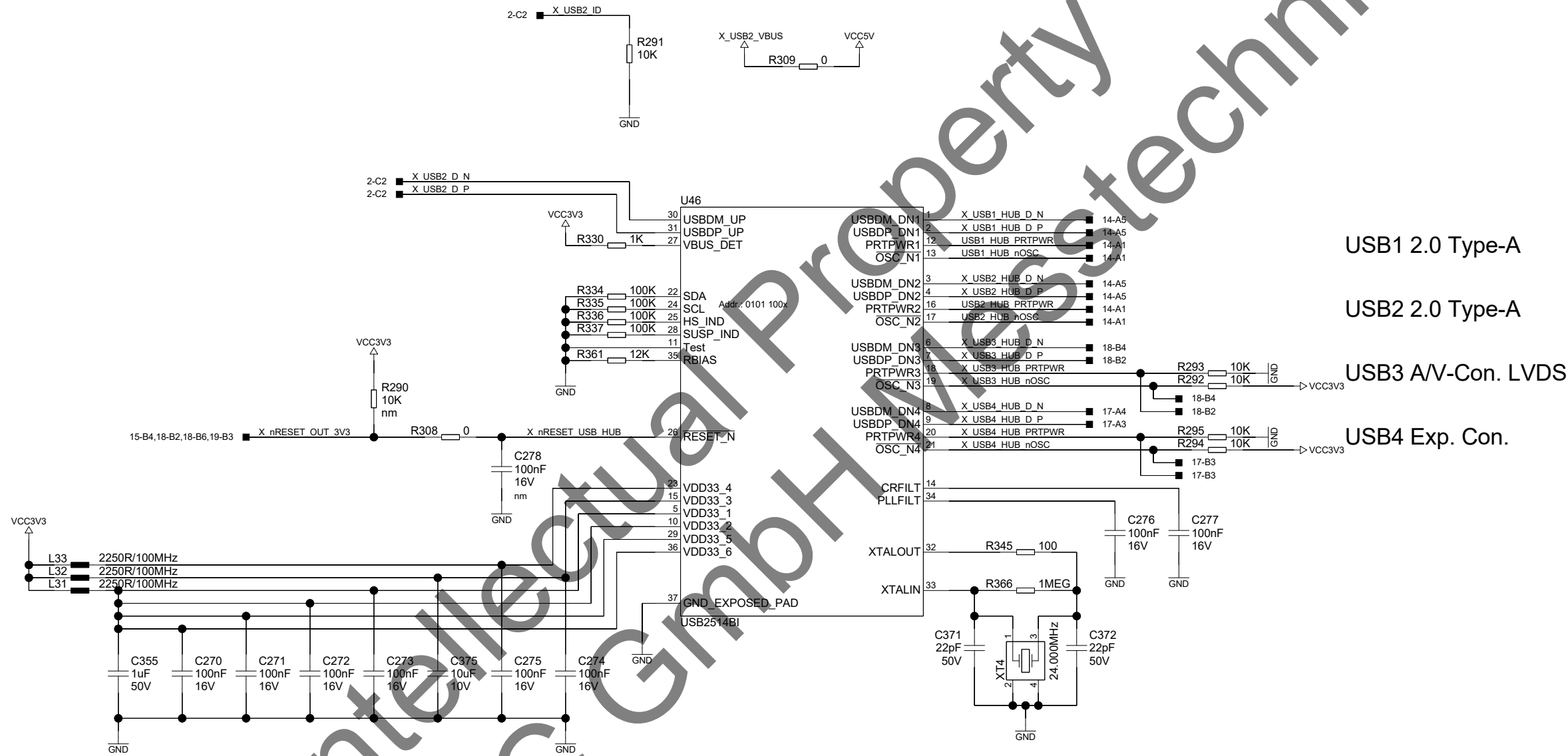
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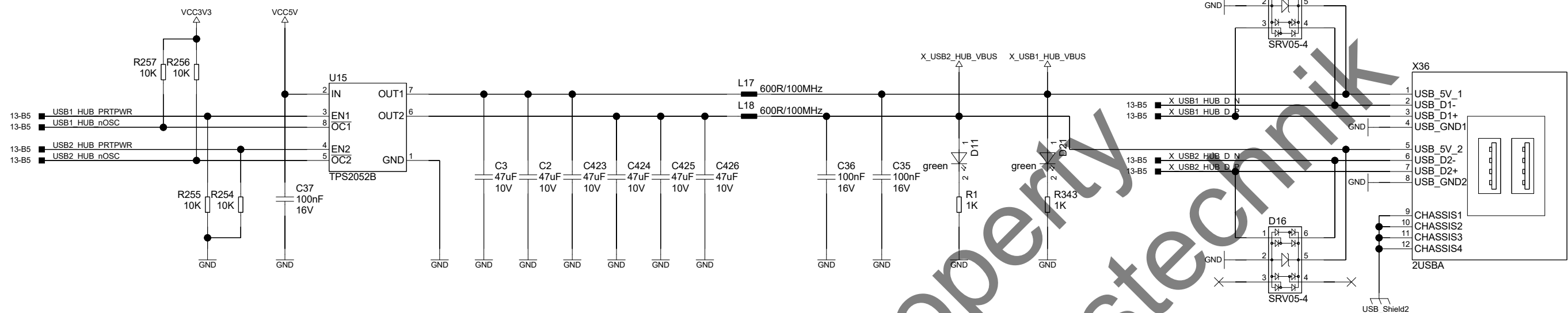
USB-HUB

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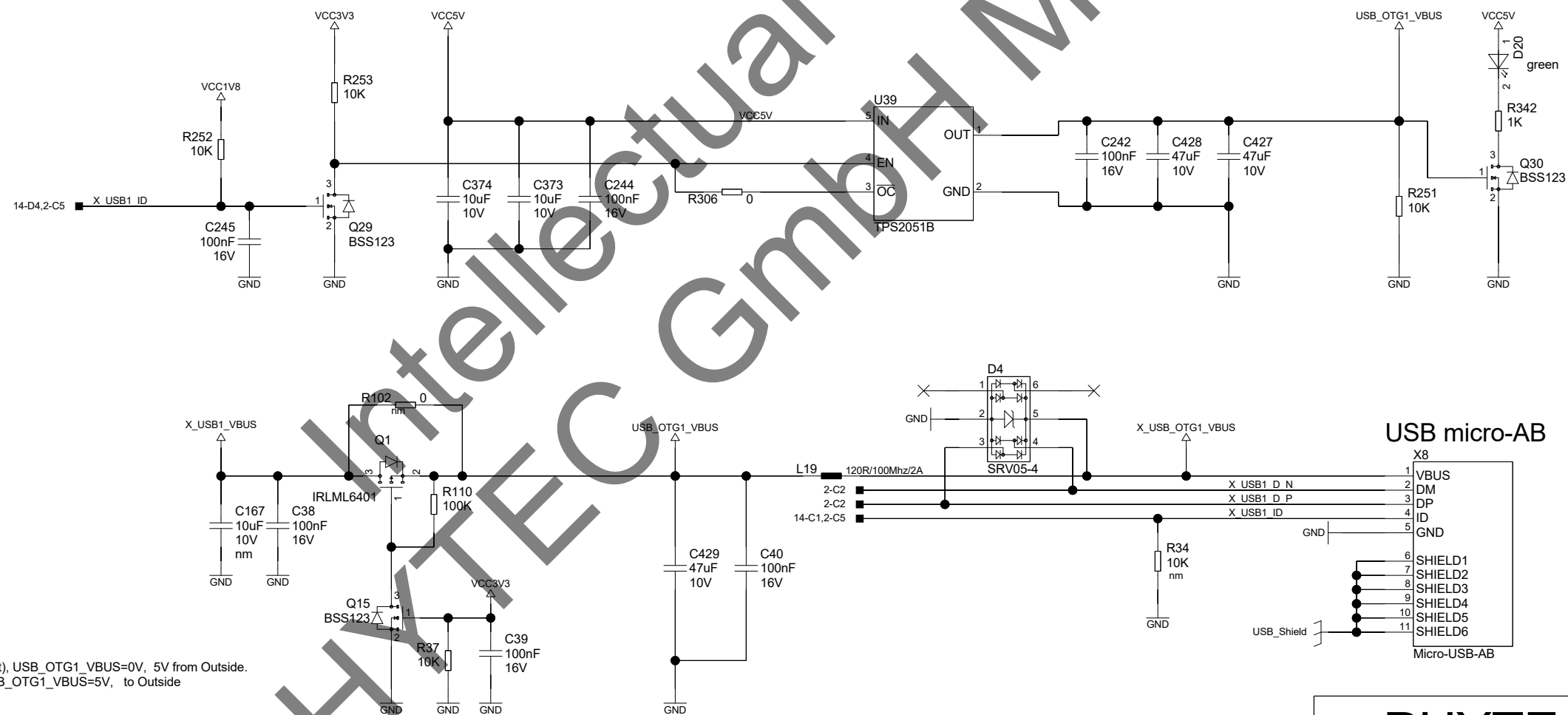


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USB1 & 2 (via Hub)



USB OTG1

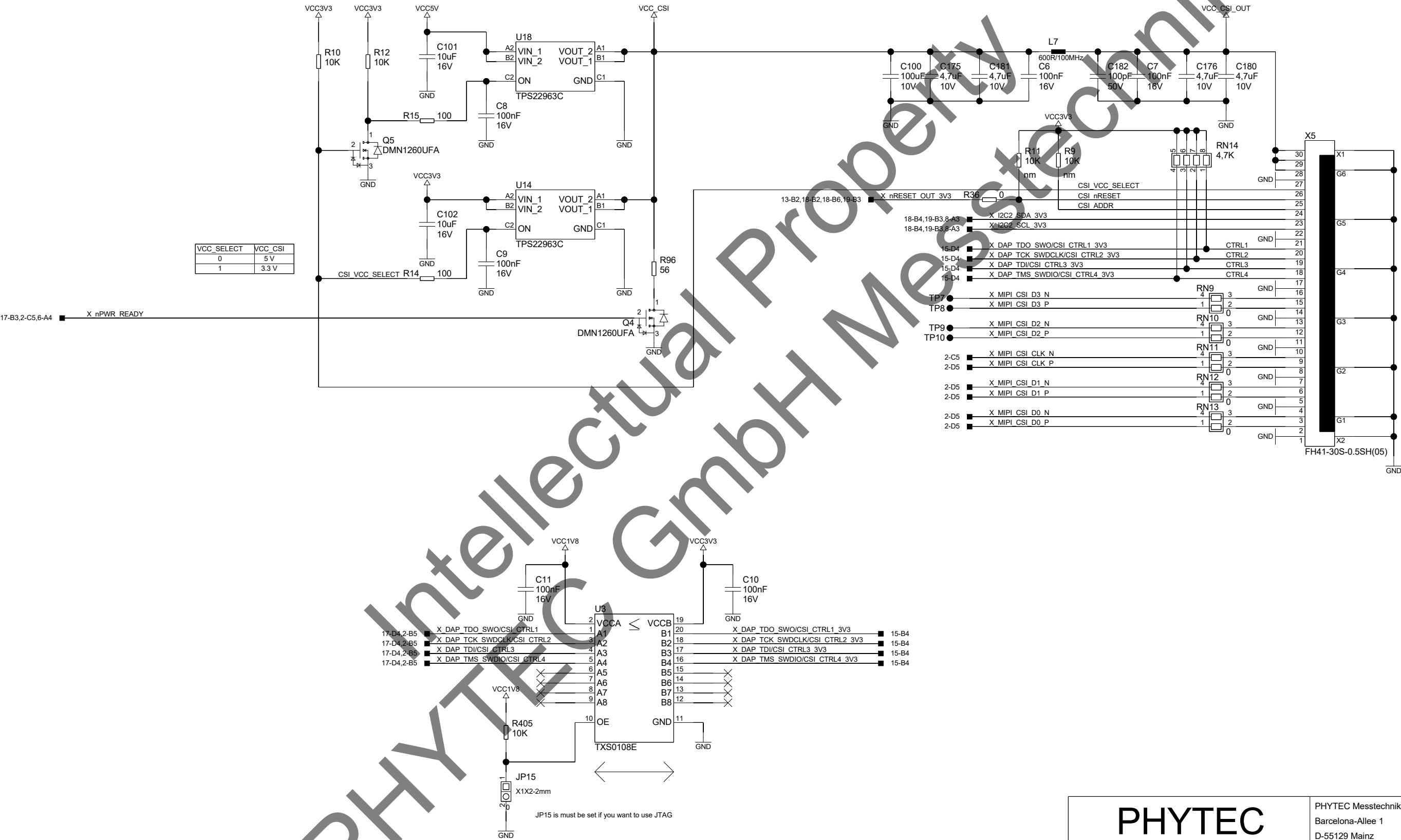


Note 7:
If OTG1 is connected with Host, ID=1(default), USB_OTG1_VBUS=0V, 5V from Outside.
If OTG1 is connected with Device, ID=0, USB_OTG1_VBUS=5V, to Outside

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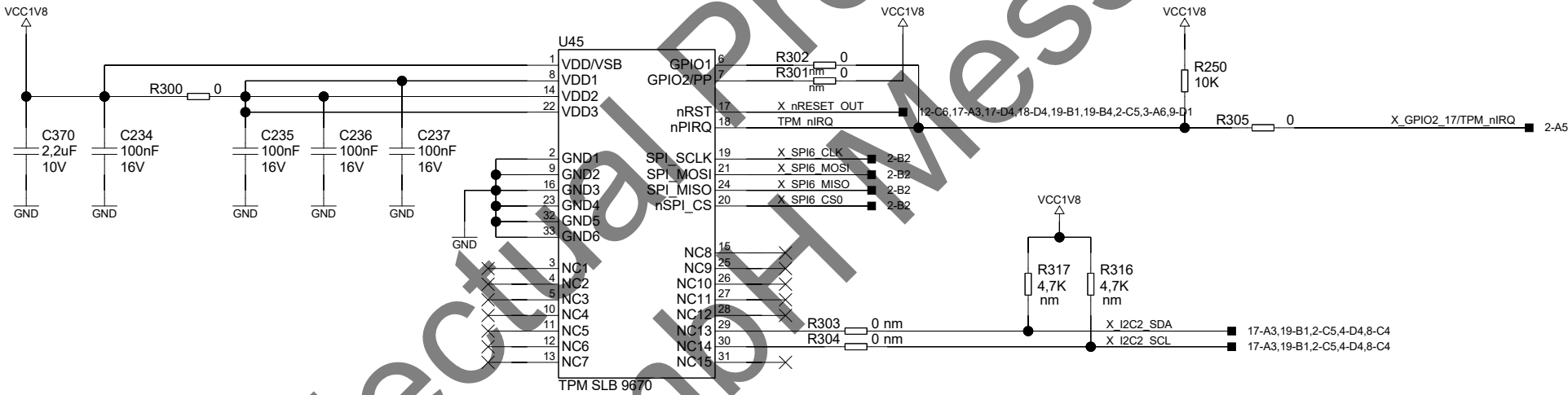
CSI phyCAM-M

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Trusted Platform Module

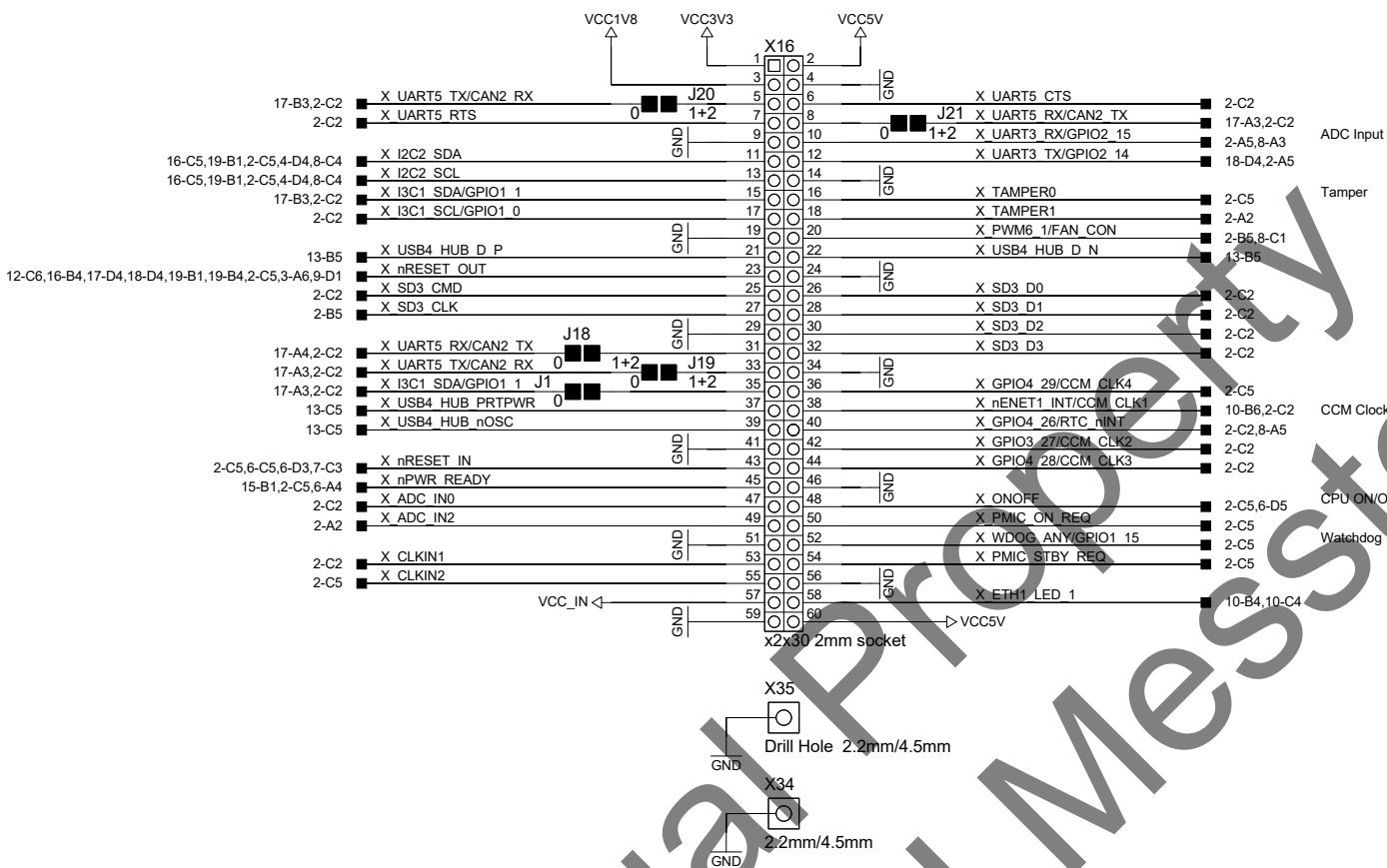
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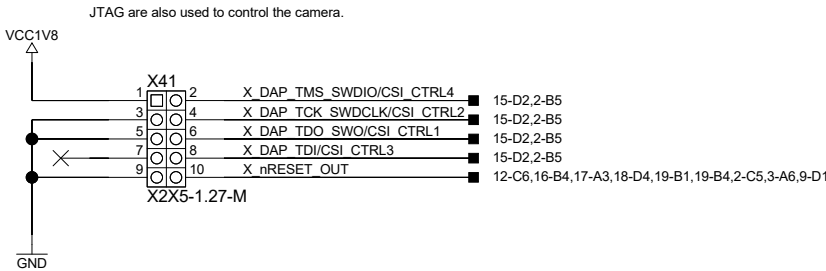
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Expansion Connector

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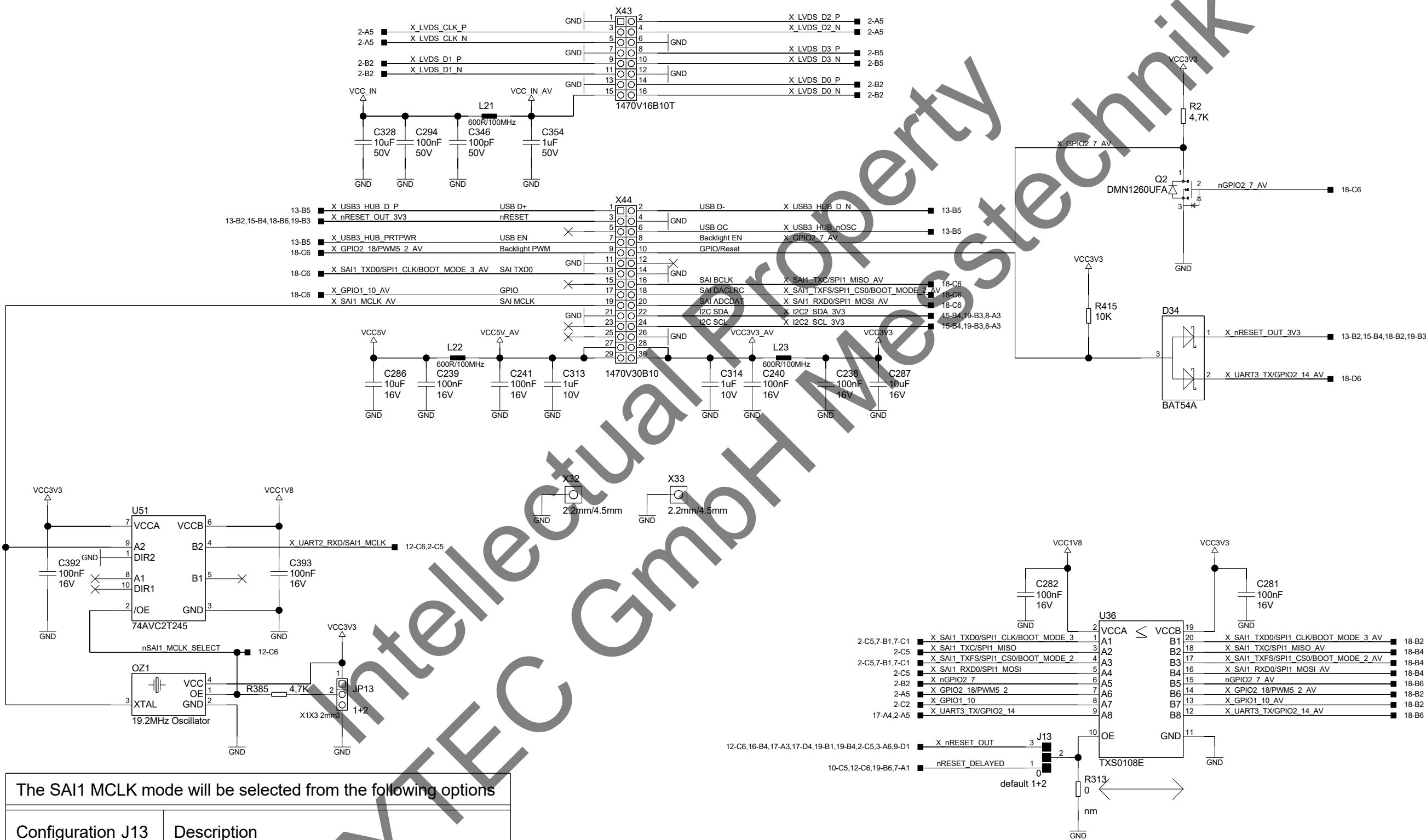
JTAG Connector



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Audio/Video Connector

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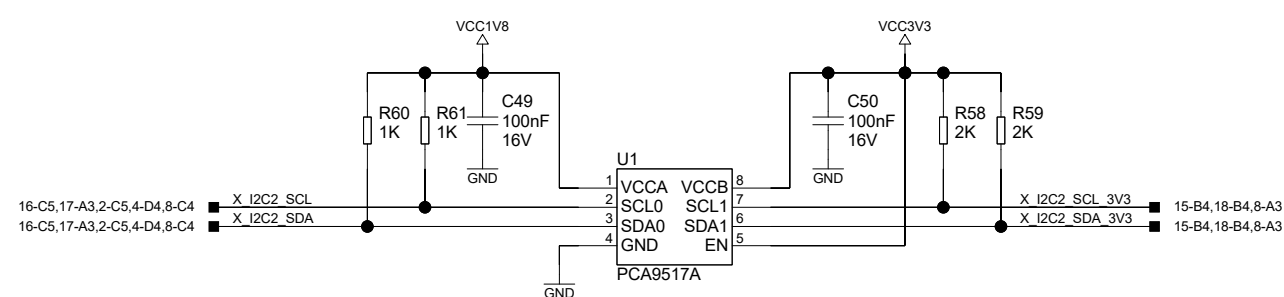
The SAI1 MCLK mode will be selected from the following options	
Configuration J13	Description
1+2	MCLK from Oscillator and U2 active
2+3	MCLK from SoC and U2 not active

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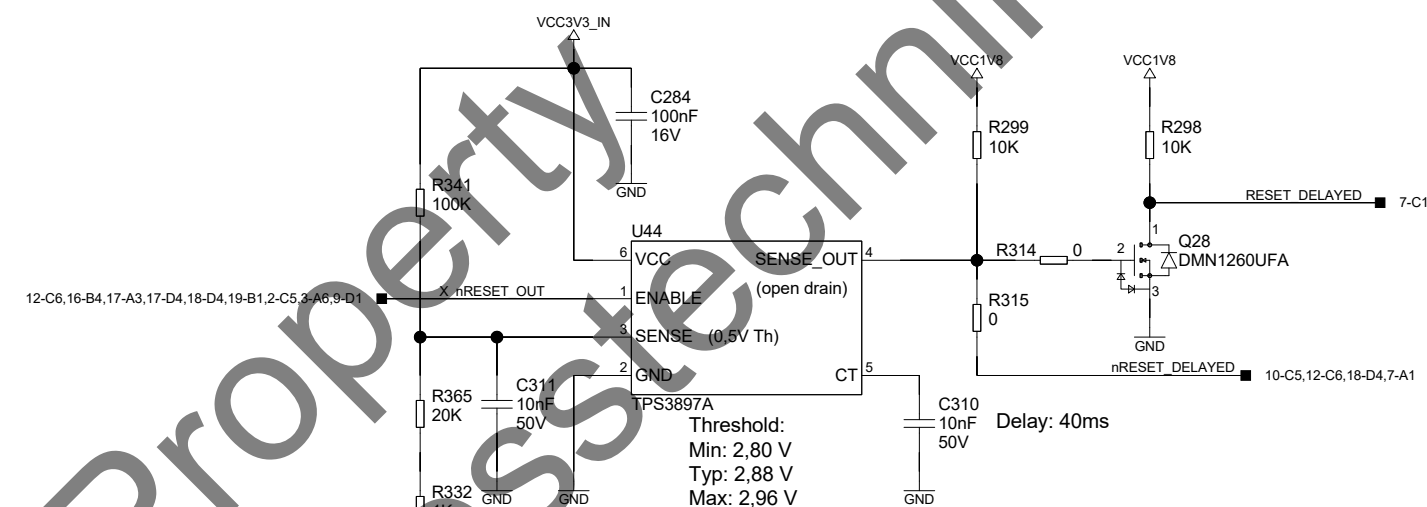
Misc

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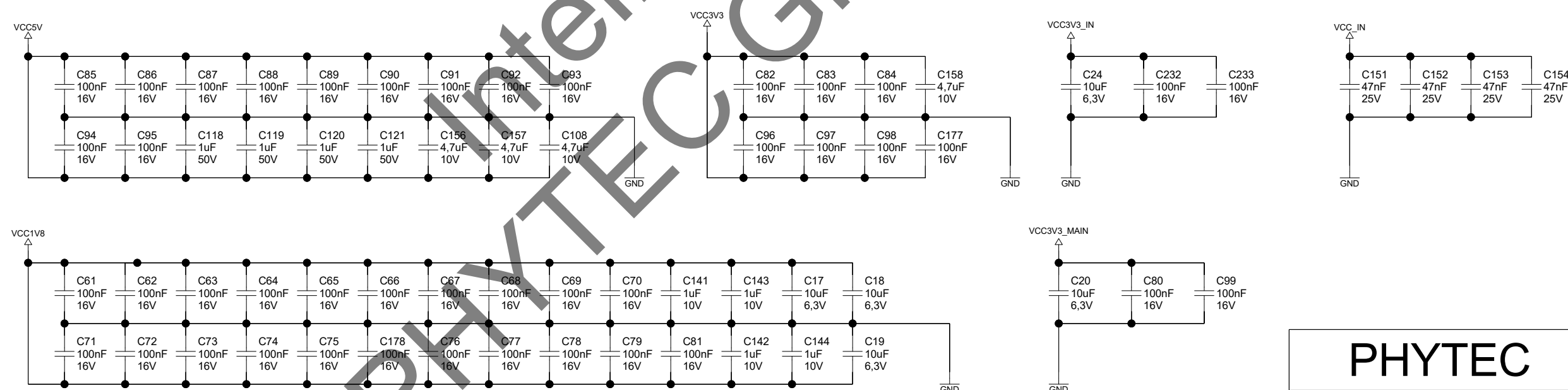
I2C Level Translators from 1.8V to 3.3V



Reset Delay [40ms]



EMC Blocking



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