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PBA-CD-33
phyBOARD-Nash-i.MX 91/93

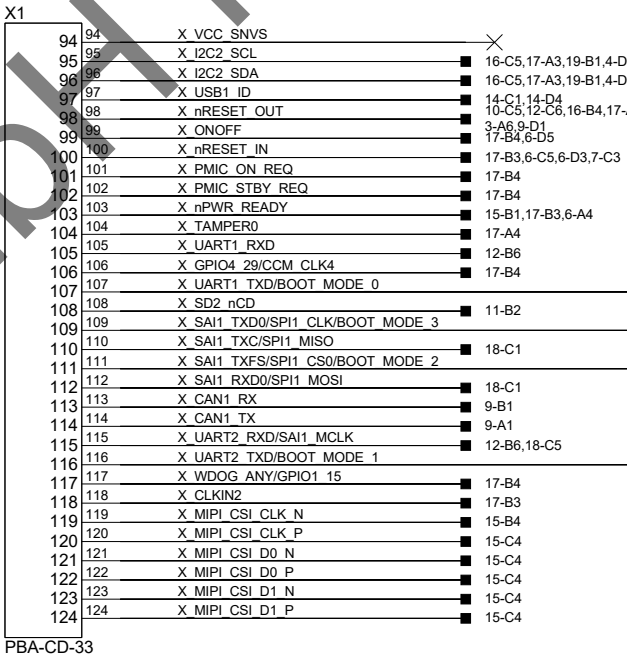
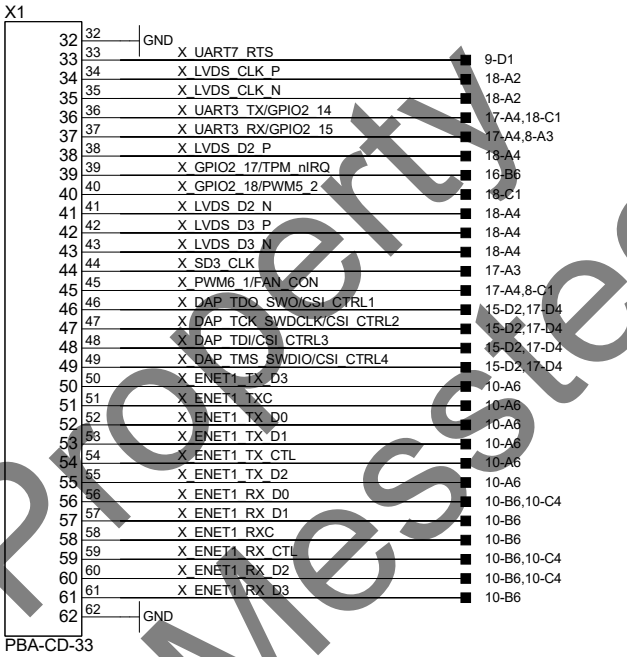
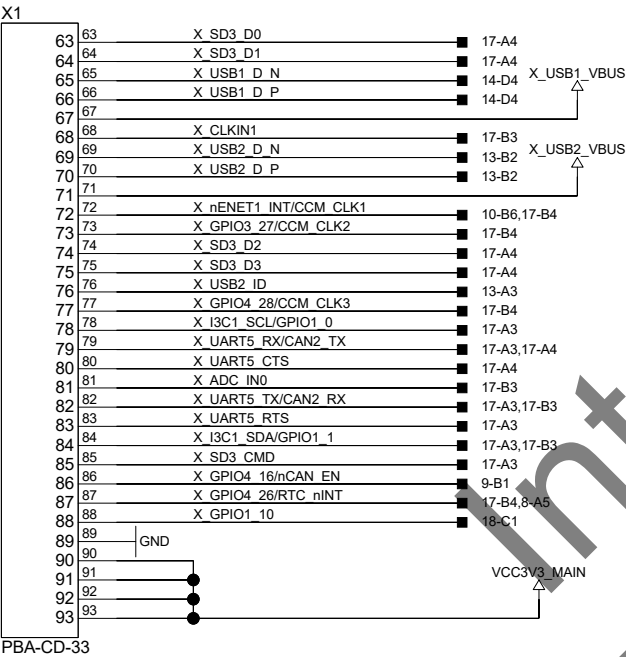
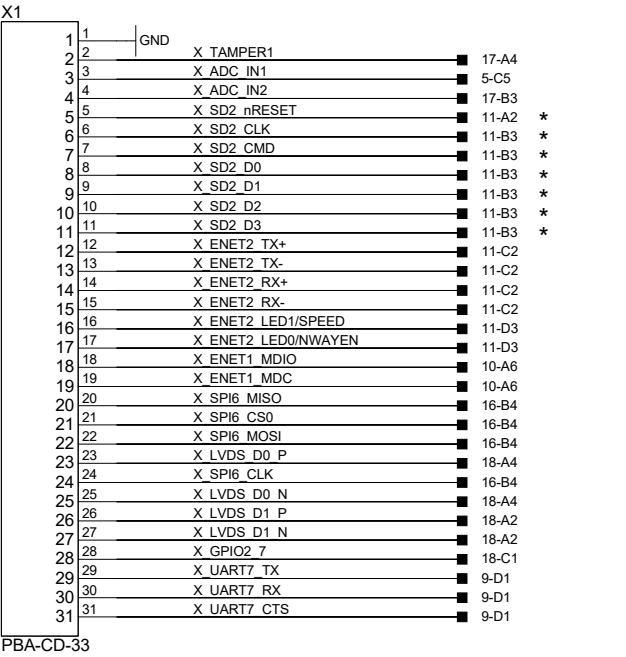
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Project: PBA-CD-33 (KPB-04729-xxx)		Department : F&E Author: H.Atfi, B.Feldmann	
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phyCORE-i.MX 91/93 Connectors

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*Note: Pin 44 and 45 must be swapped

*Note: To make SAI interface to work,
Pin 110 and 112 must be swapped

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

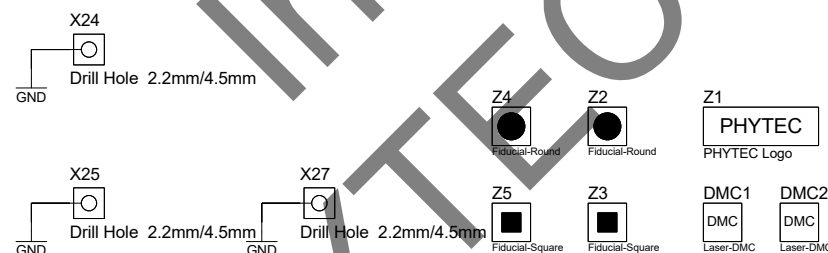
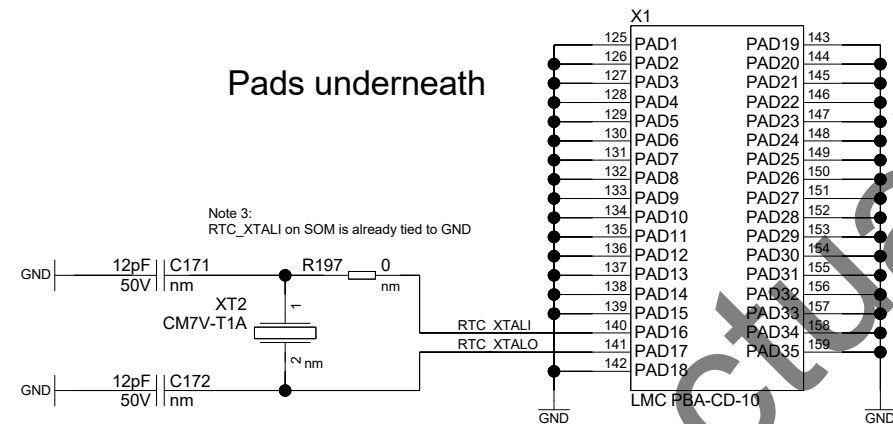
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phyCORE-i.MX 91/93 Connectors

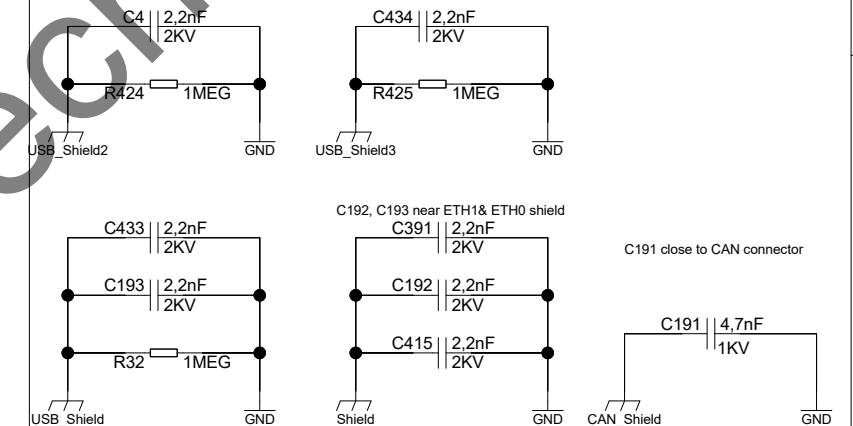
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I2C addresses used on SOM:	I2C2
- EEPROM on SOM Memory Area	0x50
- EERPOM on SOM ID Page	0x58

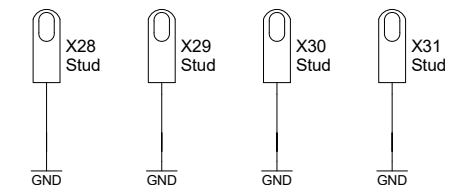
Onboard used I2C addresses:	
- Expansion Connector	-
- EEPROM Memory Area	0x54
- EEPROM ID Page	0x5C
- External RTC	0x52
- A/V Connector	-
- USB-C PD STUSB4500	0x28



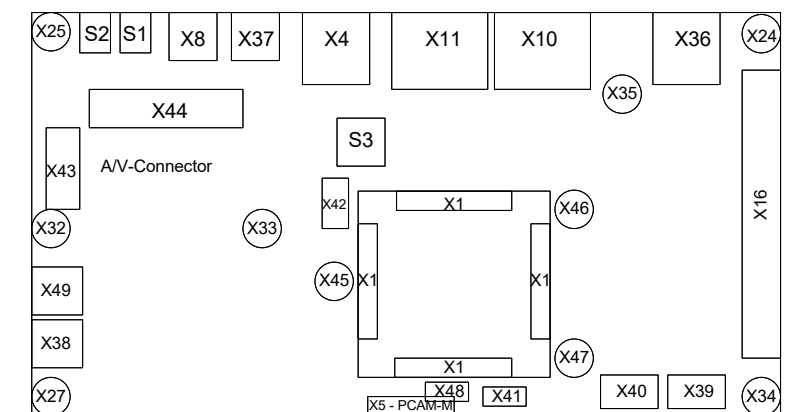
Shield Coupler



GND for Measurement



Drill Hole Placement



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Author: H.Atifi, B.Feldmann

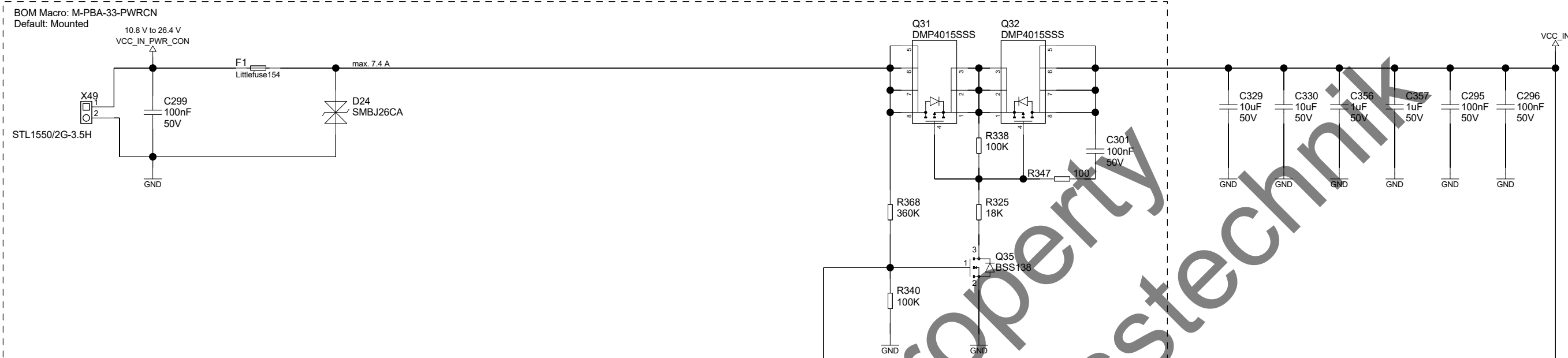
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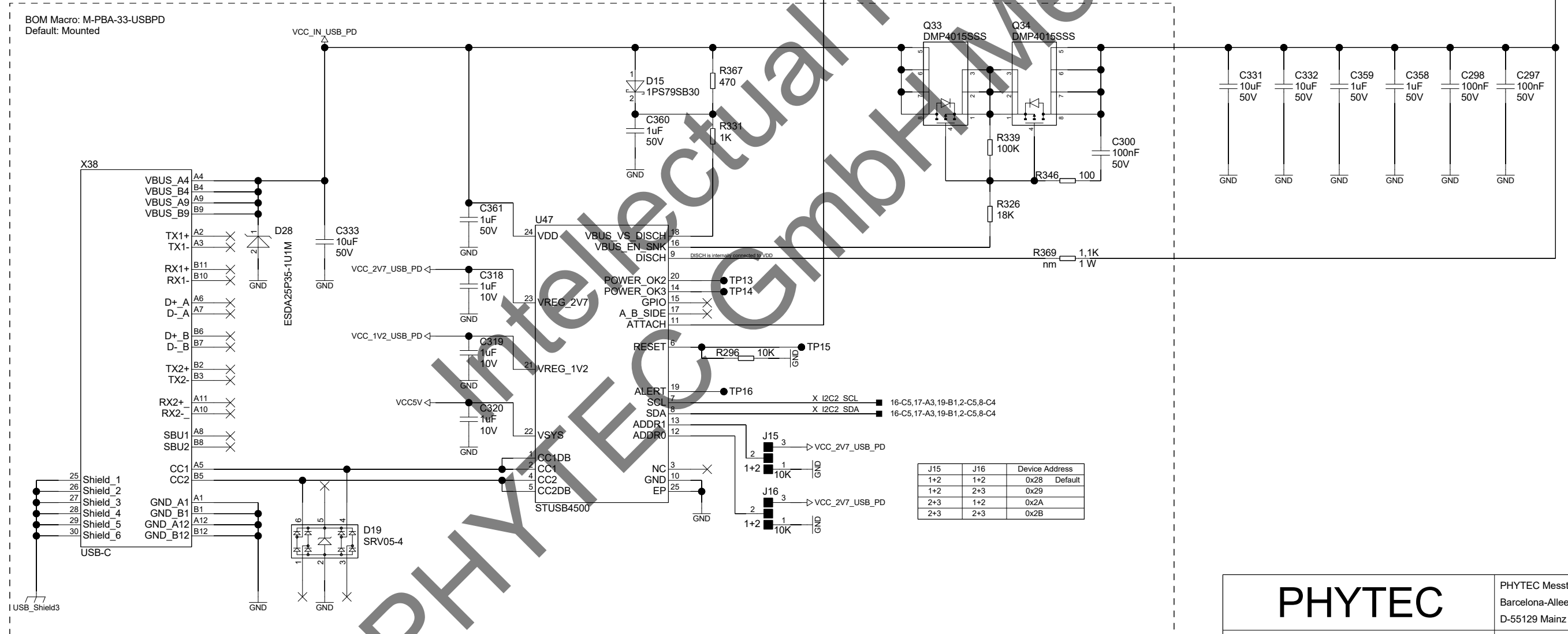
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VCC_IN via Power Connector



VCC_IN via USB-PD



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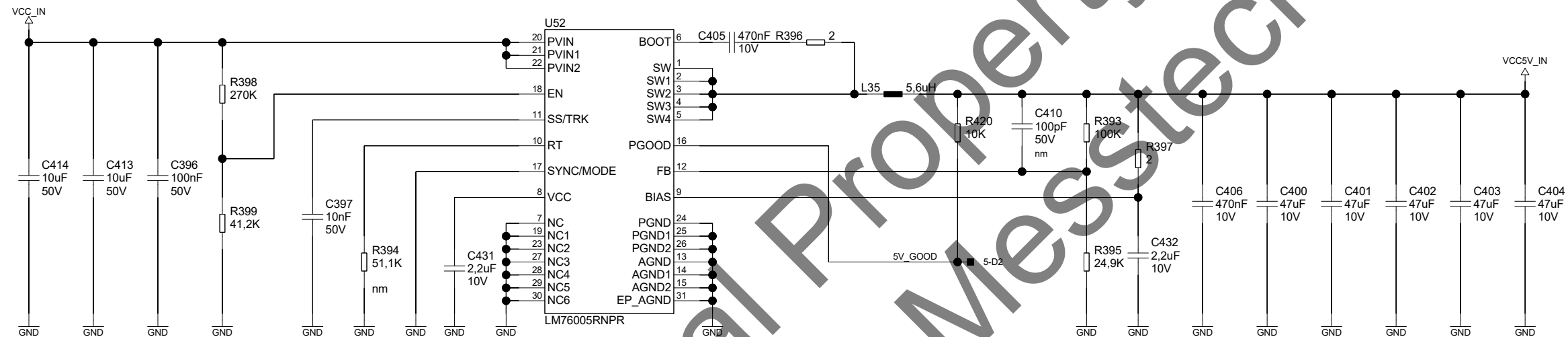
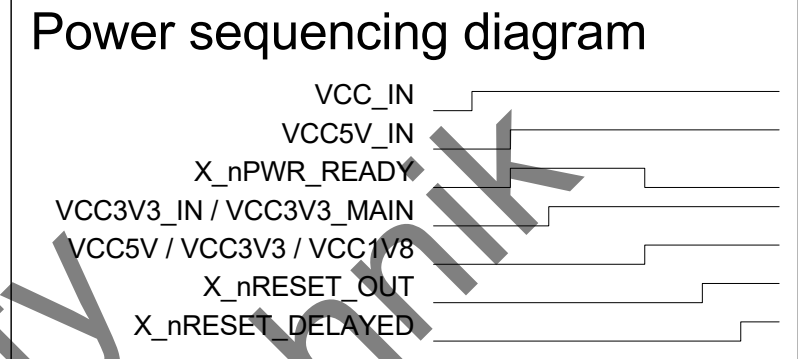
PCB-No.: 1616.0

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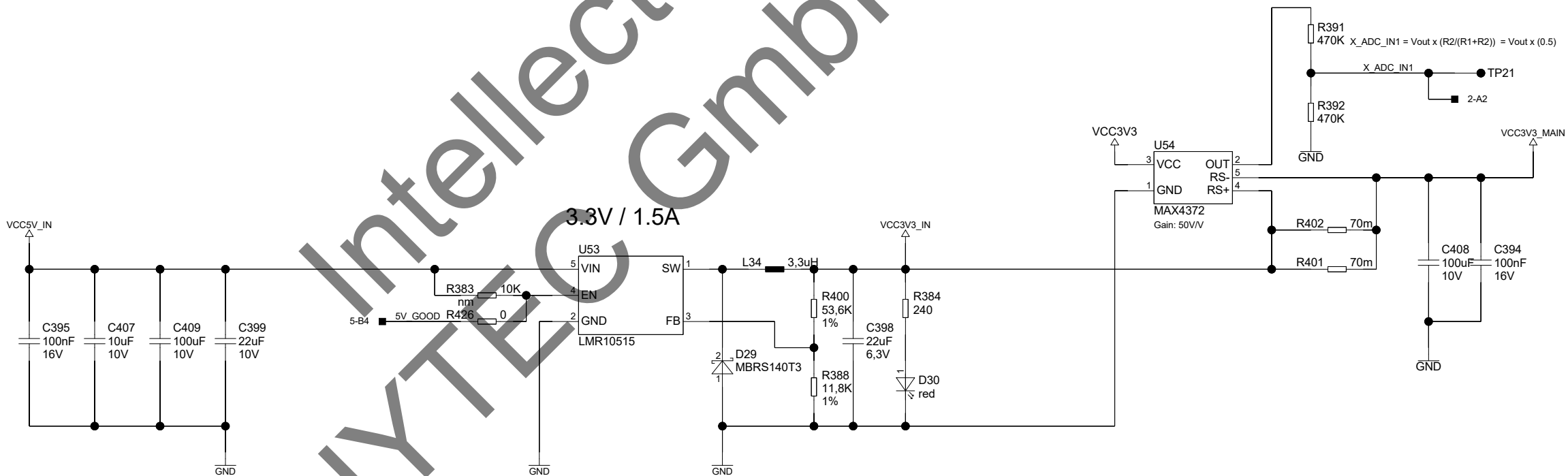
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VCC_IN to VCC5V_IN

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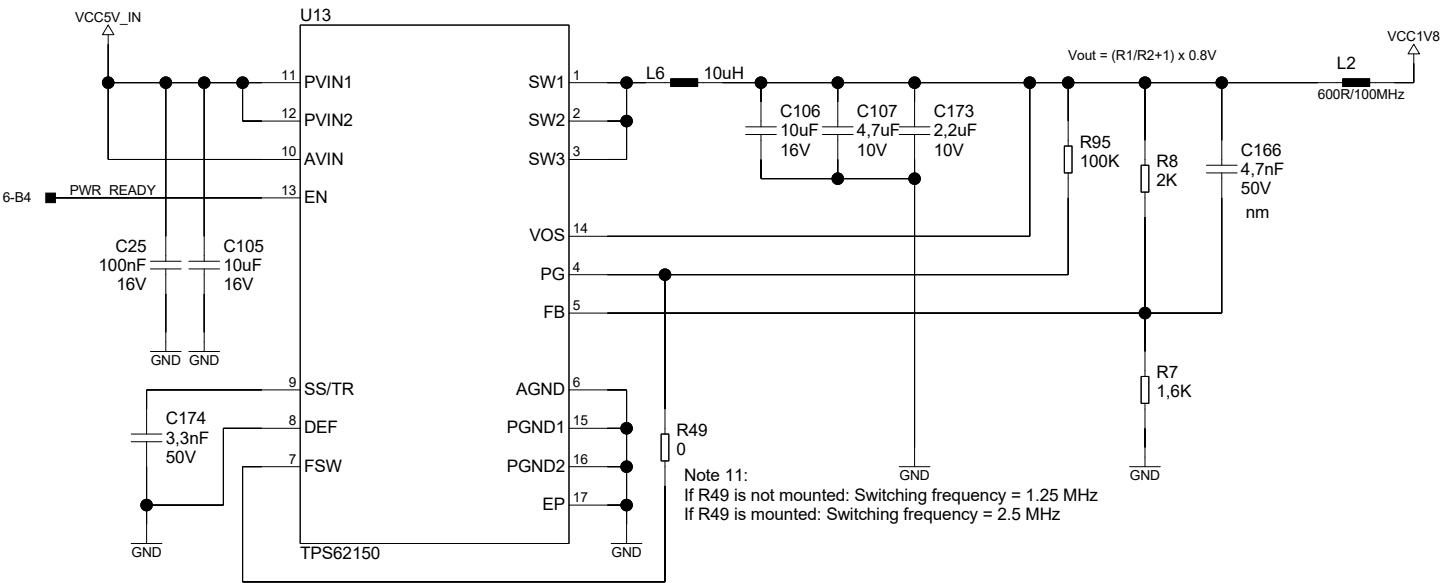


VCC5V_IN to VCC3V3_IN

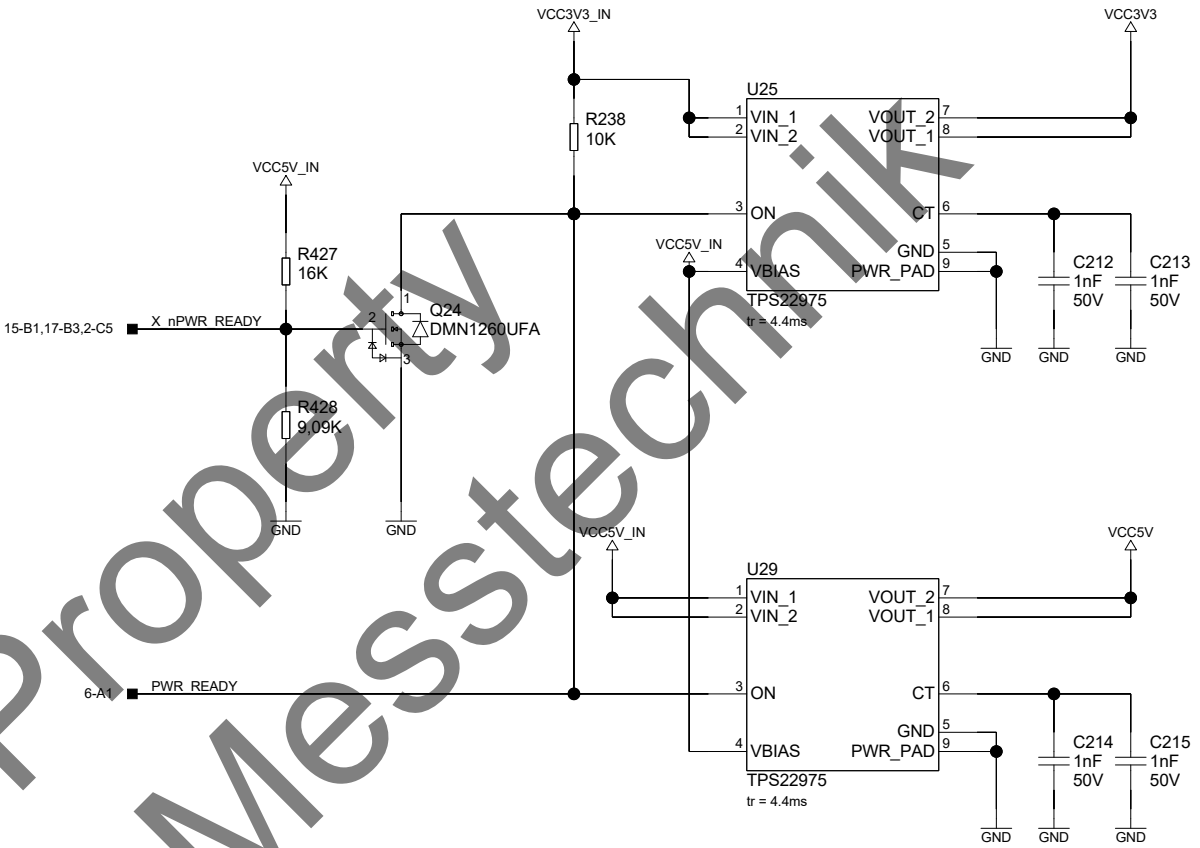


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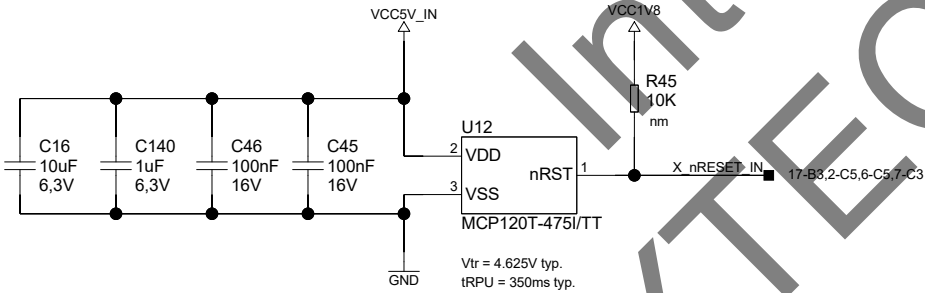
1.8V Power Supply



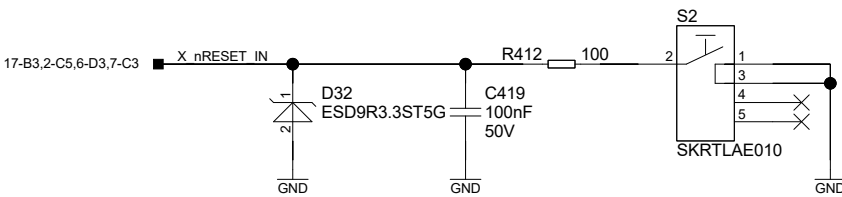
Power Switch



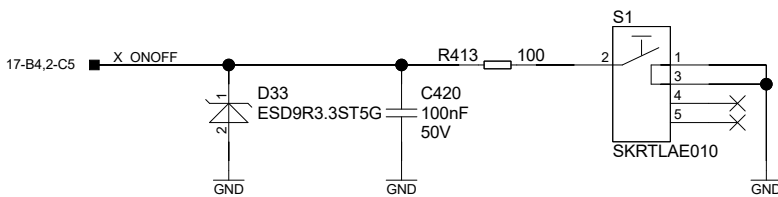
Voltage Supervisor



System Reset Button



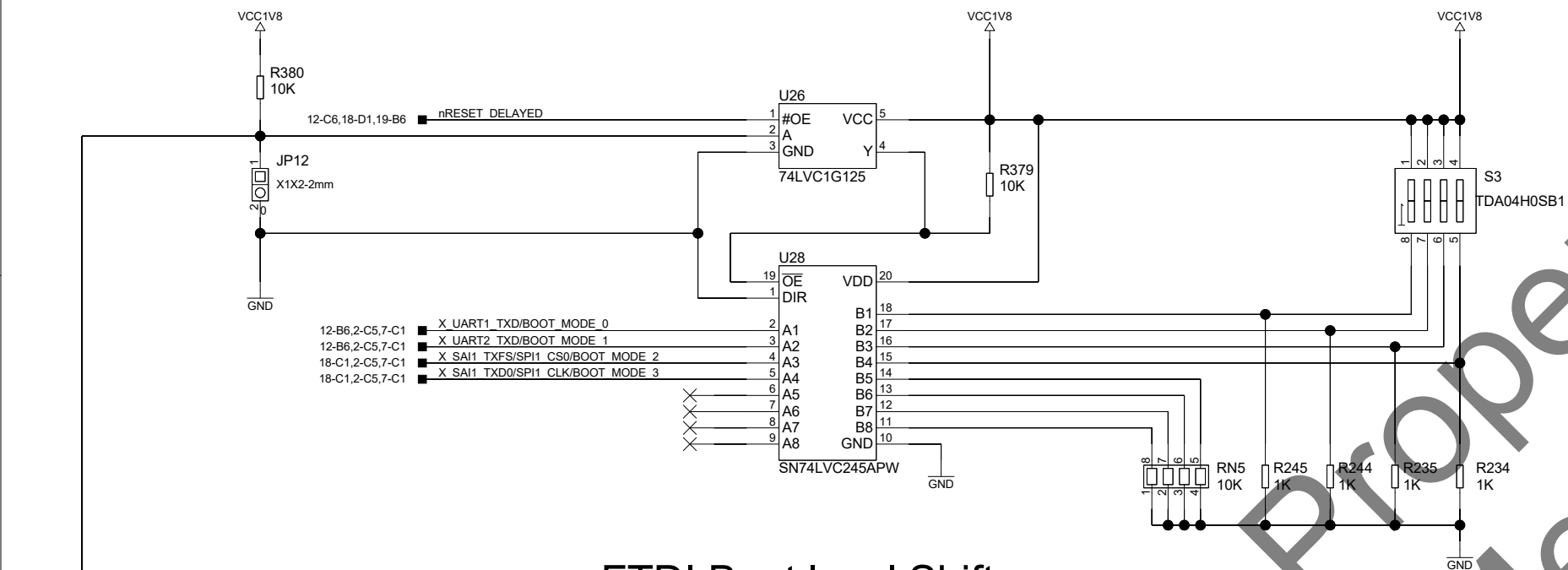
CPU ON/OFF Button



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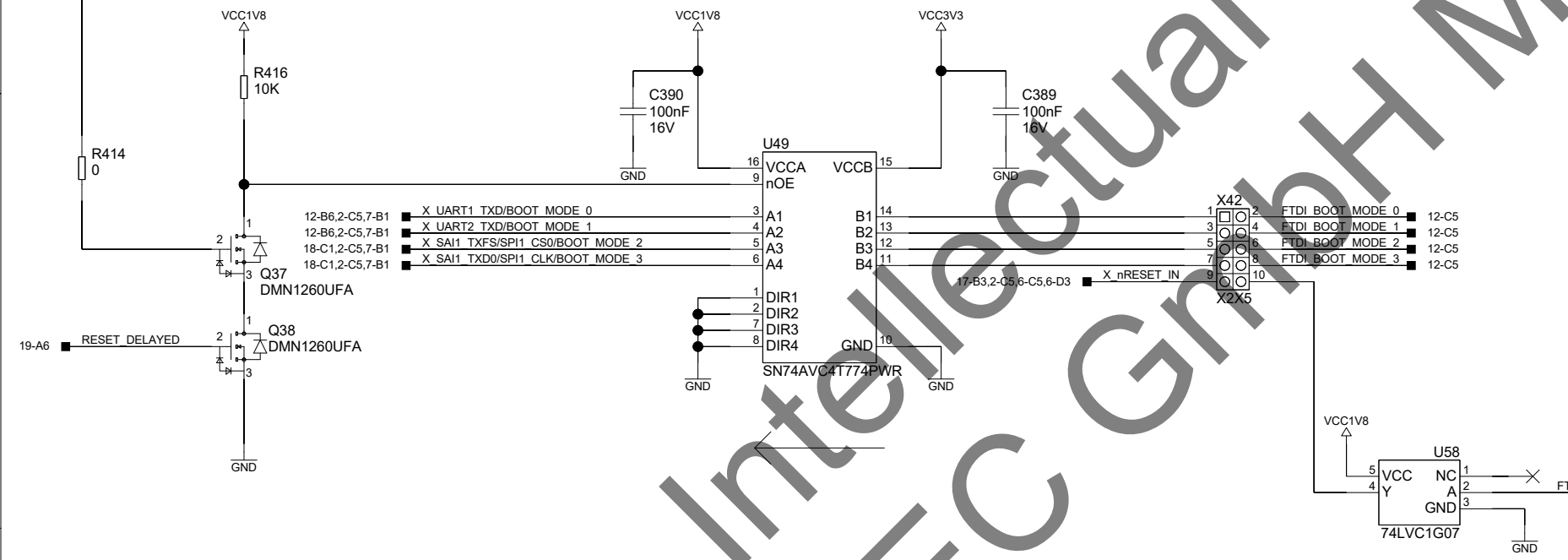
Boot Mode i.MX 91/93

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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 Modul)
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

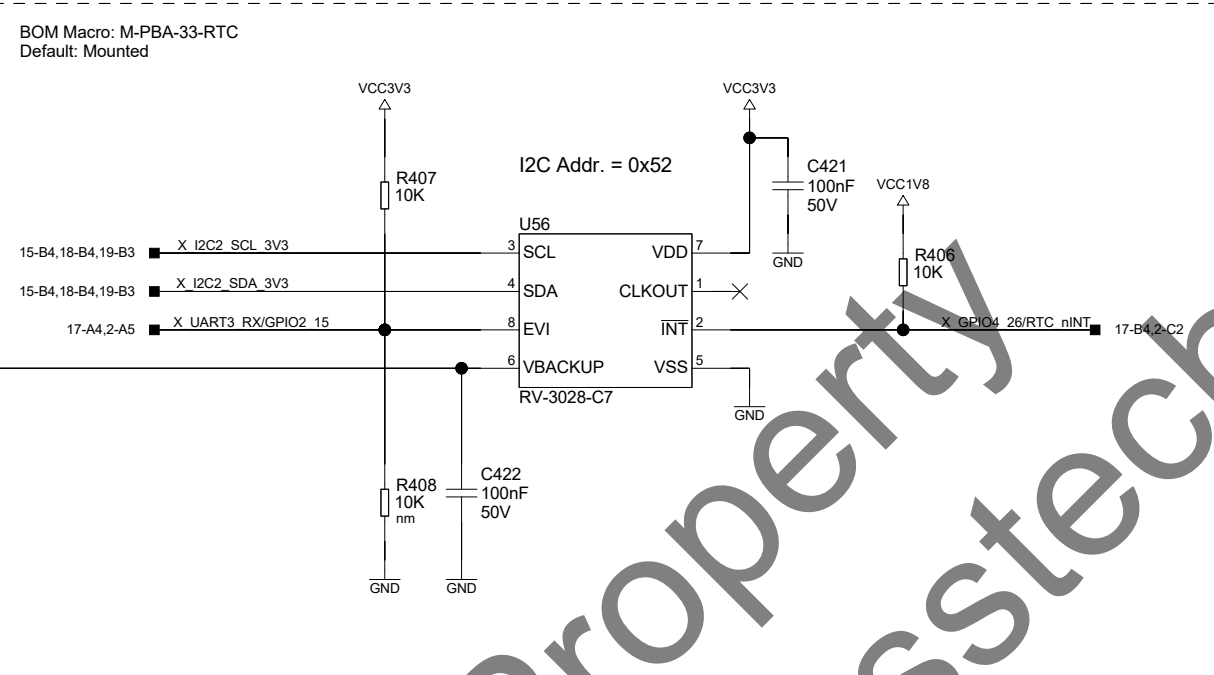
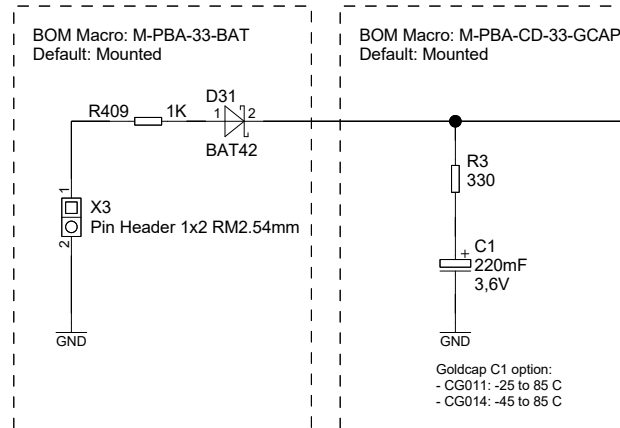
FTDI Boot level Shifter



The boot mode will be selected from the following options		
Configuration		Description
J12	X42	
0	0	Boot from pull up/down on the module (eMMC)
0	1	Boot from FTDI or extern
1	X	Boot from Dip Switches (S3)

*The first option doesn't work in this PCB rev.

RTC

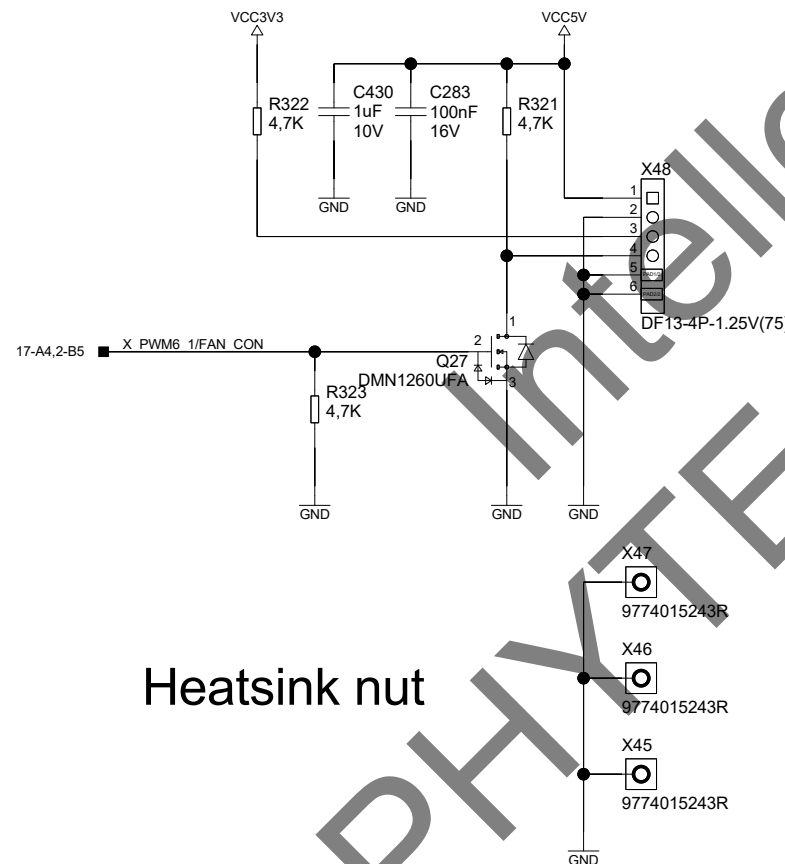


Note 5:
Internal RTC: L _ _ _
Current consumption time keeping mode at 3V: 500uA
Timekeeping down to 2.4V

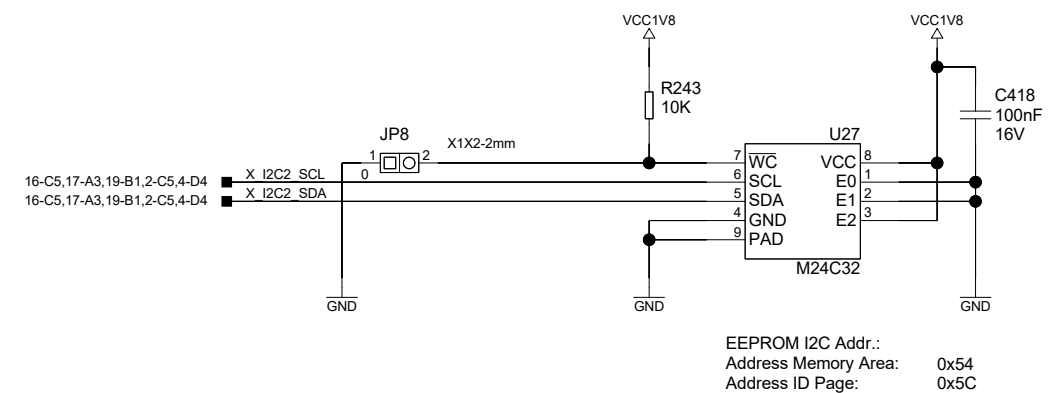
BAT42: Forward current 2mA,
Forward Voltage 0.33V @ 25degree

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

Fan Connector



EEPROM



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CAN-FD

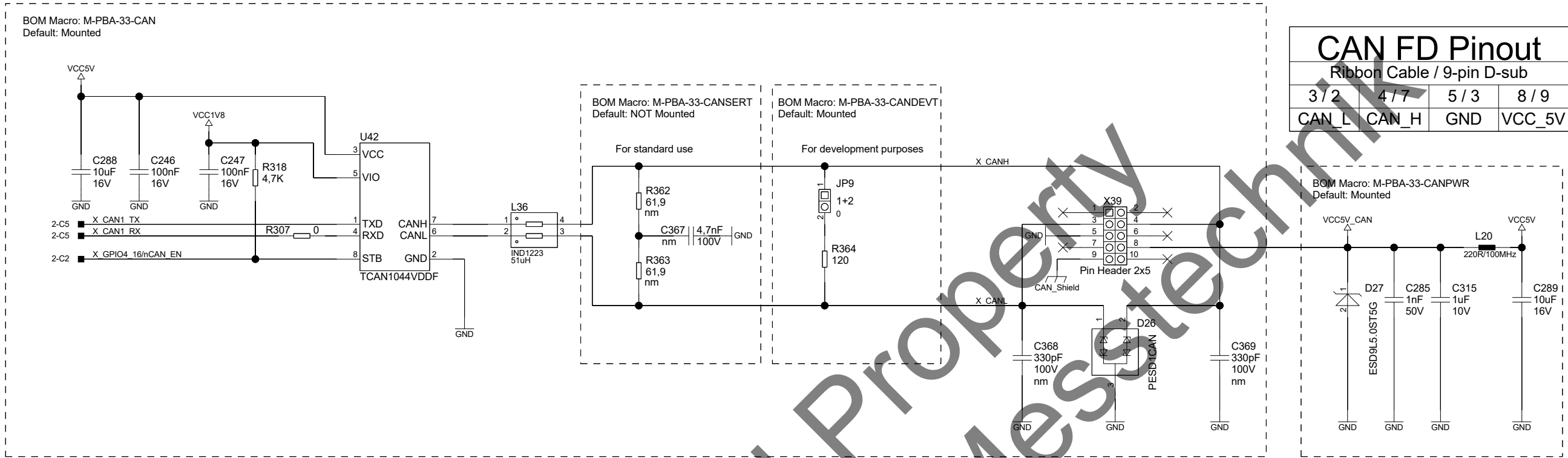
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A

B

A

B



RS-232 / RS-485

RS-232 / RS-485 Pinout

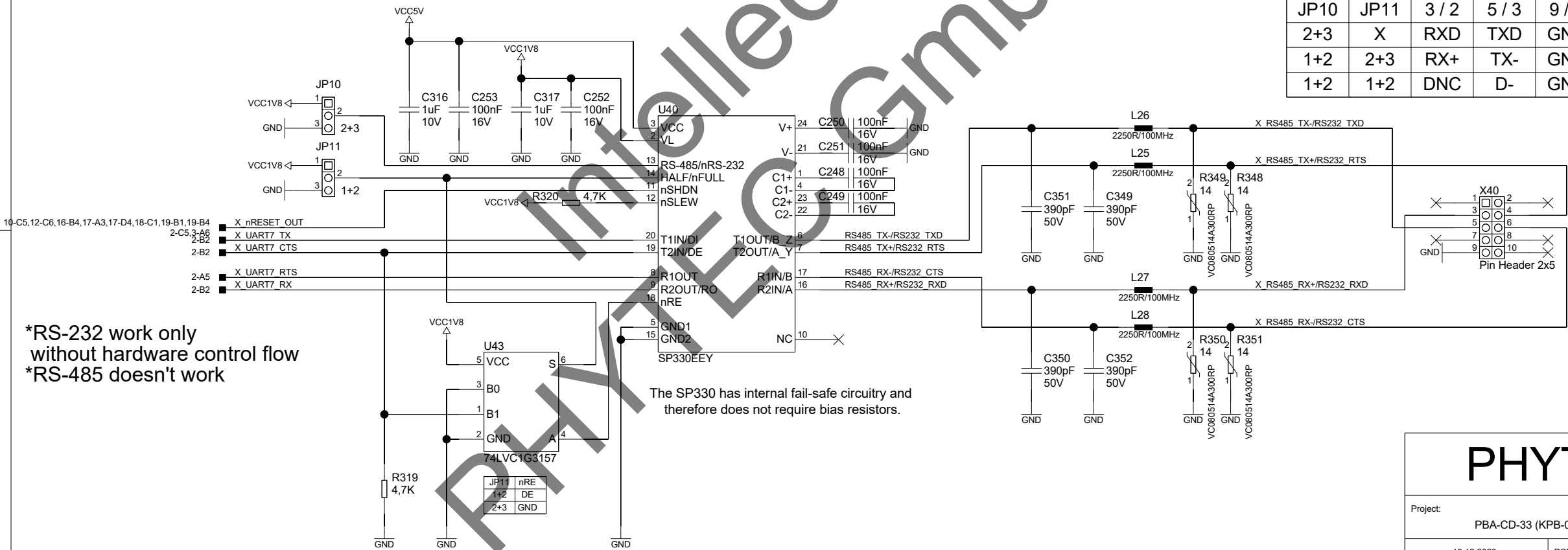
Configuration		Ribbon cable / 9-pin D-sub					Mode
JP10	JP11	3 / 2	5 / 3	9 / 5	4 / 7	6 / 8	
2+3	X	RXD	TXD	GND	RTS	CTS	RS-232 (DTE)
1+2	2+3	RX+	TX-	GND	TX+	RX-	RS-485 Full Duplex
1+2	1+2	DNC	D-	GND	D+	DNC	RS-485 Half Duplex

C

C

D

D



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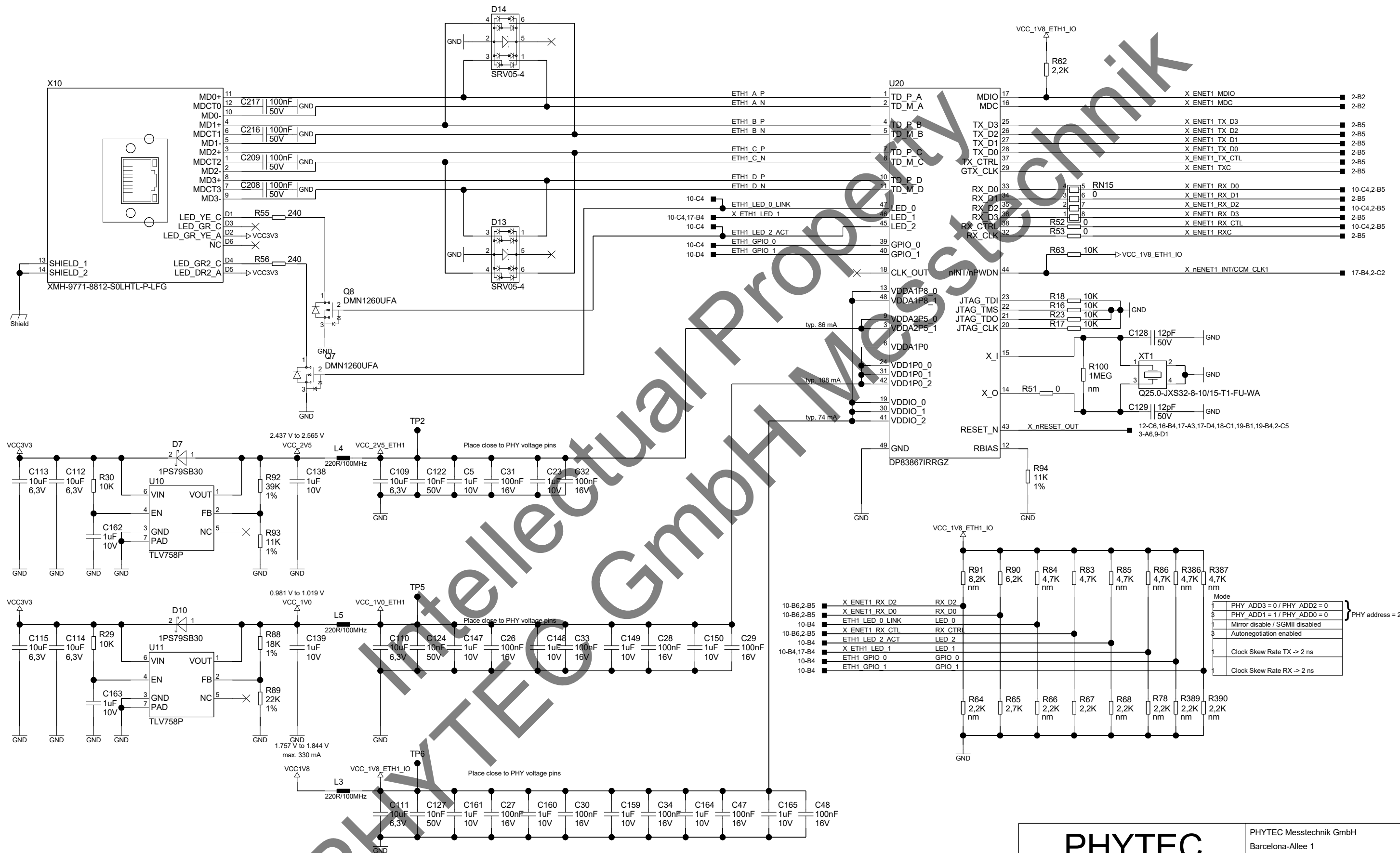
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Ethernet1

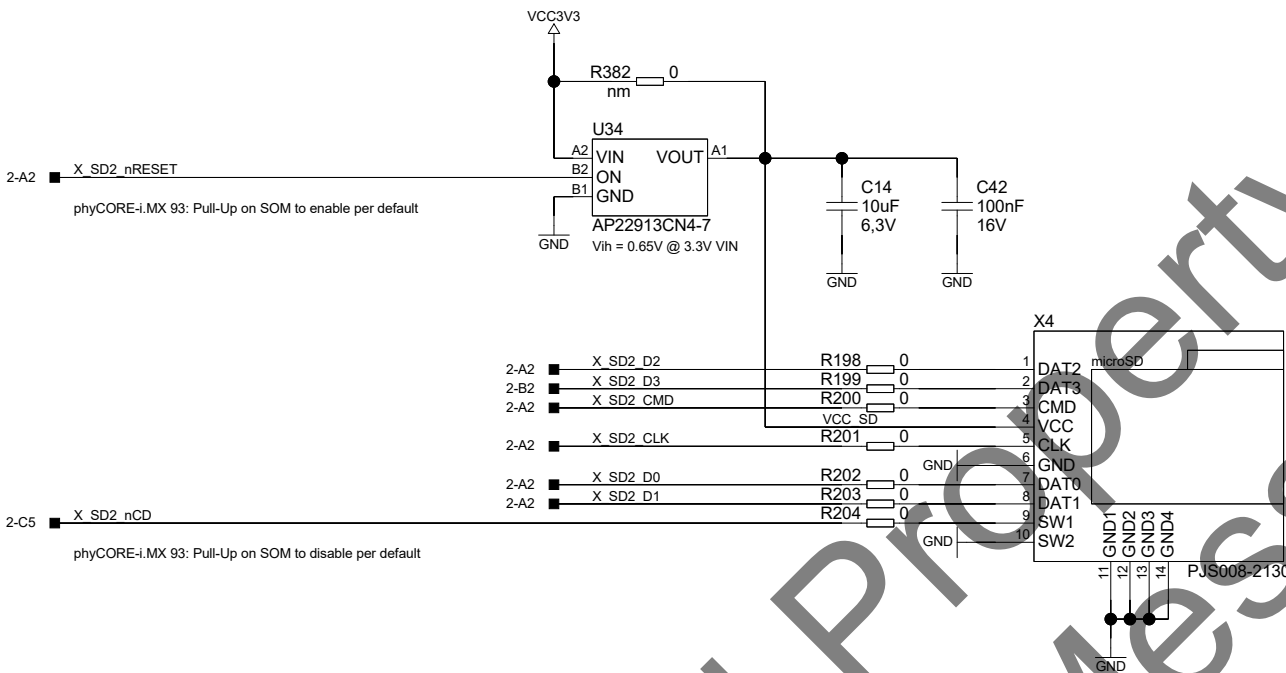


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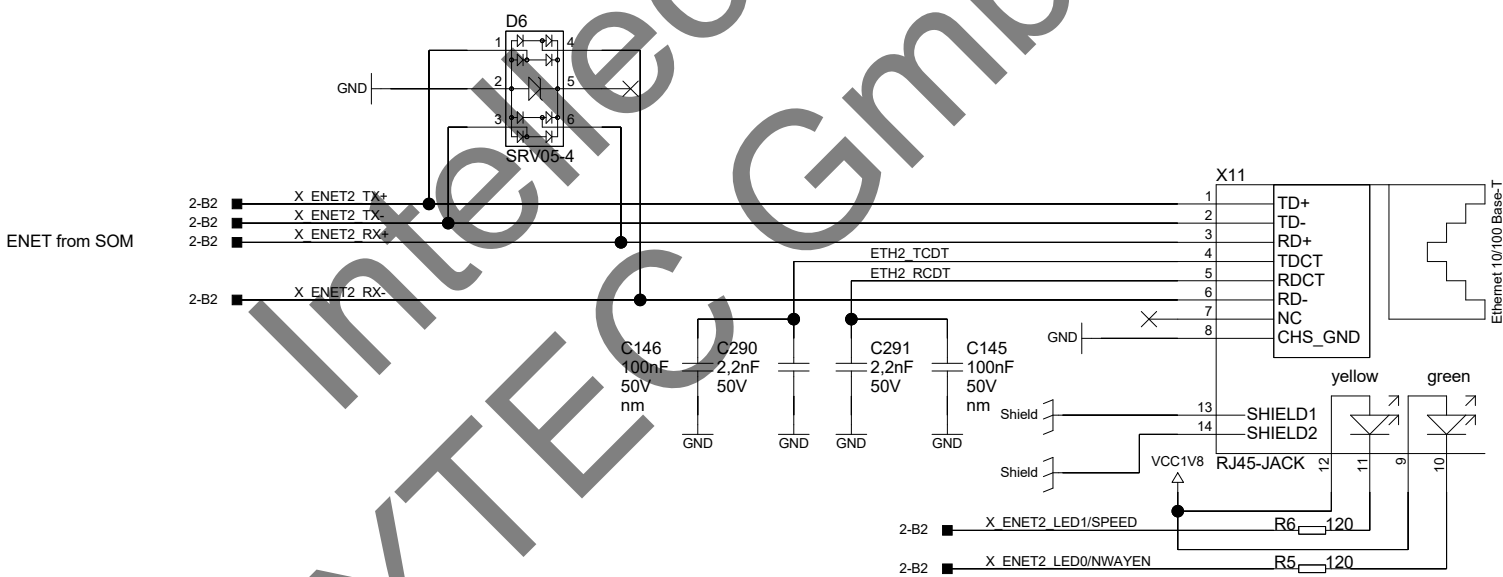
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Micro SD Card

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Ethernet 2 10/100Mbit RJ45

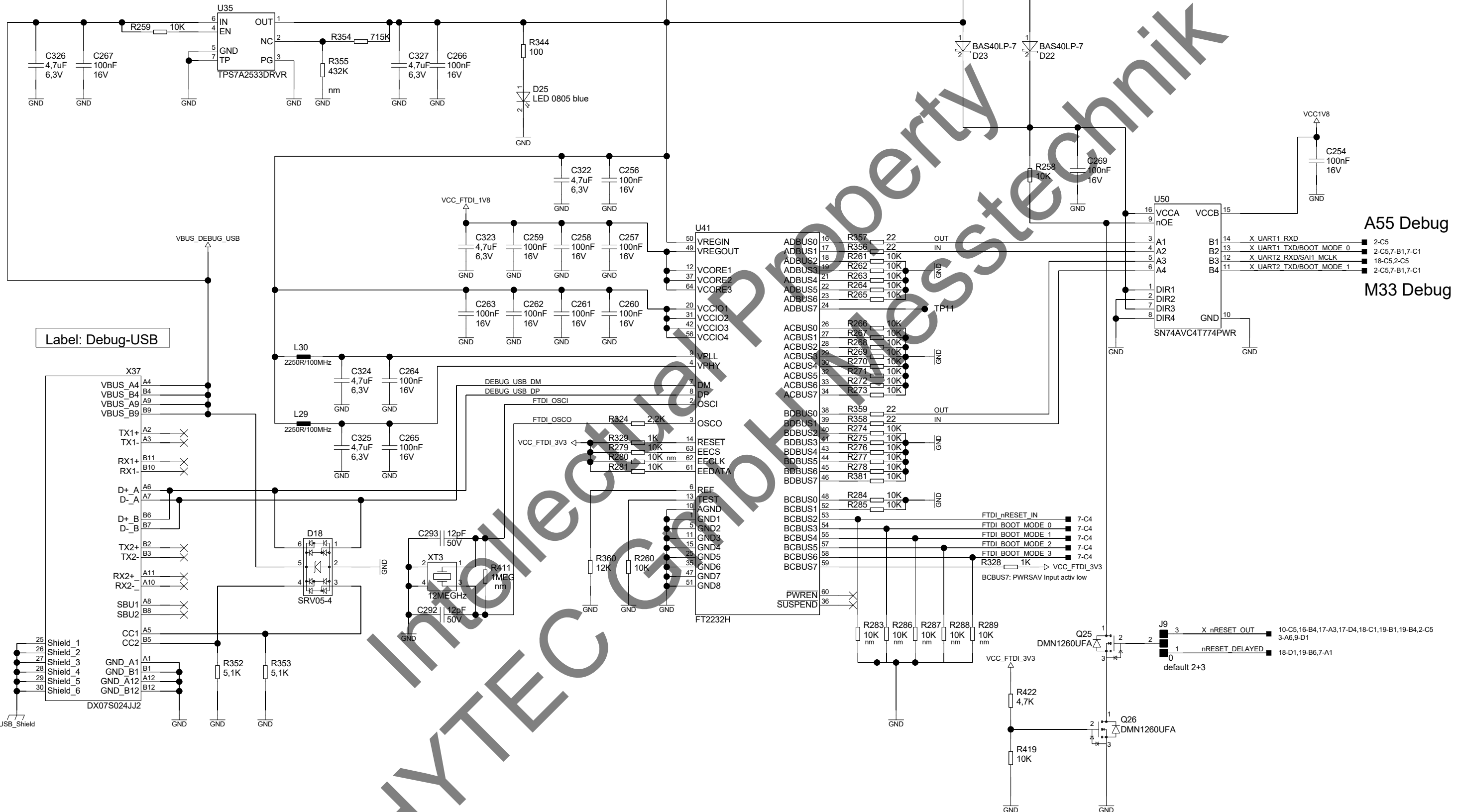


Note 9:
RJ45 Connector:
Industrial (-40 to +85 C): VE309
Commercial (0 to 70 C): VE139

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USB Debug

VCC_FTDI_3V3



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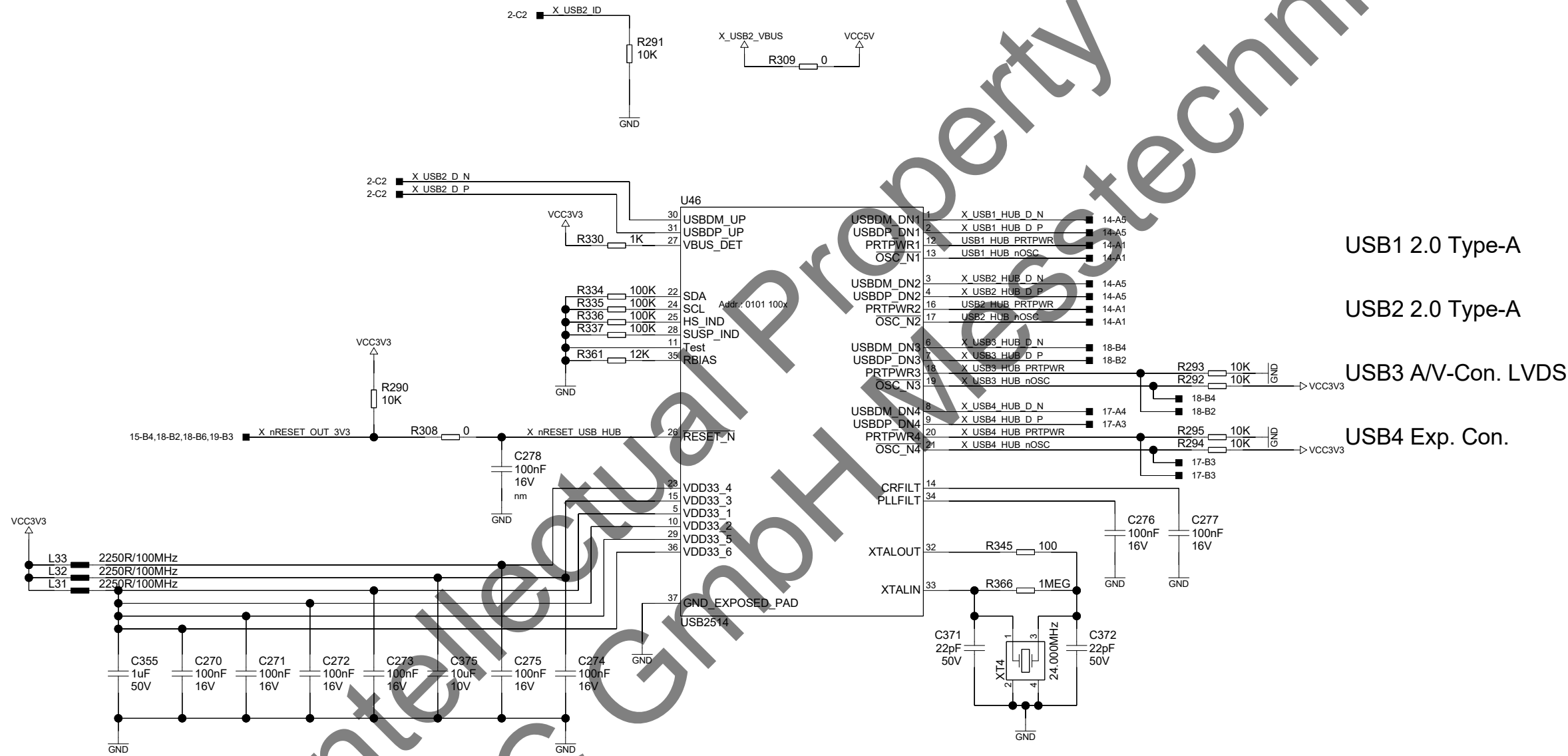
A55 Debug

M33 Debug

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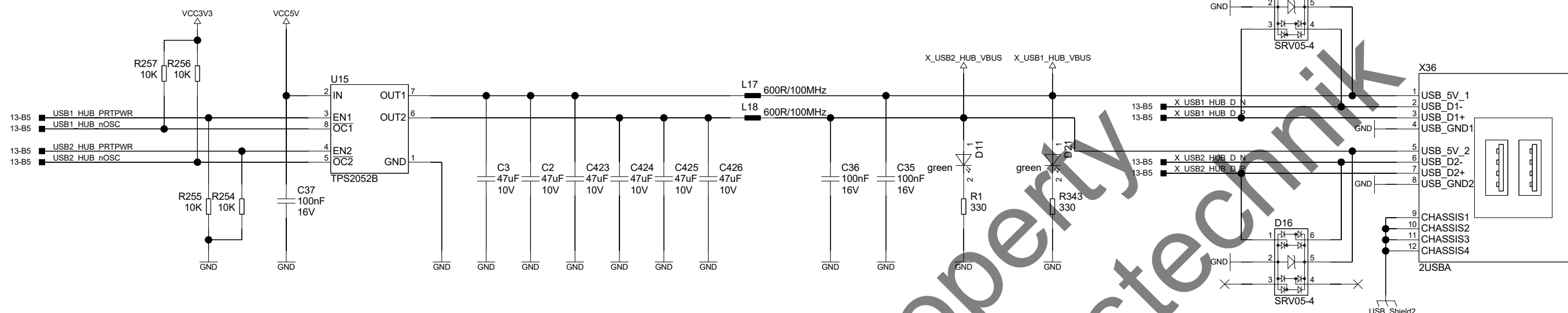
USB-HUB

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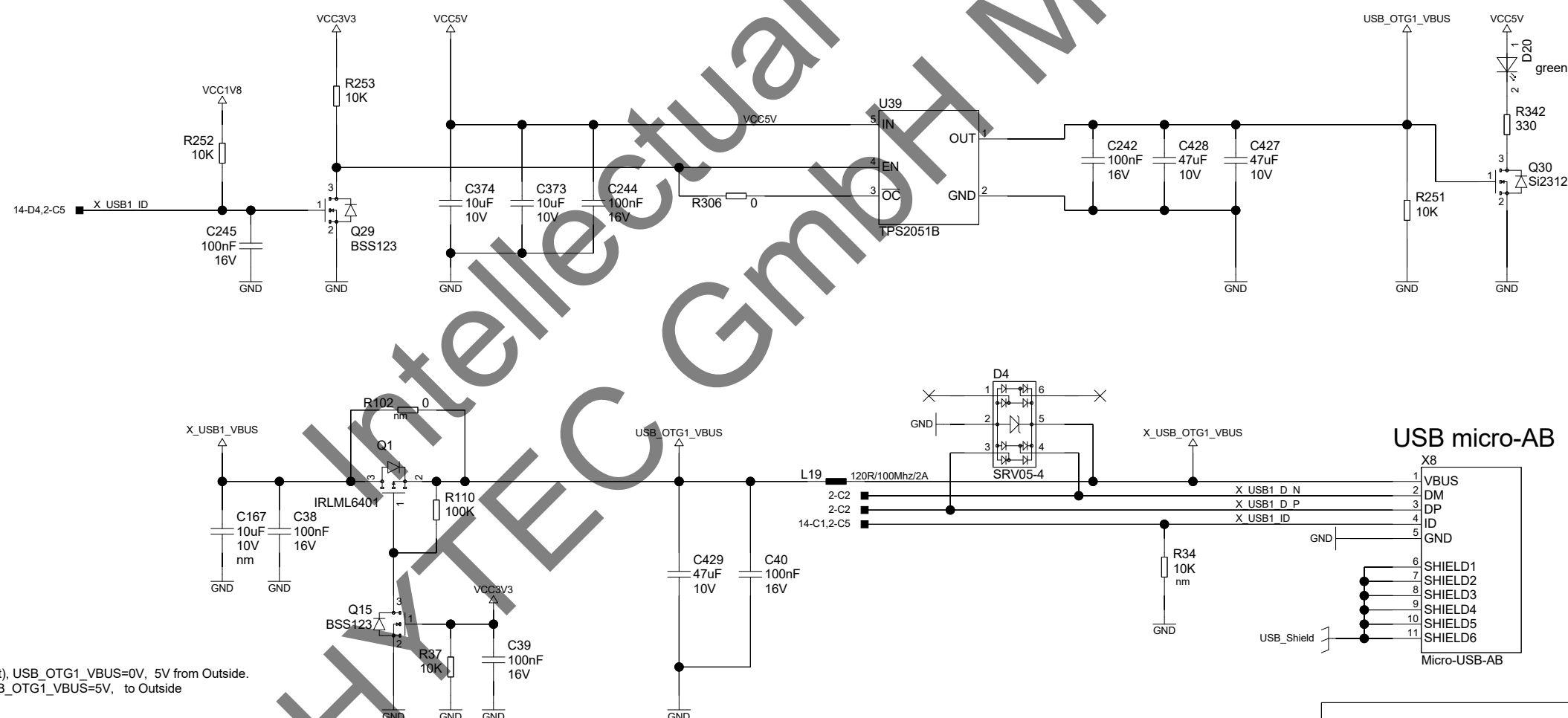


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USB1 & 2 (via Hub)



USB OTG1

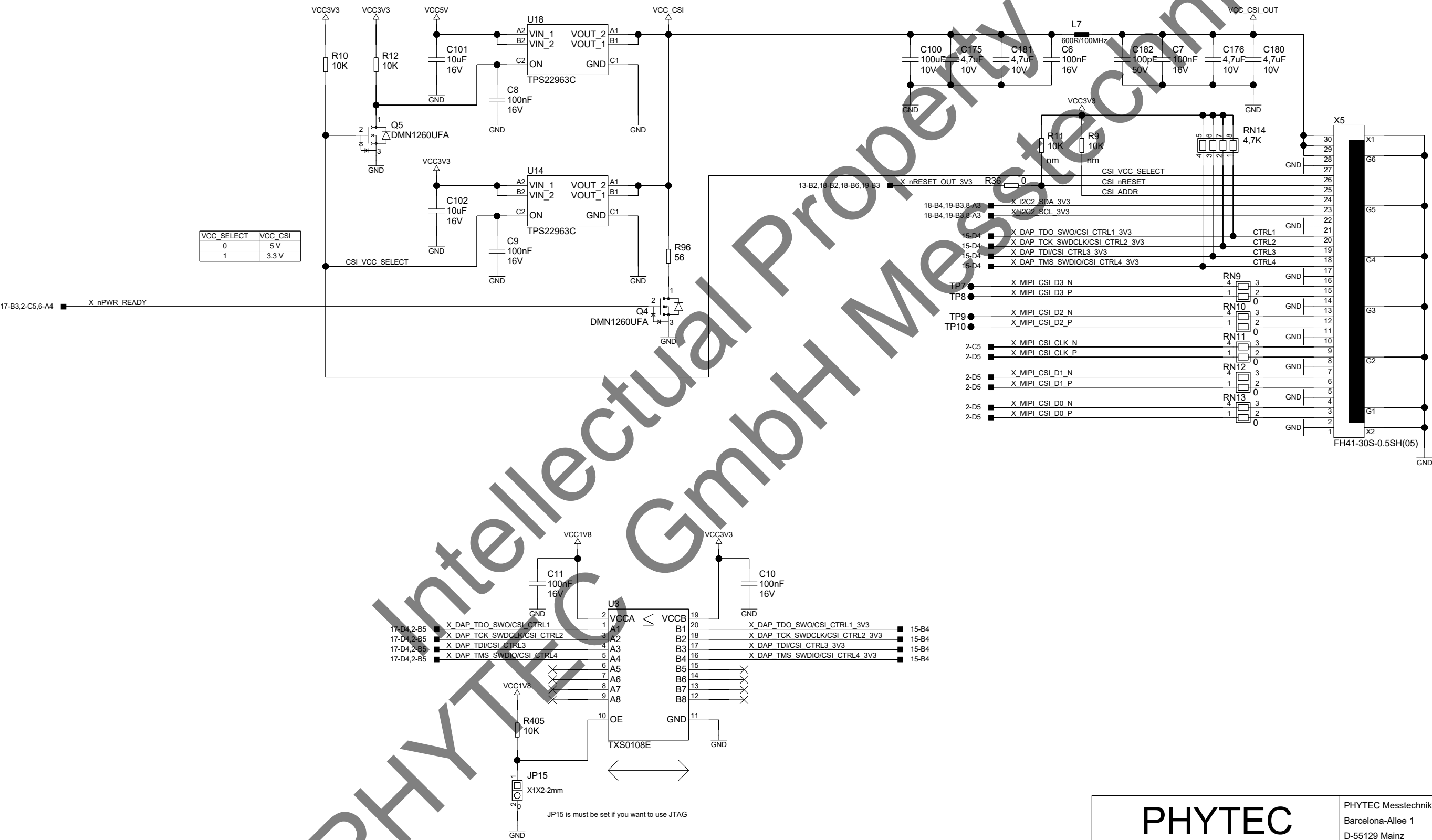


Note 7:
If OTG1 is connected with Host, ID=1(default), USB_OTG1_VBUS=0V, 5V from Outside.
If OTG1 is connected with Device, ID=0, USB_OTG1_VBUS=5V, to Outside

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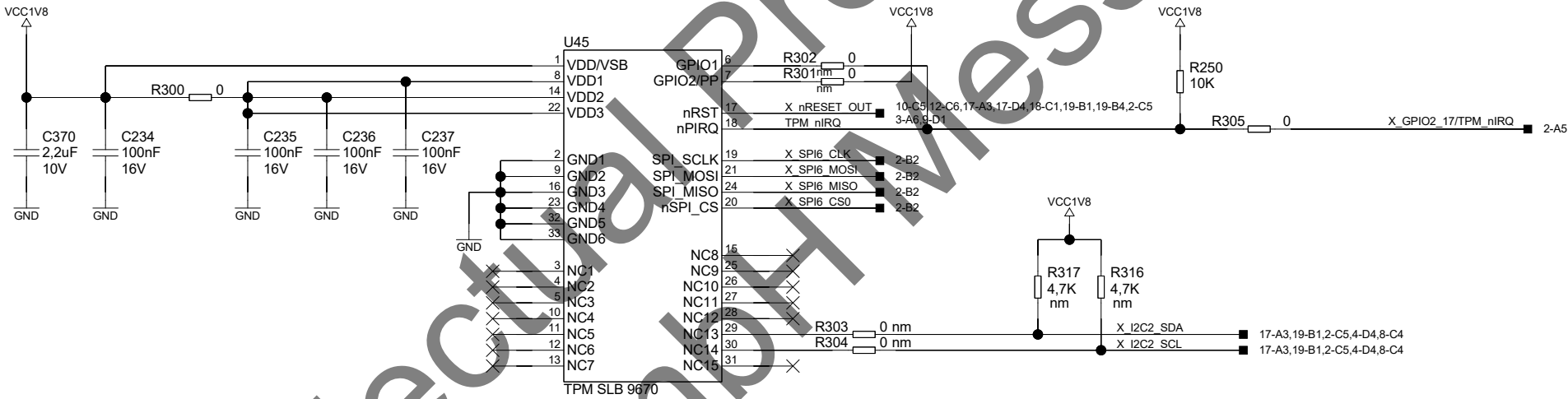
CSI phyCAM-M

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Trusted Platform Module

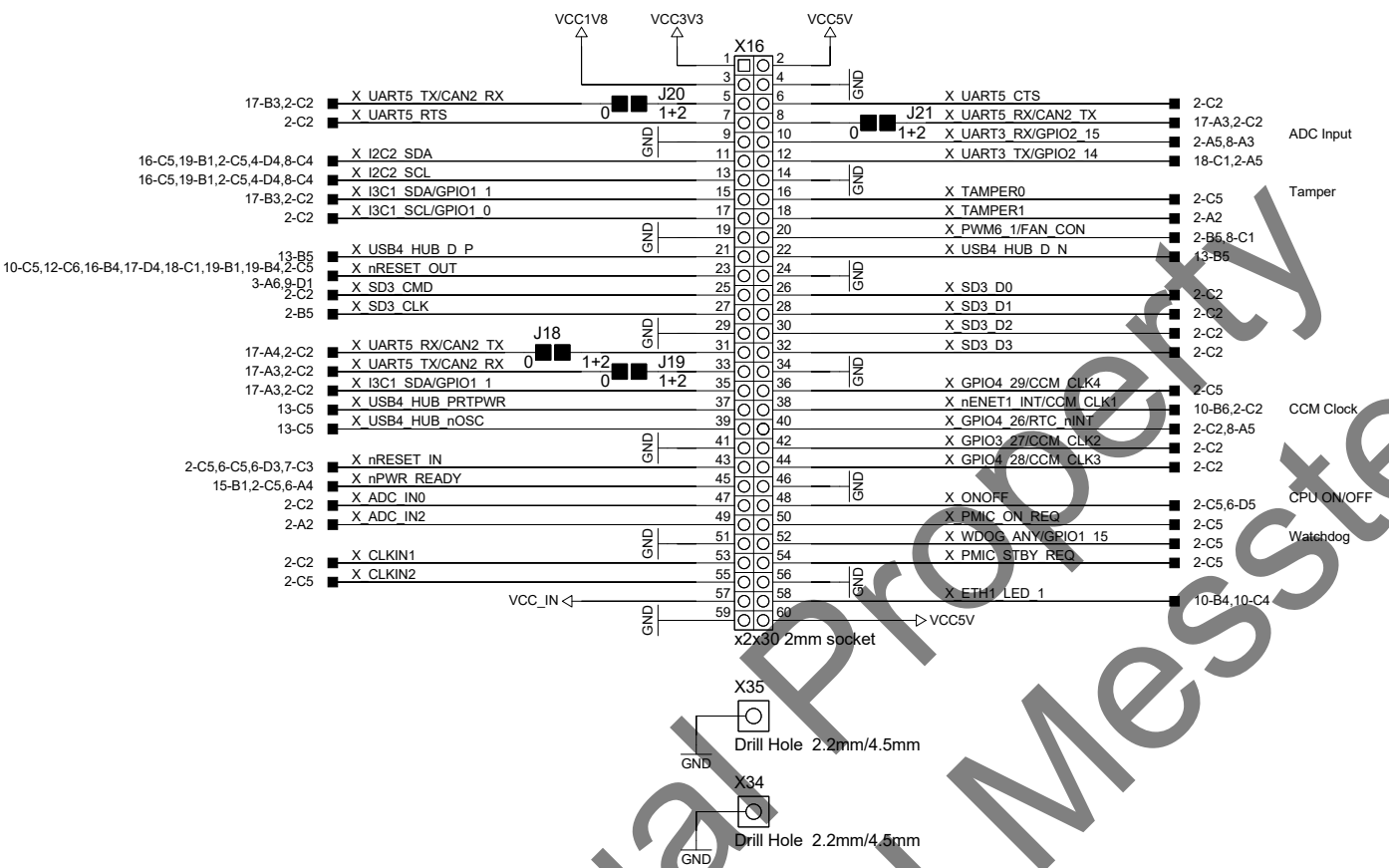
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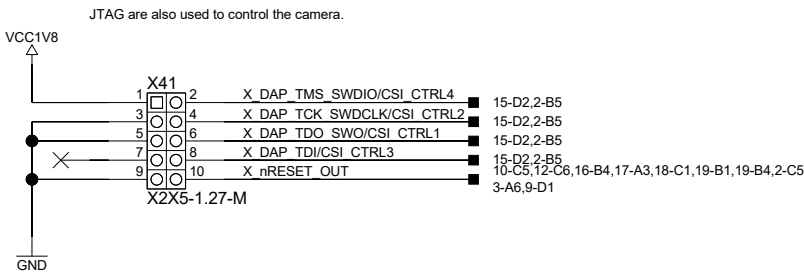
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Expansion Connector

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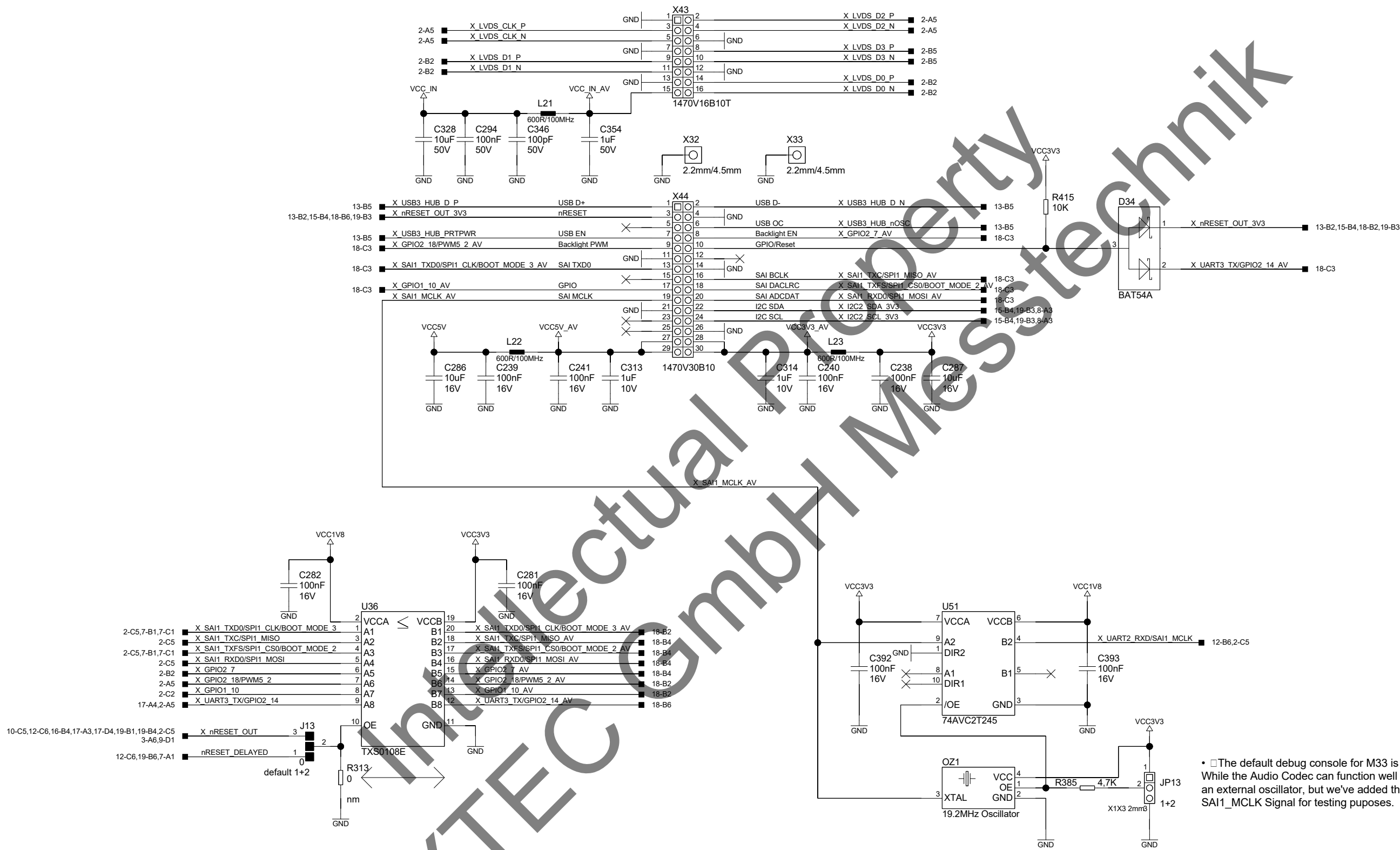
JTAG Connector



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Audio/Video Connector

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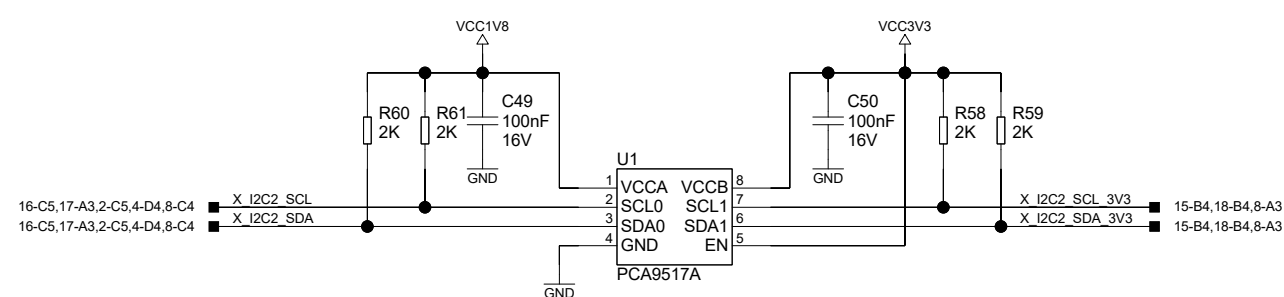
*SAI interface doesn't work with SAI1_MCLK from CPU in this PCB rev.

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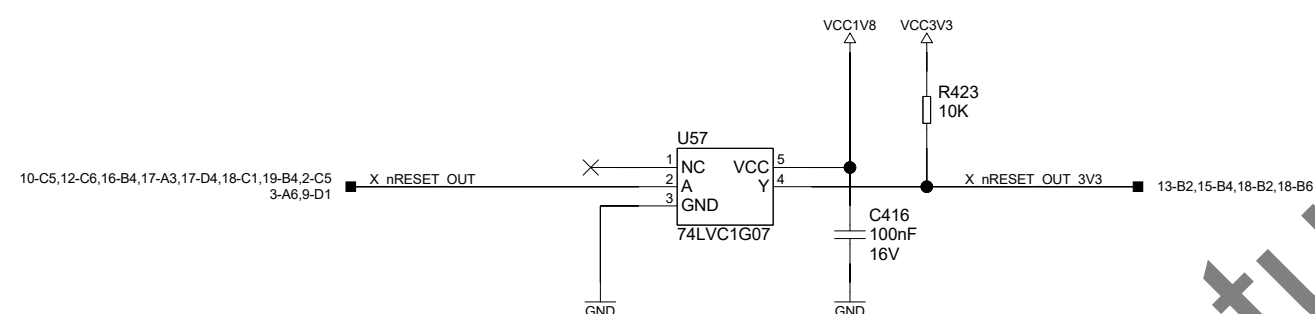
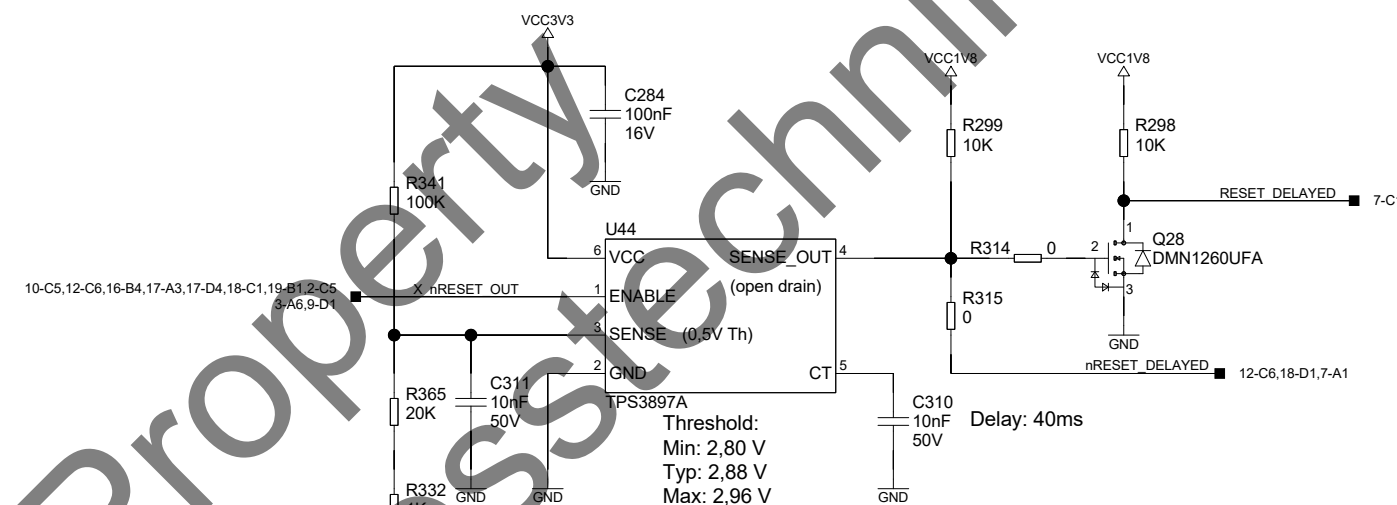
Misc

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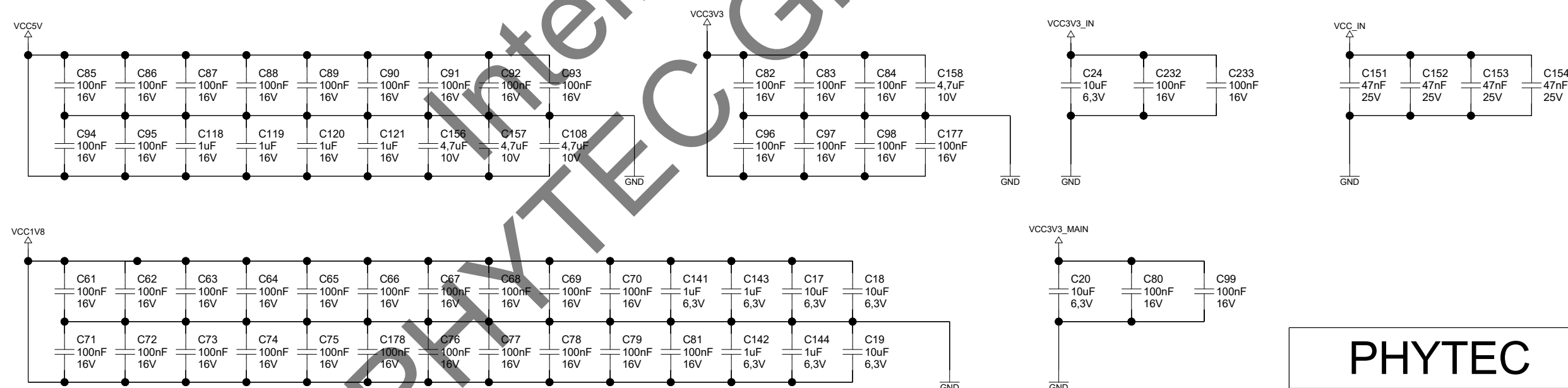
I2C Level Translators from 1.8V to 3.3V



Reset Delay [40ms]



EMC Blocking



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