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A

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

B

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C

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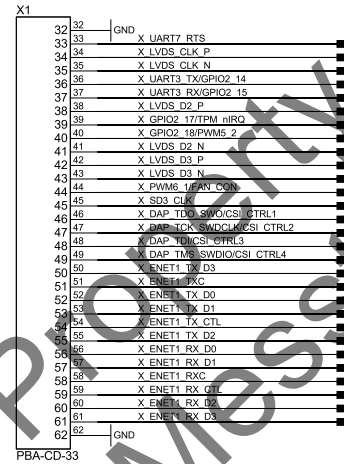
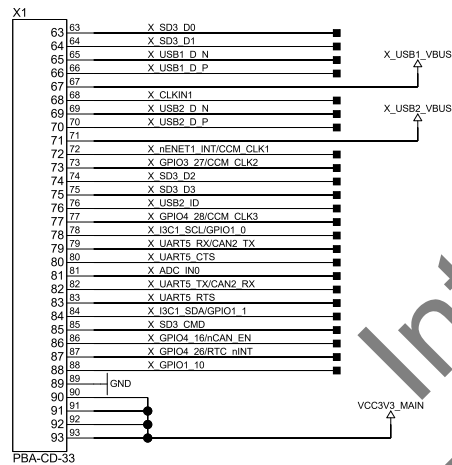
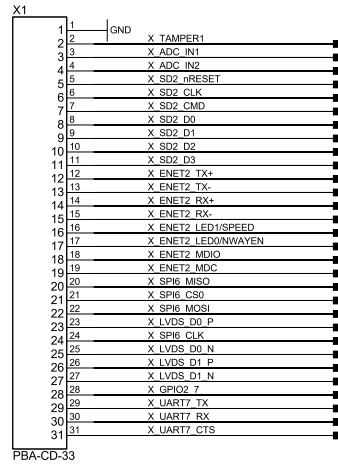
D

D

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Project: PBA-CD-33 (KPB-04729-xxx)		Department : F&E Author: B.Feldmann, H.Aßf	
07.08.2024	PCB-No.: 1616.1	Revision : 004	Sheet 1 of 19

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

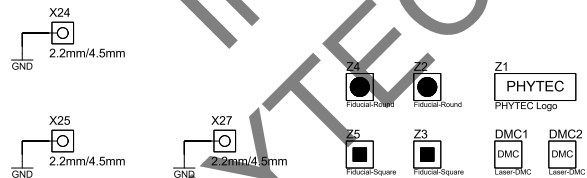
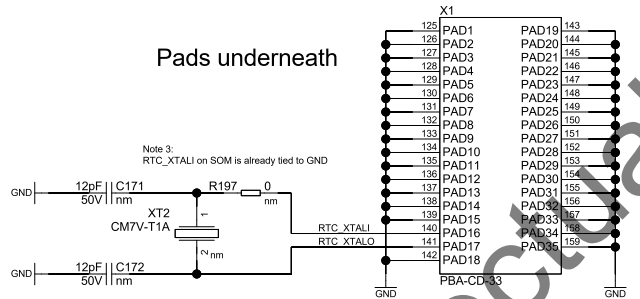
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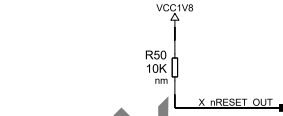
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phyCORE-i.MX 91/93 Connectors

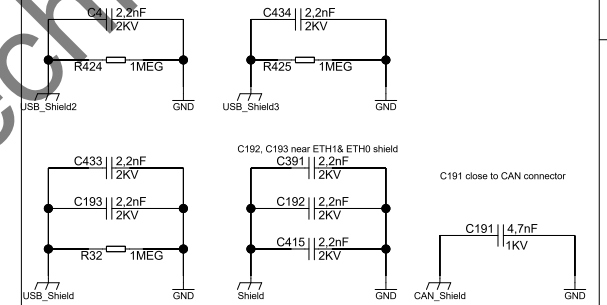
- I2C addresses used on SOM:
- EEPROM on SOM Memory Area 0x50
 - EEPROM on SOM ID Page 0x58
- Onboard used I2C addresses:
- Expansion Connector -
 - EEPROM Memory Area 0x54
 - EEPROM ID Page 0x5C
 - External RTC 0x52
 - A/V Connector -
 - USB-C PD STUSB4500 0x28



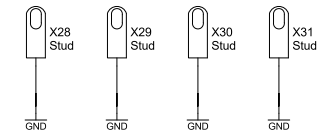
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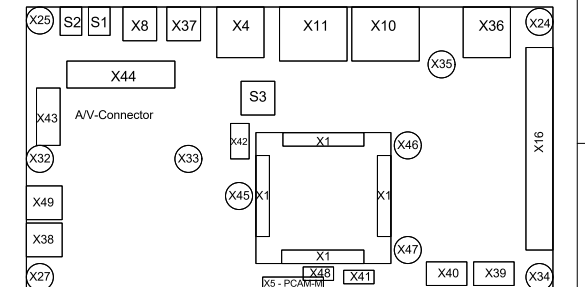
Shield Coupler



GND for Measurement



Drill Hole Placement

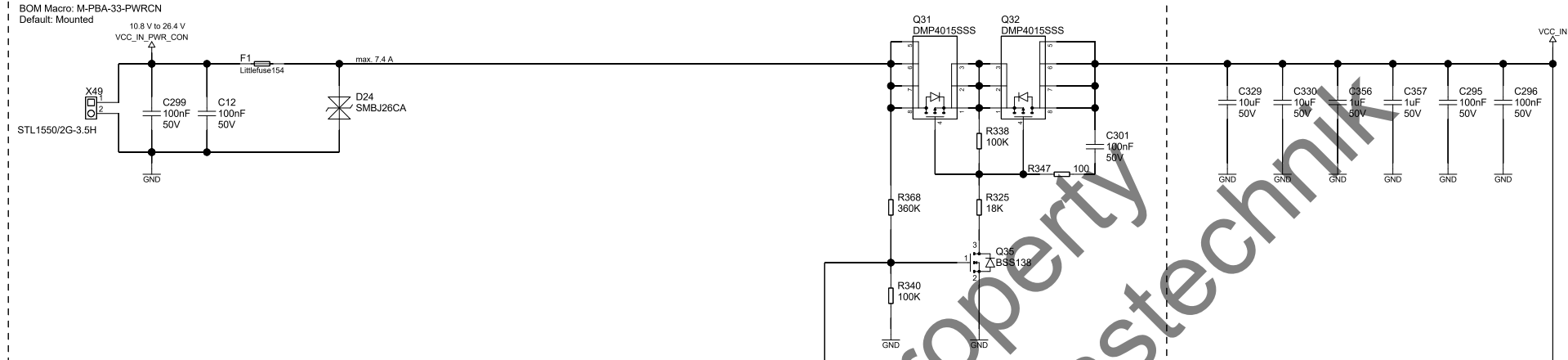


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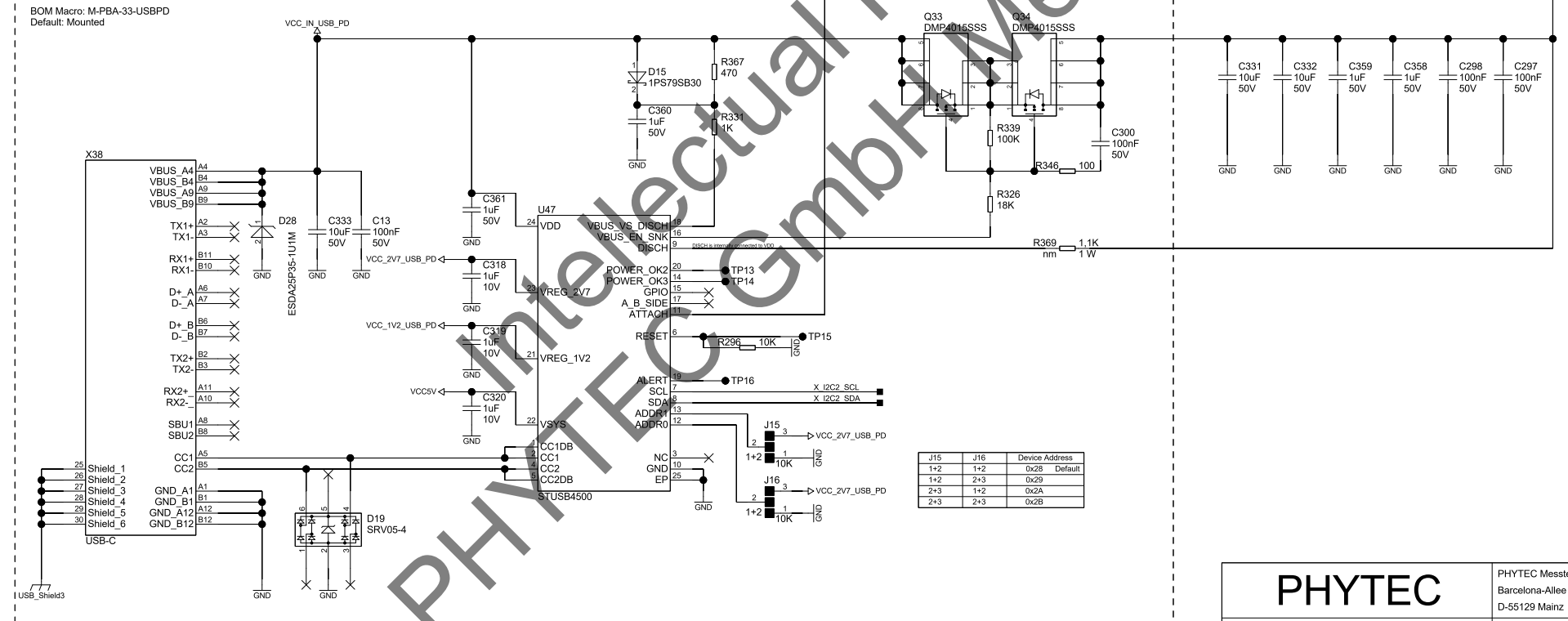
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VCC_IN via Power Connector



VCC_IN via USB-PD



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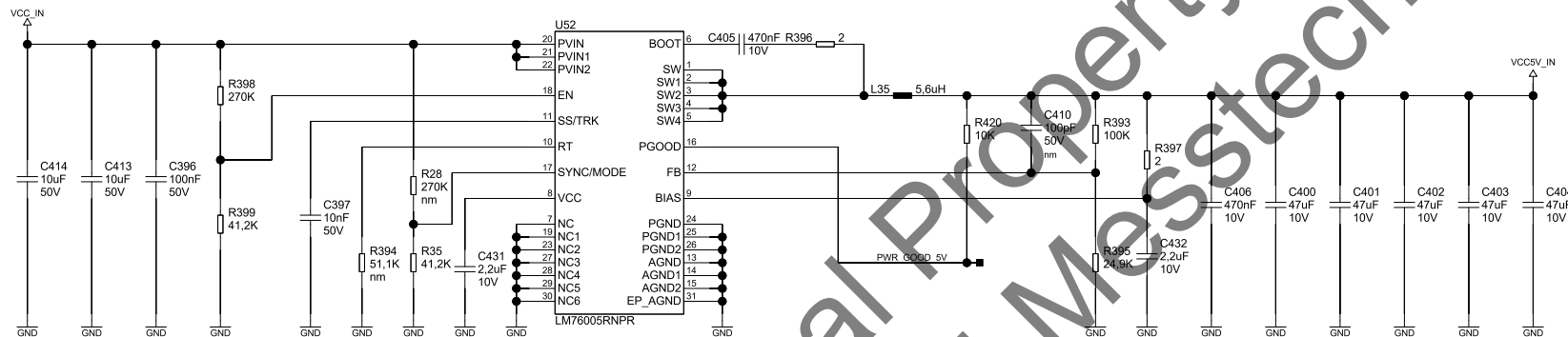
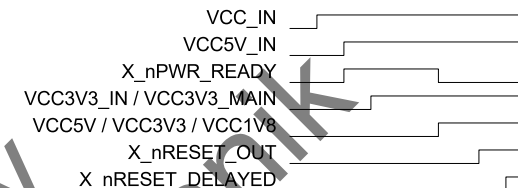
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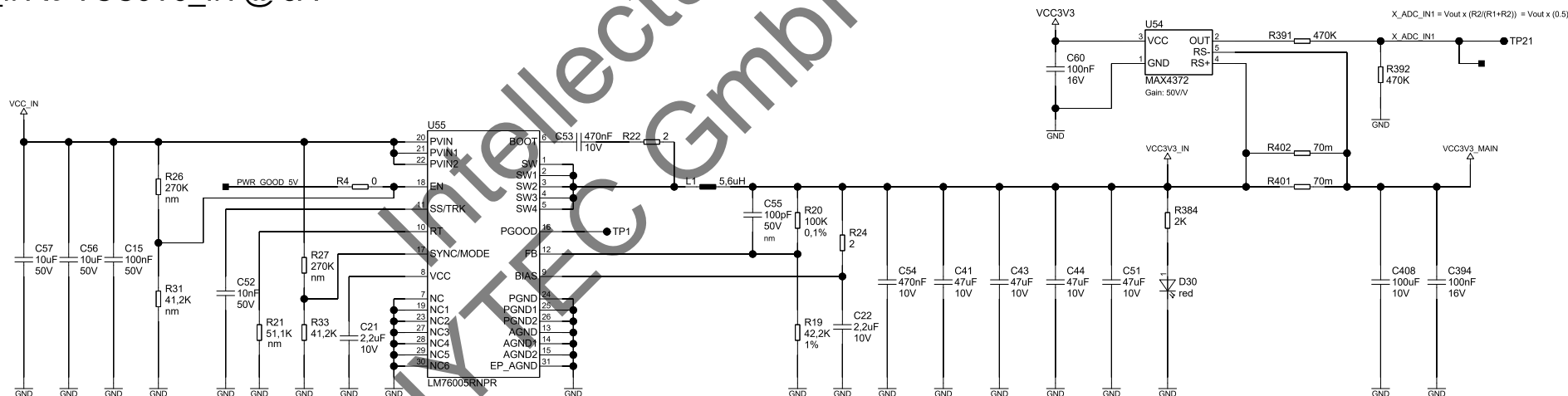
VCC_IN to VCC5V_IN @ 5A

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Power sequencing diagram



VCC_IN to VCC3V3_IN @ 5A

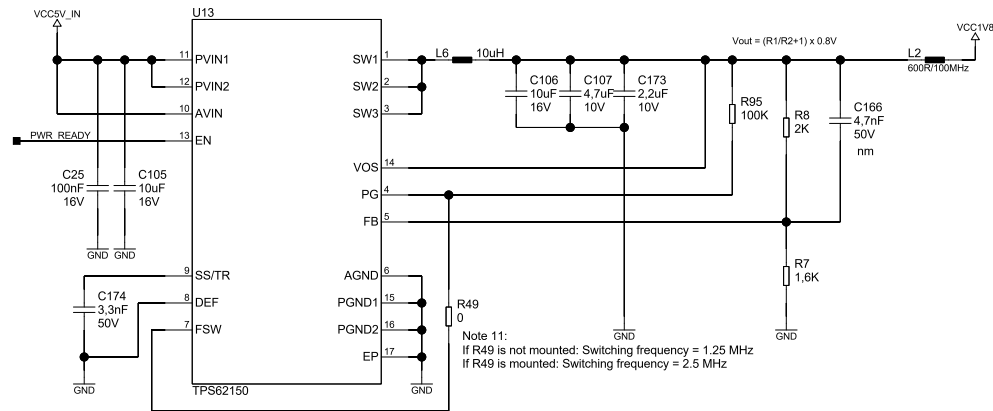


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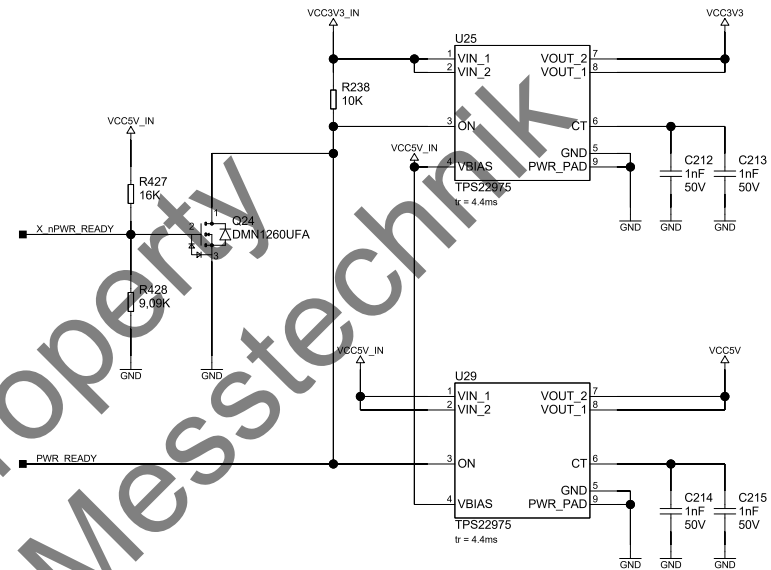
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1.8V Power Supply

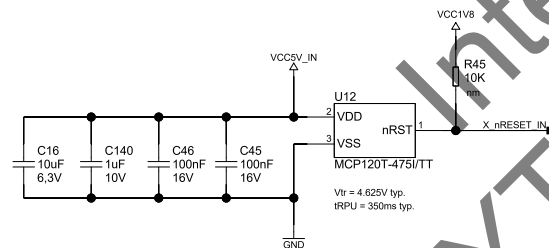


Power Switch

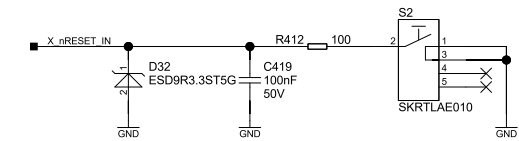
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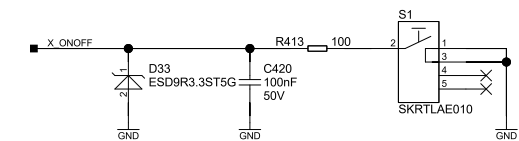
Voltage Supervisor



System Reset Button



CPU ON/OFF Button



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Boot Mode i.MX 91/93

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1

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A

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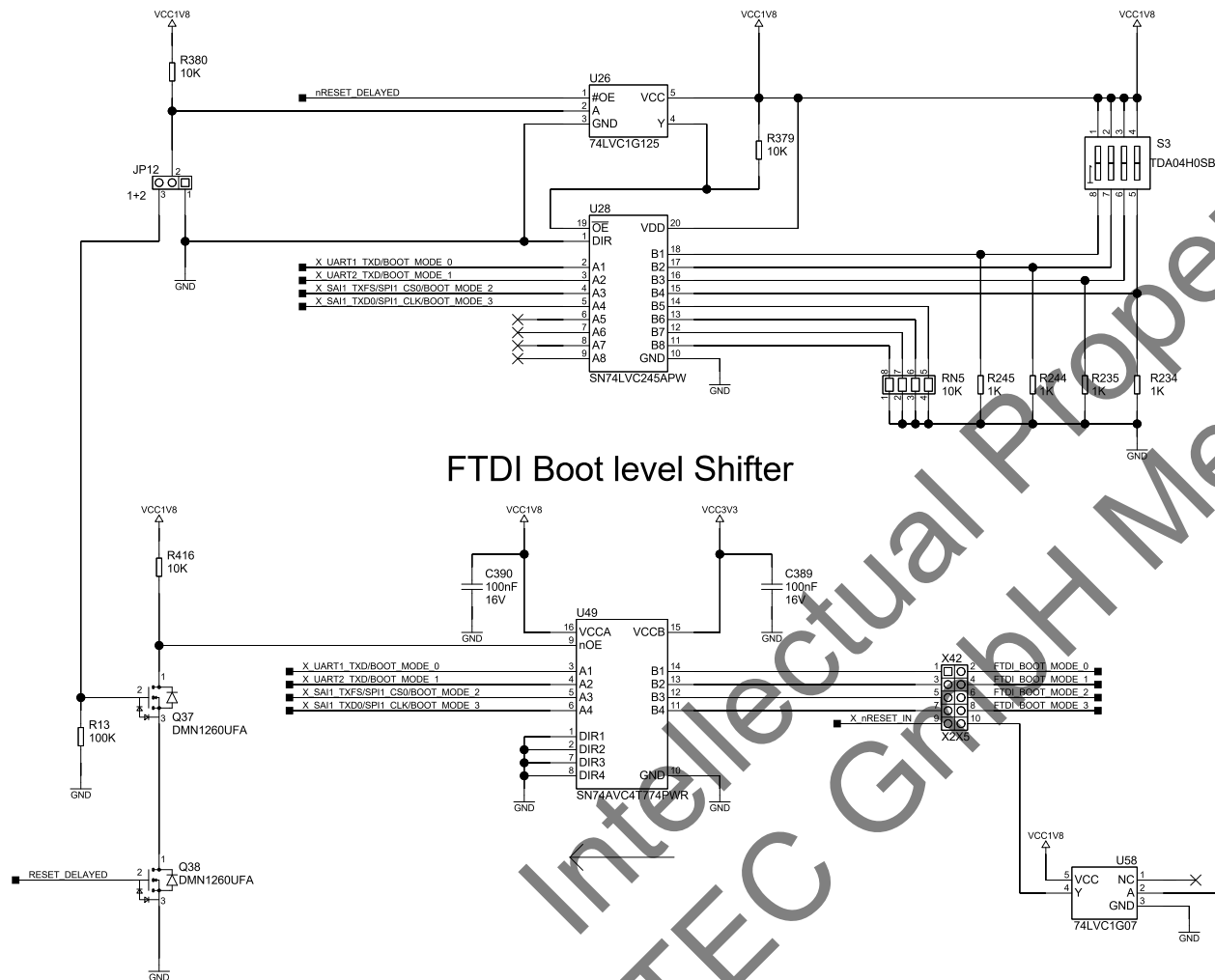
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D

D



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

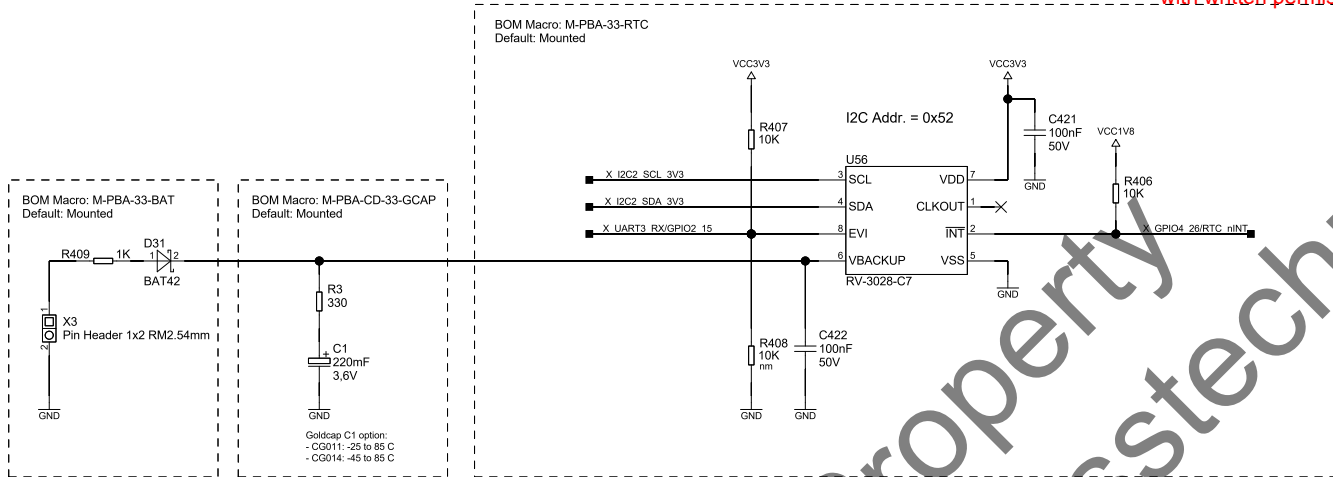
The boot mode will be selected from the following options		
Configuration		Description
J12	X42	Boot from Dip Switches (S3)
1+2	X	
2+3	1	
nm	X	Boot from pull-up/down on the module (eMMC)

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RTC

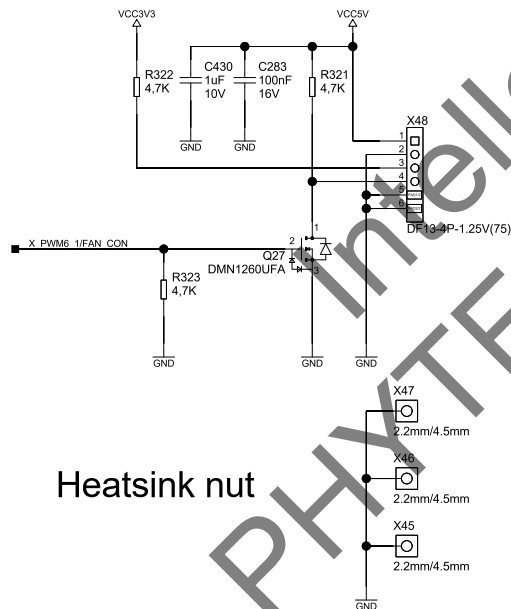


Note 5:
Internal RTC:
Current consumption time keeping mode at 3V: 500uA
Timekeeping down to 2.4V

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

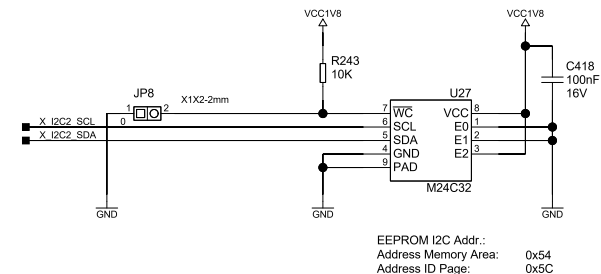
External RTC:
Current consumption during access: 5uA
Current consumption time keeping mode at 3V: 40nA
Timekeeping down to 1.1V

Fan Connector



Heatsink nut

EEPROM



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

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CAN-FD

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CAN FD Pinout

Ribbon Cable / 9-pin D-sub

3 / 2	4 / 7	5 / 3	8 / 9
CAN_L	CAN_H	GND	VCC_5V

CAN FD Pinout

Ribbon Cable / 9-pin D-sub

3 / 2	4 / 7	5 / 3	8 / 9
CAN_L	CAN_H	GND	VCC_5V

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

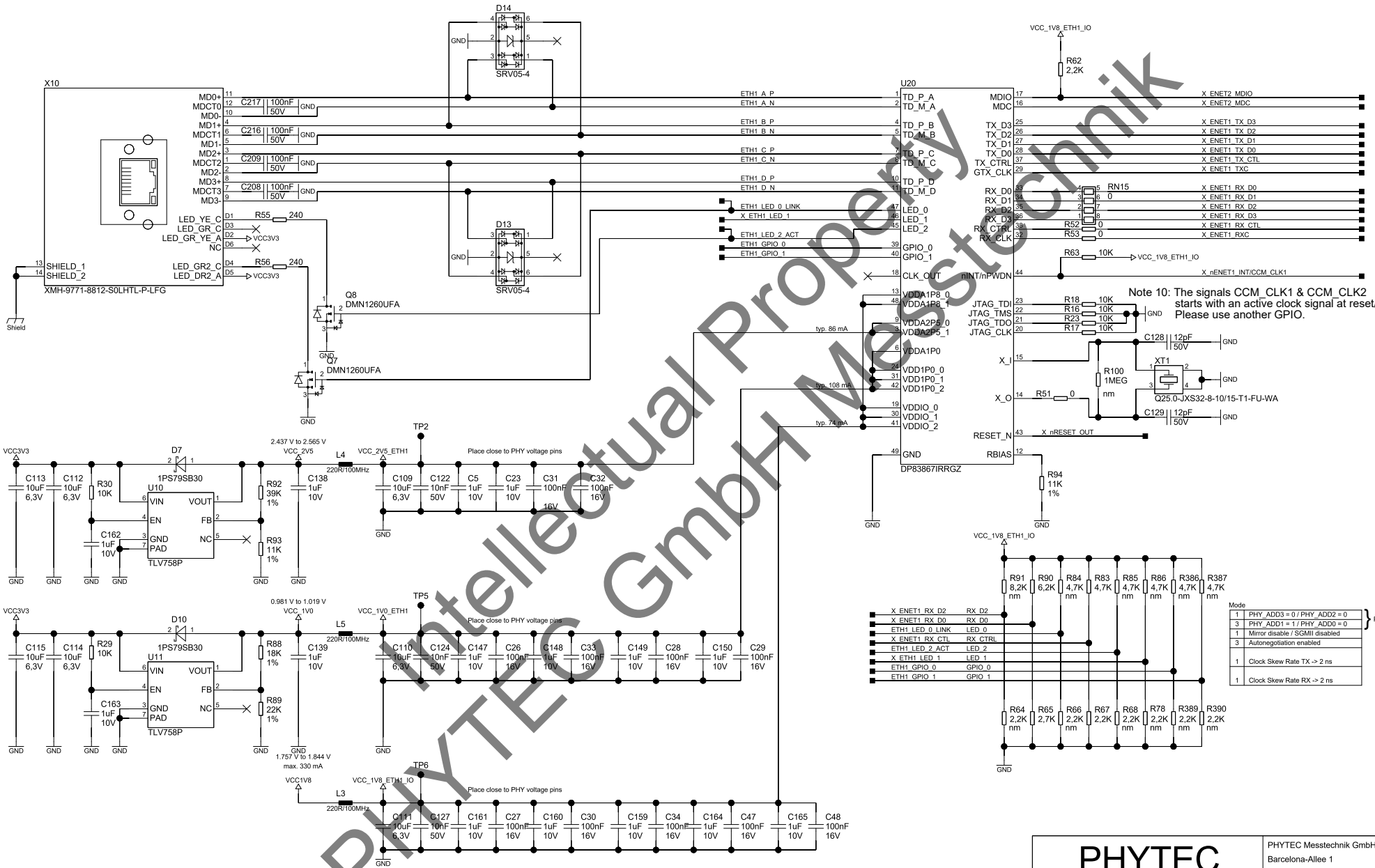
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Ethernet1

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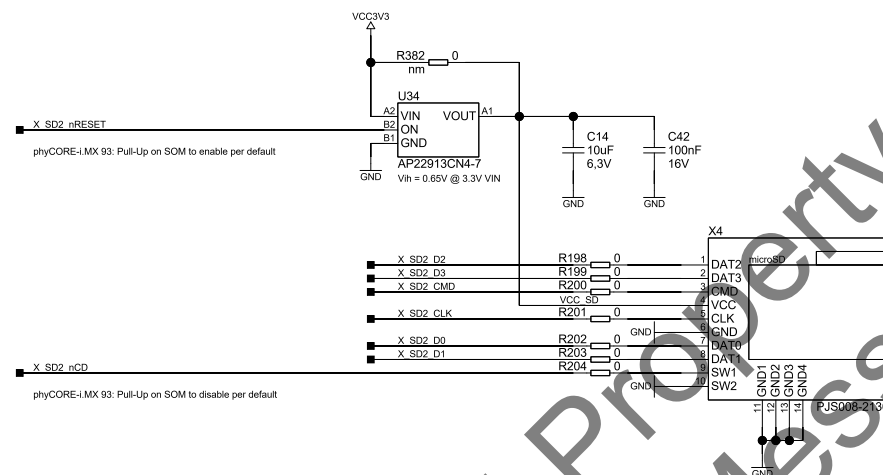
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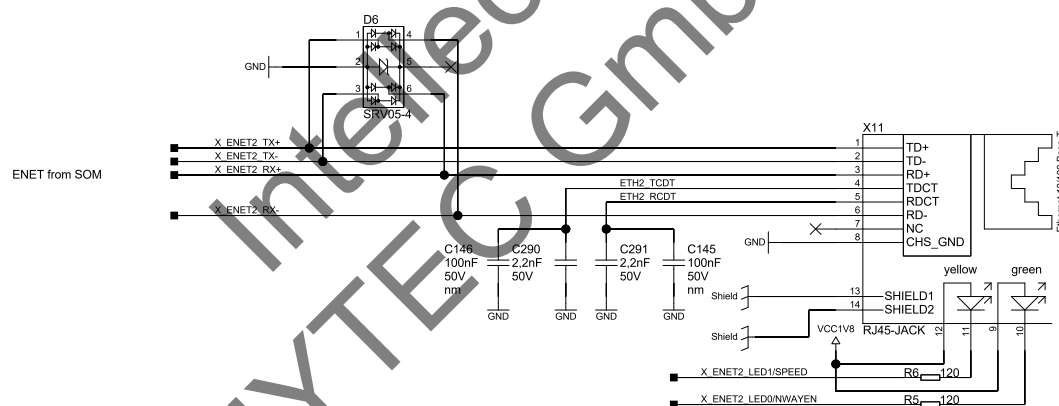
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Micro SD Card

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Ethernet 2 10/100Mbit RJ45



Note 8:
Please add MOSFET between ENET2 LED
signals and LEDs of RJ45 connector

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

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Author: B.Feldmann, H.Atifi

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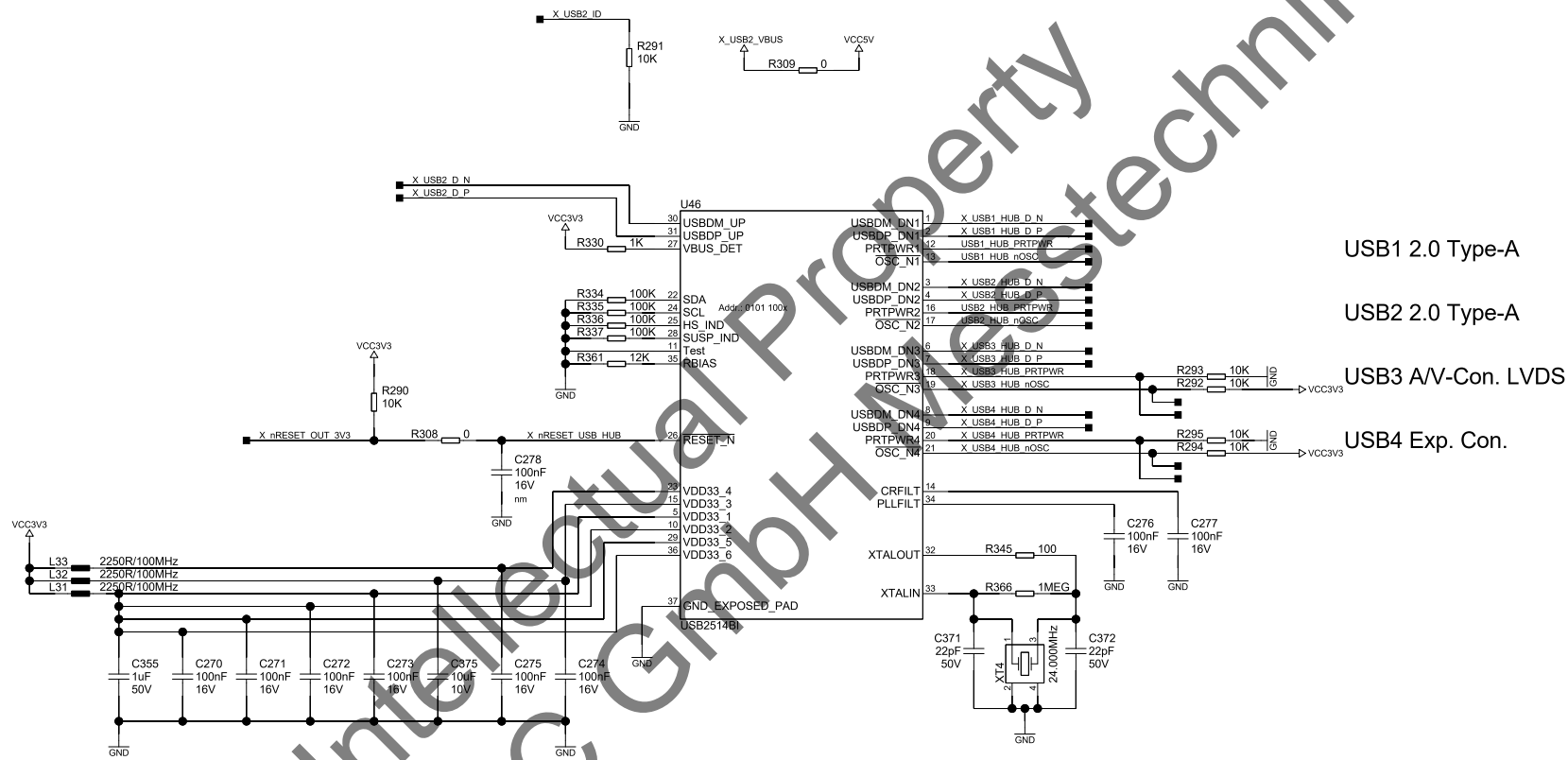
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USB-HUB

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USB1 2.0 Type-A

USB2 2.0 Type-A

USB3 A/V-Con. LVDS

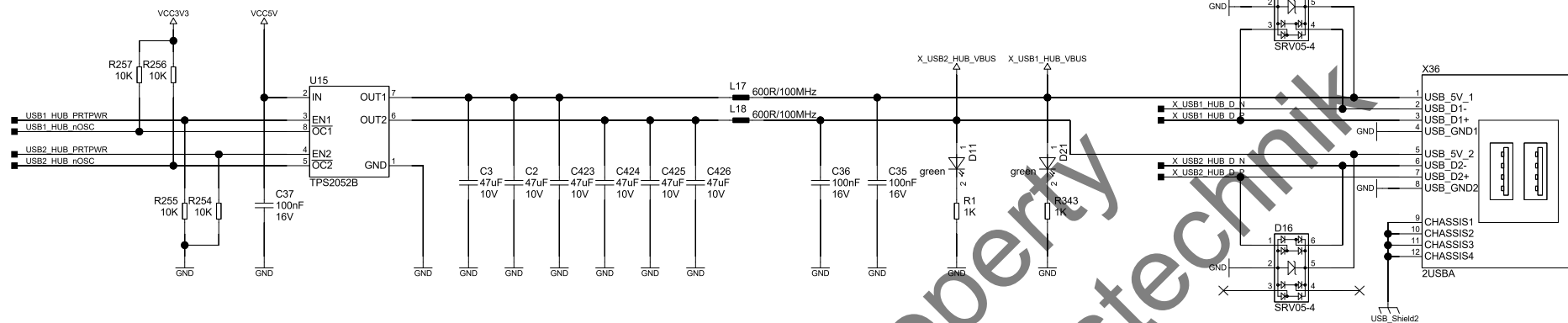
USB4 Exp. Con.

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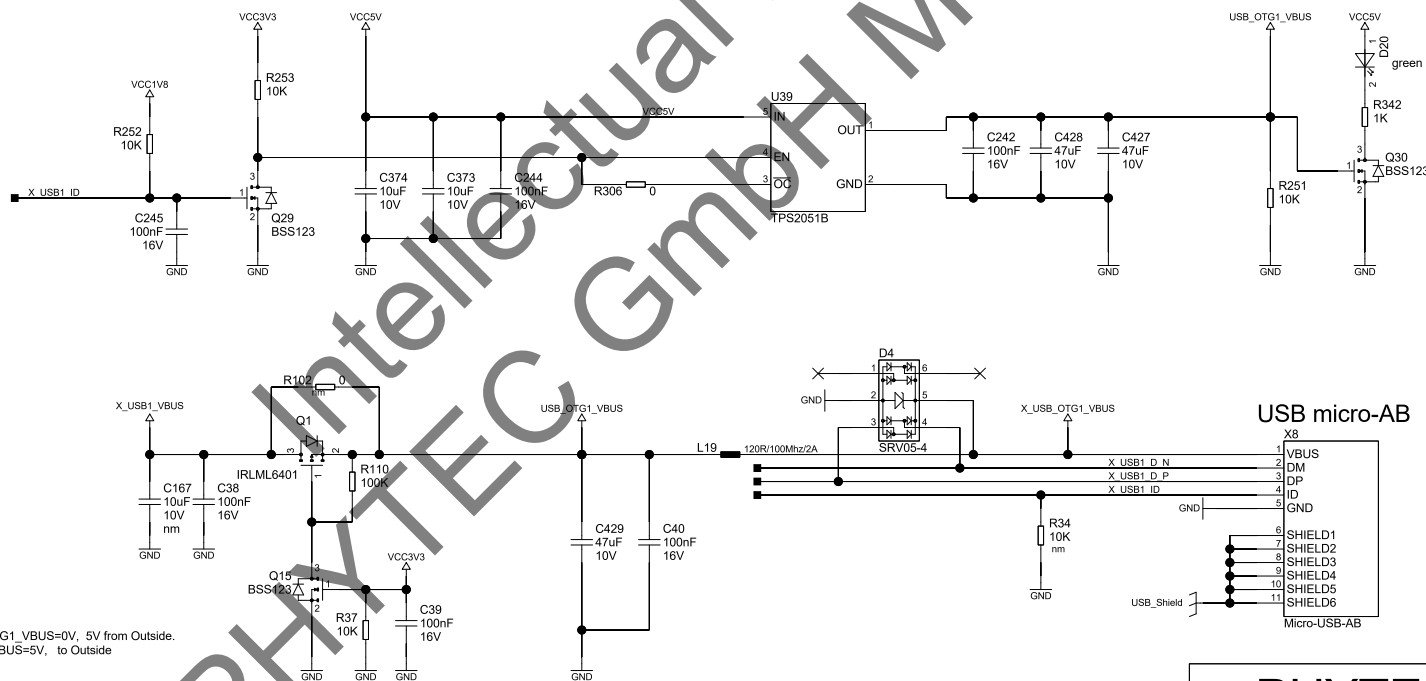
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USB1 & 2 (via Hub)



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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

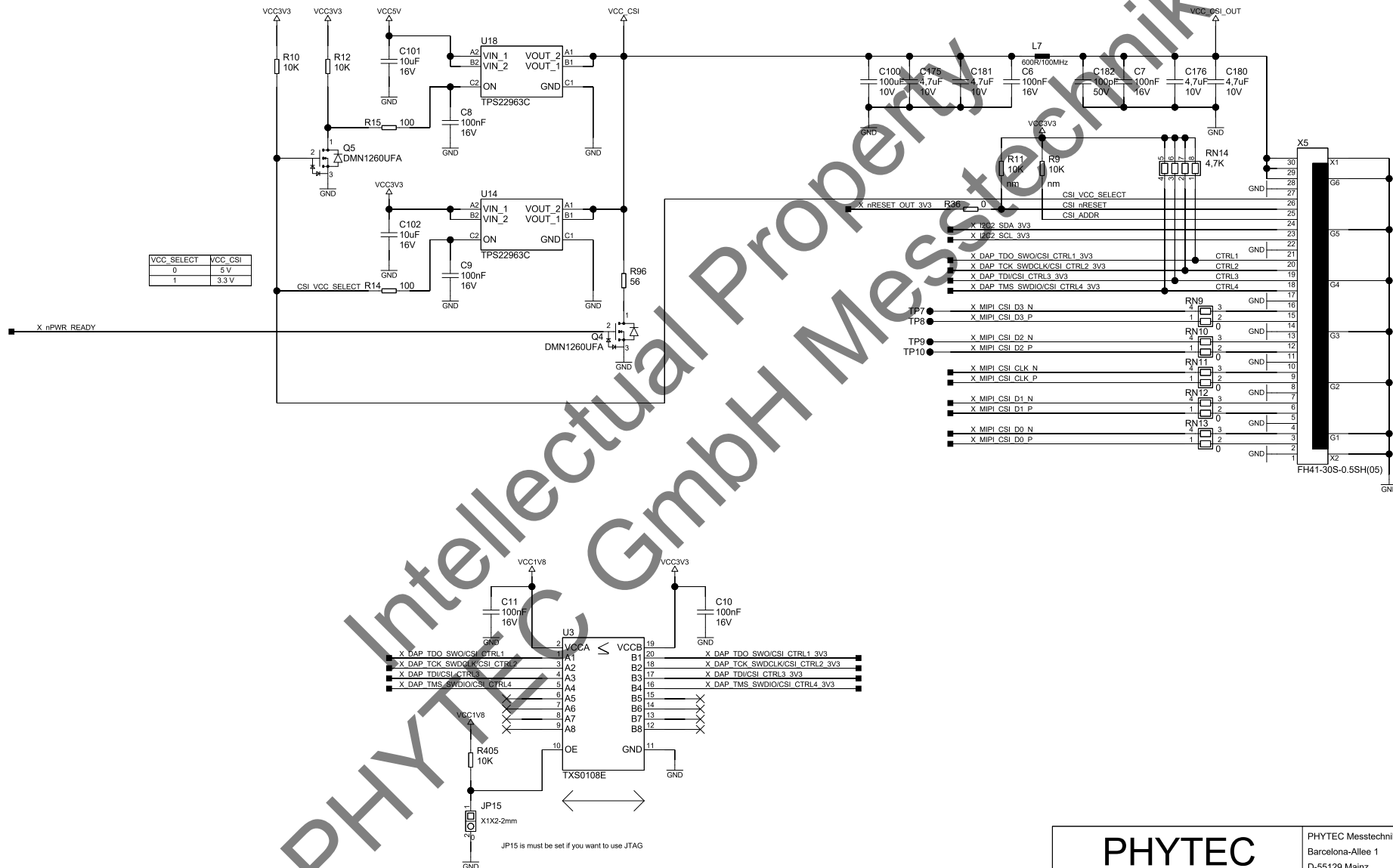
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CSI phyCAM-M

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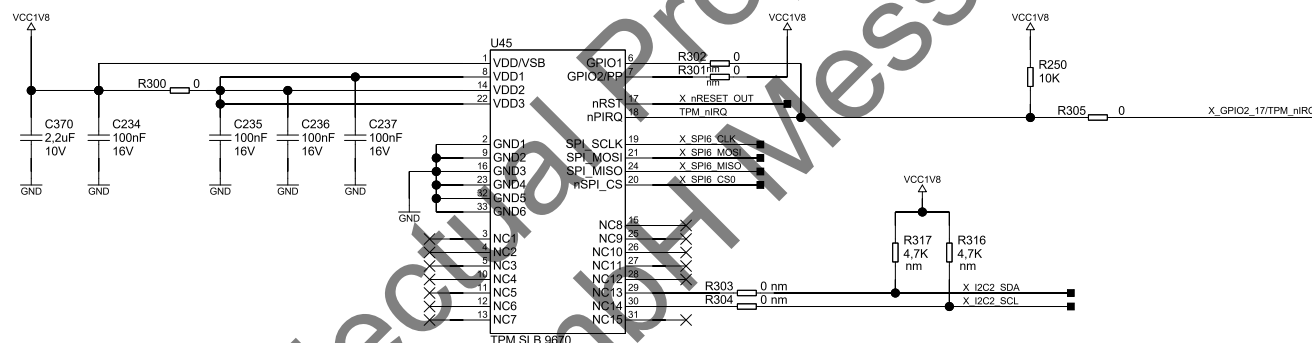
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Trusted Platform Module

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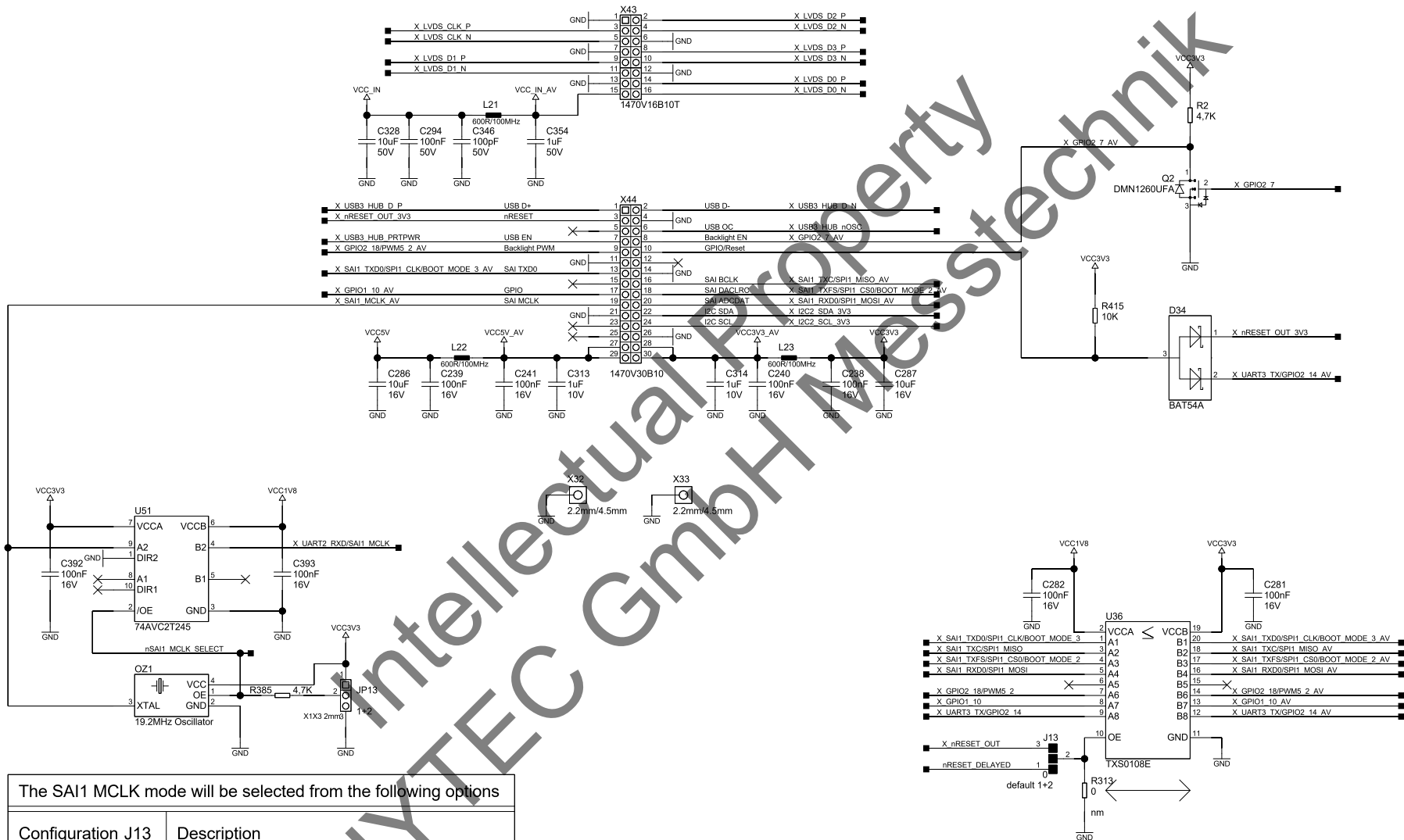
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Audio/Video Connector

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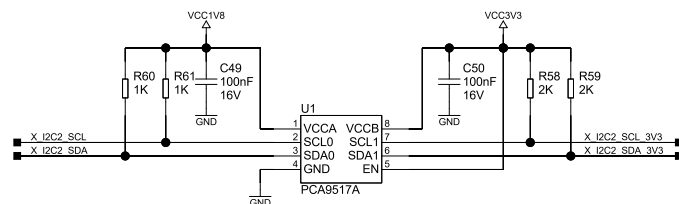
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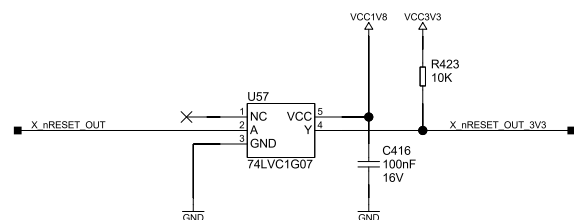
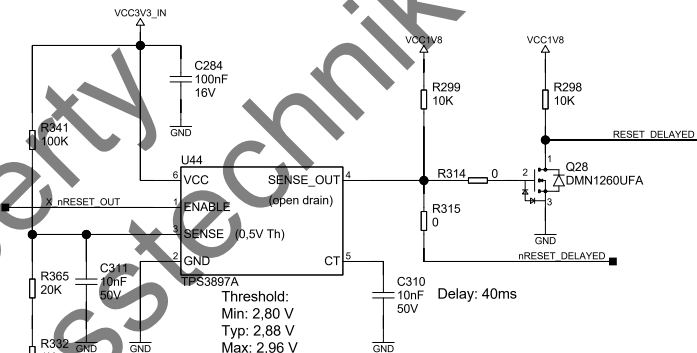
Misc

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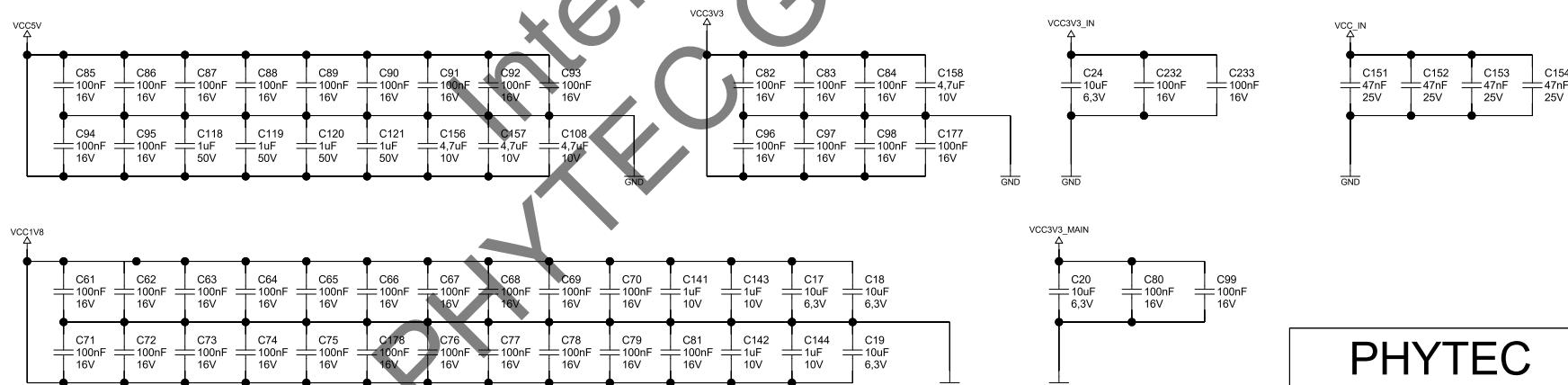
I2C Level Translators from 1.8V to 3.3V



Reset Delay [40ms]



EMC Blocking



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