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PBA-CD-15 (PB-02820)

phyBOARD Polis i.MX 8M Mini/Nano

B

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Project: PBA-CD-15 phyBOARD Polis i.MX 8M Mini/Nano		Department : F&E Author: T. Metz	
10.08.2026	PCB-No.: 1532.5	Revision : 003	Sheet 1 of 21

Overview

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I.MX 8M Mini		I.MX 8M Nano
ON: Alternate-BOOT OFF: Default-BOOT	S1-1	ON: BOOT_MODE[2] = 1 OFF: BOOT_MODE[2] = 0
ON: QSPI-BOOT OFF: SD-BOOT	S1-2	ON: BOOT_MODE[1] = 1 OFF: BOOT_MODE[1] = 0
ON: Serial Downloader OFF: Internal Boot	S1-3	ON: BOOT_MODE[0] = 1 OFF: BOOT_MODE[0] = 0
ON: UART1 RS485 OFF: UART1 RS232	S1-4	ON: UART1 RS485 OFF: UART1 RS232
Not Used	S1-5	ON: USB OTG Port OFF: USB HUB
ON: UART4 to X8 OFF: UART4 to FTDI	S1-6	ON: Baseboard Bootmode OFF: SOM Bootmode
RESET	S2	RESET
ON/OFF	S3	ON/OFF

Z1

PHYTEC

PHYTEC-Logo

DMC1

DMC

DMC2

DMC

Laser-DMC

Laser-DMC

Z2

Z4

Fiducial-Round

Fiducial-Square

Z3

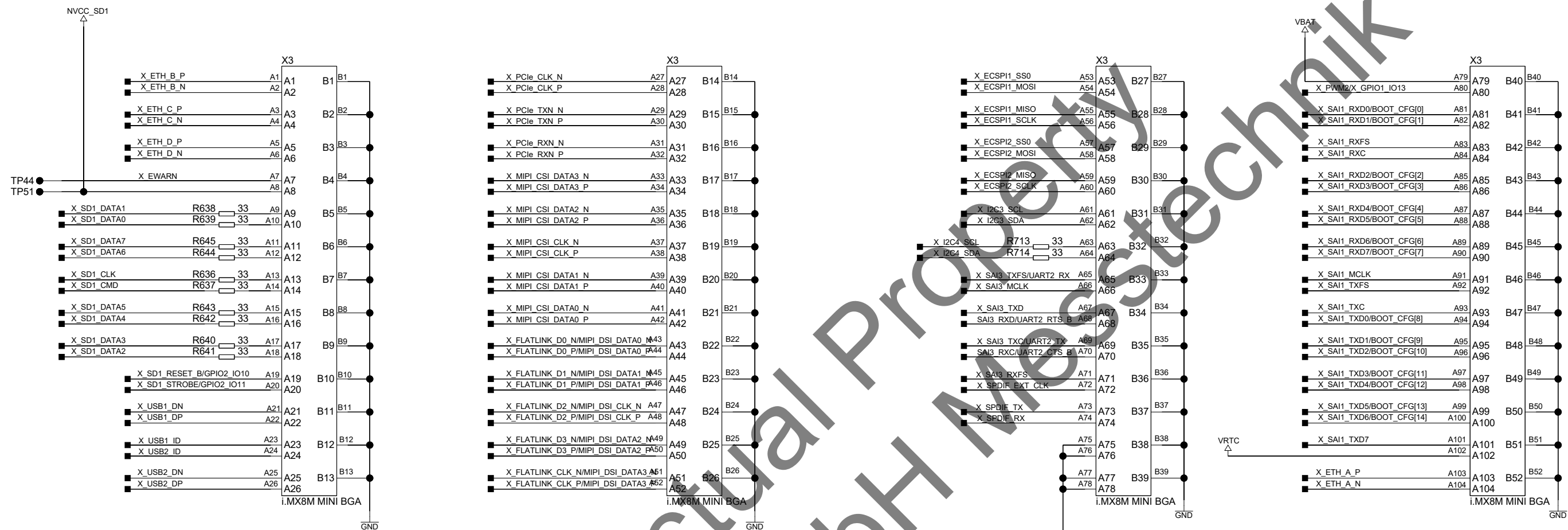
Z5

Fiducial-Round

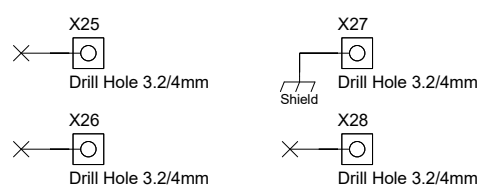
Fiducial-Square

SOM Connector Page 1

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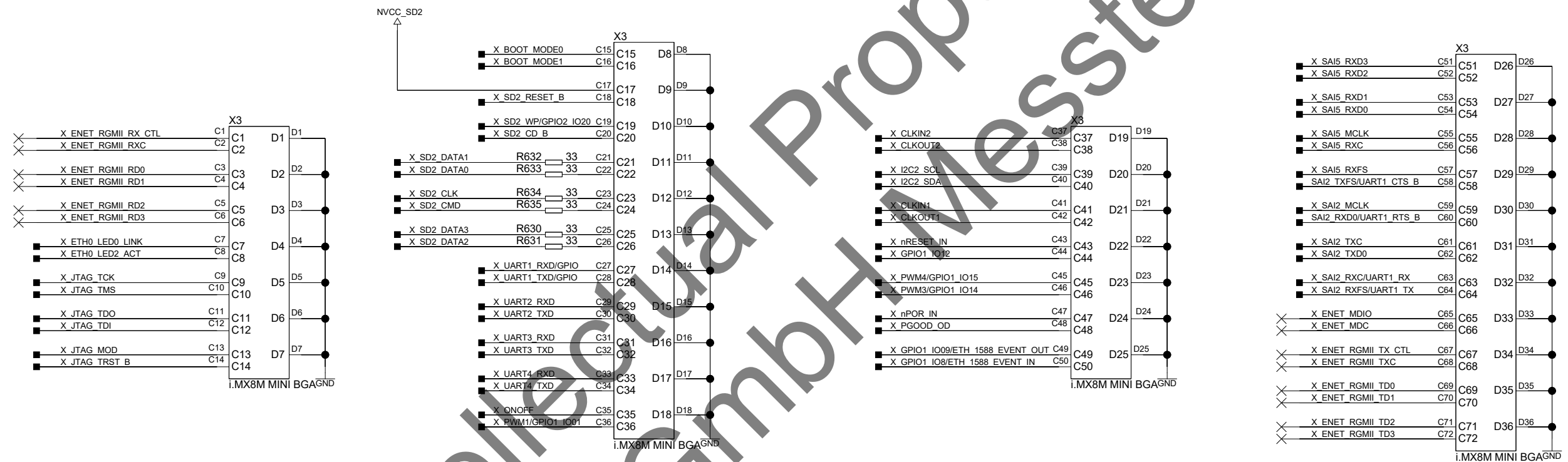
Baseboard Mounting Holes



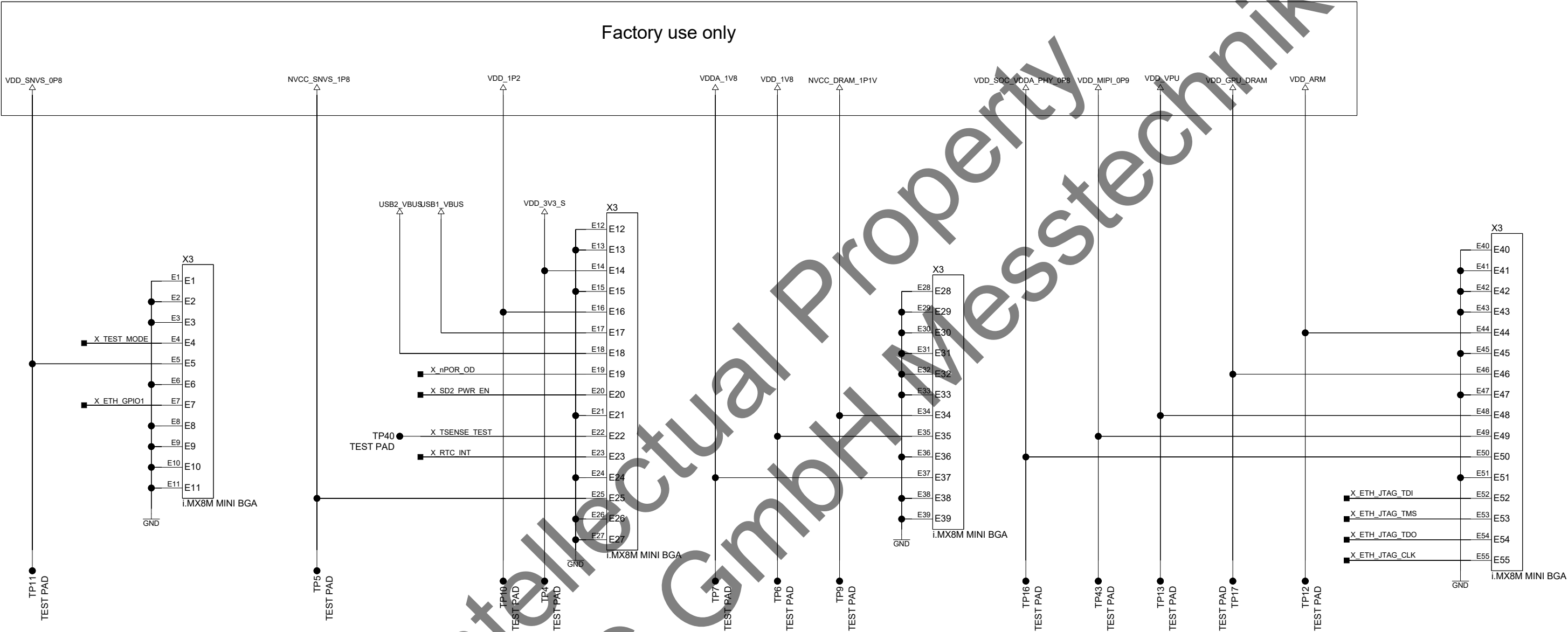
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SOM Connector Page 2

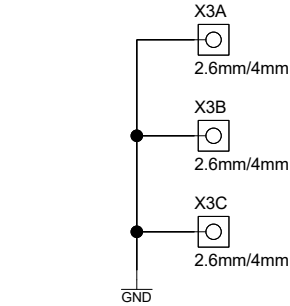
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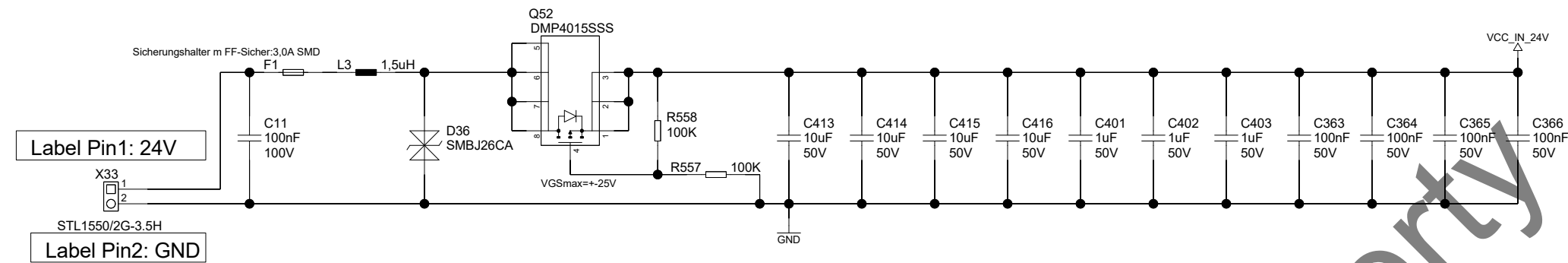
Heatspreader Mounting



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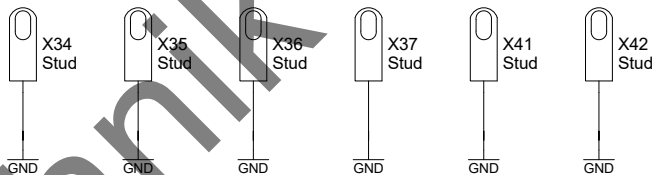
Power1

reverse polarity
protection

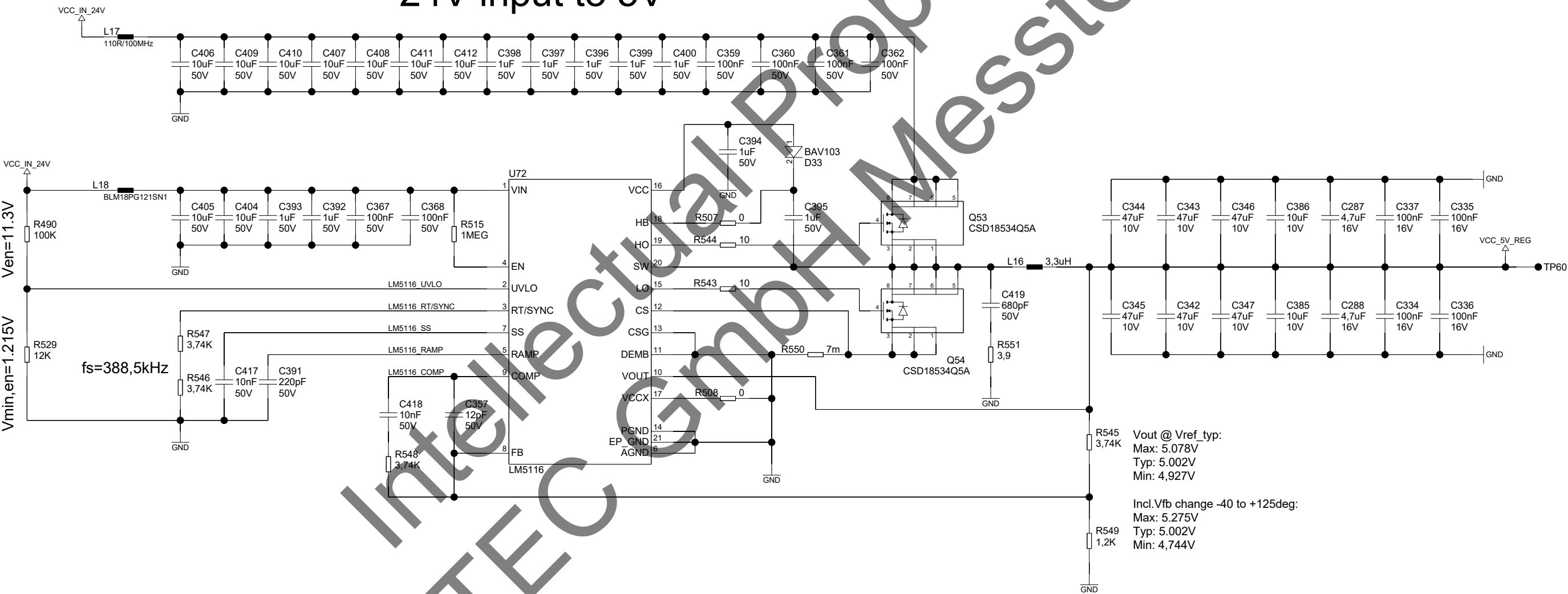


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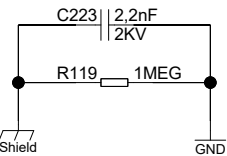
GND for Measurement



24V input to 5V



Shield



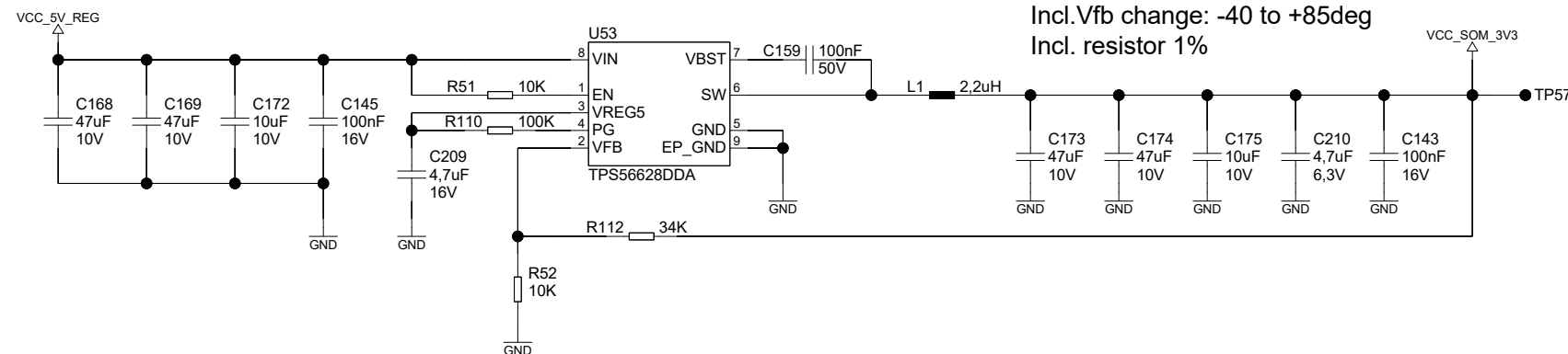
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Power2

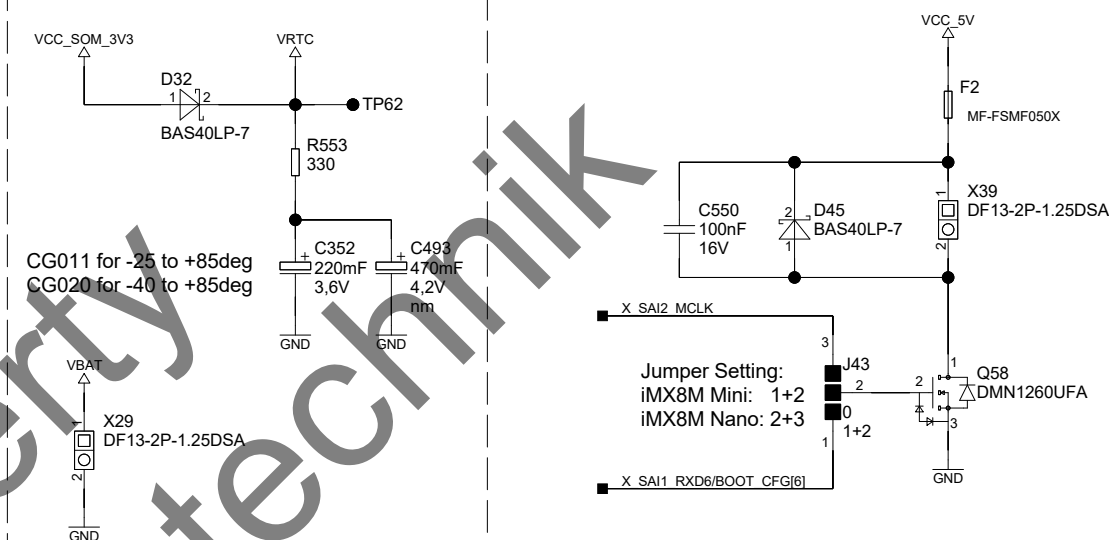
3.3V / 6A

Vmin: 3,254V
Vtyp: 3,366V
Vmax:3,481V
Incl.Vfb change: -40 to +85deg
Incl. resistor 1%

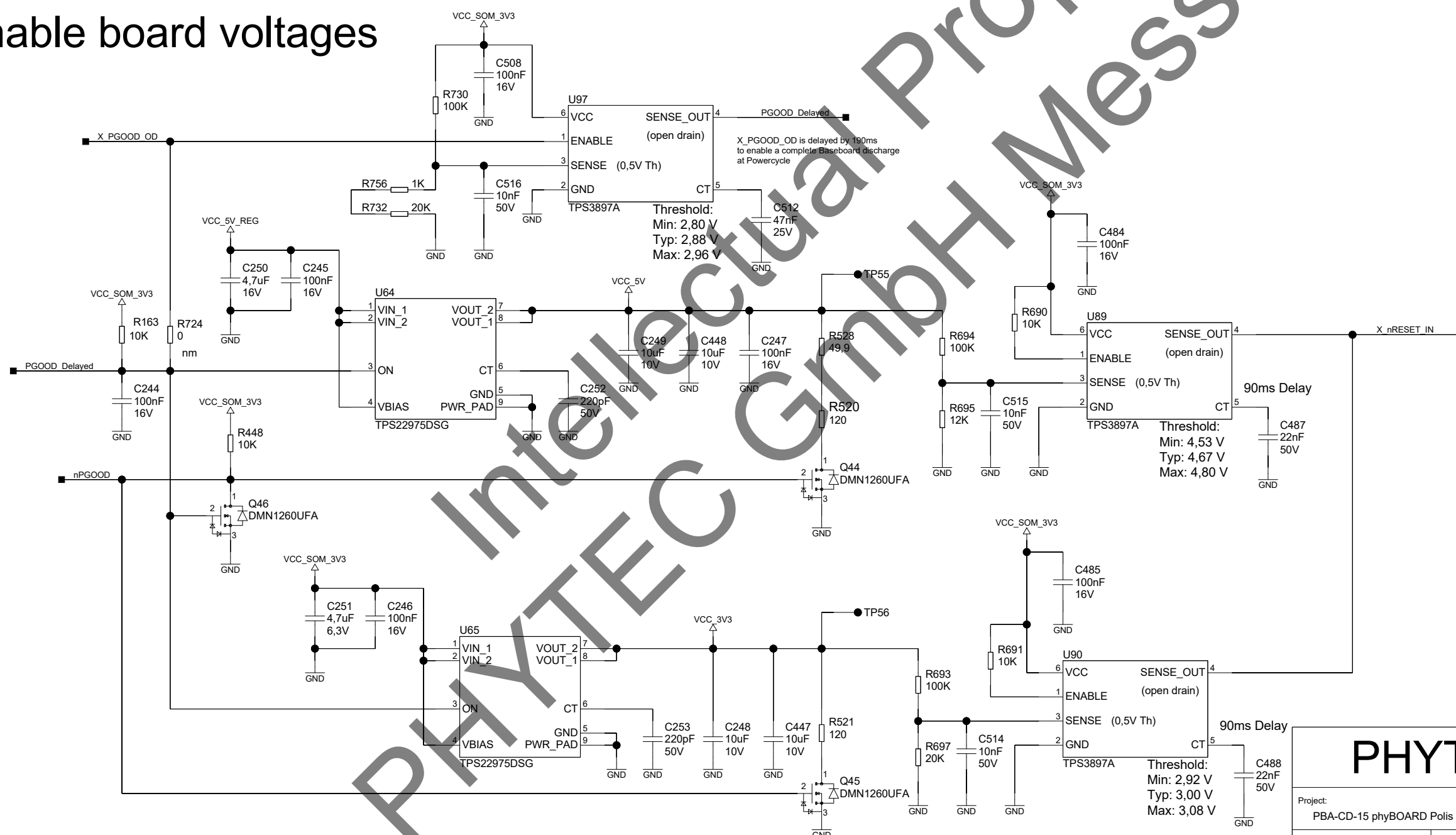


Gold CAP

Fan



Enable board voltages

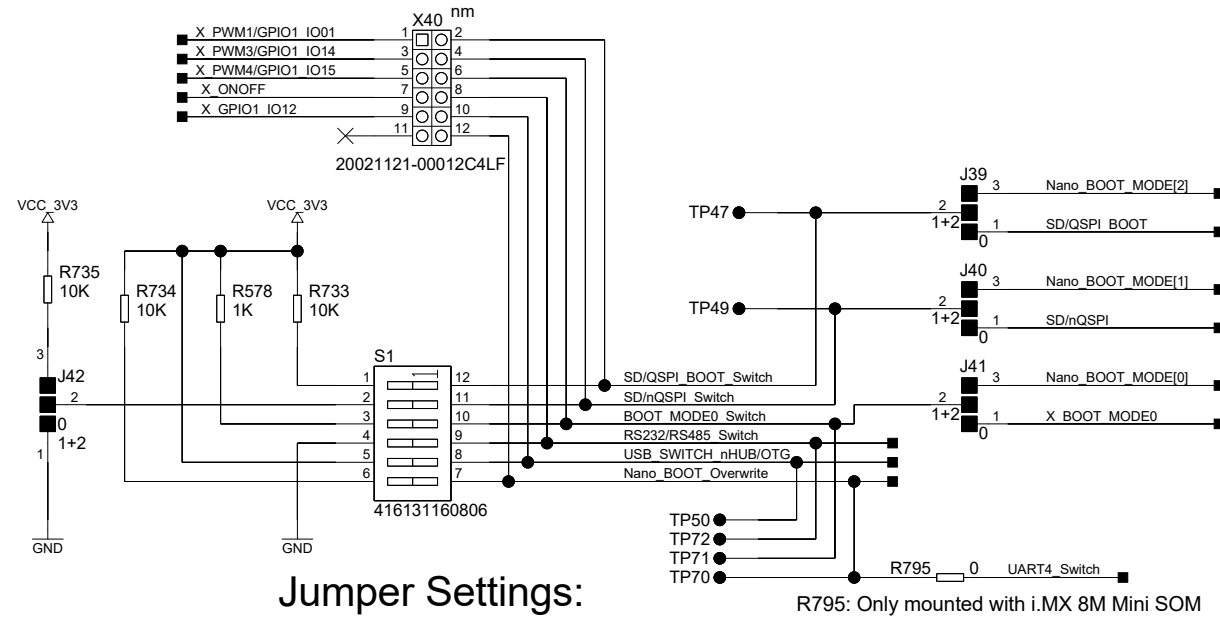


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Dip-Switch

X40 not mounted
Pads for factory use only

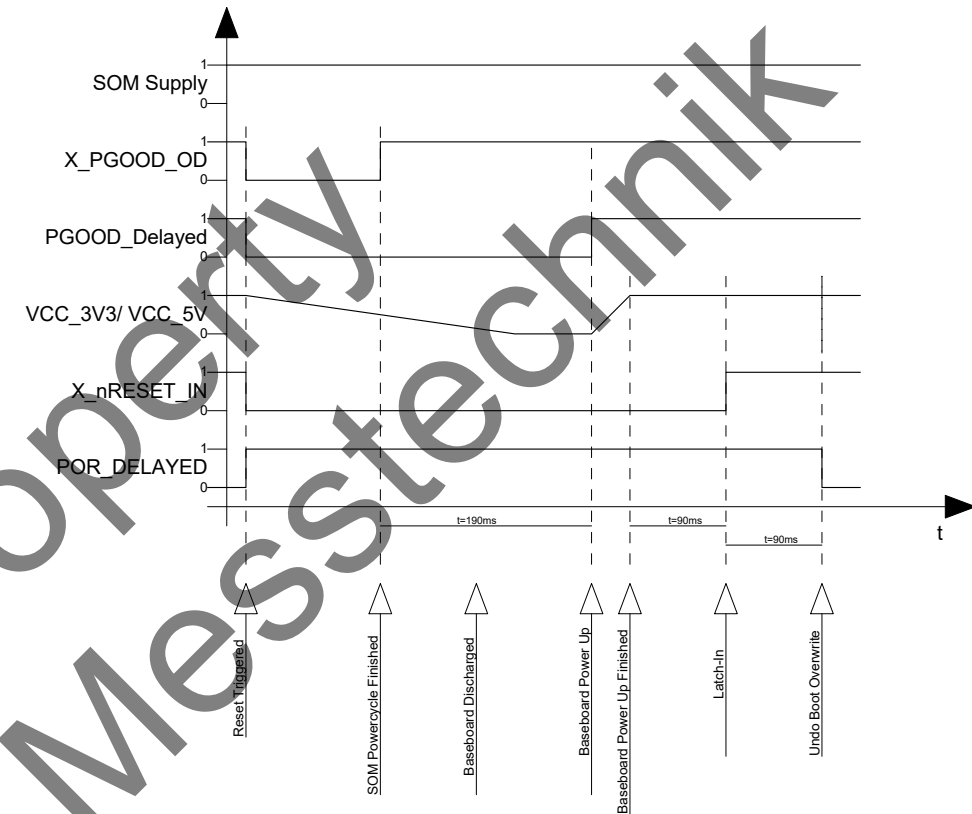


Jumper Settings:
iMX8M Mini: 1+2
iMX8M Nano: 2+3

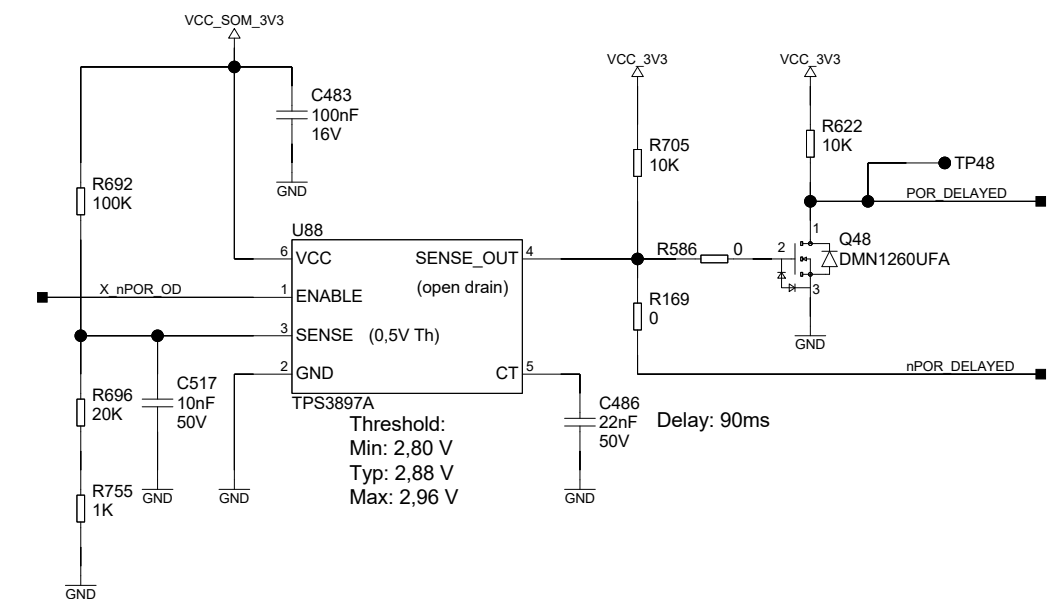
I.MX 8M Mini		I.MX 8M Nano
ON: Alternate-BOOT OFF: Default-BOOT	S1-1	ON: BOOT_MODE[2] = 1 OFF: BOOT_MODE[2] = 0
ON: QSPI-BOOT OFF: SD-BOOT	S1-2	ON: BOOT_MODE[1] = 1 OFF: BOOT_MODE[1] = 0
ON: Serial Downloader OFF: Internal Boot	S1-3	ON: BOOT_MODE[0] = 1 OFF: BOOT_MODE[0] = 0
ON: UART1 RS485 OFF: UART1 RS232	S1-4	ON: UART1 RS485 OFF: UART1 RS232
Not Used	S1-5	ON: USB OTG Port OFF: USB HUB
ON: UART4 connected to Expansion Connector OFF: UART4 connected to FTDI	S1-6	ON: Baseboard Bootmode OFF: SOM Default Bootmode

Sequencing Details

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POR Delay [90ms]



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Bootmode Configuration for i.MX 8M Mini

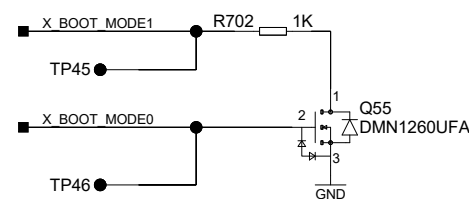
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BOOT_CFG	[14]	[13]	[12]	[11]	[10]	[9]	[8]	[7]	[6]	[5]	[4]	[3]	[2]	[1]	[0]
Default/ eMMC	0	1	0	1	0	1	0	0	1	0	1	0	1	1	0
Overwrite/ SD-Card	0	0	1	0	1	0	x	0	x	x	1	0	0	0	x
Overwrite/ QSPI	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Jumper QSPI				J8			J7					J6	J5	J4	J3

These Parts are only mounted with a i.MX 8M Mini SOM

Boot-Type

S1-4:
OFF: Serial Downloader
ON: Internal Boot

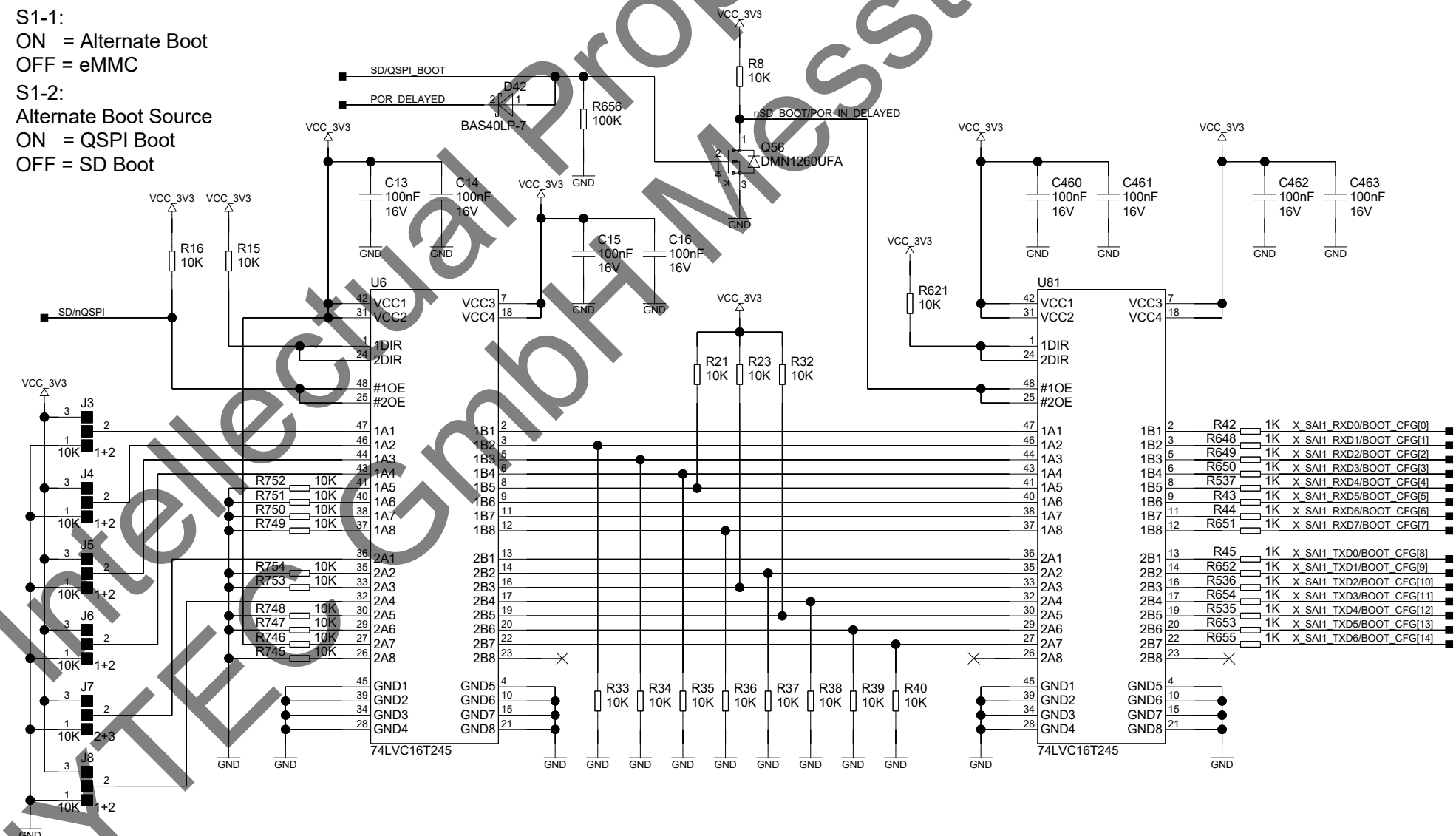


BOOT_MODE[1:0]	BOOT TYPE
00	Boot from fuses
01	Serial Downloader
10	Internal Boot (GPIO overwrite)
11	Reserved

SOM Default: Internal Boot [10]

Boot-Source

S1-1:
ON = Alternate Boot
OFF = eMMC
S1-2:
Alternate Boot Source
ON = QSPI Boot
OFF = SD Boot



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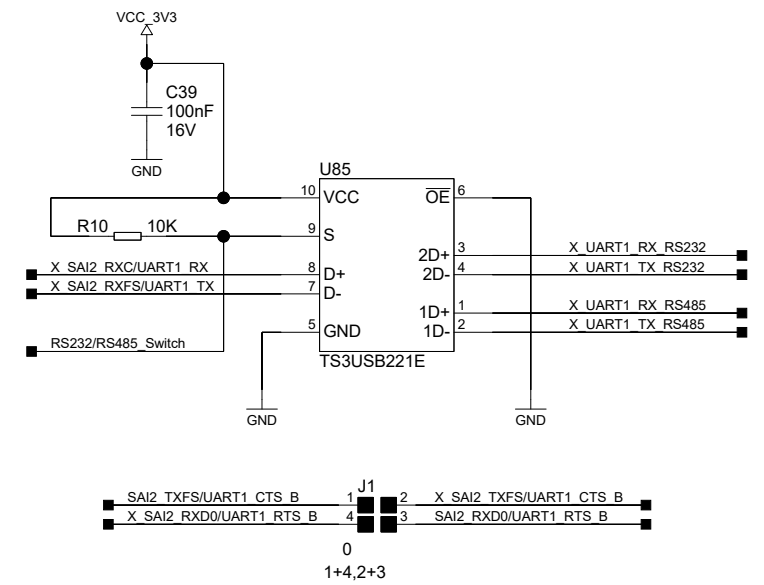
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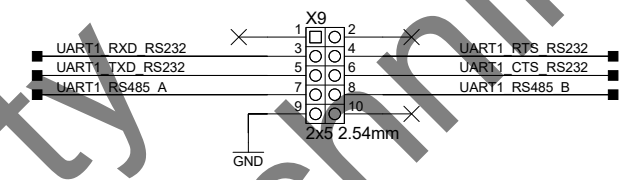
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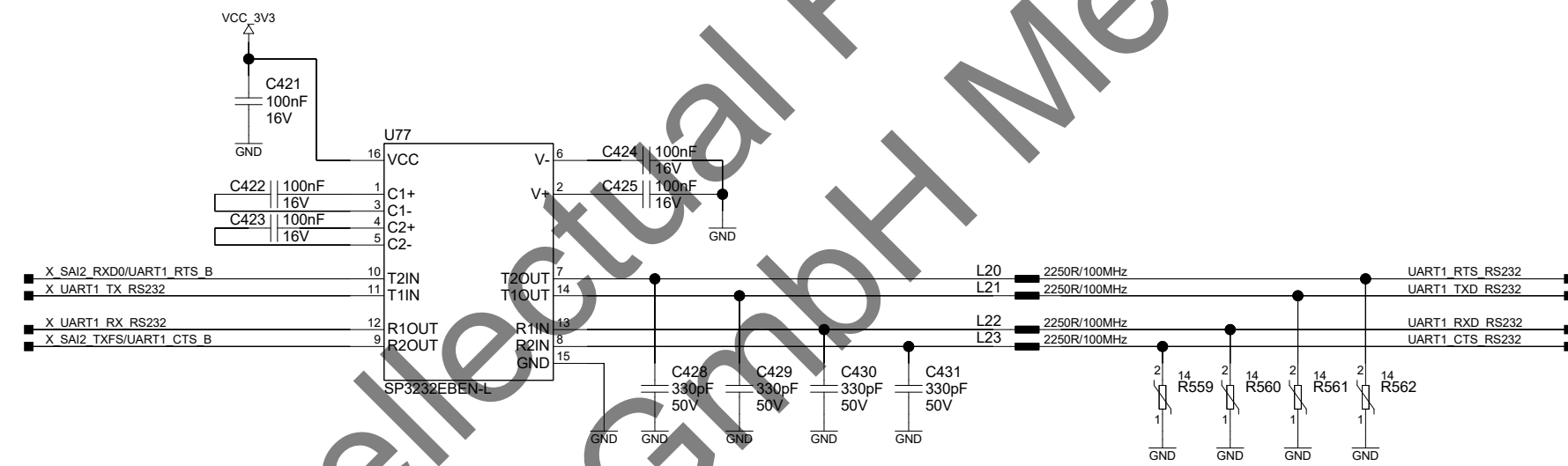
UART1 Multiplexer, RTS/CTS-Jumper



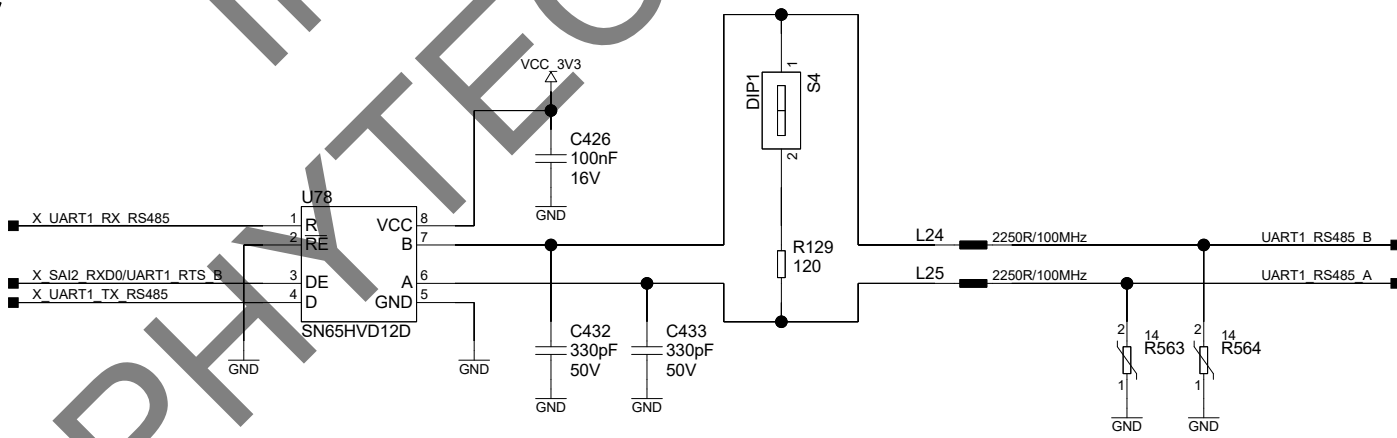
RS232/ RS485 Connector



RS232 Transceiver



RS485 Transceiver

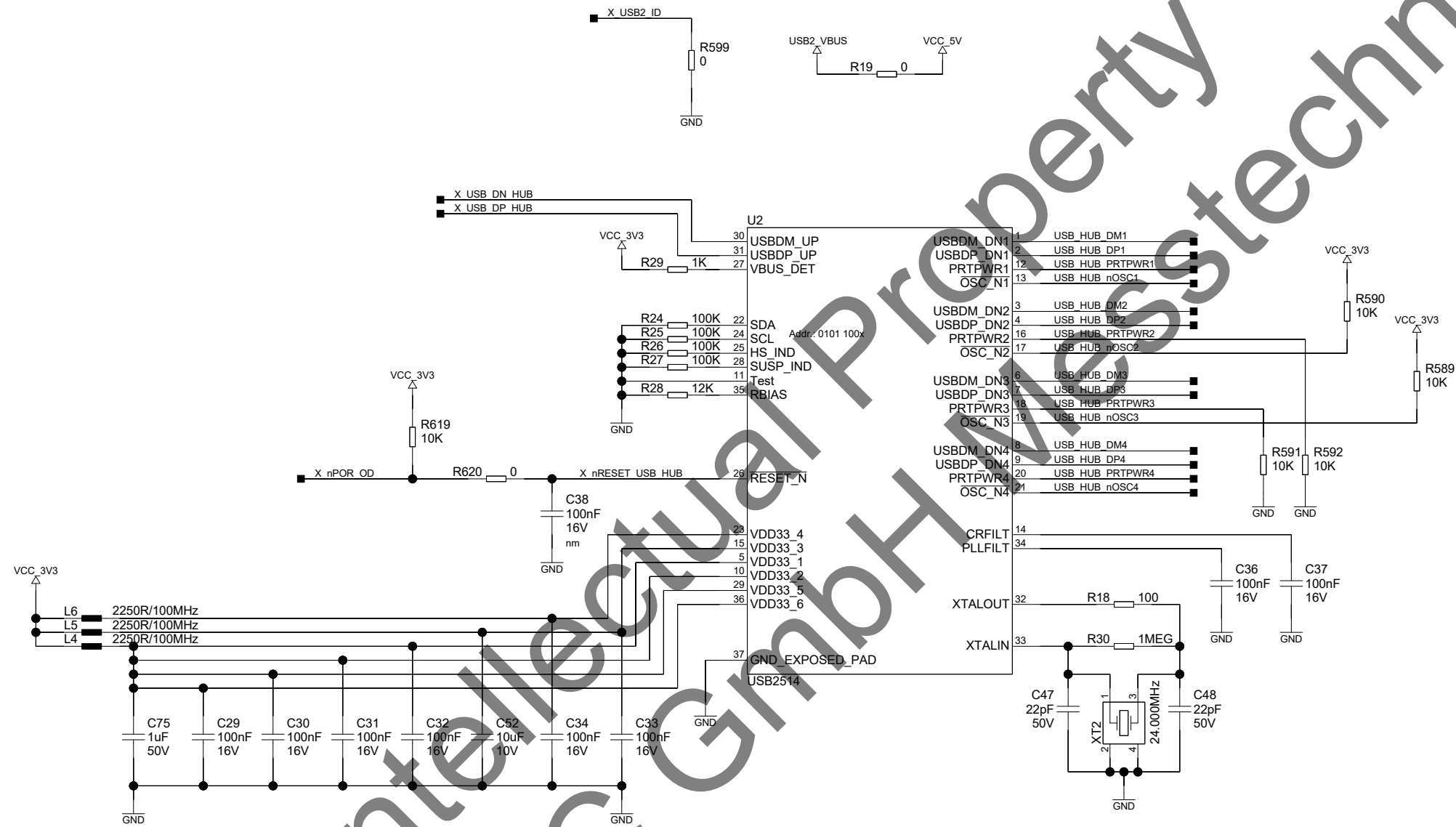


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USB-HUB

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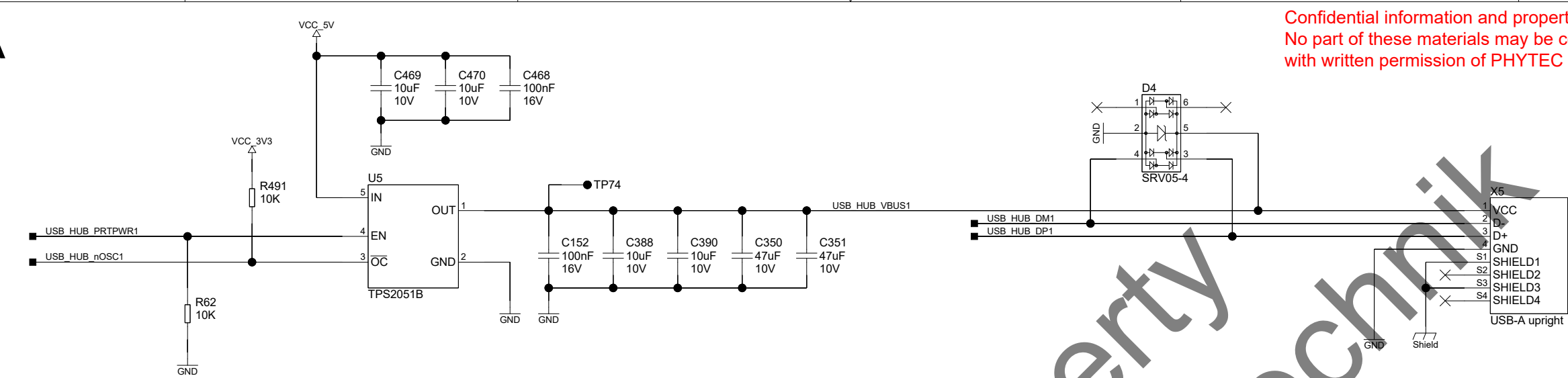
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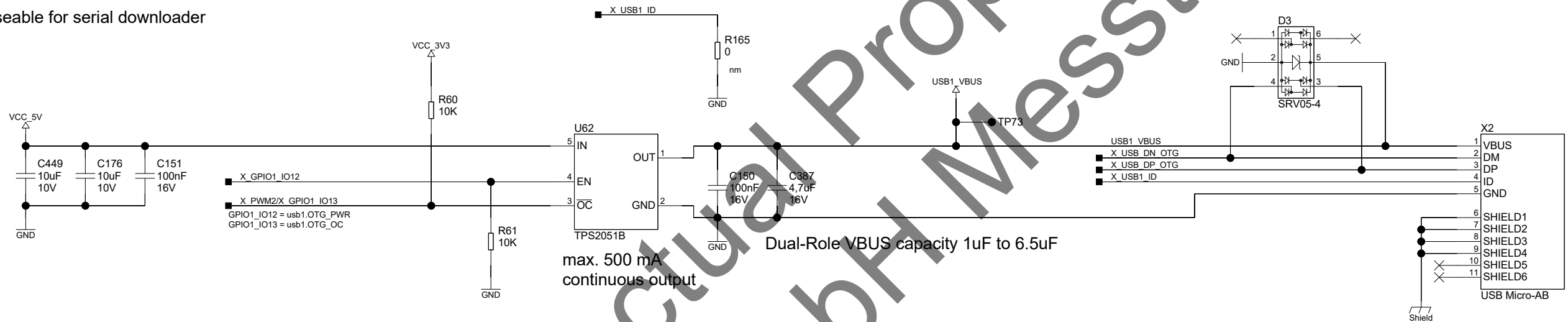
USB-A



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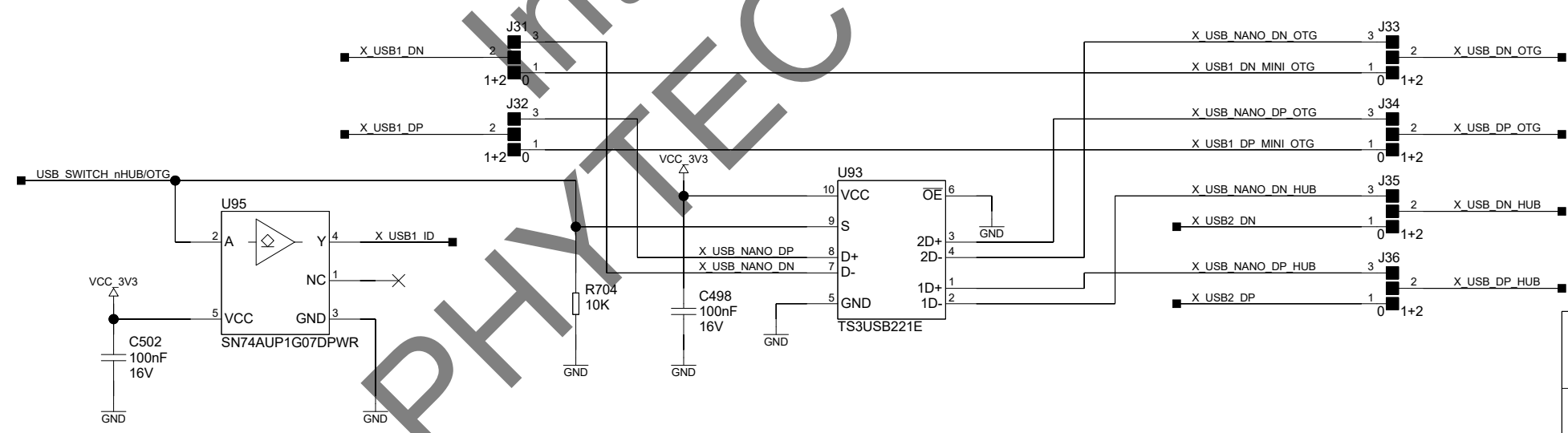
USB OTG

USB OTG1 useable for serial downloader

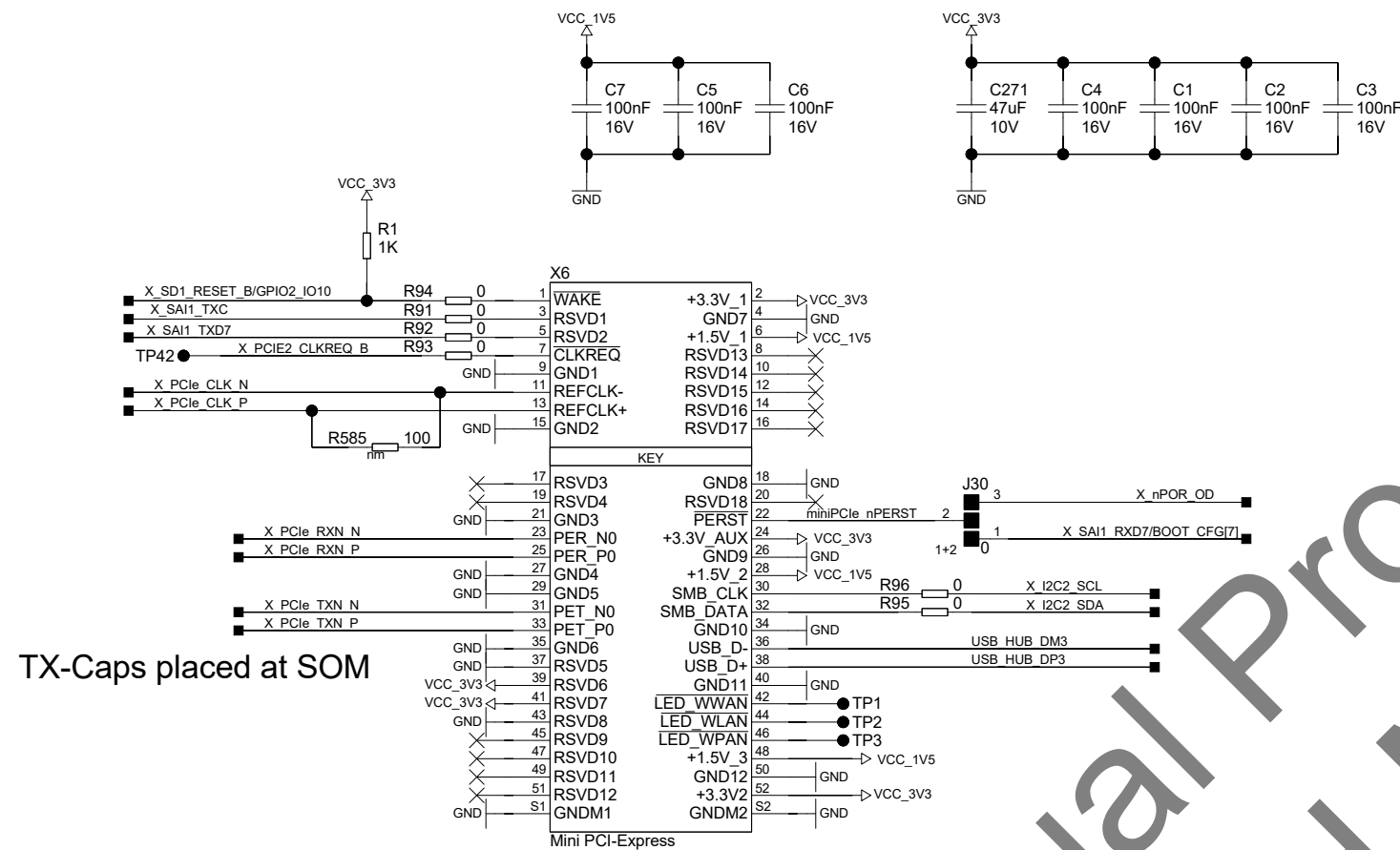


USB Switch (i.MX 8M Nano only)

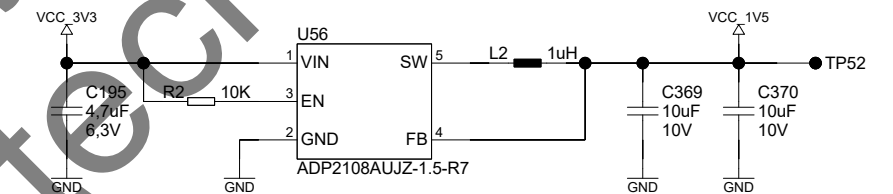
Modul	J31	J32	J33	J34	J35	J36	U93
iMX8M Mini	1+2	1+2	1+2	1+2	1+2	1+2	nm
iMX8M NANO	2+3	2+3	2+3	2+3	2+3	2+3	mount



miniPCle Connector

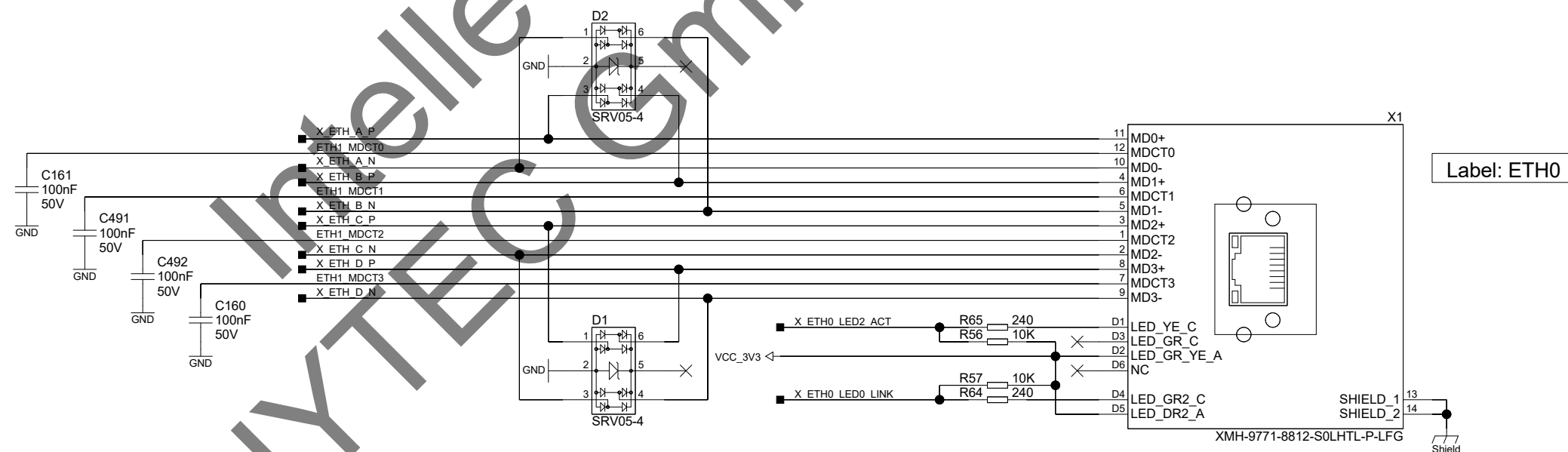


miniPCle/Exp. 1V5 Supply



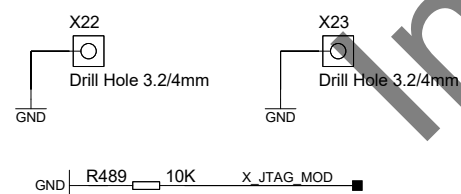
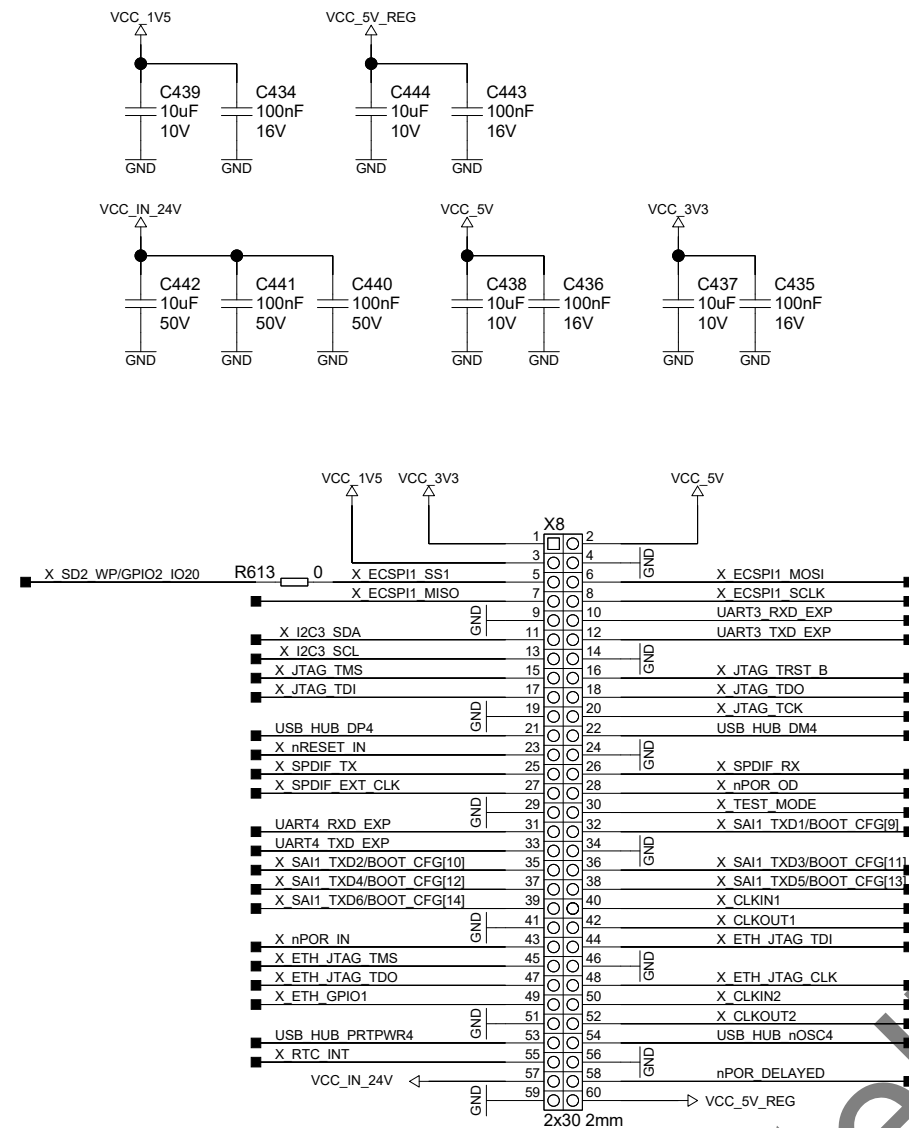
Power needed:
MAX = 375 mA
MAX PEAK = 500 mA

ENET Gbit-Connector



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Expansion Connector

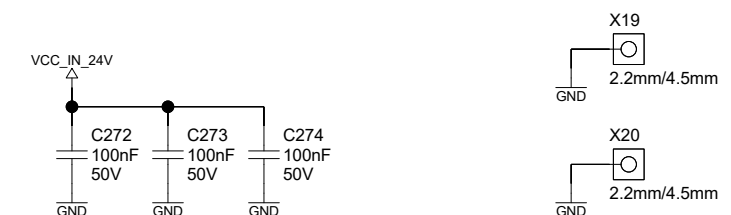
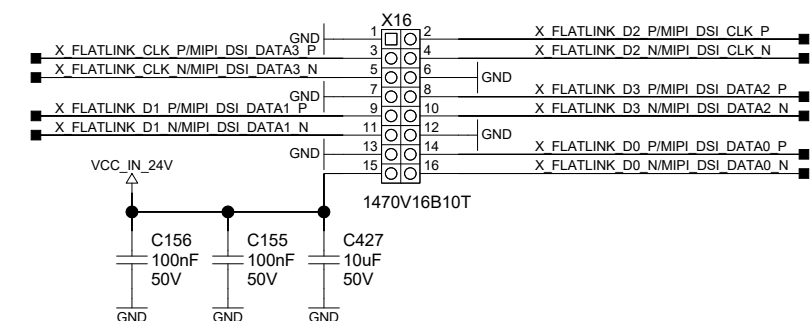
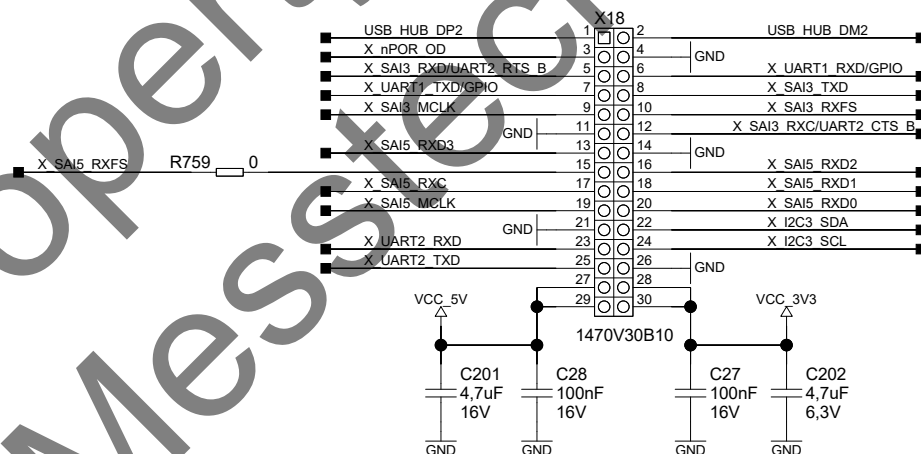


Compatibility with PEB-EVAL-01:

- X8 Pin 37 (S1) Only Mini
- X8 Pin 38 (S2) Only Mini
- X8 Pin 33 (S3) Mini and Nano
- X8 Pin 35 (Red LED) Only Mini
- X8 Pin 36 (Yellow LED) Only Mini
- X8 Pin 31 (Green LED) Mini and Nano

Audio/Video-Connector

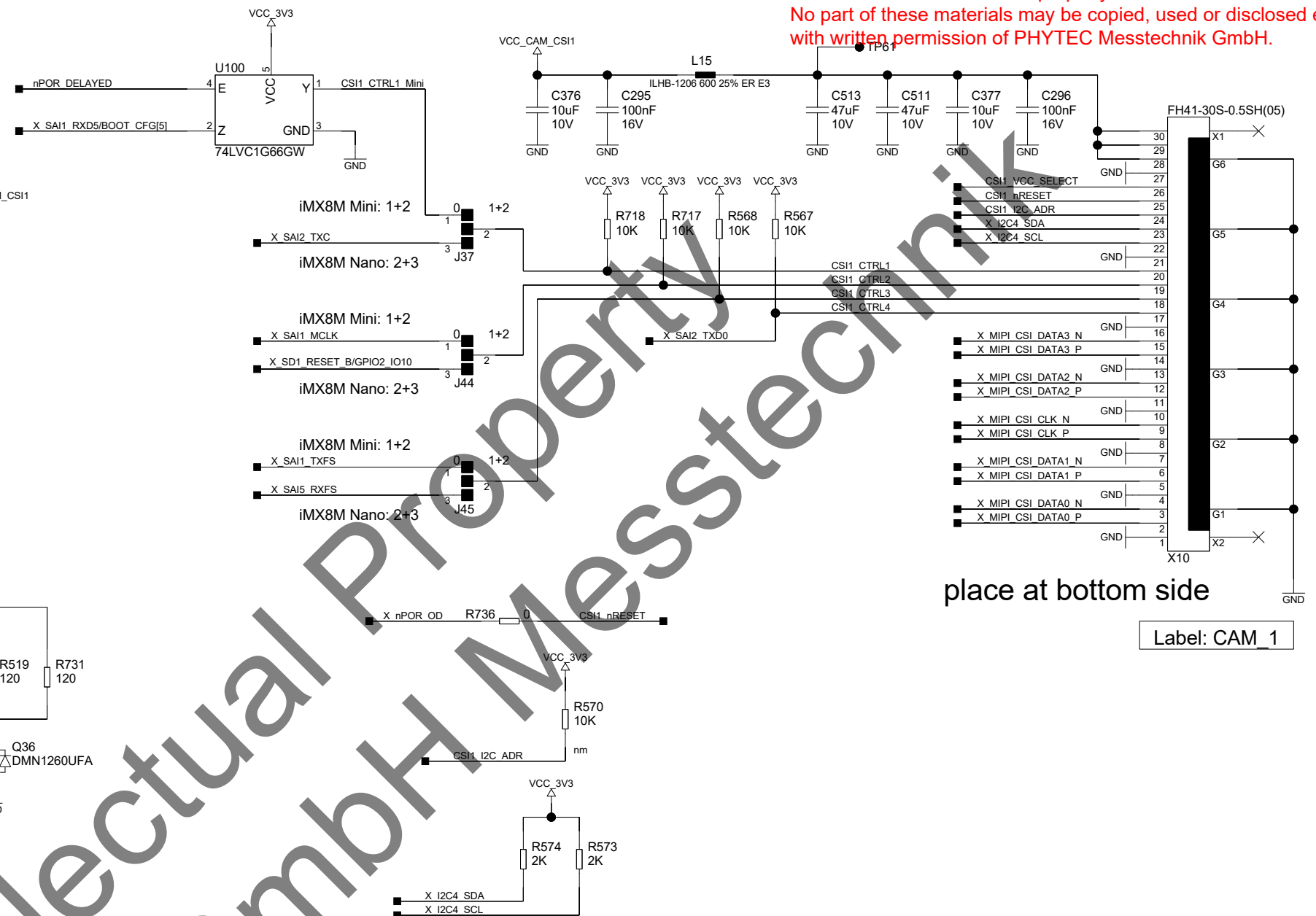
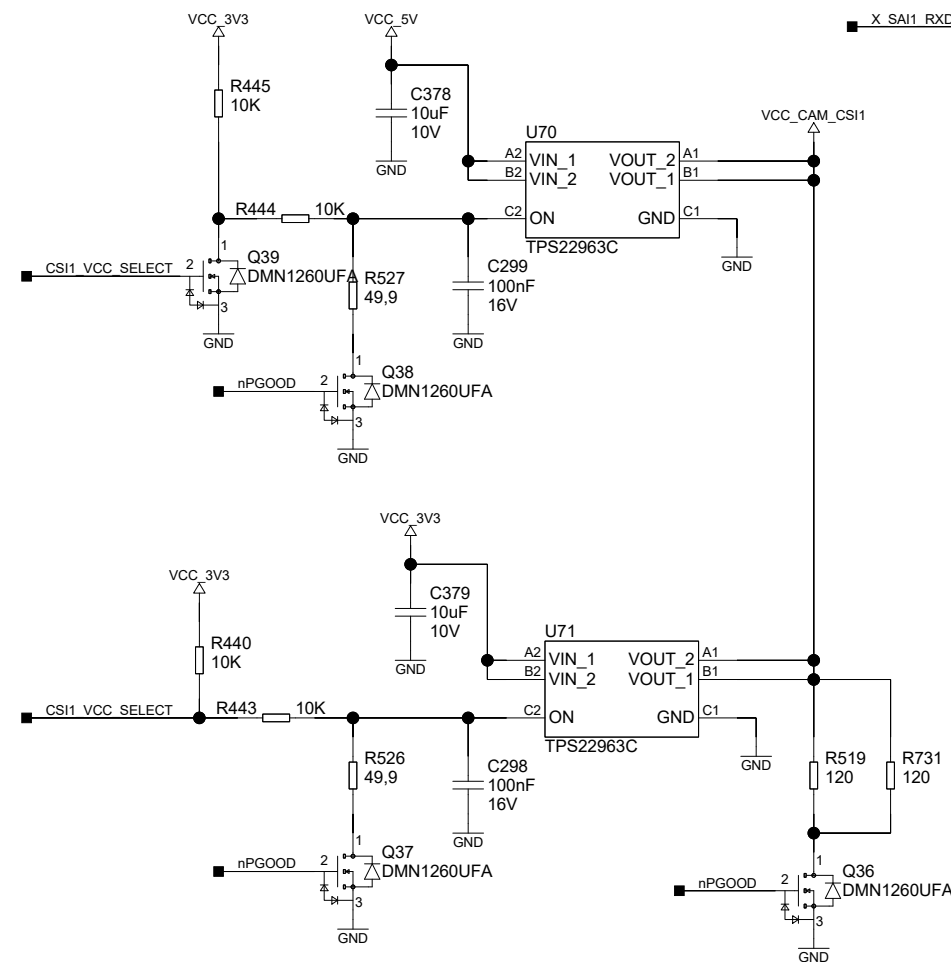
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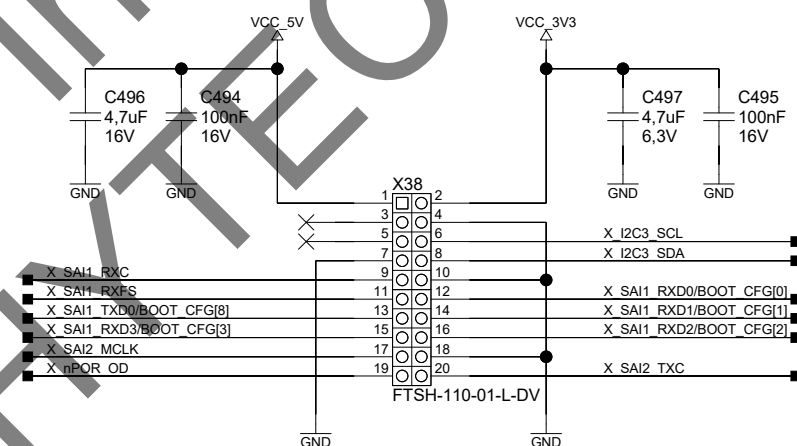
place capacitors along the trace

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CSI1/CAM1
phyCAM-M



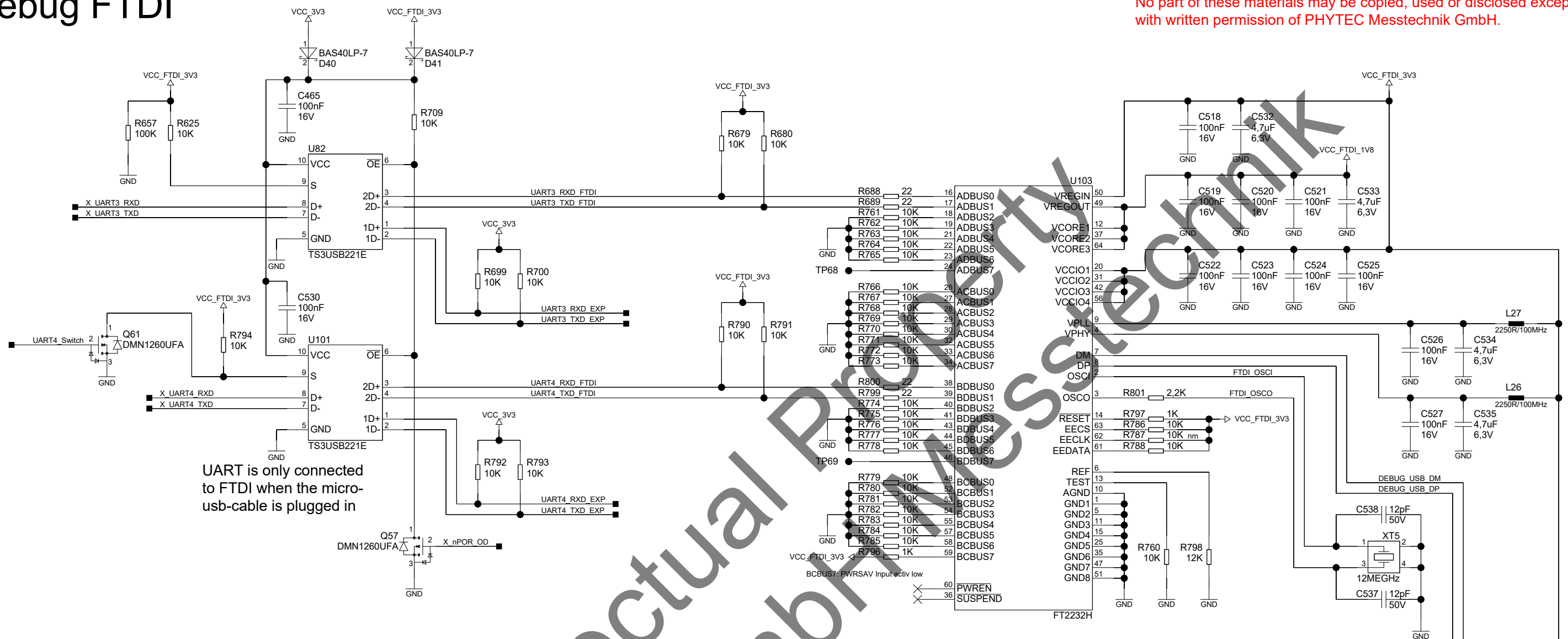
VOICE ARRAY CONNECTOR



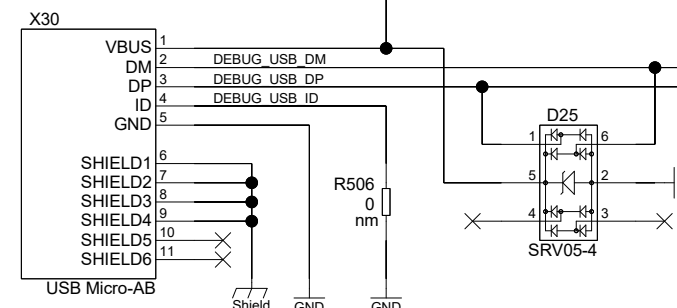
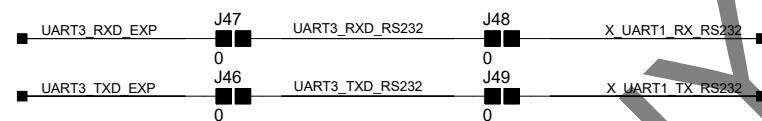
This Connector is only mounted with a i.MX 8M Mini SOM

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Debug FTDI



Factory use only



Mount R802 and R803
in case U102 has adj. output

Label D34:
FTDI Enabled

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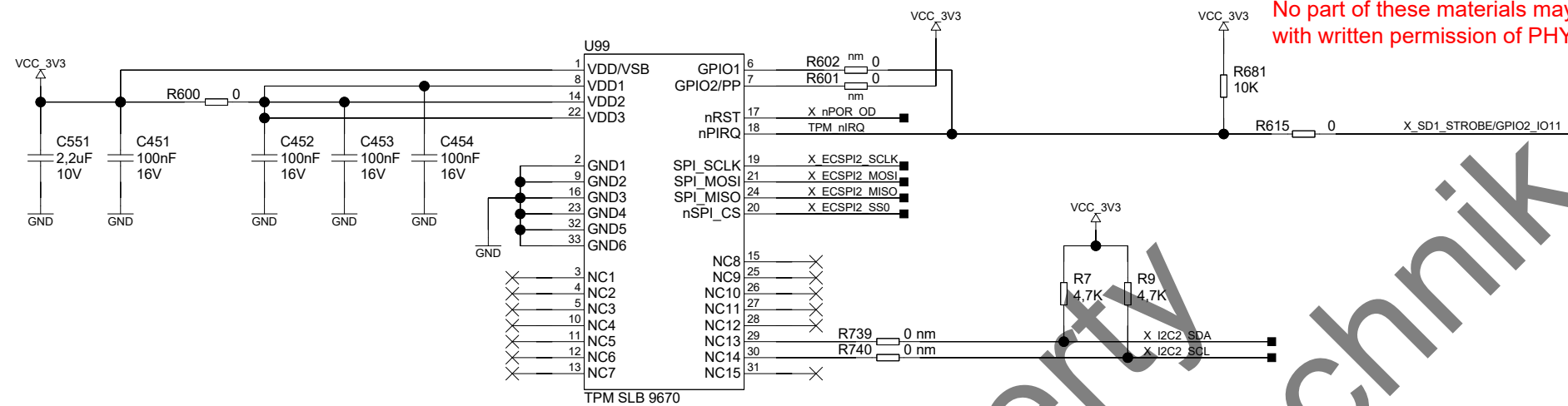
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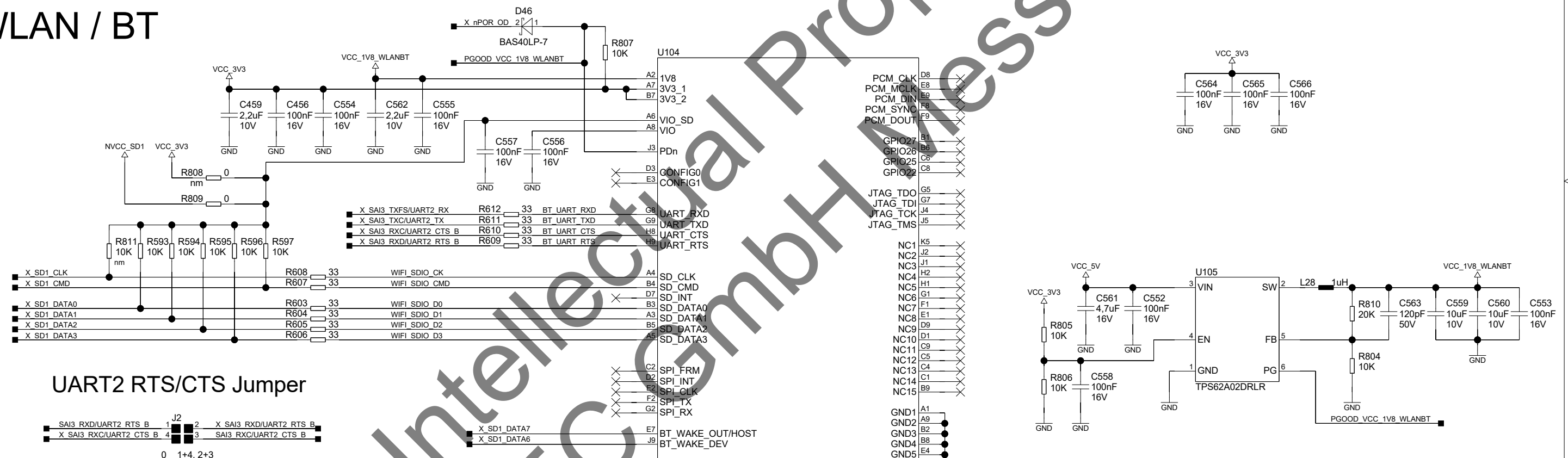
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TPM

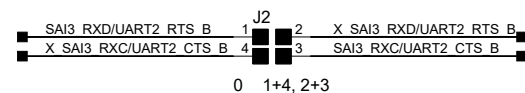


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WLAN / BT

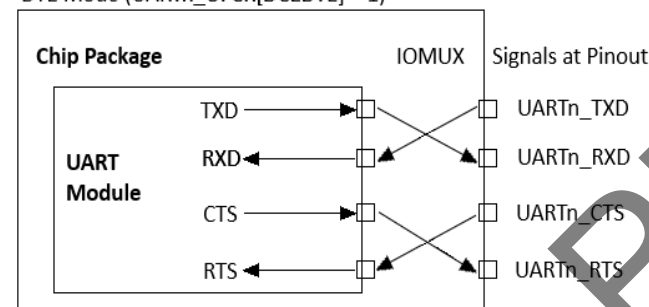


UART2 RTS/CTS Jumper



8MM DTE mode signal assignment

DTE Mode (UARTn_UFCR[DCEDTE] = 1)



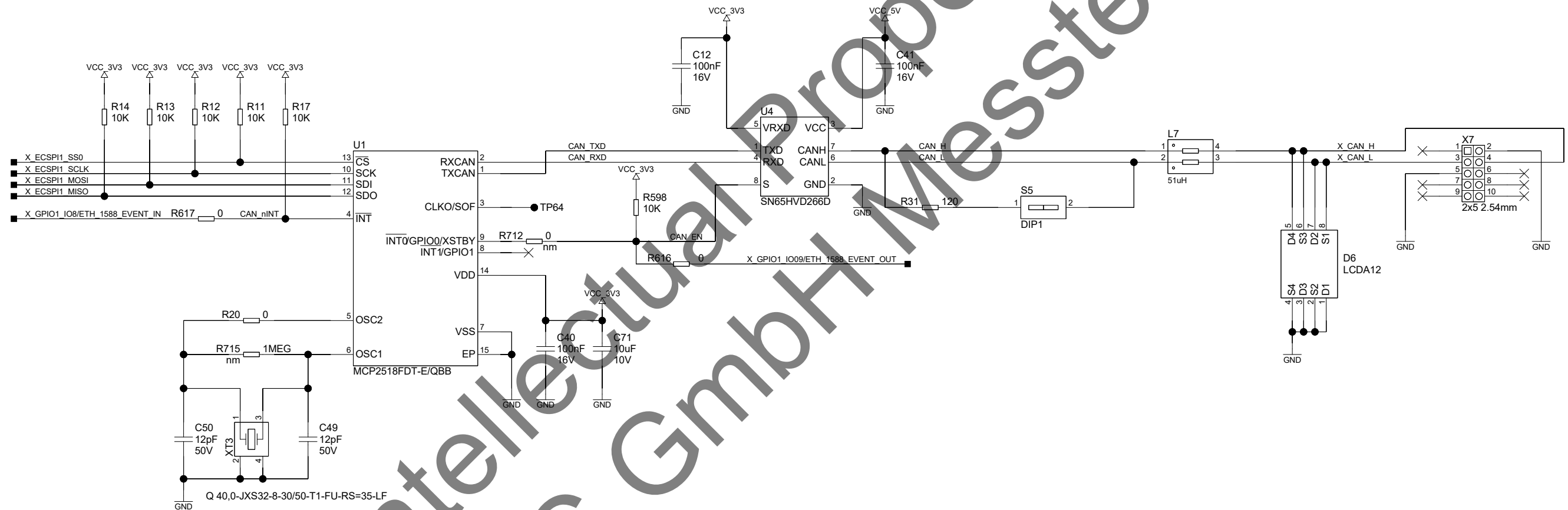
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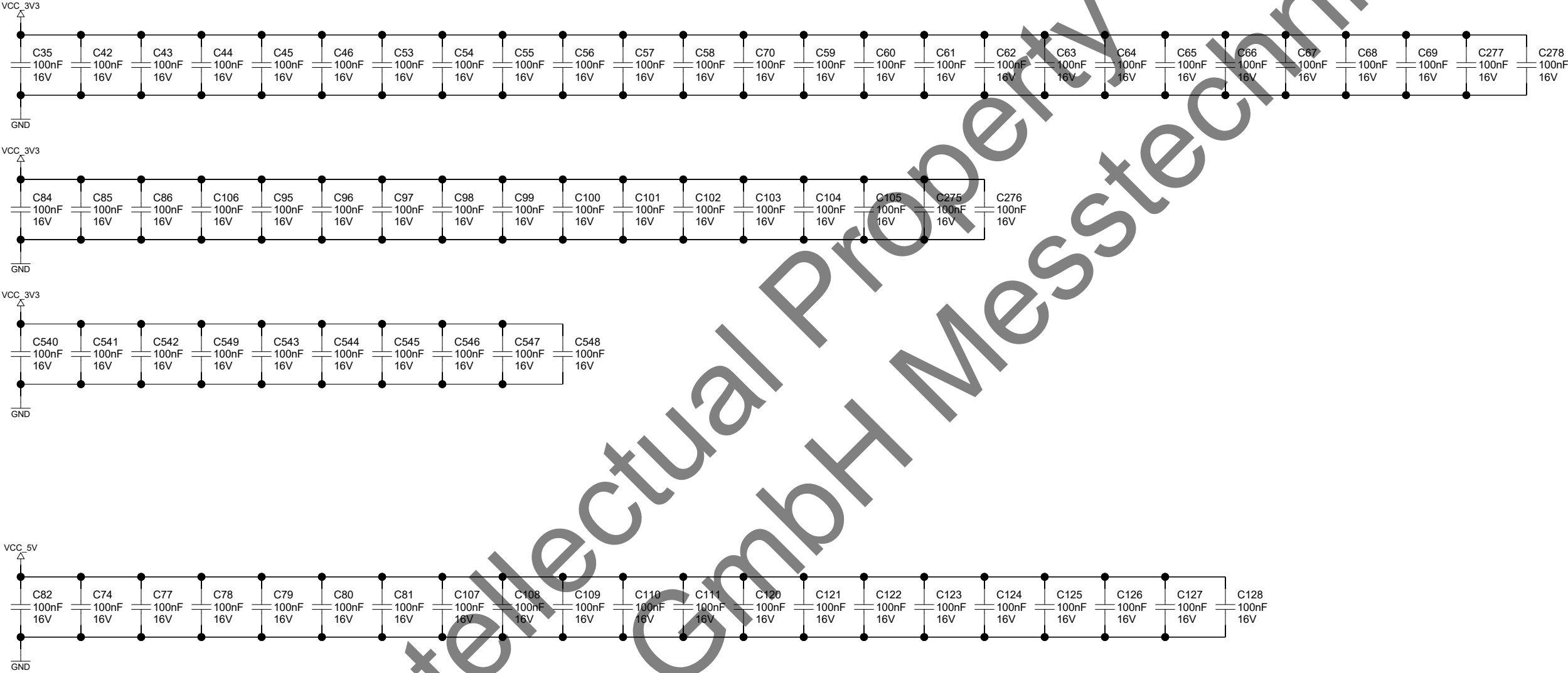
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