
M53EVK Hardware Manual

Release 1

ARIES Embedded GmbH

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CONTENTS

1	About this manual	1
1.1	Imprint	1
1.2	Disclaimer	1
1.3	Copyright	1
1.4	Registered Trademarks	1
1.5	Care and Maintenance	2
1.6	Change Log	2
2	Overview	3
2.1	Feature Set	3
2.2	Block Diagram	4
2.3	Dimensions	5
2.4	Parts Location	6
2.5	Parts Overview	7
3	Resources	9
3.1	Serial Interfaces	9
3.2	Power Supply	12
3.3	Schematics	13

ABOUT THIS MANUAL

1.1 Imprint

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1.2 Disclaimer

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1.5 Care and Maintenance

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.
- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not attempt to open the device.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Do not paint the device. Paint can clog the moving parts and prevent proper operation.
- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

1.6 Change Log

Revision	Date	Revised	Comment
1.0	23.11.2012	aw	Initial creation
1.1	11.07.2016	aw	Transition to pdf documentation Inserted 'Care and Maintenance'

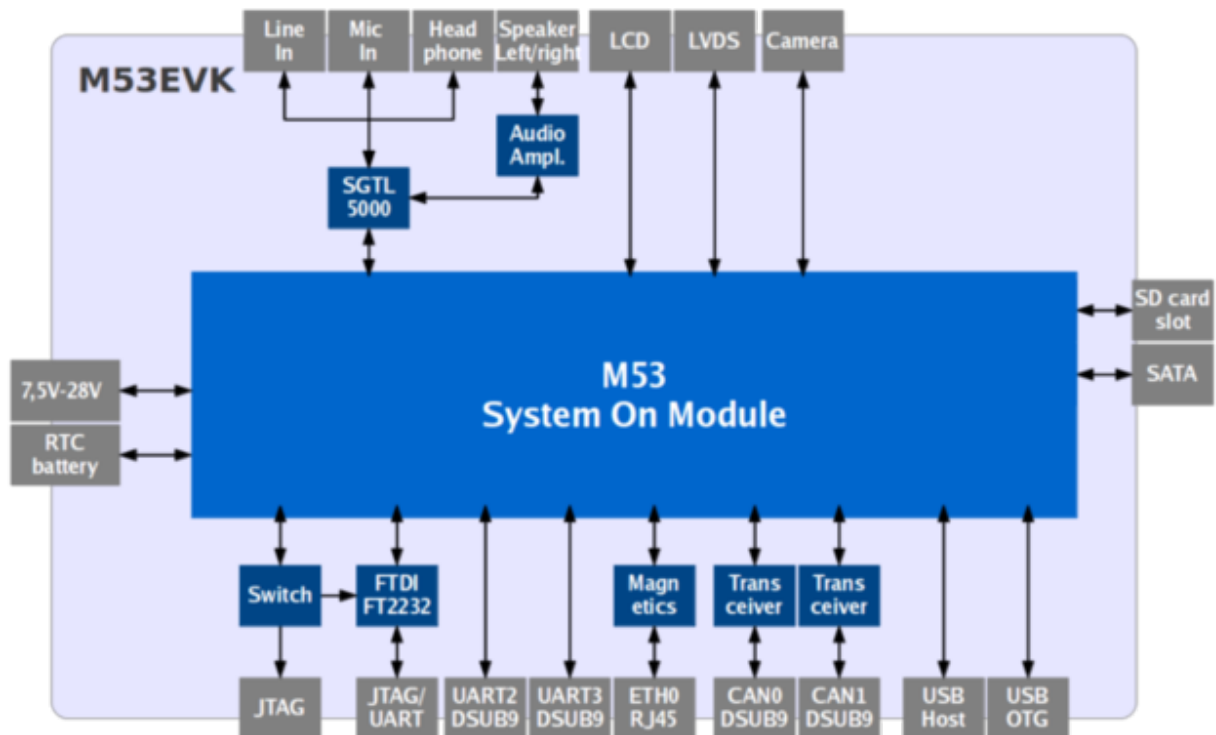
OVERVIEW

2.1 Feature Set

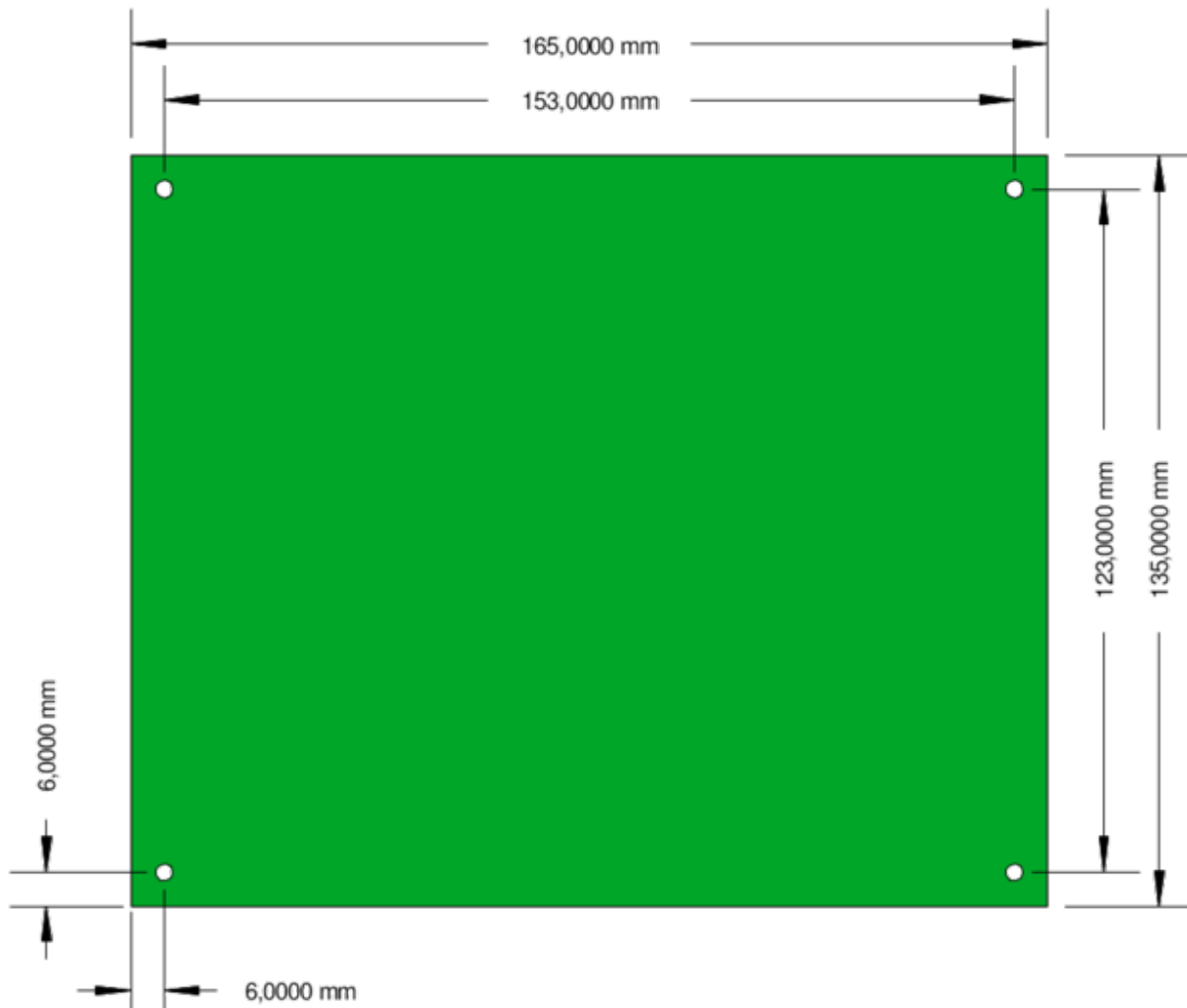
The M53 Evaluation Kit features

- MXM connector for M53 System On Module
- one Ethernet connectors RJ45 for 10/100MBit/s
- USB Host connector USB A, 4 pins
- USB device connector USB AB, 5 pins
- UART2, UART3 on DSUB9 connector, RS232 interface
- UART1 and JTAG via FTDI chip on USB AB connector
- CAN0 / CAN1 interfaces on DSUB9 connector each, optional termination
- Microphone In
- Headphone Out
- Line In
- Speaker Out
- SD card slot
- TFT display pin header / FFC
- LVDS port
- Camera port
- Reset / Power / Recovery button
- JTAG
- Power supply 7,5V - 28V

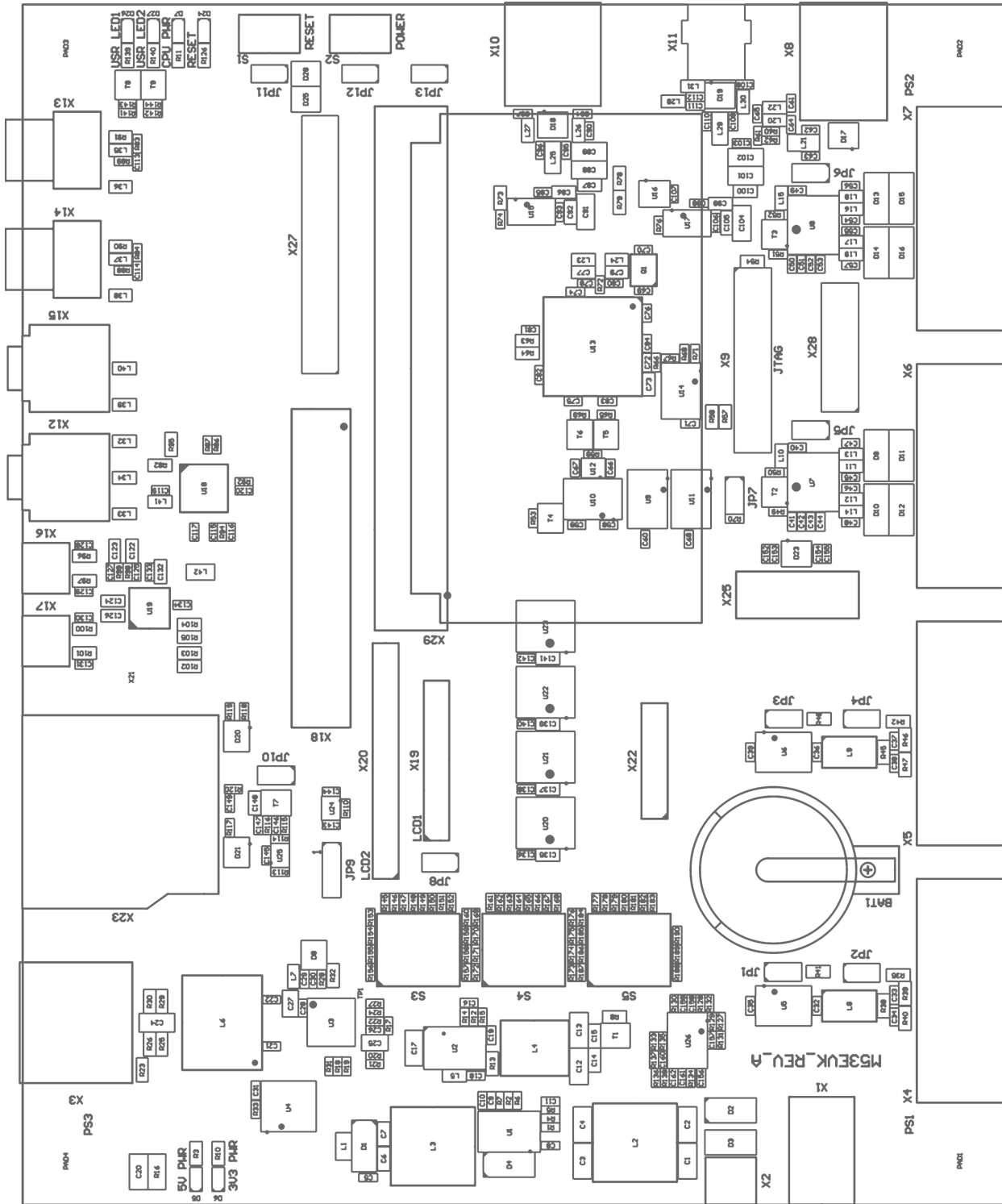
2.2 Block Diagram



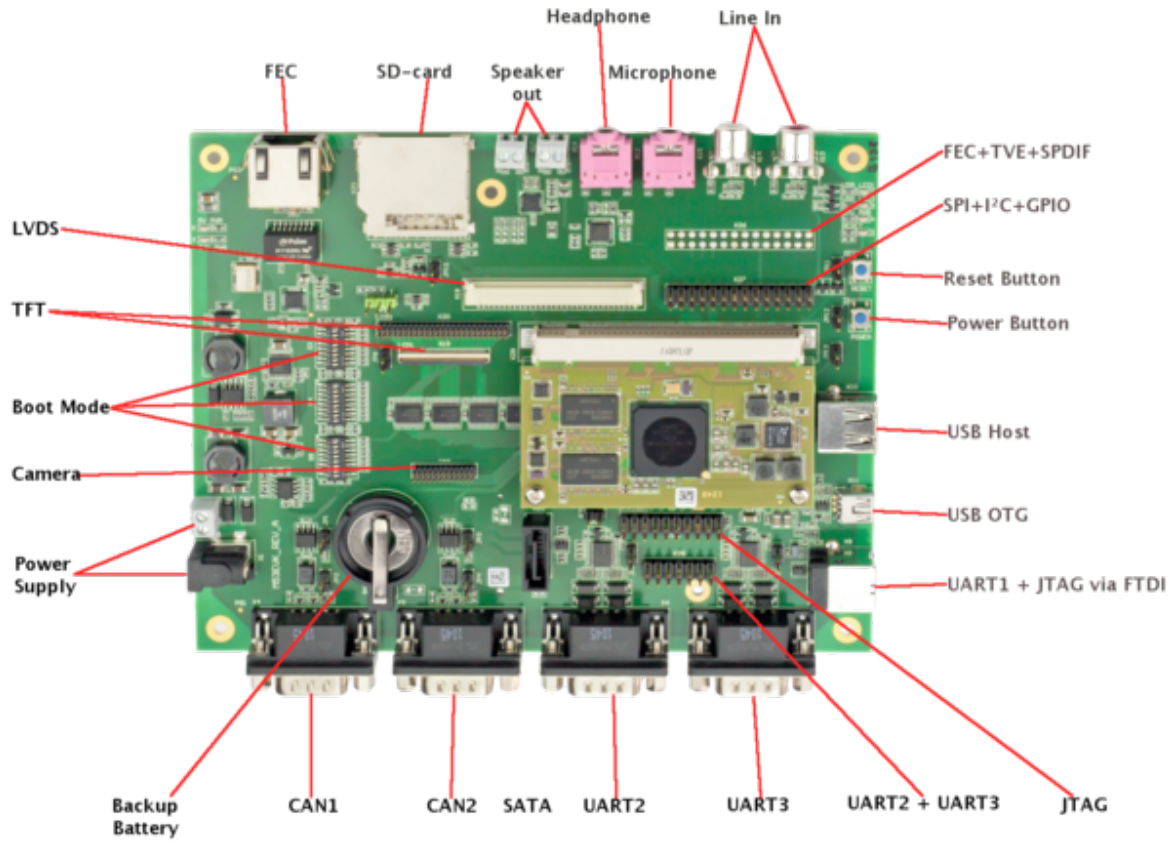
2.3 Dimensions



2.4 Parts Location



2.5 Parts Overview



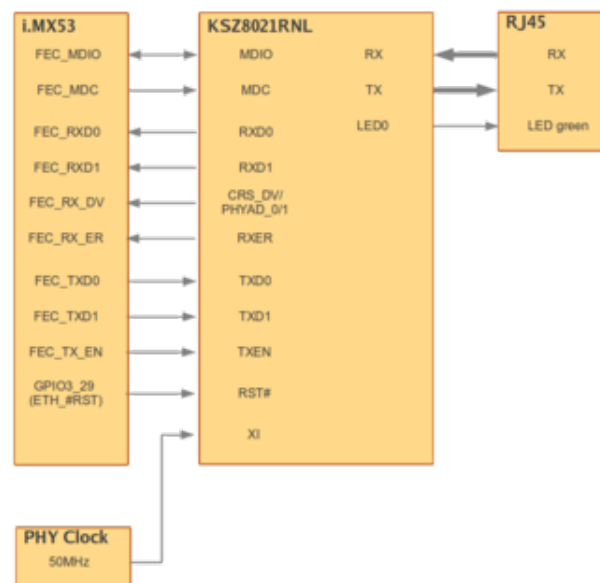
RESOURCES

3.1 Serial Interfaces

3.1.1 Ethernet

M53 supports one Fast Ethernet interface ETH0 which is available on connector X3.

The ETH0 PHY has MDIO address 00000, the interface is implemented as follows:



3.1.2 UART

AUART2 is available as RS232 interface on the DSUB9 connector X6. The connector supplies the following pin out:

Pin	Signal
1	n.c.
2	RxD
3	TxD
4	n.c.
5	GND
6	n.c.
7	RTS
8	CTS
9	n.c.

AUART3 is available as RS232 interface on the DSUB9 connector X7. The connector supplies the following pin out:

Pin	Signal
1	n.c.
2	RxD
3	TxD
4	n.c.
5	GND
6	n.c.
7	RTS
8	CTS
9	n.c.

UART2 and UART3 are also available as TTL signals on connector X28:

Pin	Signal
1	3V3
2	3V3
3	UART2_TXD
4	UART2_RTS
5	UART2_RXD
6	UART2_CTS
7	GND
8	GND
9	UART3_TXD
10	UART3_RTS
11	UART3_RXD
12	UART3_CTS
13	GND
14	GND

UART1 is available via the USB to UART bridge FT2232HL on connector X8.

3.1.3 JTAG

M53EVK makes the JTAG interface of the i.MX53 CPU available on connector X9:

Pin	Signal	Pin	Signal
1	3V3	2	3V3
3	#TRST	4	GND
5	TDI	6	GND
7	TMS	8	GND
9	TCK	10	GND
11	n.c.	12	GND
13	TDO	14	GND
15	#SRST	16	GND
17	1k Ω to GND	18	GND
19	1k Ω to GND	20	GND

To activate the JTAG interface on connector X9 the jumper JP7 has to be left open:

JP7	JTAG interface available on
open	JTAG on connector X9
closed	JTAG via FTDI FT2232 on connector X8

3.1.4 JTAG / UART1 via FTDI

JTAG and UART1 are made available via the FTDI FT2232 chip on the USB B connector X8.

To activate the JTAG interface on connector X9 the jumper JP7 has to be closed:

JP7	JTAG interface available on
open	JTAG on connector X9
closed	JTAG via FTDI FT2232 on connector X8

3.1.5 USB Host

Connector X10 supplies a standard USB Host interface on a USB-A connector:

Pin	Signal
1	USB Host VBus
2	DN
3	DP
4	GND

3.1.6 USB OTG

Connector X11 supplies a standard USB device/OTG interface on a mini USB-AB connector:

Pin	Signal
1	OTG VBUS
2	DM
3	DP
4	ID
5	GND

3.1.7 FlexCAN

M53EVK features two CAN interfaces:

Closing Jumper JP2 causes the termination of interface CAN1 with 120Ω:

JP2	Status
Open	CAN1 termination disabled
Closed	CAN1 terminated with 120 Ohms

Closing Jumper JP1 selects the operation mode for the transceiver of CAN1:

JP1	CAN1 transceiver operation mode
Open	High speed with slope control
Closed	Standby mode

Connector X5 supplies the CAN interface CAN0:

Pin	Signal
1	n.c.
2	CAN2_RX
3	n.c.
4	n.c.
5	n.c.
6	n.c.
7	CAN2_TX
8	n.c.
9	n.c.

Closing Jumper JP4 causes the termination of interface CAN2 with 120Ω:

JP4	Status
Open	CAN2 termination disabled
Closed	CAN2 terminated with 120 Ohms

Closing Jumper JP3 selects the operation mode for the transceiver of CAN2:

JP3	CAN2 transceiver operation mode
Open	High speed with slope control
Closed	Standby mode

3.2 Power Supply

The M53EVK can be powered by connecting a suitable DC powersupply in the range between 7,5....28V to connector X1 or connector X2.

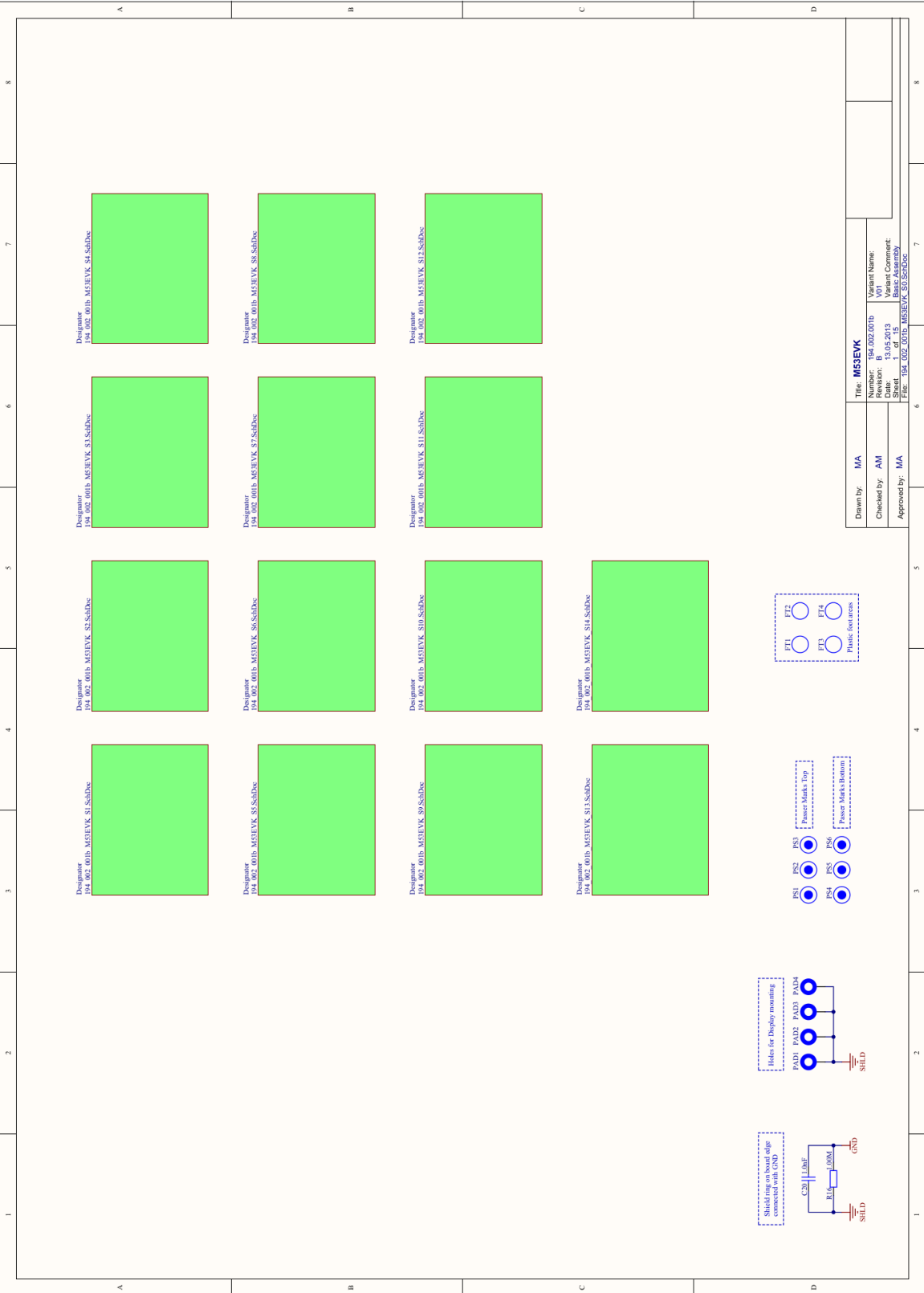
Connector X1

Pin	Voltage
1	7,5V ... 28V
2	GND

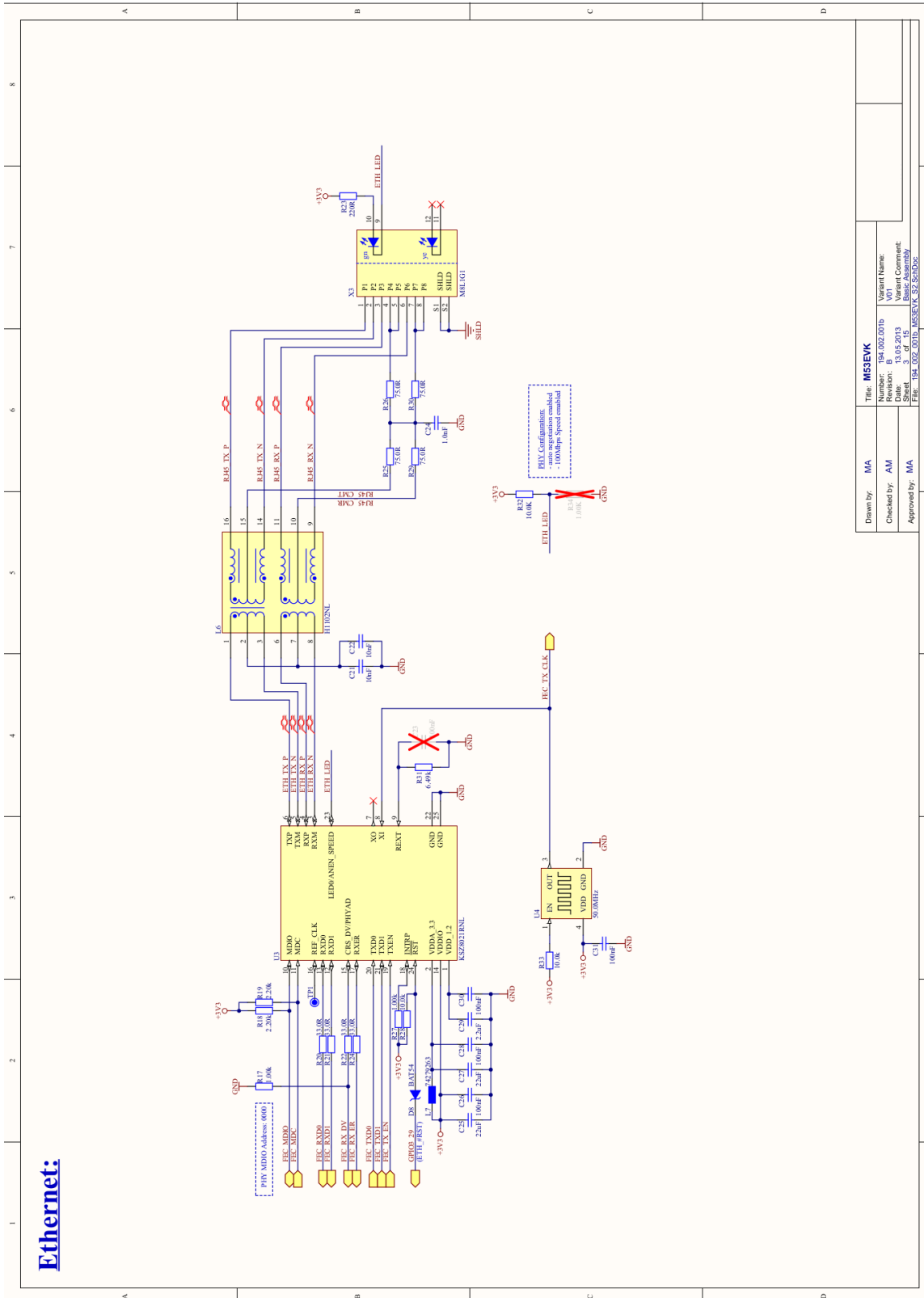
Connector X2

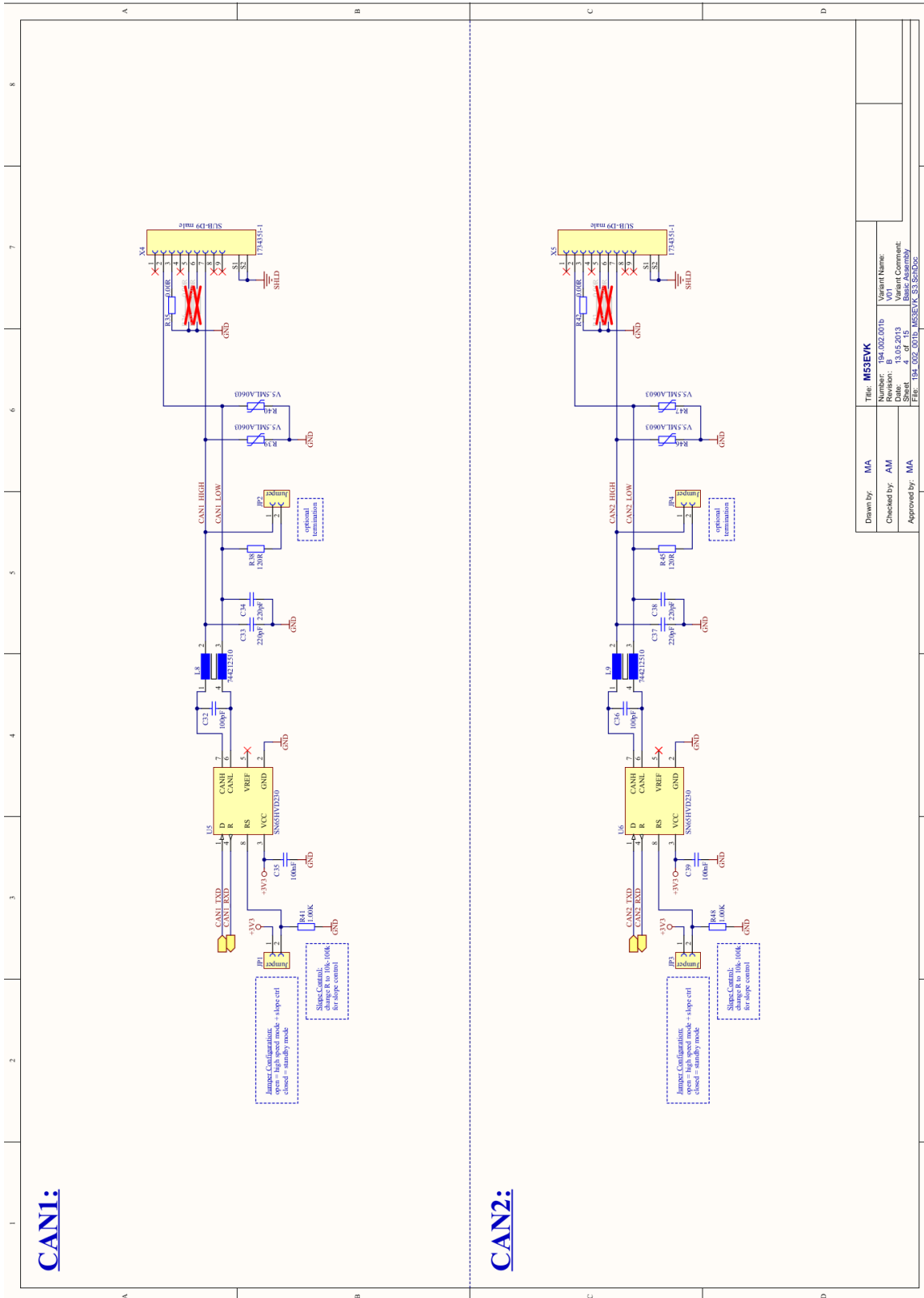
Pin	Voltage
1	7,5V ... 28V
2	GND

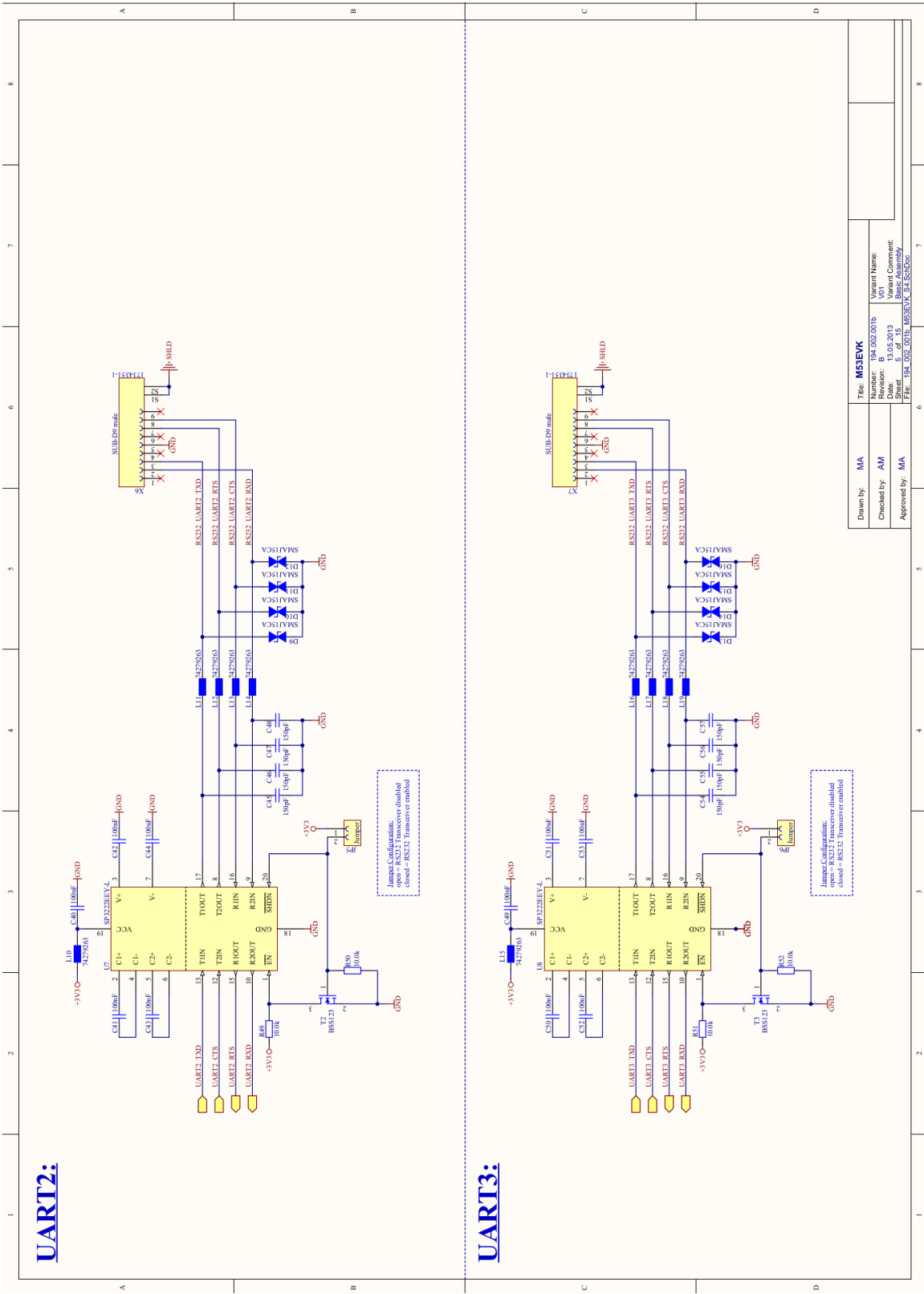
3.3 Schematics



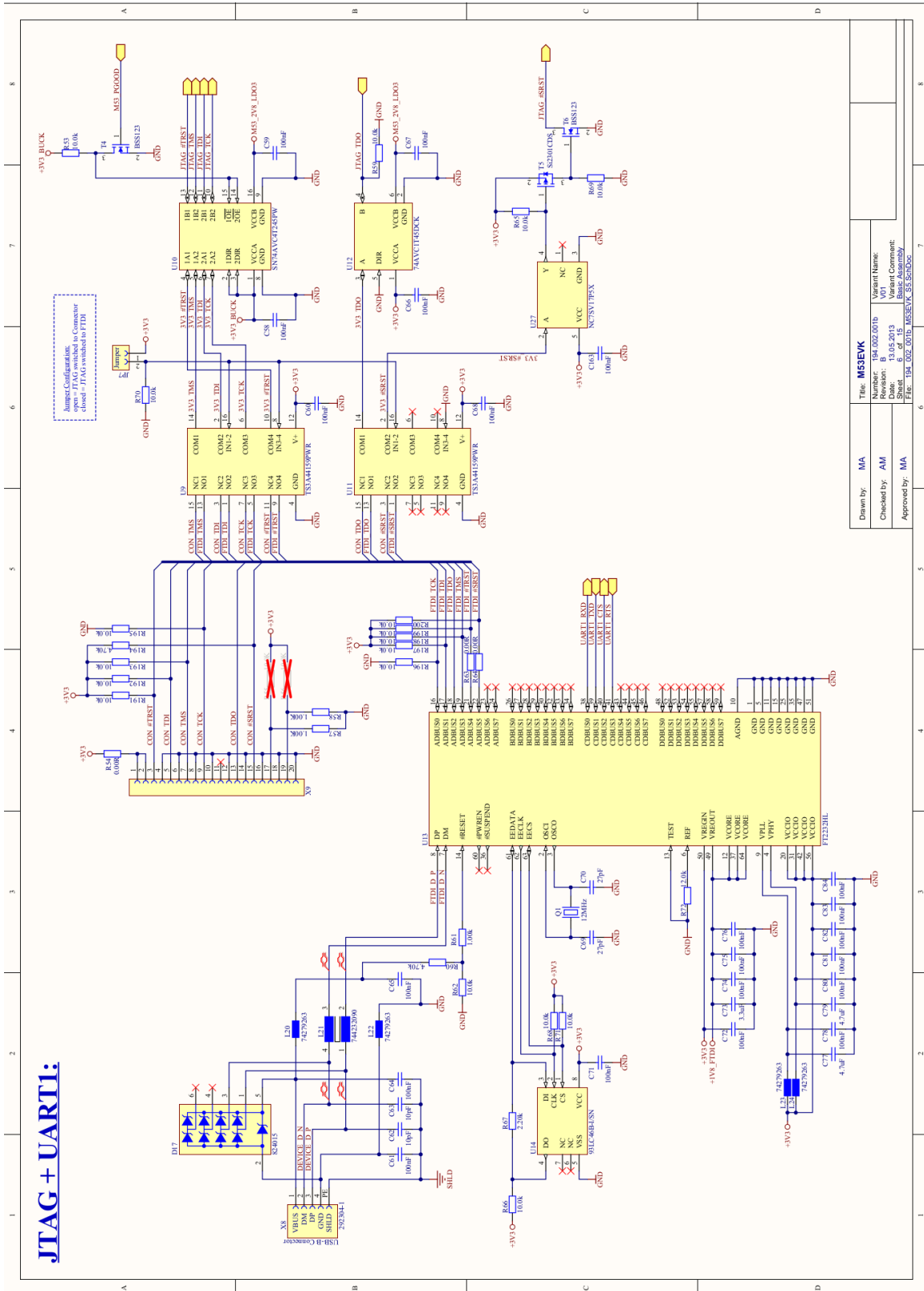


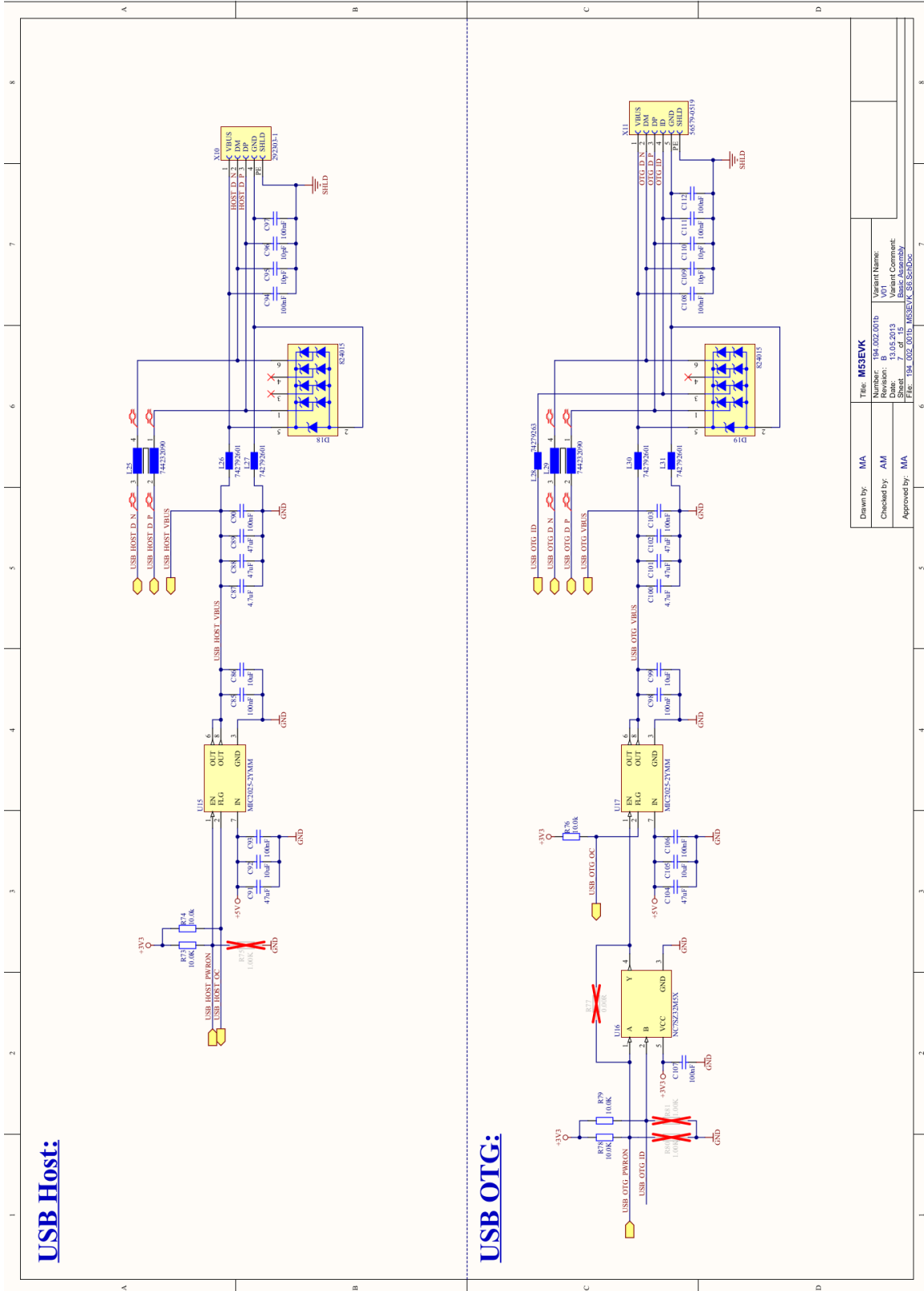


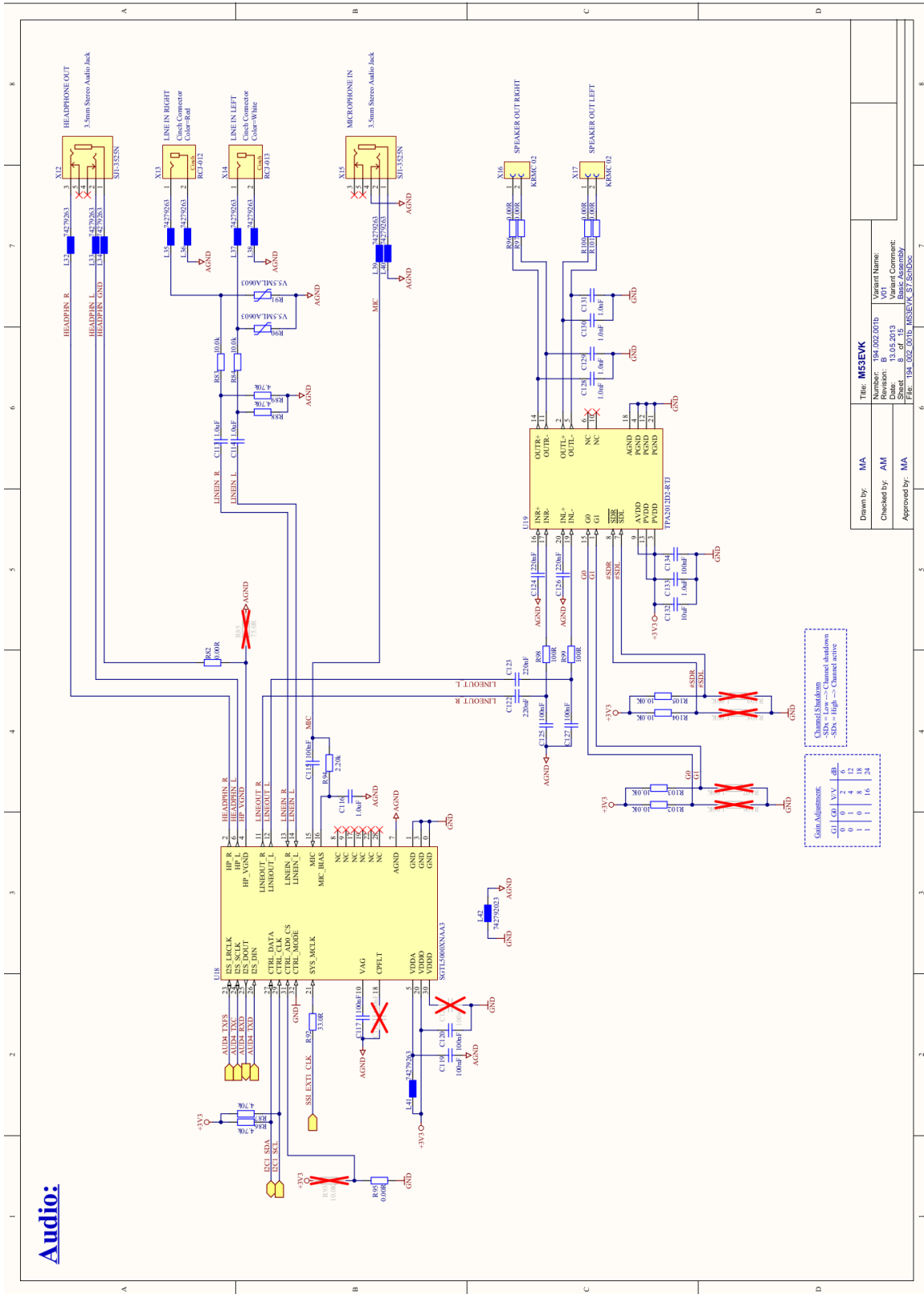


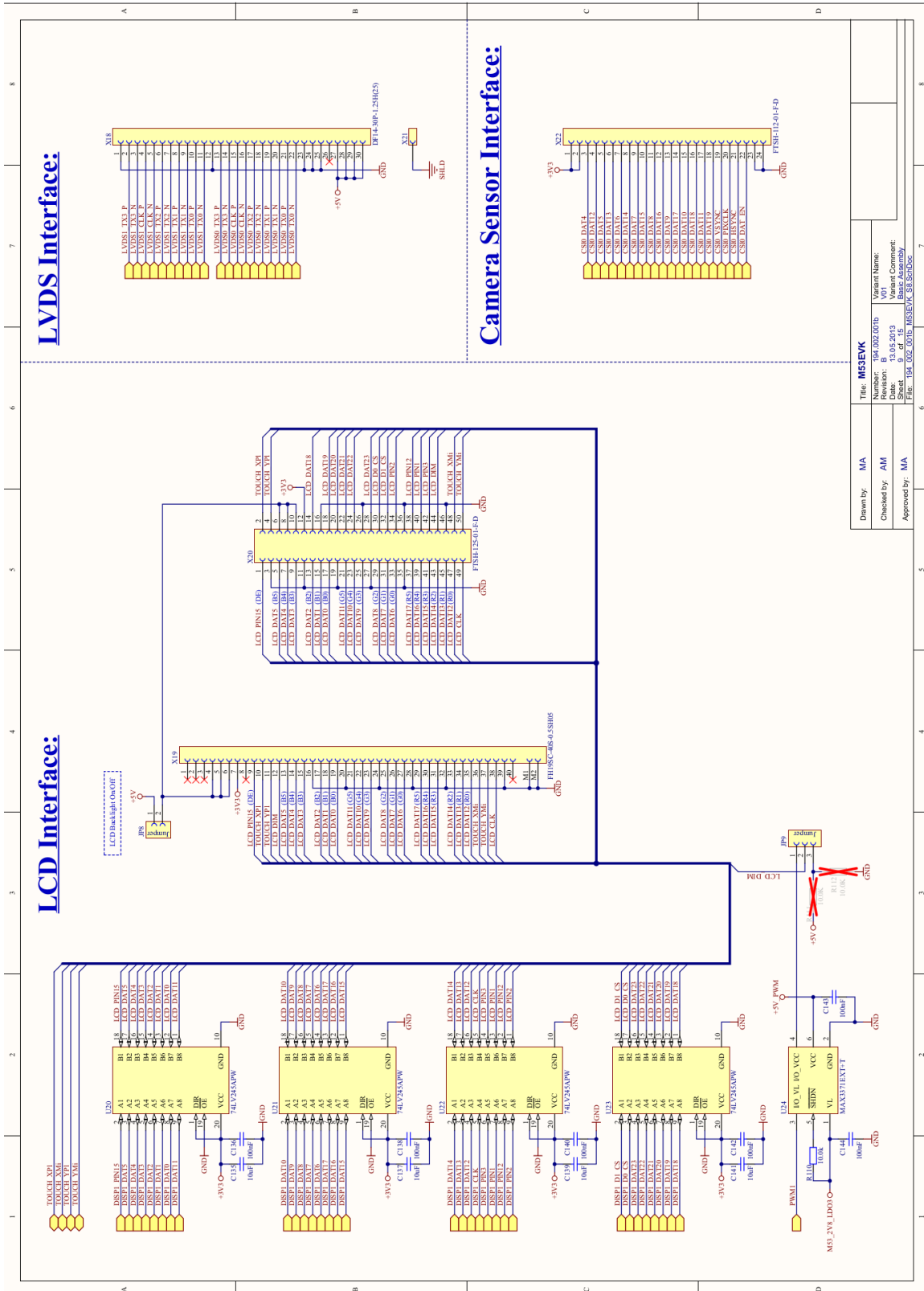


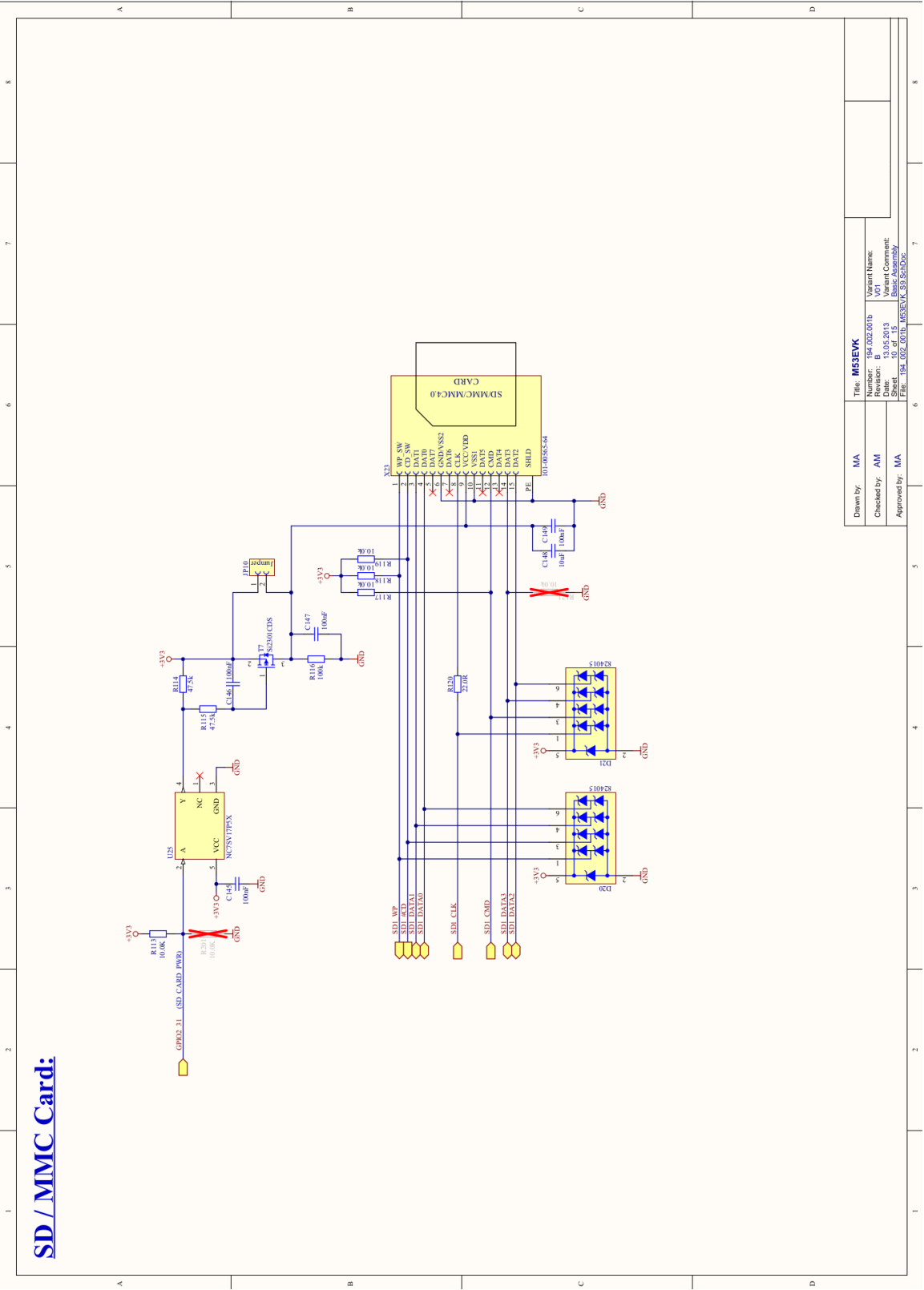
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Approved by:	MA	Revision:	B
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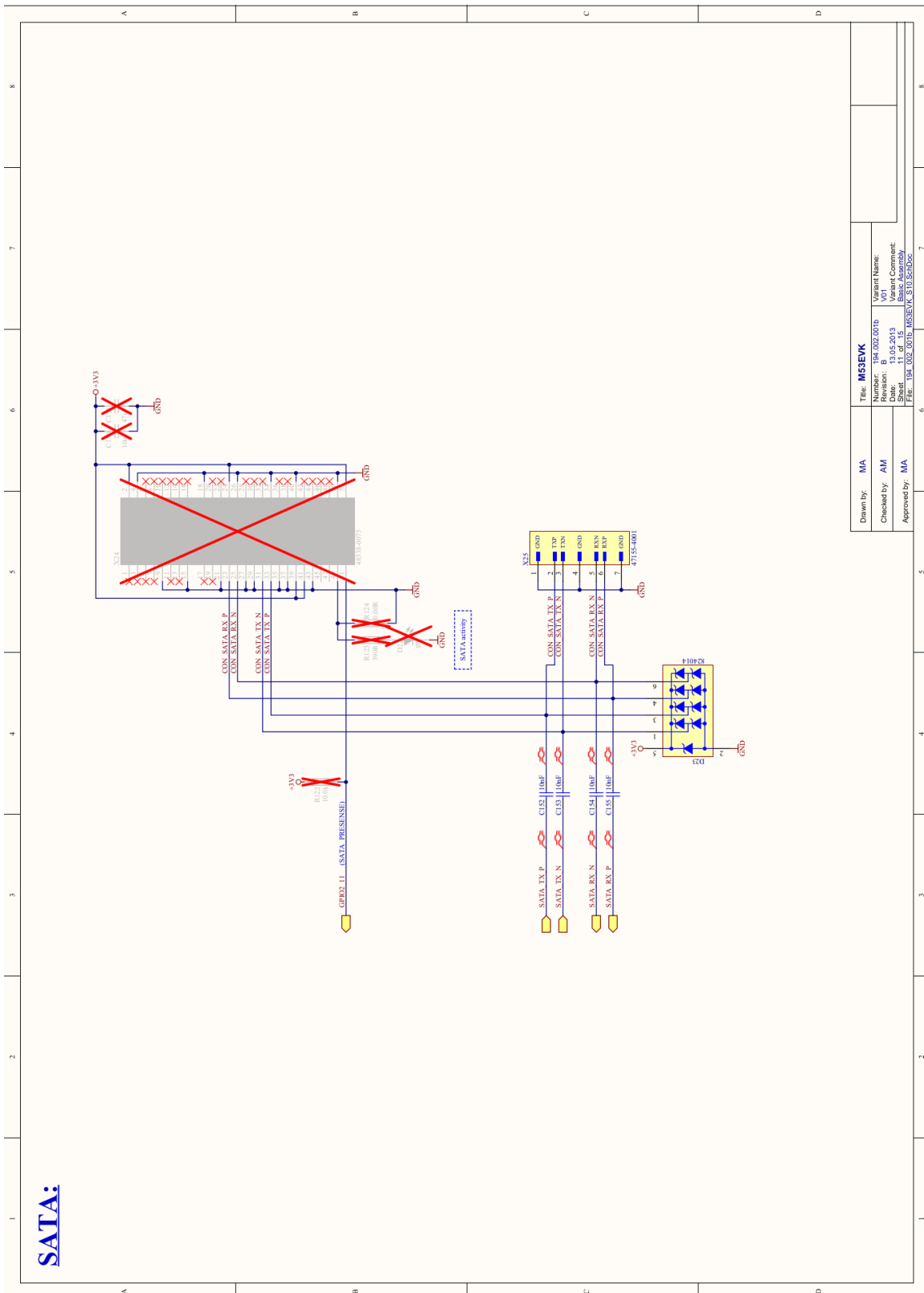


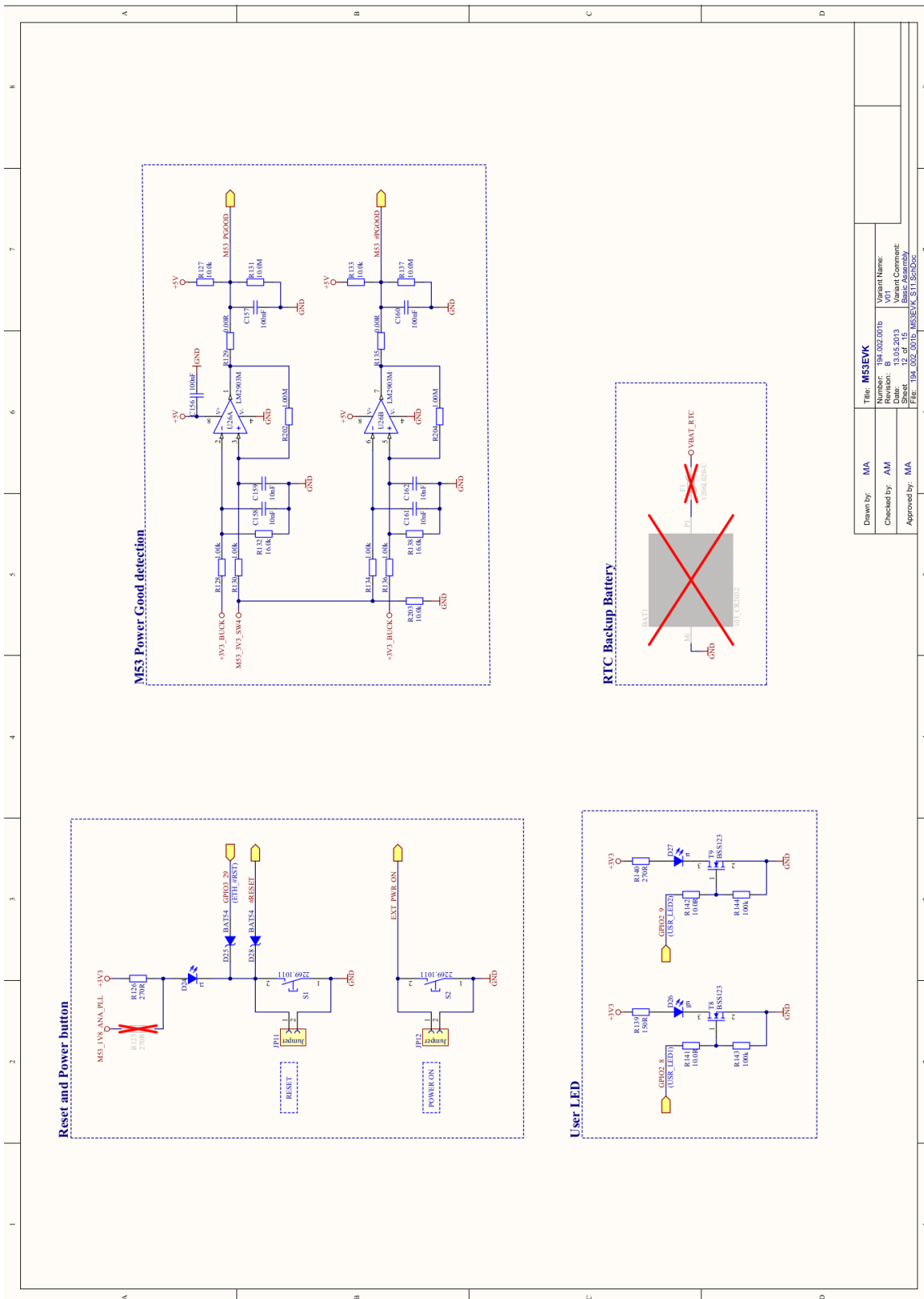




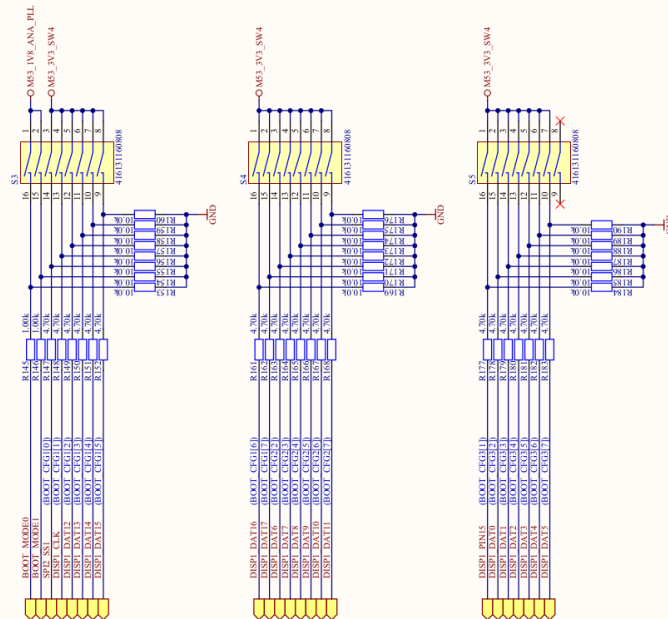








Boot Mode Configuration:



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	Date: 05.05.2013	
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