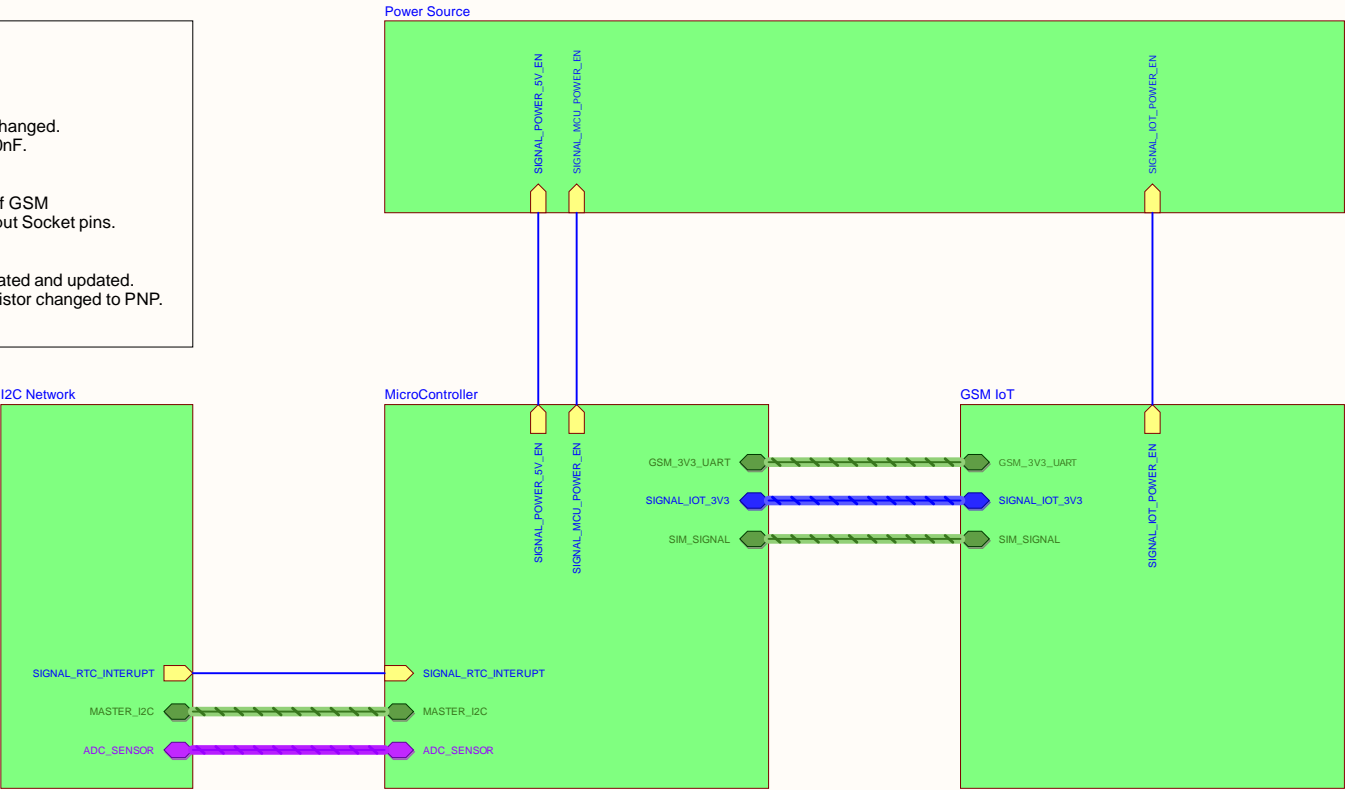


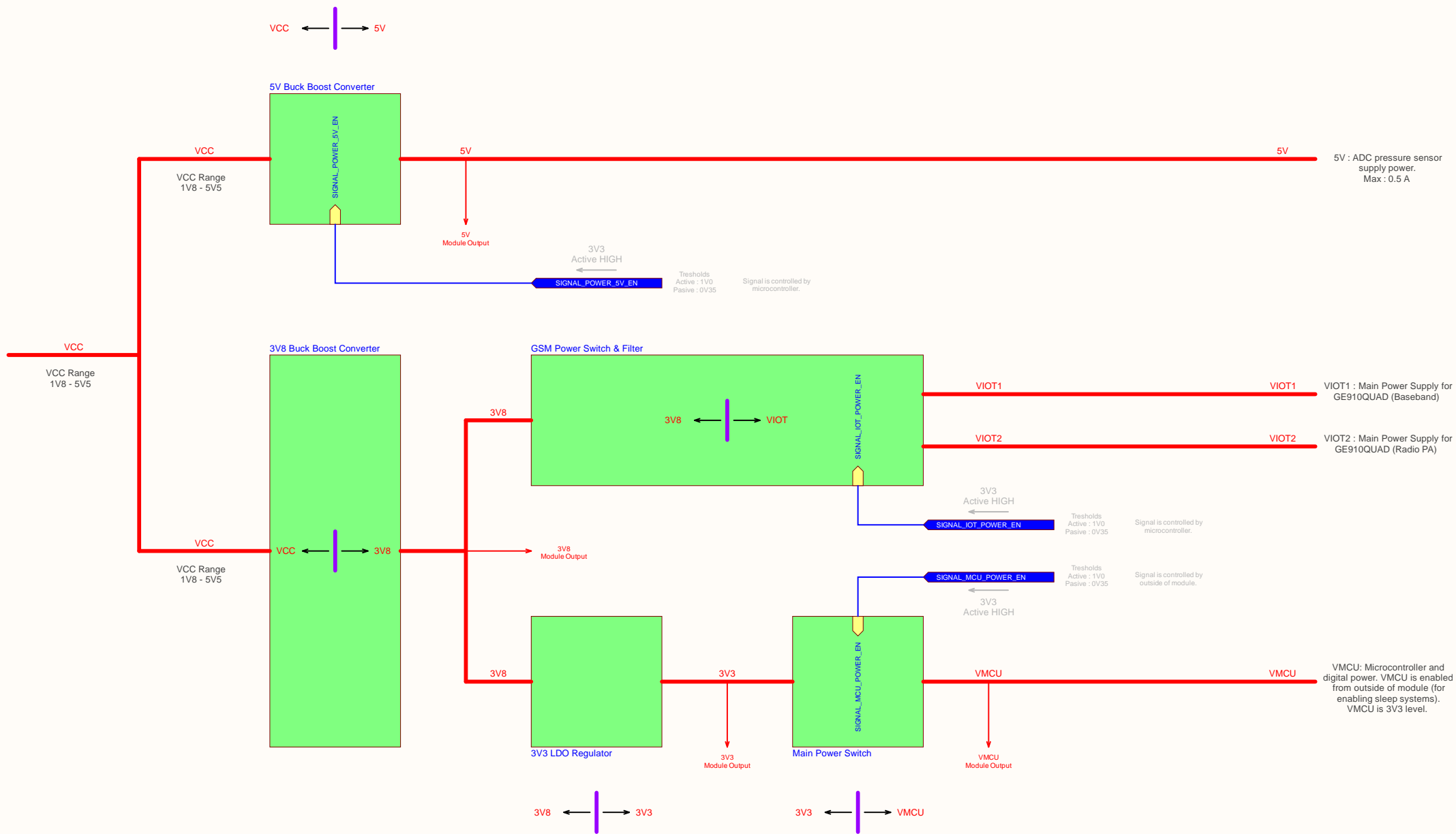
B100 - Master IoT MicroController

Revision History

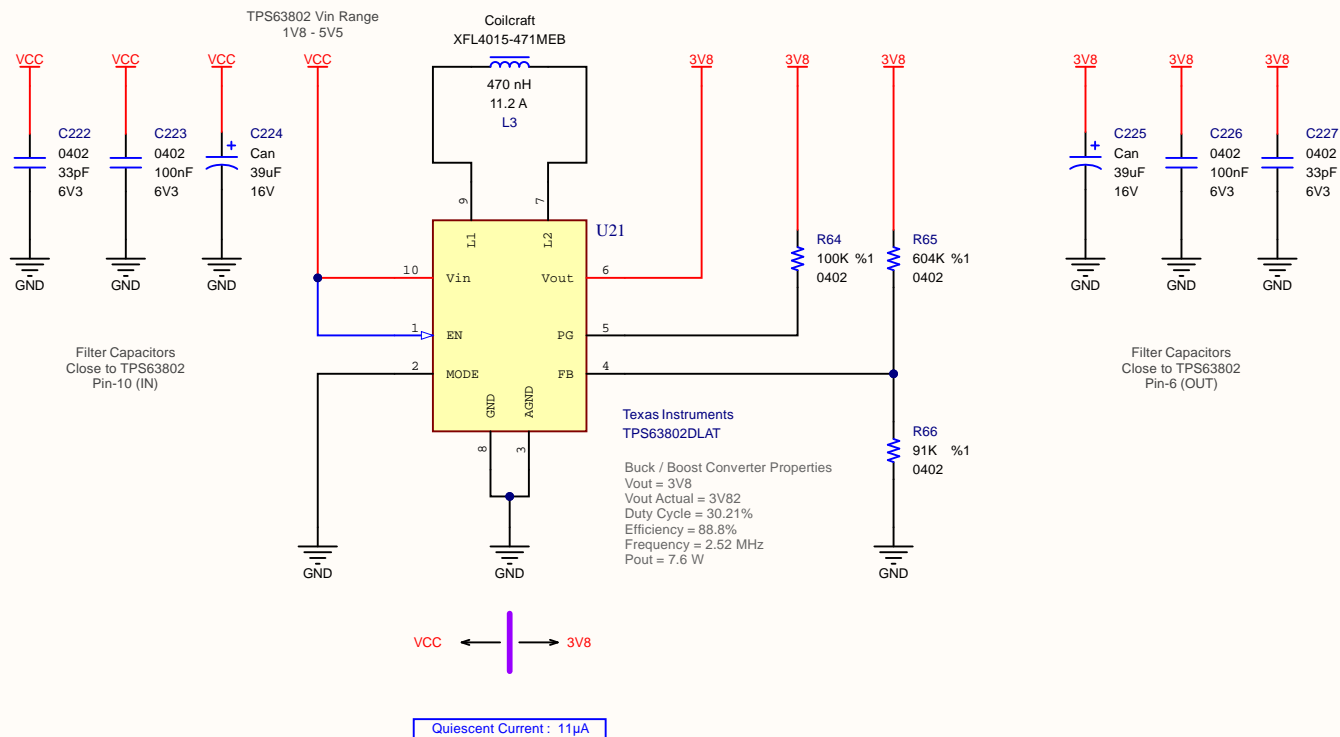
- AA001 (05.01.2021)
* Schematic creation.
- AA002 (11.01.2021)
* Bidirectional signal translator IC changed.
* SIM Vcc capacitor changed to 100nF.
- AA003 (19.01.2021)
* 33 pF capacitor added to VAUX of GSM
* 33 pF capacitors added to all Output Socket pins.
- AA004 (22.01.2021)
* GSM IoT LED resistors are calculated and updated.
* GSM IoT LED power enable transistor changed to PNP.




Power Archtechure



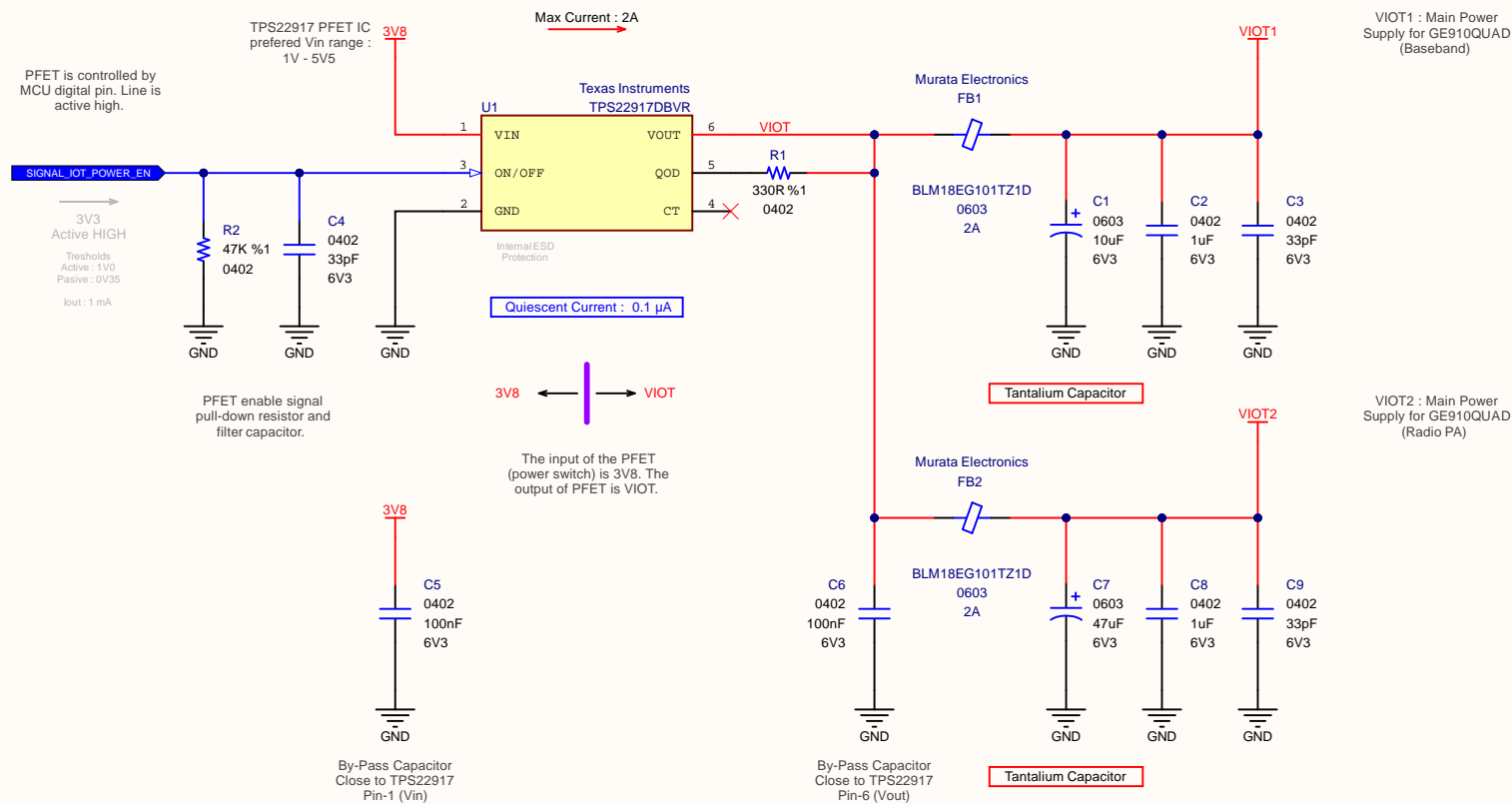
3V8 Buck Boost Converter




| | | | | |
|--|-----------------------|----------------------------|--|---|
| Title 3V8 DC/DC Buck Boost Converter | | | Ovoo Electronics Necip Fazıl Mah. Otarmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 3 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:37 | Sheet 3 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\3V8 Buck Boost Converter.SchDoc | | | | |


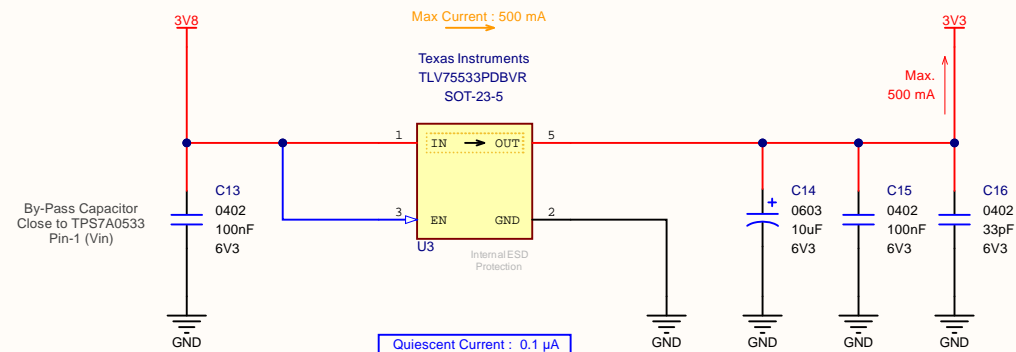
GSM Modem Power Switch

GSM Module Power Filter




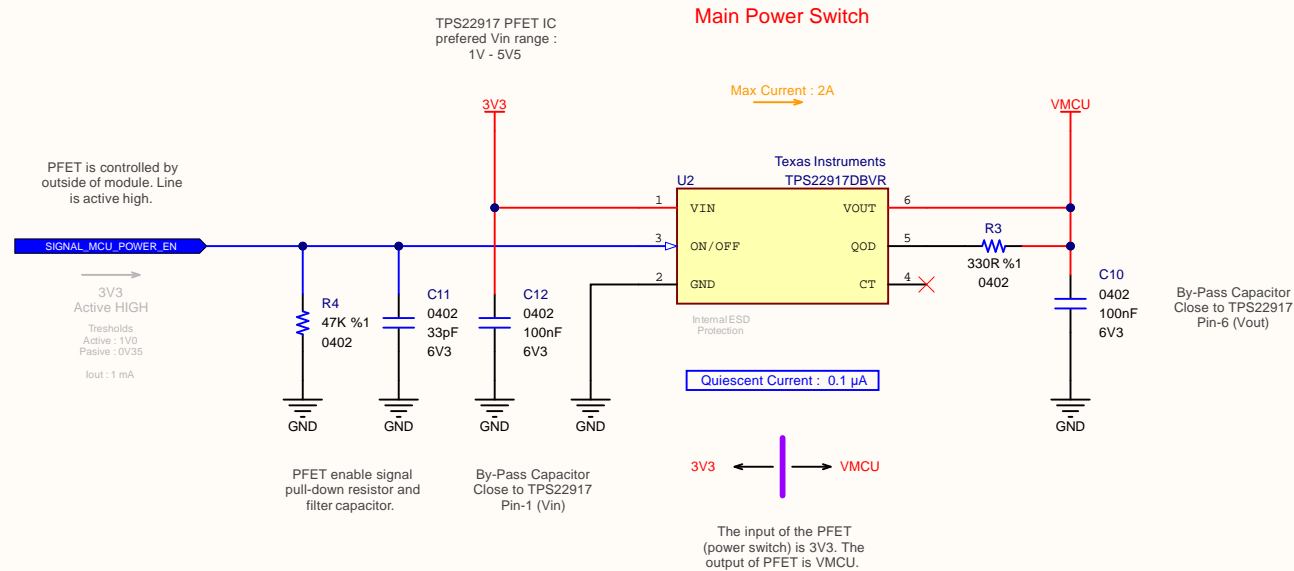
| | | | | | |
|--|------------------------------|------------------------------------|---|--|---|
| Title GSM Power Switch and Filter | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 4 | Revision: B100AA R4 | | | |
| Date: 11.02.2021 | Time: 16:13:37 | Sheet 4 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\GSM Power.SchDoc | | | | | |


3V3 LDO Regulator



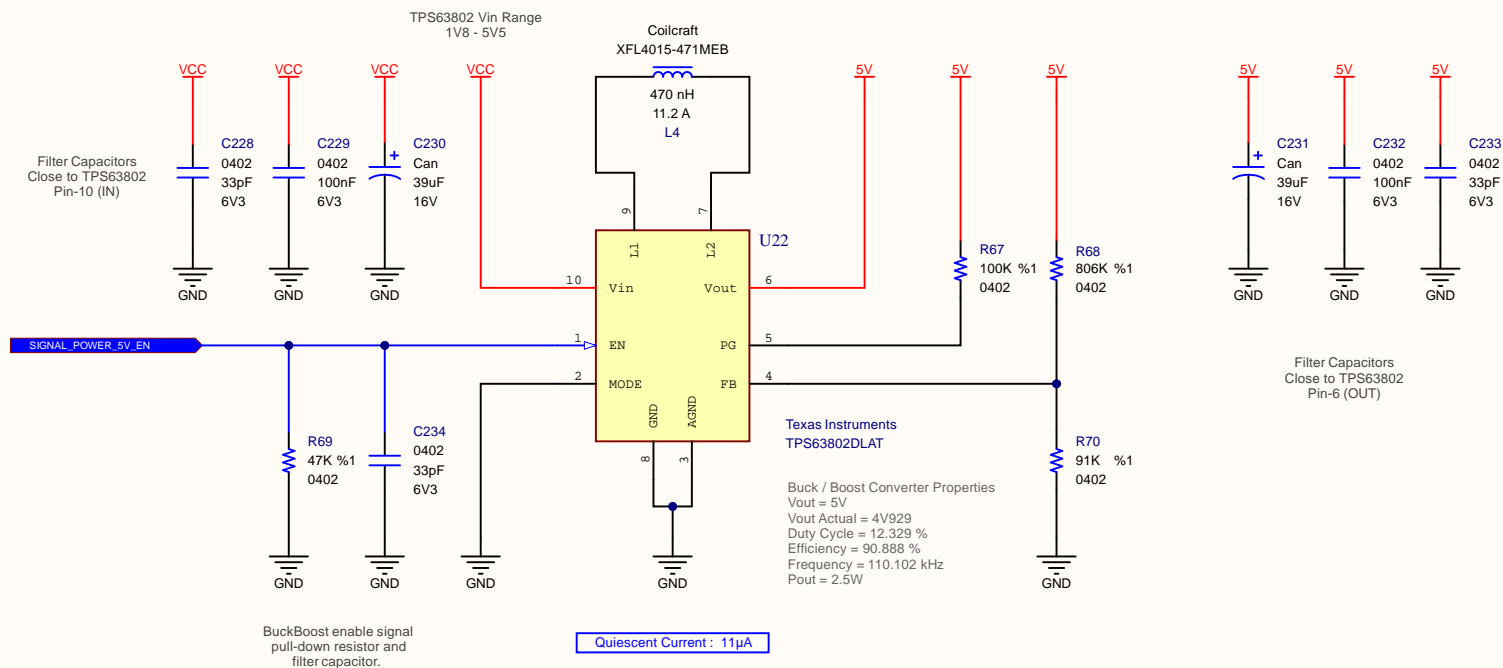
TLV75533 LDO is a 3V3 regulator. LDO is always enable.


| | | | | |
|---|-----------------------|----------------------------|--|---|
| Title 3V3 LDO Regulator | | | Ovoo Electronics Necip Fazıl Mah. Ofisarmak Sok. Bigirli Apt. No: 19/B Meram / Konya Turkey |  |
| Date: A4 | Number: 5 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:37 | Sheet 5 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\3V3 LDO Regulator.SchDoc | | | | |
| | | | | |



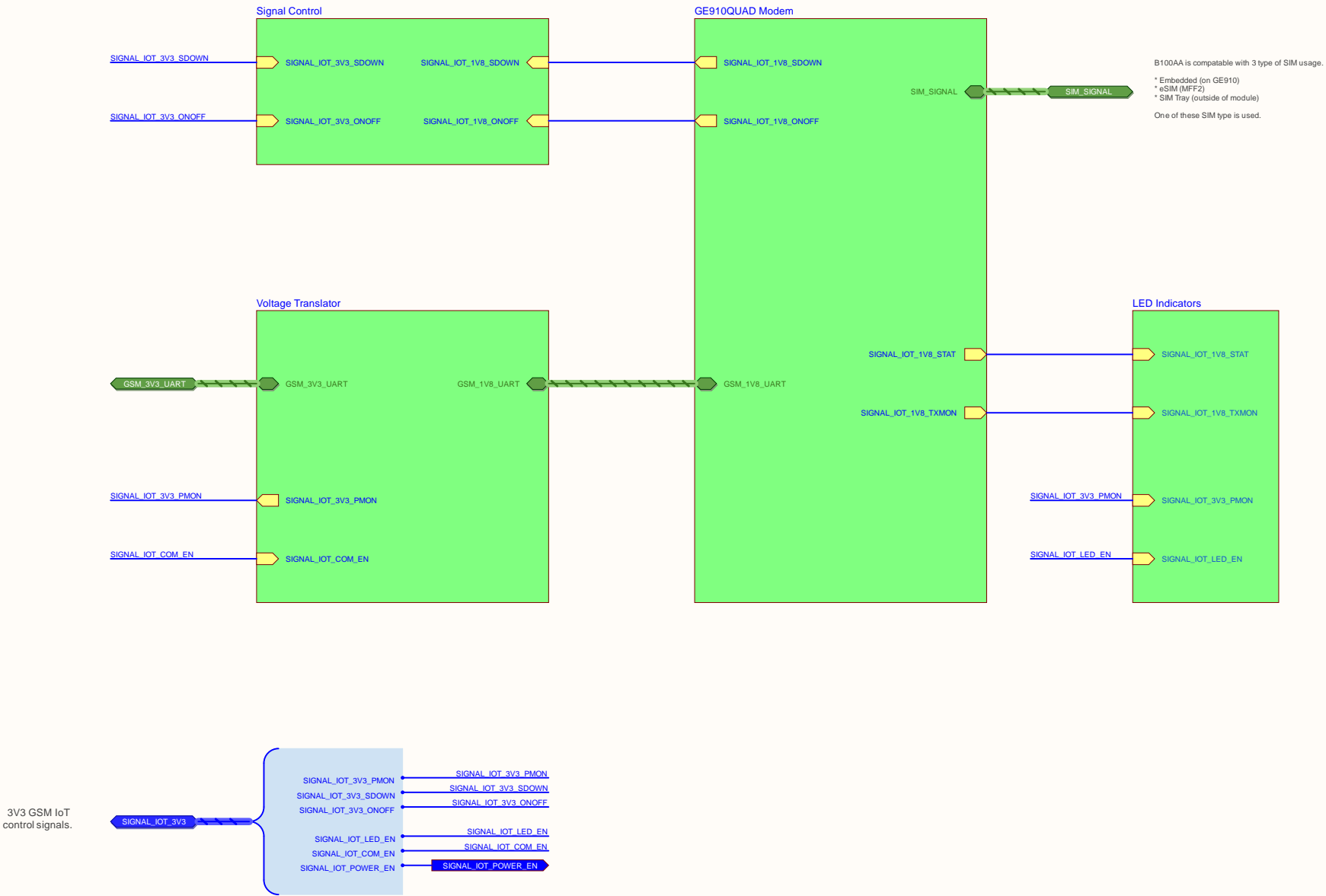
| | | | | |
|---|-----------------------|-----------------------------|--|---|
| Title Main Power Switch | | | Ovoo Electronics Necip Fazıl Mah, Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 6 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:37 | Sheet 6 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Main Power Switch.SchDoc | | | | |

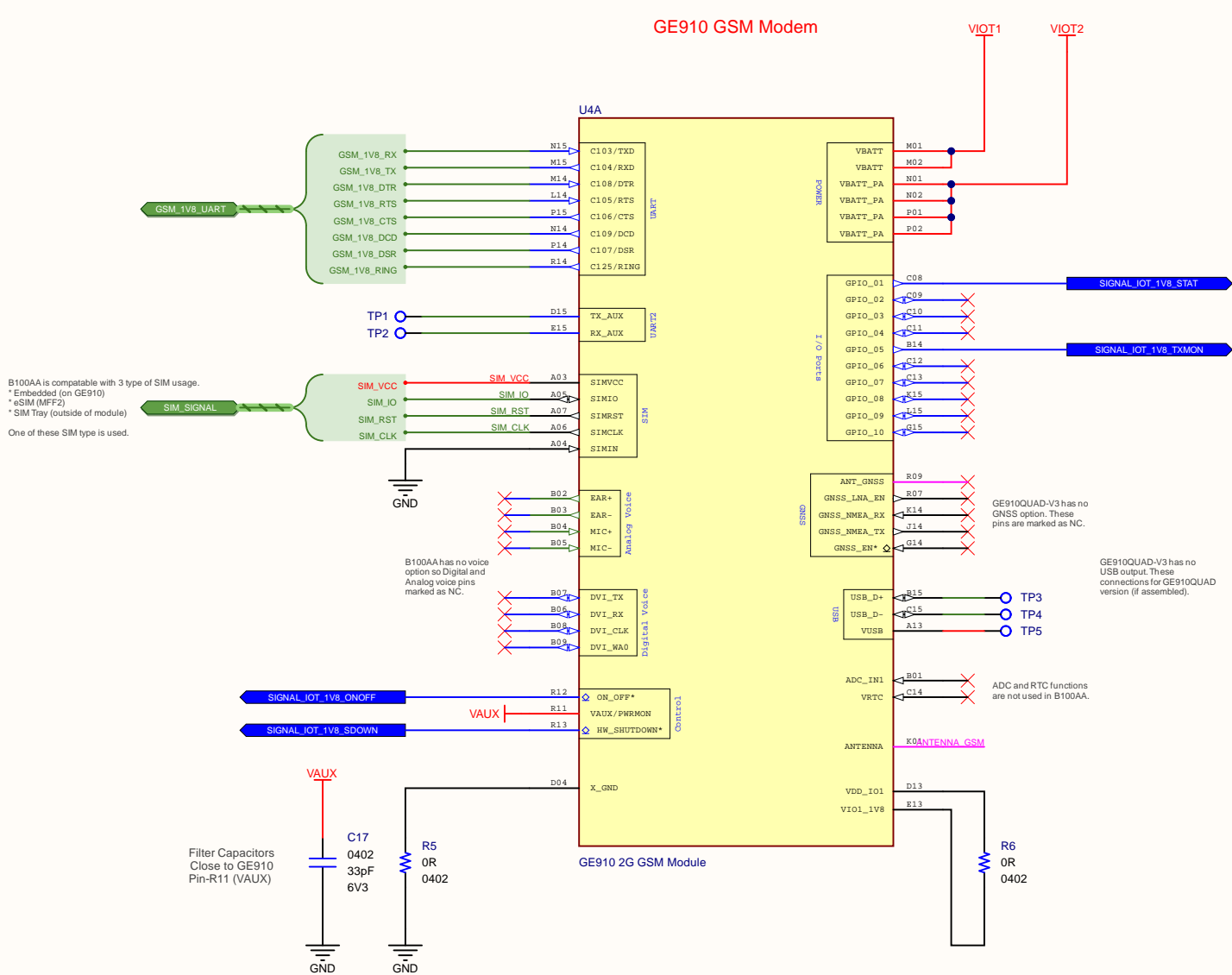
VCC ← | → 5V



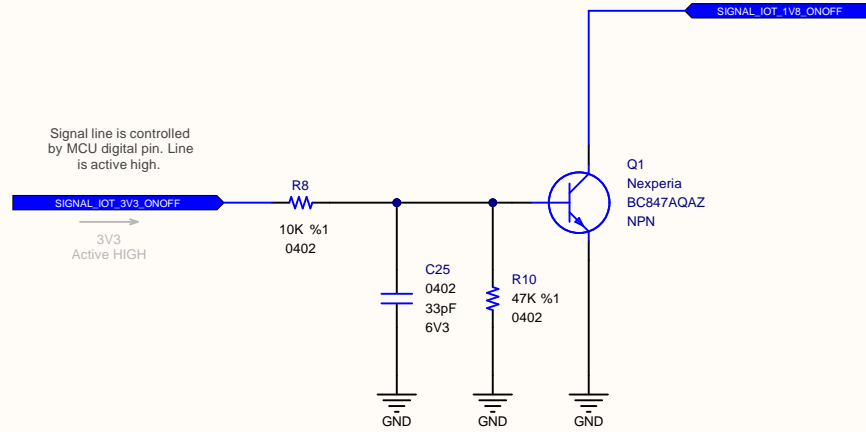
| | | | | |
|---|------------------------------|---|--|---|
| Title 5V DC/DC Buck Boost Converter | | | Ovoo Electronics Necip Fazıl Mah. Ortamark Sok. Birgül Apt. No: 19B Meram / Konya Türkiye |  |
| Size: A4 | Number: 7 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:37 | Sheet 7 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\5V Buck Boost Converter.SchDoc | | | | |

GSM IoT Communication Layer

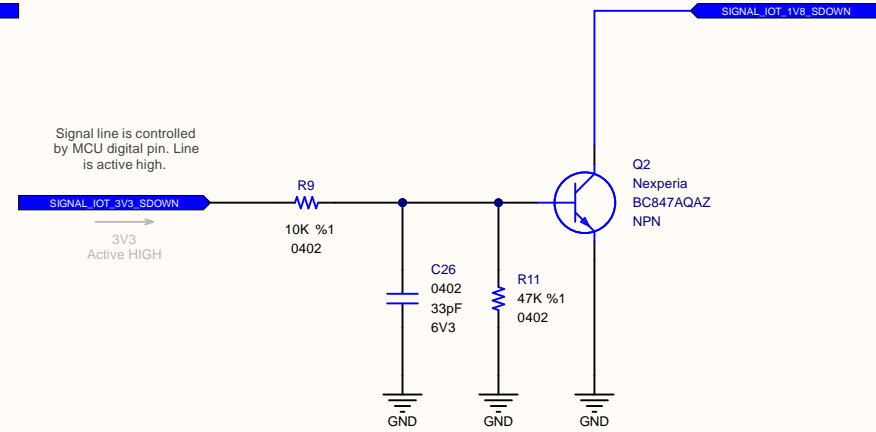




GSM Module On/Off Signal



GSM Module Shut Down Signal



Title GSM Control Signal Management

Size: A4

Number: 10

Revision: B100AA R4

Date: 11.02.2021

Time: 16:13:37

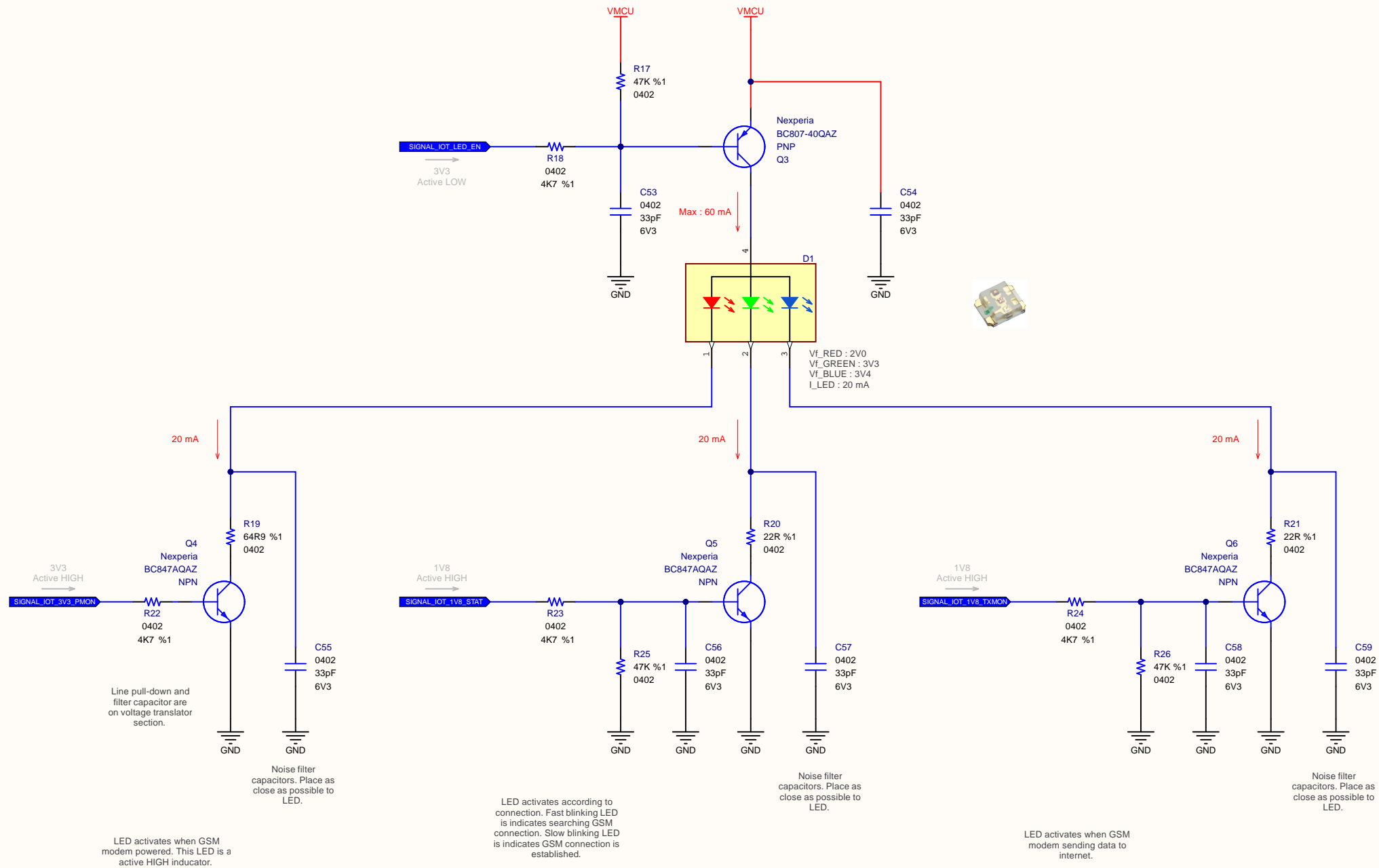
Sheet 10 of 54

File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\GSM Signal Control.SchDoc

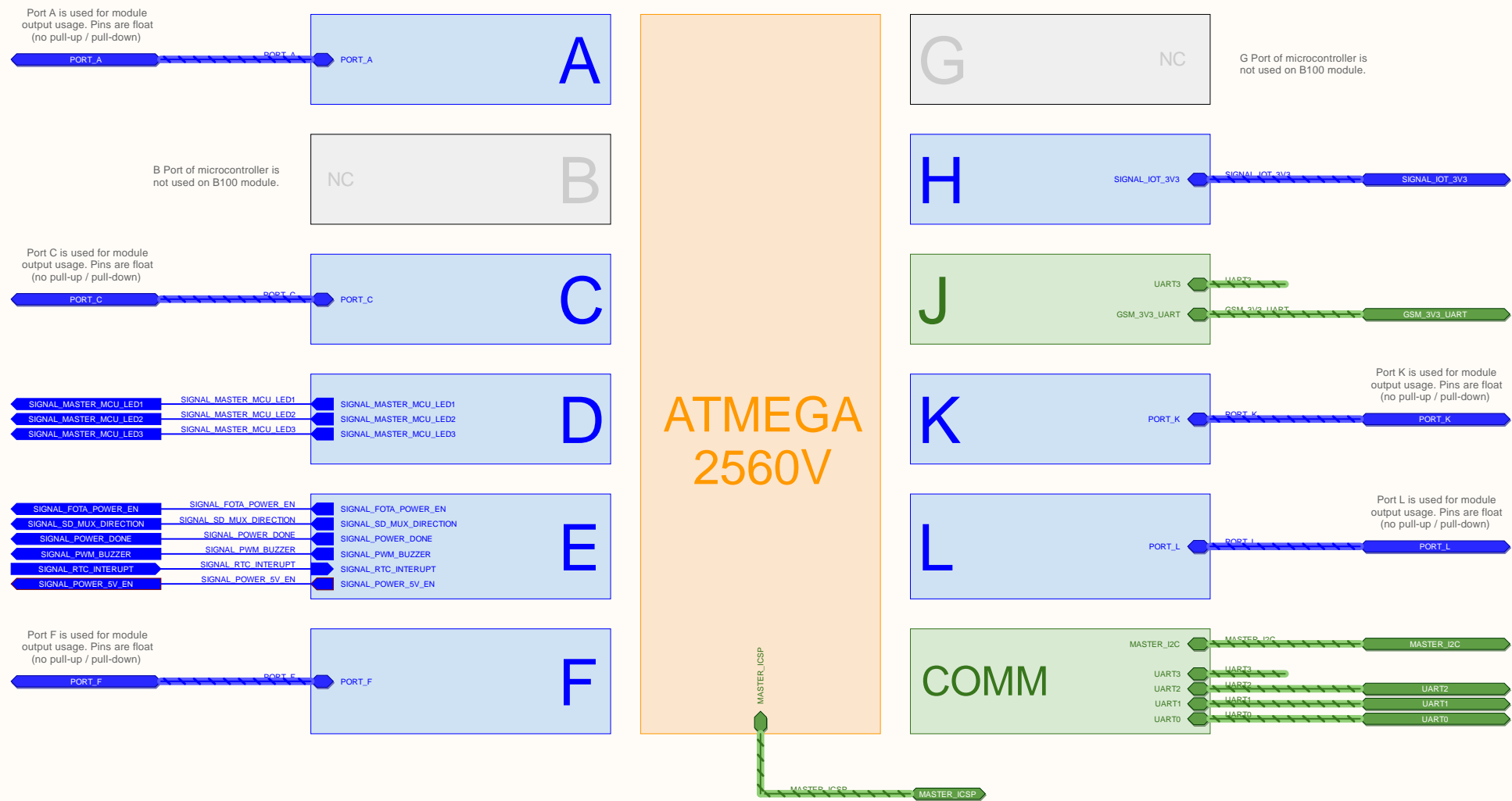
Ovoo Electronics

Necip Fazıl Mah. Ortarmak Sok.
Bırgöl Apt. No: 19/6
Meram / Konya
Türkiye

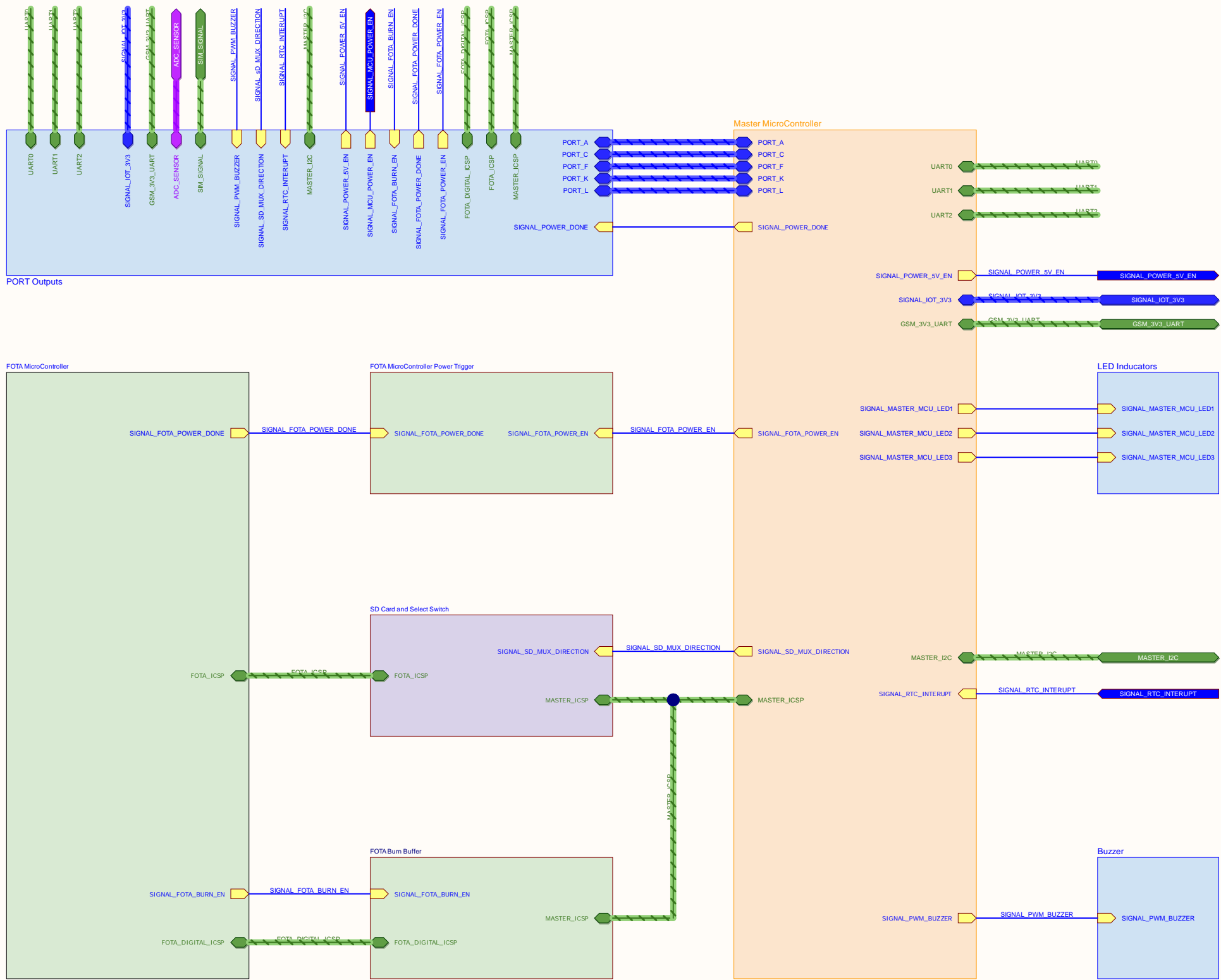
GSM IoT LED Indicators



Master MicroController

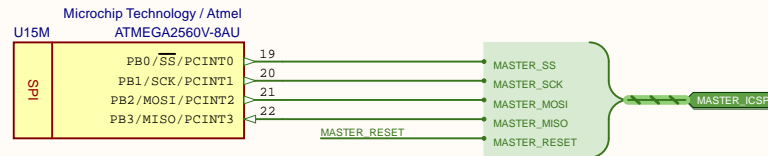
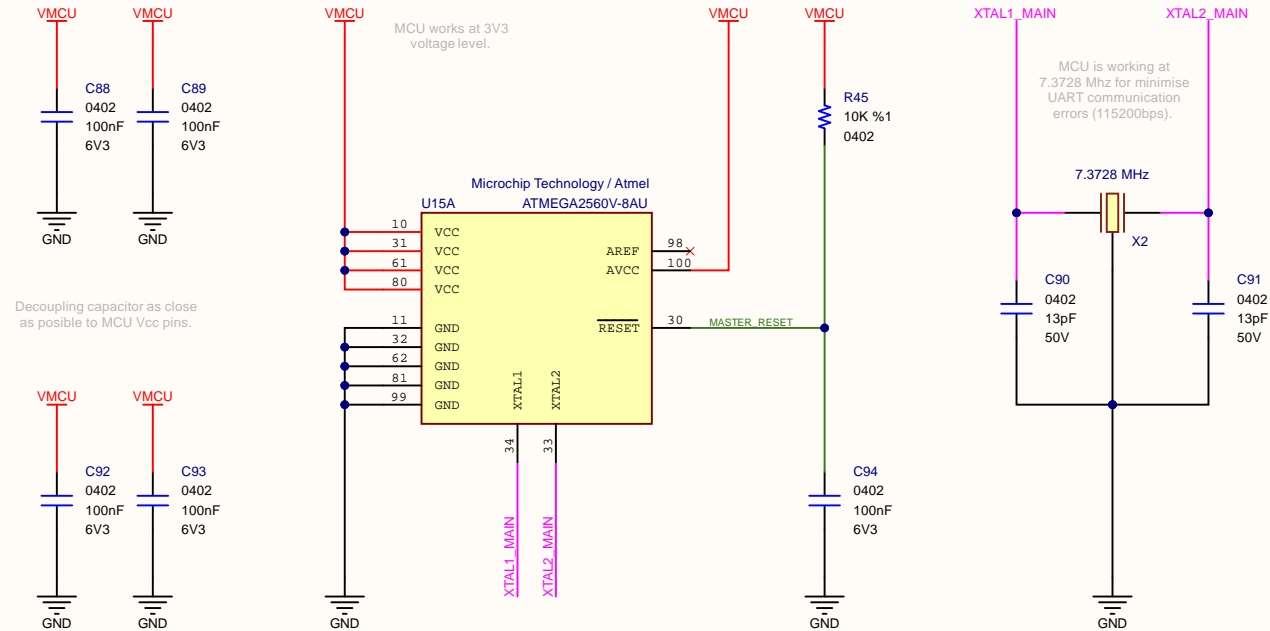


B100 MicroController




MicroController

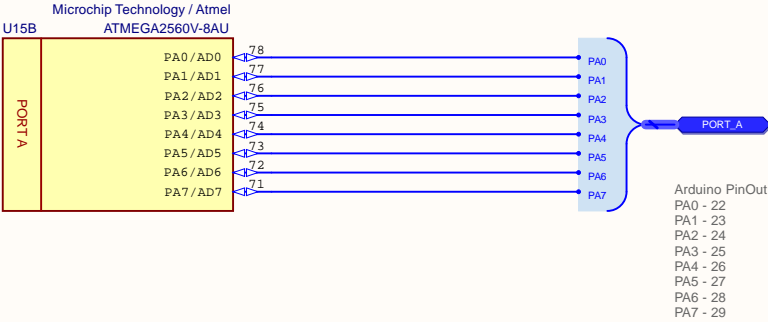
Crystal Oscillator



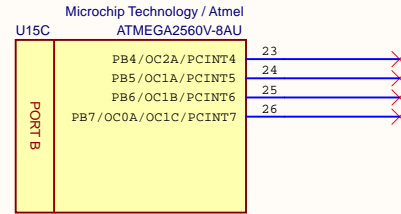
Master MicroController ICSP

| | | | | | |
|---|-----------------------|------------------------------|---|--|---|
| Title Master MicroController Core | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgöl Apt. No: 19/B Meram / Konya Türkiye | |  |
| Size: A4 | Number: 15 | Revision: B100AA R4 | | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 15 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Core.SchDoc | | | | | |


Master MicroController A Port



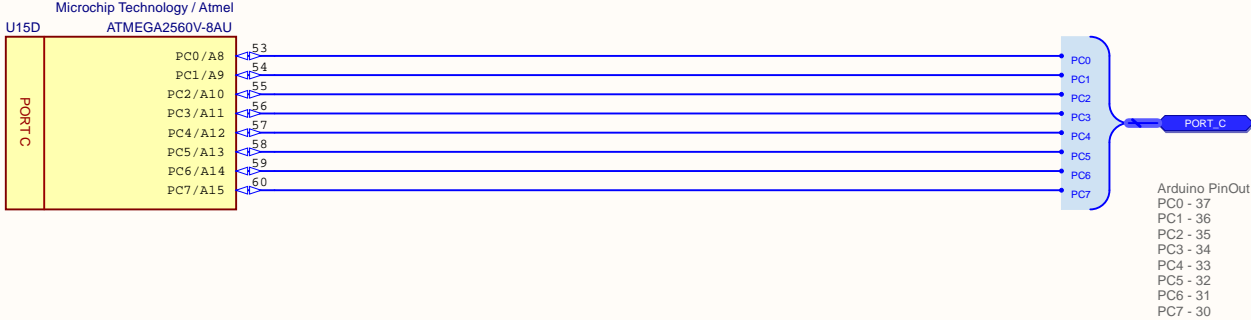
Master MicroController B Port



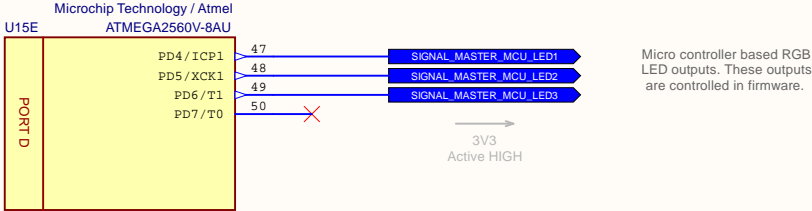
These ports are not used in B100 module. All un-used pins are NC.


| | | | | | |
|---|-----------------------|------------------------------|--|--|---|
| Title Master Micro Controller Port B Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 17 | Revision: B100AA R4 | | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 17 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port B.SchDoc | | | | | |
| | | | | | |

Master MicroController C Port

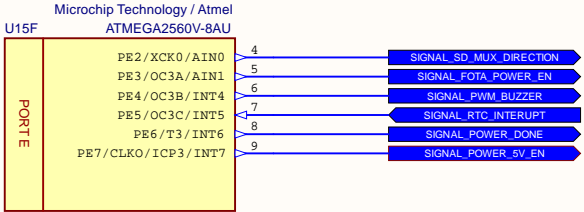



Master MicroController D Port



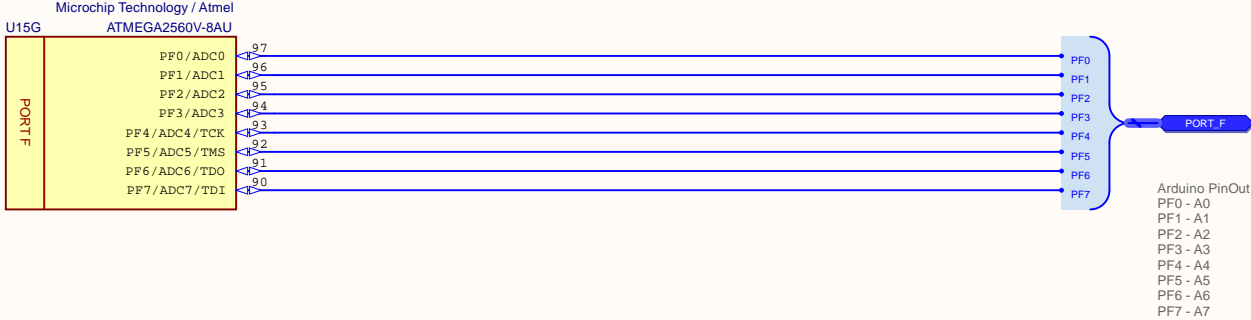
| | | | | |
|--|----------------|---------------------|---|---|
| Title Master Micro Controller Port D Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 19 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 19 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port D.SchDoc | | | | |


Master MicroController E Port



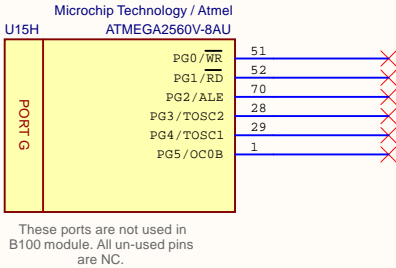
| | | | |
|--|----------------|---------------------|--|
| Title Master Micro Controller Port E Pin Out | | | <div>Ovoo Electronics</div> <div>Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye</div> <div></div> |
| Size: A4 | Number: 20 | Revision: B100AA R4 | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 20 of 54 | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port E.SchDoc | | | |


Master MicroController F Port



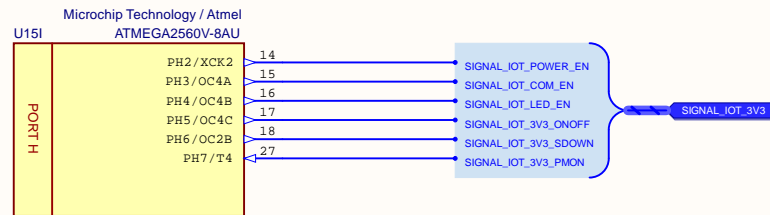
| | | | | |
|--|----------------|---------------------|---|---|
| Title Master Micro Controller Port F Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 21 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 21 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port F.SchDoc | | | | |


Master MicroController G Port



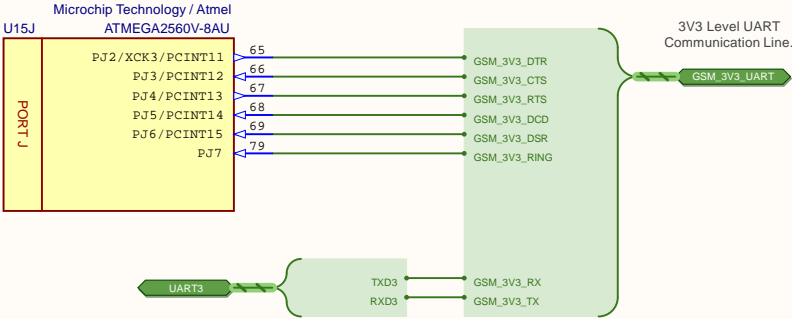
| | | | | |
|---|-----------------------|------------------------------|--|---|
| Title Master Micro Controller Port G Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 22 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 22 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port G.SchDoc | | | | |


Master MicroController H Port



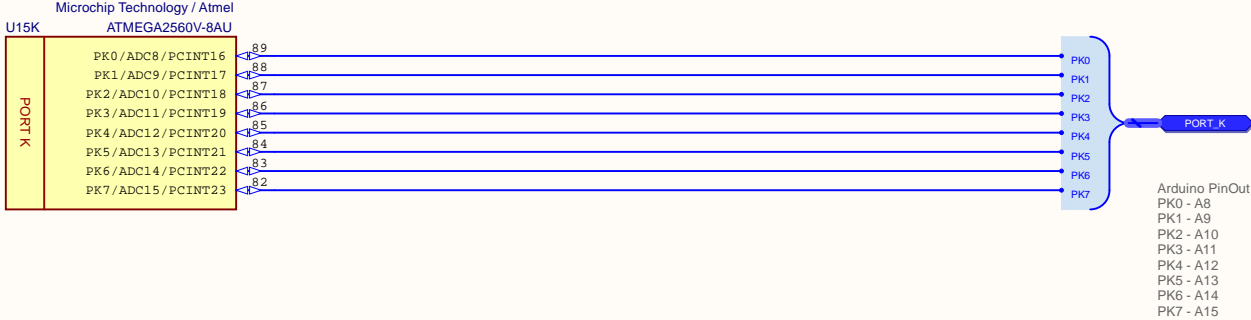
| | | | | |
|---|-----------------------|------------------------------|--|---|
| Title Master Micro Controller Port H Pin Out | | | Ovoo Electronics Necip Fazıl Mah, Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 23 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 23 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port H.SchDoc | | | | |

GSM IoT Communication Pins

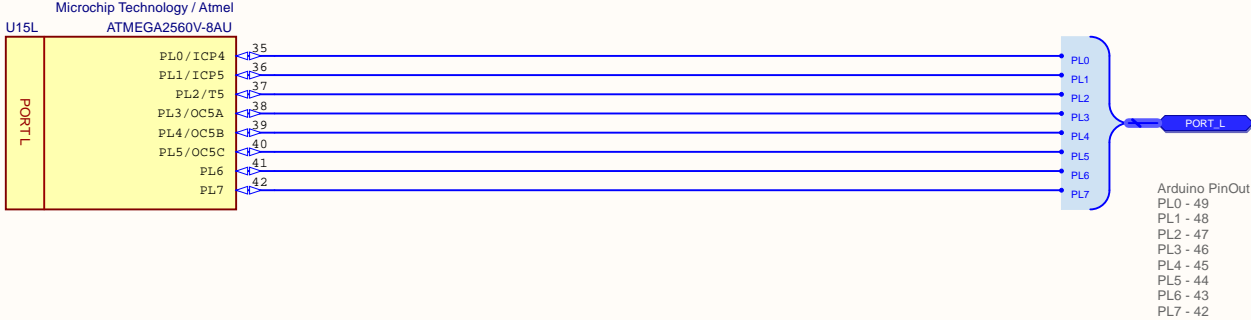


| | | | | |
|---|-----------------------|------------------------------|--|---|
| Title Master Micro Controller Port J Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 24 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 24 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port J.SchDoc | | | | |
| | | | | |

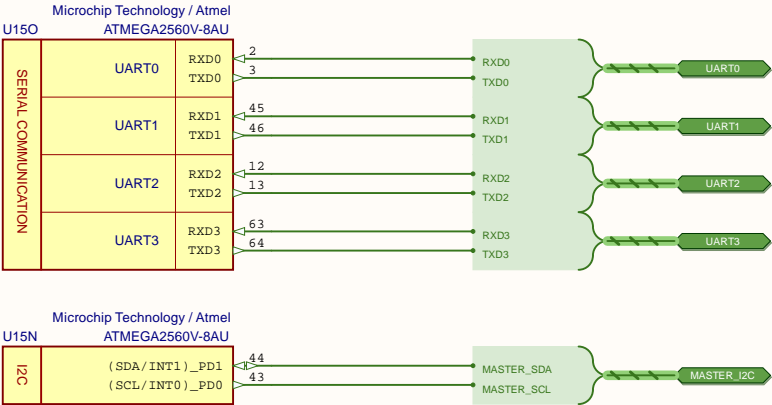
Master MicroController K Port



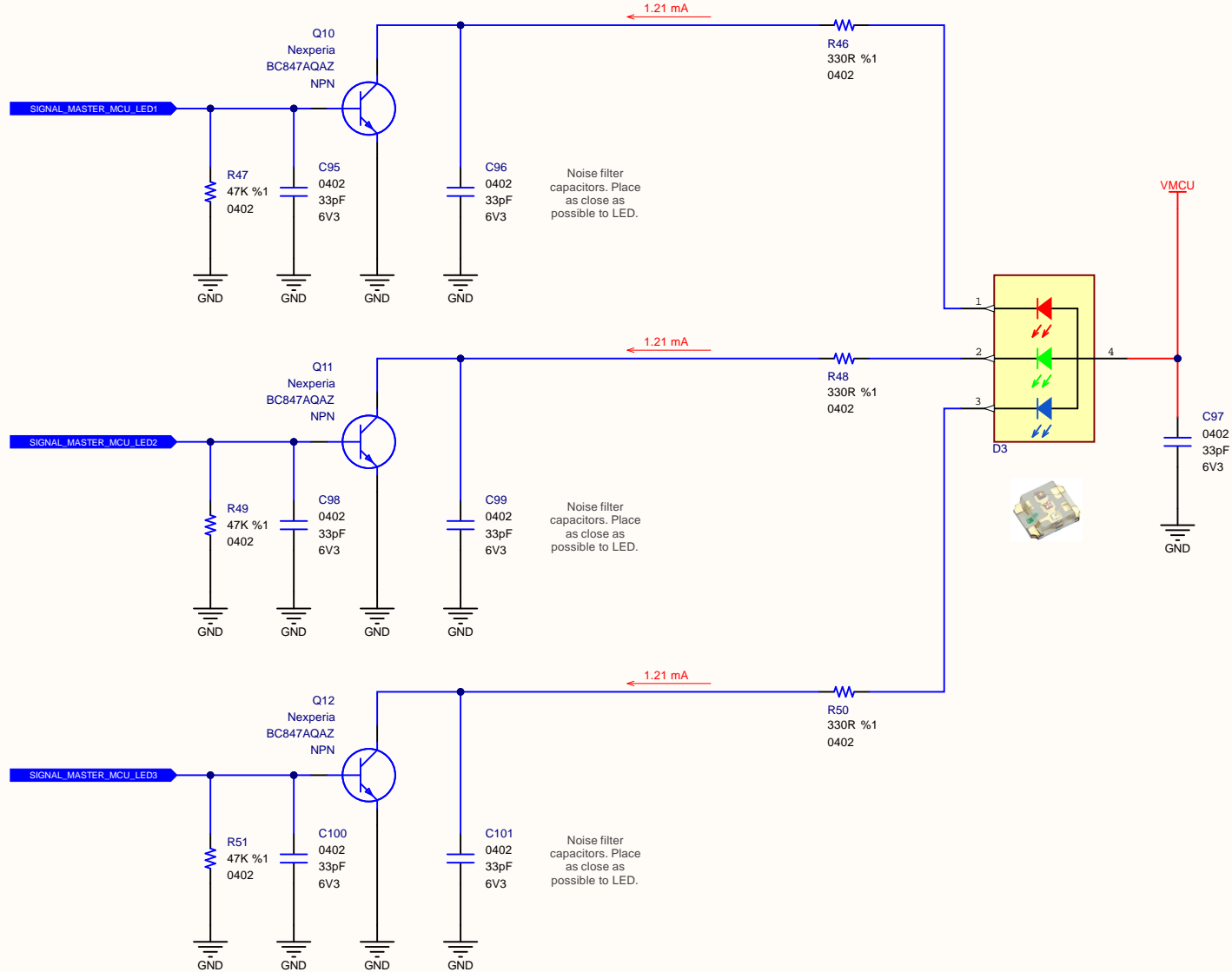
Master MicroController L Port




Communication Ports

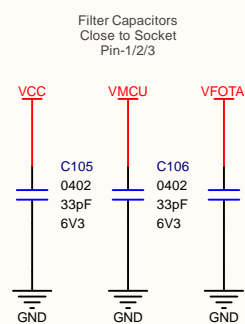
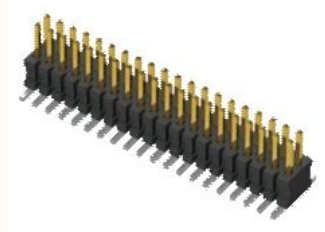
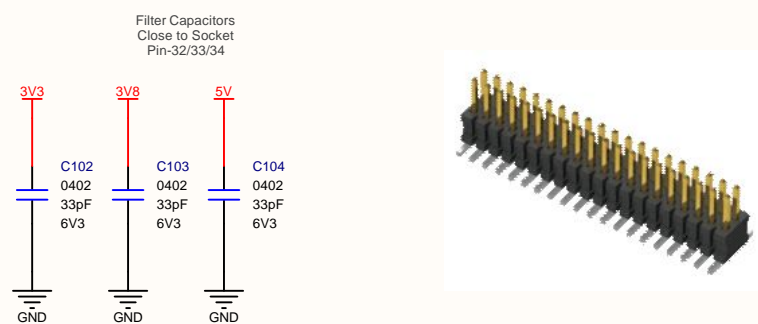


Main Microcontroller Status LED Indicators

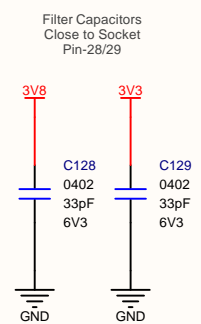
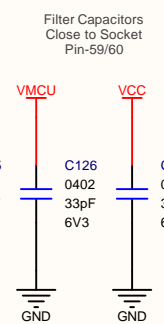
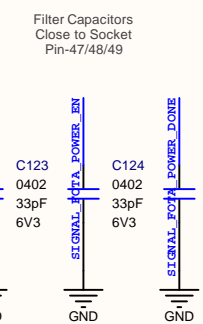
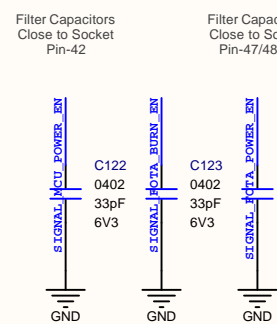
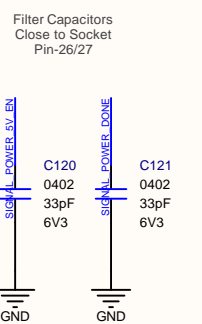
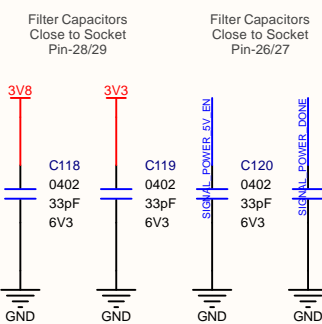
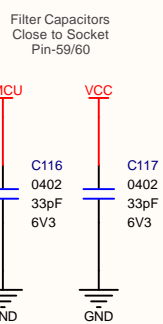
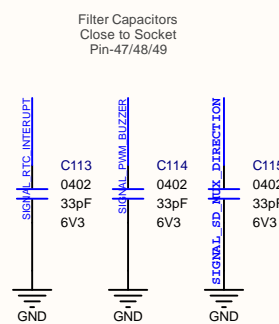
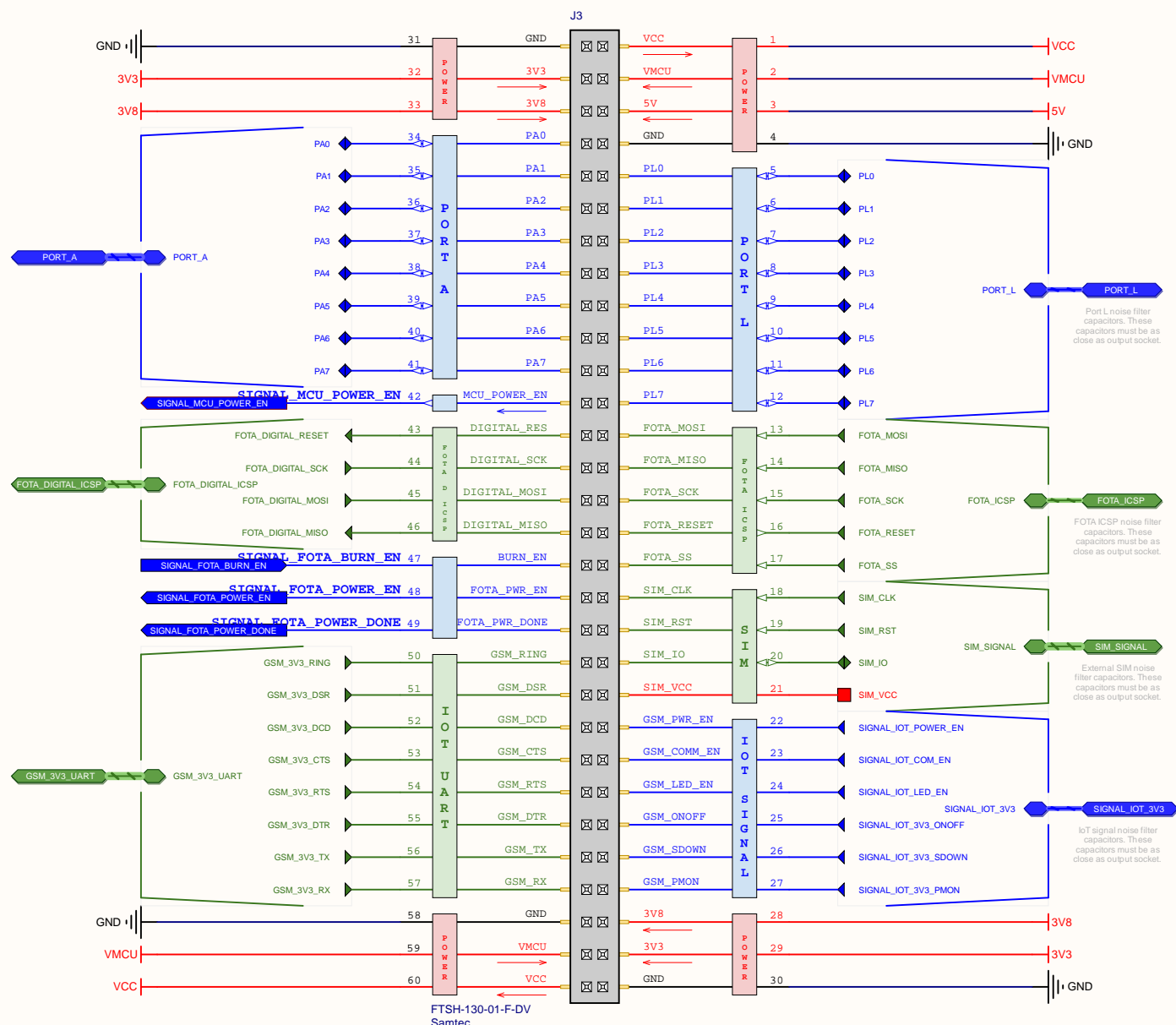
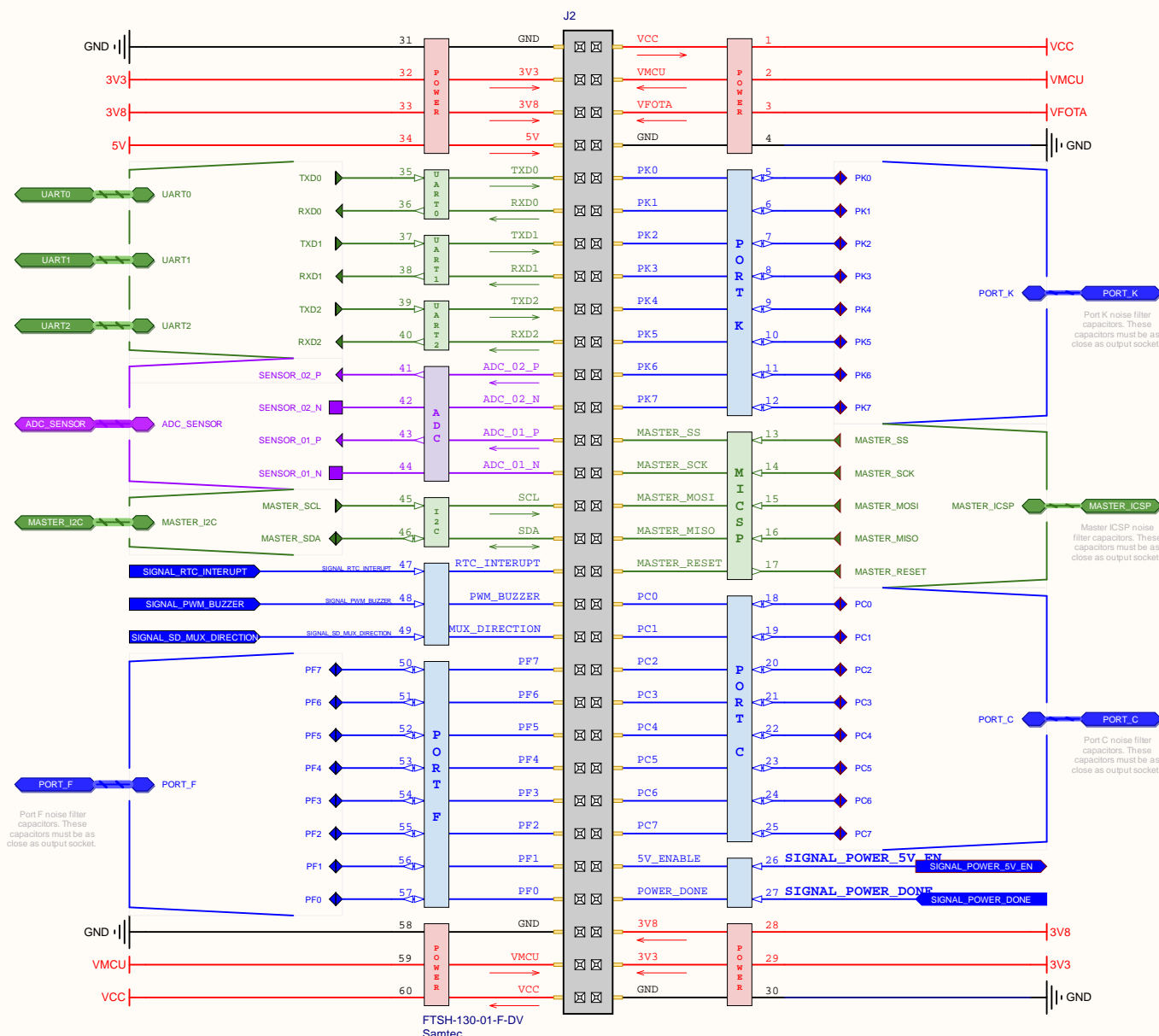
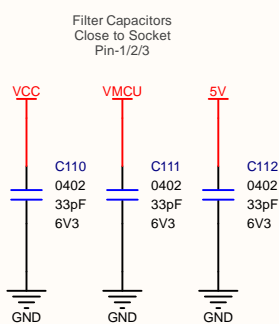
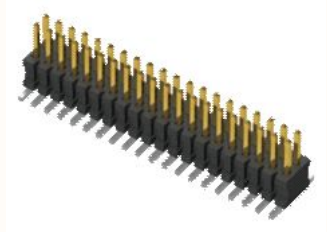
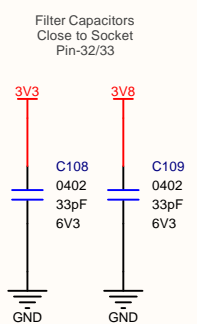


| | | | | | |
|--|-----------------------|----------------------------|--|--|---|
| Title Master MicroController LED | | | Ovoo Electronics | |  |
| Size: A4 | Number: 28 | Revision: B100AA R4 | Necip Fazıl Mah. Ortamak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| | | | | | |
| Date: 11.02.2021 | Time: 16:13:38 | Sheet 28 | of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController LED.SchDoc | | | | | |

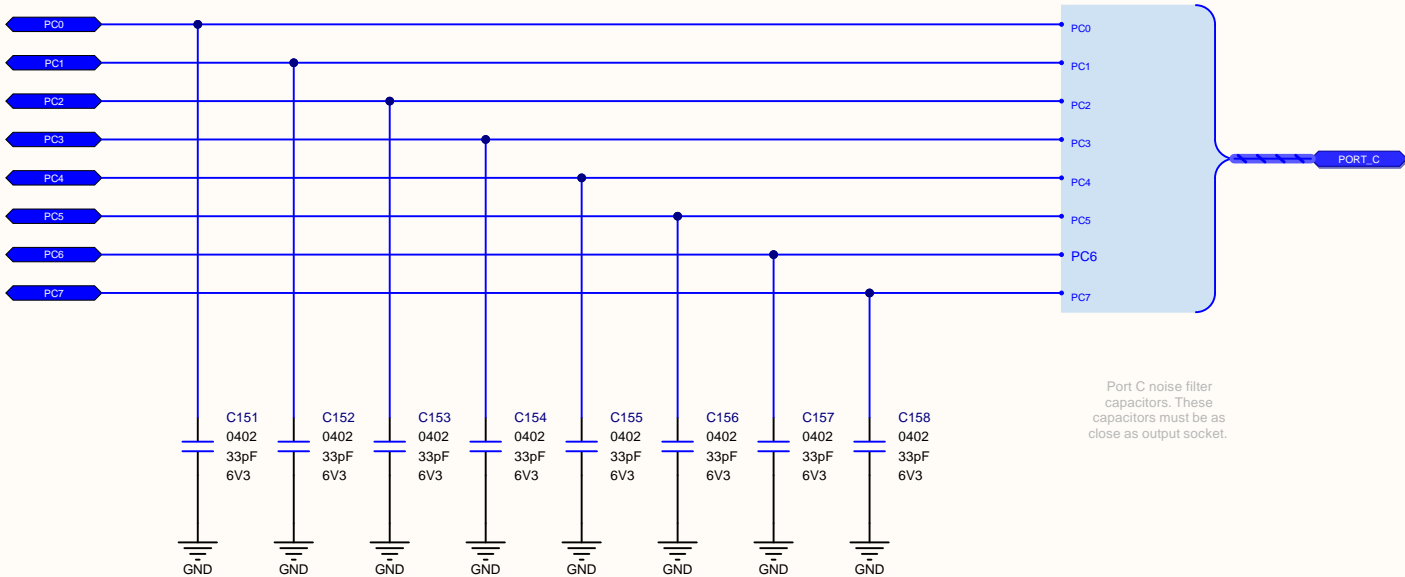
Module Output Socket A



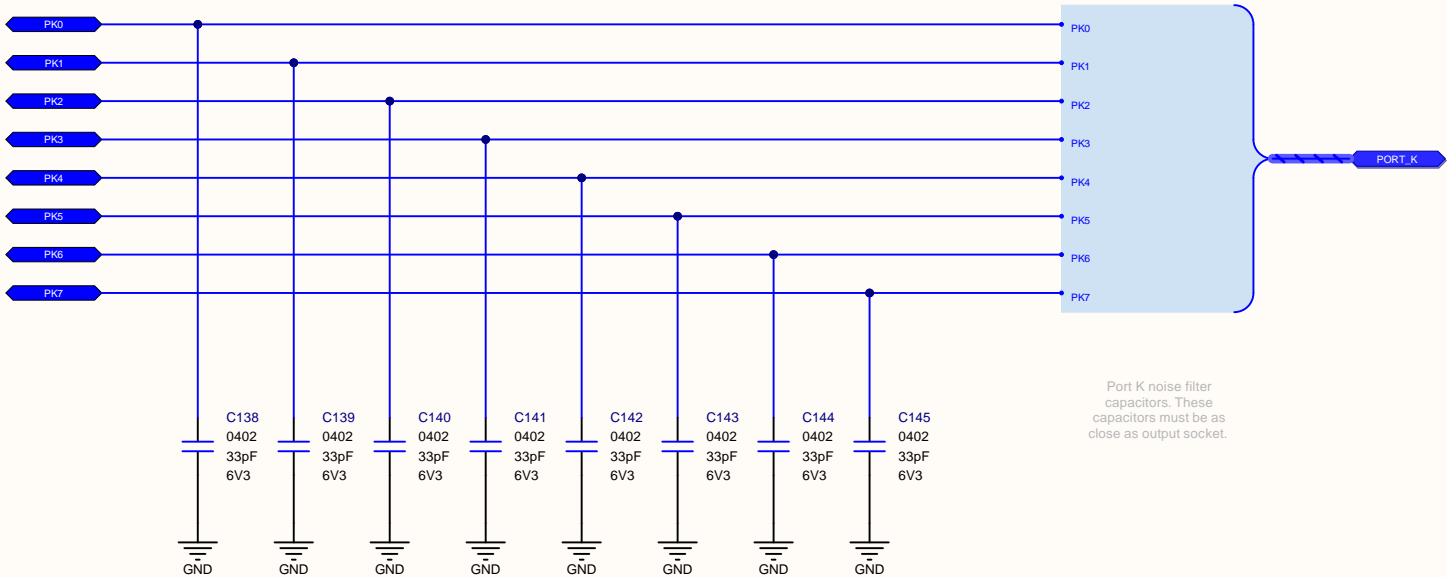
Module Output Socket B



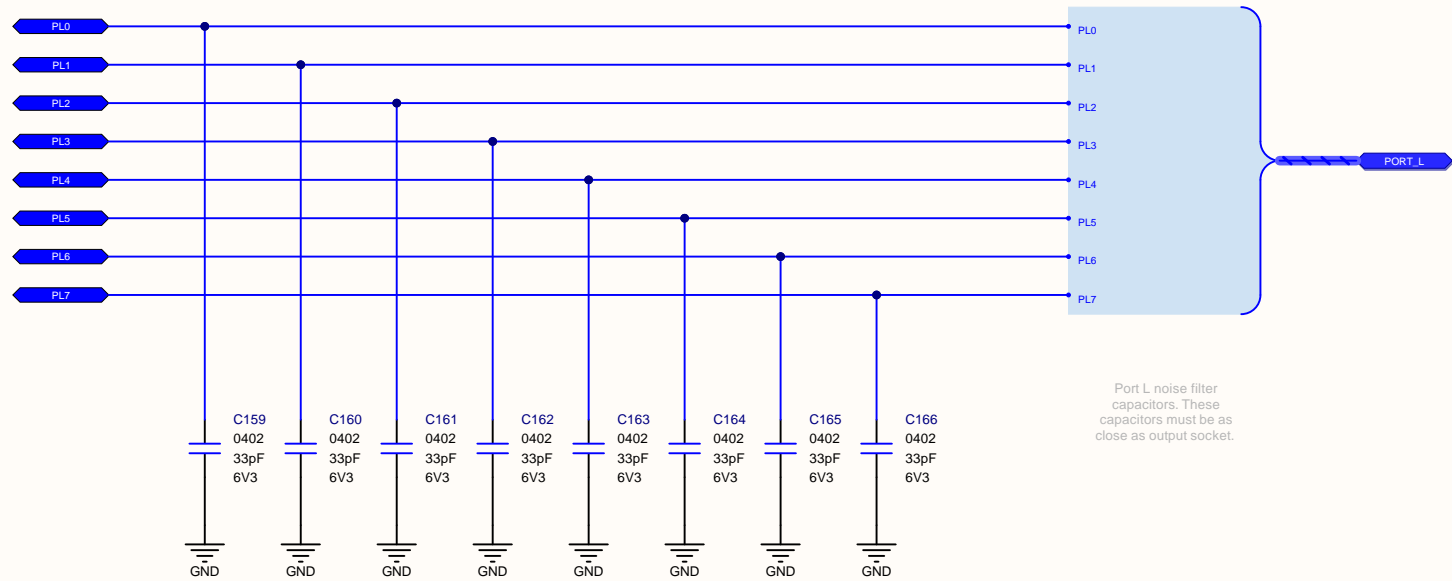
Port C Output Socket Noise Capacitors




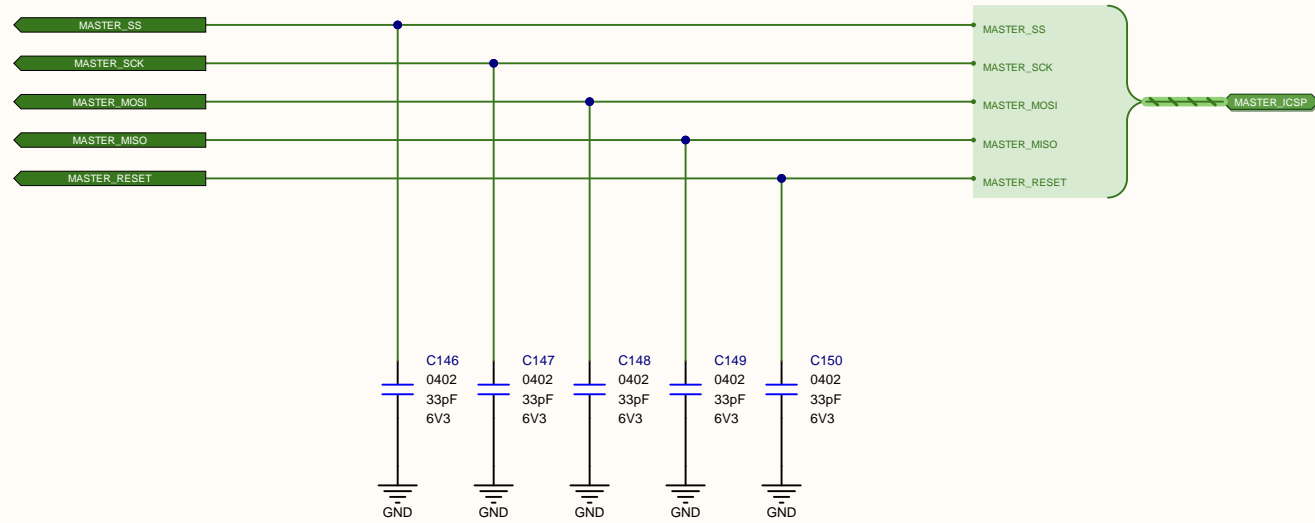
Port K Output Socket Noise Capacitors

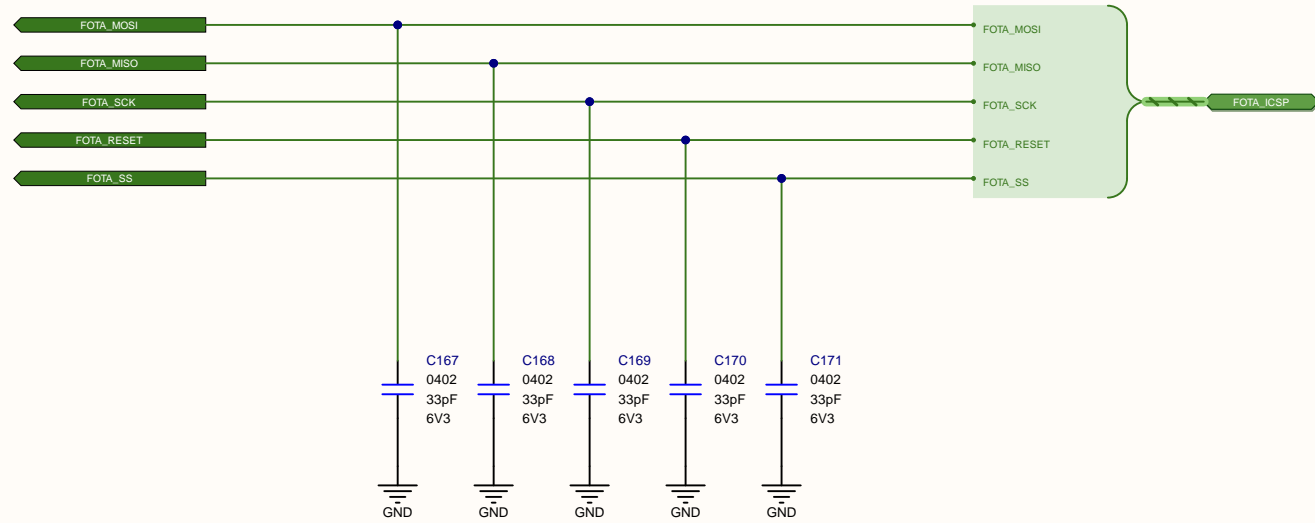


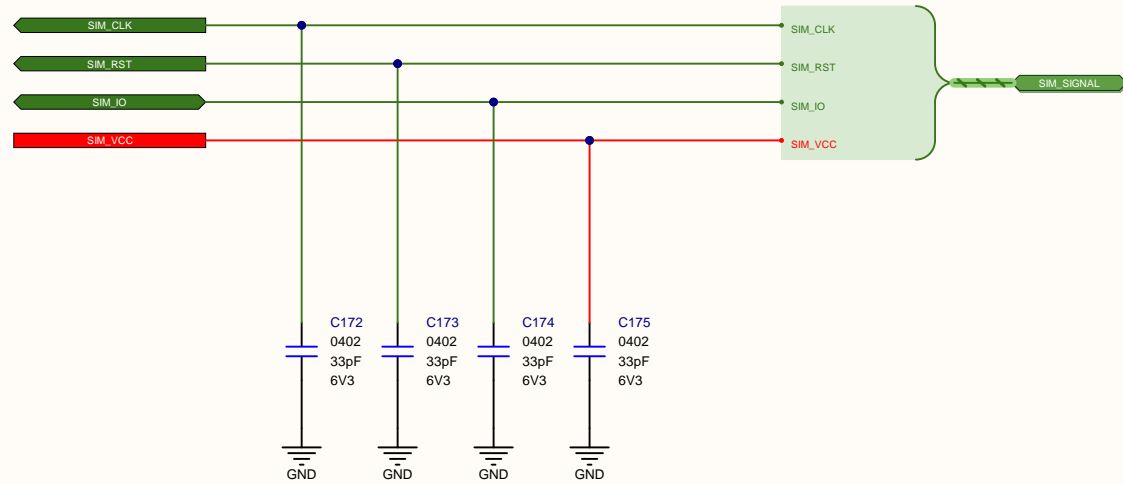
Port L Output Socket Noise Capacitors



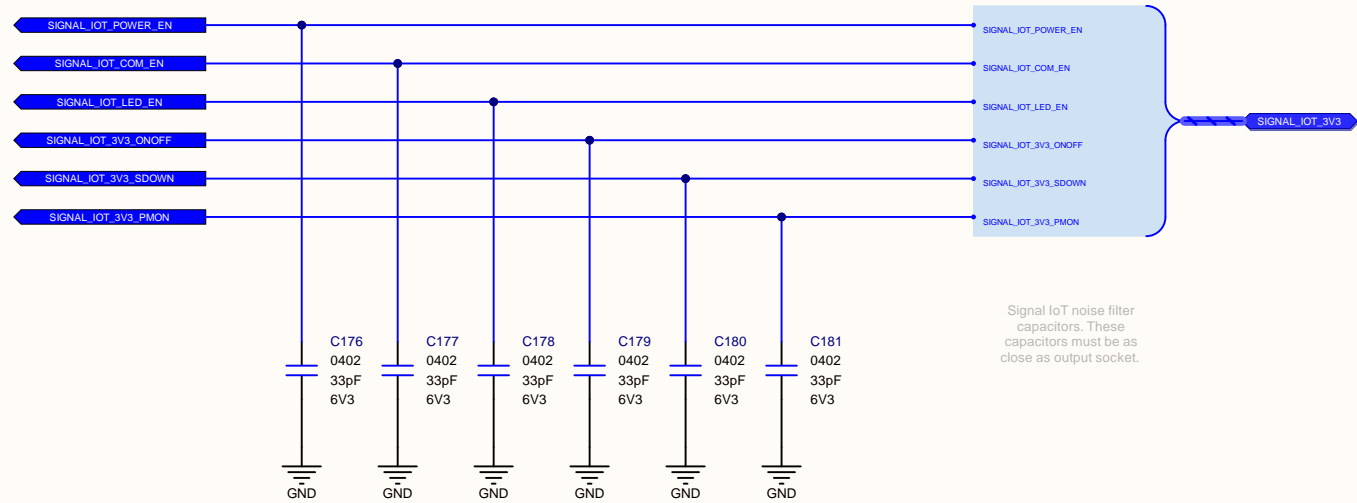
| | | | | |
|--|-----------------------|------------------------------|--|---|
| Title PORT L Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 32 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:39 | Sheet 32 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Port L.SchDoc | | | | |



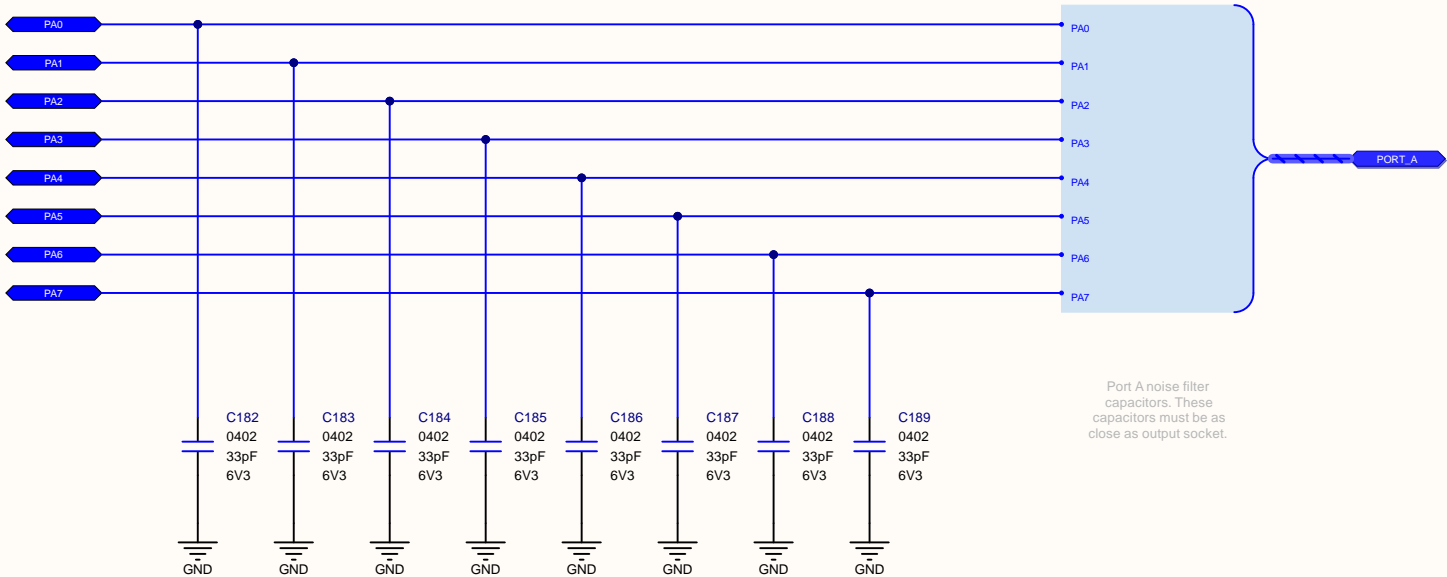


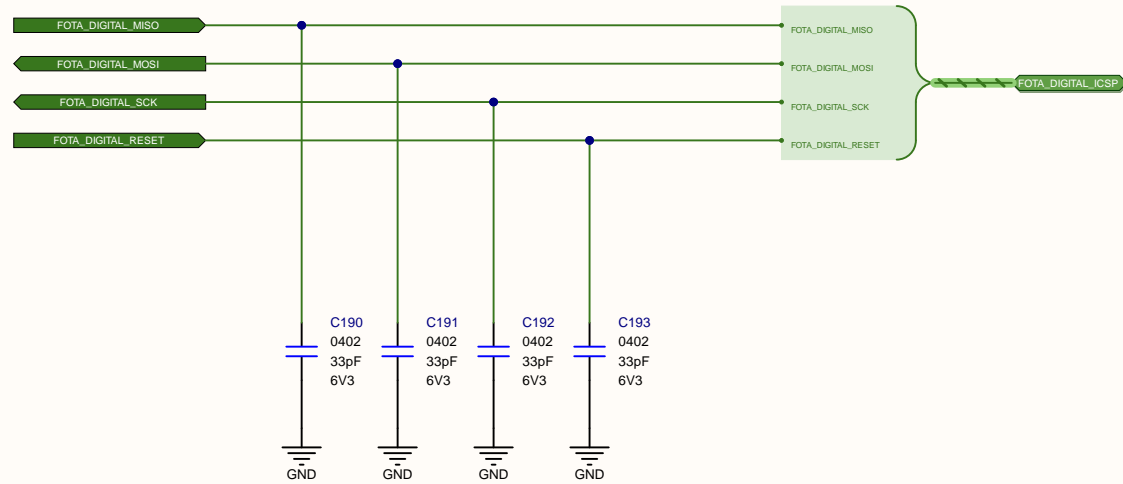



Signal IoT Output Socket Noise Capacitors



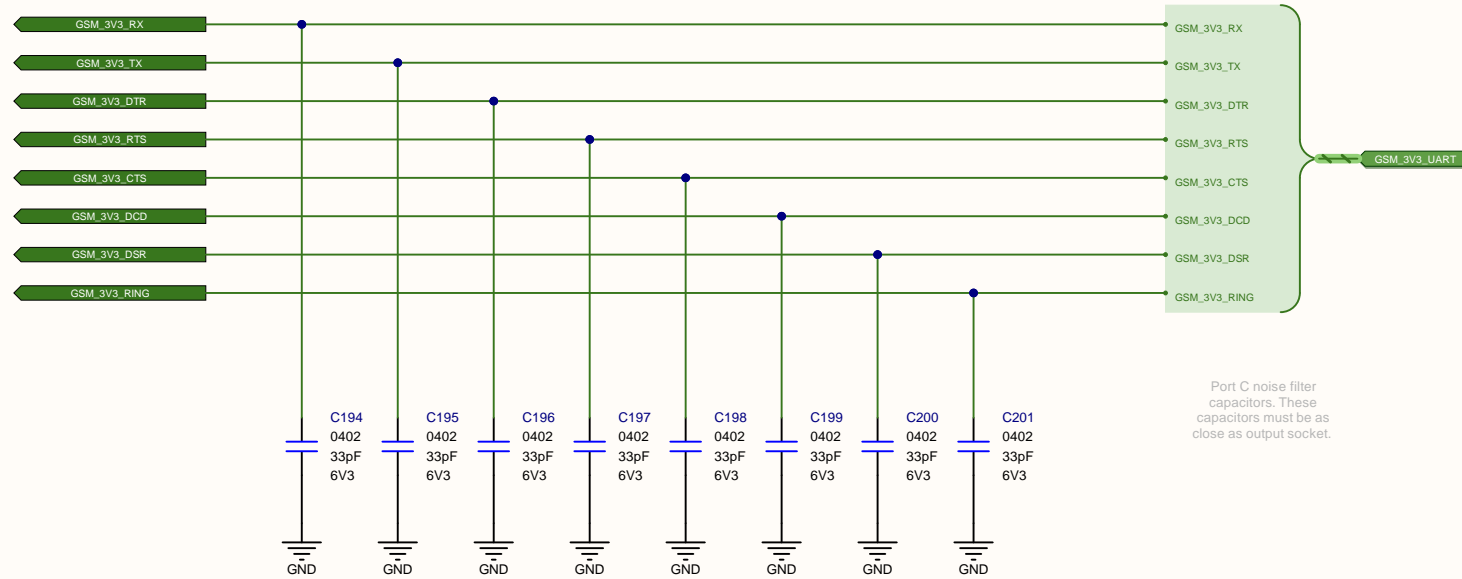
Port A Output Socket Noise Capacitors






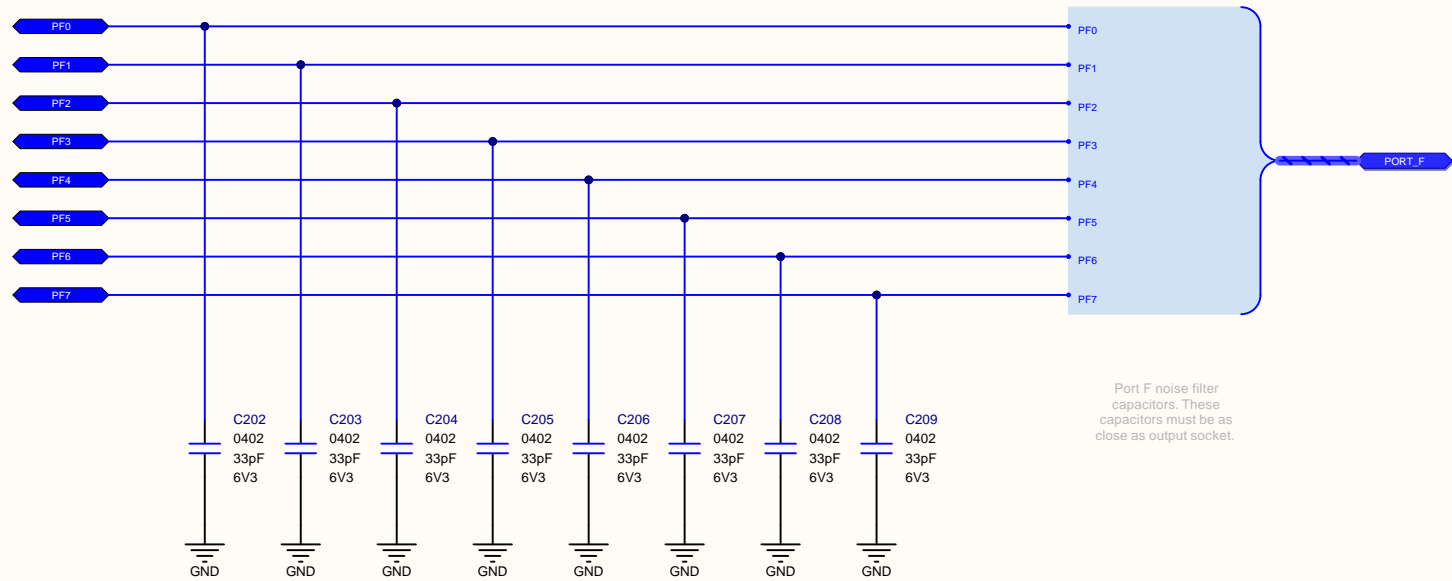
| | | | | | |
|---|-----------------------|------------------------------|---|--|---|
| Title FOTA Digital ICSP Filter Capacitors | | | Ovoo Electronics | |  |
| Size: A4 | Number: 38 | Revision: B100AA R4 | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Date: 11.02.2021 | Time: 16:13:39 | Sheet 38 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - FOTA Digital ICSP.SchDoc | | | | | |


IoT UART Output Socket Noise Capacitors

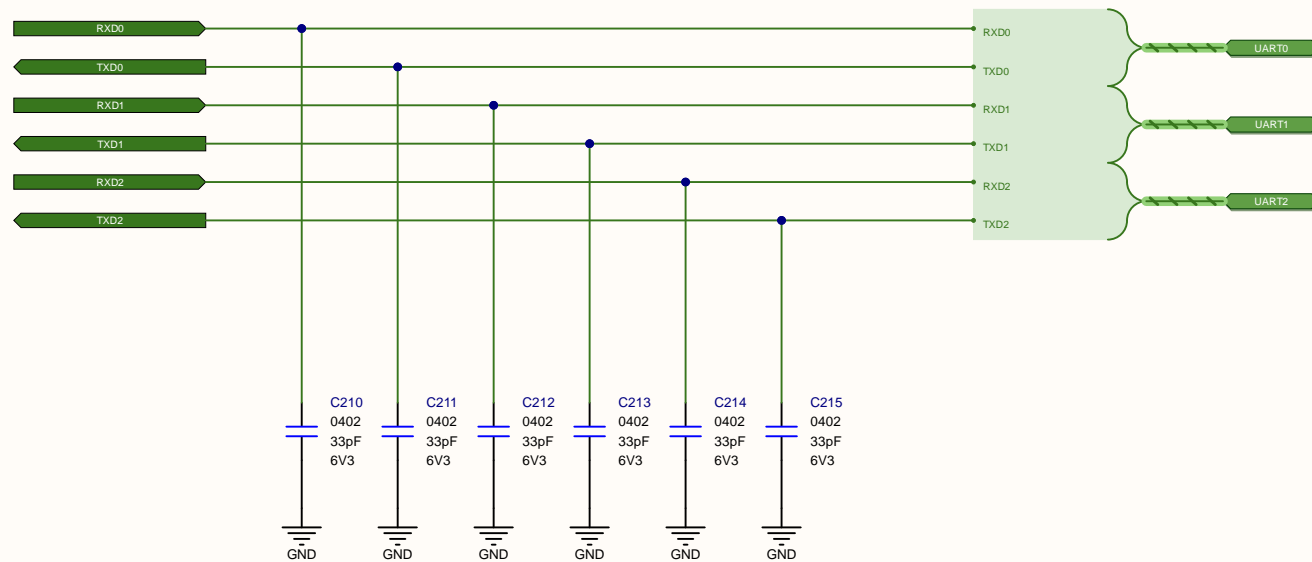


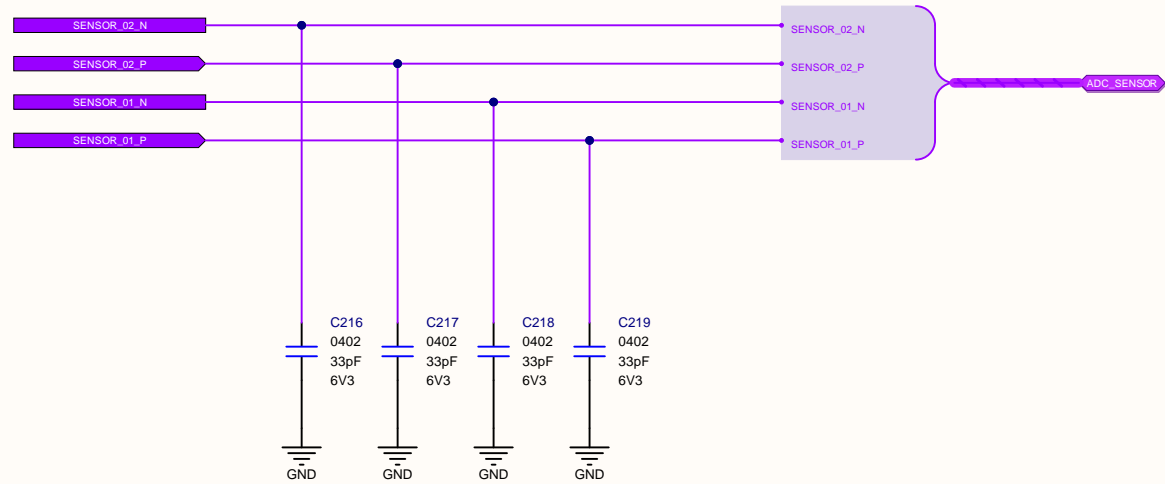
| | | | | |
|--|-----------------------|------------------------------|--|---|
| Title IoT UART Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 39 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:39 | Sheet 39 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - IoT UART.SchDoc | | | | |


Port F Output Socket Noise Capacitors

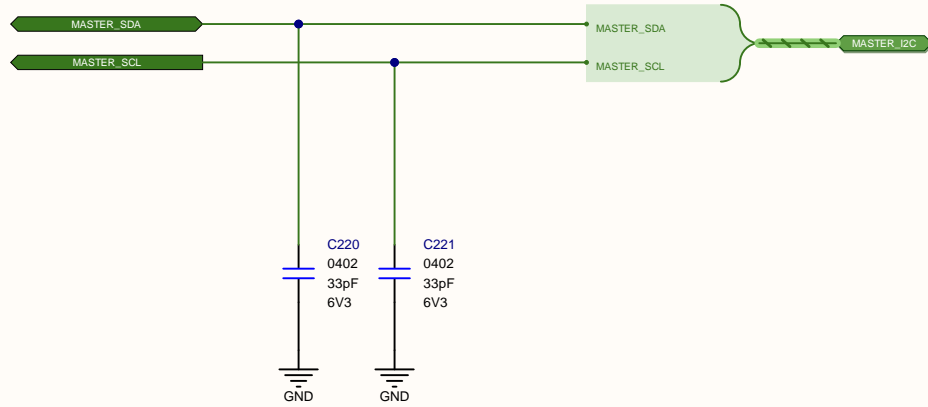


| | | | | |
|--|-----------------------|------------------------------|--|---|
| Title PORT F Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 40 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:39 | Sheet 40 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Port F.SchDoc | | | | |



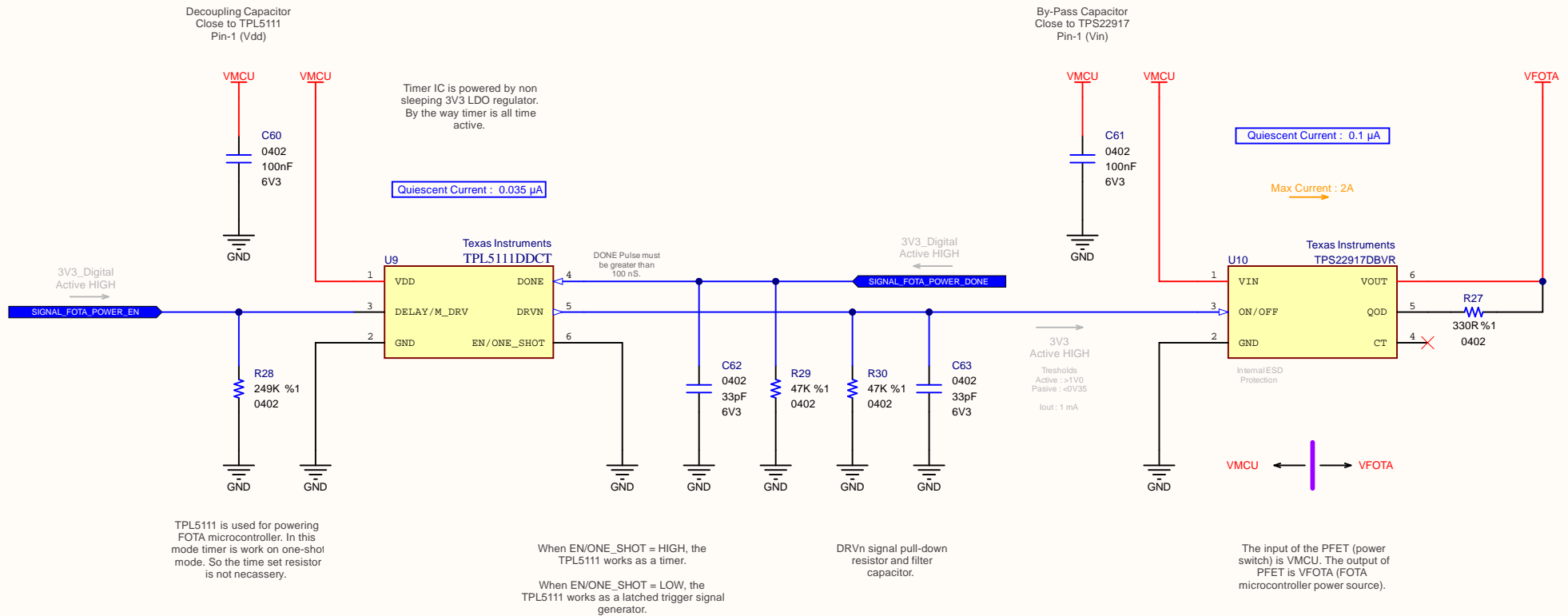


| | | | | | |
|--|-----------------------|------------------------------|---|--|---|
| Title ADC Sensor Filter Capacitors | | | Ovoo Electronics | |  |
| Size: A4 | Number: 42 | Revision: B100AA R4 | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Date: 11.02.2021 | Time: 16:13:39 | Sheet 42 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - ADC Sensor.SchDoc | | | | | |



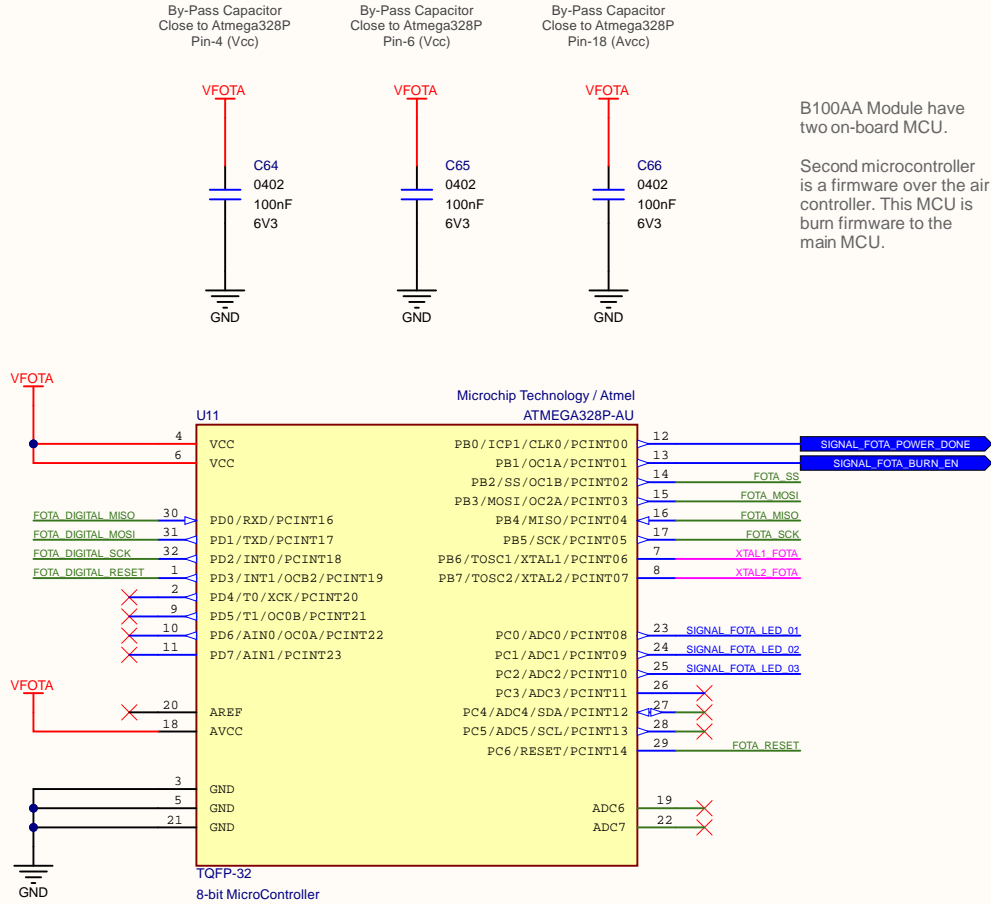
Power Trigger

Power Switch



| | | | |
|---|-----------------------|------------------------------|---|
| Title FOTA MicroController Latched Power Trigger | | | <div>Ovoo Electronics</div> <div>Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye</div> |
| Size: A4 | Number: 44 | Revision: B100AA R4 | |
| Date: 11.02.2021 | Time: 16:13:39 | Sheet 44 of 54 | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\FOTA MicroController Power Switch.SchDoc | | | |
| | | | |

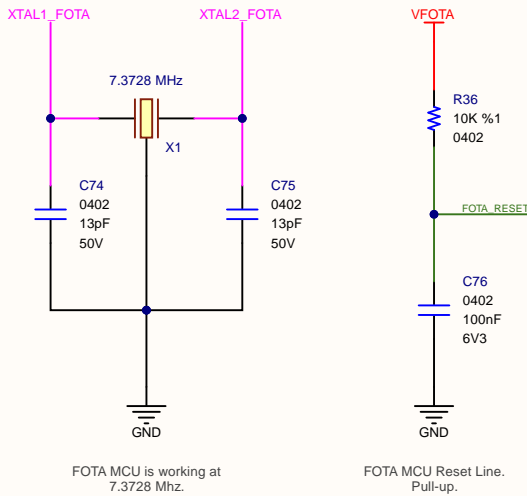
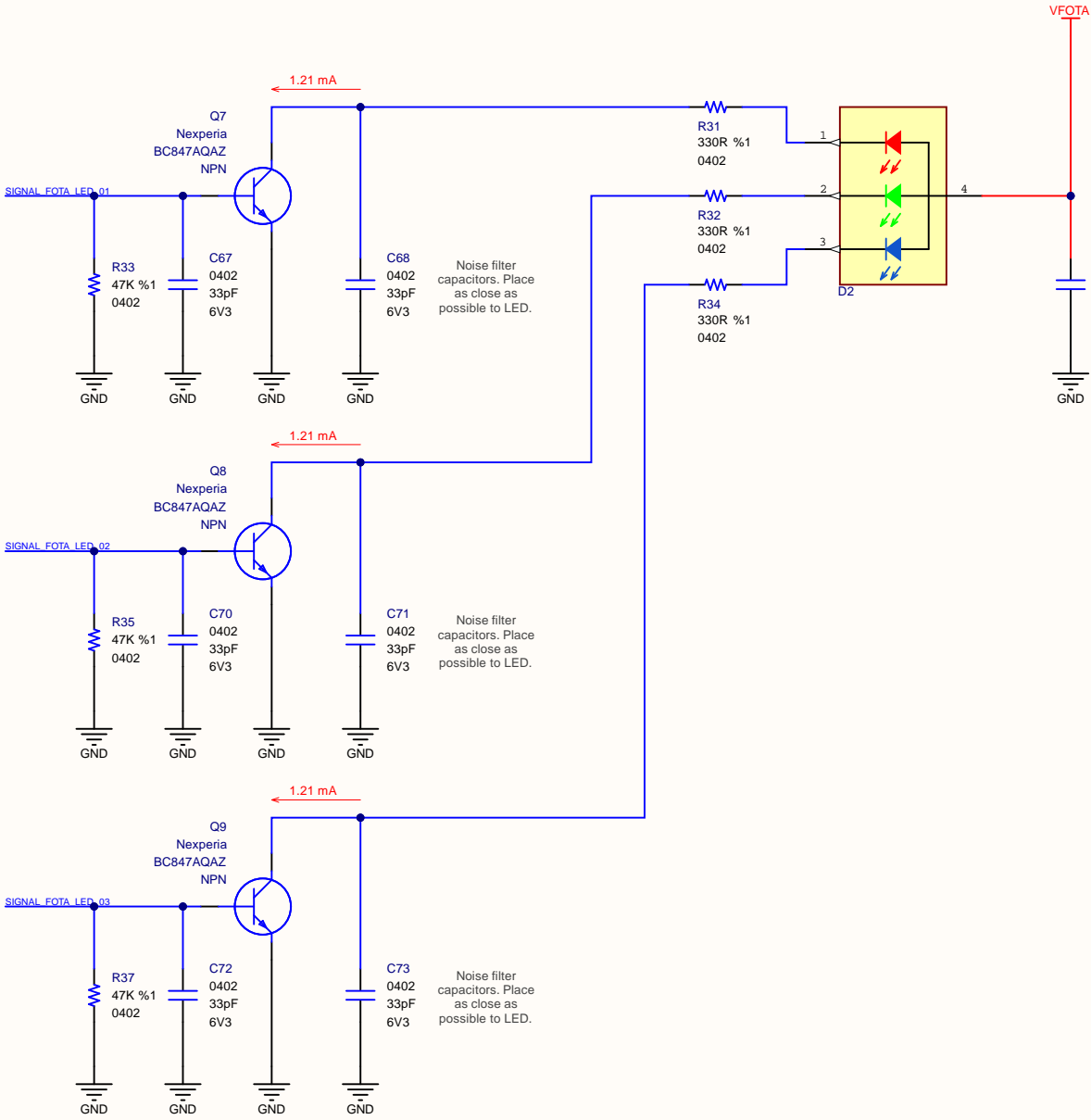
FOTA Micro Controller



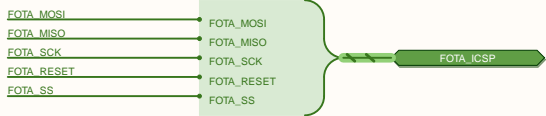
B100AA Module have two on-board MCU.

Second microcontroller is a firmware over the air controller. This MCU is burn firmware to the main MCU.

FOTA Status LED Indicators



FOTA Micro Controller ICSP



FOTA Digital ICSP (Main MCU Burn)



A

B

C

D

A

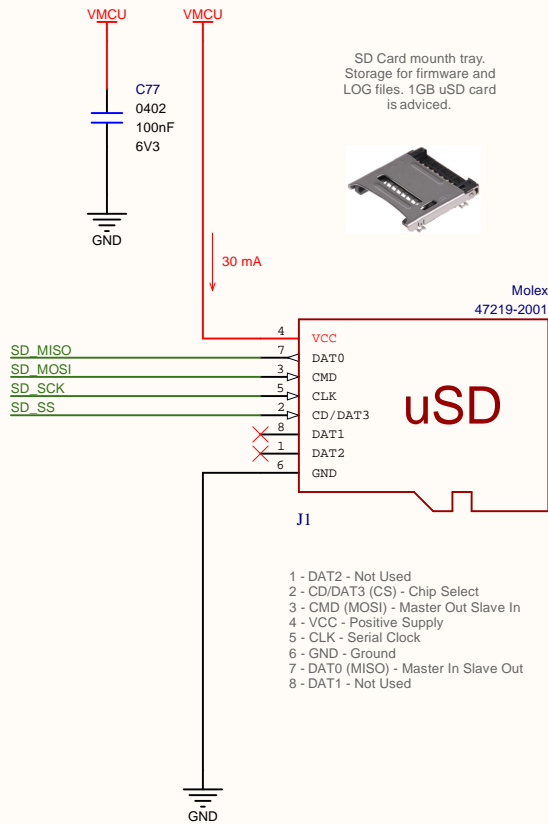
B

C

D

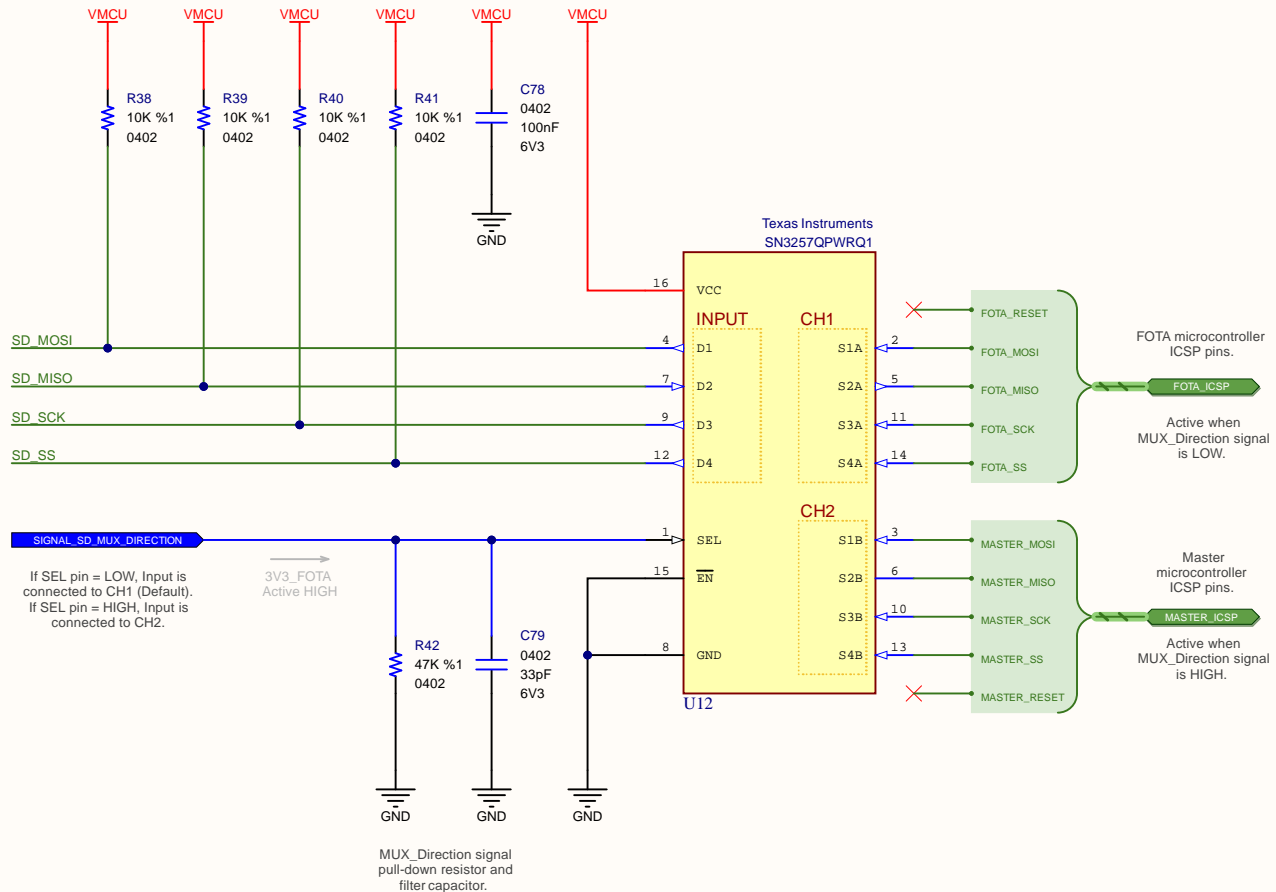
Decoupling Capacitor.
As close as possible to
uSD tray.


SD Card

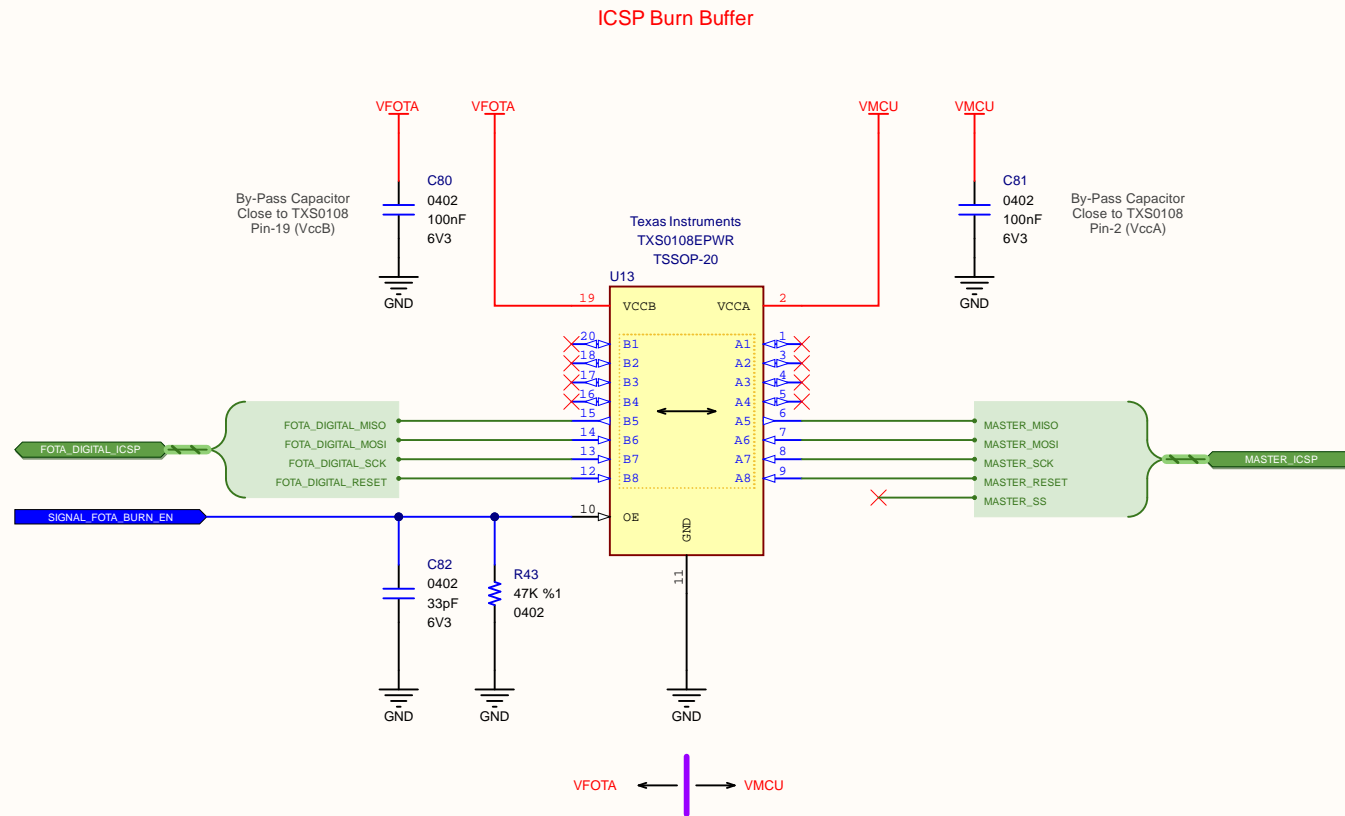


By-Pass Capacitor
Close to SN3257QPWRQ1
Pin-16 (Vcc)

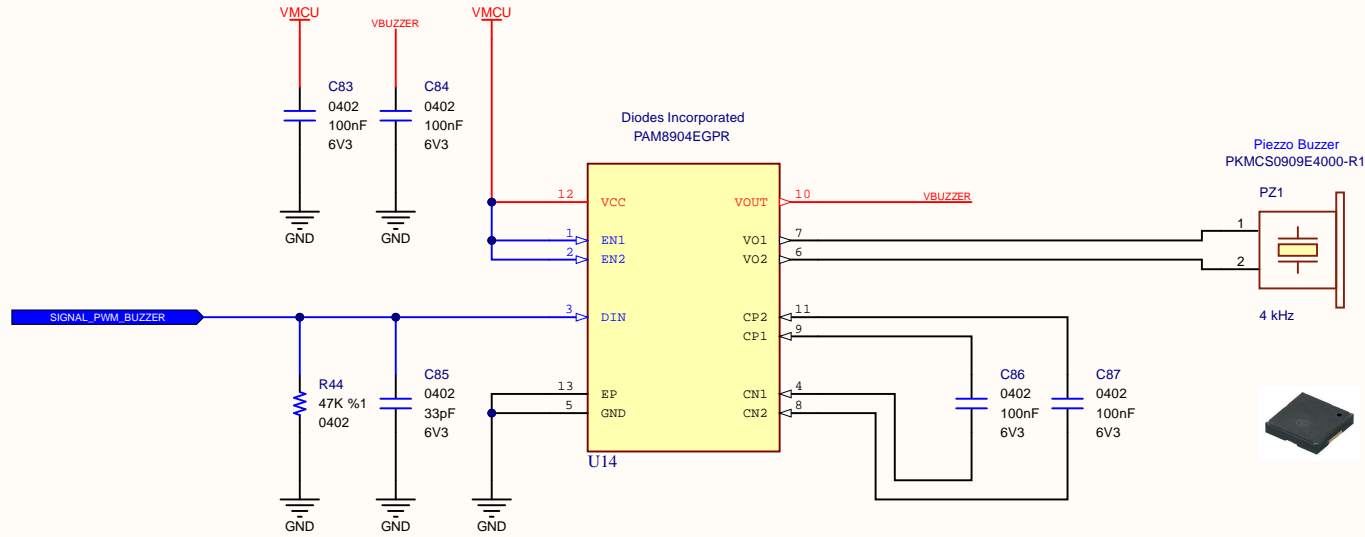
SPI Selection Switch




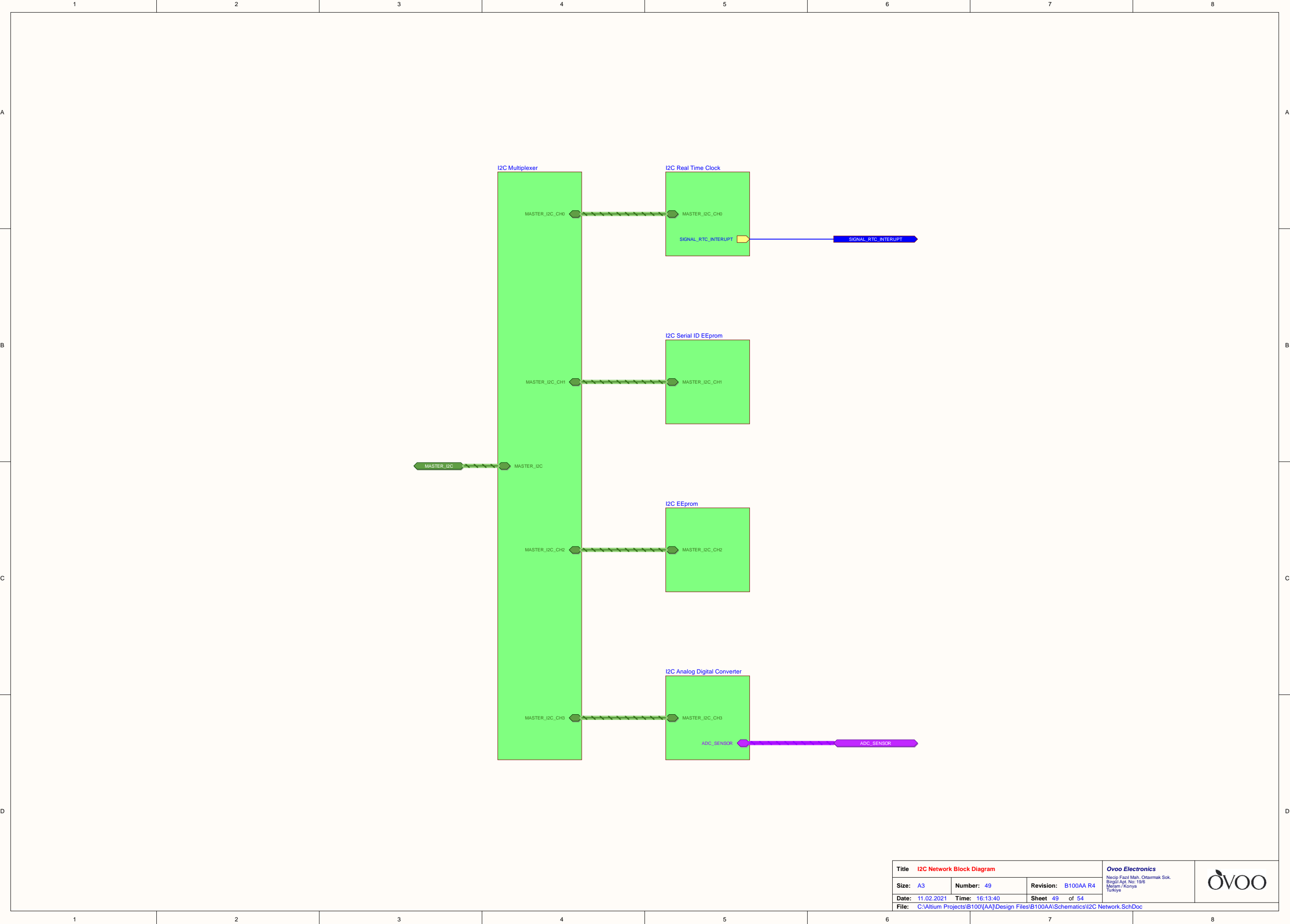
| | | | | | |
|---|-----------------------|------------------------------|--|--|---|
| Title SD Card & Select Switch | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 46 | Revision: B100AA R4 | | | |
| Date: 11.02.2021 | Time: 16:13:40 | Sheet 46 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\SD Card.SchDoc | | | | | |

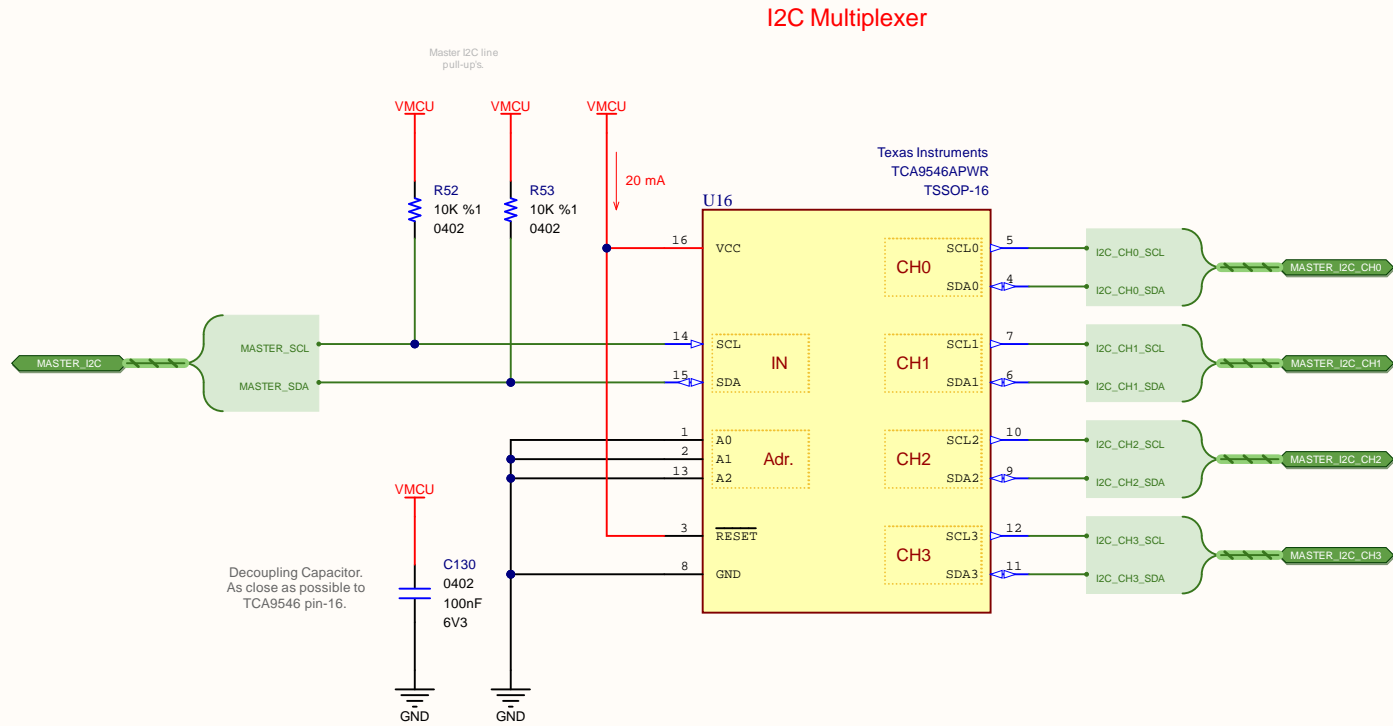
**Title** FOTA Burn Buffer**Size:** A4**Number:** 47**Revision:** B100AA R4**Date:** 11.02.2021**Time:** 16:13:40**Sheet** 47 **of** 54**File:** C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\ICSP Burn Buffer.SchDoc**Ovoo Electronics**Necip Fazıl Mah. Ortarmak Sok.
Bırgölü Apt. No: 19/6
Meram / Konya
Türkiye


Piezzo Buzzer



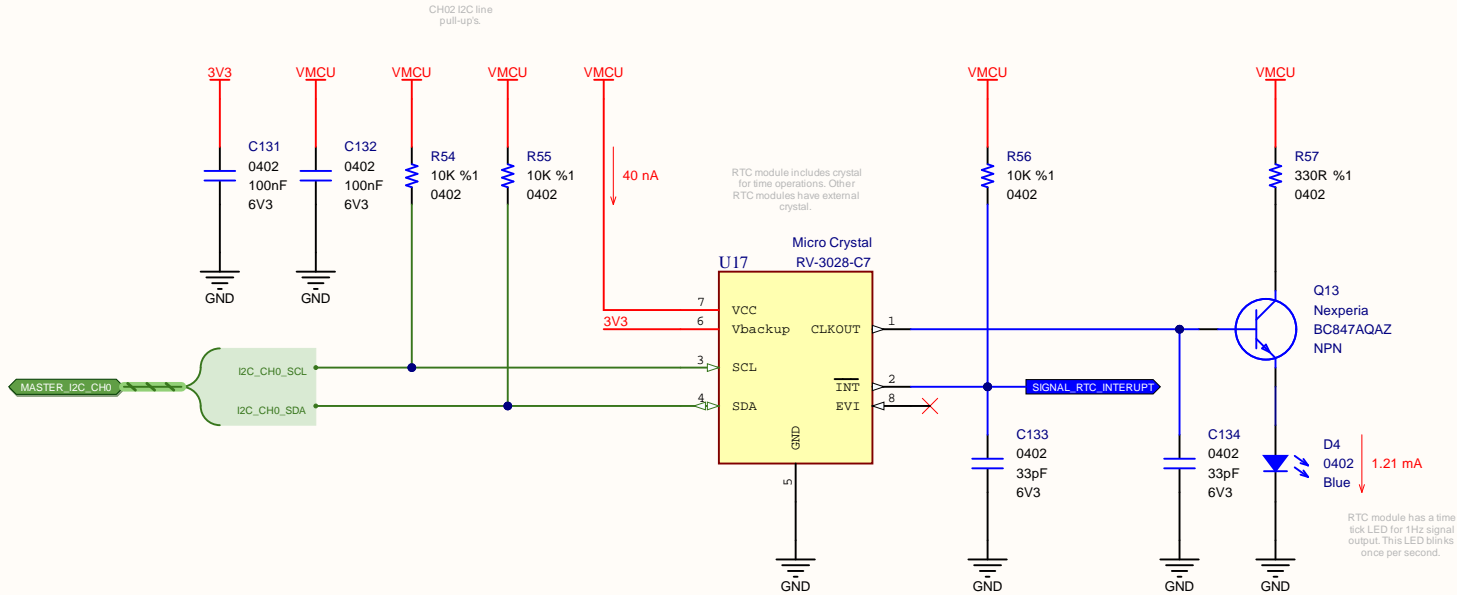
| | | | | |
|---|-----------------------|------------------------------|--|---|
| Title Buzzer | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 48 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:40 | Sheet 48 of 54 | | |
| File: C:\Altium Projects\B100(AA)\Design Files\B100AA\Schematics\Buzzer.SchDoc | | | | |



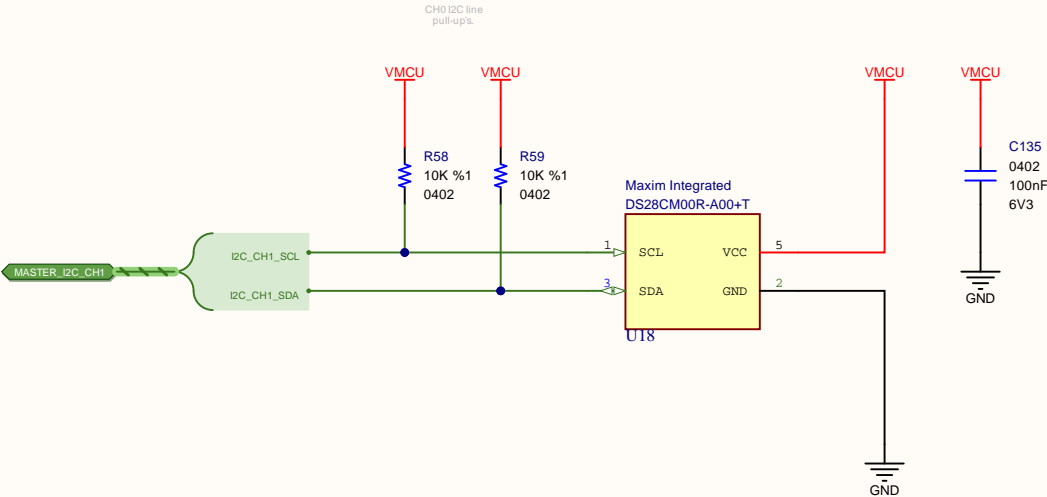



| | | | | | |
|---|-----------------------|------------------------------|---|--|---|
| Title I2C Multiplexer | | | Ovoo Electronics | |  |
| Size: A4 | Number: 50 | Revision: B100AA R4 | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Date: 11.02.2021 | Time: 16:13:40 | Sheet 50 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\I2C Multiplexer.SchDoc | | | | | |

Real Time Clock

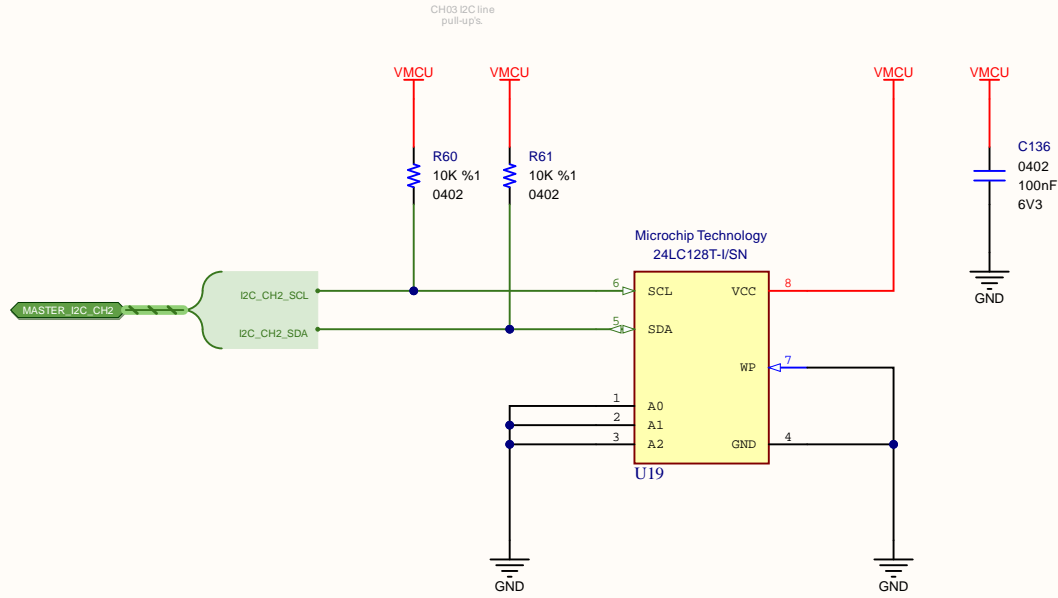


I2C Serial ID EEPROM



| | | | | | |
|---|----------------|---------------------|---|--|---|
| Title I2C Serial ID EEPROM | | | Ovoo Electronics | |  |
| | | | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Size: A4 | Number: 52 | Revision: B100AA R4 | | | |
| Date: 11.02.2021 | Time: 16:13:40 | Sheet 52 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Serial ID EEPROM.SchDoc | | | | | |

EEPROM



Title I2C EEprom

Size: A4

Number: 53

Revision: B100AA R4

Date: 11.02.2021

Time: 16:13:40

Sheet 53 of 54

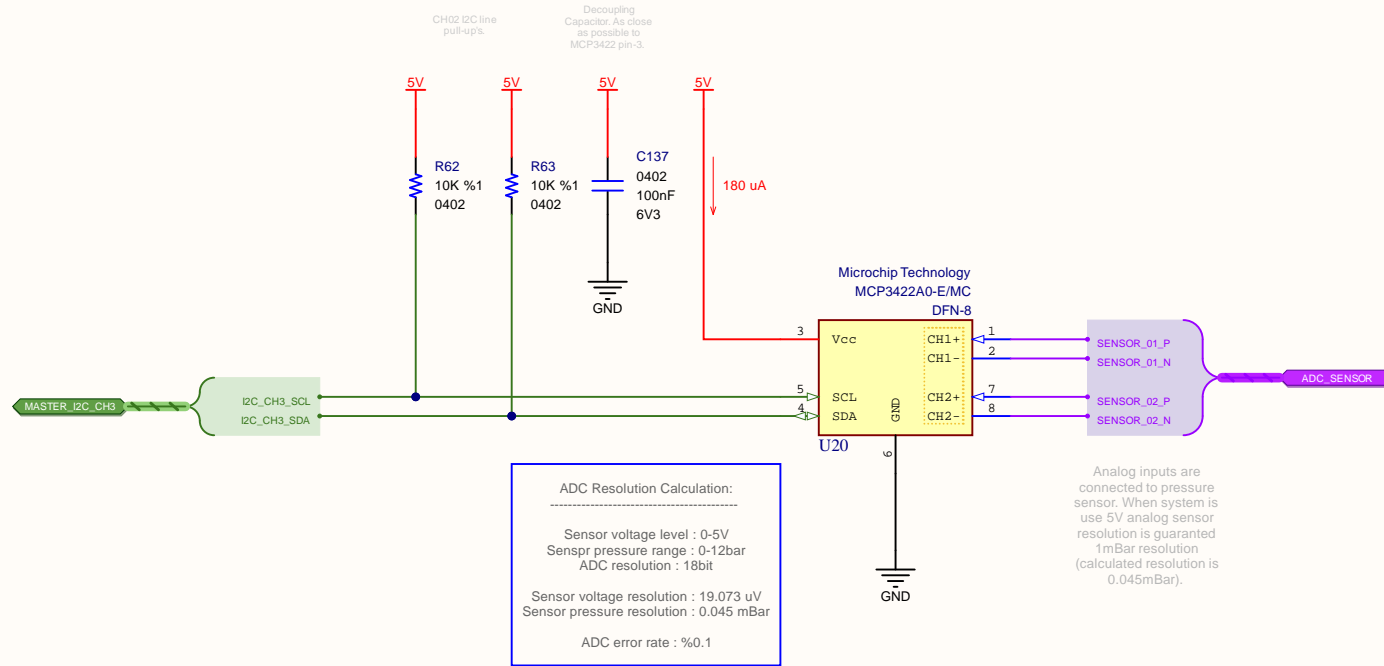
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\EEPROM.SchDoc


Ovoo Electronics

Necip Fazıl Mah. Ortarmak Sok.
Bırgöl Apt. No: 19/6
Meram / Konya
Türkiye



Analog Digital Converter



| | | | | |
|--|-----------------------|------------------------------|--|---|
| Title Analog Digital Converter | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 54 | Revision: B100AA R4 | | |
| Date: 11.02.2021 | Time: 16:13:40 | Sheet 54 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Analog Digital Converter.SchDoc | | | | |