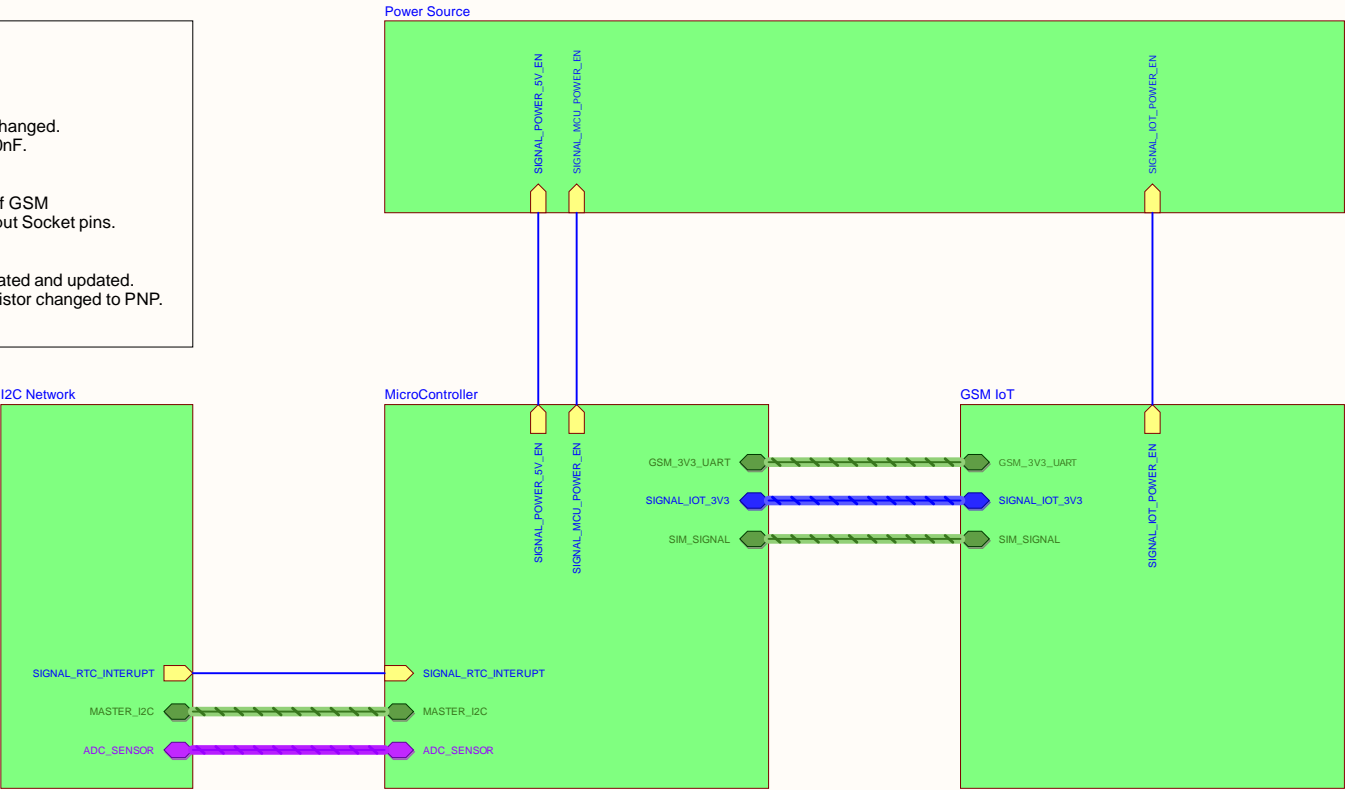


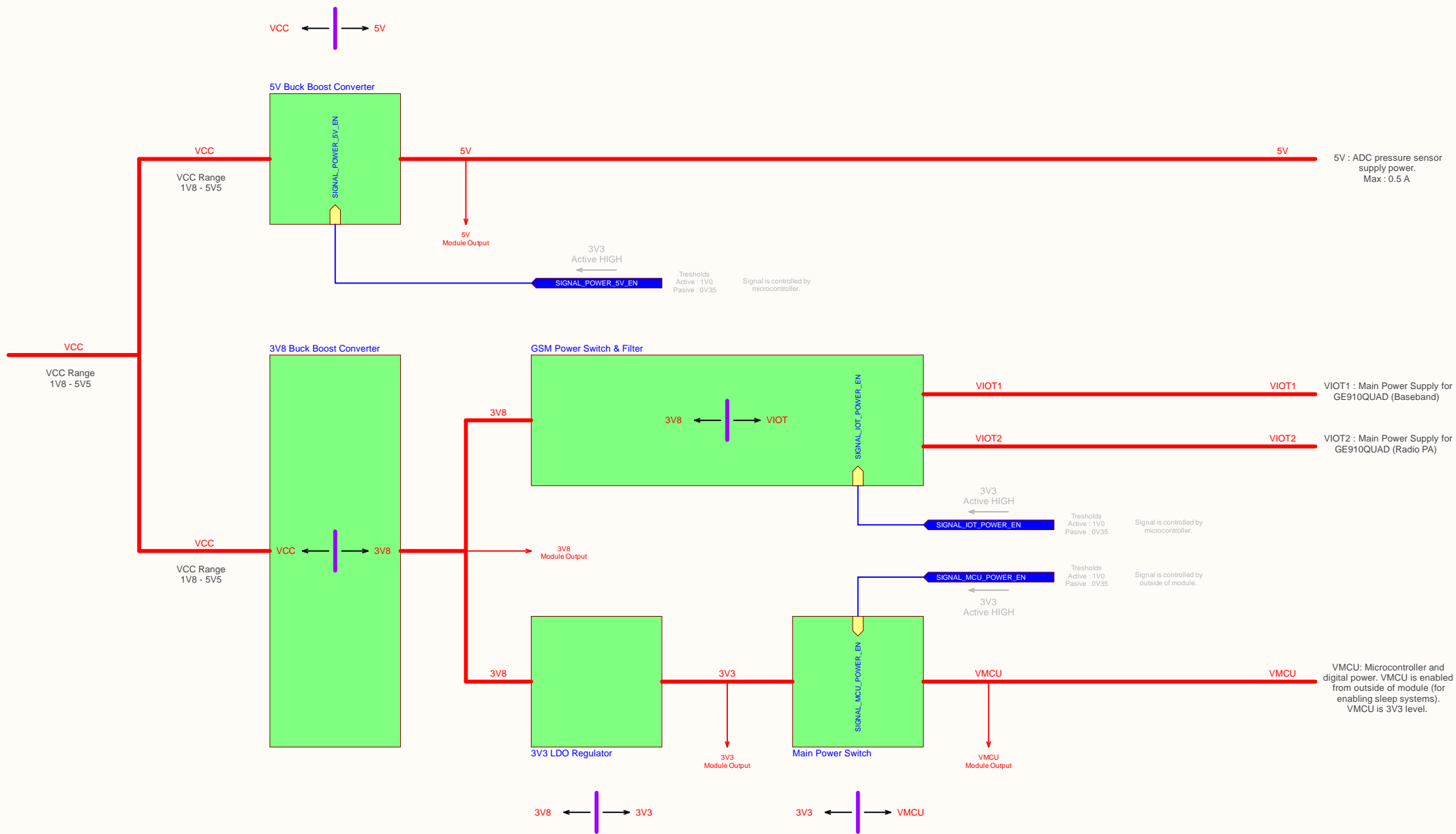
B100 - Master IoT MicroController

Revision History

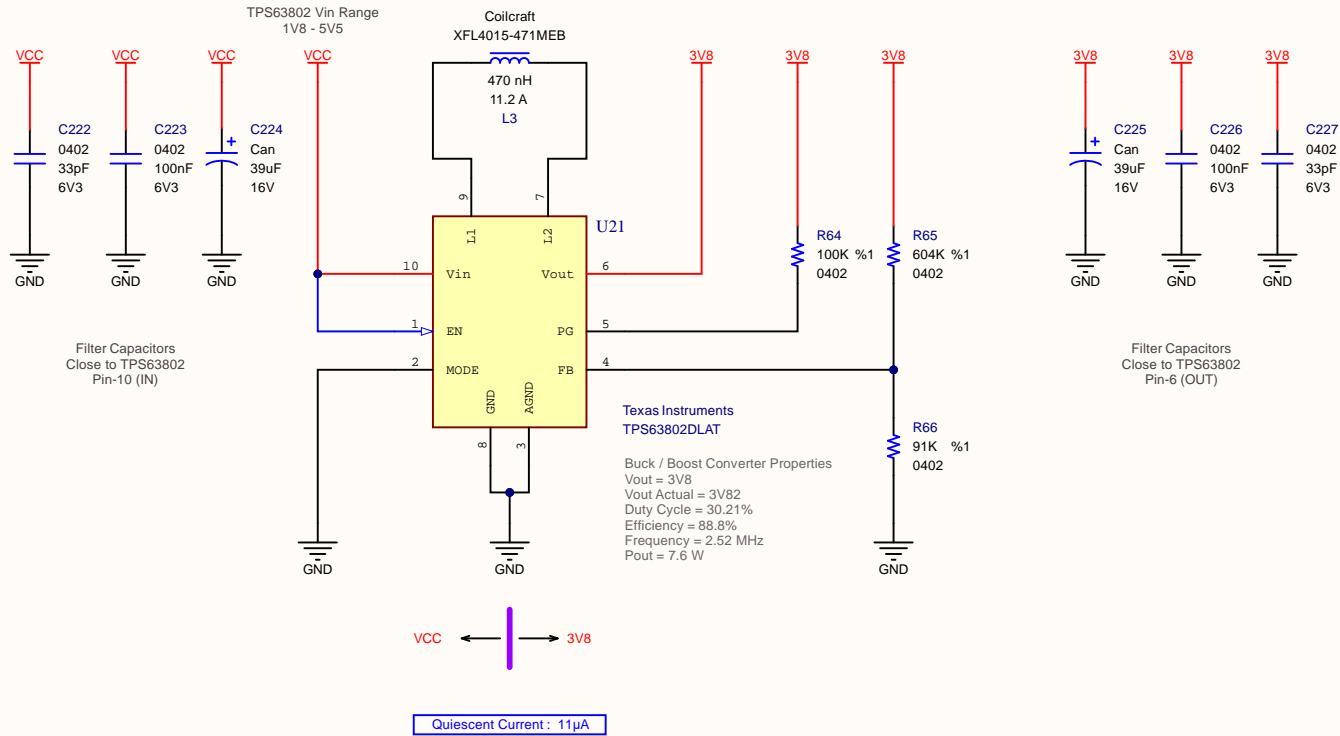
- AA001 (05.01.2021)
* Schematic creation.
- AA002 (11.01.2021)
* Bidirectional signal translator IC changed.
* SIM Vcc capacitor changed to 100nF.
- AA003 (19.01.2021)
* 33 pF capacitor added to VAUX of GSM
* 33 pF capacitors added to all Output Socket pins.
- AA004 (22.01.2021)
* GSM IoT LED resistors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




Power Archtechure



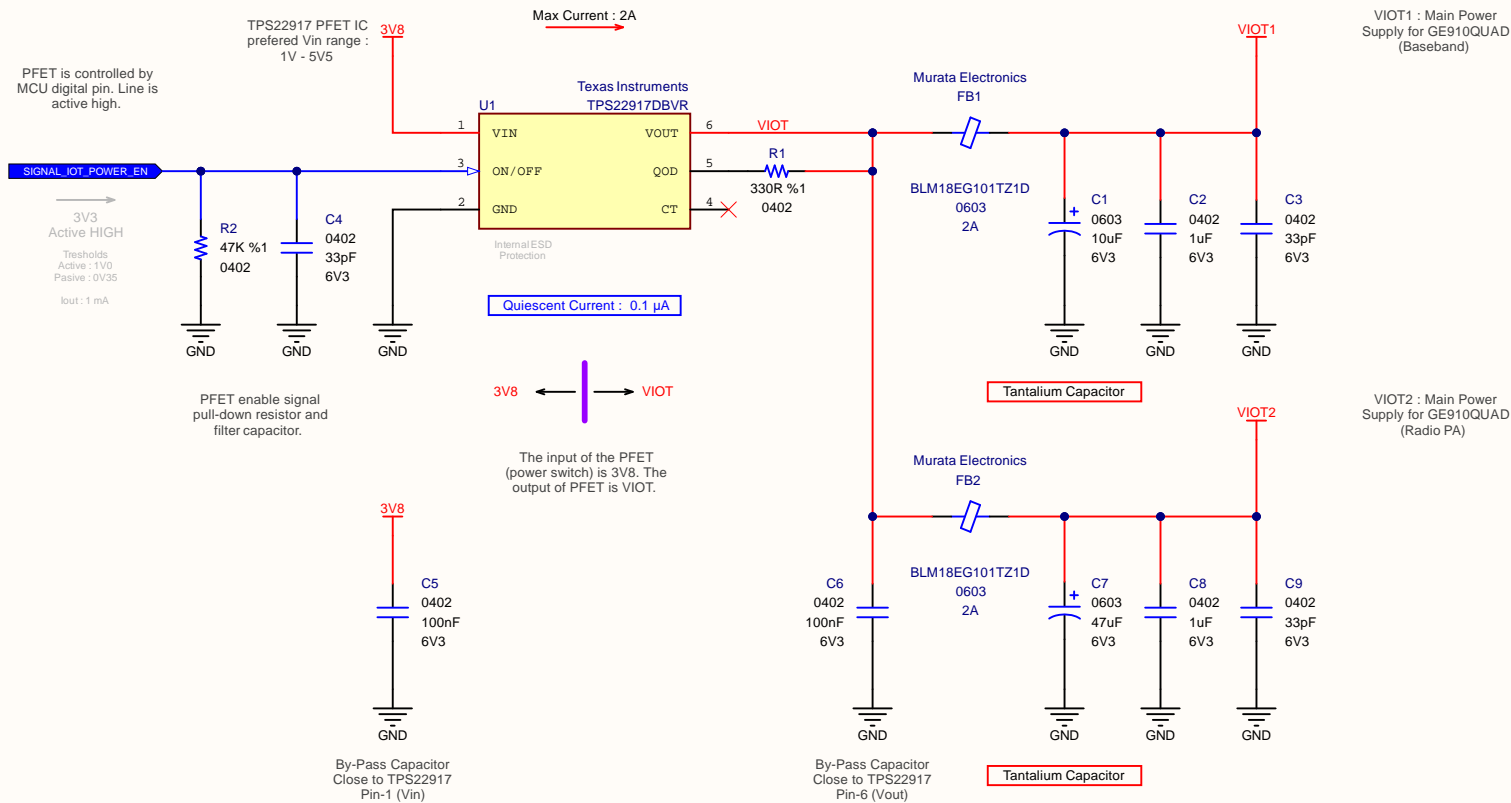
3V8 Buck Boost Converter



| | | | | | |
|---|----------------|---------------------|--|--|---|
| Title 3V8 DC/DC Buck Boost Converter | | | Ovoo Electronics Necip Fazil Mah. Ortarmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 3 | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:35 | 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

Size: A4

Number: 4

Revision: B100AA R4

Date: 2.02.2021

Time: 18:16:35

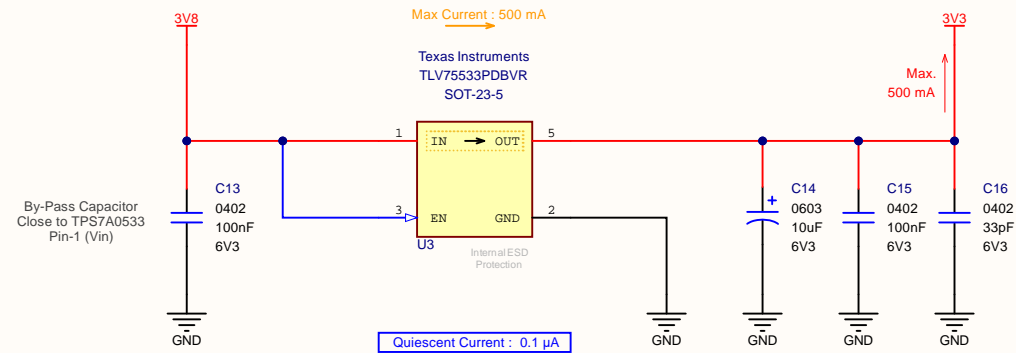
Sheet 4 of 54

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

Ovoo Electronics


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

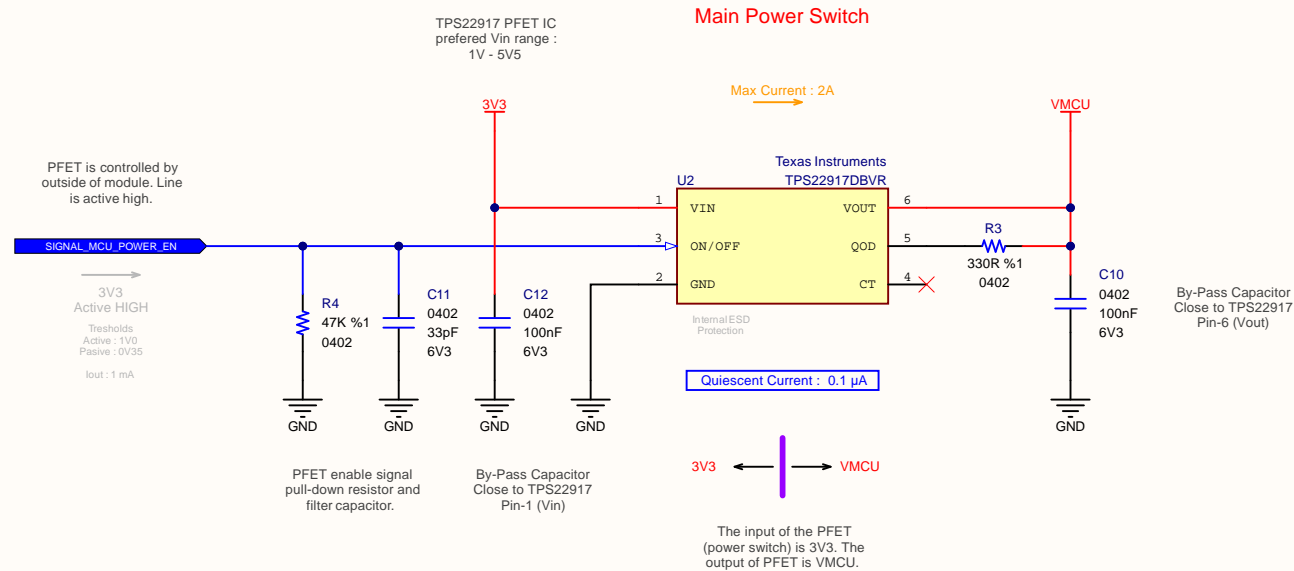
3V3 LDO Regulator




3V8 \longleftrightarrow 3V3

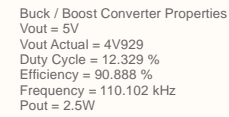
TLV75533 LDO is a 3V3 regulator. LDO is always enable.


| | | | | | |
|--|----------------|---------------------|---|--|---|
| Title 3V3 LDO Regulator | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 5 | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:35 | Sheet 5 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\3V3 LDO Regulator.SchDoc | | | | | |



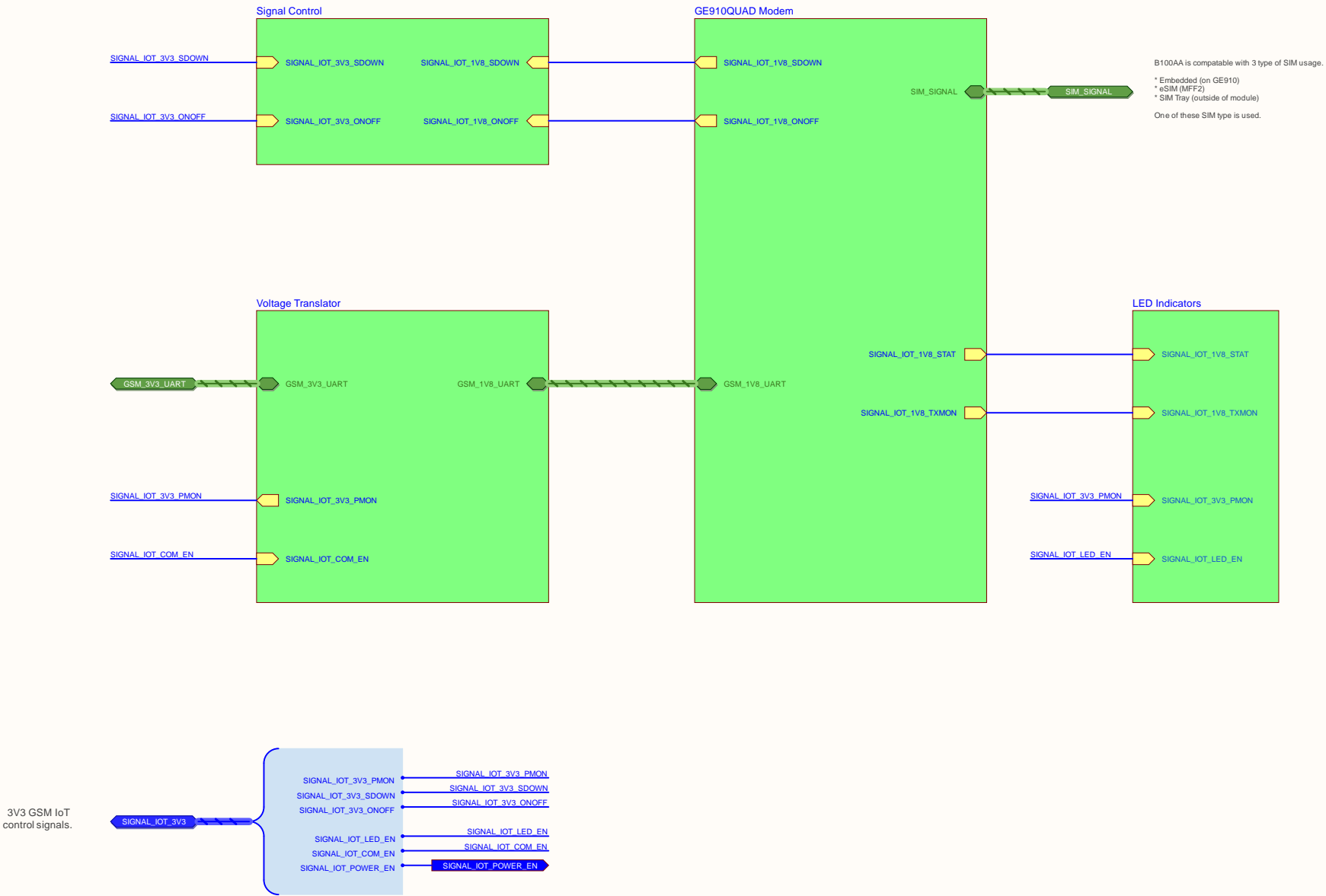
| | | | | | |
|---|-----------------------|-----------------------------|--|--|---|
| Title Main Power Switch | | | Ovoo Electronics Necip Fazıl Mah, Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 6 | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:35 | Sheet 6 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Main Power Switch.SchDoc | | | | | |

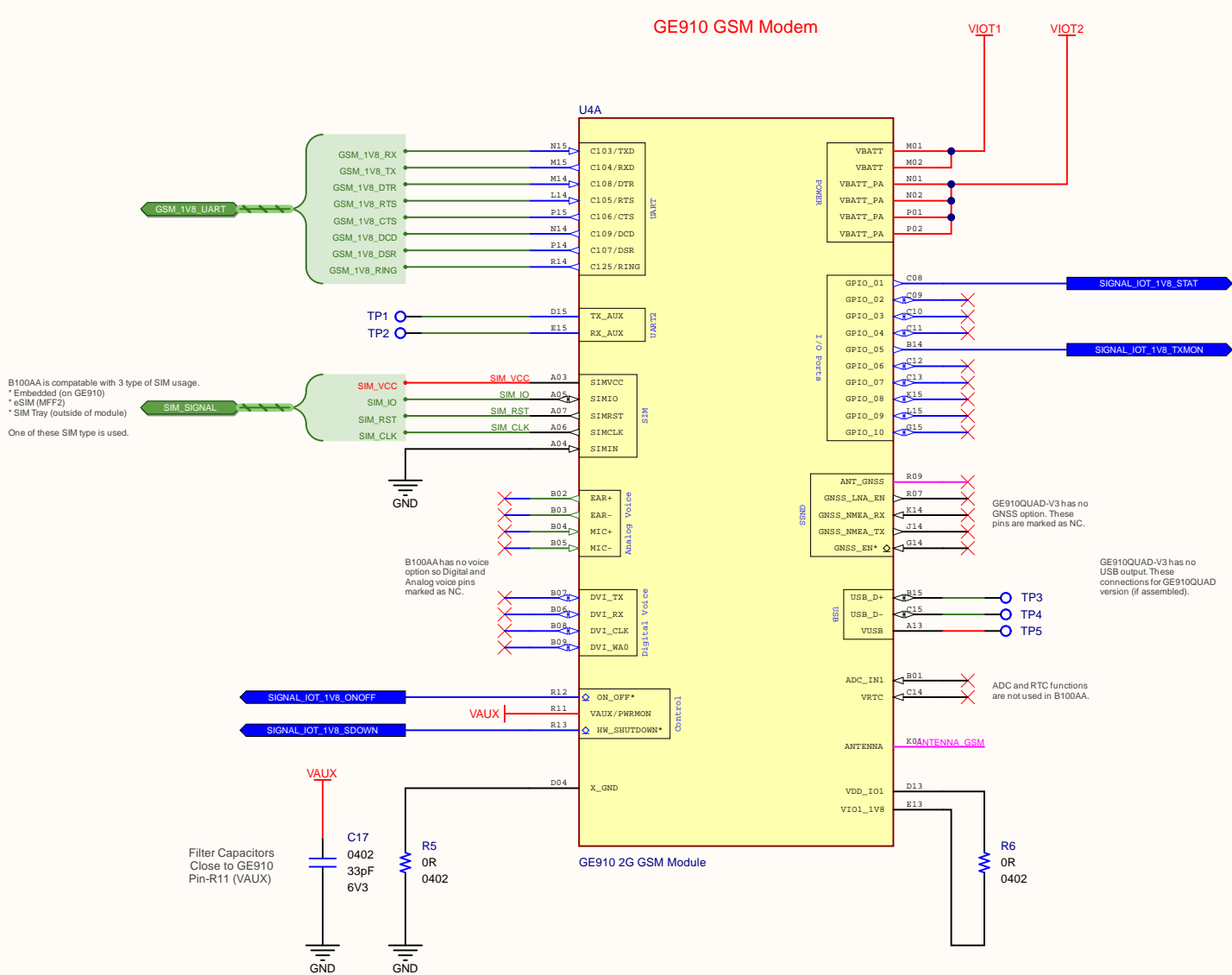
VCC ← | → 5V



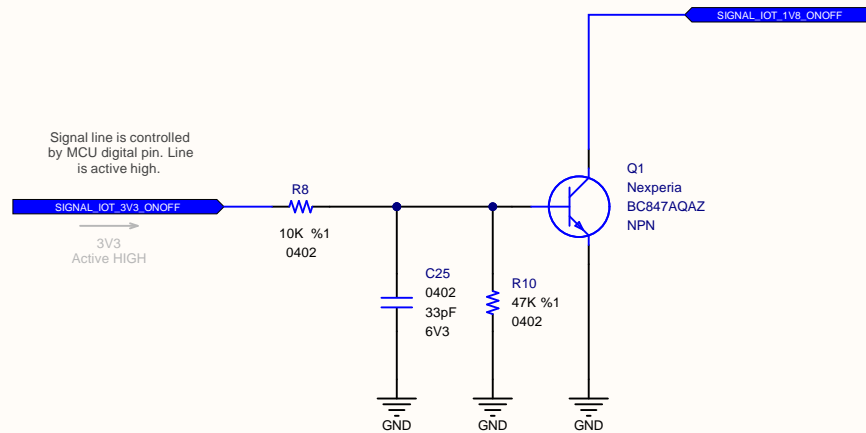
| | | | | |
|---|-----------------------|----------------------------|---|---|
| Title 5V DC/DC Buck Boost Converter | | | Ovoo Electronics Necip Fazıl Mah. Ofisarmak Sok. Bırgıl A/pt. No: 19/B Meram / Konya Türkiye |  |
| Size: A4 | Number: 7 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:35 | Sheet 7 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\5V Buck Boost Converter.SchDoc | | | | |

GSM IoT Communication Layer

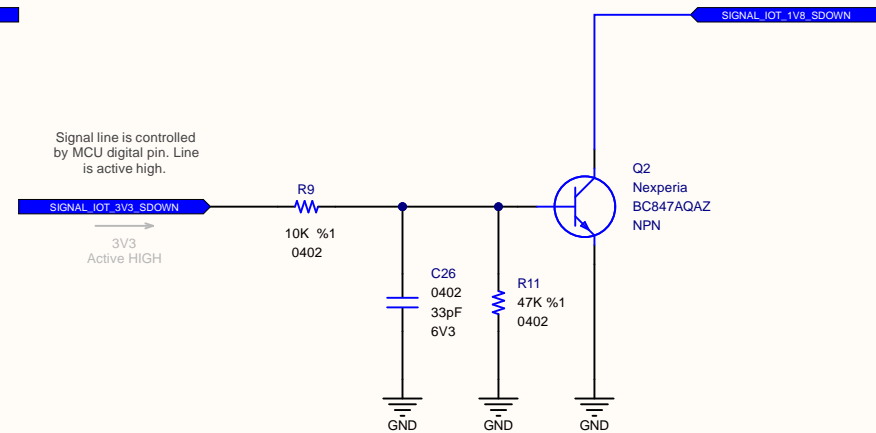




GSM Module On/Off Signal



GSM Module Shut Down Signal



Title GSM Control Signal Management

Size: A4

Number: 10

Revision: B100AA R4

Date: 2.02.2021

Time: 18:16:35

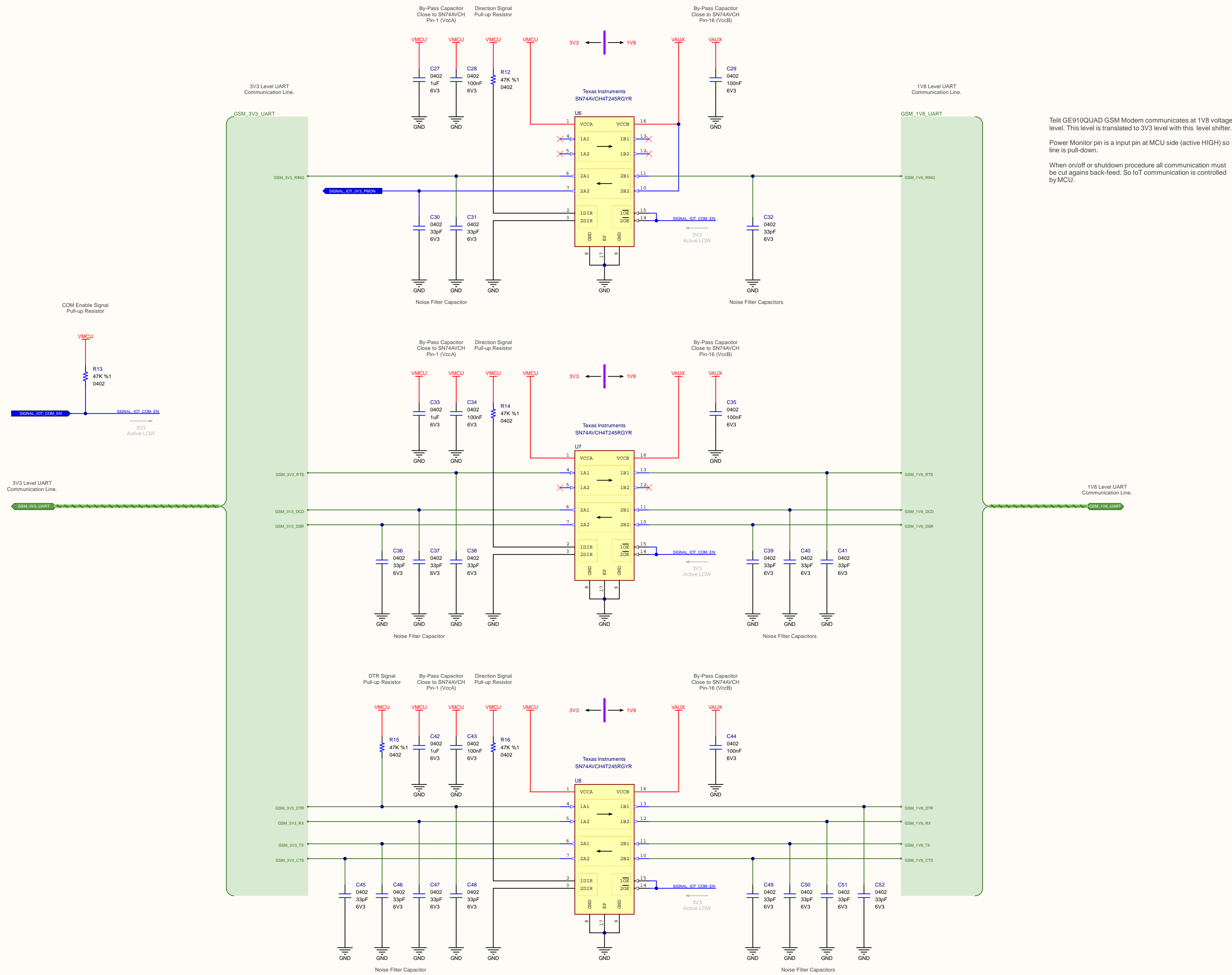
Sheet 10 of 54

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

Ovoo Electronics

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

BiDirectional Level Shifter

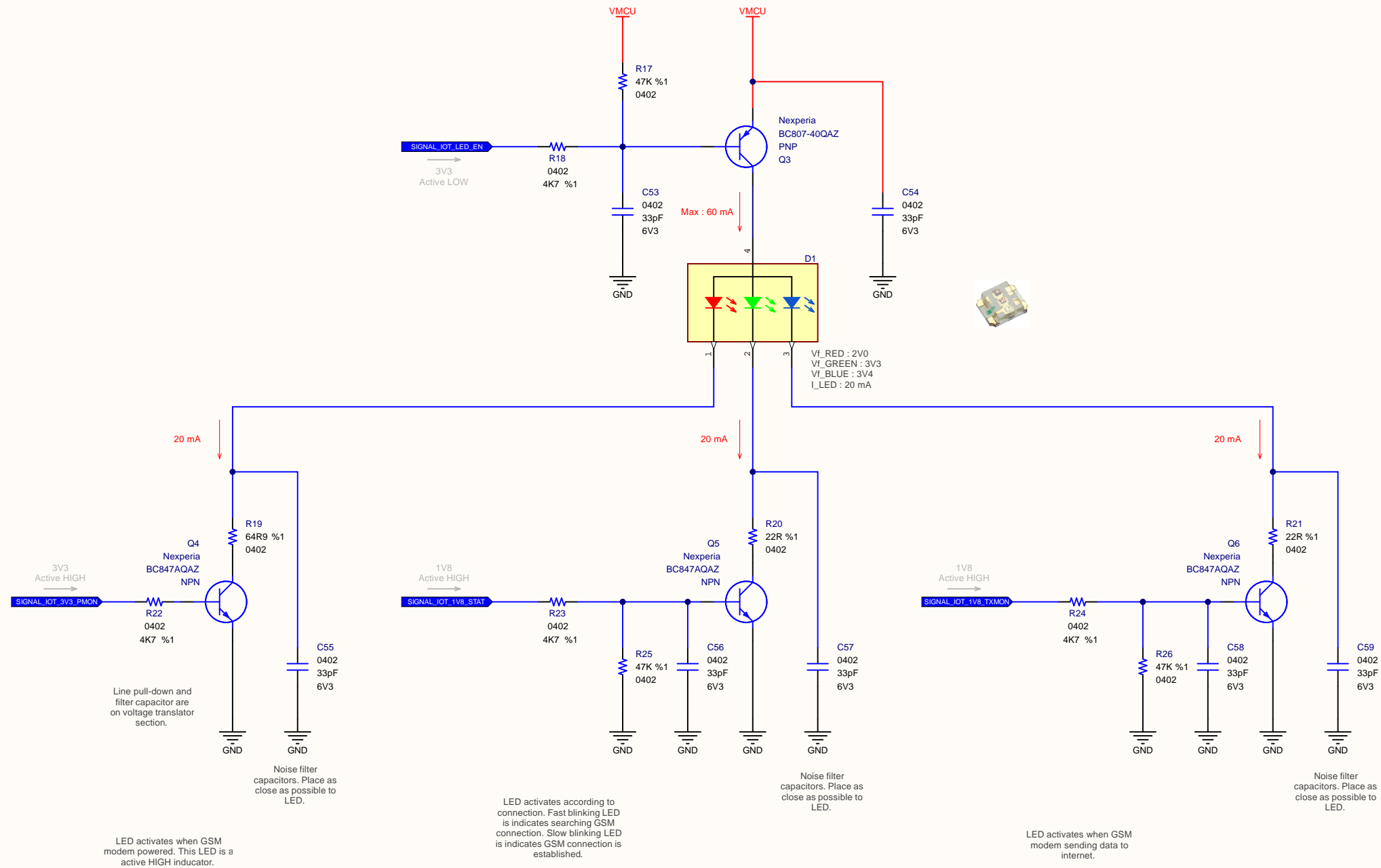


Telit GE910QUAD GSM Modem communicates at 1V8 voltage level. This level is translated to 3V3 level with this level shifter.

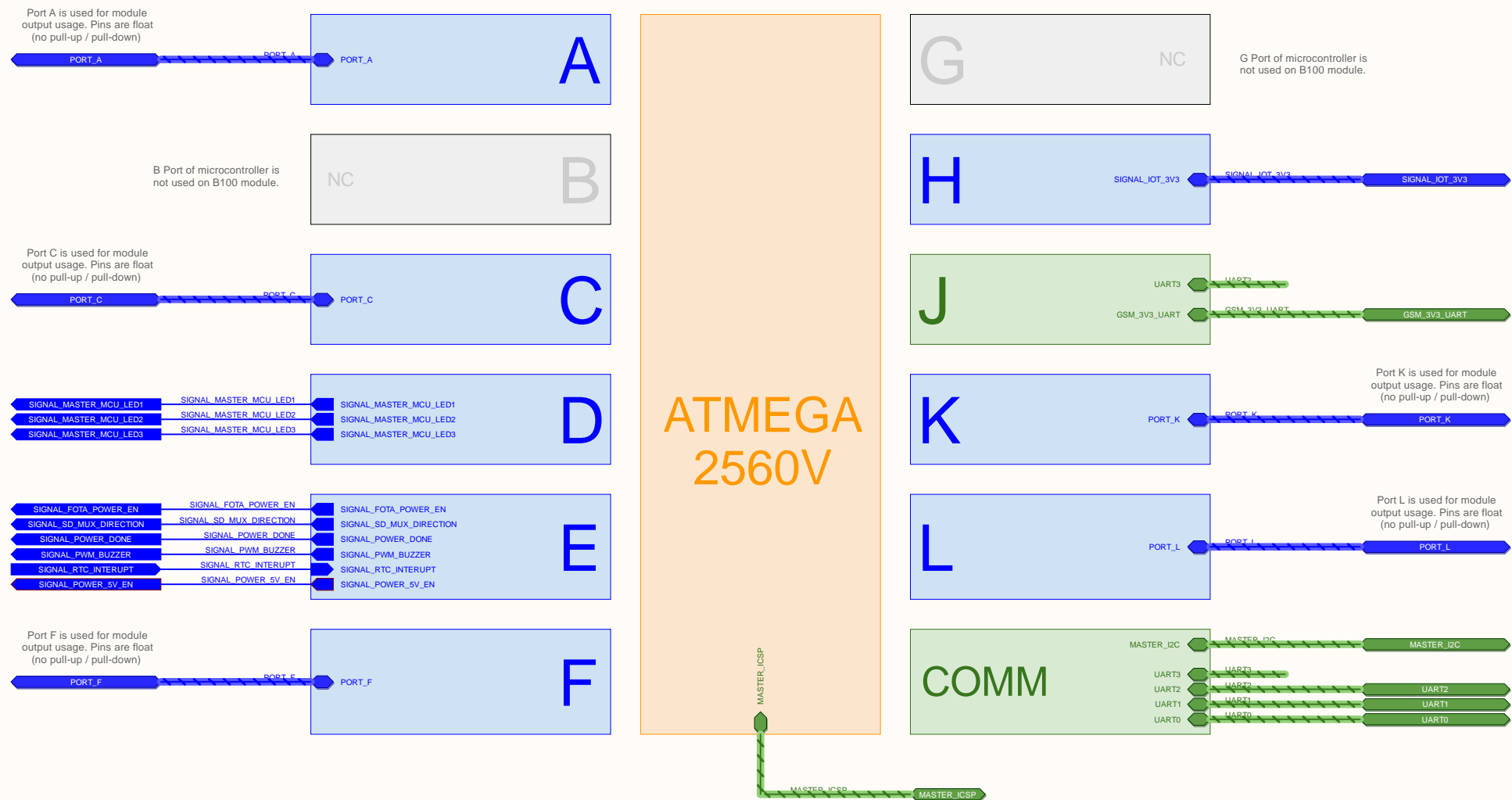
Power Monitor pin is a input pin at MCU side (active HIGH) so line is pull-down.

When on/off or shutdown procedure all communication must be cut agains back-feed. So IoT communication is controlled by MCU.

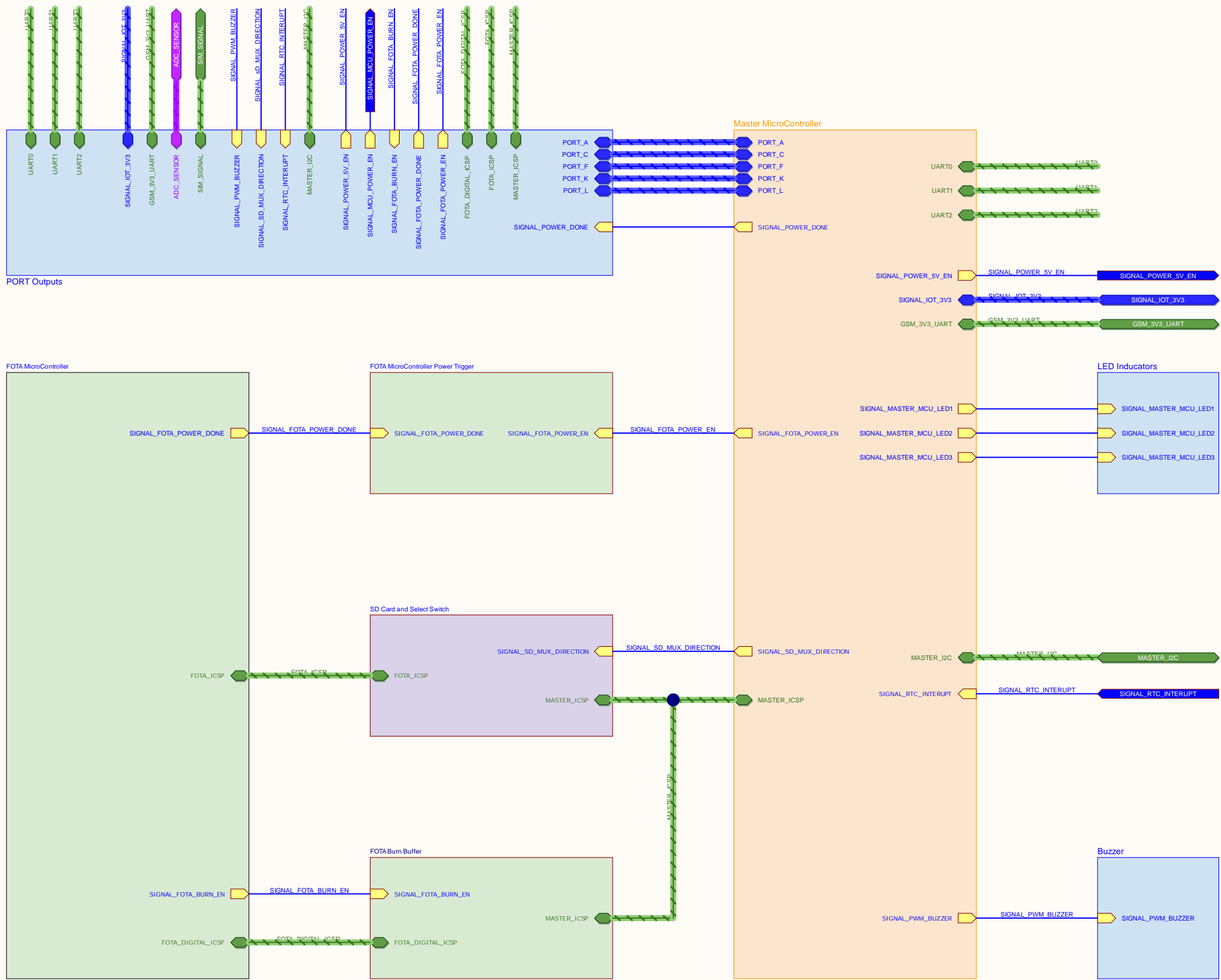
GSM IoT LED Indicators



Master MicroController

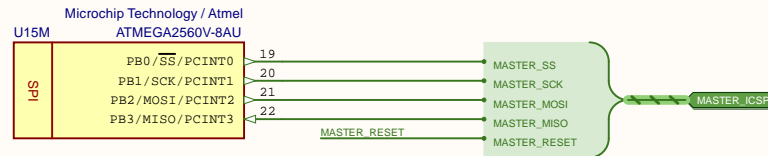
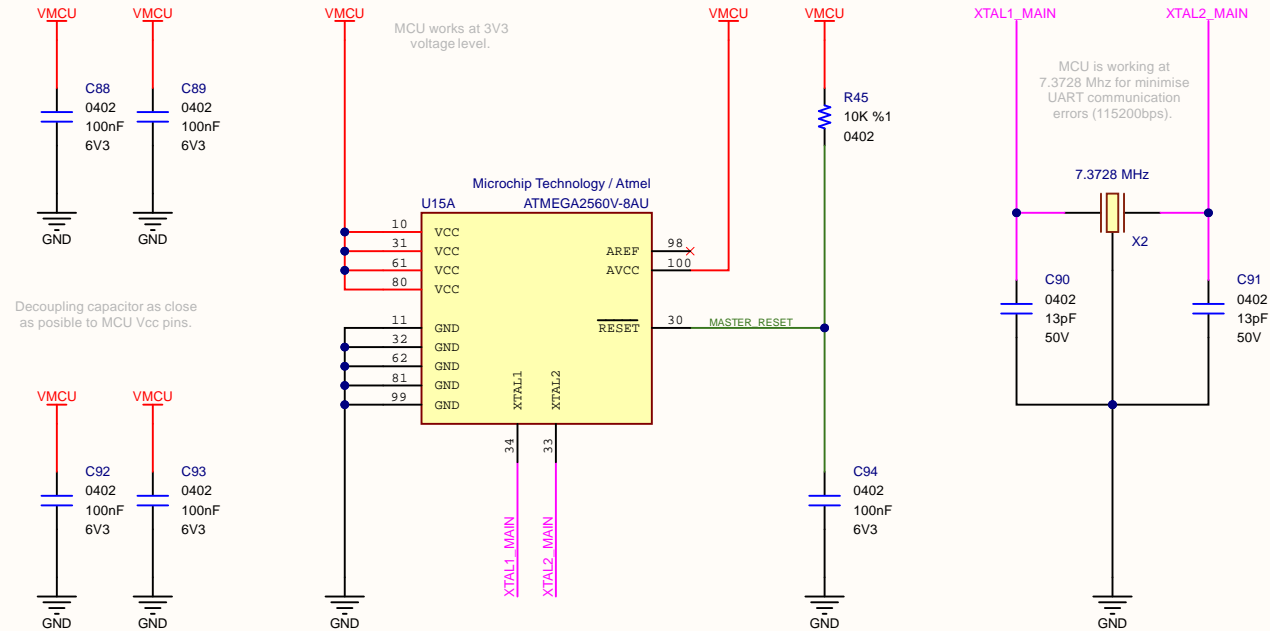


B100 MicroController




MicroController

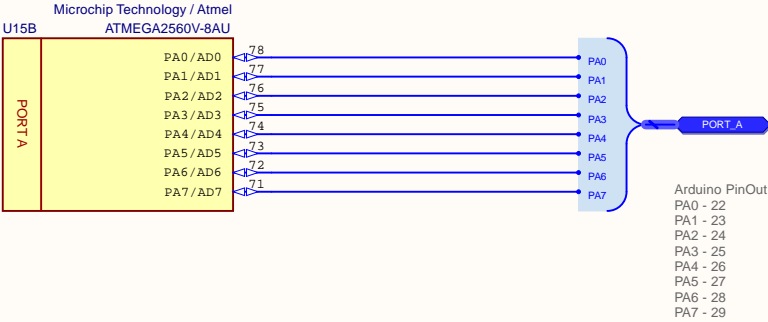
Crystal Oscillator



Master MicroController ICSP

| | | | | | |
|---|-----------------------|------------------------------|--|--|---|
| Title Master MicroController Core | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 15 | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 15 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Core.SchDoc | | | | | |

Master MicroController A Port



A

B

C

D

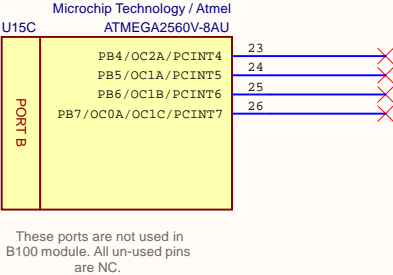
A


B

C

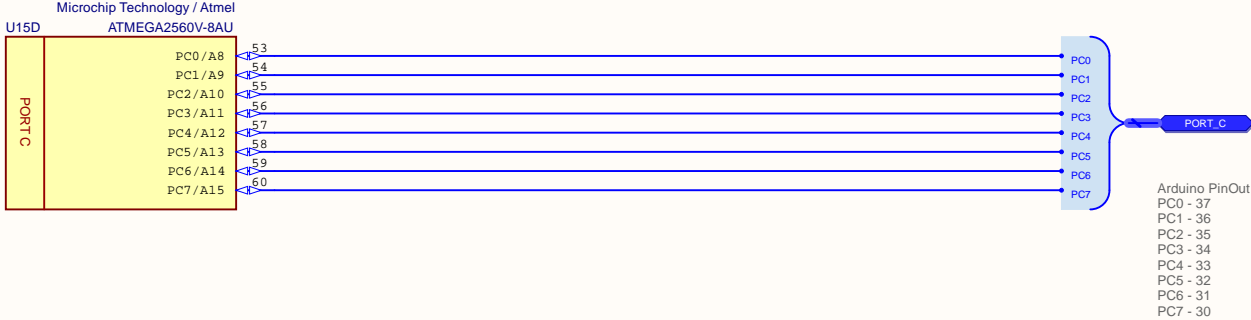
D

Master MicroController B Port

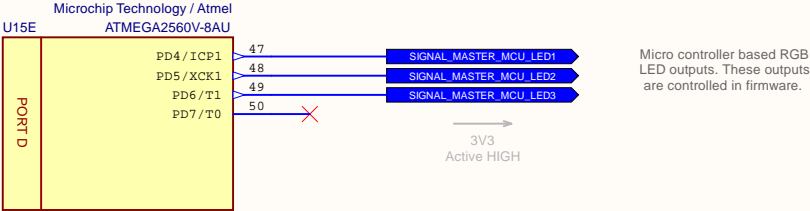



| | | | | |
|--|----------------|---------------------|---|---|
| Title Master Micro Controller Port B Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 17 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 17 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port B.SchDoc | | | | |

Master MicroController C Port

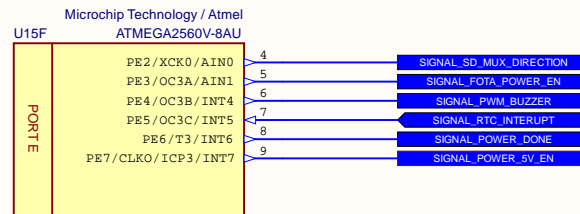



Master MicroController D Port



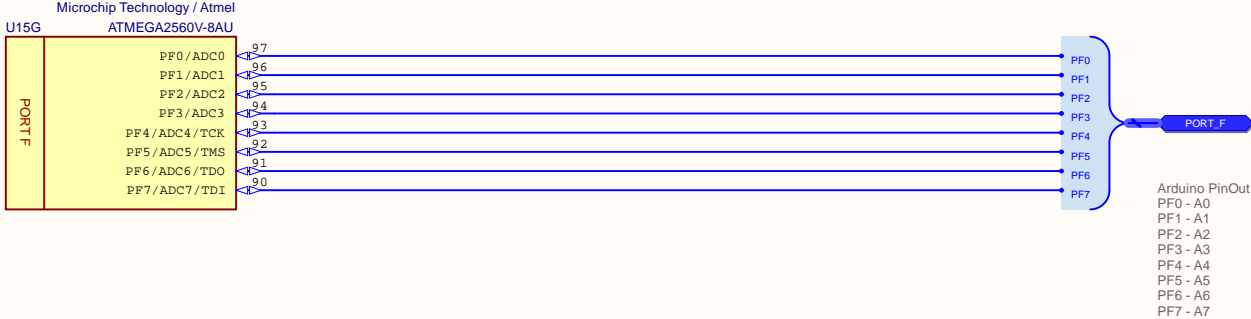
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|--|----------------|---------------------|---|---|
| Title Master Micro Controller Port D Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 19 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 19 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port D.SchDoc | | | | |

Master MicroController E Port

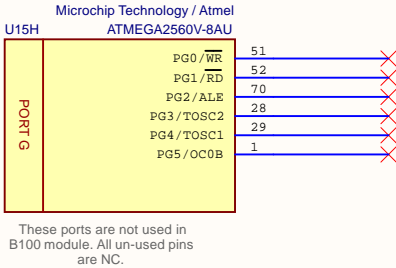



| | | | | |
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| Title Master Micro Controller Port E Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 20 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 20 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port E.SchDoc | | | | |

Master MicroController F Port

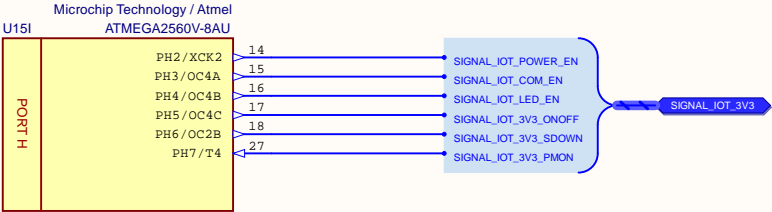



Master MicroController G Port



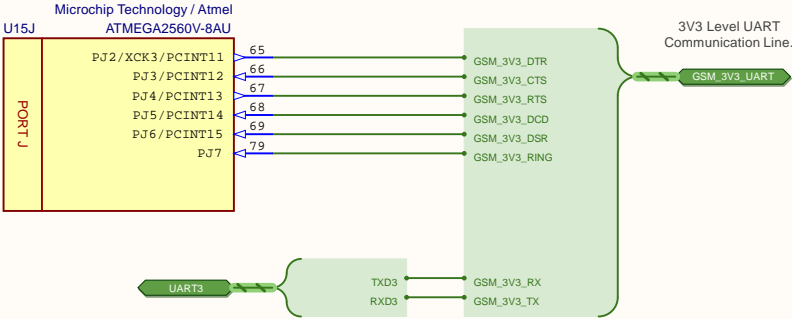
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|--|----------------|---------------------|---|---|
| Title Master Micro Controller Port G Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 22 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 22 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port G.SchDoc | | | | |

Master MicroController H Port

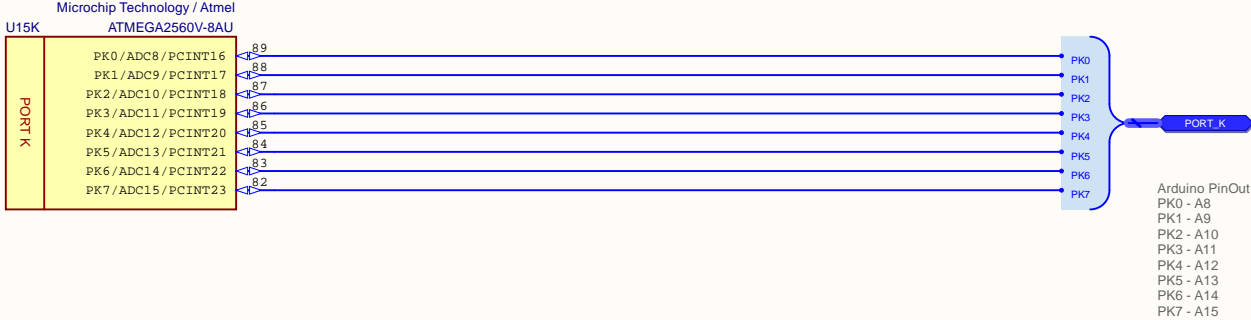



| | | | | |
|--|----------------|---------------------|--|---|
| Title Master Micro Controller Port H Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Otairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 23 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 23 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port H.SchDoc | | | | |

GSM IoT Communication Pins

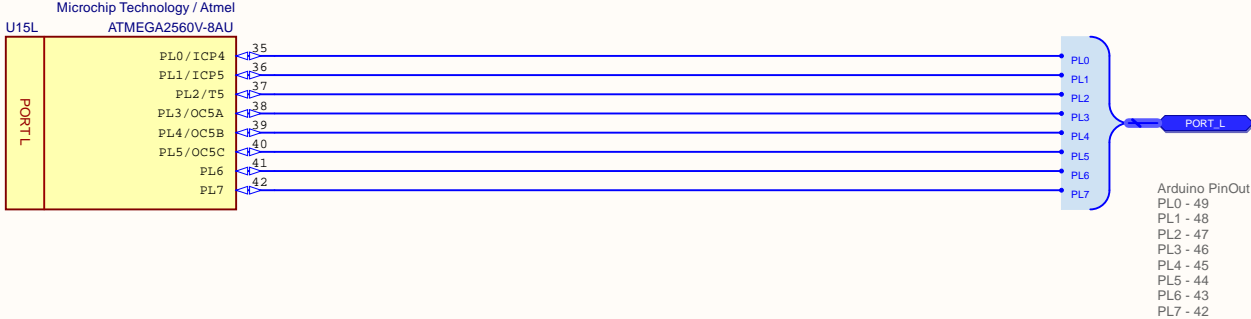


Master MicroController K Port

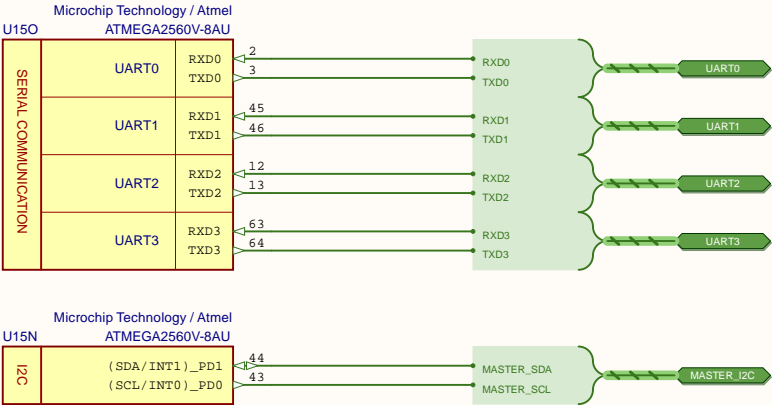


| | | | | |
|--|----------------|---------------------|---|---|
| Title Master Micro Controller Port K Pin Out | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 25 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:36 | Sheet 25 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port K.SchDoc | | | | |

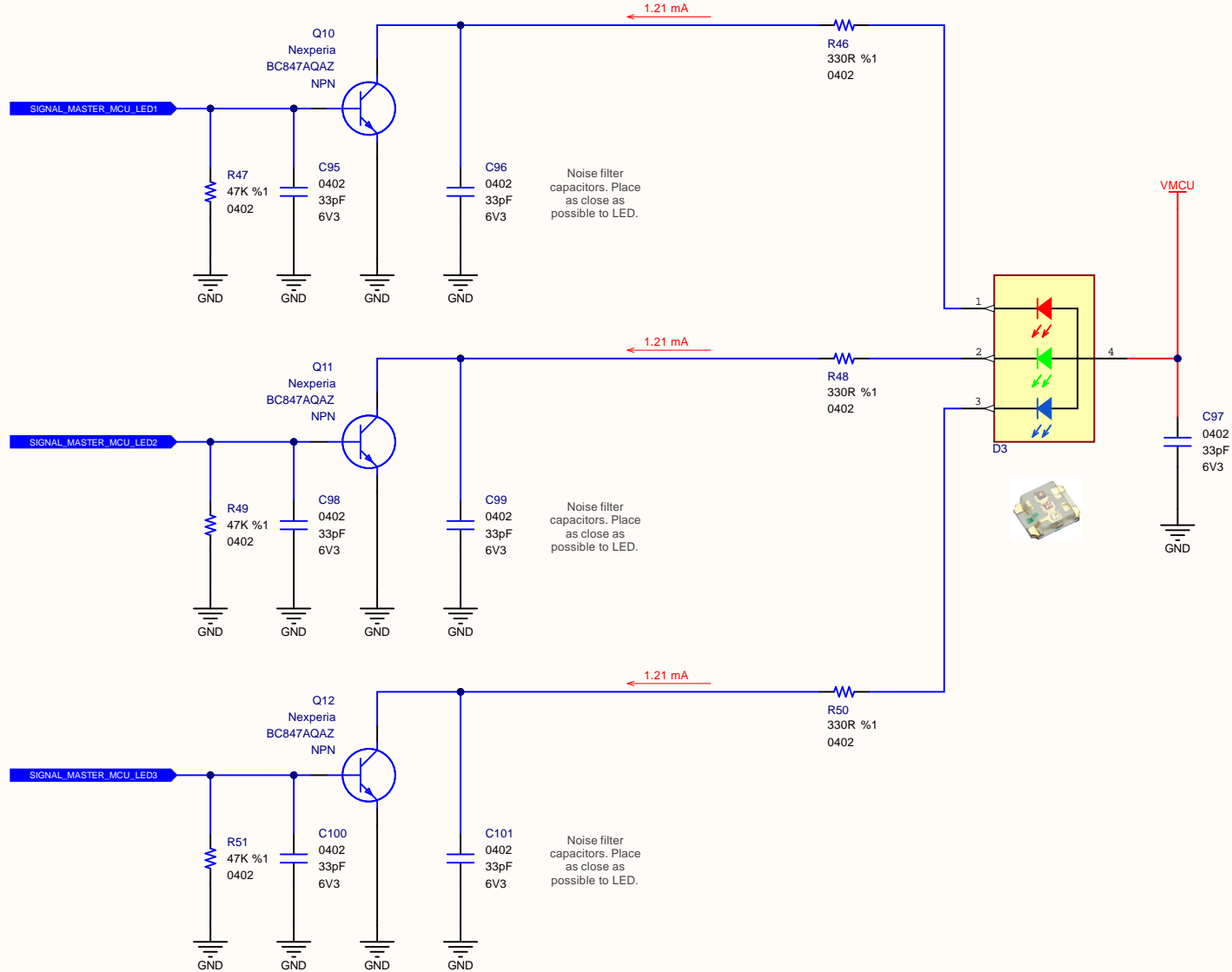
Master MicroController L Port




Communication Ports



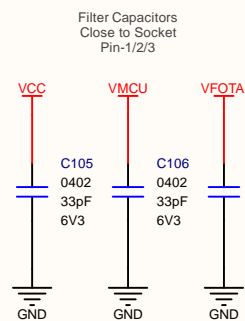
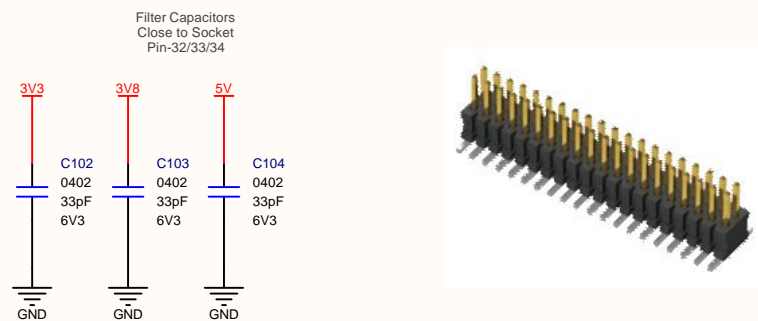
Main Microcontroller Status LED Indicators



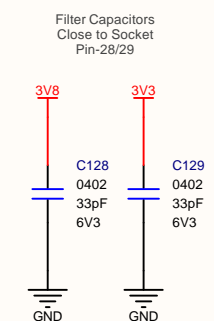
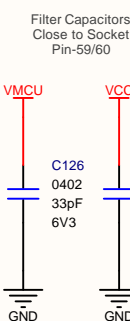
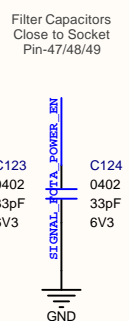
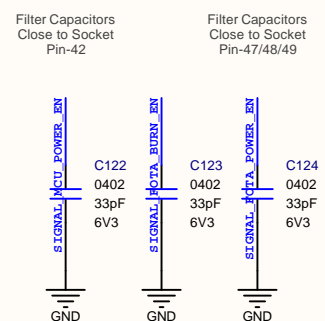
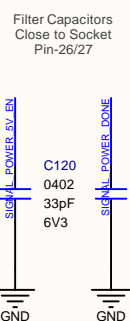
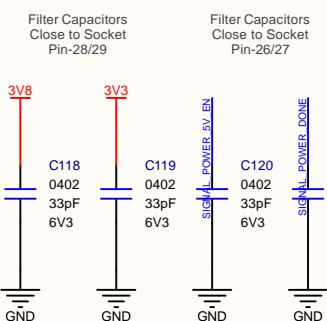
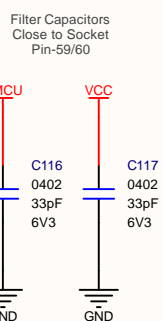
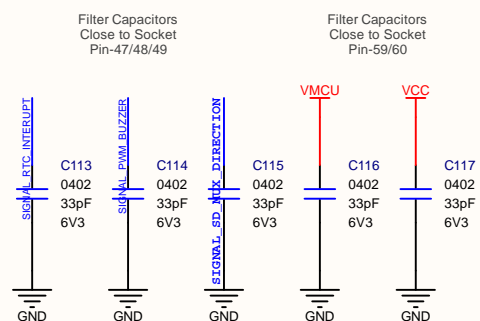
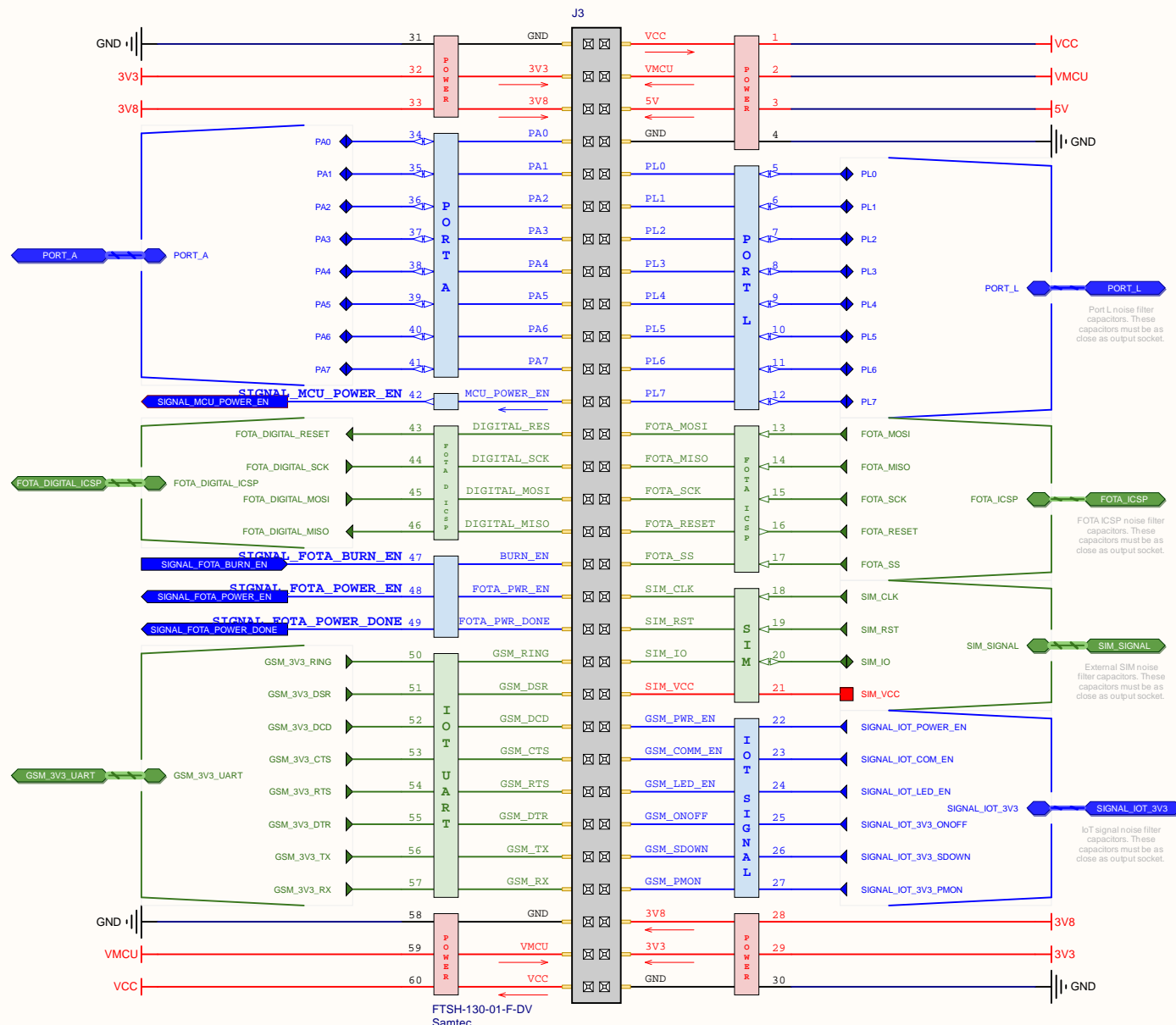
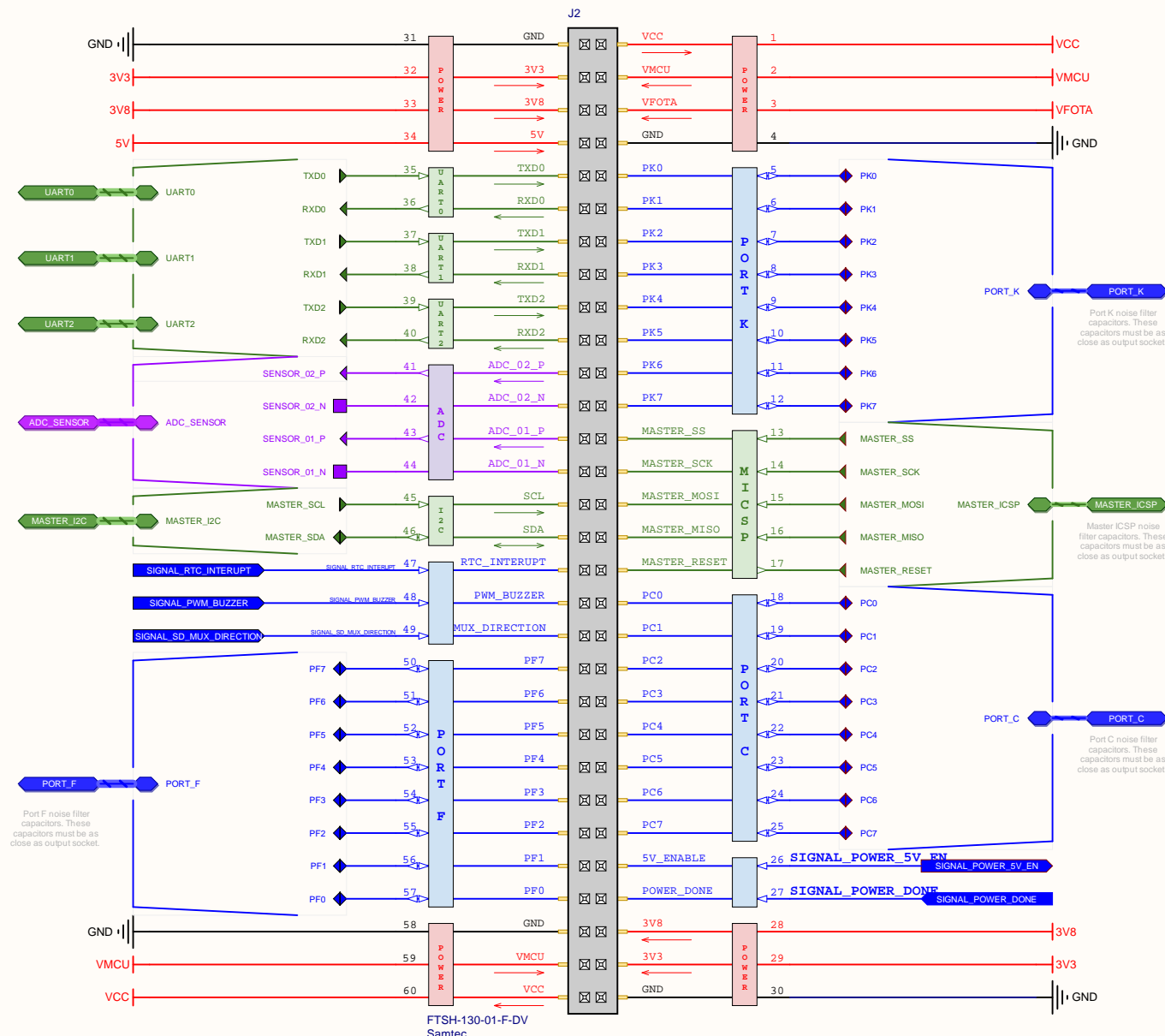
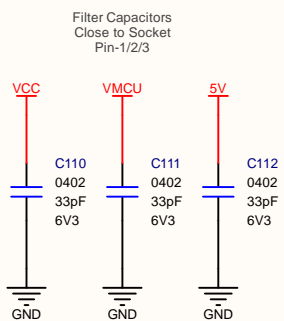
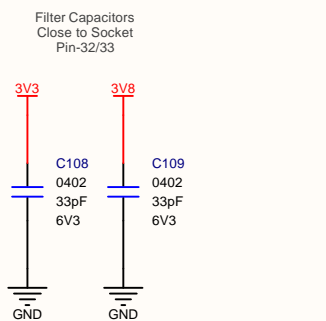
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| Title Master MicroController LED | | | Ovoo Electronics | |  |
| Size: A4 | | Number: 28 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | | Time: 18:16:36 | | Necip Fazıl Mah. Ortamak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |
| | | Sheet 28 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController LED.SchDoc | | | | | |



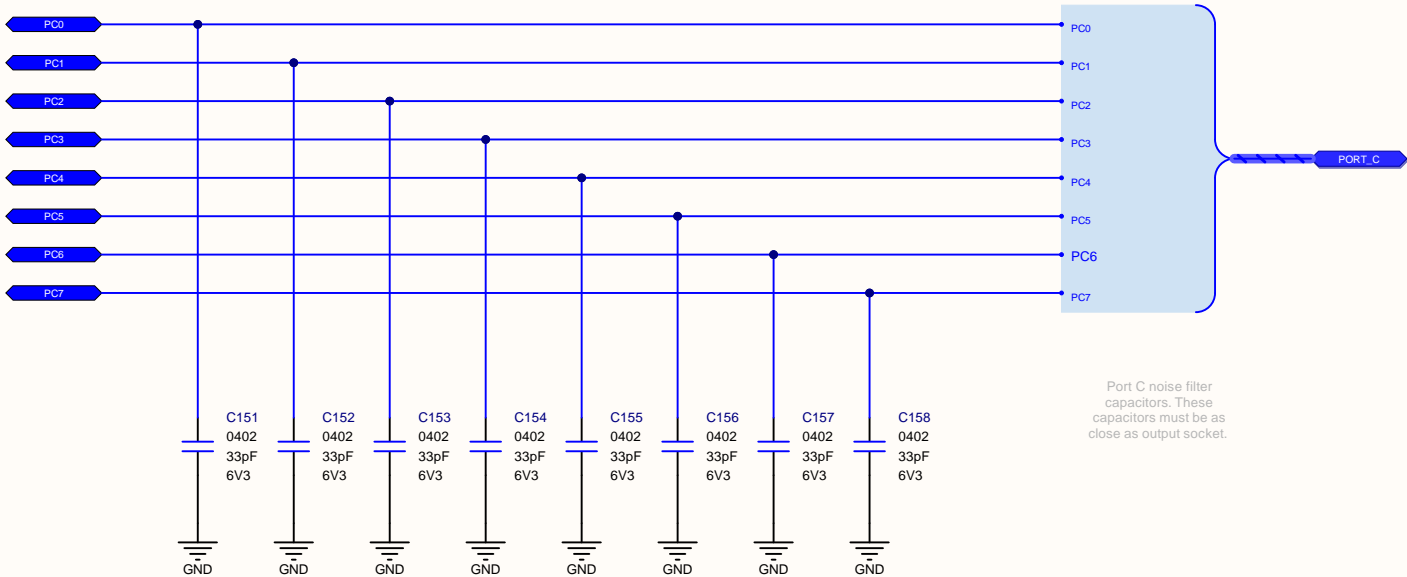
Module Output Socket A



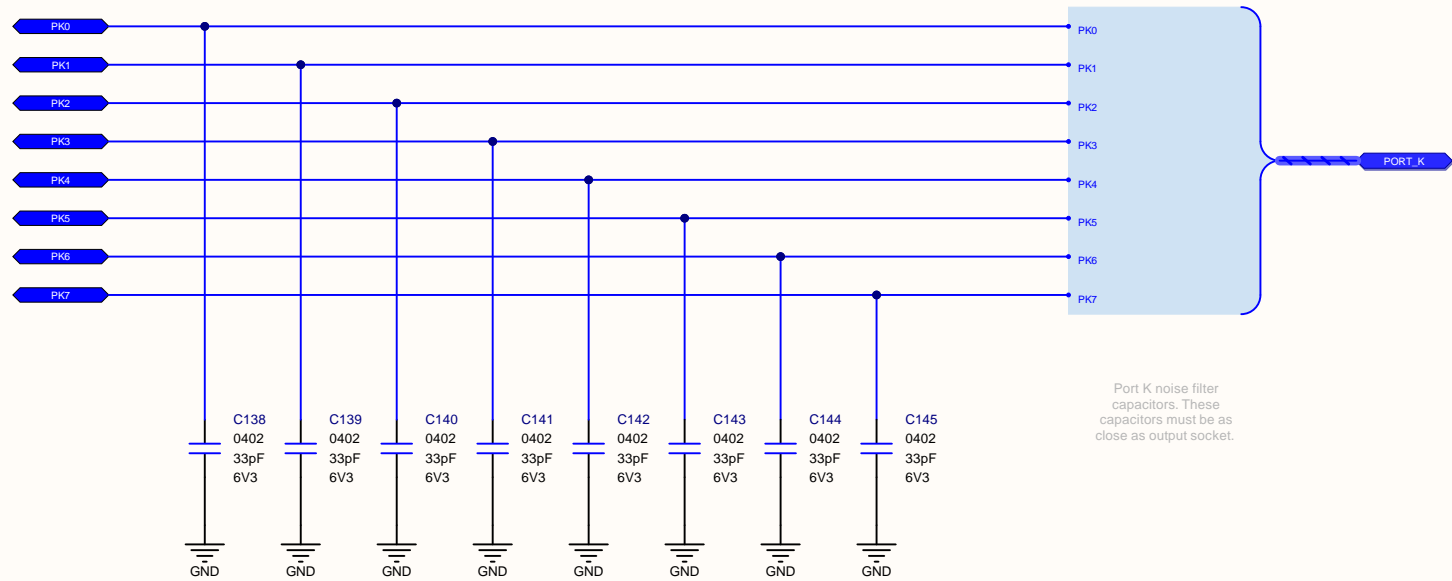
Module Output Socket B




Port C Output Socket Noise Capacitors

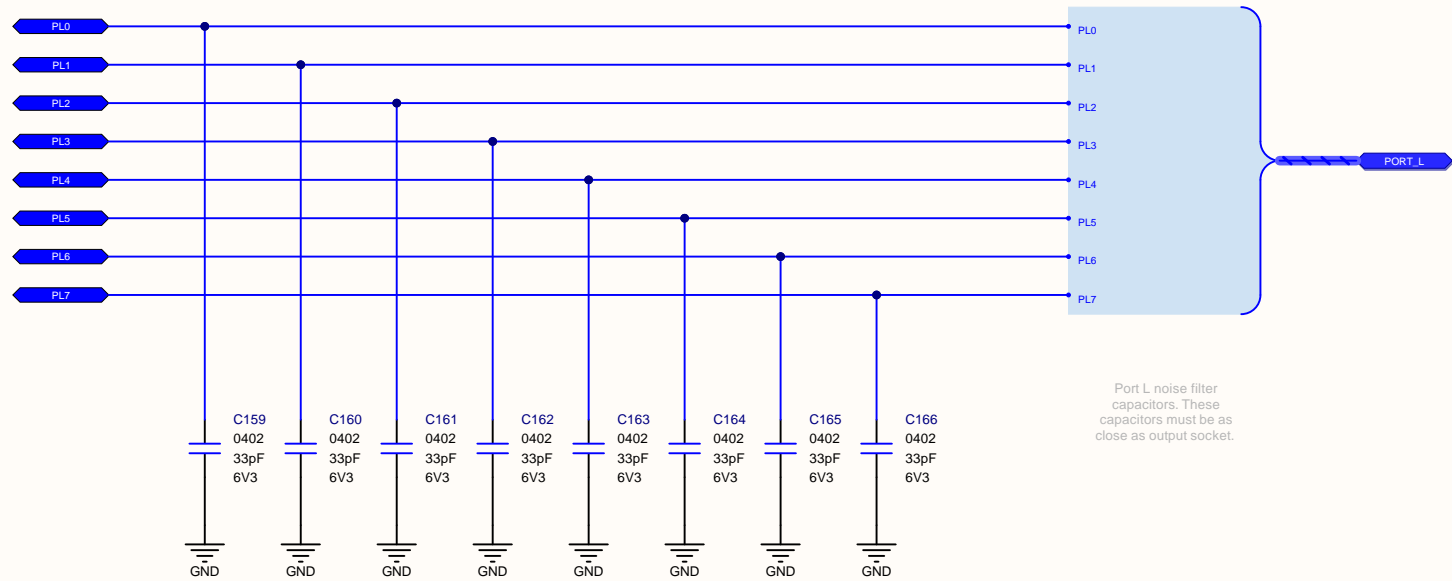



Port K Output Socket Noise Capacitors

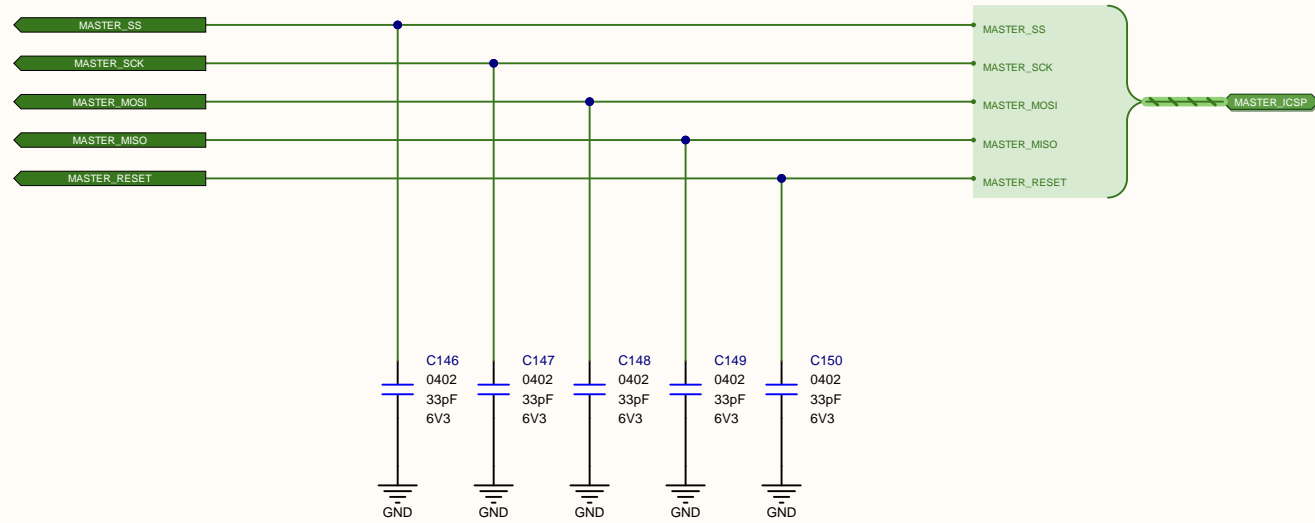


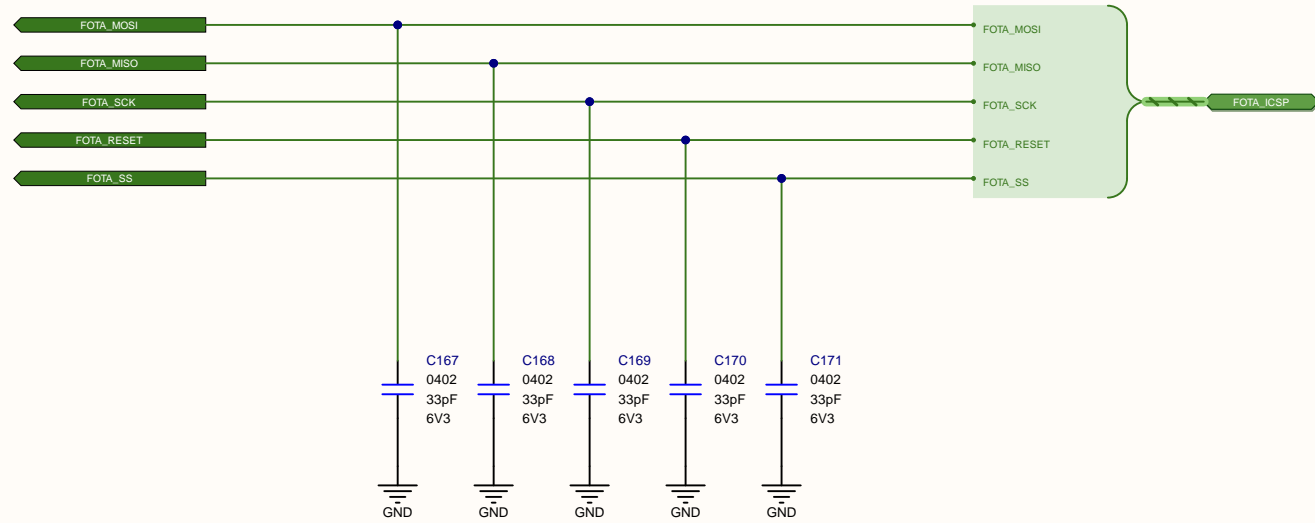
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|--|-----------------------|------------------------------|--|---|
| Title PORT K Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 31 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 31 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Port K.SchDoc | | | | |

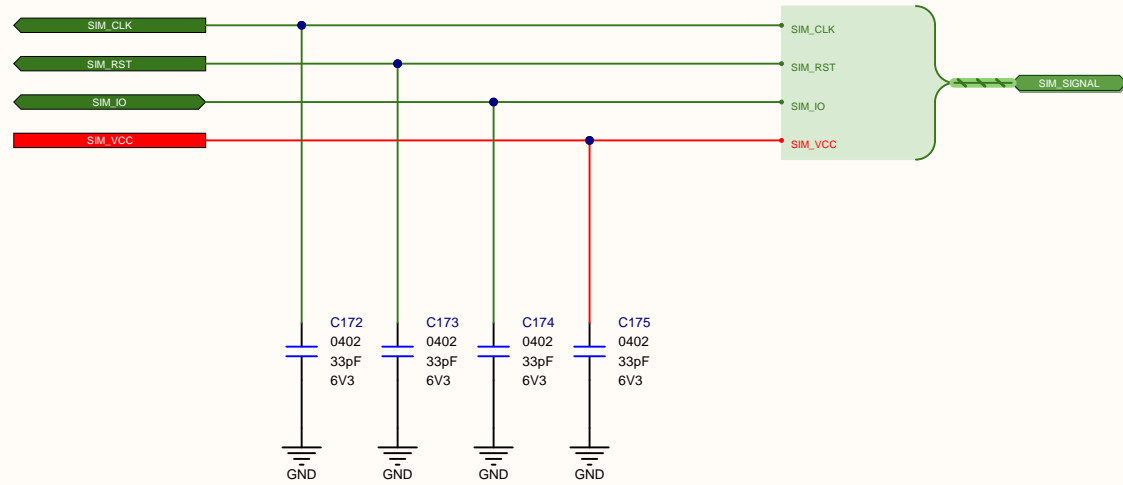
Port L Output Socket Noise Capacitors




| | | | | |
|--|-----------------------|------------------------------|--|---|
| 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: 2.02.2021 | Time: 18:16:37 | Sheet 32 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Port L.SchDoc | | | | |

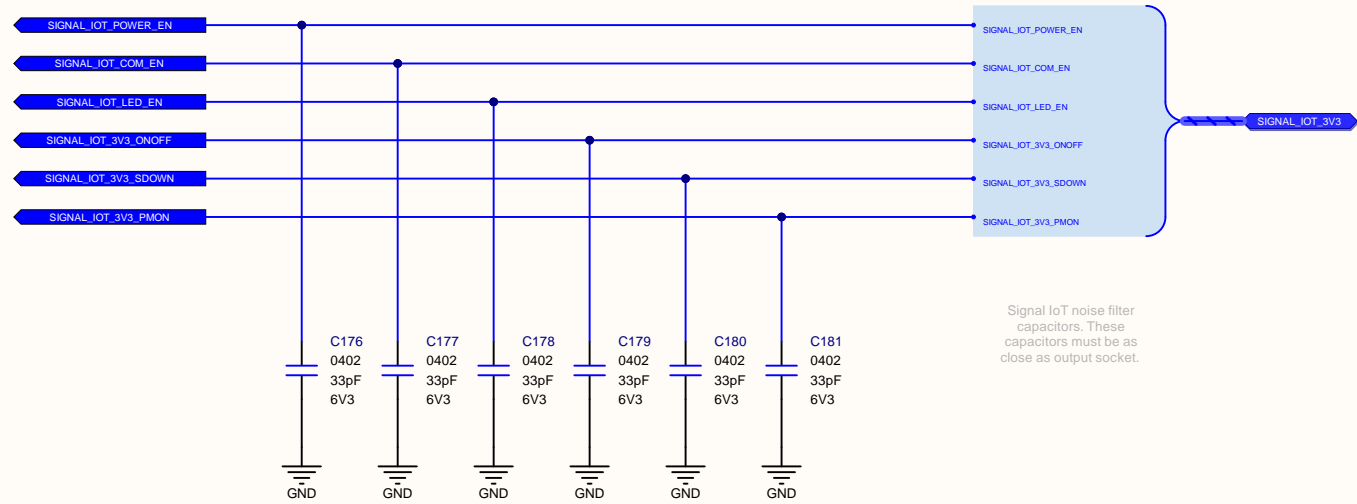




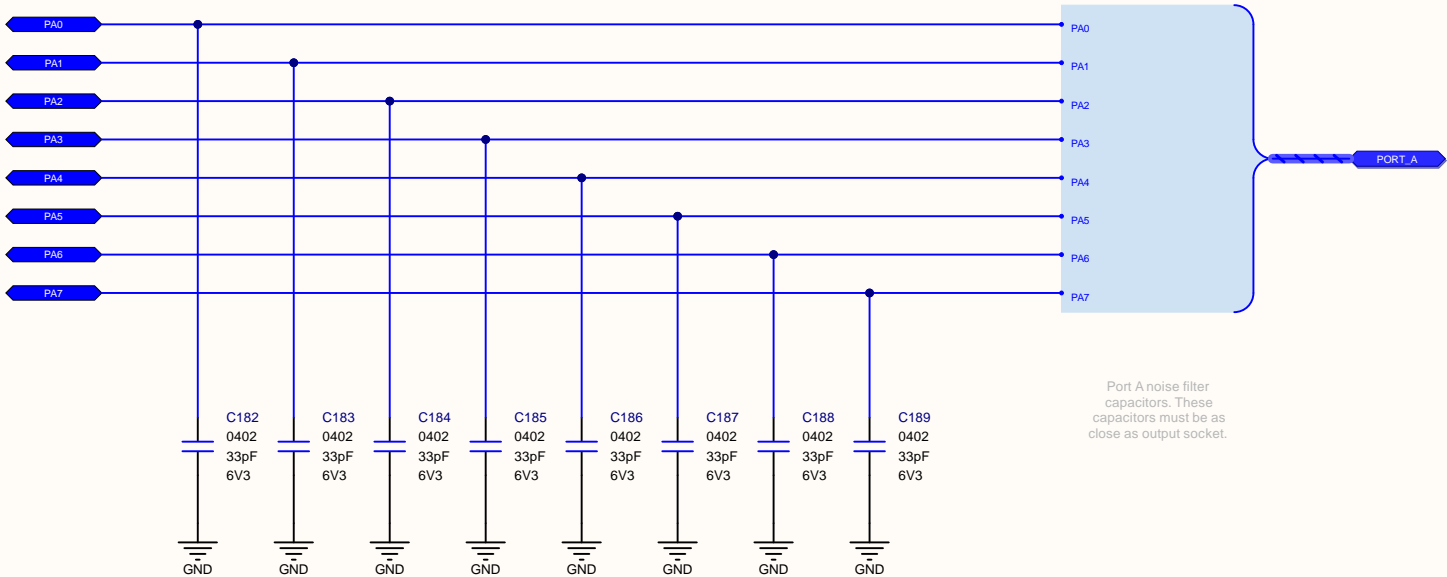


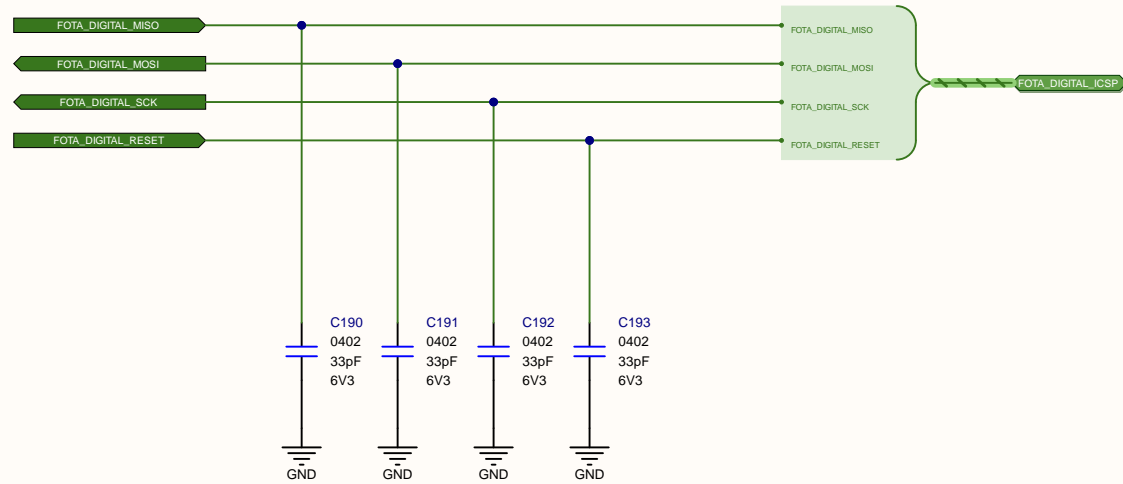
| | | | | | |
|--|----------------|---------------------|---|--|---|
| Title External SIM Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A4 | Number: 35 | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 35 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Fiter Capacitors - External SIM.SchDoc | | | | | |


Signal IoT Output Socket Noise Capacitors



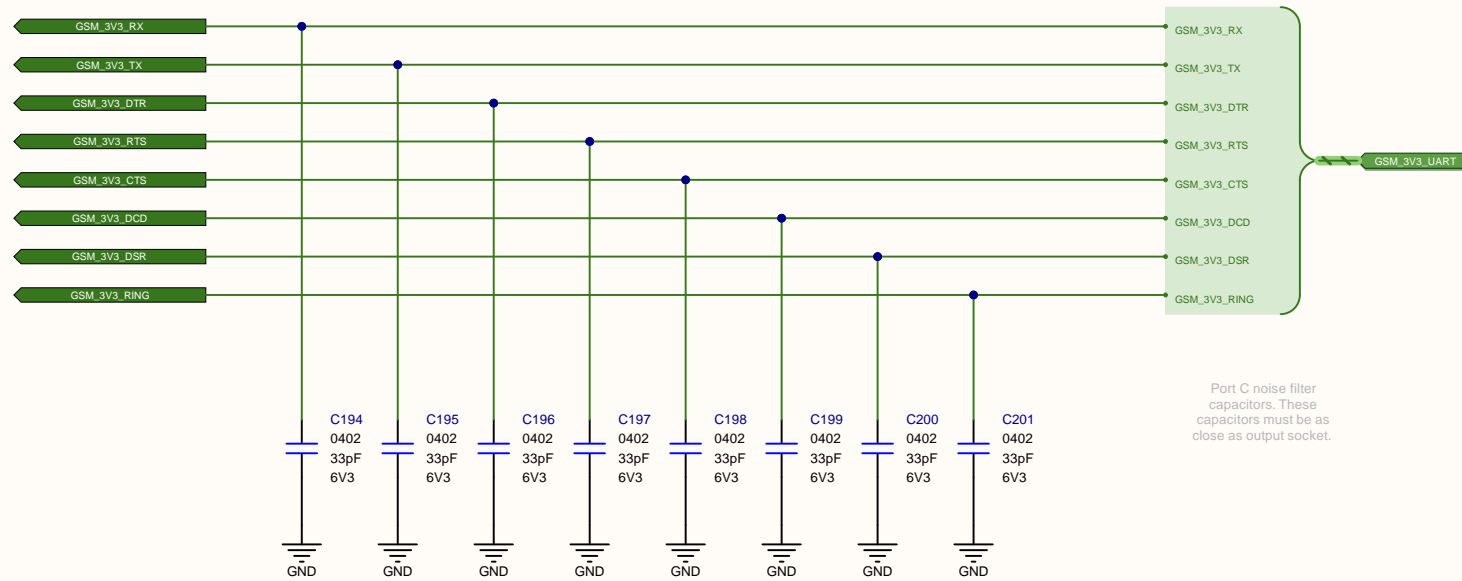
Port A Output Socket Noise Capacitors



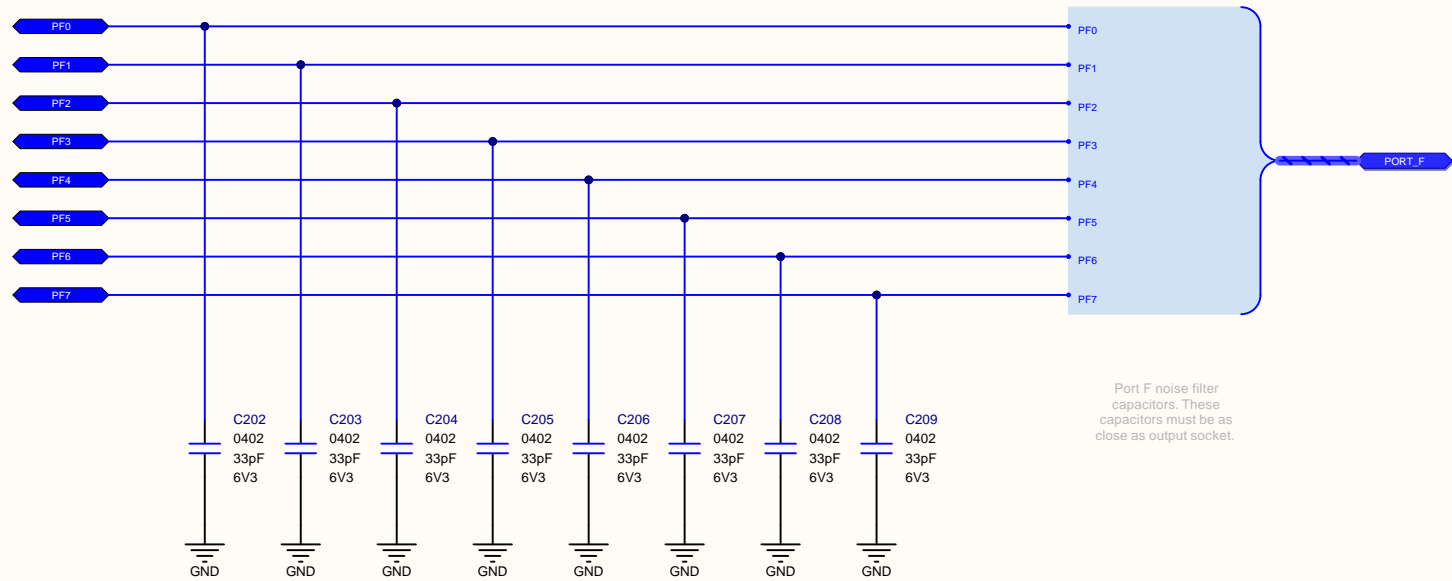



| | | | | |
|---|-----------------------|------------------------------|--|---|
| Title FOTA Digital ICSP Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 38 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 38 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - FOTA Digital ICSP.SchDoc | | | | |

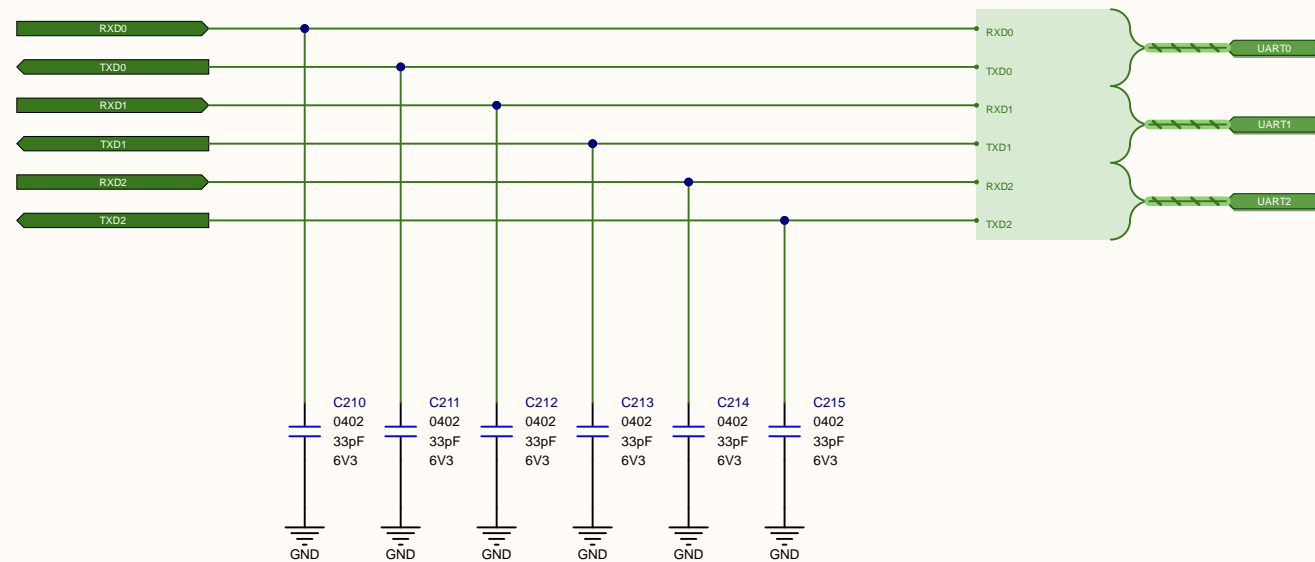
IoT UART Output Socket Noise Capacitors

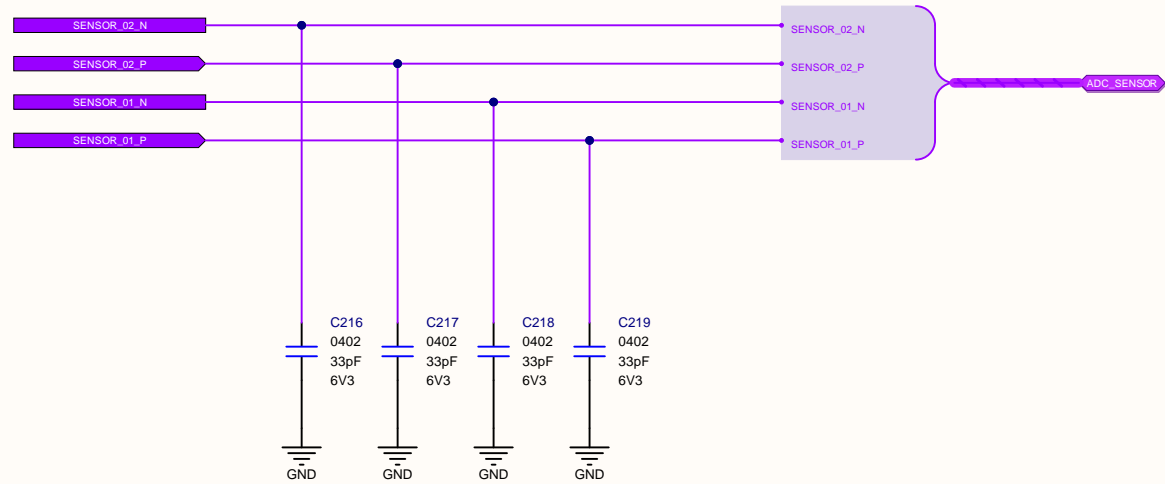



Port F Output Socket Noise Capacitors

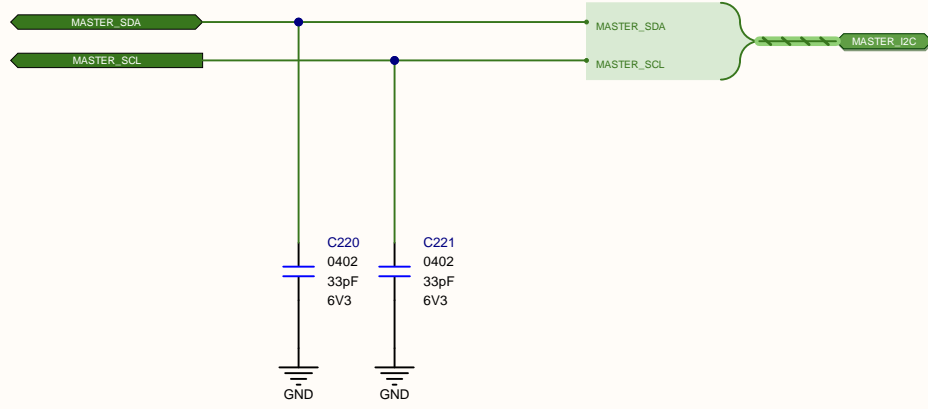



| | | | | |
|--|-----------------------|------------------------------|--|---|
| Title PORT F Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 40 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 40 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Port F.SchDoc | | | | |





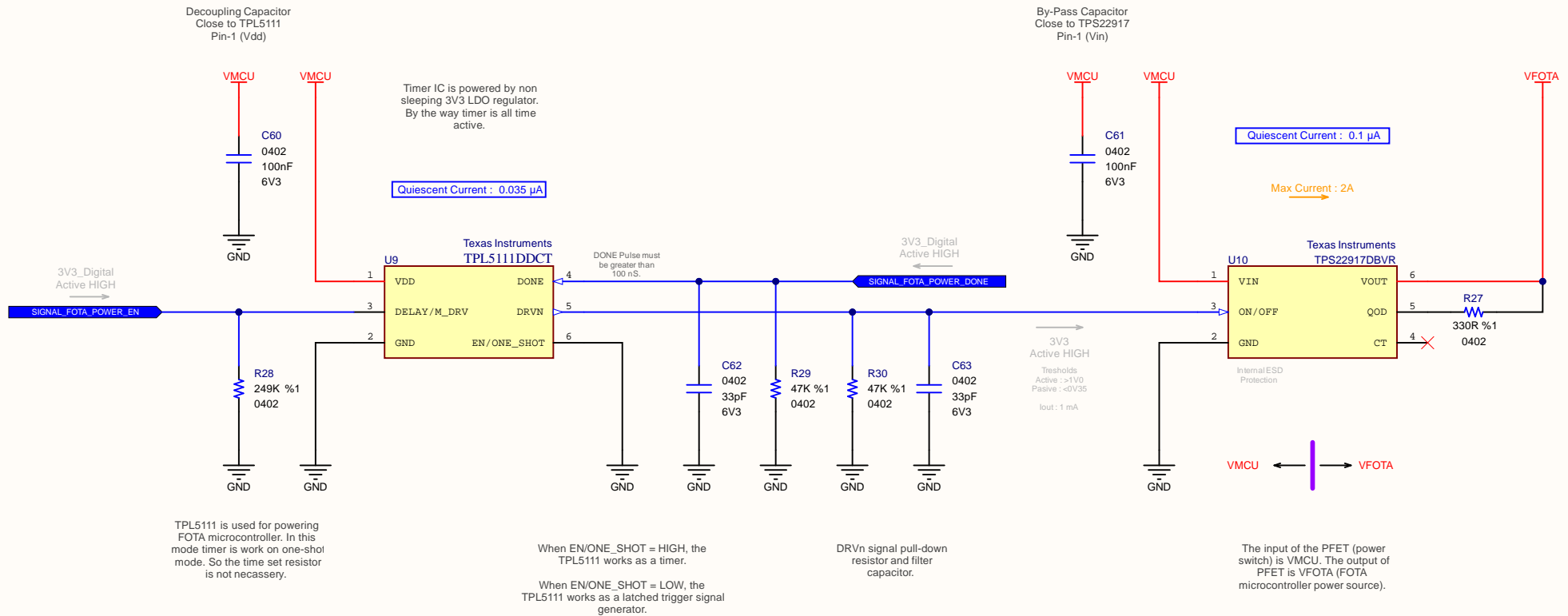
| | | | | |
|--|-----------------------|------------------------------|--|---|
| Title ADC Sensor Filter Capacitors | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 42 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 42 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - ADC Sensor.SchDoc | | | | |




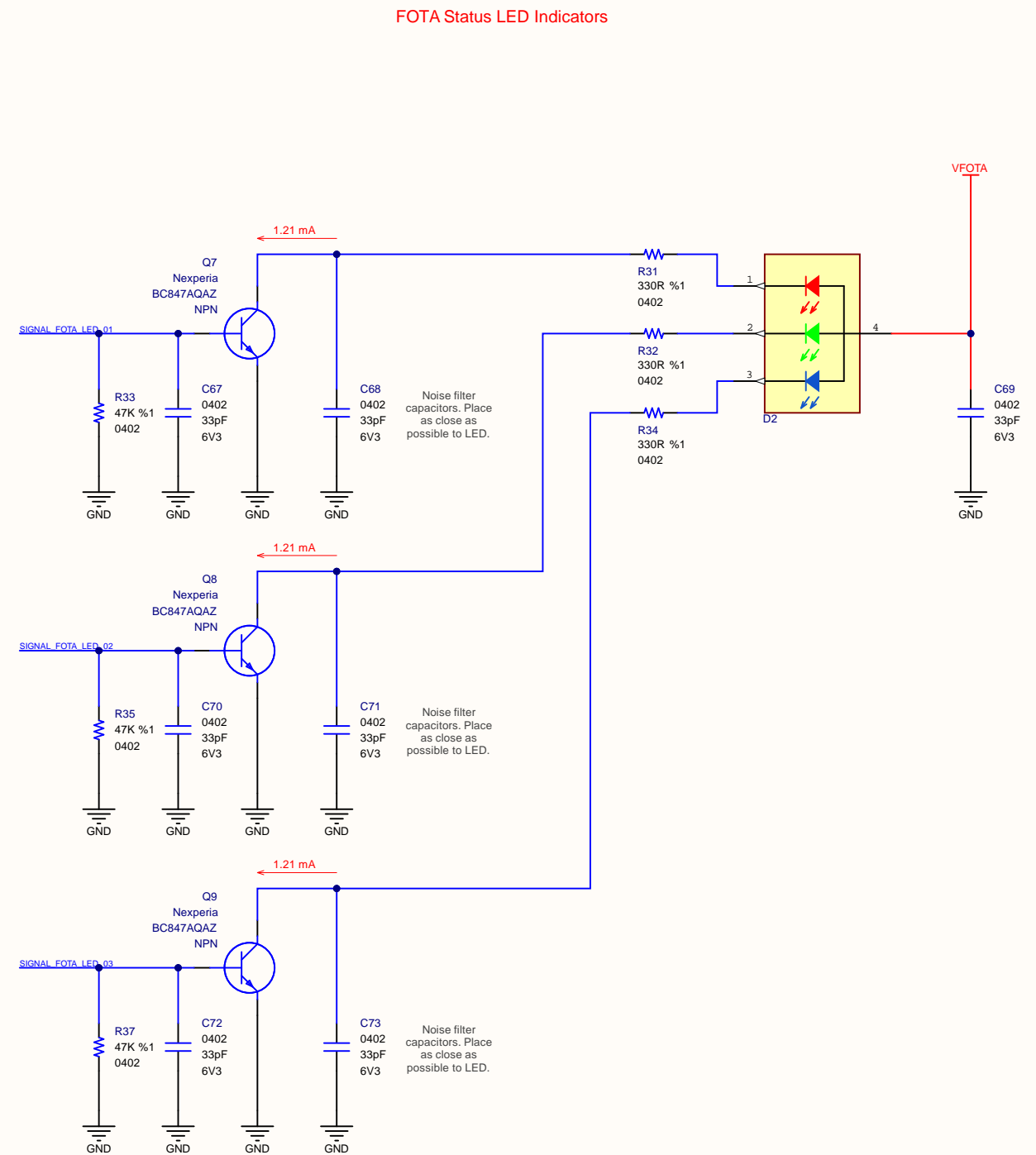
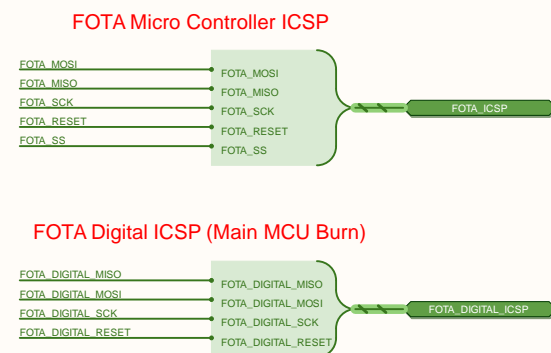
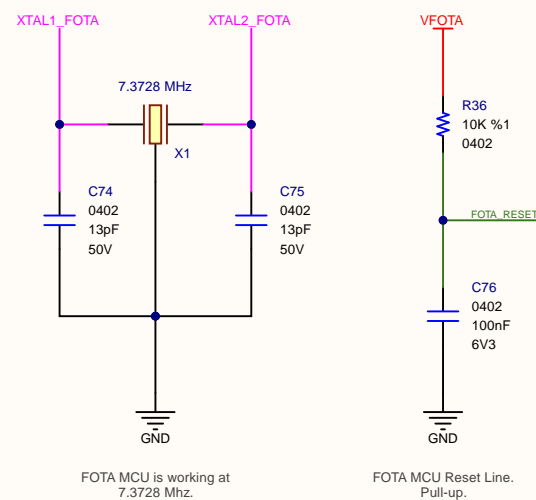
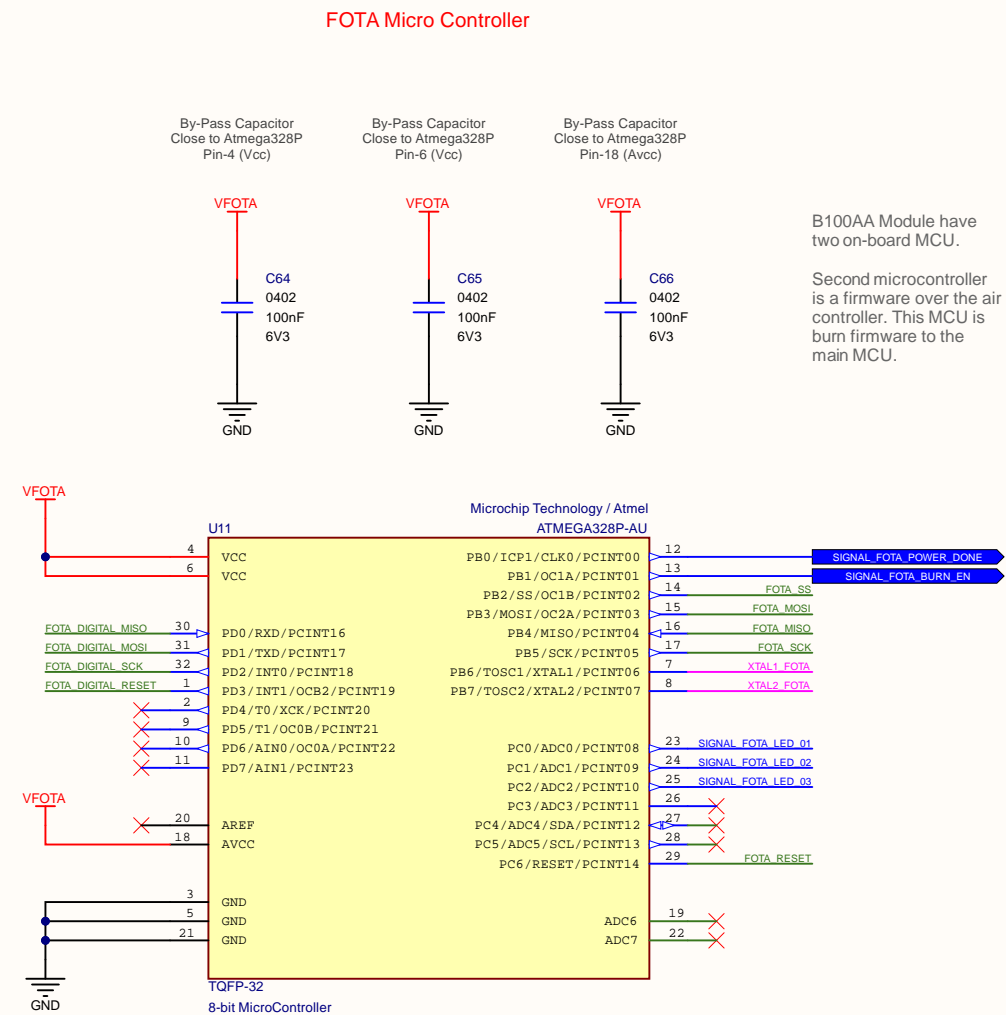
| | | | | | |
|--|-----------------------|------------------------------|---|--|---|
| Title I2C Filter Capacitors | | | Ovoo Electronics | |  |
| Size: A4 | Number: 43 | Revision: B100AA R4 | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 43 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\FILTER Capacitors - I2C.SchDoc | | | | | |
| | | | | | |


Power Trigger

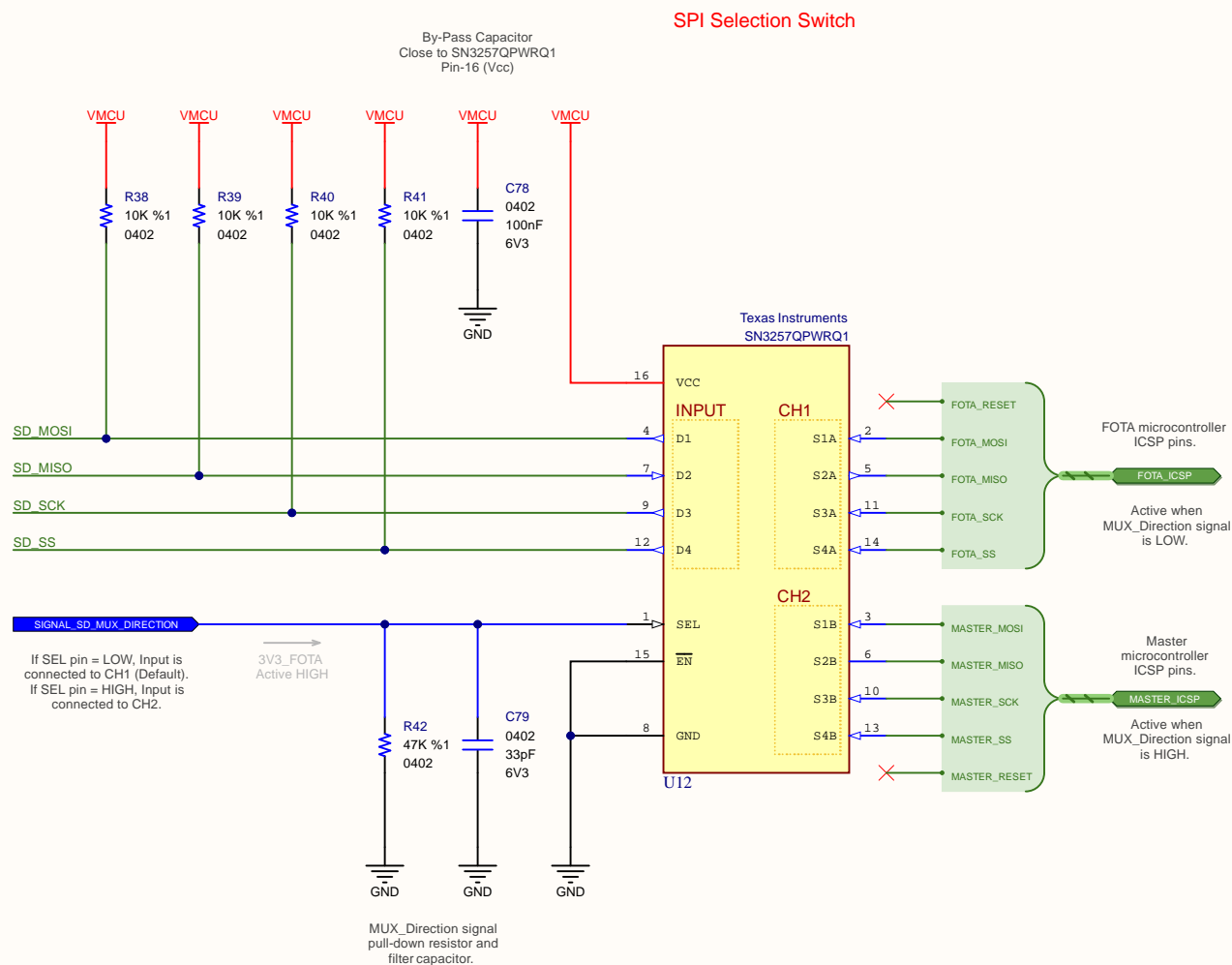
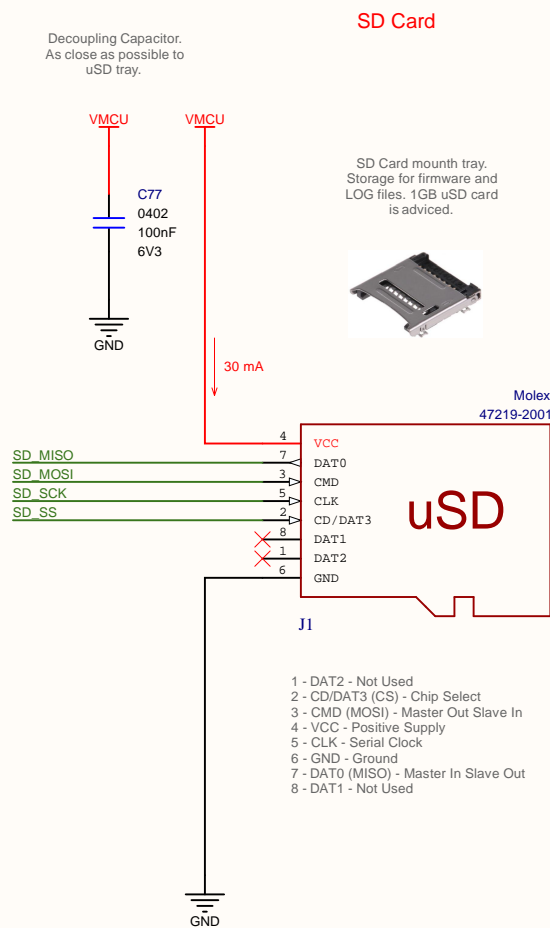
Power Switch




| | | | | | |
|--|----------------|---------------------|---|--|---|
| Title FOTA MicroController Latched Power Trigger | | | Ovoo Electronics | |  |
| Size: A4 | Number: 44 | Revision: B100AA R4 | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| | | | | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 44 | of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\FOTA MicroController Power Switch.SchDoc | | | | | |

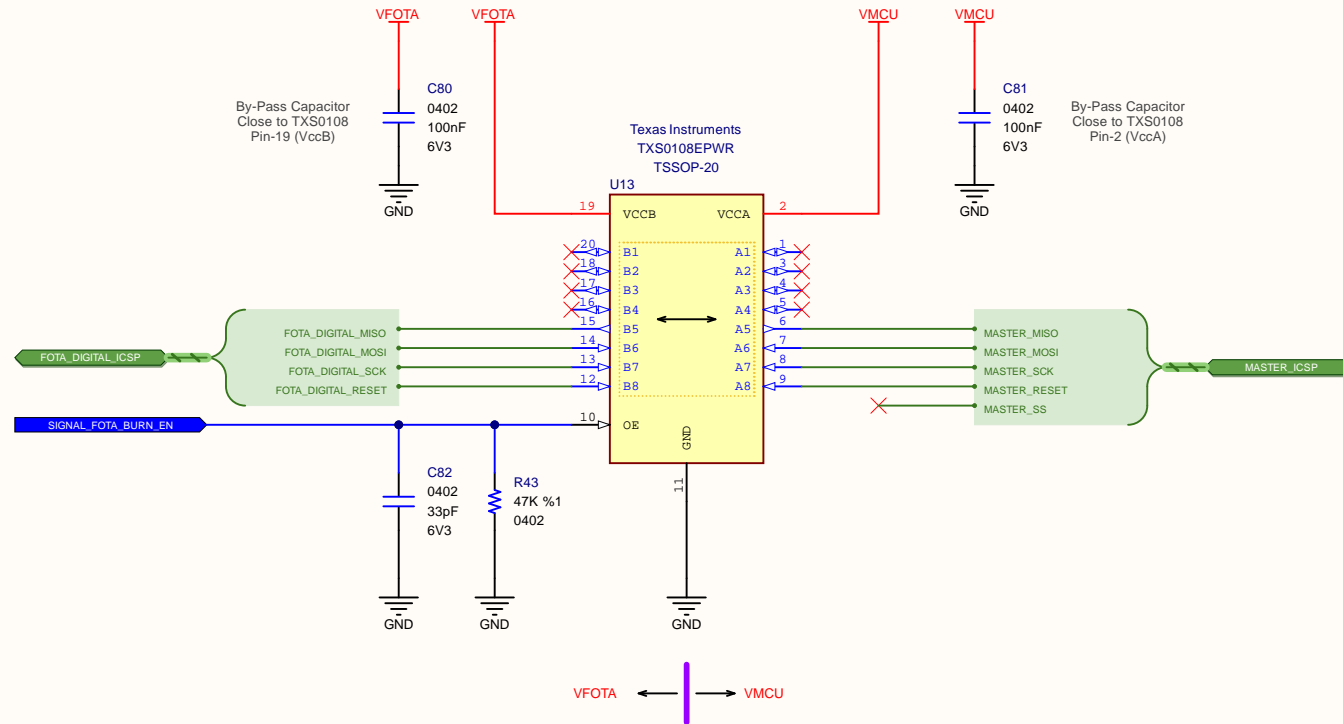


| | | | | | |
|--|------------------------------|--|---|--|---|
| Title FOTA MicroController | | | Ovoo Electronics Necip Fazıl Mah. Otaurmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye | |  |
| Size: A3 | Number: 45 | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:37 | Sheet 45 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\FOTA MicroController.SchDoc | | | | | |



| | | | | |
|--|------------------------------|--|---|---|
| Title SD Card & Select Switch | | | Ovoo Electronics Necip Fazıl Mah. Otaurmak Sok. Birgül Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 46 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:38 | Sheet 46 of 54 | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\SD Card.SchDoc | | | | |

ICSP Burn Buffer



Title FOTA Burn Buffer

Size: A4

Number: 47

Revision: B100AA R4

Date: 2.02.2021

Time: 18:16:38

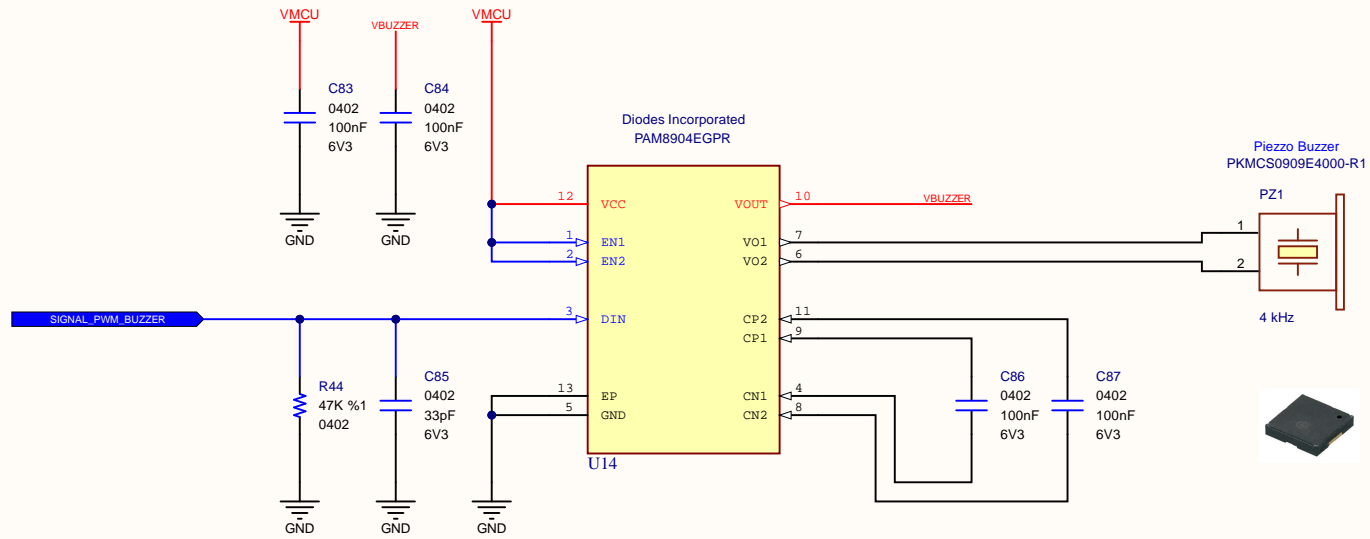
Sheet 47 of 54


File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\ICSP Burn Buffer.SchDoc

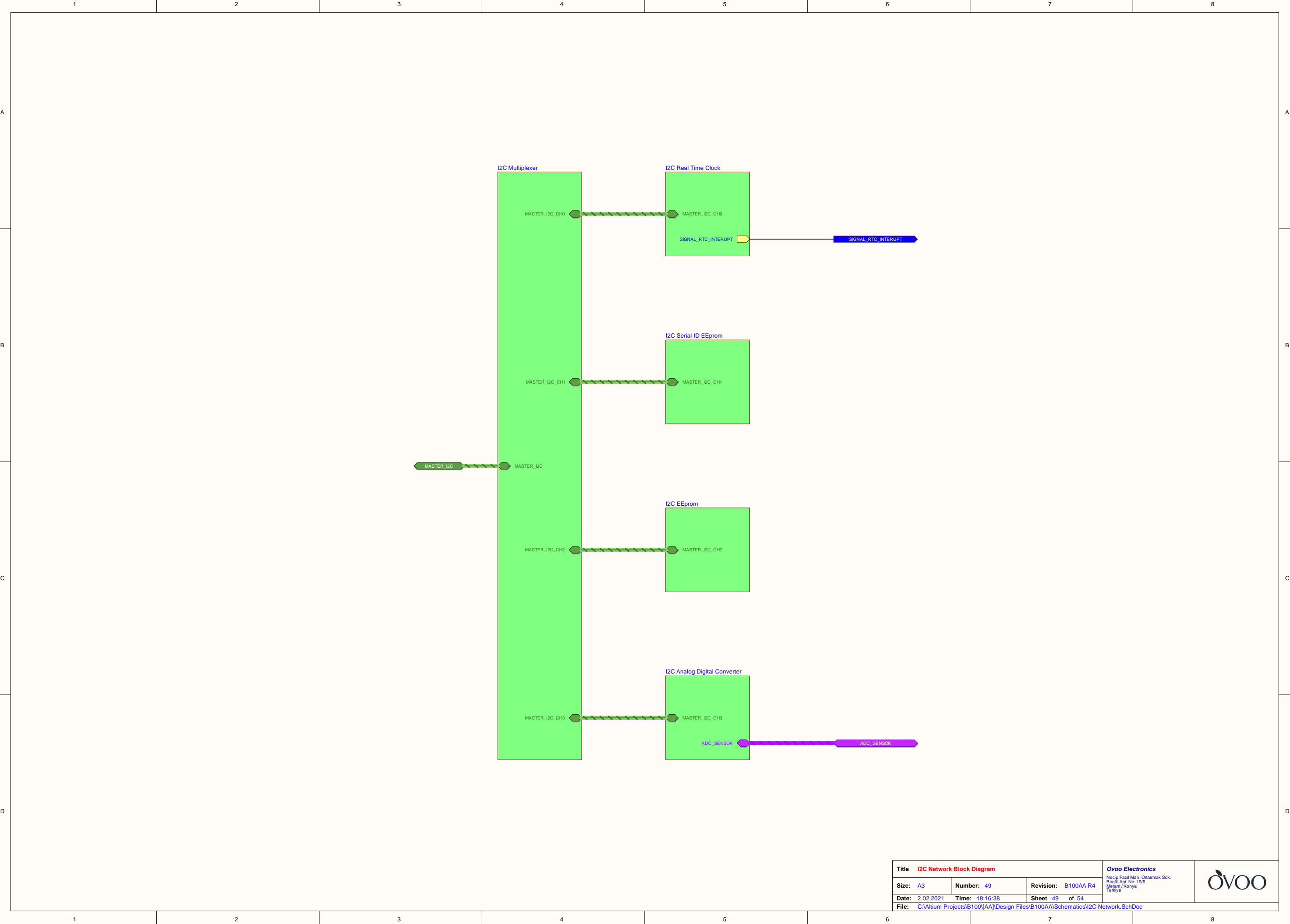
Ovoo Electronics

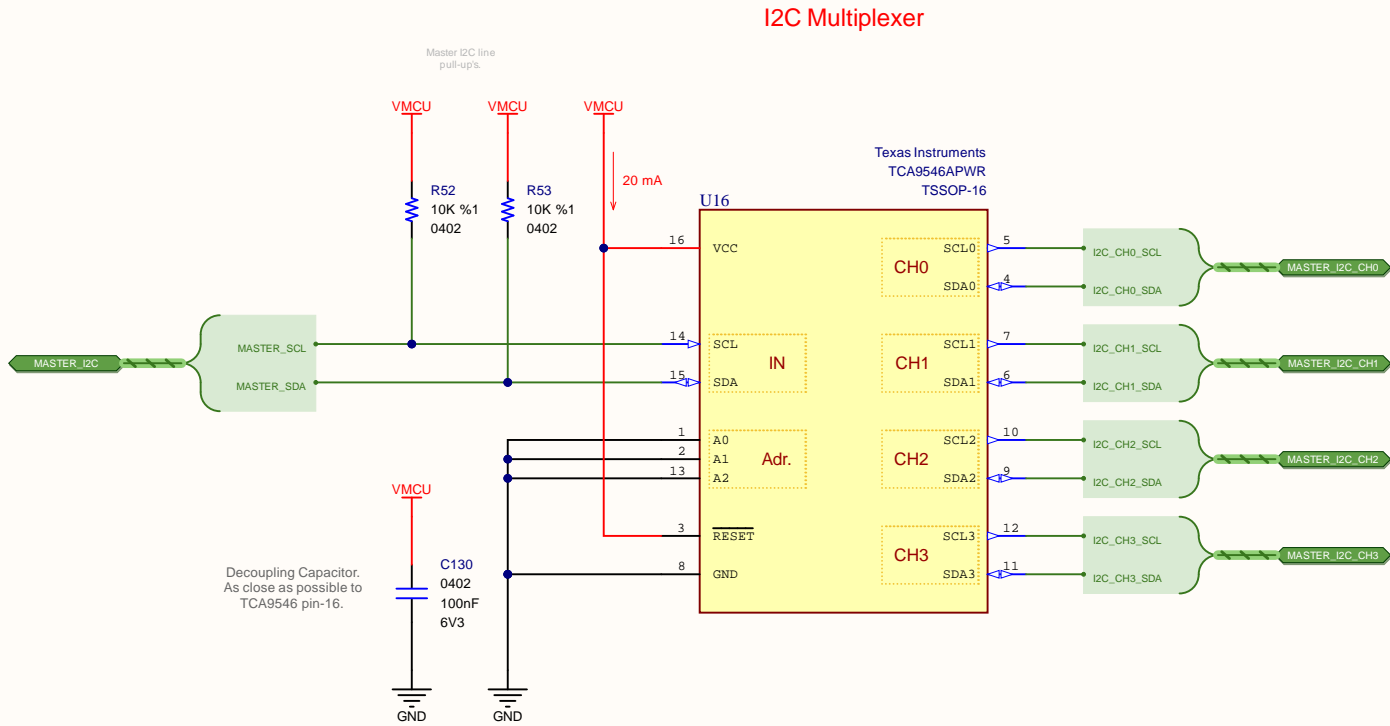
Necip Fazıl Mah. Ortarmak Sok.
Bırgölü Apt. No: 19/6
Meram / Konya
Türkiye


Piezzo Buzzer



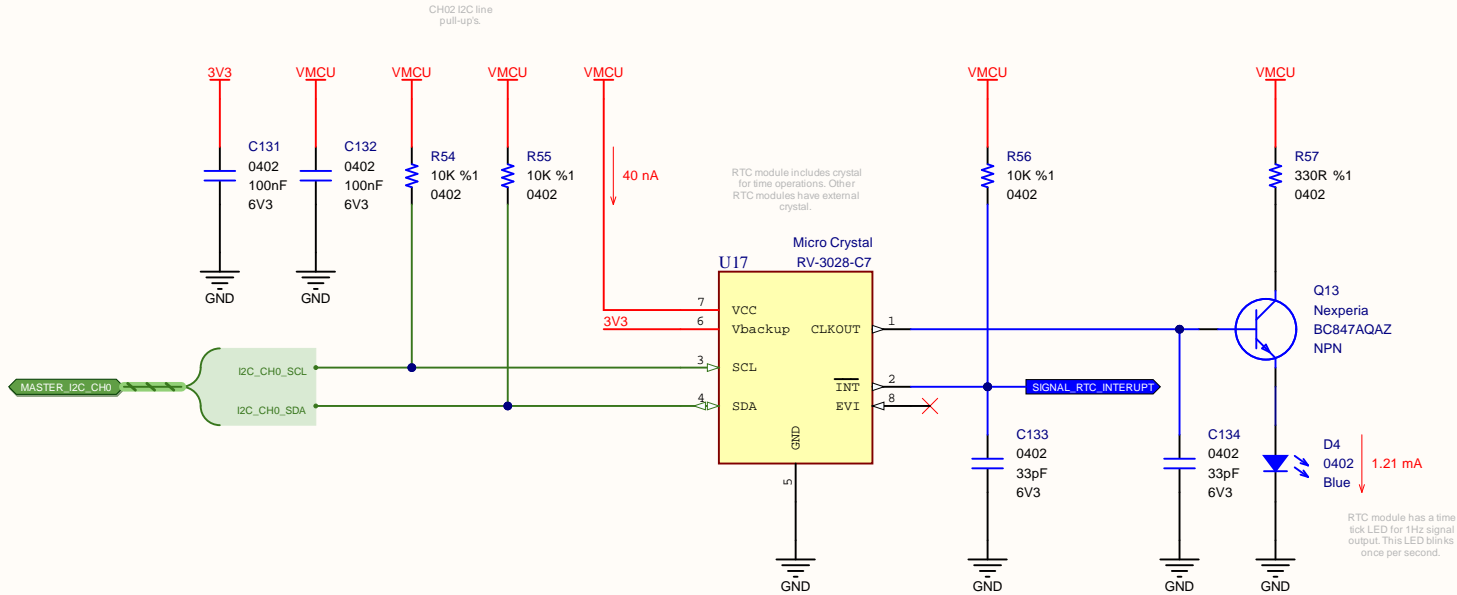
| | | | | |
|---|-----------------------|------------------------------|--|---|
| Title Buzzer | | | Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye |  |
| Size: A4 | Number: 48 | Revision: B100AA R4 | | |
| Date: 2.02.2021 | Time: 18:16:38 | Sheet 48 of 54 | | |
| File: C:\Altium Projects\B100(AA)\Design Files\B100AA\Schematics\Buzzer.SchDoc | | | | |



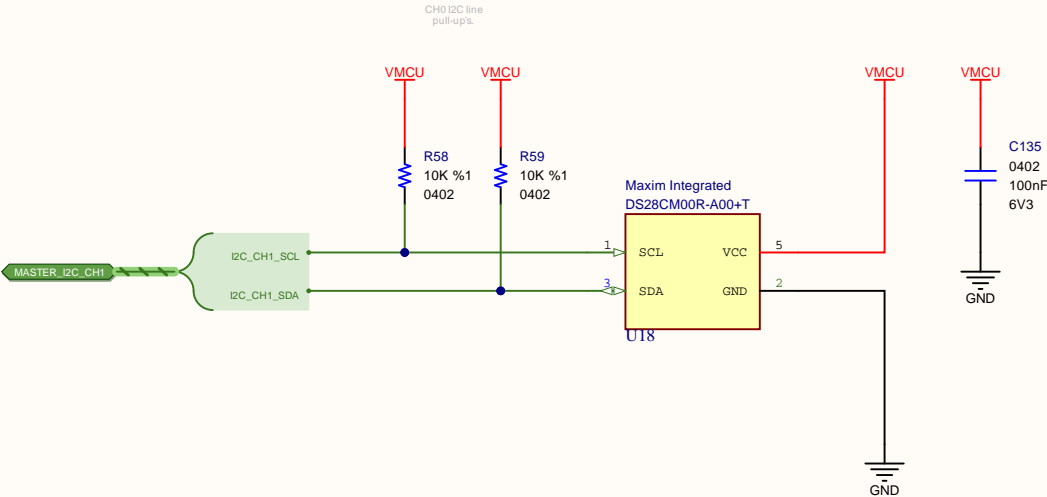



| | | | | | |
|---|-----------------------|------------------------------|---|--|---|
| Title I2C Multiplexer | | | Ovoo Electronics | |  |
| Size: A4 | Number: 50 | Revision: B100AA R4 | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Date: 2.02.2021 | Time: 18:16:38 | Sheet 50 of 54 | | | |
| File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\I2C Multiplexer.SchDoc | | | | | |

Real Time Clock

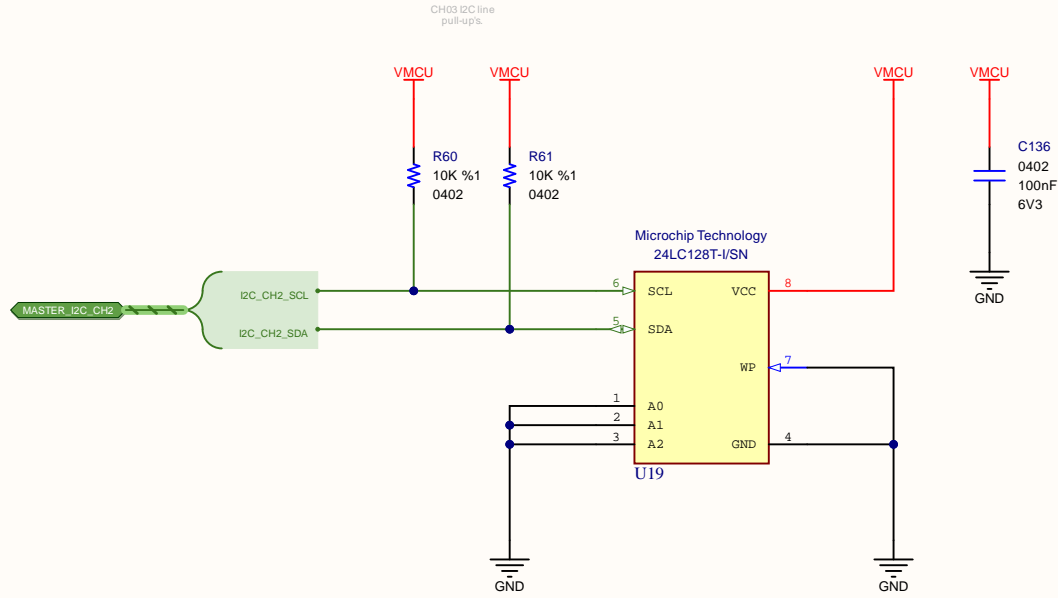


I2C Serial ID EEPROM



| | | | | | |
|---|----------------|---------------------|---|--|---|
| Title I2C Serial ID EEprom | | | Ovoo Electronics | |  |
| Size: A4 | | | Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye | | |
| Number: 52 | | Revision: B100AA R4 | | | |
| Date: 2.02.2021 | Time: 18:16:38 | 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: 2.02.2021

Time: 18:16:38

Sheet 53 of 54

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

Ovoo Electronics

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



Analog Digital Converter

