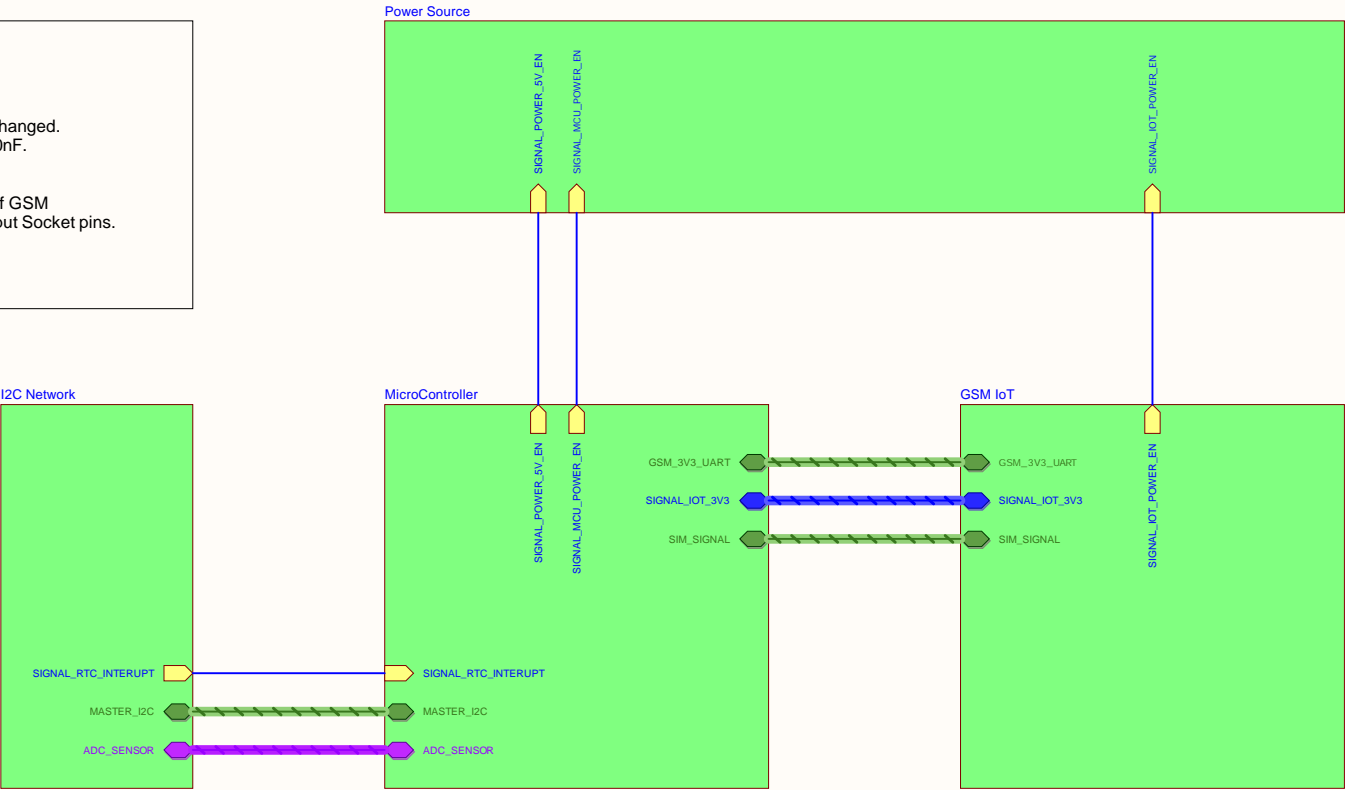


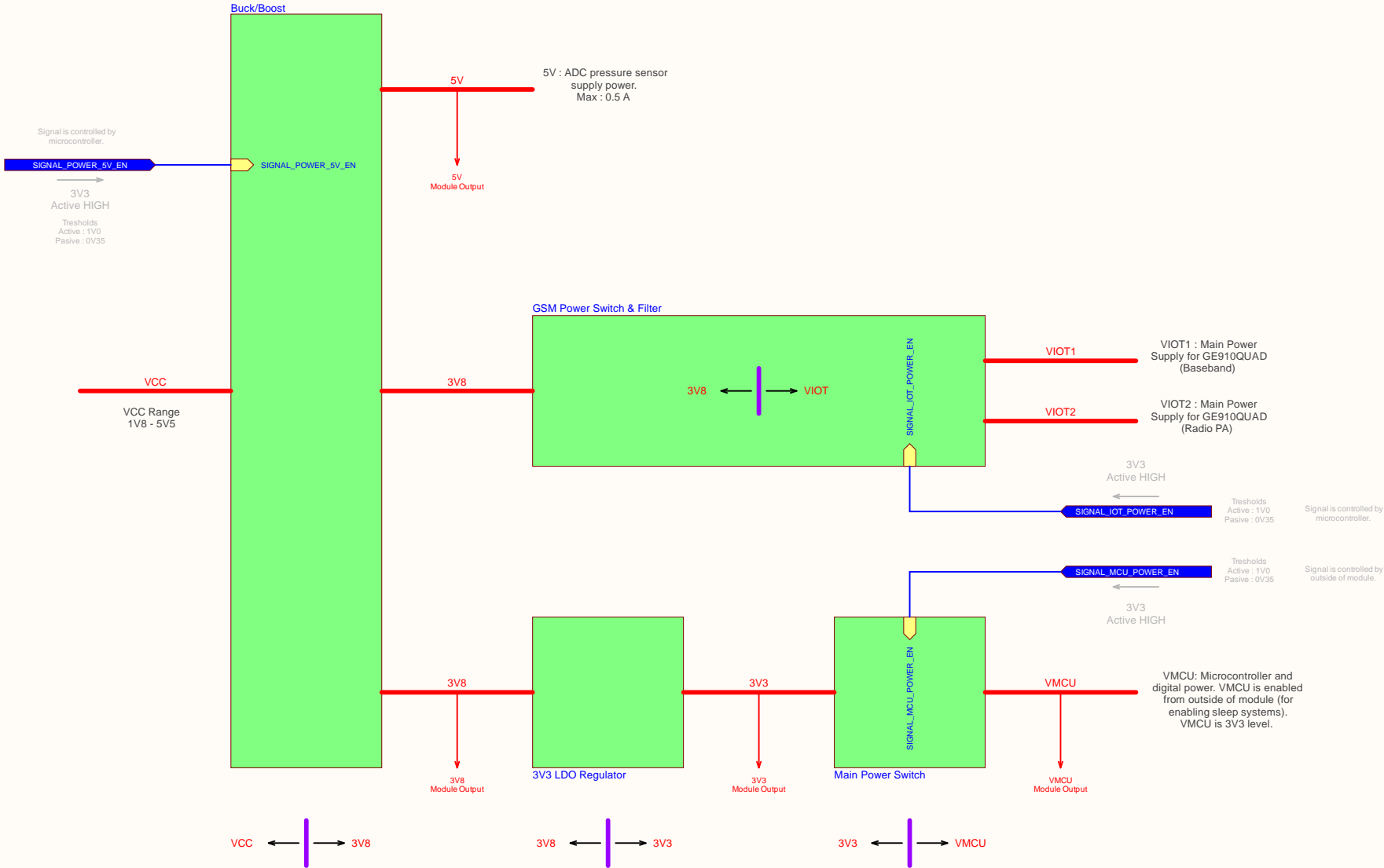
B100 - Master IoT MicroController


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.

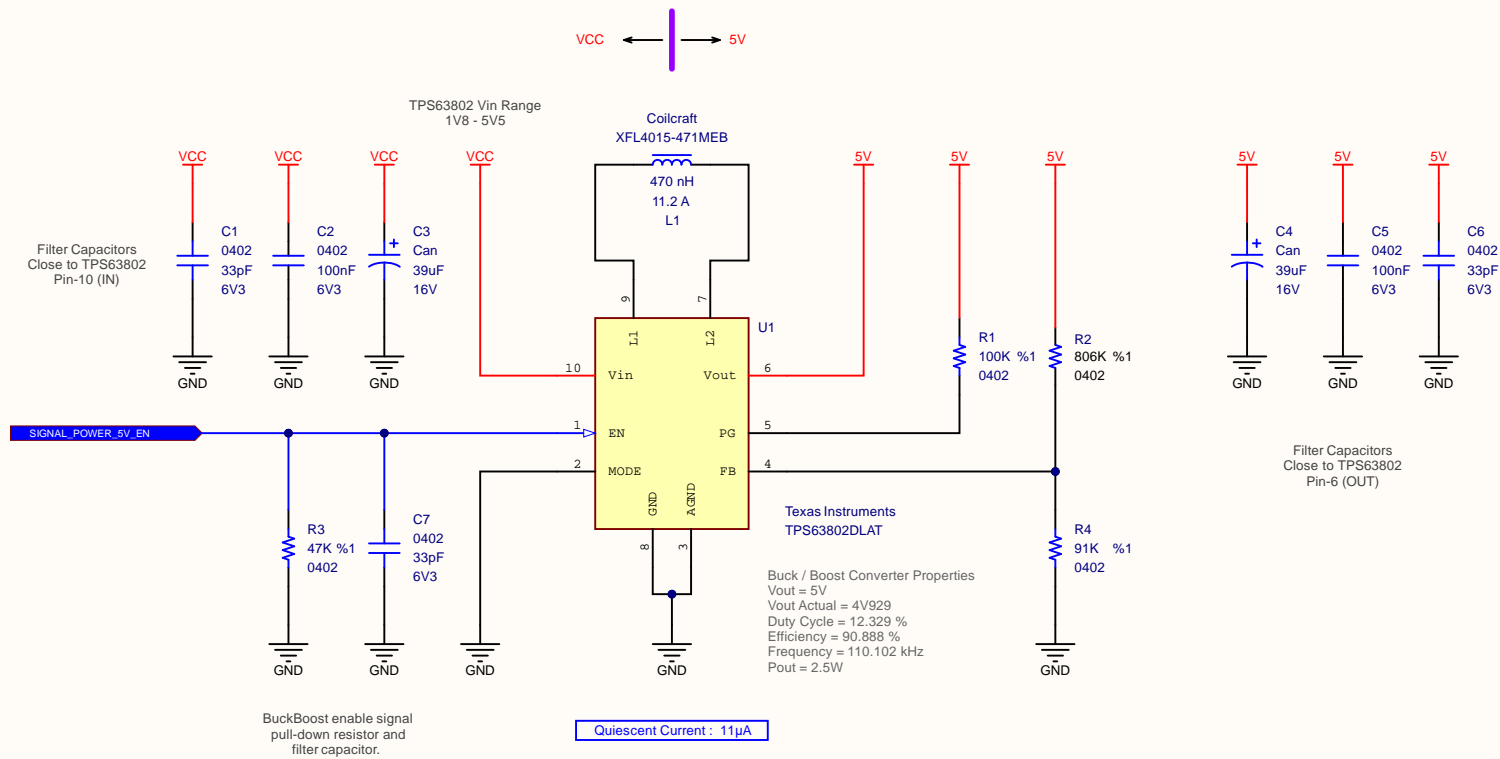


Power Architechture

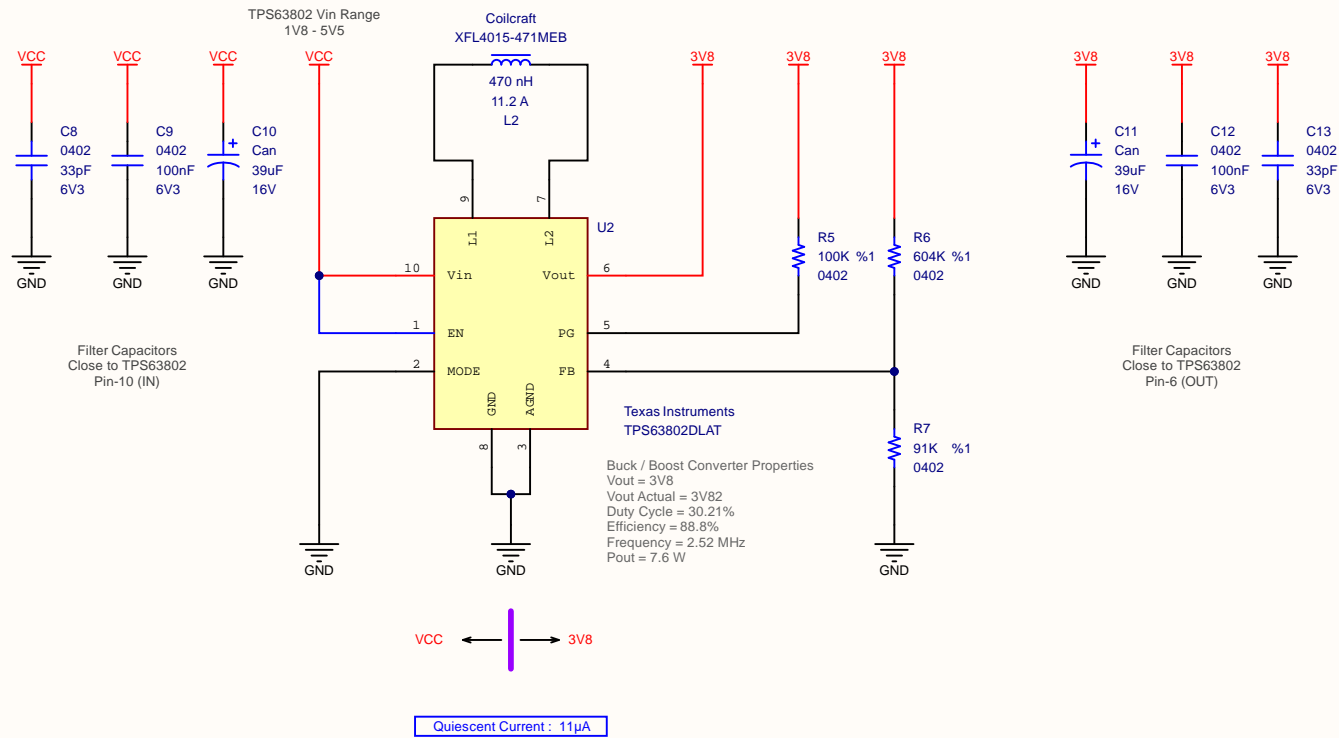


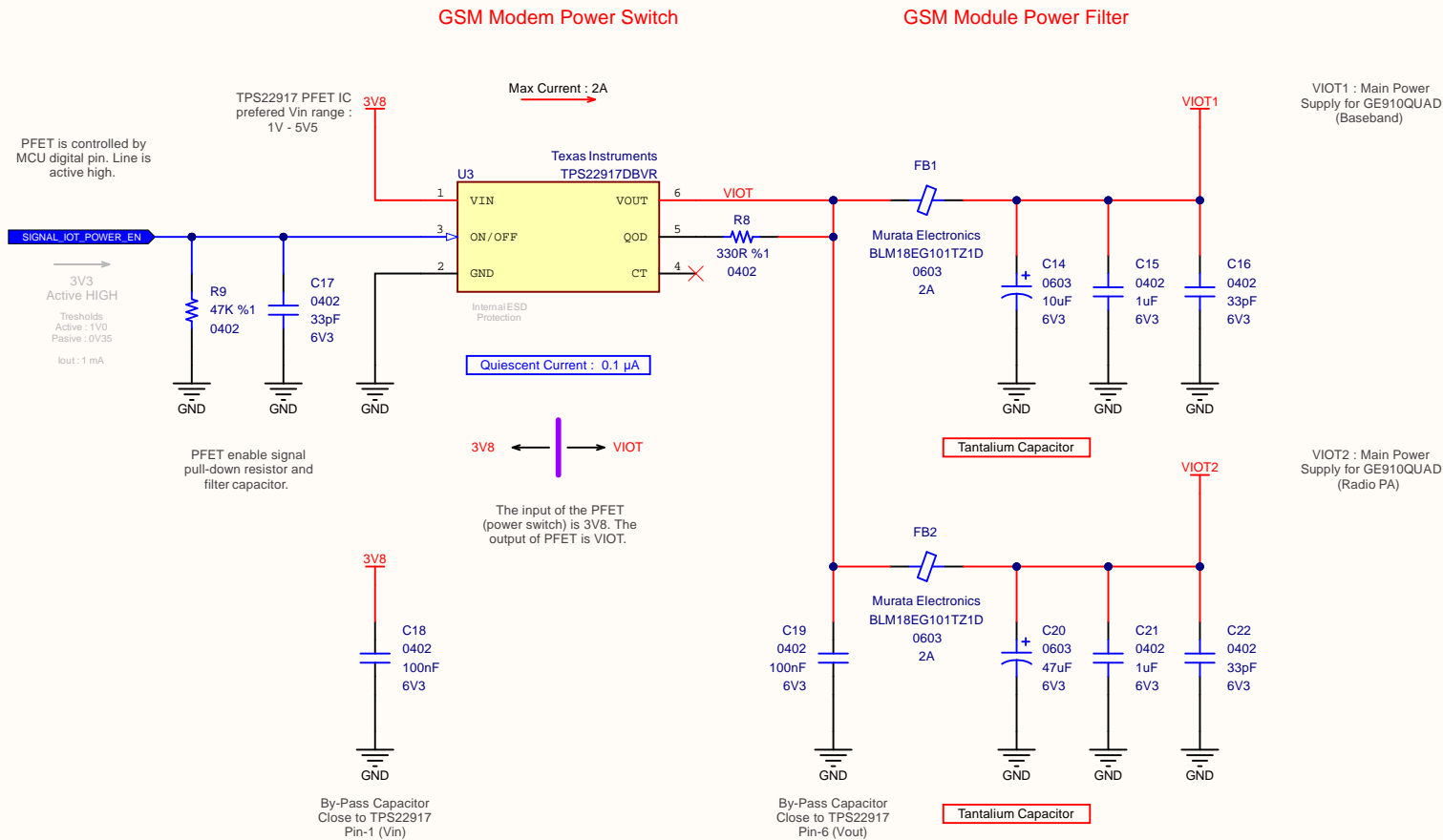
Title Power Source			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye		
Size: A4	Number: 2.	Revision: B100AA			
Date: 19.01.2021	Time: 15:34:55	Sheet 2 of 53			
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Power Source.SchDoc					


5V Buck Boost Converter




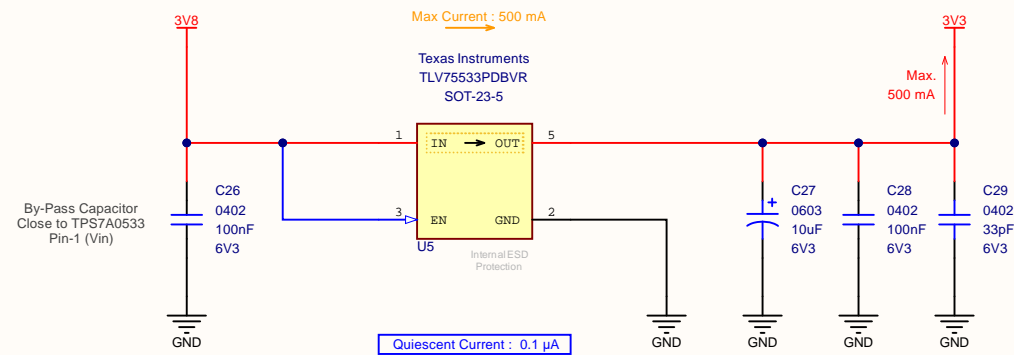
3V8 Buck Boost Converter






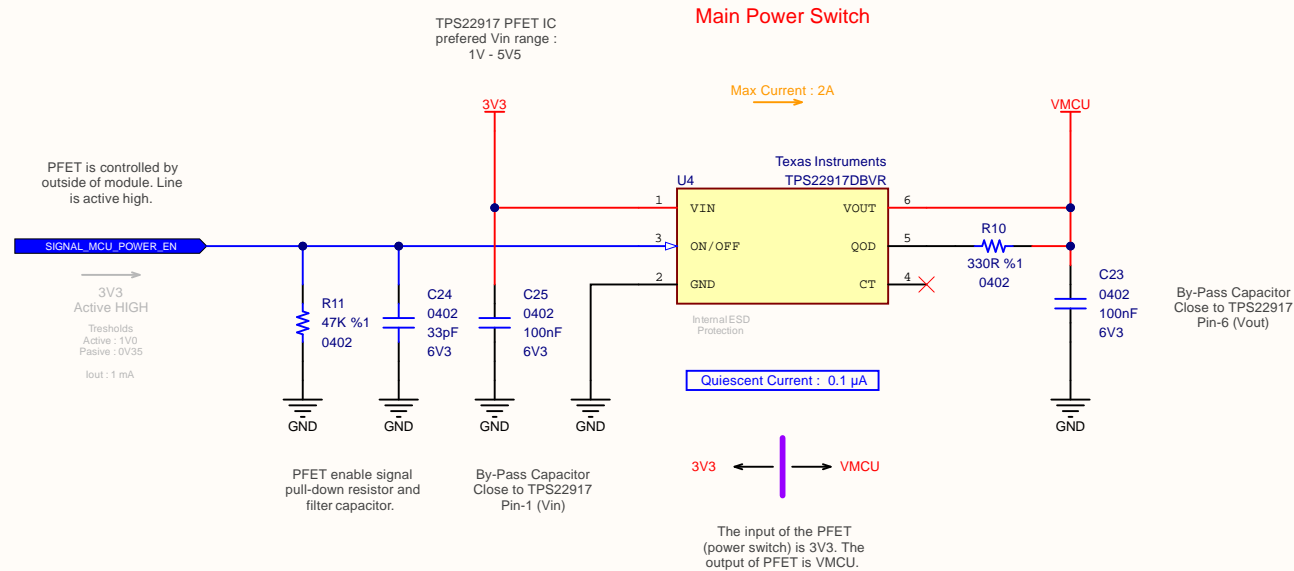
Title GSM Power Switch and Filter			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye		
Size: A4	Number: 4.	Revision: B100AA			
Date: 19.01.2021	Time: 15:34:56	Sheet 4 of 53			
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\GSM Power.SchDoc					


3V3 LDO Regulator



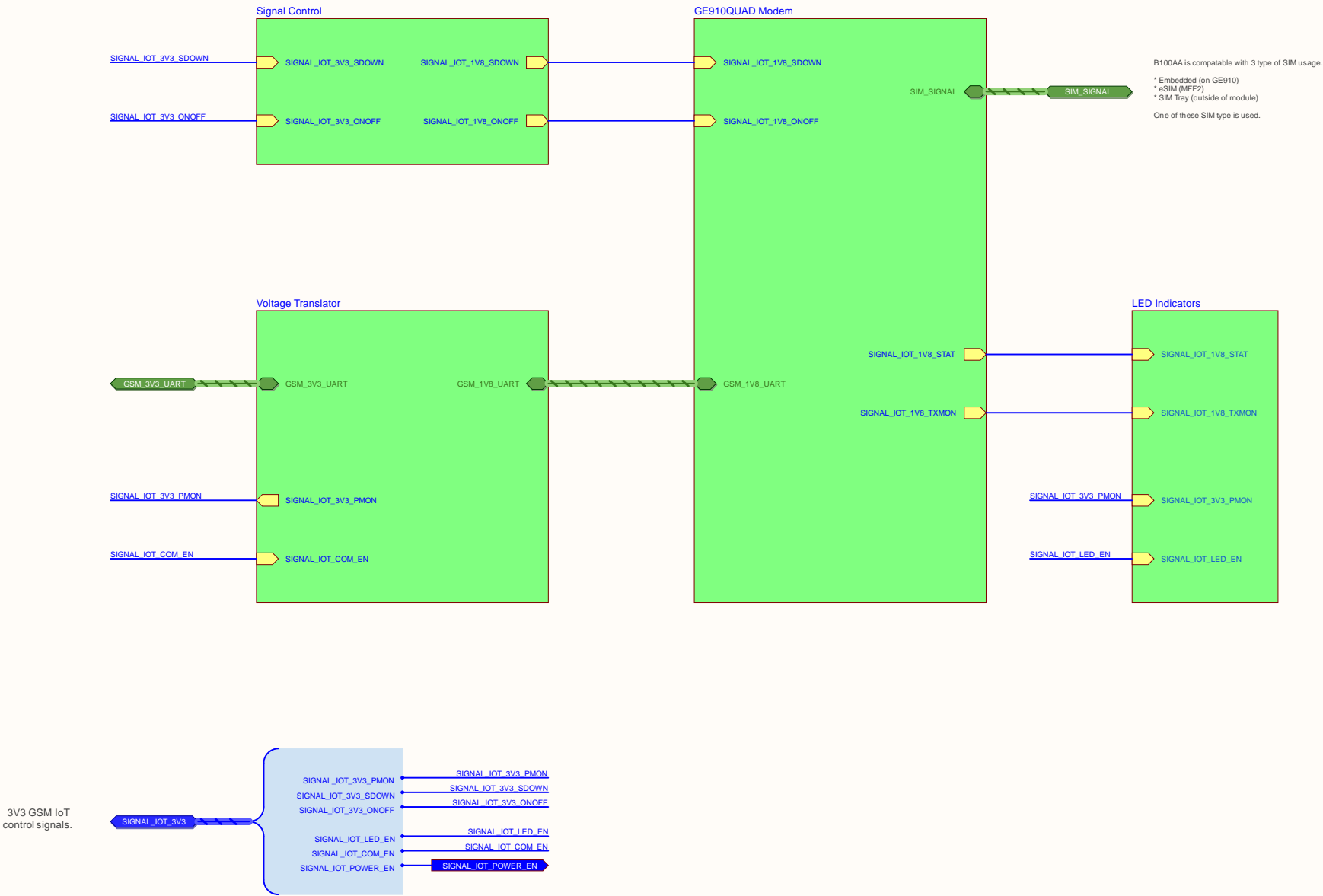
TLV75533 LDO is a 3V3 regulator. LDO is always enable.

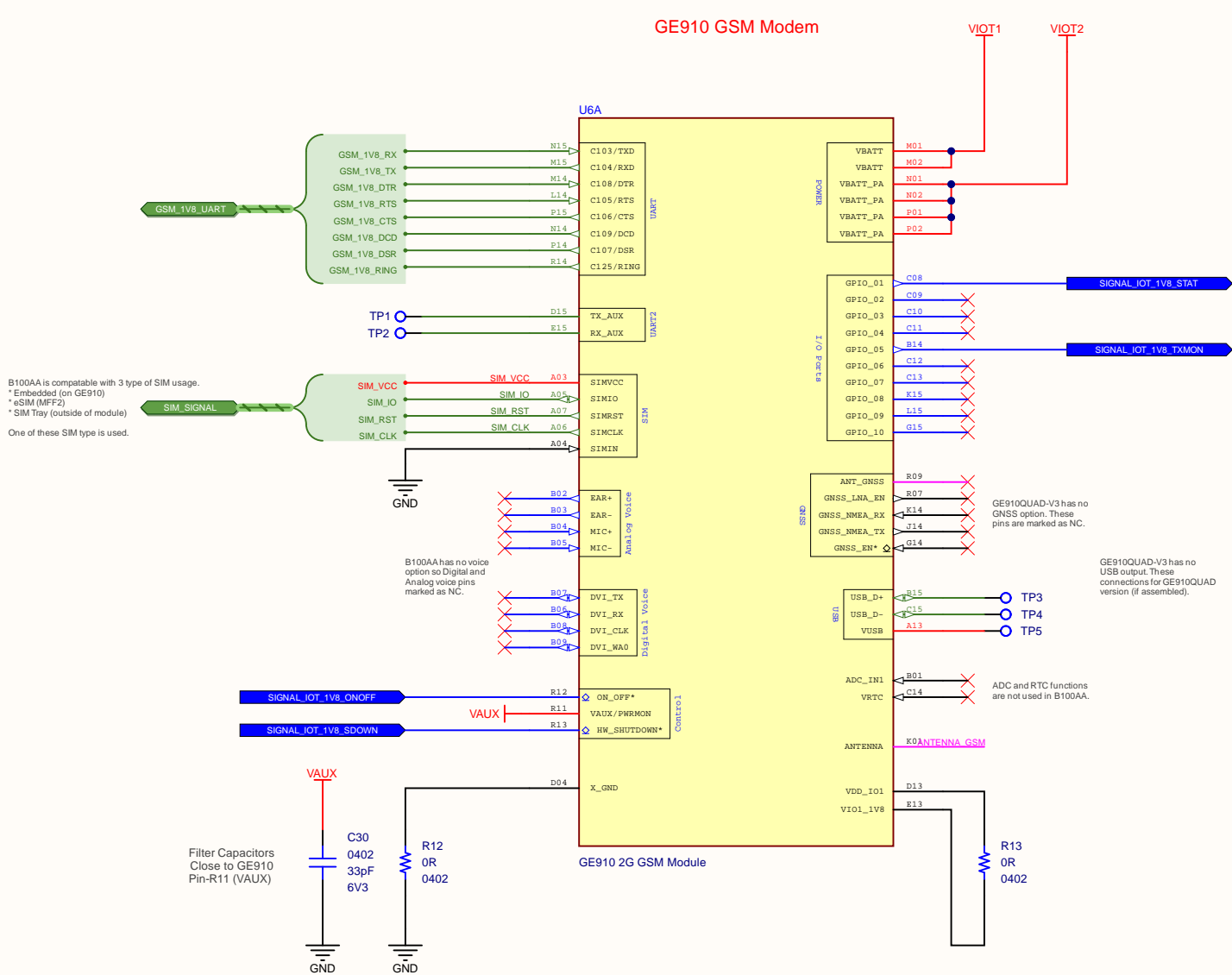
Title 3V3 LDO Regulator			Ovoo Electronics Necip Fazıl Mah. Ofisarmak Sok. Bigirli Apt. No: 19/B Meram / Konya Turkey		
Date: A4	Number: 5.	Revision: B100AA			
Date: 19.01.2021	Time: 15:34:56	Sheet 5 of 53			
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\3V3 LDO Regulator.SchDoc					



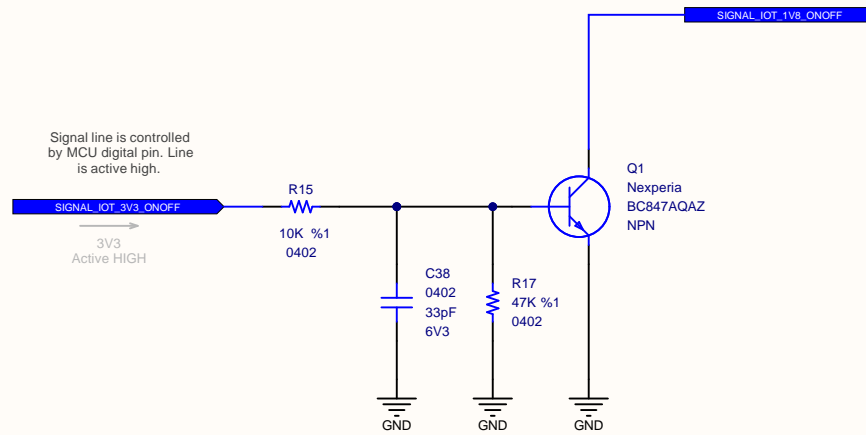
Title Main Power Switch			Ovoo Electronics Necip Fazıl Mah, Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 6.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:56	Sheet 6 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Main Power Switch.SchDoc				

GSM IoT Communication Layer

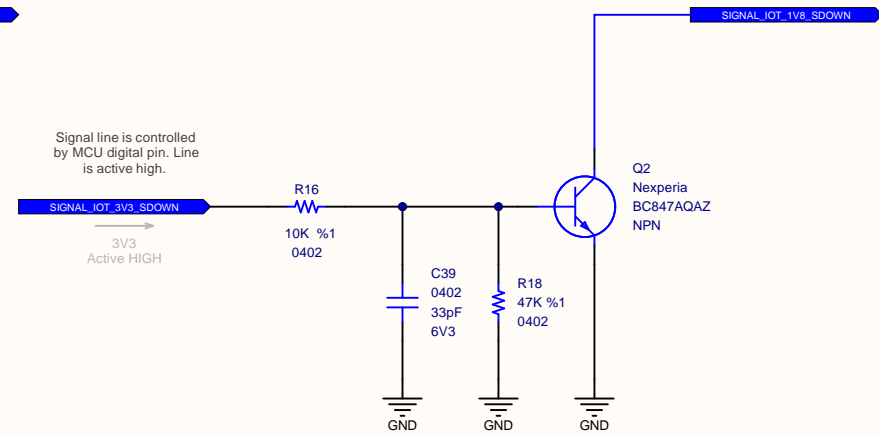




GSM Module On/Off Signal



GSM Module Shut Down Signal



Title GSM Control Signal Management

Size: A4

Number: 9.

Revision: B100AA

Date: 19.01.2021

Time: 15:34:56

Sheet 9 of 53

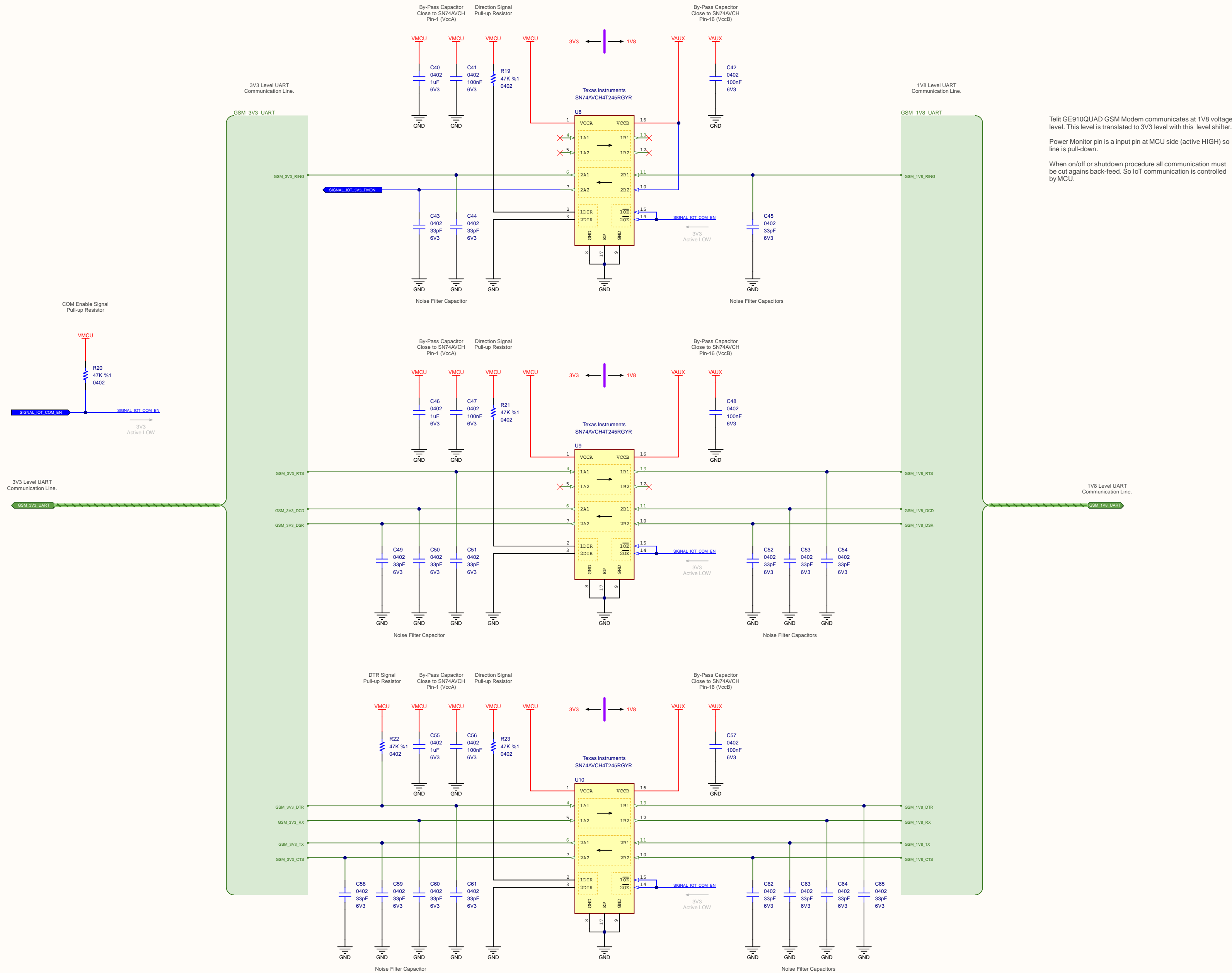
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\GSM Signal Control.SchDoc

Ovoo Electronics

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

OVOO

BiDirectional Level Shifter

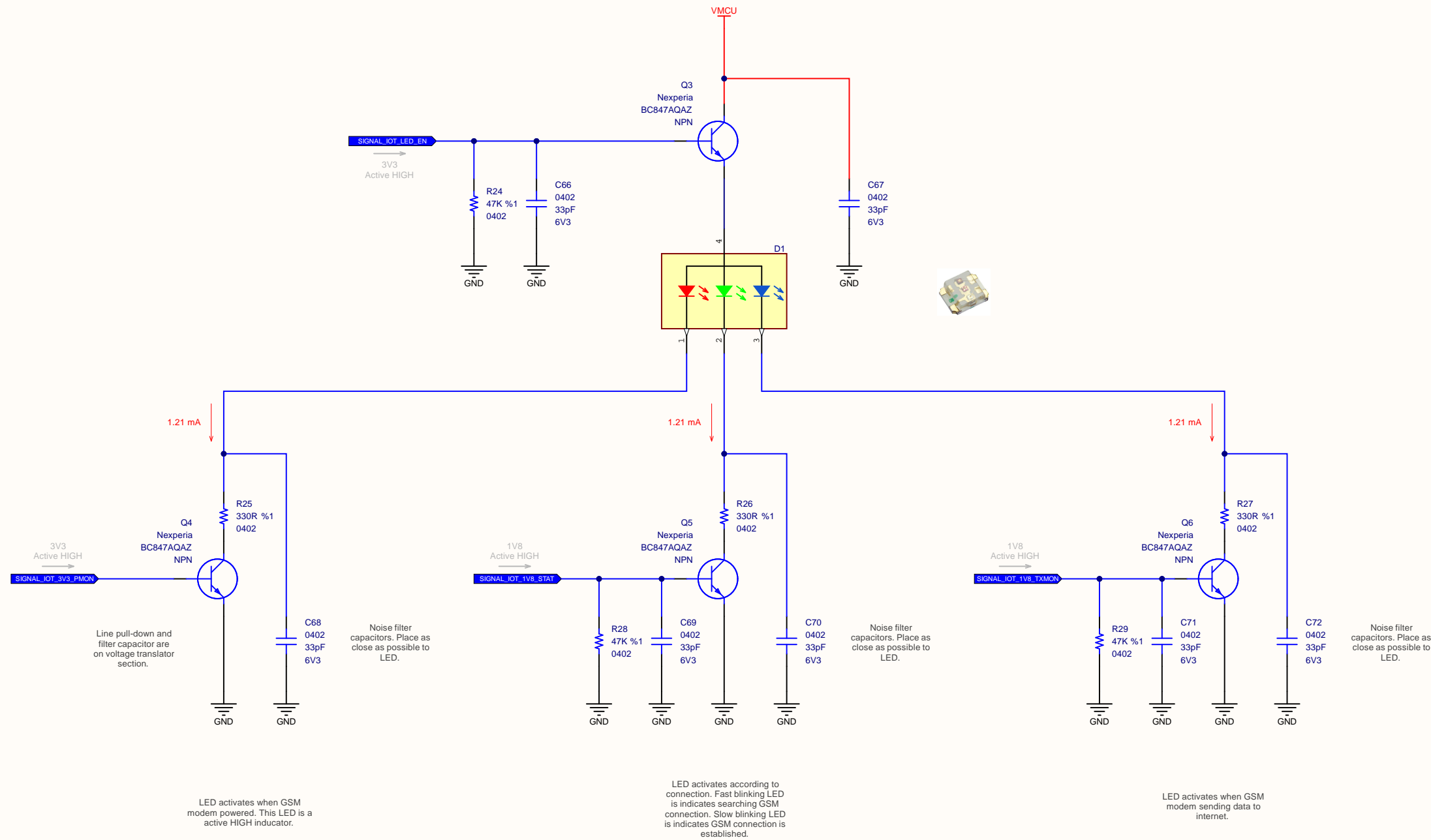


Telit GE910QUAD GSM Modem communicates at 1V8 voltage level. This level is translated to 3V3 level with this level shifter.

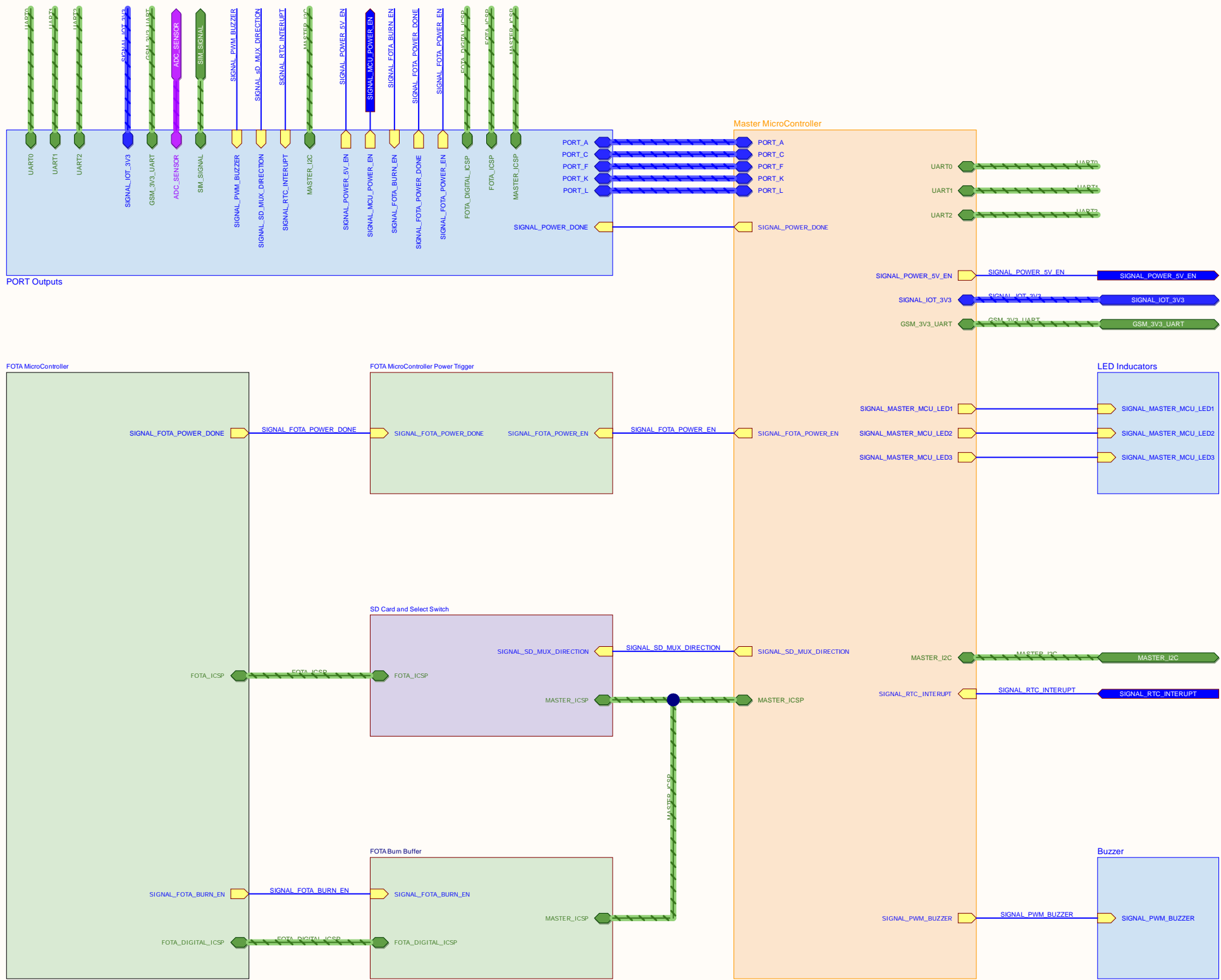
Power Monitor pin is a input pin at MCU side (active HIGH) so line is pull-down.

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

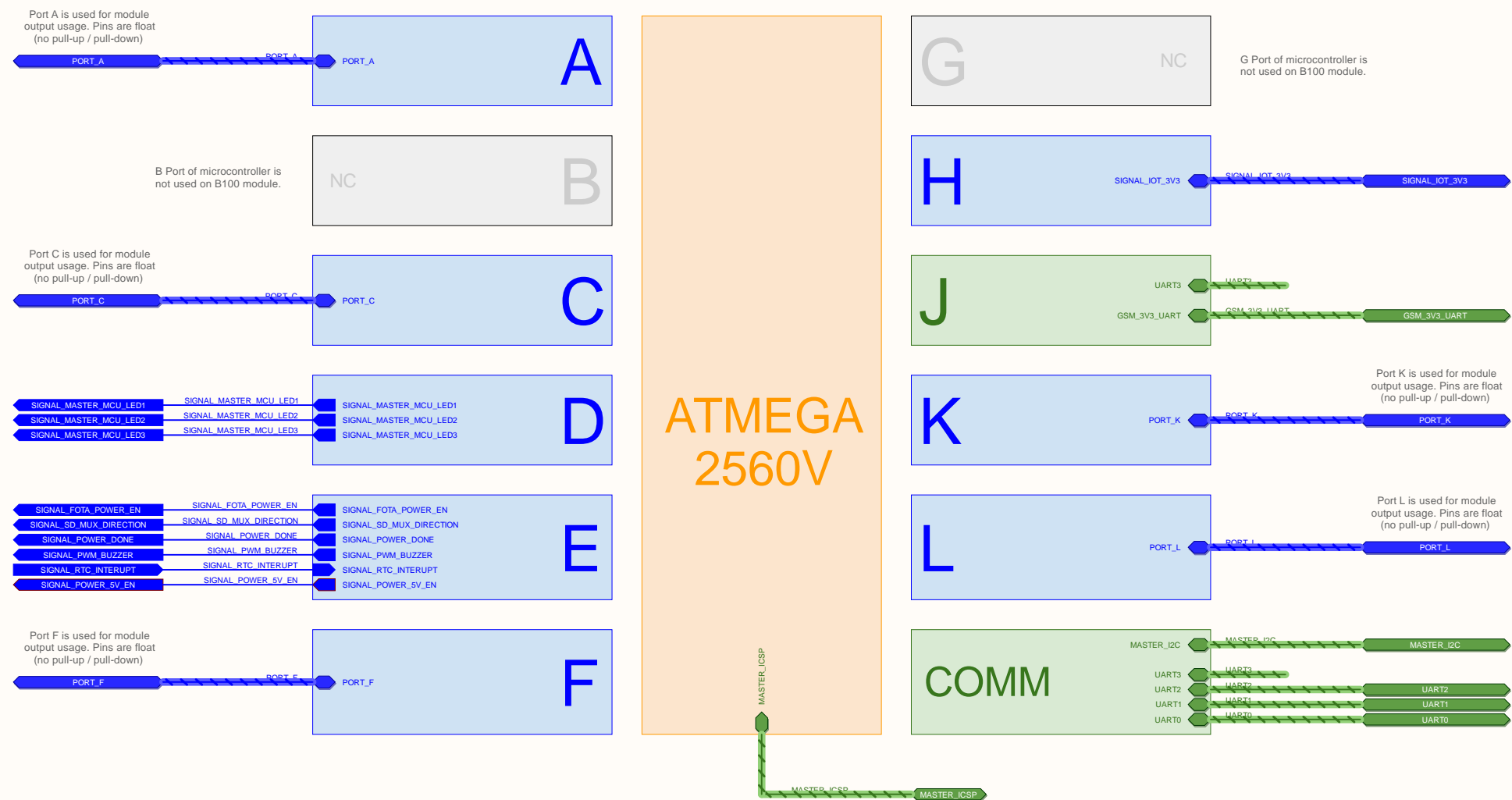
GSM IoT LED Indicators



B100 MicroController

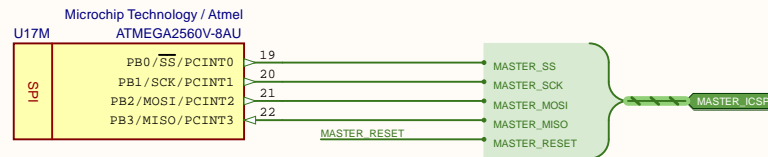
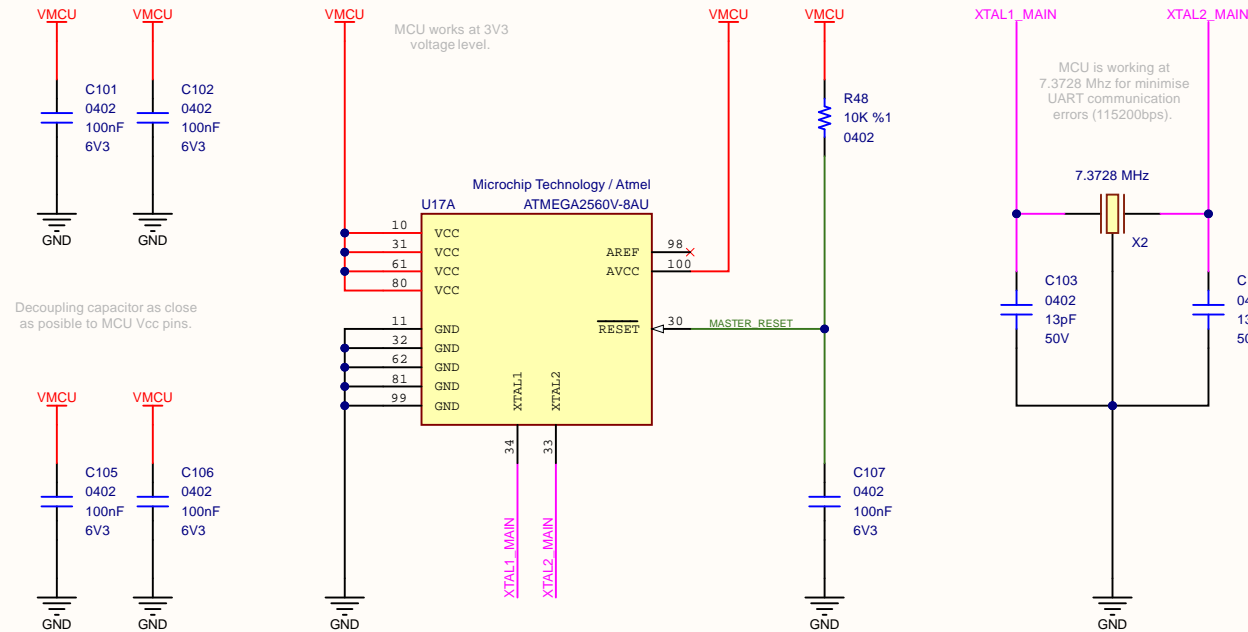


Master MicroController




MicroController

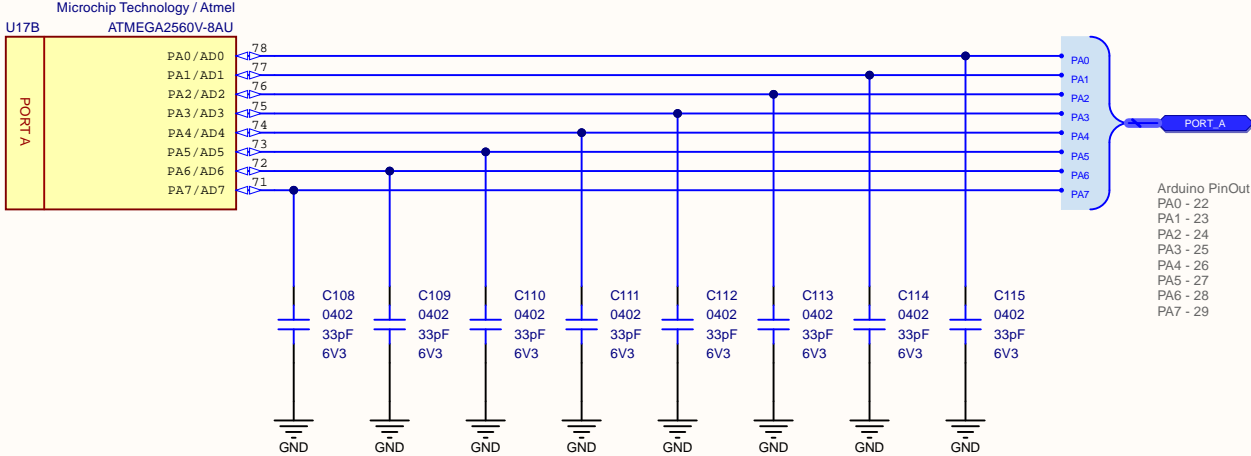
Crystal Oscillator



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: 14.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 14 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Core.SchDoc				

Master MicroController A Port



A

B

C

D

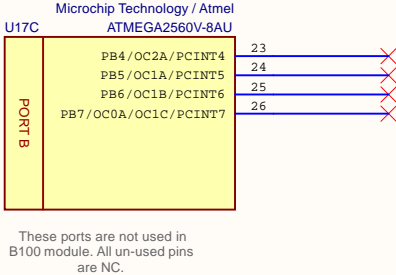
A


B

C

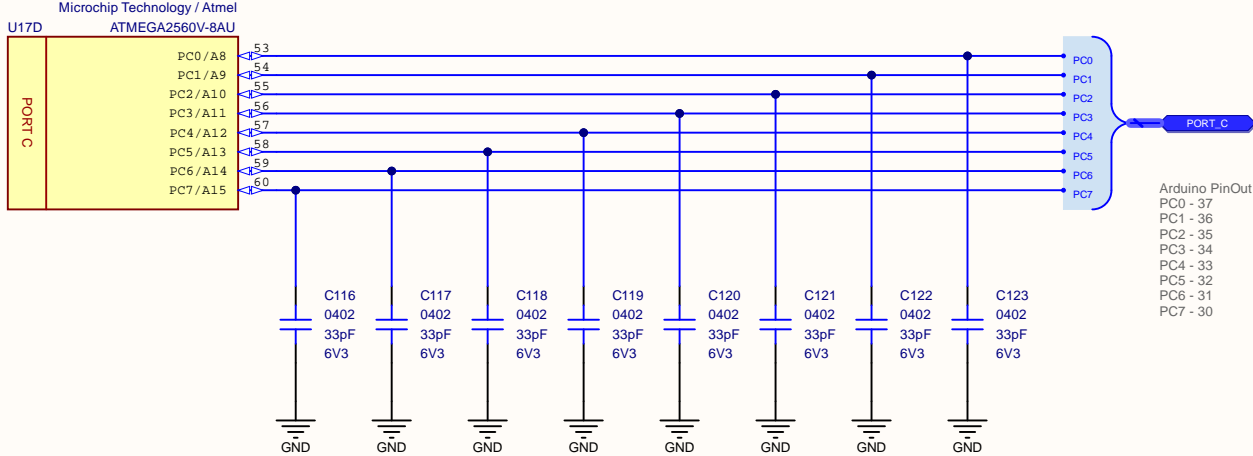
D

Master MicroController B Port

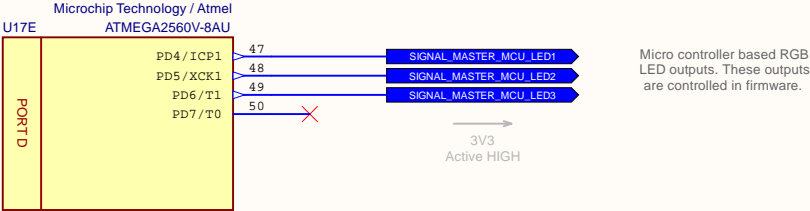



Title Master Micro Controller Port B Pin Out			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 16.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 16 of 53		
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Master MicroController C Port

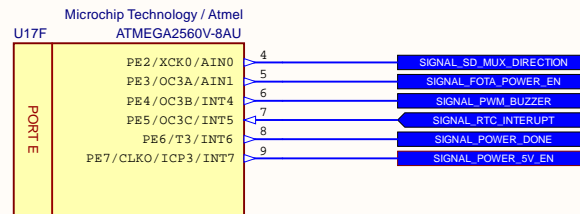



Master MicroController D Port



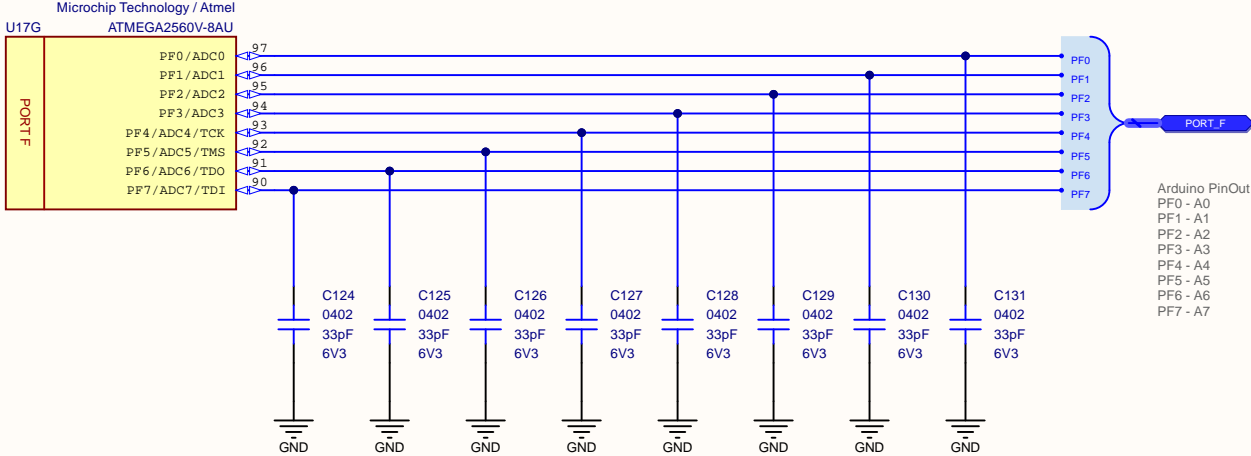
Title Master Micro Controller Port D Pin Out			Ovoo Electronics Necip Fazıl Mah. Ortairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 18.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 18 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port D.SchDoc				


Master MicroController E Port



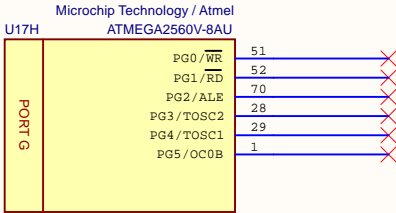
Title Master Micro Controller Port E Pin Out			Ovoo Electronics Necip Fazıl Mah, Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 19.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 19 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port E.SchDoc				

Master MicroController F Port




Title Master Micro Controller Port F Pin Out			Ovoo Electronics Necip Fazıl Mah. Ortairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 20.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 20 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port F.SchDoc				

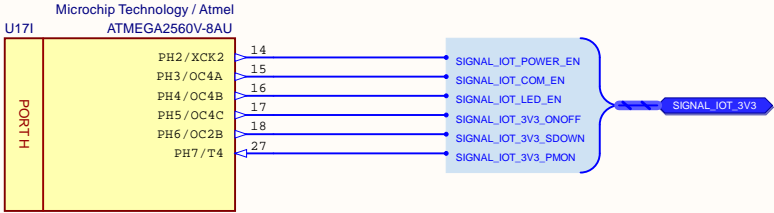
Master MicroController G Port



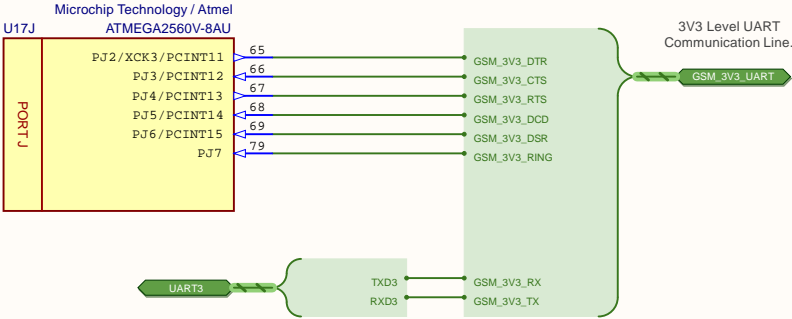
These ports are not used in B100 module. All un-used pins are NC.


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: 21.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 21 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController Port G.SchDoc				

Master MicroController H Port

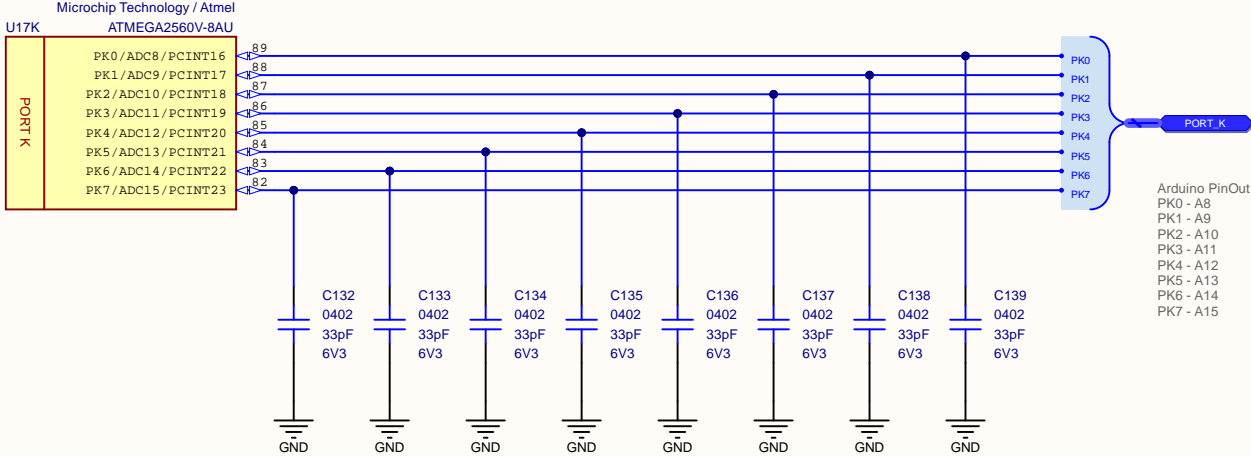


GSM IoT Communication Pins

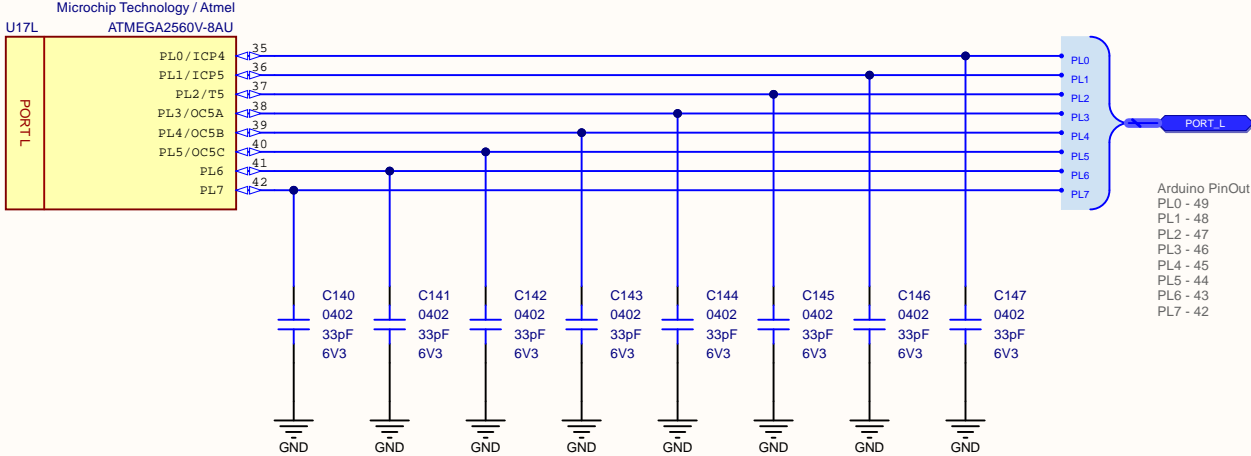


Title Master Micro Controller Port J Pin Out			Ovoo Electronics Necip Fazıl Mah. Ortairmak Sok. Bırgöl Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 23.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:57	Sheet 23 of 53		
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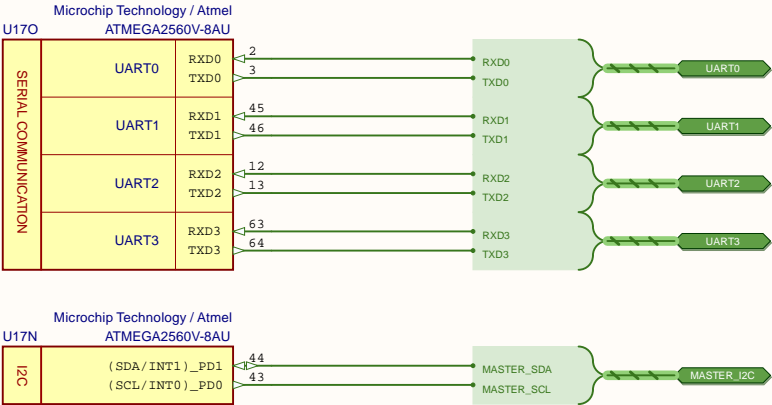
Master MicroController K Port



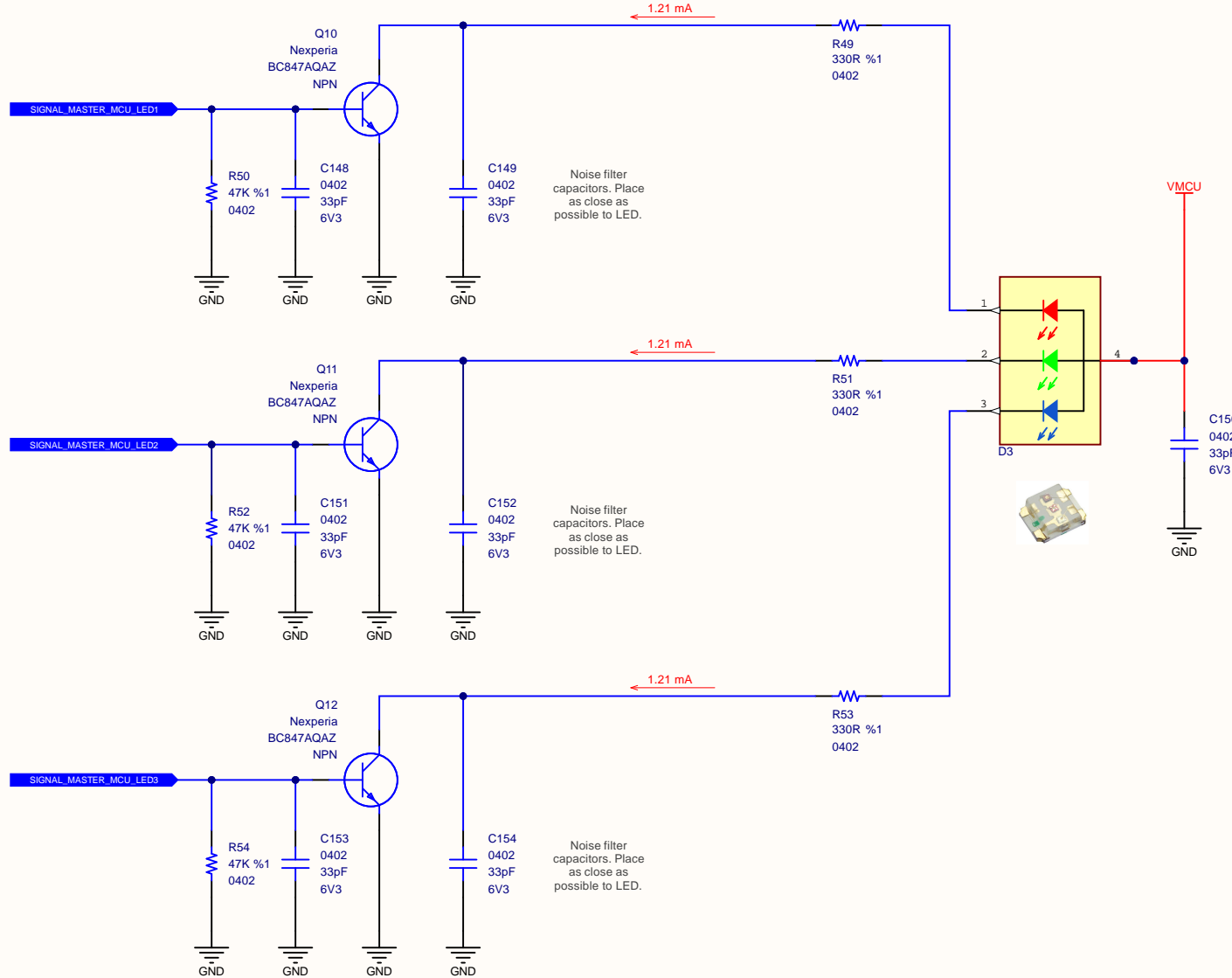
Master MicroController L Port




Communication Ports



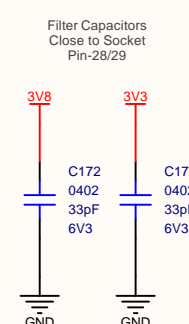
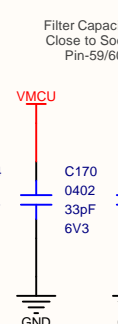
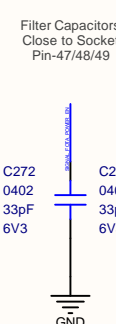
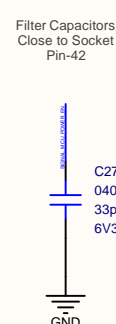
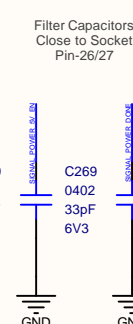
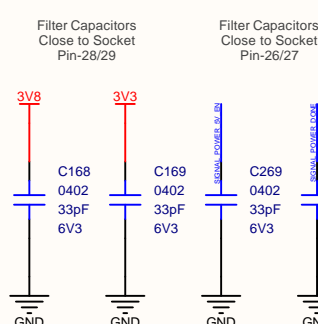
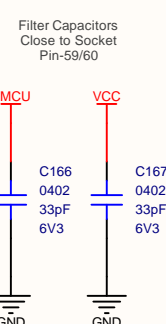
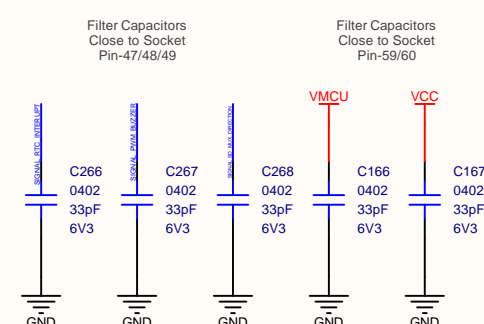
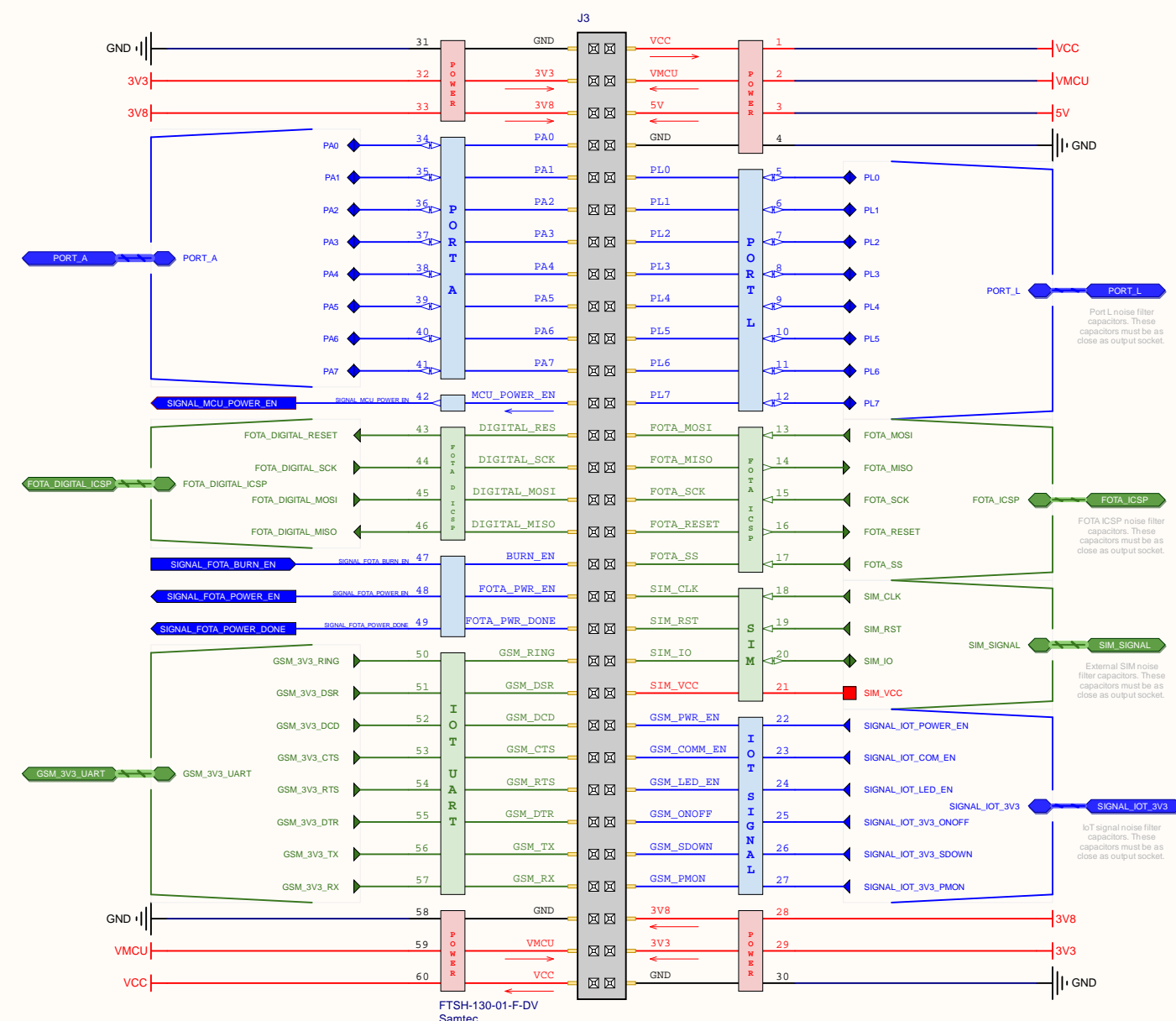
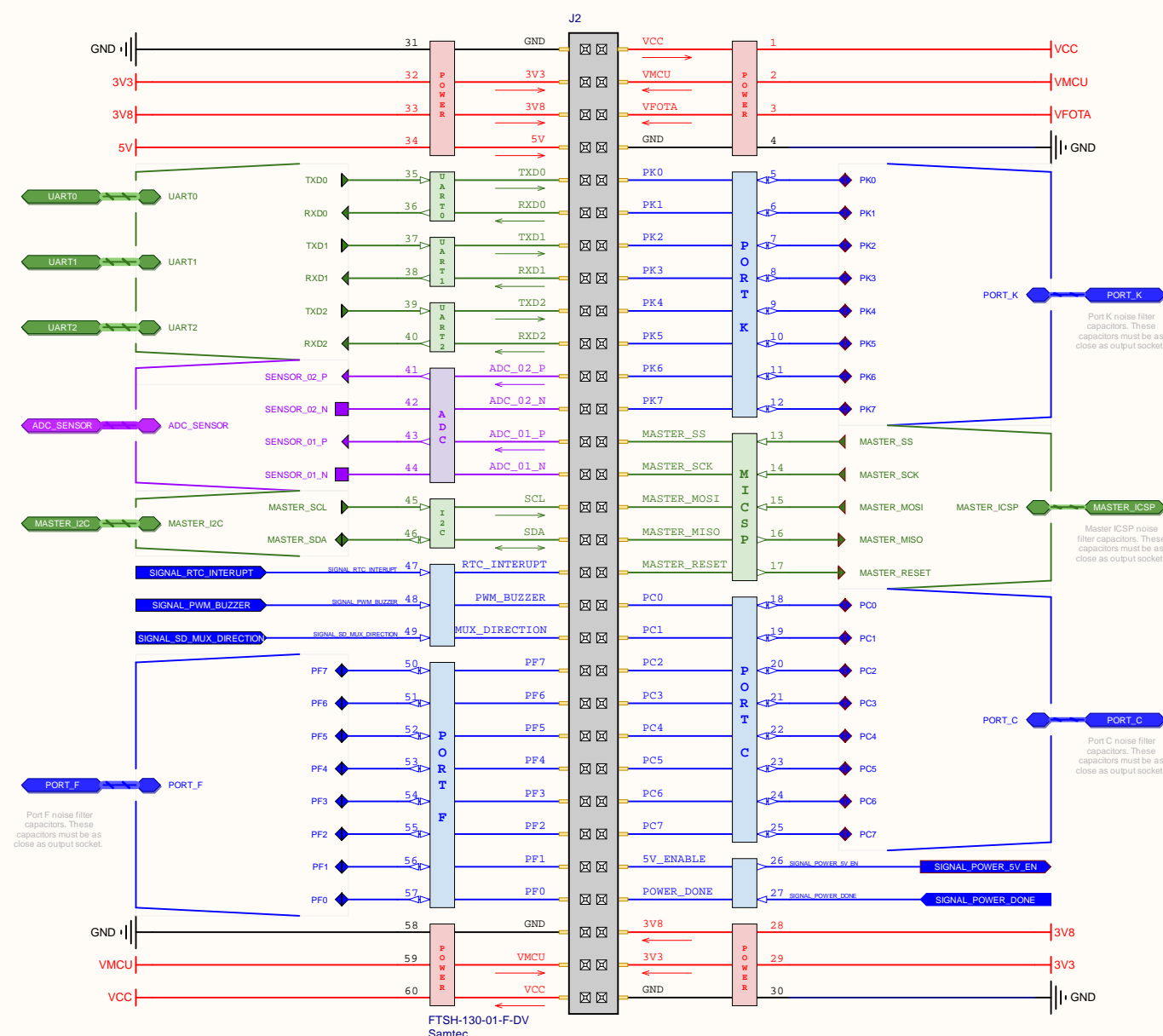
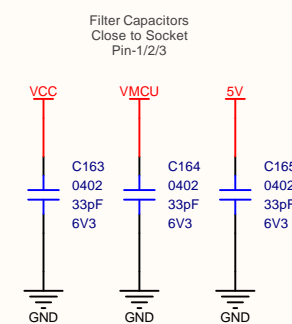
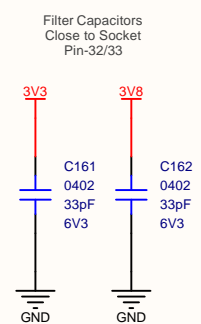
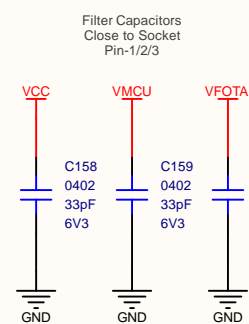
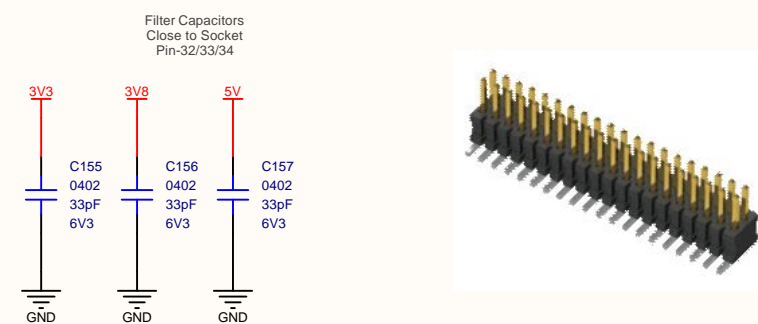
Main Microcontroller Status LED Indicators



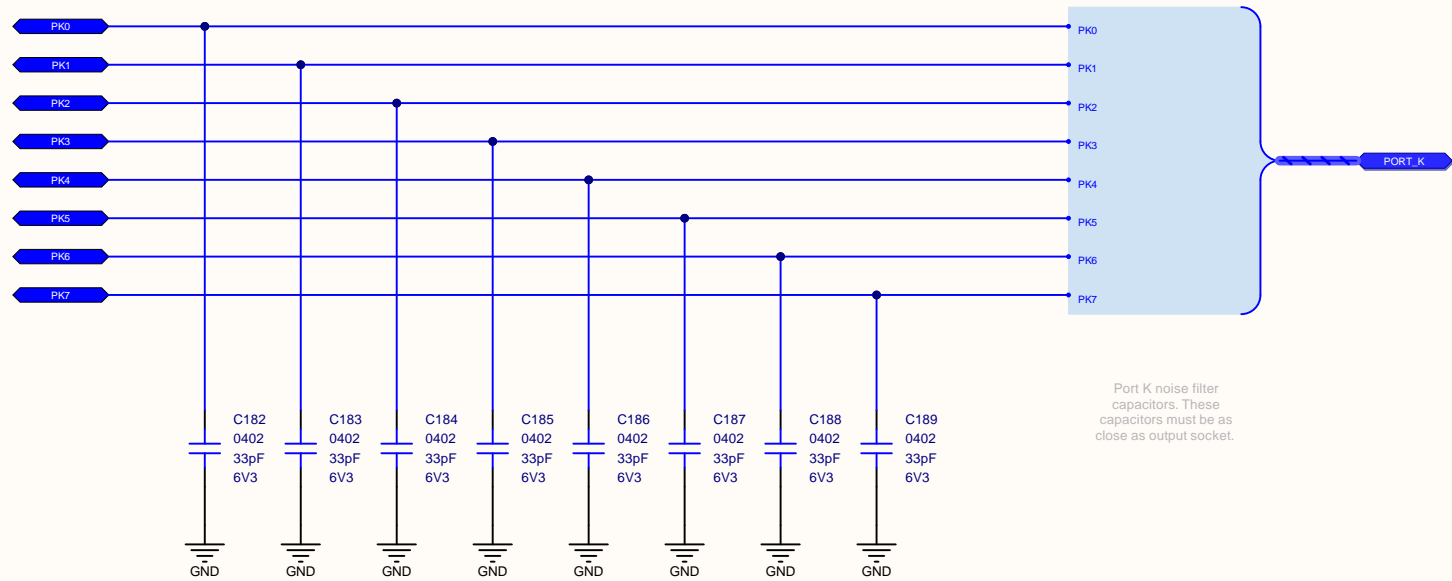
Title Master MicroController LED			Ovoo Electronics		
Size: A4	Number: 27.	Revision: B100AA	Necip Fazıl Mah. Ortamak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye		
Date: 19.01.2021	Time: 15:34:58	Sheet 27 of 53			
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Master MicroController LED.Sch.Doc					


Module Output Socket A

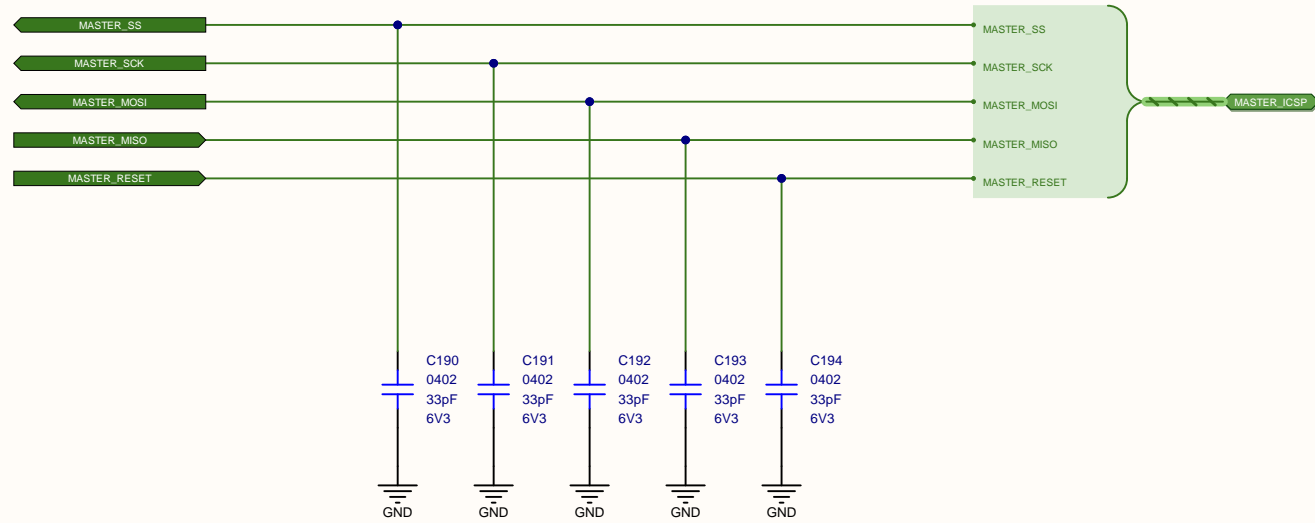
Module Output Socket B




Port K Output Socket Noise Capacitors

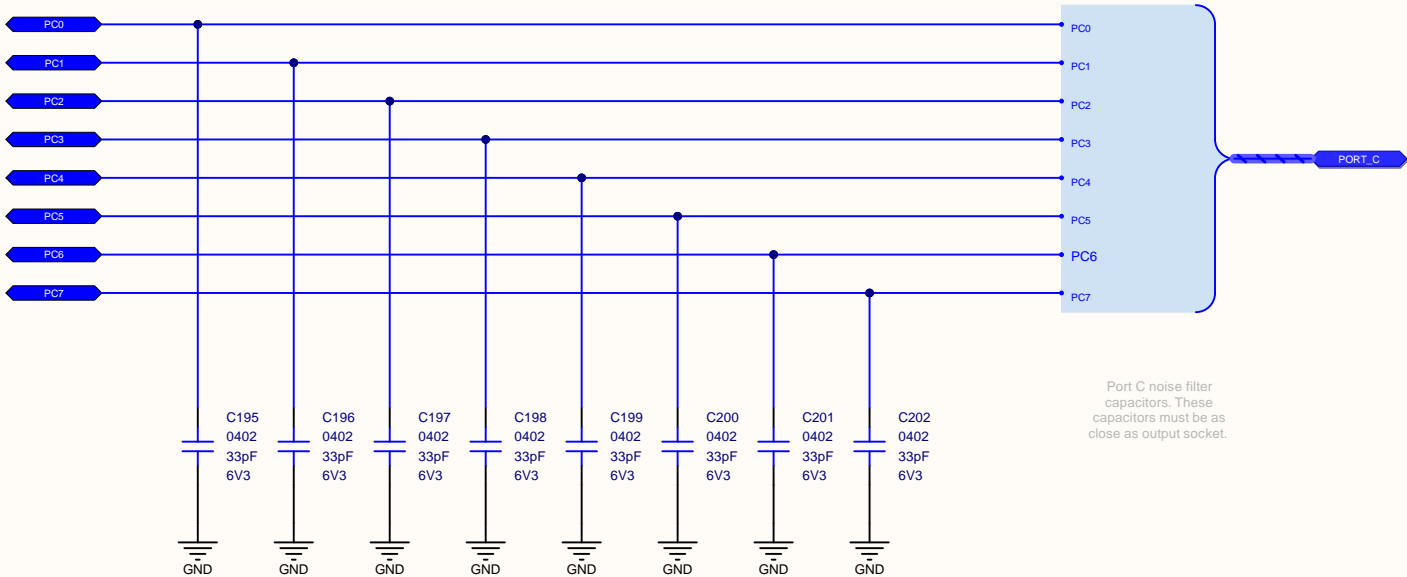


Title PORT K Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 29.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:58	Sheet 29 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Port K.SchDoc				

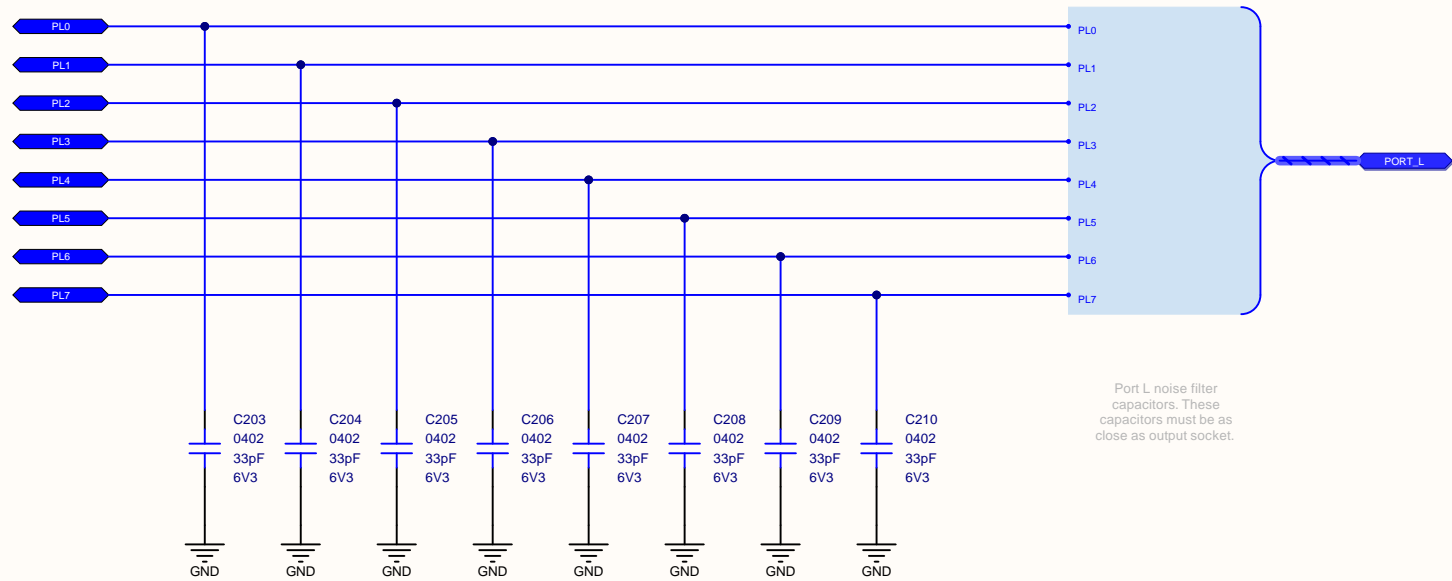



Title Master ICSP Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 30.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:58	Sheet 30 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Master ICSP.SchDoc				

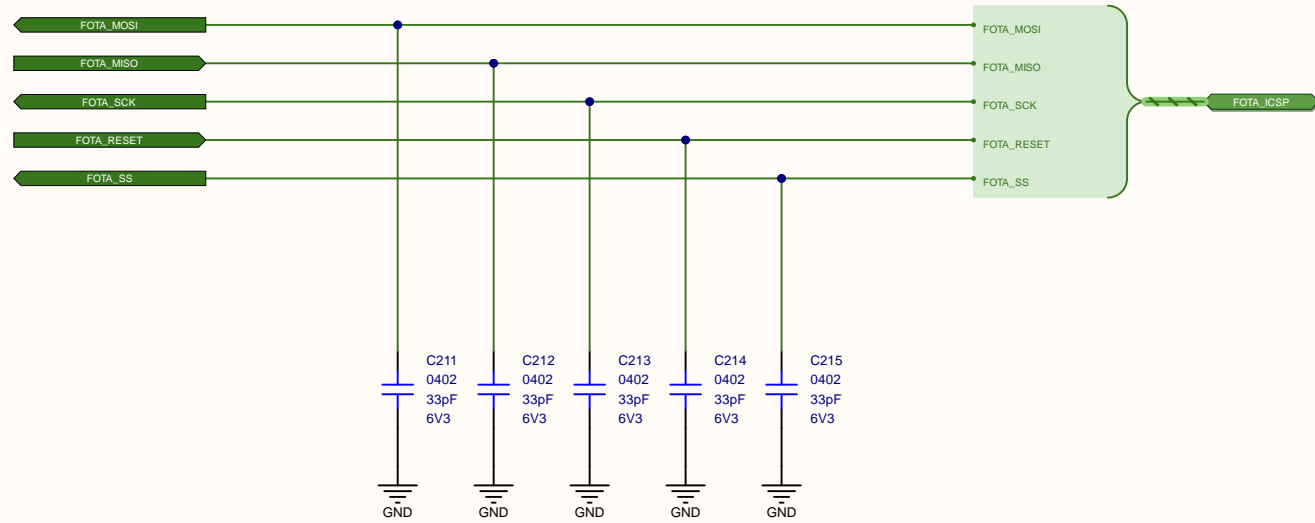
Port C Output Socket Noise Capacitors

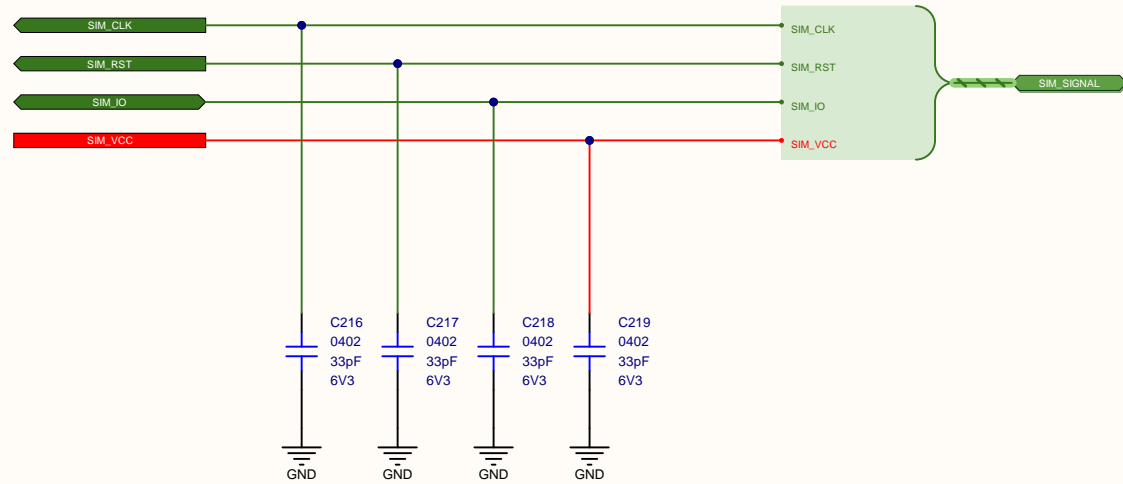



Port L Output Socket Noise Capacitors



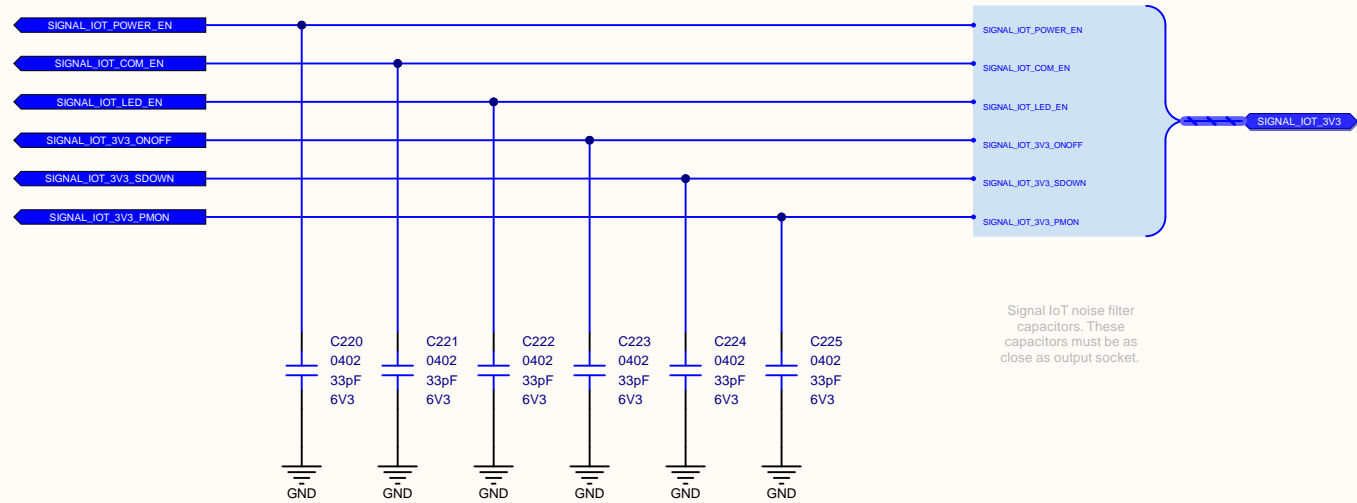
Title PORT L Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 32.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:58	Sheet 32 of 53		
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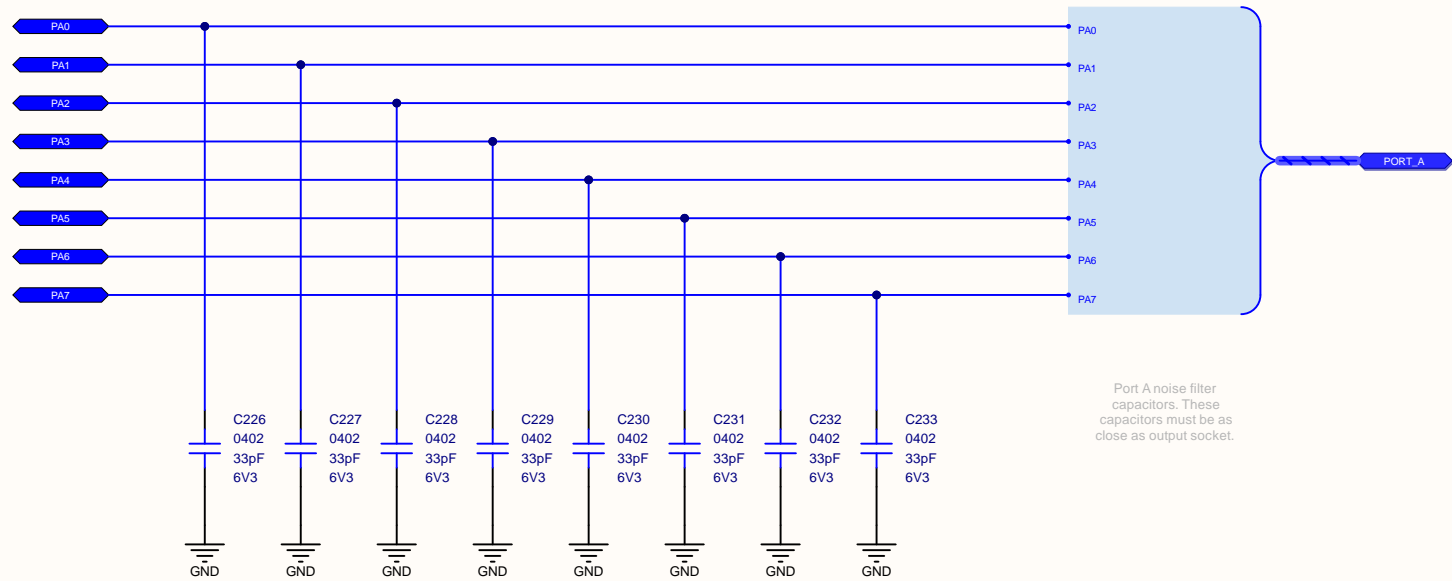
Title FOTA ICSP Filter Capacitors			Ovoo Electronics	
Size: A4	Number: 34.	Revision: B100AA	Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Date: 19.01.2021	Time: 15:34:58	Sheet 34 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - External SIM.SchDoc				


Signal IoT Output Socket Noise Capacitors

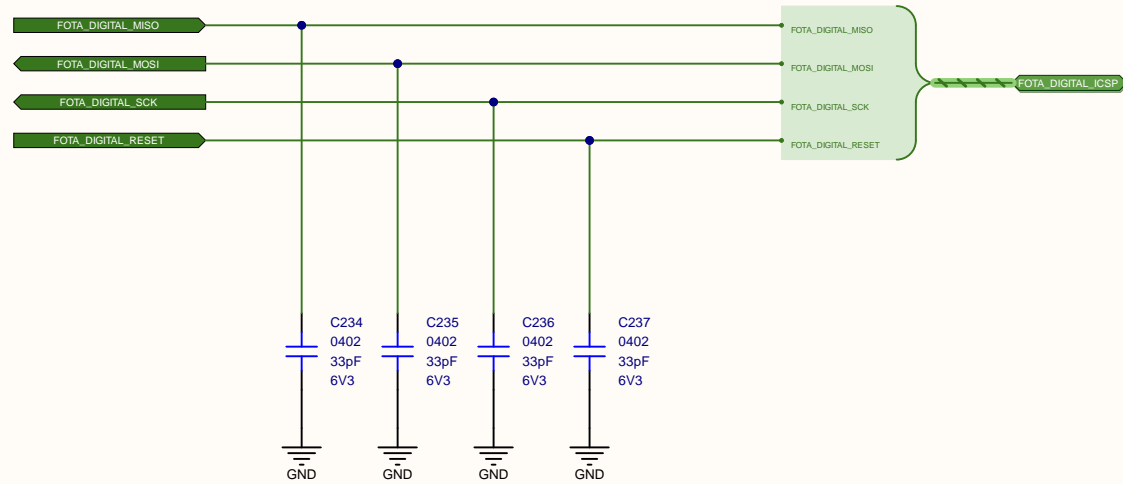



Title PORT K Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
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Date: 19.01.2021	Time: 15:34:58	Sheet 35 of 53		
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Port A Output Socket Noise Capacitors

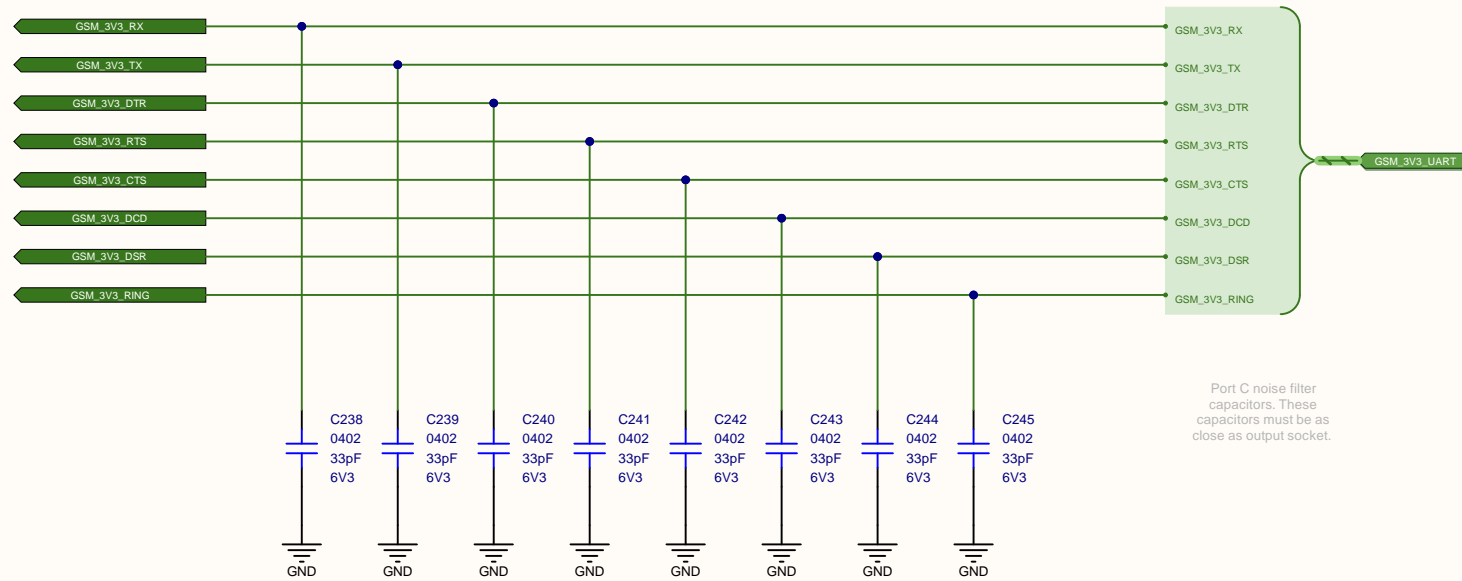



Title PORT K Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
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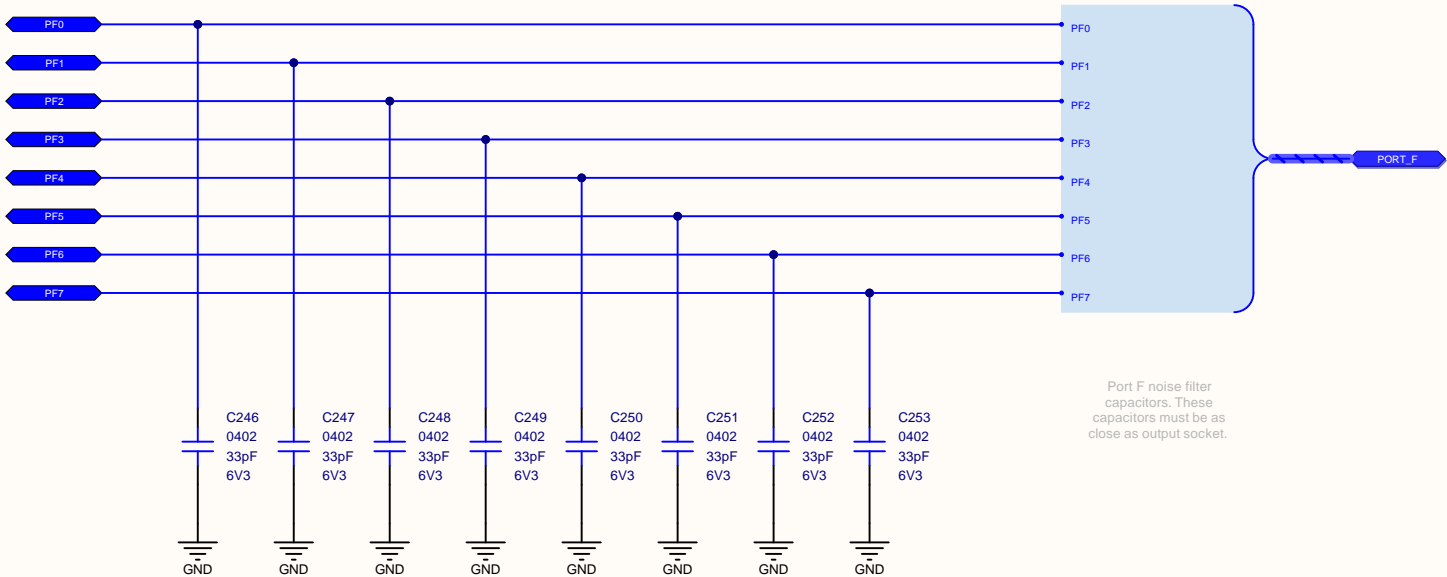
Title FOTA Digital ICSP Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye 
Size: A4	Number: 37.	Revision: B100AA	
Date: 19.01.2021	Time: 15:34:59	Sheet 37 of 53	
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - FOTA Digital ICSP.SchDoc			

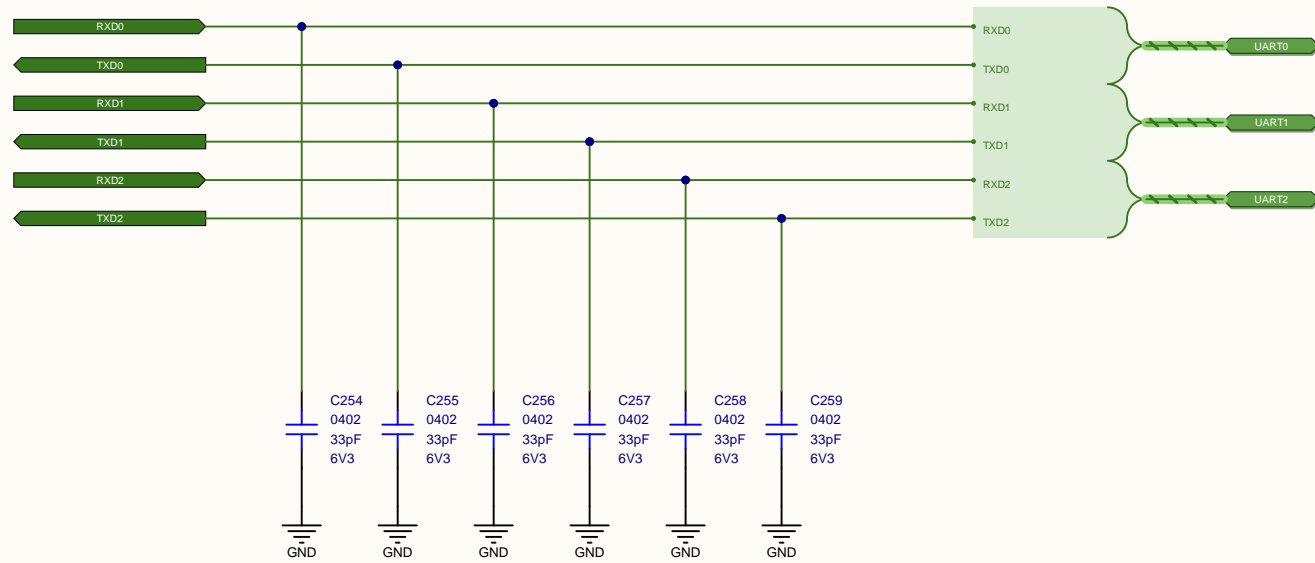
IoT UART Output Socket Noise Capacitors




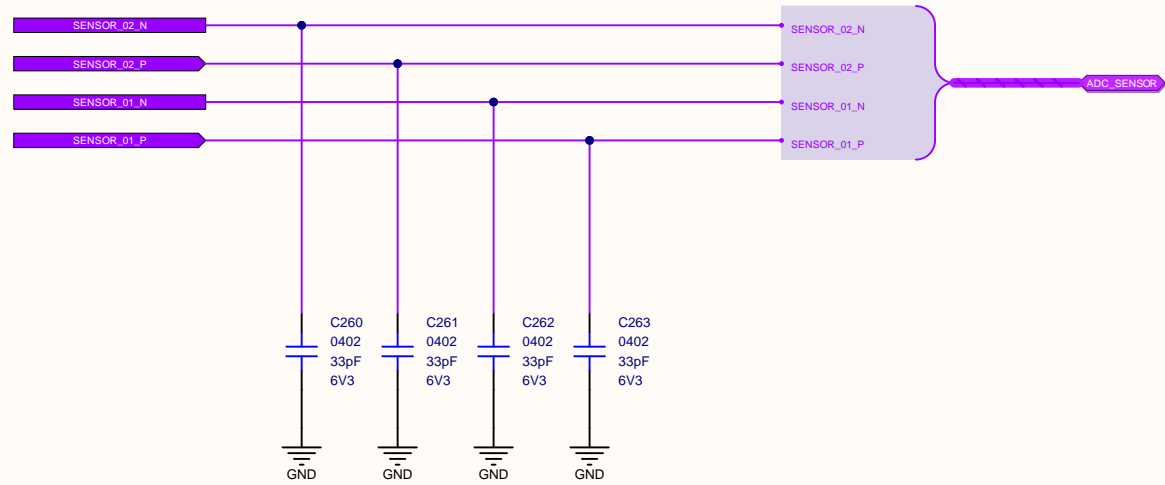
Title PORT K Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 38.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 38 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - IoT UART.SchDoc				


Port F Output Socket Noise Capacitors

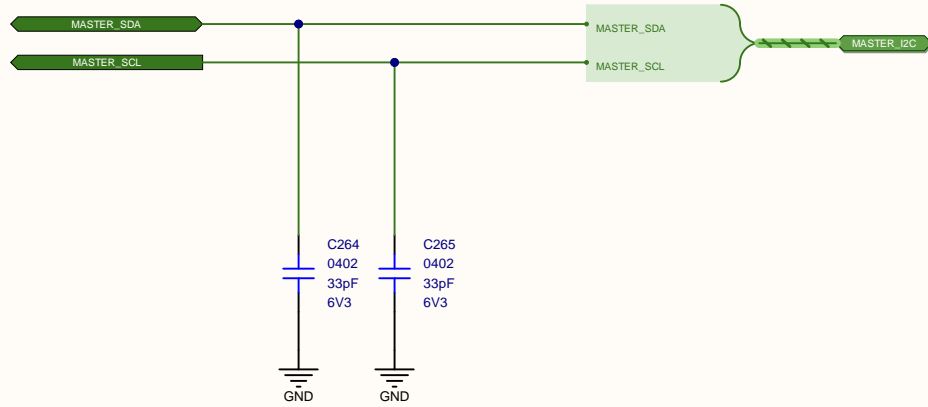





Title Serial Communication Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 40.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 40 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - Serial Communication.SchDoc				



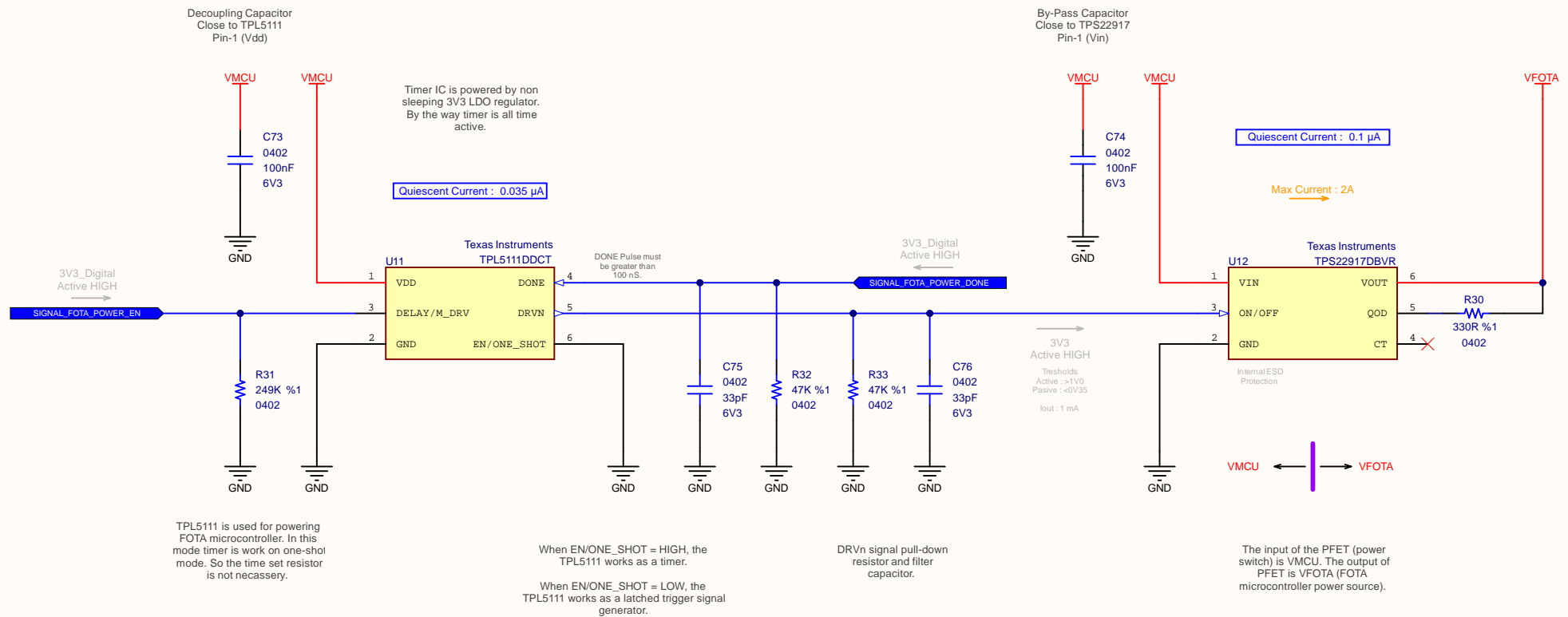
Title ADC Sensor Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 41.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 41 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Filter Capacitors - ADC Sensor.SchDoc				



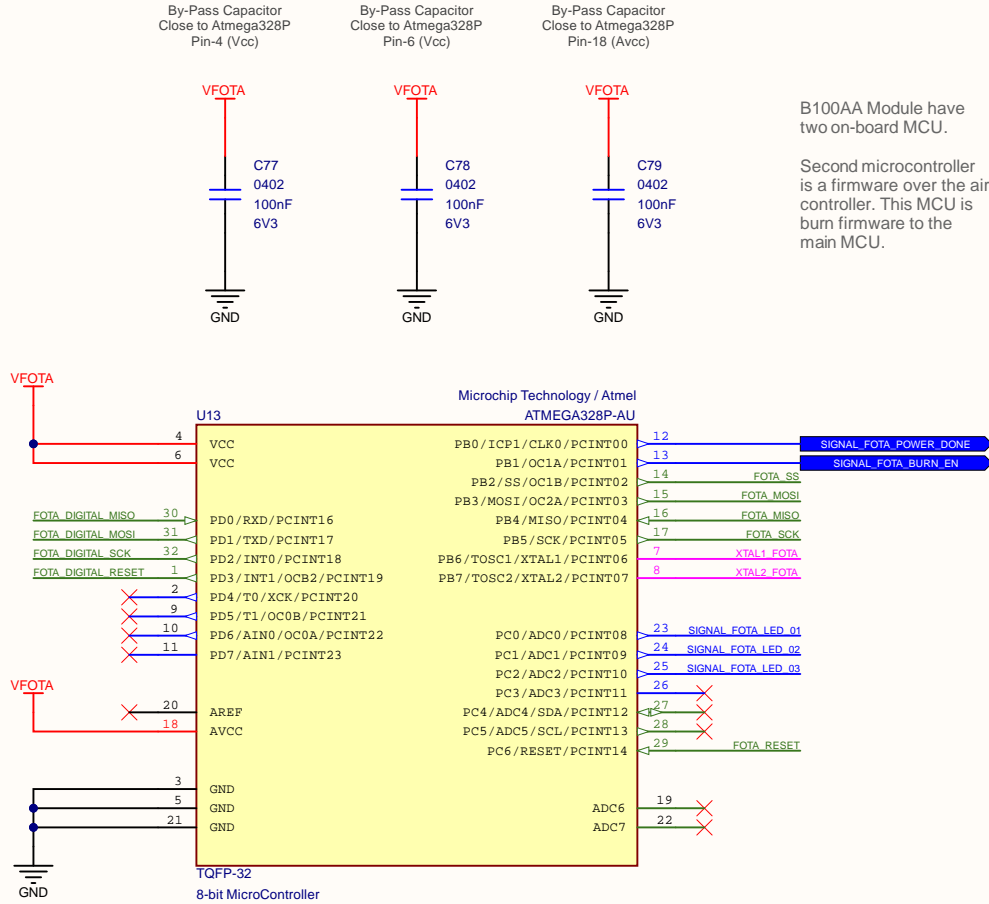
Title I2C Filter Capacitors			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 42.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 42 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\FILTER Capacitors - I2C.SchDoc				

Power Trigger

Power Switch



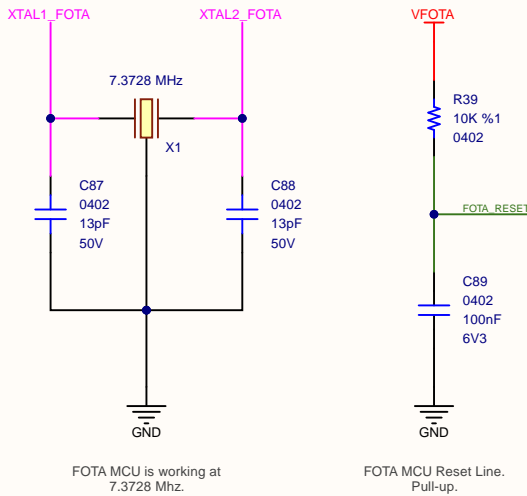
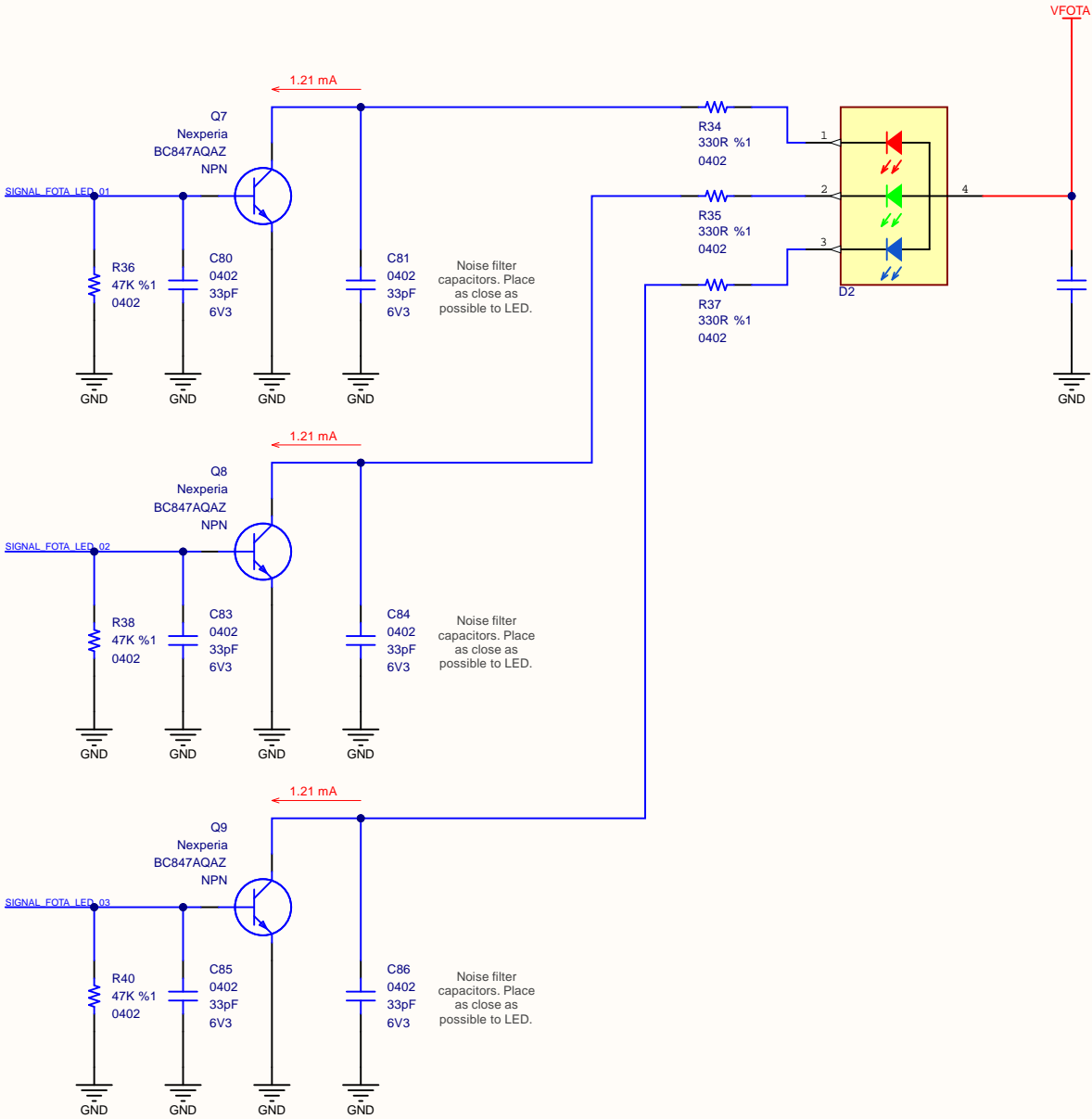
FOTA Micro Controller



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

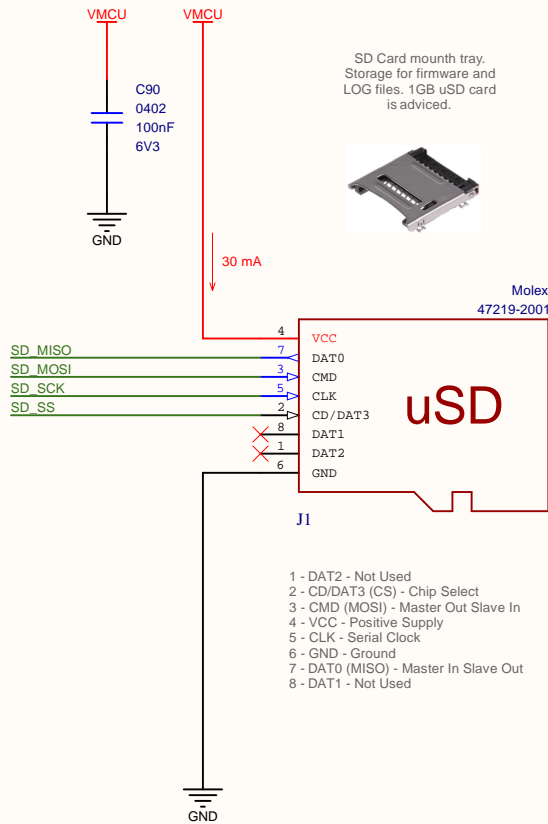
B

C

D

Decoupling Capacitor.
As close as possible to
uSD tray.

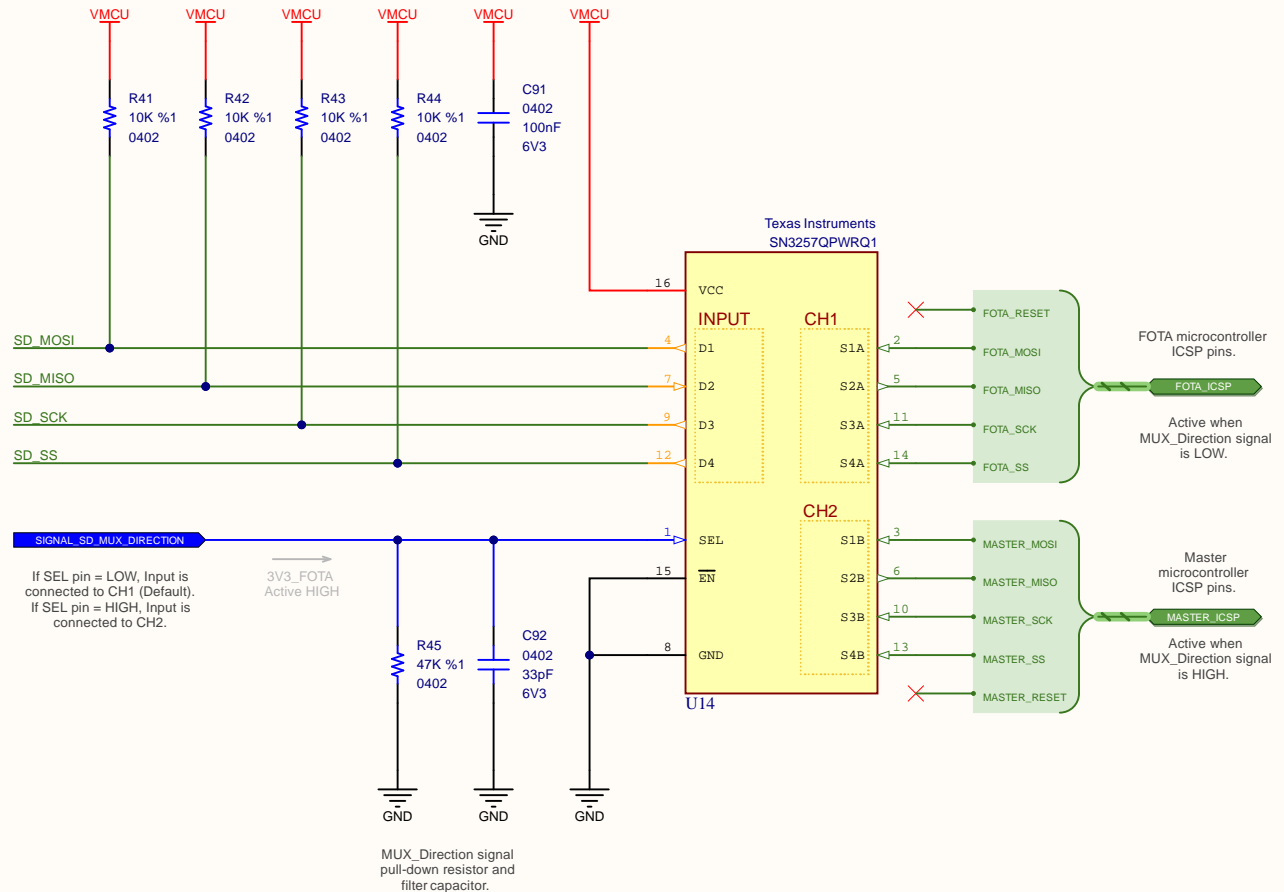
SD Card



- 1 - DAT2 - Not Used
2 - CD/DAT3 (CS) - Chip Select
3 - CMD (MOSI) - Master Out Slave In
4 - VCC - Positive Supply
5 - CLK - Serial Clock
6 - GND - Ground
7 - DAT0 (MISO) - Master In Slave Out
8 - DAT1 - Not Used

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

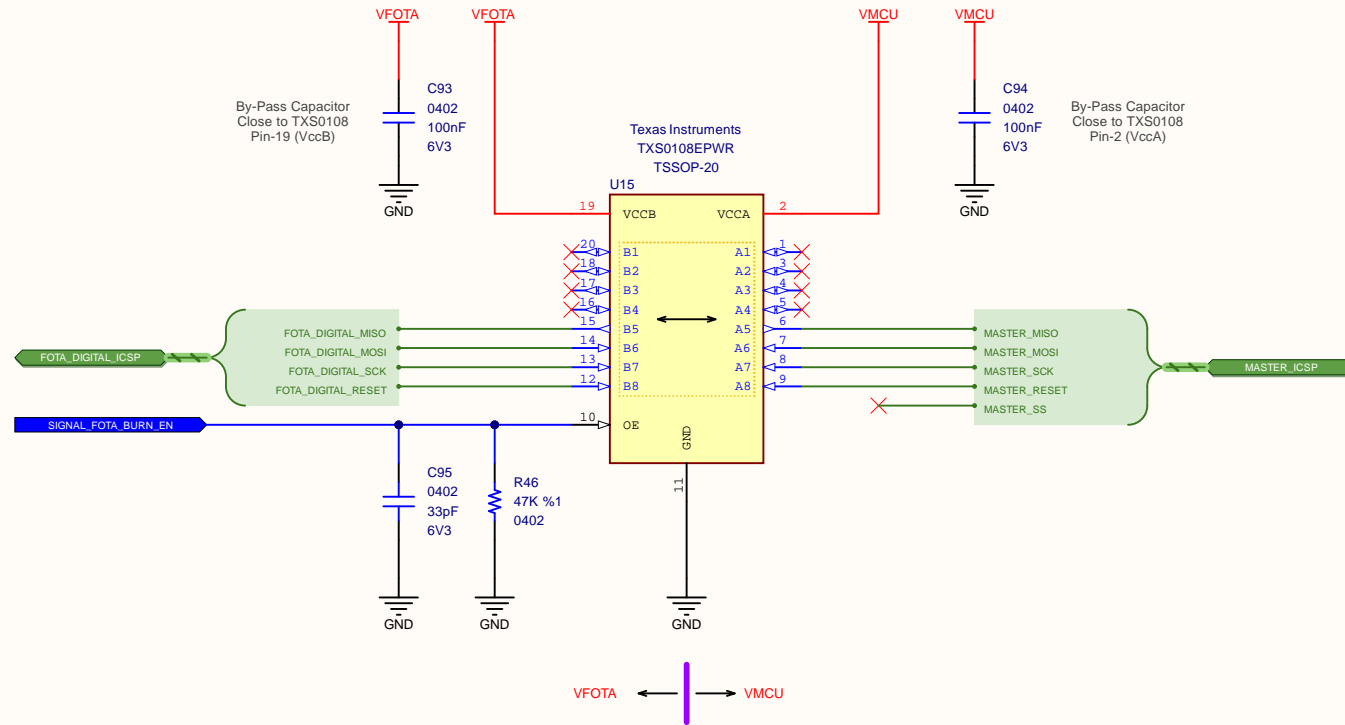
SPI Selection Switch




Title SD Card & Select Switch			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye
Size: A4	Number: 45.	Revision: B100AA	
Date: 19.01.2021	Time: 15:34:59	Sheet 45 of 53	
File: C:\Altium Projects\B100[AA]\Design Files\B100AA\Schematics\SD Card.SchDoc			

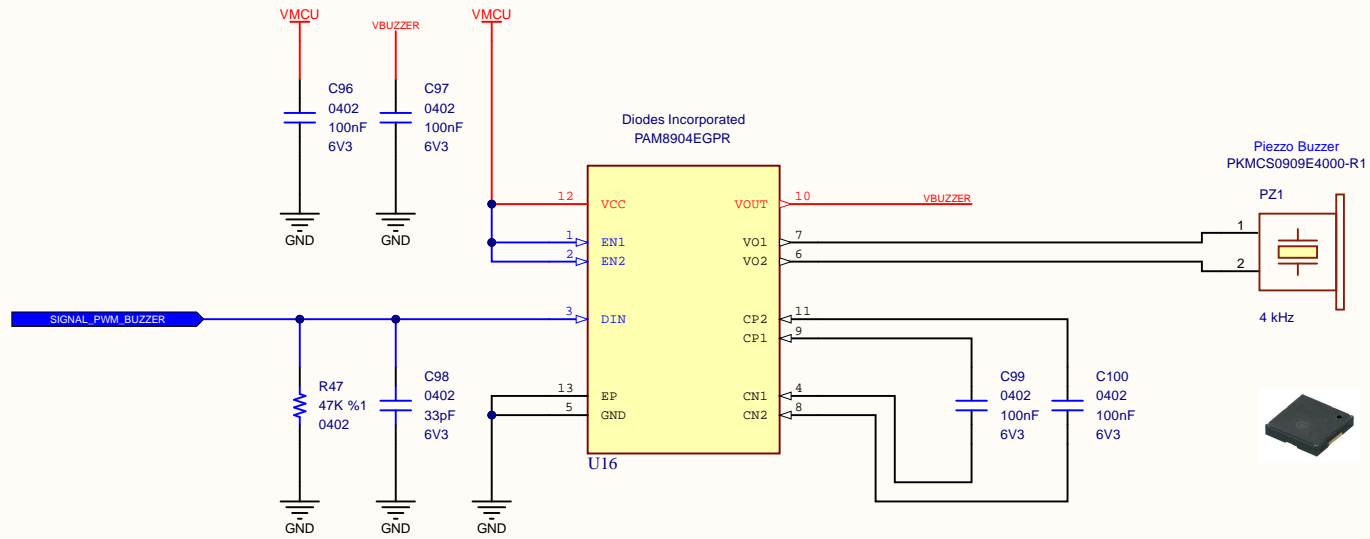



ICSP Burn Buffer

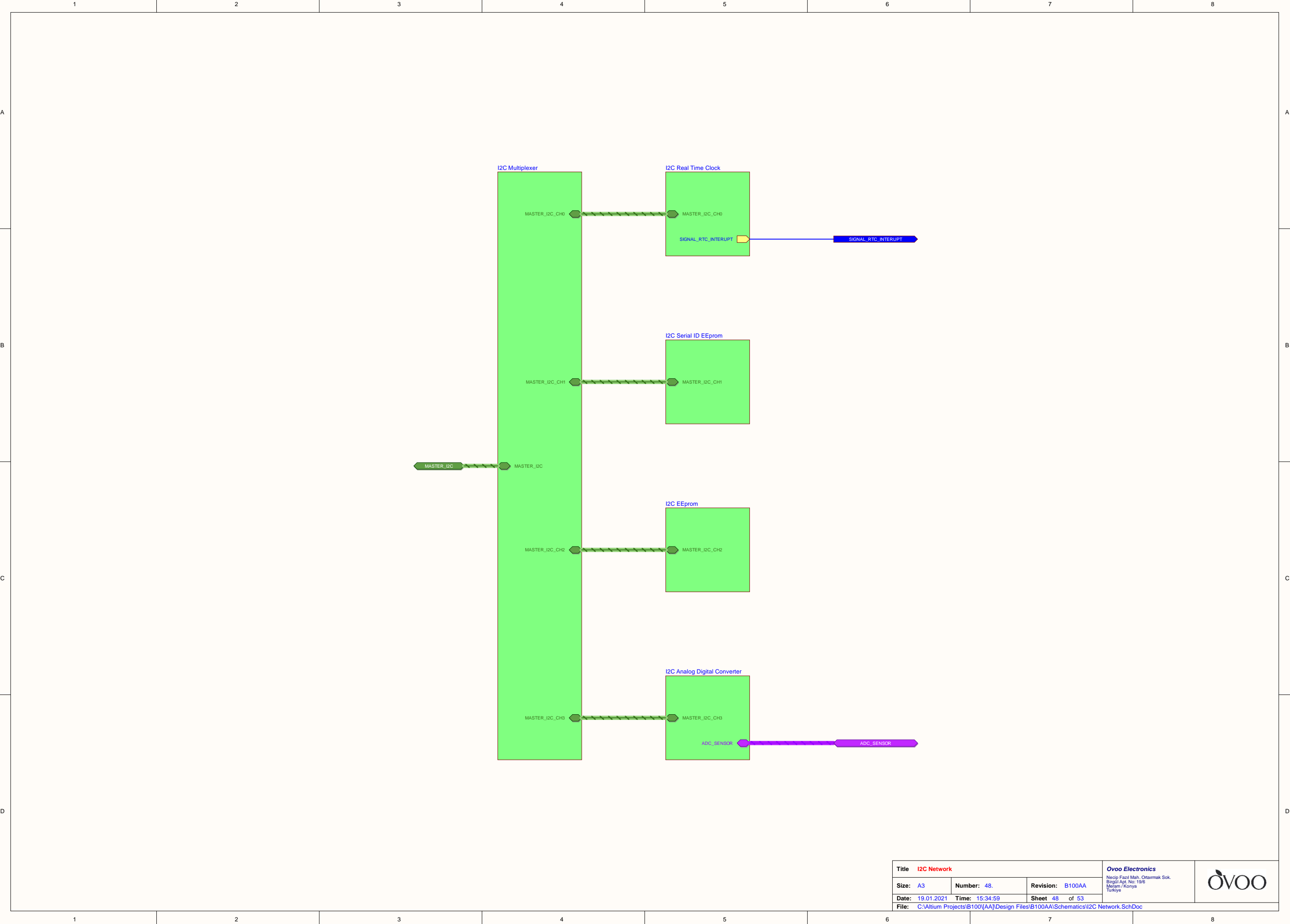


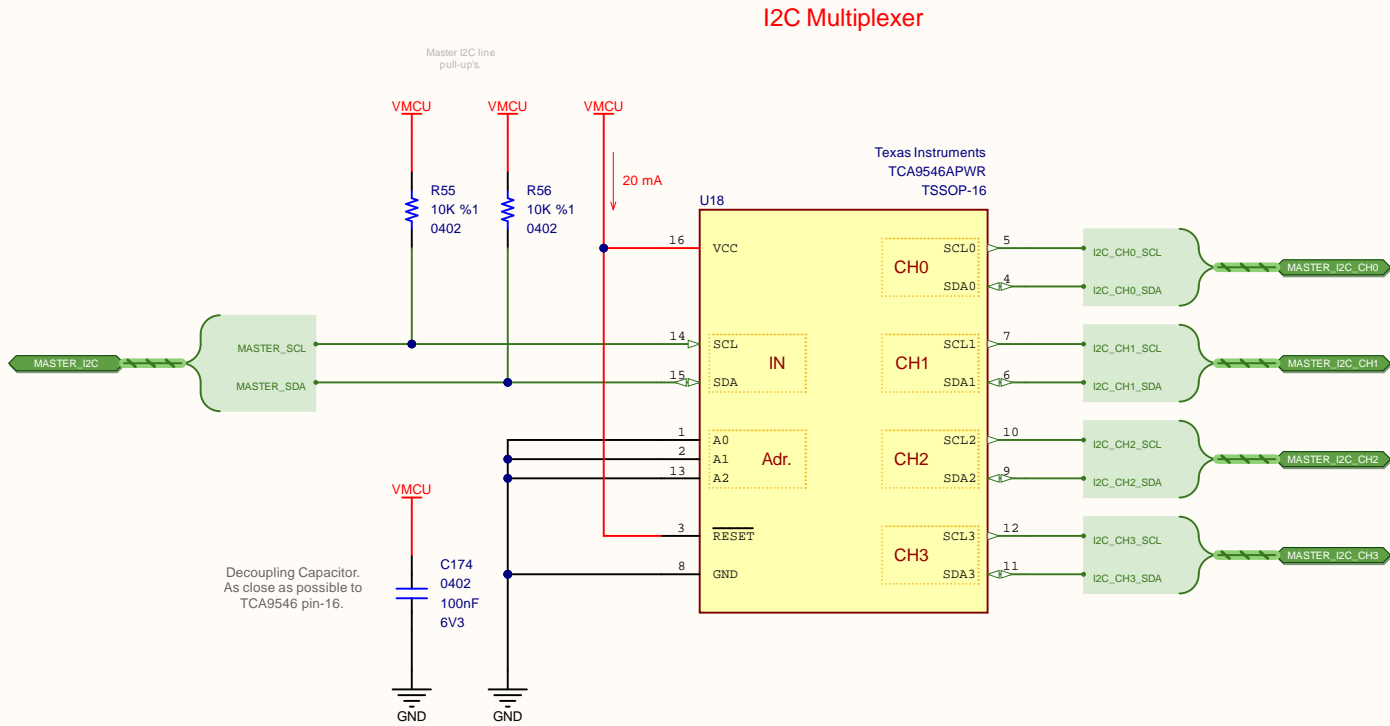
Title FOTA Burn Buffer			Ovoo Electronics Necip Fazıl Mah, Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 46.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 46 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\ICSP Burn Buffer.SchDoc				


Piezzo Buzzer



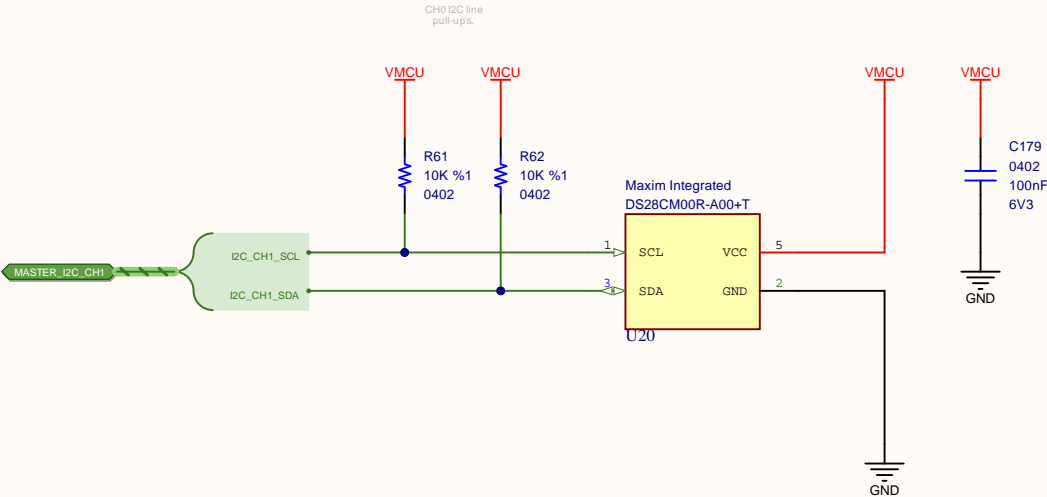
Title Buzzer			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 47.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 47 of 53		
File: C:\Altium Projects\B100(AA)\Design Files\B100AA\Schematics\Buzzer.SchDoc				






Title I2C Multiplexer			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Birgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 49.	Revision: B100AA		
Date: 19.01.2021	Time: 15:34:59	Sheet 49 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\I2C Multiplexer.SchDoc				

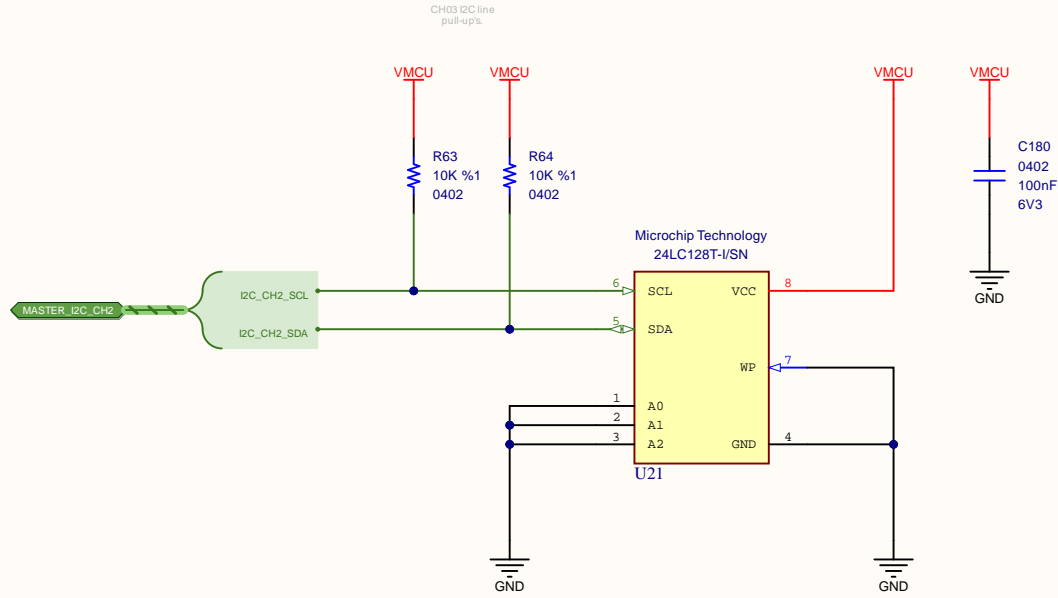
I2C Serial ID EEPROM



Title: I2C Serial ID EEPROM			Ovoo Electronics		
			Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye		
Size: A4	Number: 51.	Revision: B100AA			
Date: 19.01.2021	Time: 15:35:00	Sheet 51 of 53			
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Serial ID EEPROM.SchDoc					



EEPROM



Title I2C EEprom

Size: A4

Number: 52.

Revision: B100AA

Date: 19.01.2021

Time: 15:35:00

Sheet 52 of 53

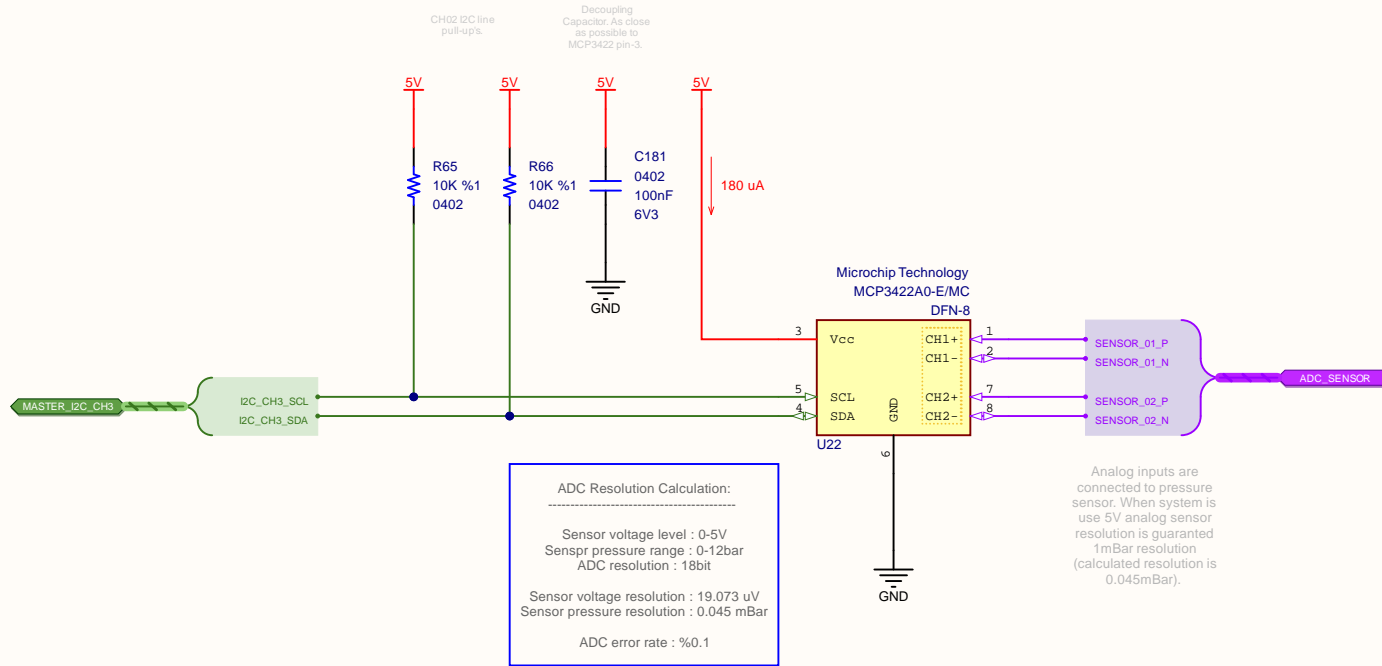
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\EEPROM.SchDoc


Ovoo Electronics

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



Analog Digital Converter



Title Analog Digital Converter			Ovoo Electronics Necip Fazıl Mah. Ortarmak Sok. Bırgölü Apt. No: 19/6 Meram / Konya Türkiye	
Size: A4	Number: 53.	Revision: B100AA		
Date: 19.01.2021	Time: 15:35:00	Sheet 53 of 53		
File: C:\Altium Projects\B100\AA\Design Files\B100AA\Schematics\Analog Digital Converter.SchDoc				