B100 - Master IoT MicroController

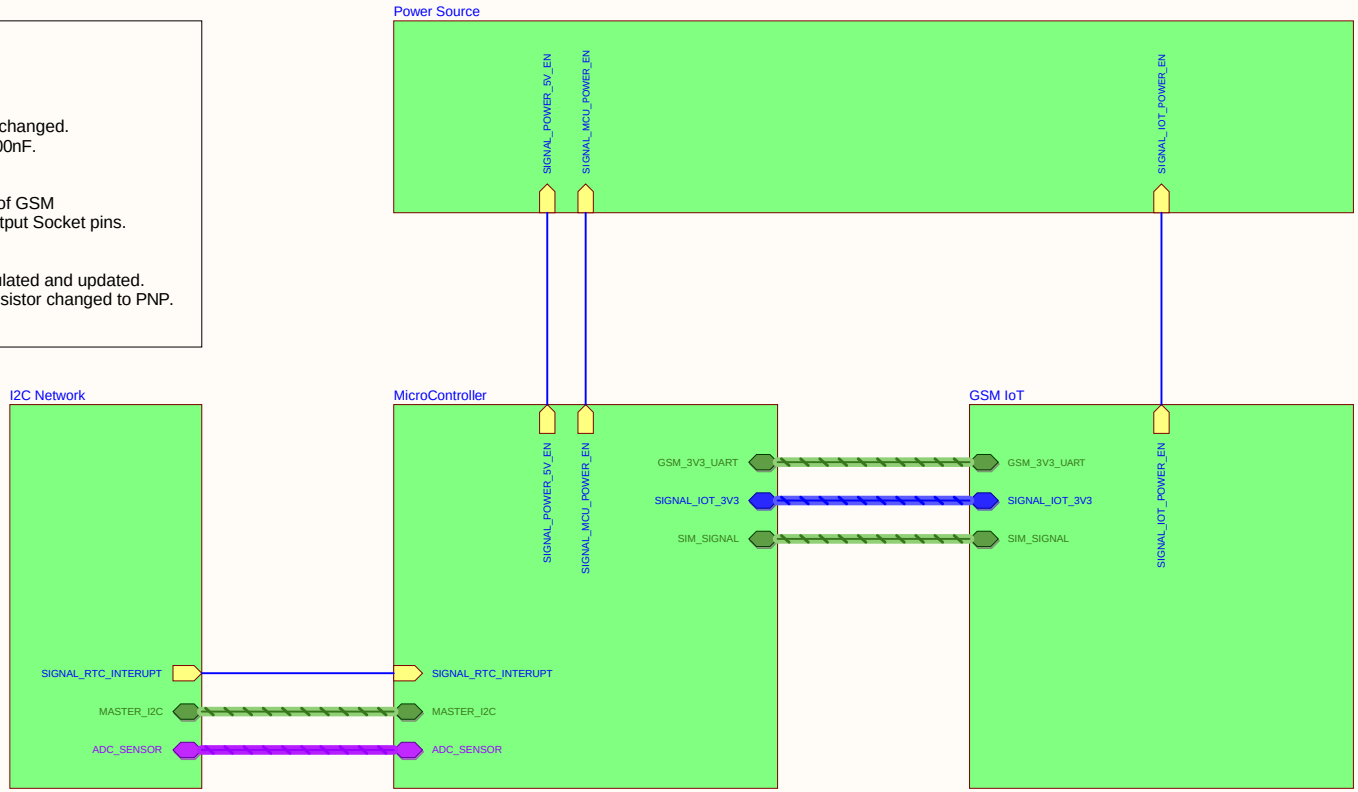
Revision History

AA001 (05.01.2021)
* Schematic creation.

AA002 (11.01.2021)
* Bidirectional signal translator IC changed.
* SIM Vcc capacitor changed to 100nF.

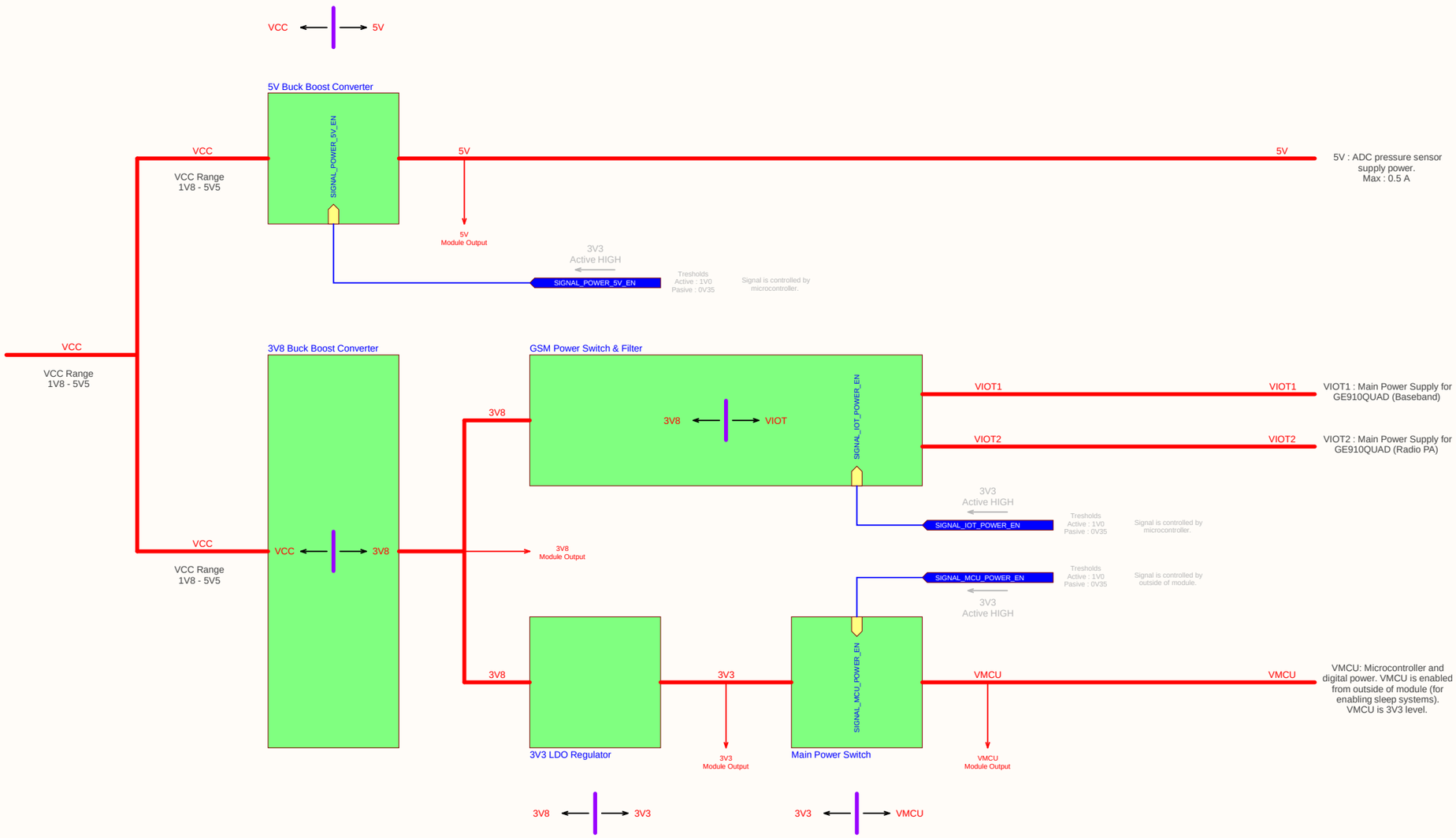
AA003 (19.01.2021)
* 33 pF capacitor added to VAUX of GSM
* 33 pF capacitors added to all Output Socket pins.

AA004 (22.01.2021)
* GSM IoT LED resistors are calculated and updated.
* GSM IoT LED power enable transistor changed to PNP.



Title	**B100 Block Diagram**		**Ovoo Electronics**
Size: A4	**Number:** 1	**Revision:** B100AA R4	Necip Fazil Mah. Ortaırmak Sok. Birgül Apt. No: 19/6 Meram / Konya Turkiye
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 1 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\B100 Block Diagram.SchDoc			

Power Architechture



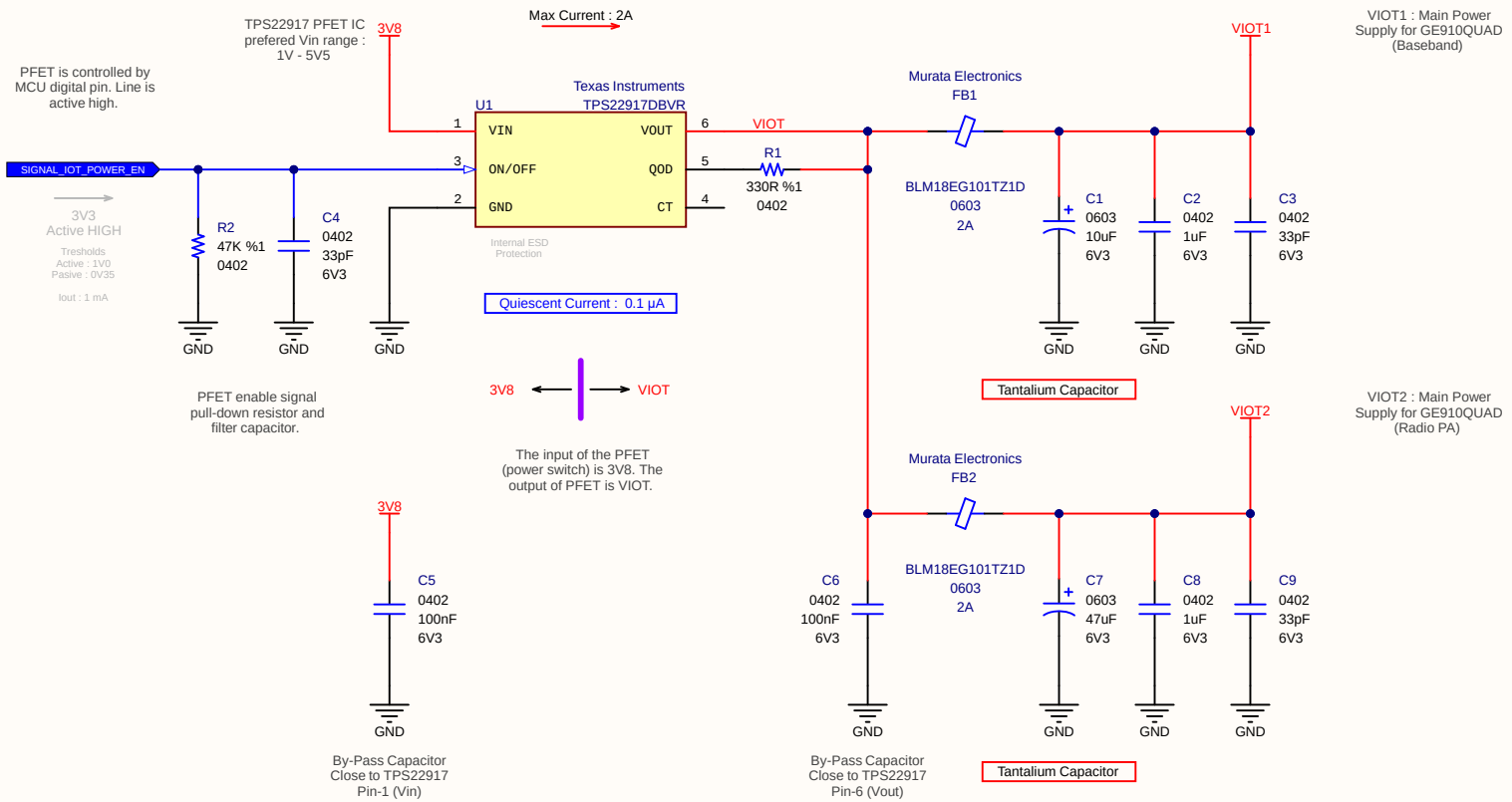
Title	Power Architechture Block Diagram		
Size: A3	**Number:** 2	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 2 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Power Source.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortarmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

OVOO

GSM Modem Power Switch

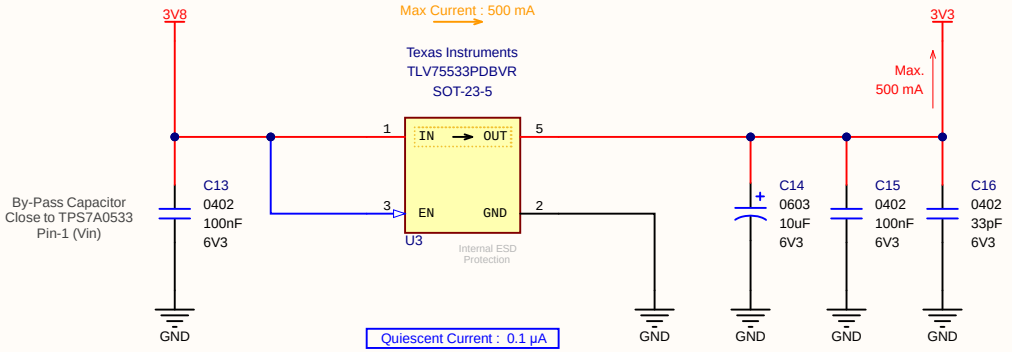
GSM Module Power Filter

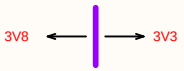


Title	GSM Power Switch and Filter		
Size: A4	**Number:** 4	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 4 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\GSM Power.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortairmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

3V3 LDO Regulator



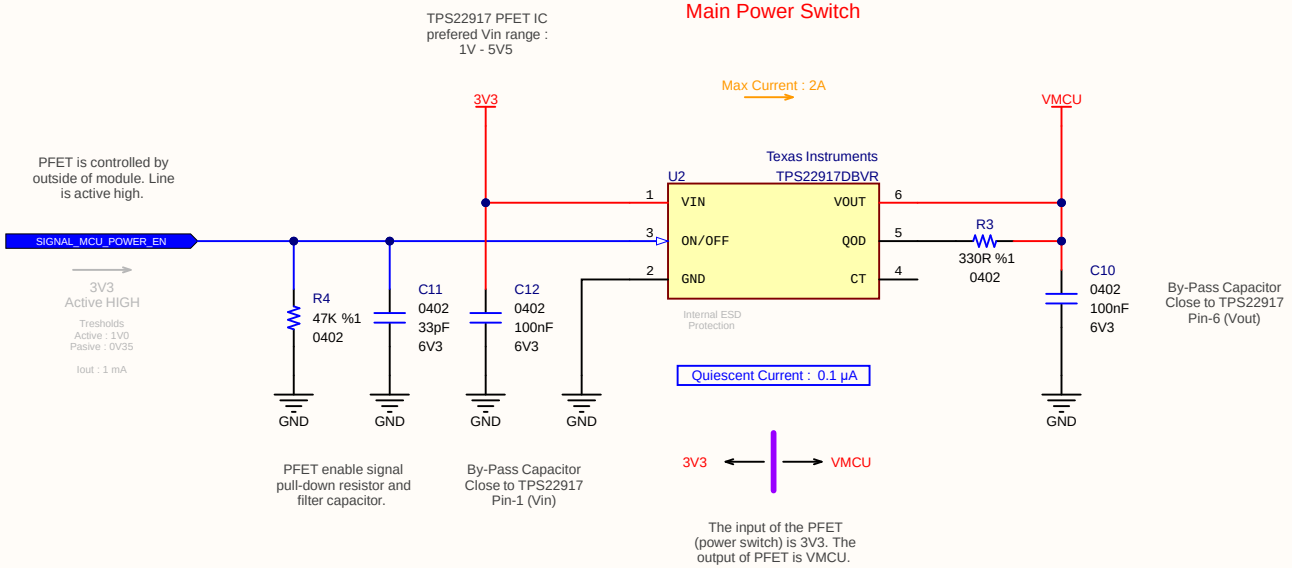


TLV75533 LDO is a 3V3 regulator. LDO is always enable.

Title	**3V3 LDO Regulator**		
Size: A4	**Number:** 5	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 5 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\3V3 LDO Regulator.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

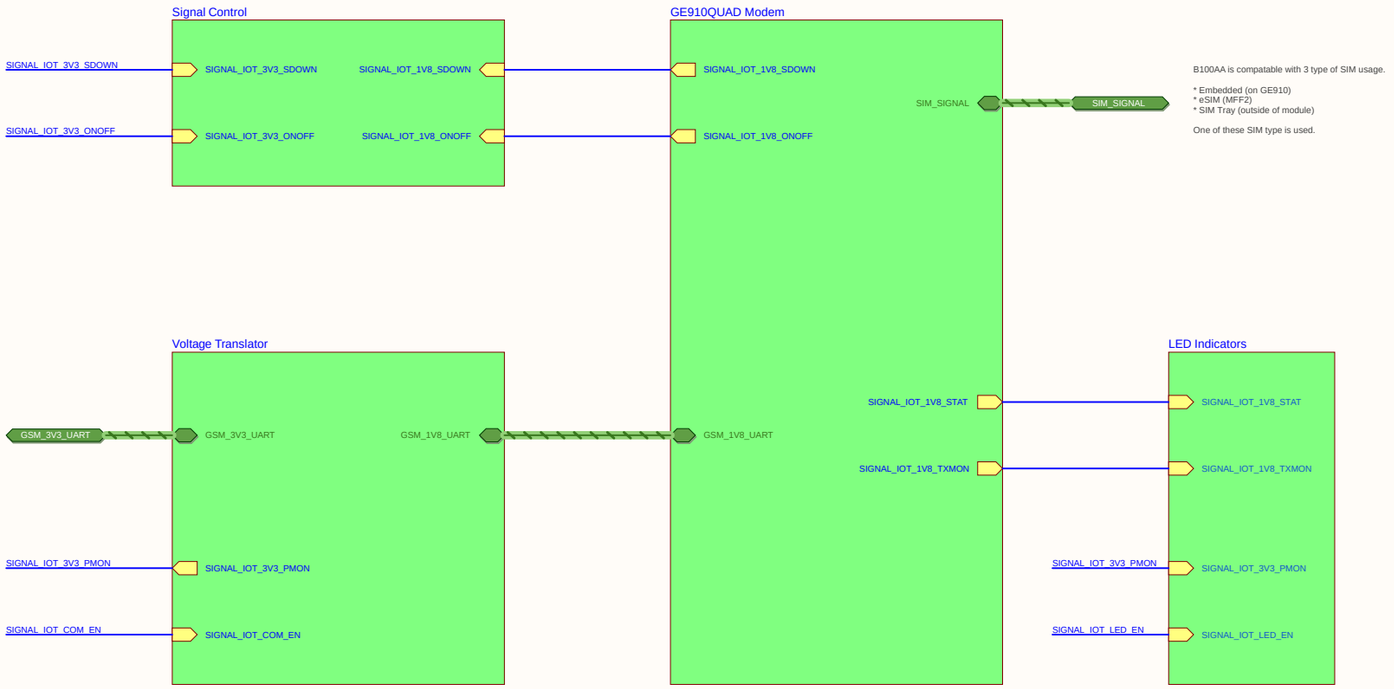
Main Power Switch



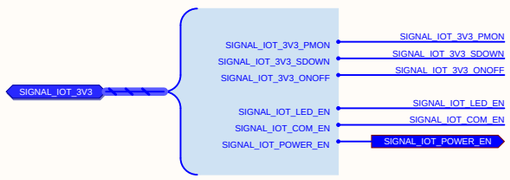
Title	Main Power Switch		
Size: A4	**Number:** 6	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 6 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Main Power Switch.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaurmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

GSM IoT Communication Layer

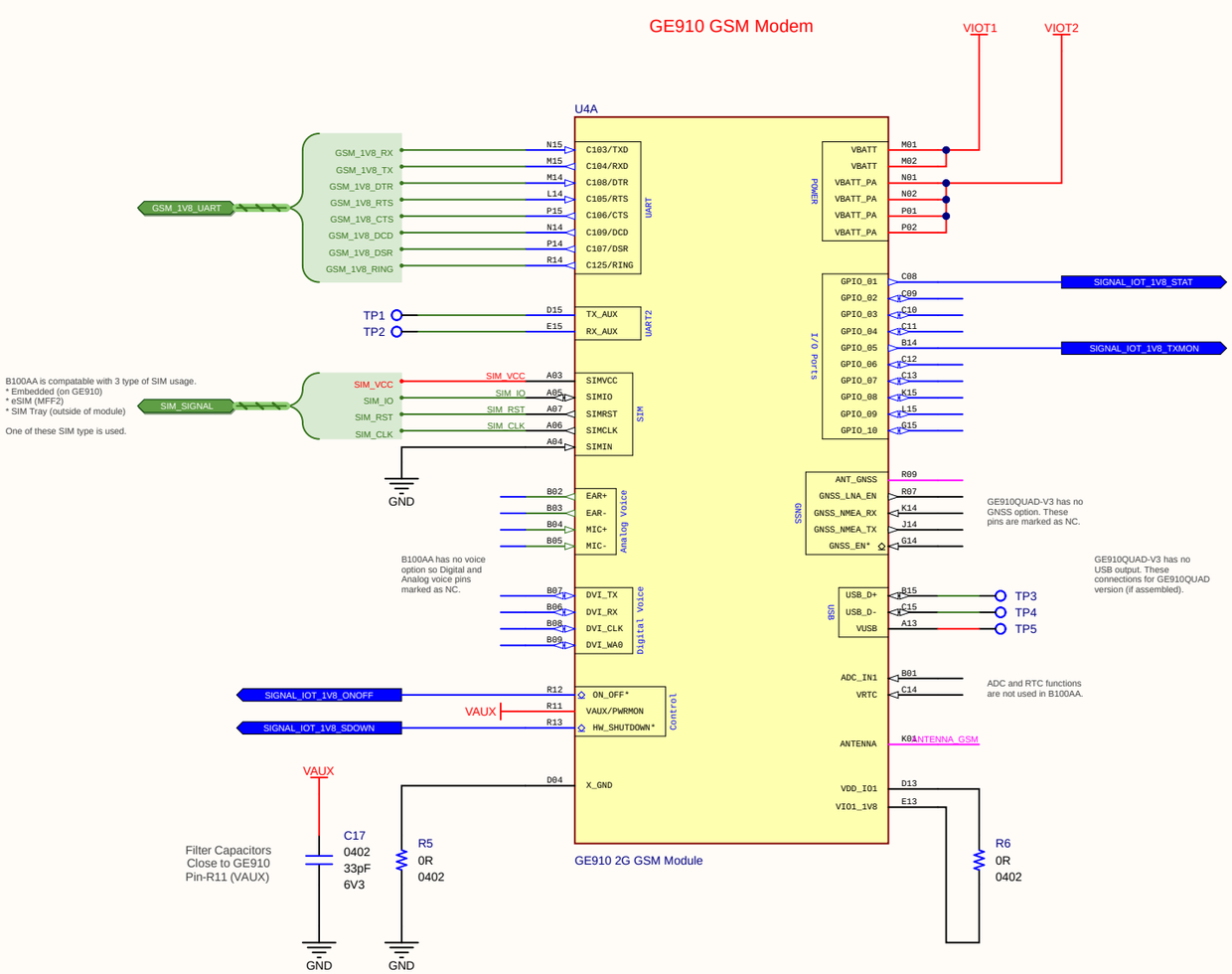


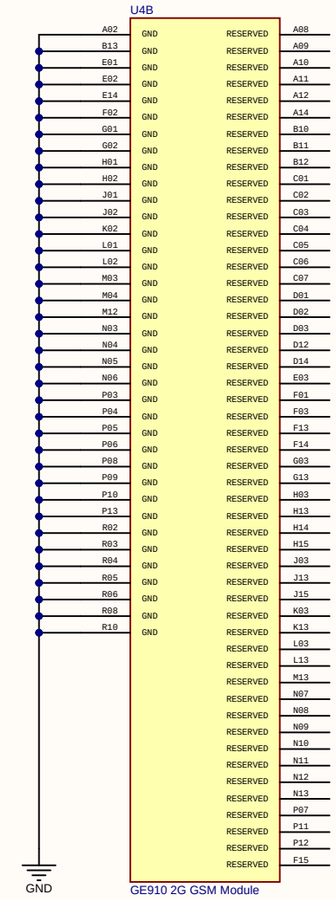
3V3 GSM IoT control signals.

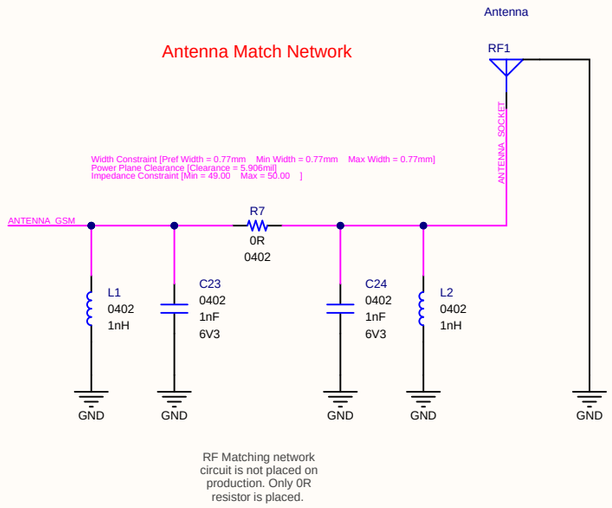


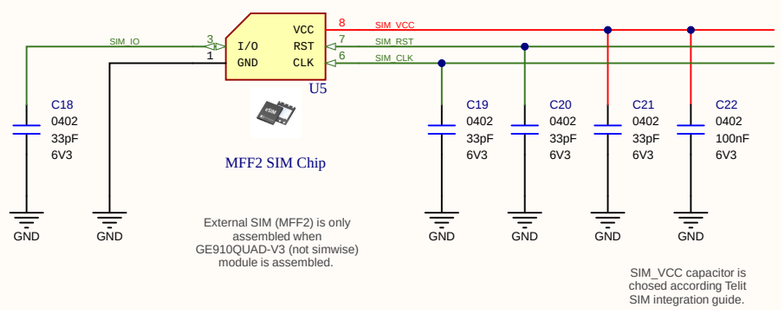
Title	GSM IoT Block Diagram		
Size: A3	**Number:** 7	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 7 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\GSM IoT.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortairmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



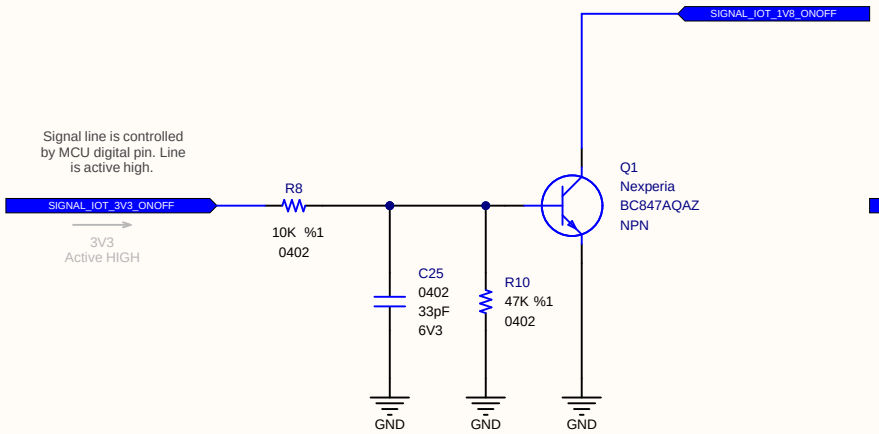




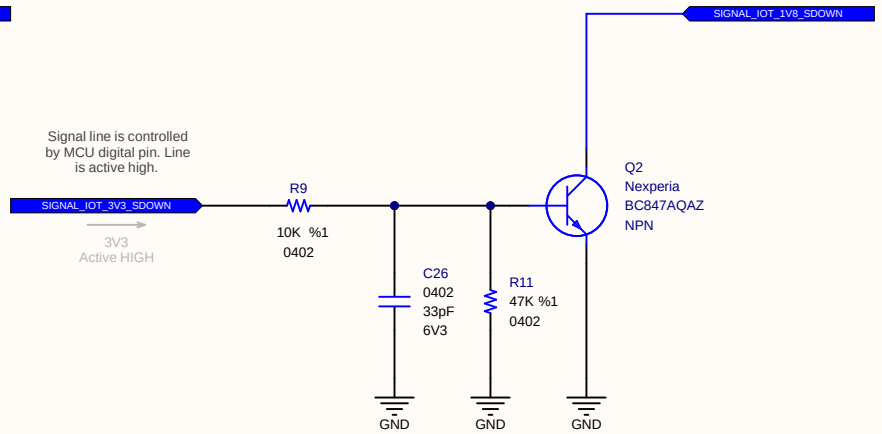


Title GE910 GSM Modem & SIM			**Ovoo Electronics** Necip Fazil Mah. Ortairmak Sok. Birgül Apt. No: 19/6 Meram / Konya Turkiye
Size: A3	**Number:** 8	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 8 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\GE910QUAD Modem.SchDoc			

GSM Module On/Off Signal



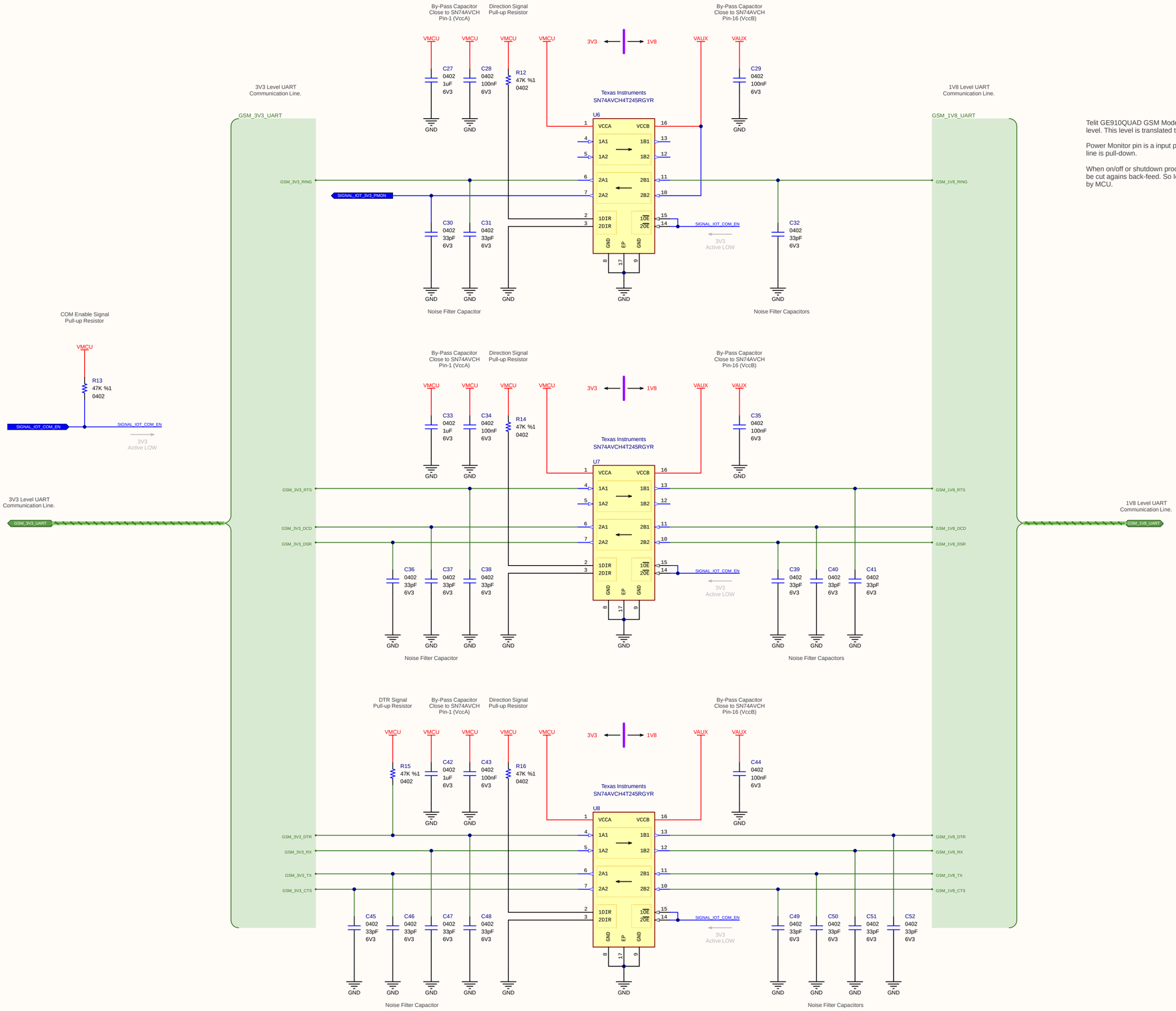
GSM Module Shut Down Signal



Title	GSM Control Signal Management		
Size: A4	**Number:** 9	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 9 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\GSM Signal Control.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

BiDirectional Level Shifter



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

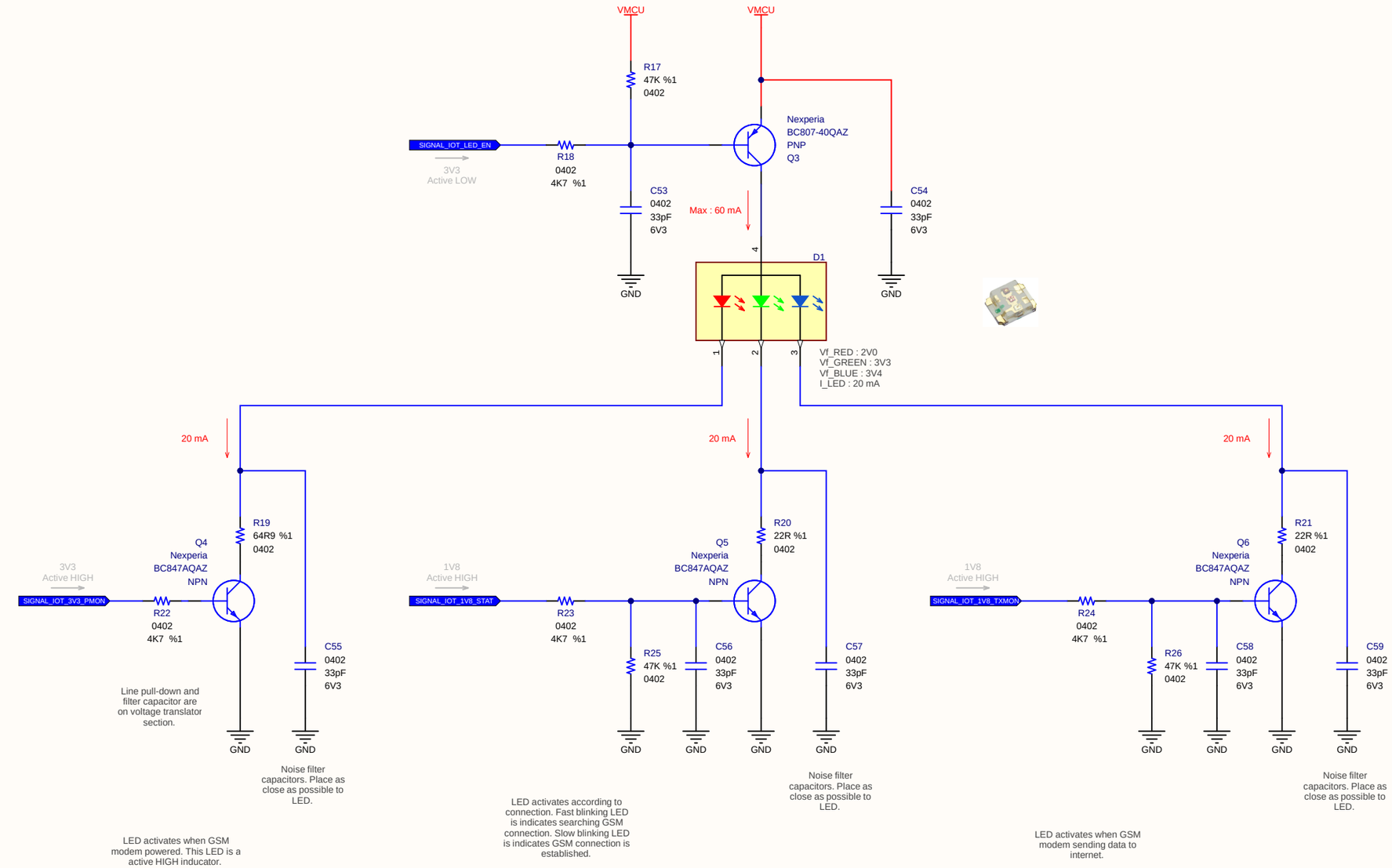
Power Monitor pin is a input pin at MCU side (active HIGH) so line is pull-down.

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

Title	3V3 - 1V8 Voltage Level Translator		
Size:	A2	**Number:** 10	**Revision:** B100AA R4
Date:	28.01.2021	**Time:** 11:45:12	**Sheet** 10 of 53
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Bidirectional Voltage Translator.SchDoc		

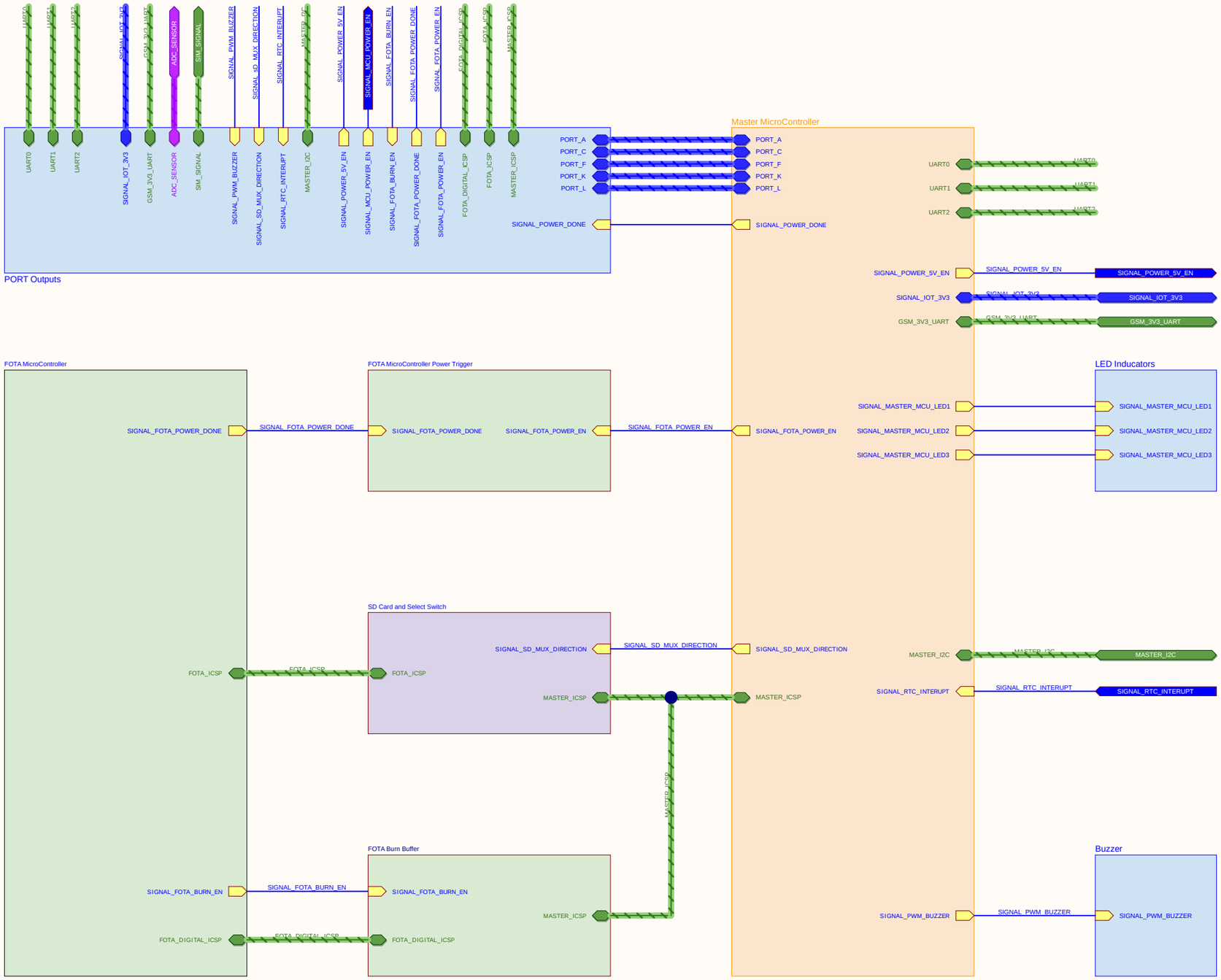
Ovoo Electronics
Necip Fazıl Mah. Ortanmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

GSM IoT LED Indicators



Title GSM Modem Signal Indicator LED's			***Ovoo Electronics*** Necip Fazıl Mah. Ortaırmak Sok. Birgül Apt. No: 19/6 Meram / Konya Turkiye
Size: A3	**Number:** 11	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 11 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\GSM LED Indicators.SchDoc			

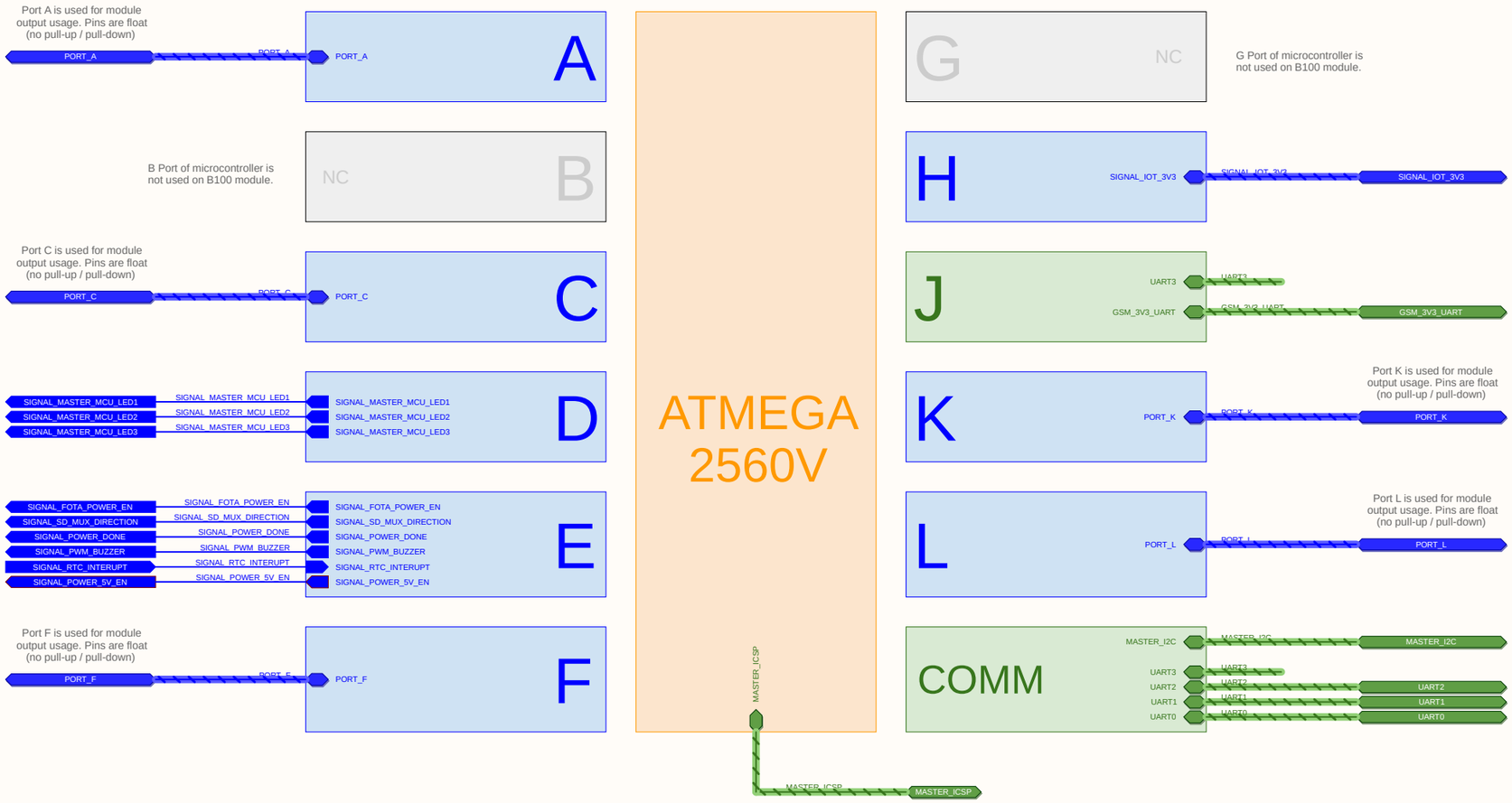
B100 MicroController



Title	MicroController Block Diagram		
Size: A3	**Number:** 12	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:12	**Sheet** 12 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\MicroController.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Master MicroController

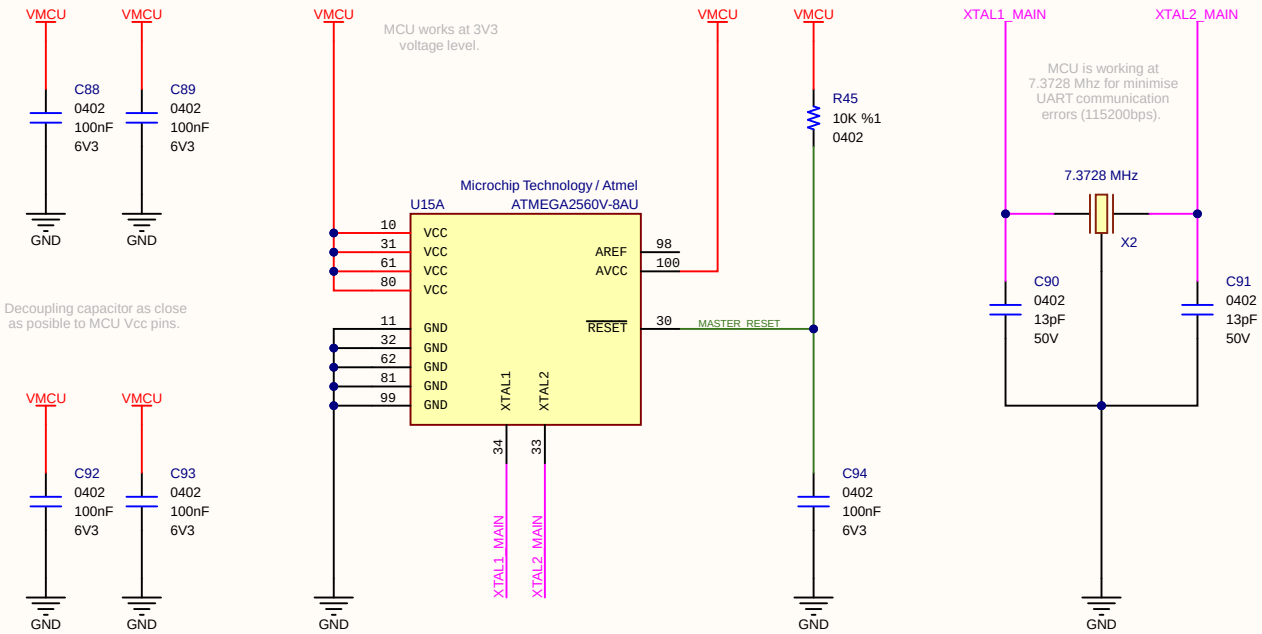


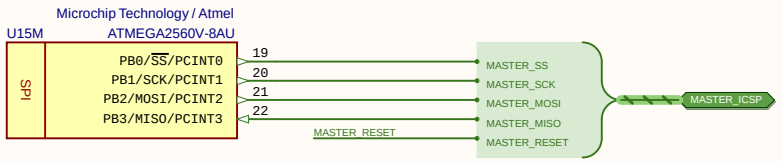
Title	Master Micro Controller		
Size: A3	**Number:** 13	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 13 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController.SchDoc		

Ovoo Electronics
Necip Fazıl Mah. Ortarmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

MicroController

Crystal Oscillator



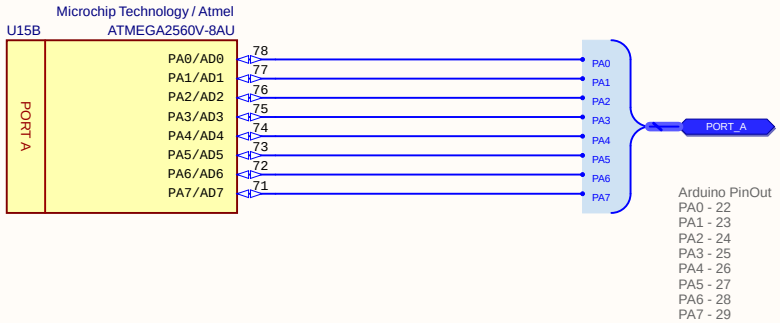


Master MicroController ICSP

Title	Master MicroController Core		
Size: A4	**Number:** 14	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 14 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Core.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

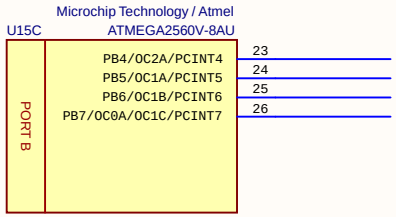
Master MicroController A Port



Title	**Master Micro Controller Port A Pin Out**		
Size: A4	**Number:** 15	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 15 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port A.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Master MicroController B Port

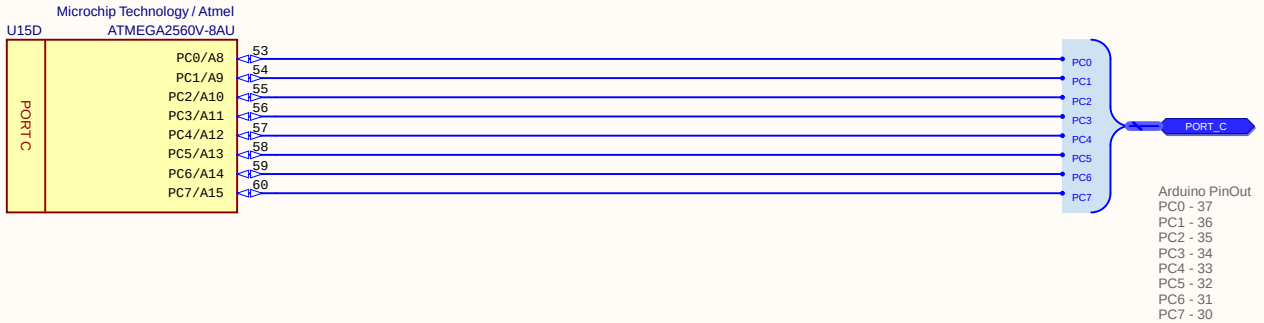


These ports are not used in B100 module. All un-used pins are NC.

Title	**Master Micro Controller Port B Pin Out**		
Size: A4	**Number:** 16	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 16 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port B.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

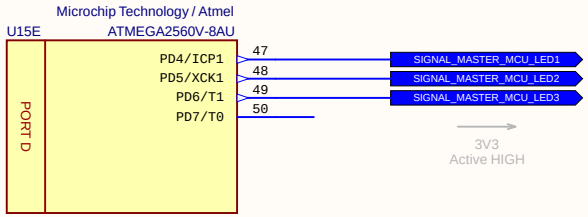
Master MicroController C Port



Title	**Master Micro Controller Port C Pin Out**		
Size: A4	**Number:** 17	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 17 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port C.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Master MicroController D Port

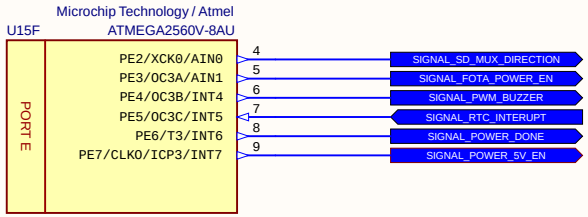


Micro controller based RGB LED outputs. These outputs are controlled in firmware.

Title	**Master Micro Controller Port D Pin Out**		
Size: A4	**Number:** 18	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 18 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port D.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

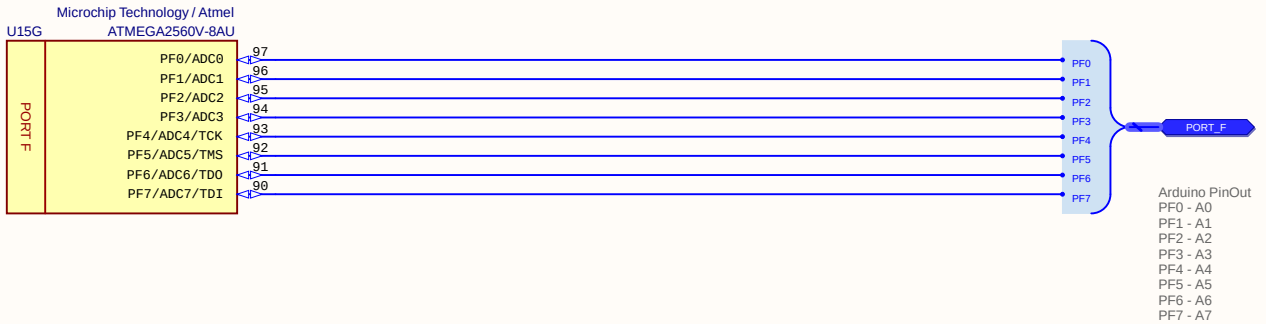
Master MicroController E Port



Title	**Master Micro Controller Port E Pin Out**		
Size: A4	**Number:** 19	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 19 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port E.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

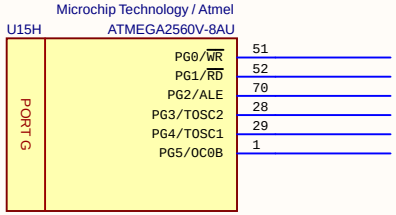
Master MicroController F Port



Title	**Master Micro Controller Port F Pin Out**		
Size: A4	**Number:** 20	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 20 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port F.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Master MicroController G Port

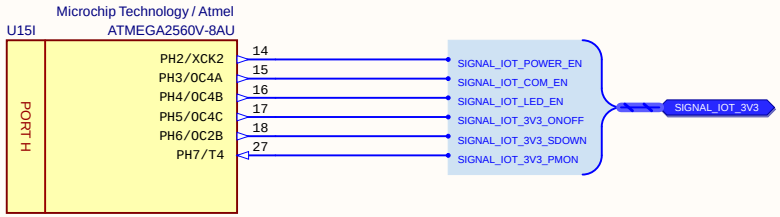


These ports are not used in B100 module. All un-used pins are NC.

Title	**Master Micro Controller Port G Pin Out**		
Size: A4	**Number:** 21	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 21 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port G.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

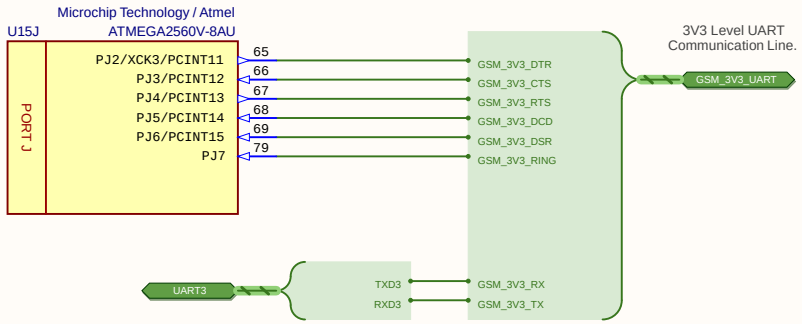
Master MicroController H Port



Title	**Master Micro Controller Port H Pin Out**		
Size: A4	**Number:** 22	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 22 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port H.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

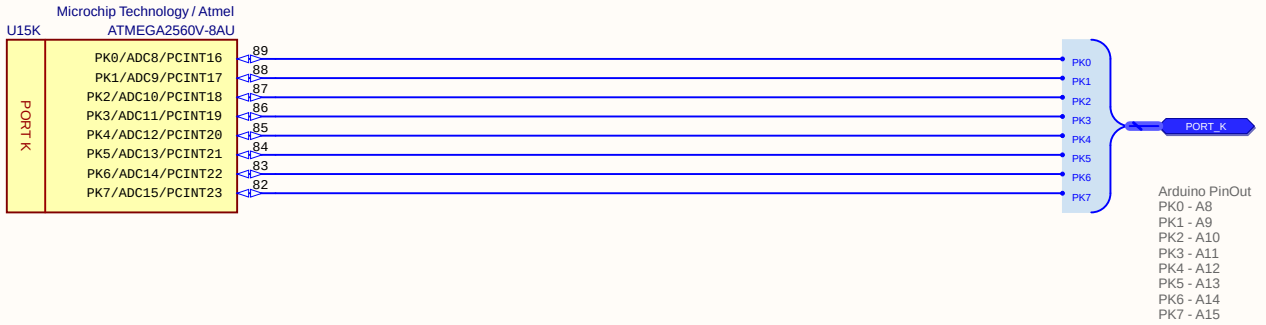
GSM IoT Communication Pins



Title	**Master Micro Controller Port J Pin Out**		
Size: A4	**Number:** 23	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 23 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port J.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

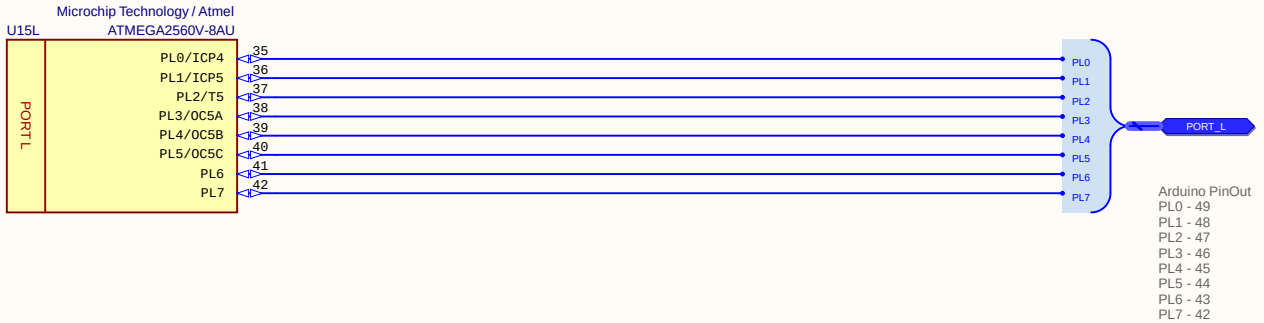
Master MicroController K Port



Title	**Master Micro Controller Port K Pin Out**		
Size: A4	**Number:** 24	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 24 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port K.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

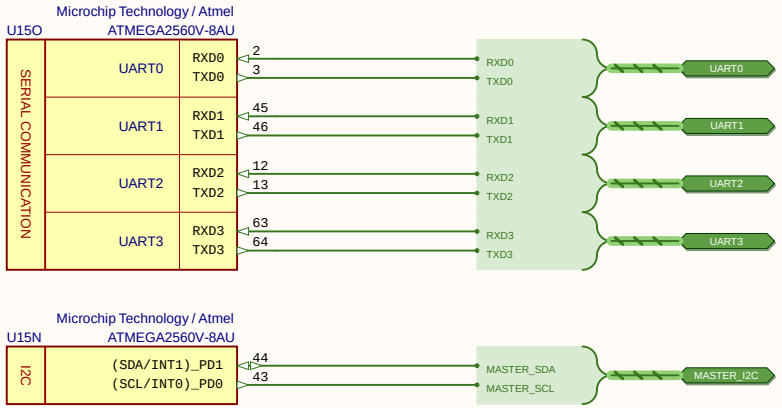
Master MicroController L Port



Title	**Master Micro Controller Port L Pin Out**		
Size: A4	**Number:** 25	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 25 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Port L.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Communication Ports

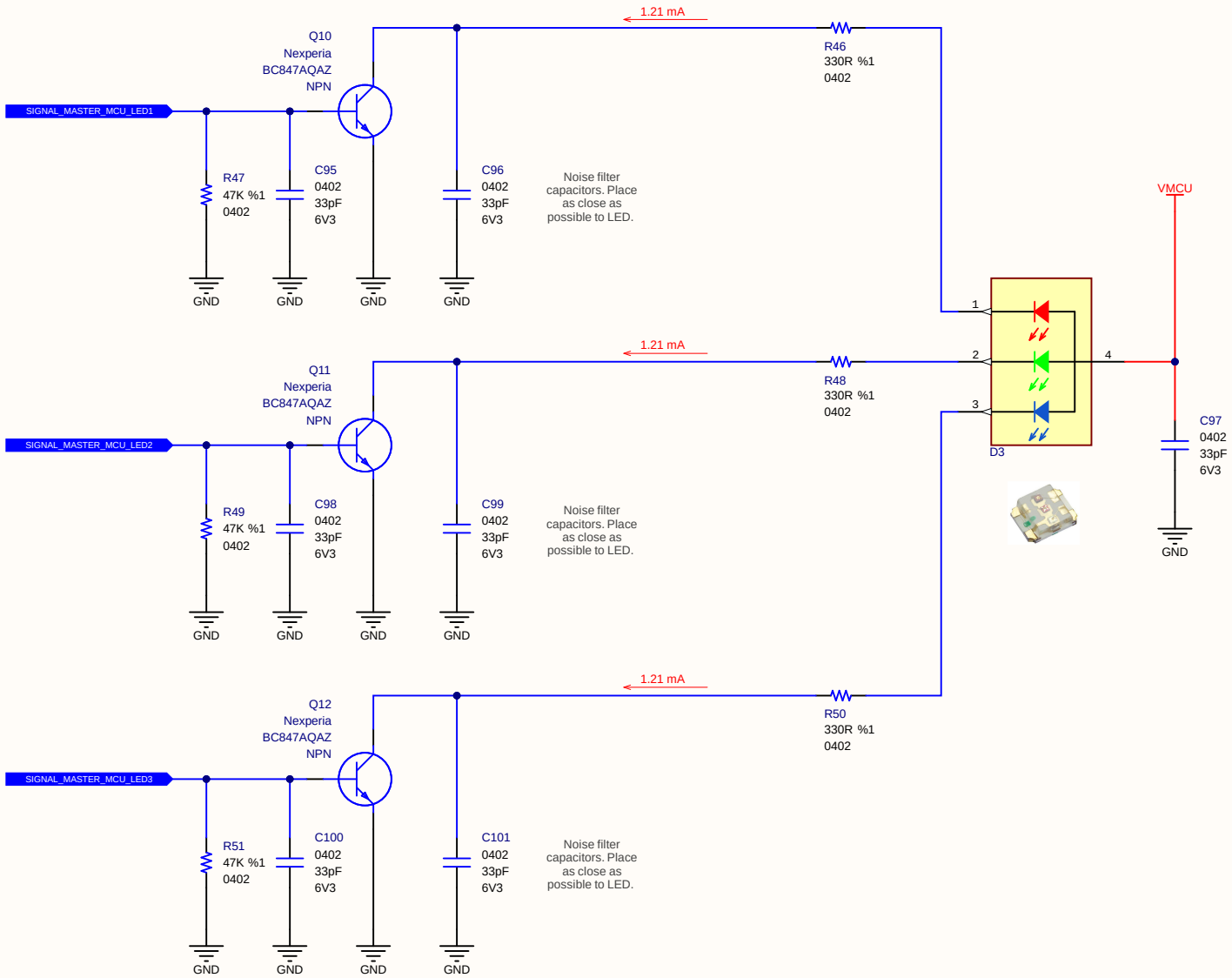


Title	**Master MicroController Communication Port Pin Out**		
Size: A4	**Number:** 26	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 26 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController Serial Communication Port.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

OVOO

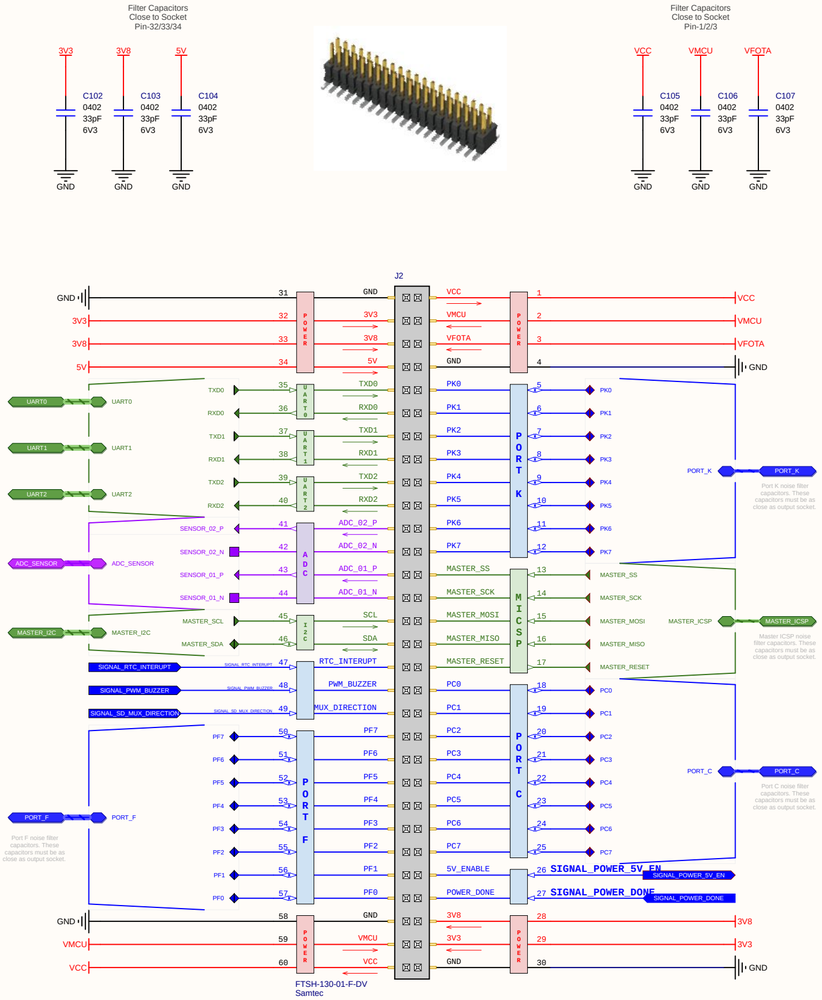
Main Microcontroller Status LED Indicators



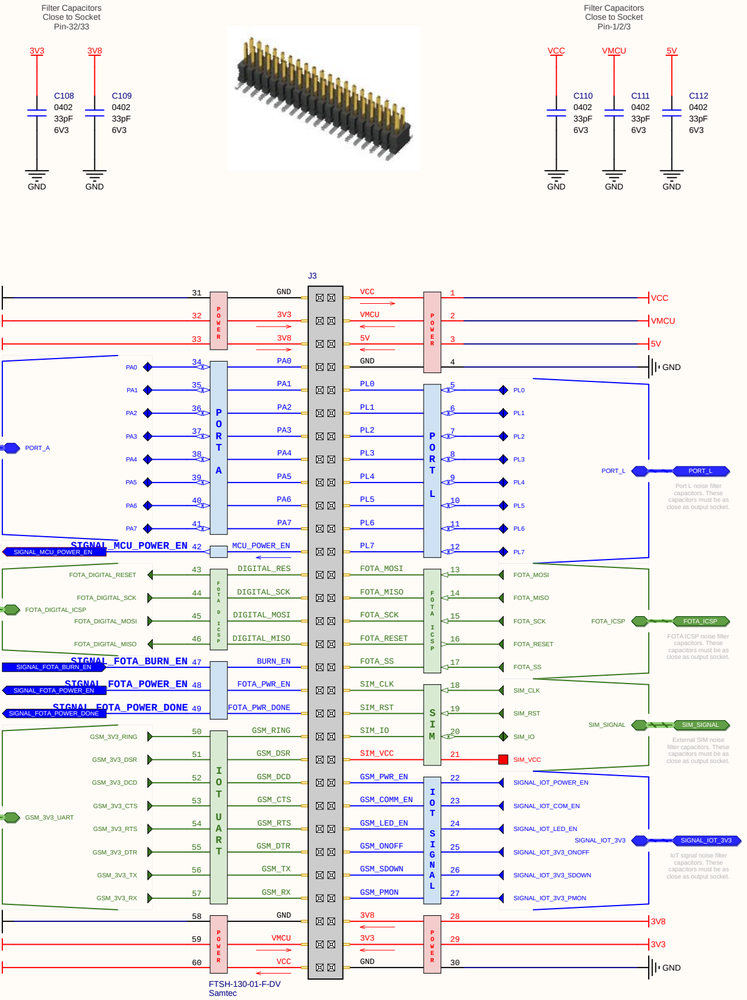
Title	Master MicroController LED		
Size: A4	**Number:** 27	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 27 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Master MicroController LED.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaarmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Module Output Socket A



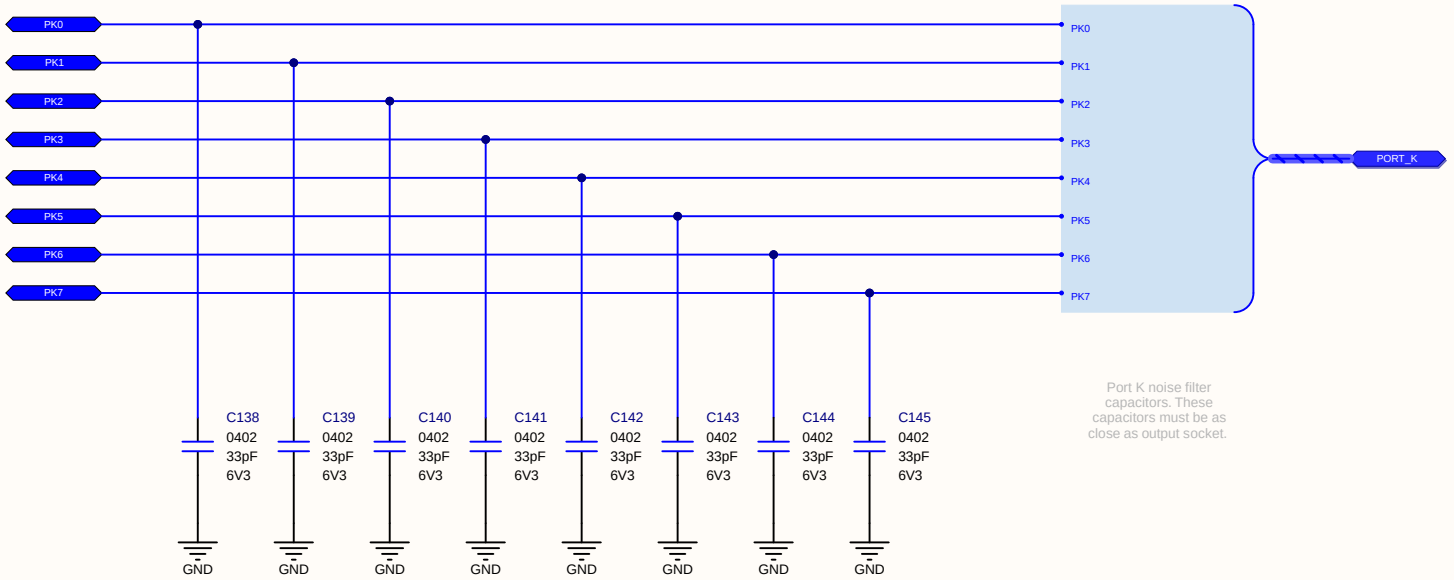
Module Output Socket B



Title	Module Output Sockets		
Size: A2	**Number:** 28	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:13	**Sheet** 28 of 53	
File:	C:\Altium Projects\B100I[AA]\Design Files\B100AA\Schematics\Module Output Sockets.SchDoc		

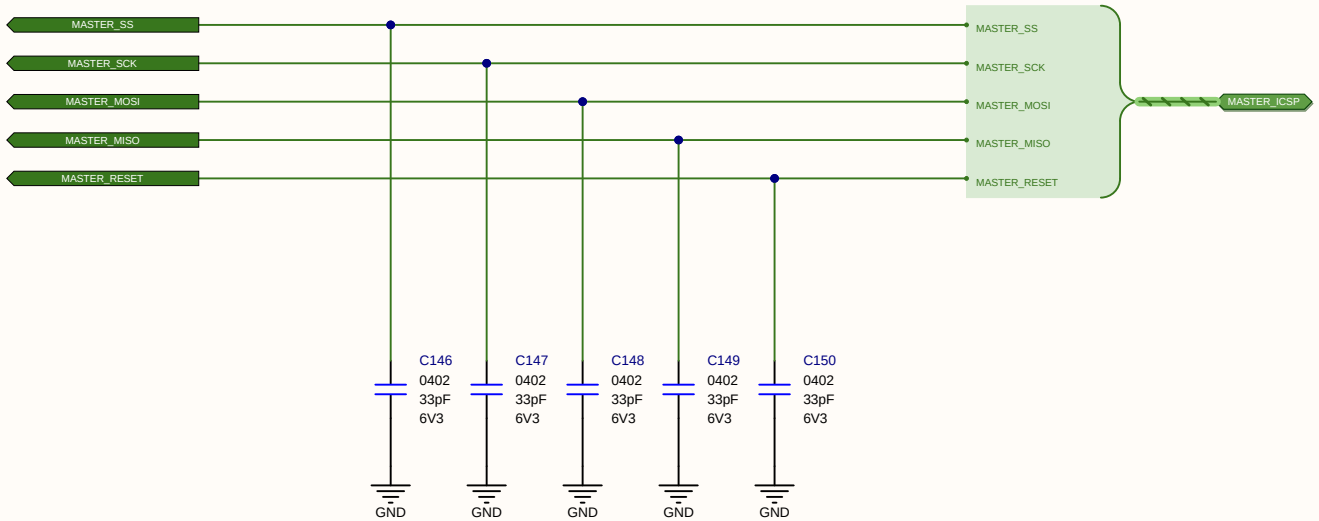
Ovoo Electronics
Necip Fazıl Mah. Ortanmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Port K Output Socket Noise Capacitors



Title	**PORT K Filter Capacitors**		
Size: A4	**Number:** 29	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 29 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Port K.SchDoc		

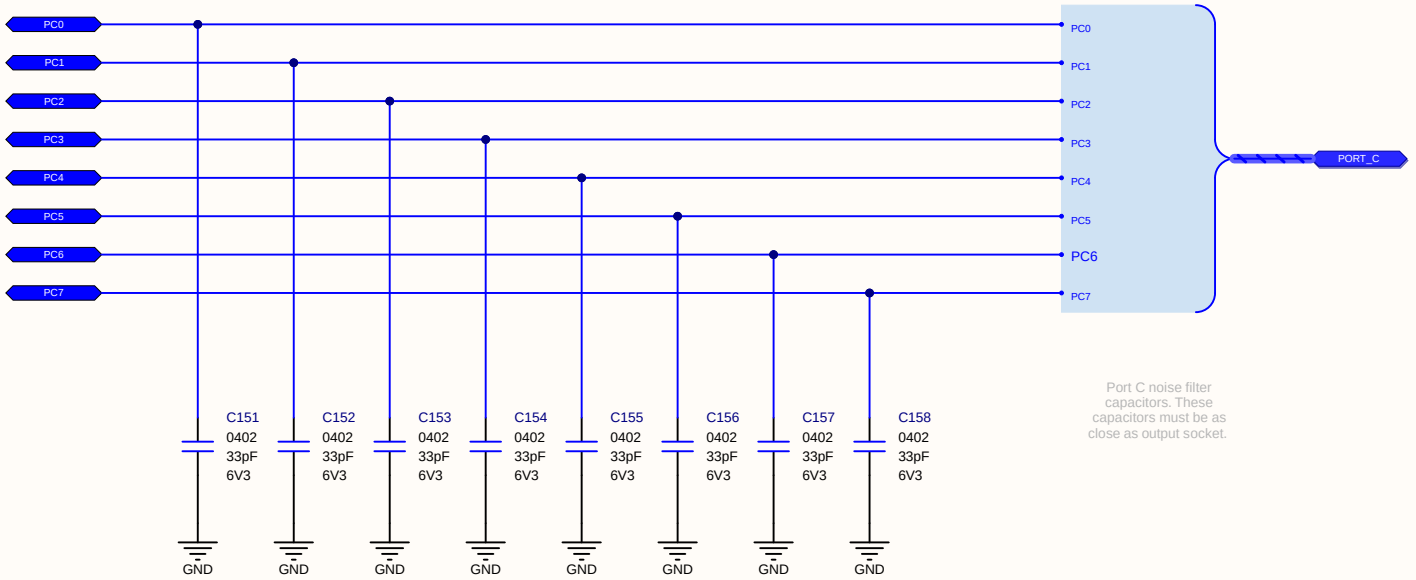
Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



Title	**Master ICSP Filter Capacitors**		
Size: A4	**Number:** 30	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 30 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Master ICSP.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaurmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

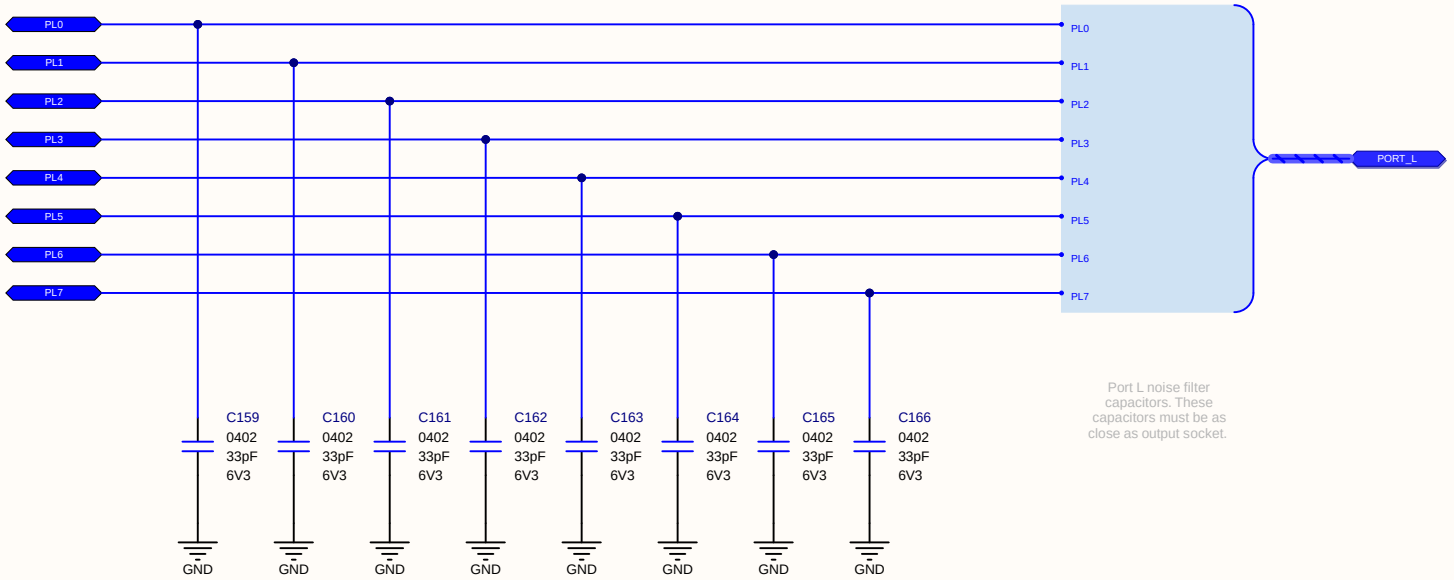
Port C Output Socket Noise Capacitors



Title	**PORT C Filter Capacitors**		
Size: A4	**Number:** 31	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 31 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Port C.SchDoc		

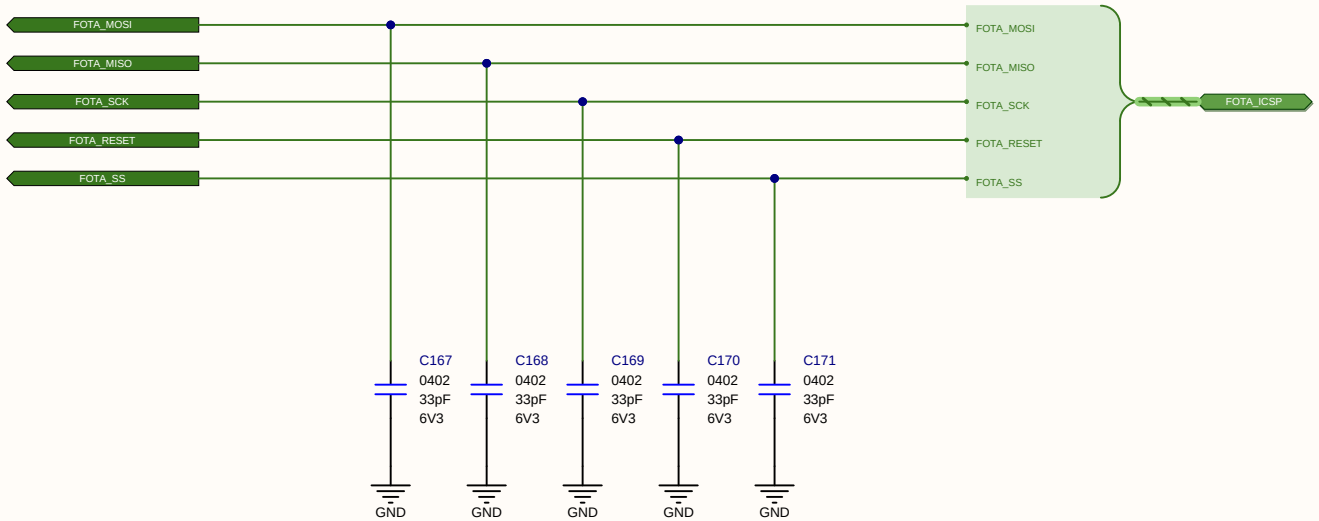
Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Port L Output Socket Noise Capacitors



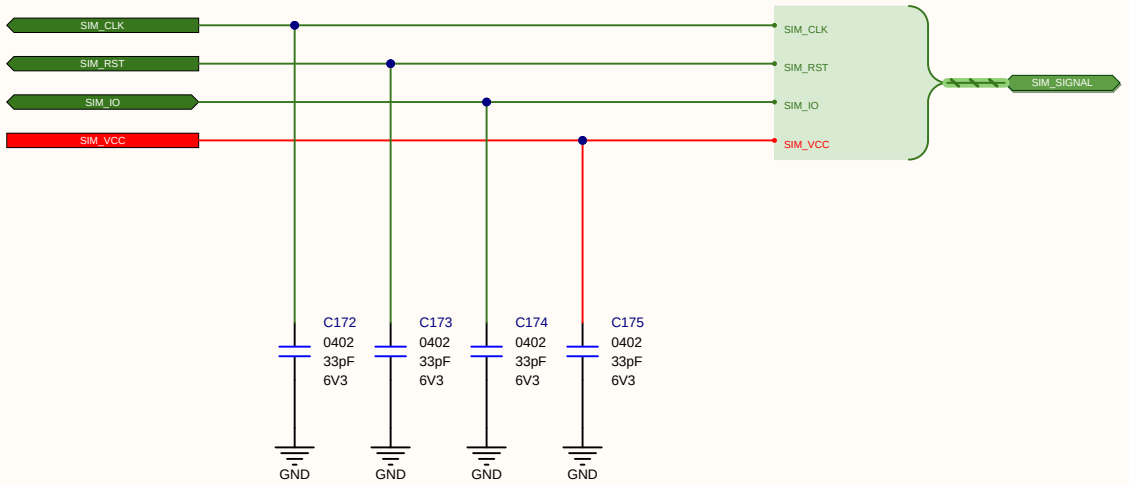
Title	**PORT L Filter Capacitors**		
Size: A4	**Number:** 32	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 32 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Port L.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



Title	**FOTA ICSP Filter Capacitors**		
Size: A4	**Number:** 33	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 33 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - FOTA ICSP.SchDoc		

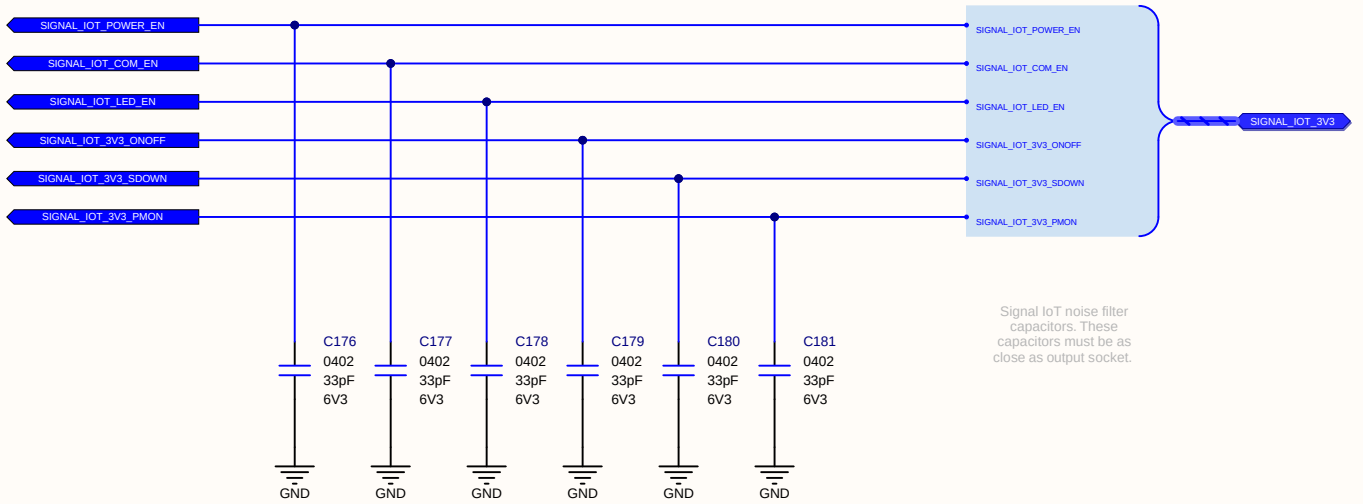
Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



Title	**External SIM Filter Capacitors**		
Size: A4	**Number:** 34	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 34 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - External SIM.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

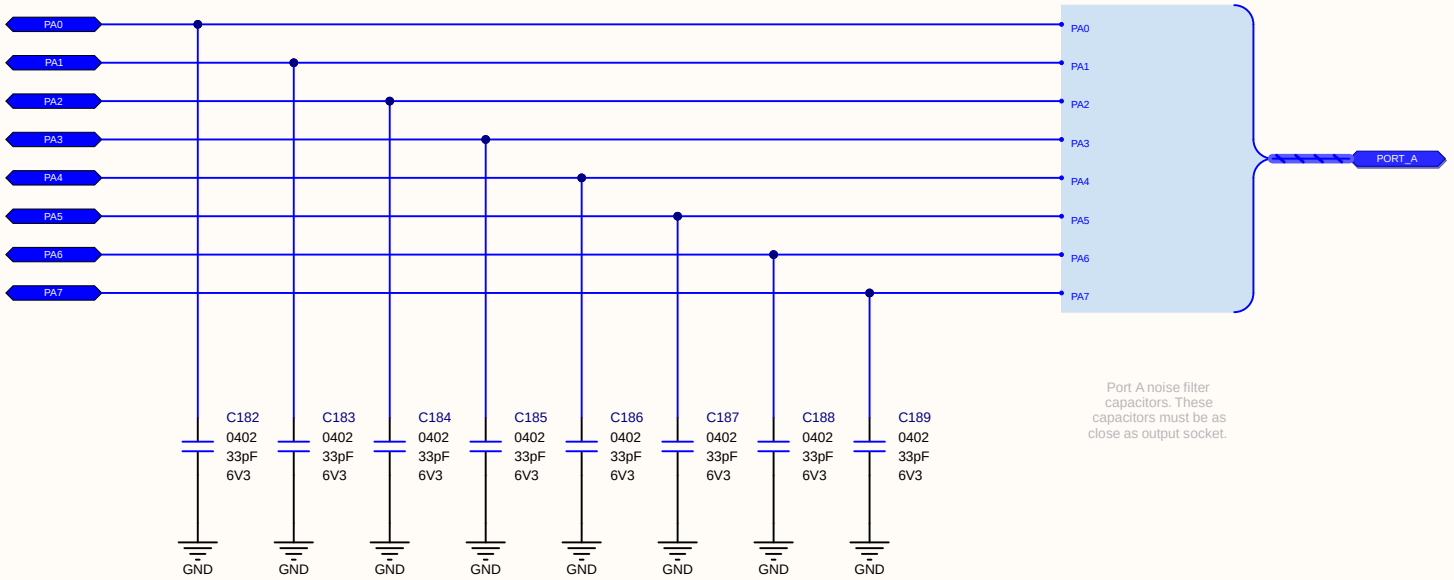
Signal IoT Output Socket Noise Capacitors



Title	**Signal IoT Filter Capacitors**		
Size: A4	**Number:** 35	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 35 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Signal IoT.SchDoc		

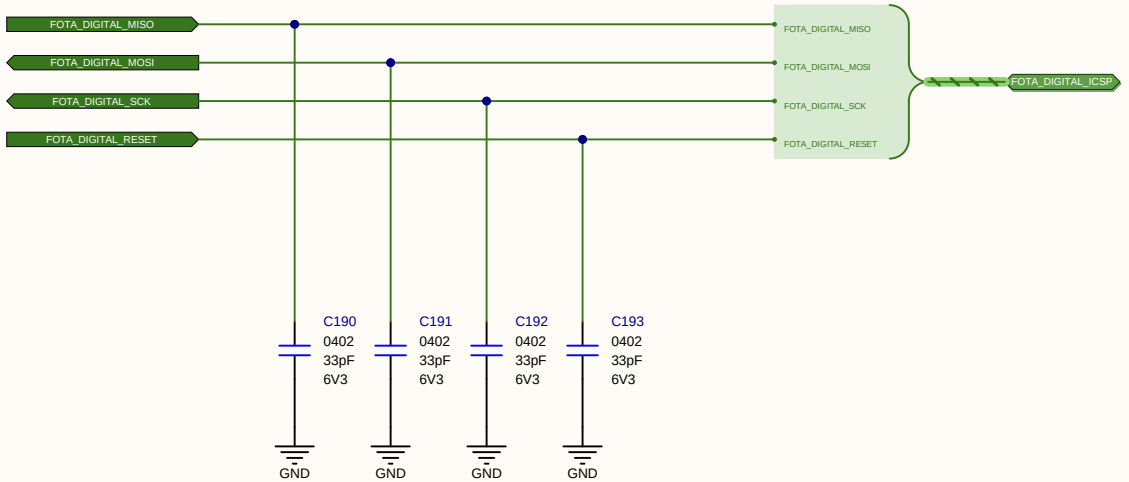
Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Port A Output Socket Noise Capacitors



Title	**PORT A Filter Capacitors**		
Size: A4	**Number:** 36	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 36 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Port A.SchDoc		

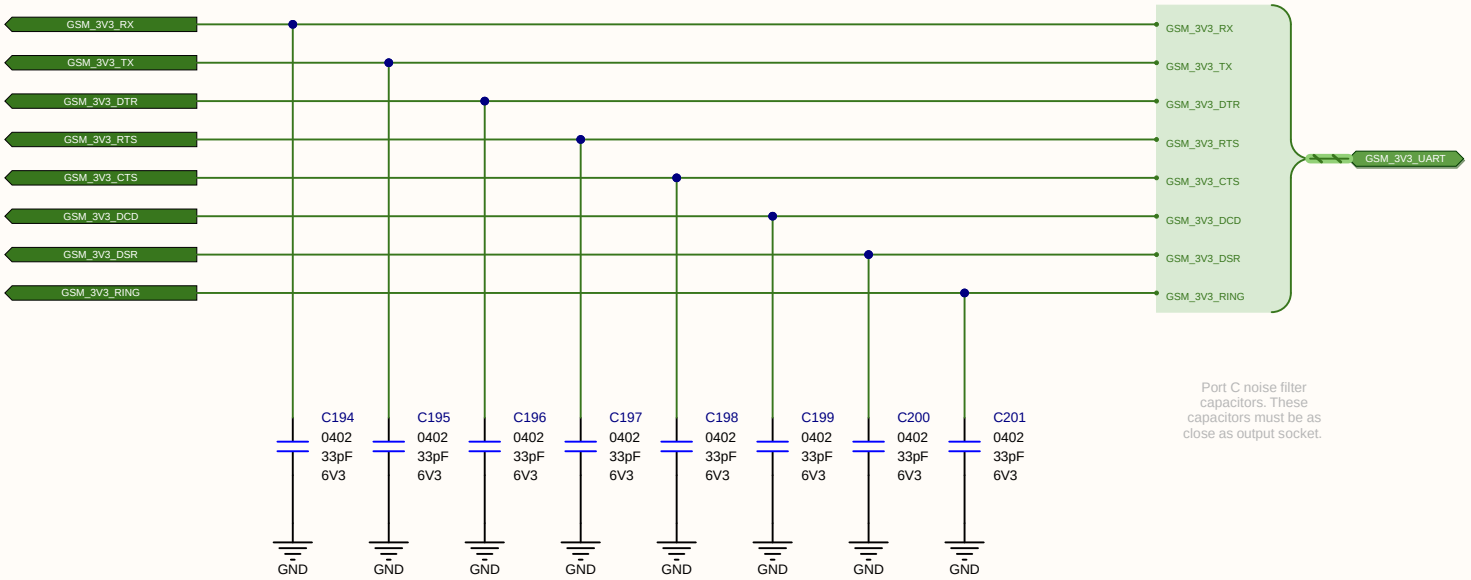
Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



Title	**FOTA Digital ICSP Filter Capacitors**		
Size: A4	**Number:** 37	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 37 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - FOTA Digital ICSP.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

IoT UART Output Socket Noise Capacitors

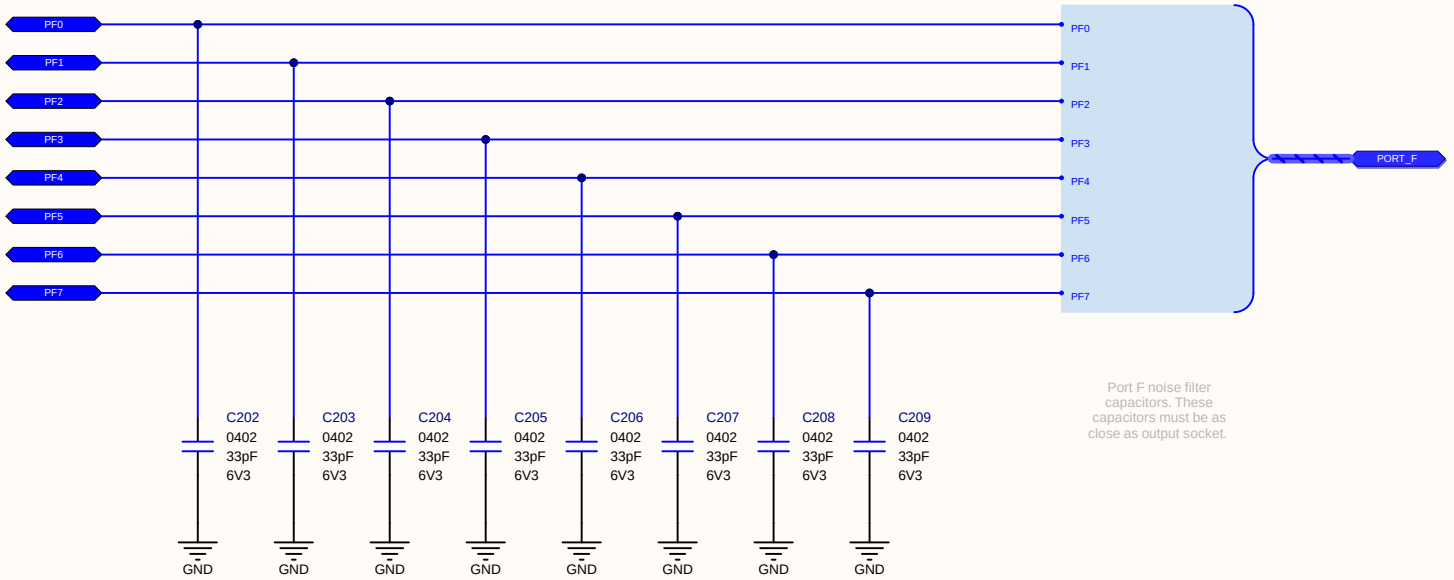


Title	**IoT UART Filter Capacitors**		
Size: A4	**Number:** 38	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 38 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - IoT UART.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

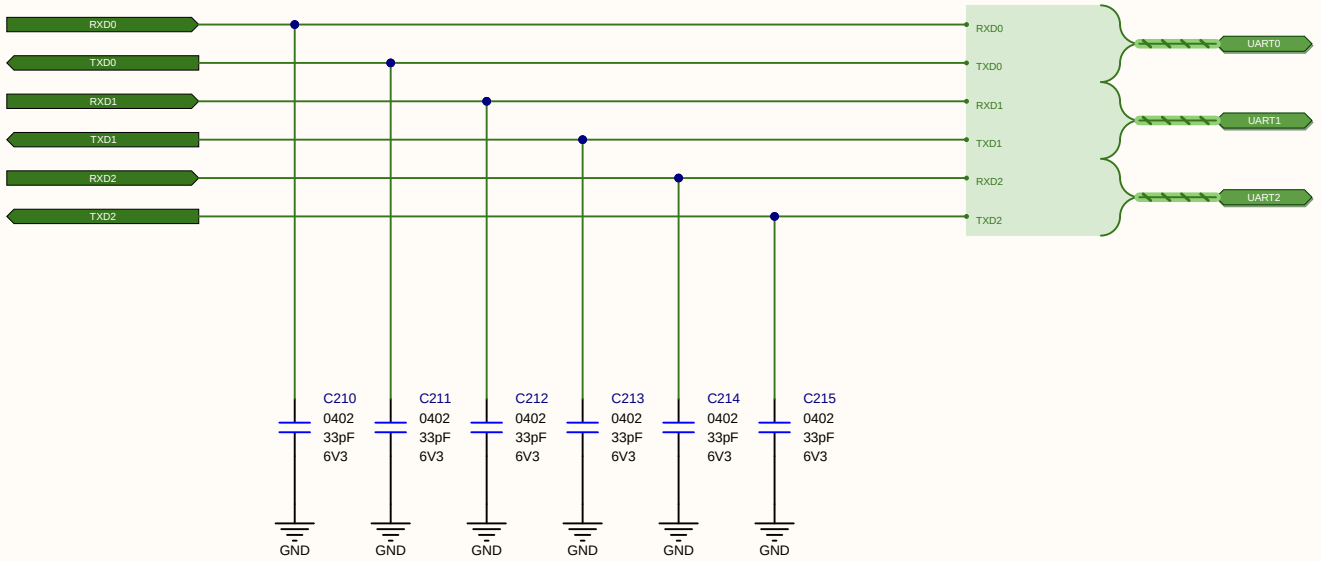
OVOO

Port F Output Socket Noise Capacitors



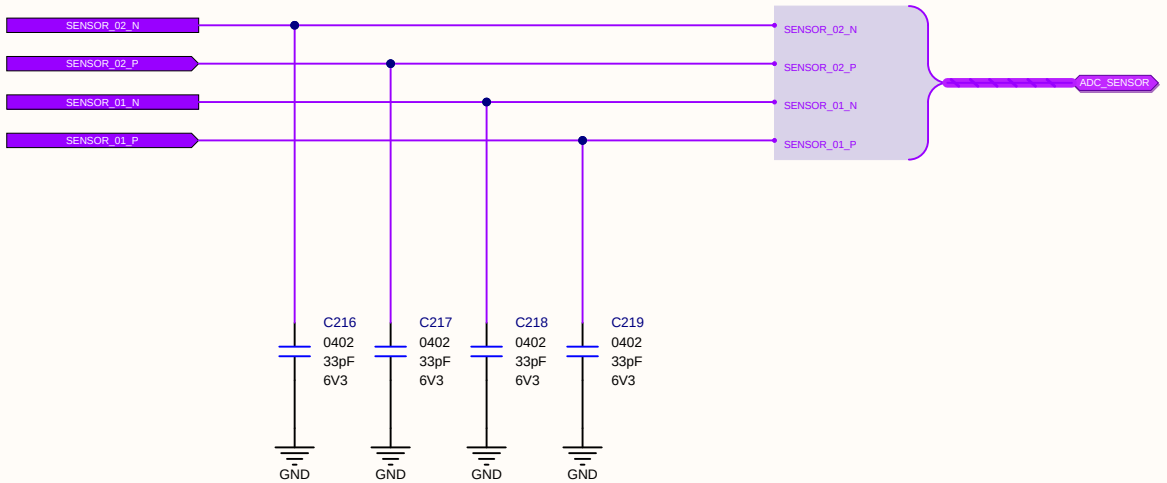
Title	**PORT F Filter Capacitors**		
Size: A4	**Number:** 39	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 39 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Port F.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



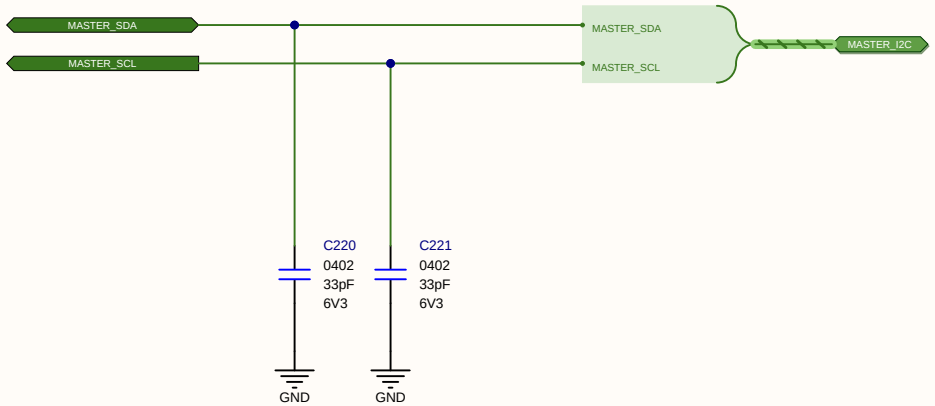
Title	**Serial Communication Filter Capacitors**		
Size: A4	**Number:** 40	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 40 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - Serial Communication.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye



Title	**ADC Sensor Filter Capacitors**		
Size: A4	**Number:** 41	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 41 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - ADC Sensor.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

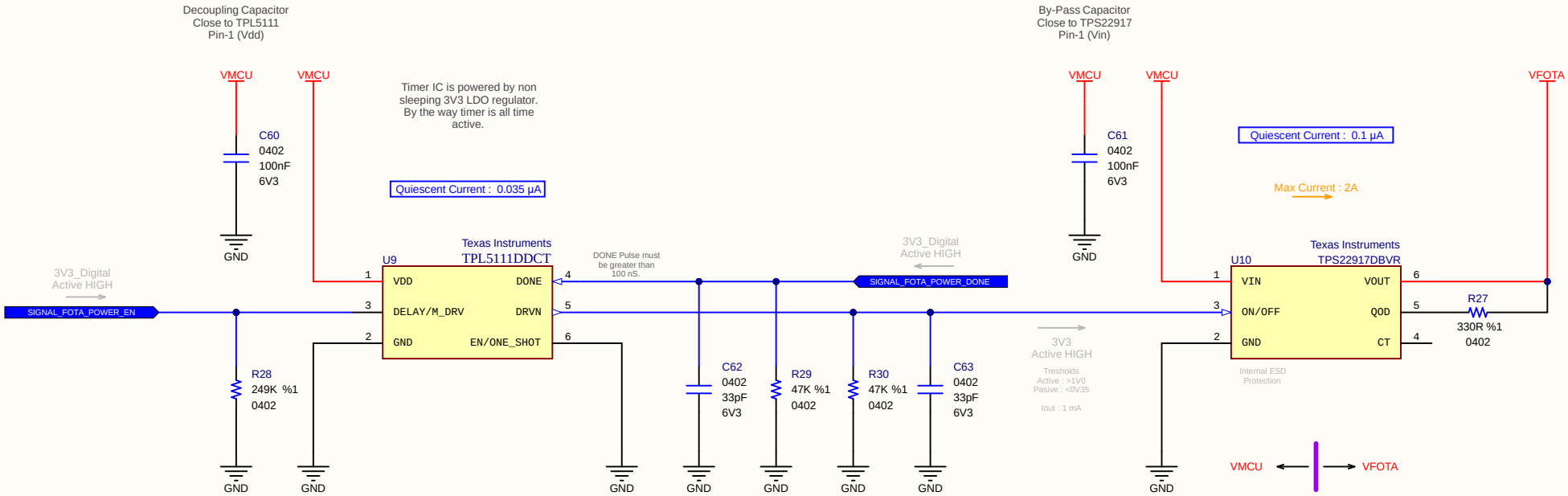


Title	**I2C Filter Capacitors**		
Size: A4	**Number:** 42	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 42 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Filter Capacitors - I2C.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Power Trigger

Power Switch



TPL5111 is used for powering FOTA microcontroller. In this mode timer is work on one-shot mode. So the time set resistor is not necessery.

When EN/ONE_SHOT = HIGH, the TPL5111 works as a timer.

When EN/ONE_SHOT = LOW, the TPL5111 works as a latched trigger signal generator.

DRVn signal pull-down resistor and filter capacitor.

The input of the PFET (power switch) is VMCU. The output of PFET is VFOTA (FOTA microcontroller power source).

Title	**FOTA MicroController Latched Power Trigger**		
Size: A4	**Number:** 43	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 43 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\FOTA MicroController Power Switch.SchDoc			

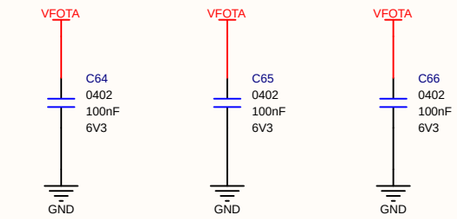
Ovoo Electronics
Necip Fazil Mah. Ortaarmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

FOTA Micro Controller

By-Pass Capacitor Close to Atmega328P Pin-4 (Vcc)

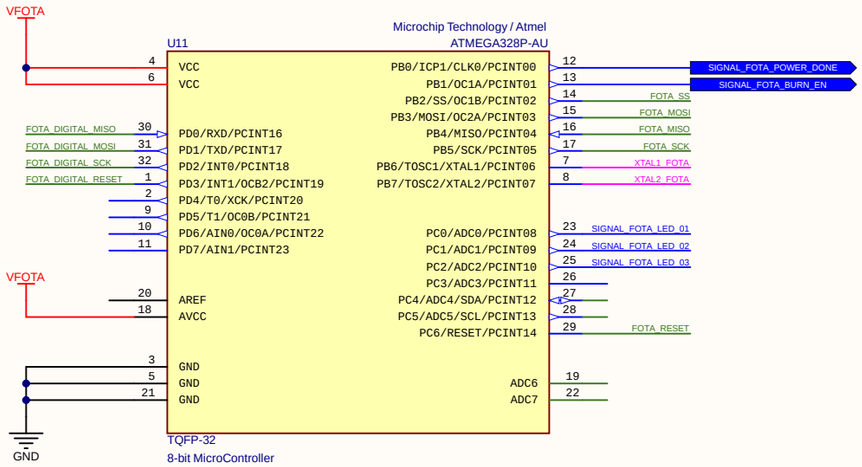
By-Pass Capacitor Close to Atmega328P Pin-6 (Vcc)

By-Pass Capacitor Close to Atmega328P Pin-18 (Avcc)

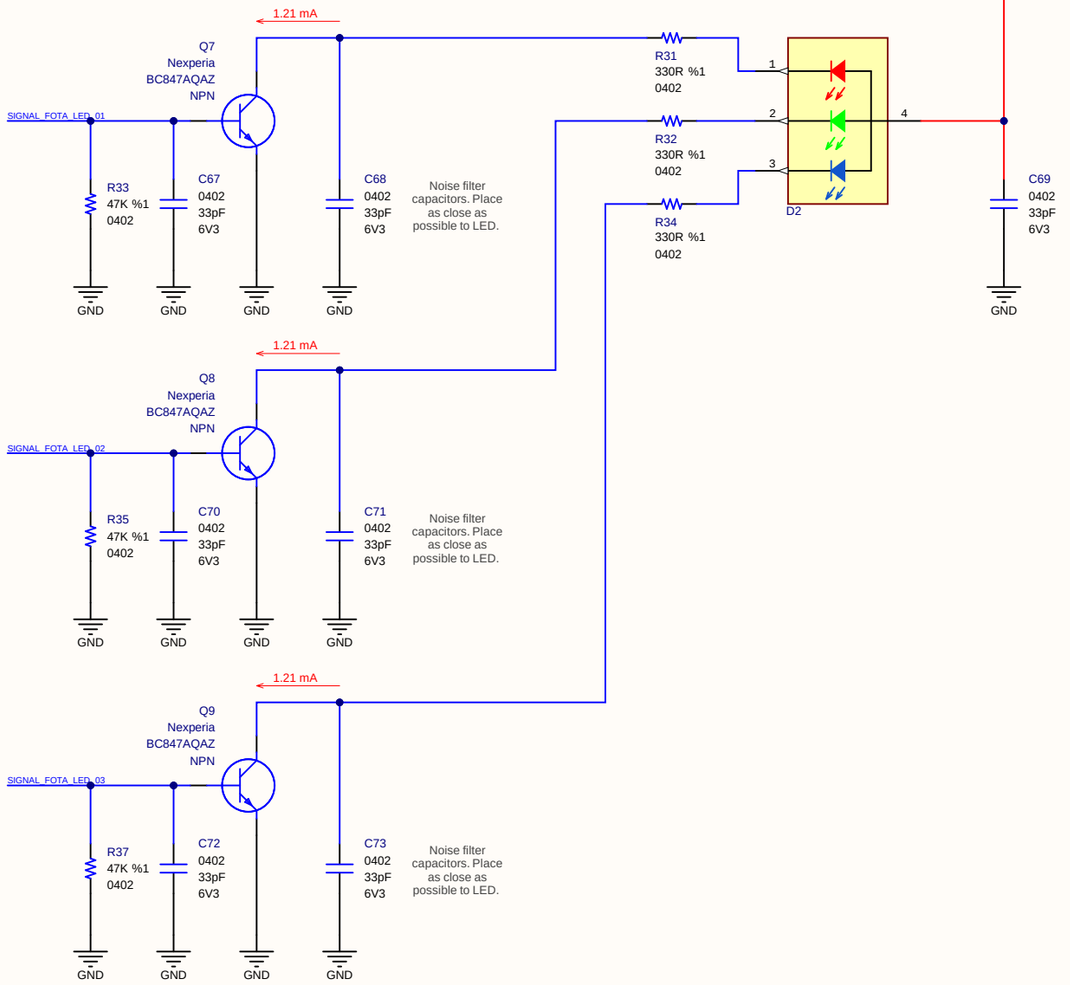


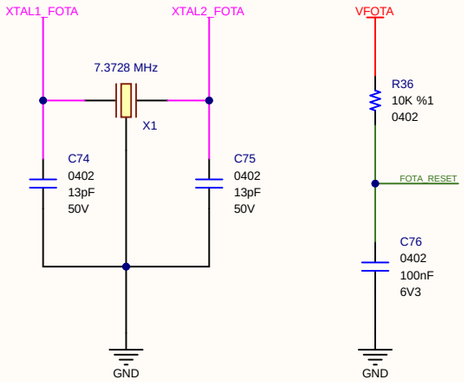
B100AA Module have two on-board MCU.

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



FOTA Status LED Indicators





FOTA MCU is working at 7.3728 Mhz.

FOTA MCU Reset Line. Pull-up.

FOTA Micro Controller ICSP

FOTA Digital ICSP (Main MCU Burn)

Title	FOTA MicroController		
Size: A3	**Number:** 44	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 44 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\FOTA MicroController.SchDoc		

Ovoo Electronics
Necip Fazıl Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

SD Card

Decoupling Capacitor.
As close as possible to uSD tray.

VMCU

C77
0402
100nF
6V3

GND

VMCU

30 mA

SD Card mounth tray.
Storage for firmware and LOG files. 1GB uSD card is adviced.

Molex
47219-2001

SD_MISO
SD_MOSI
SD_SCK
SD_SS

4	VCC
7	DAT0
3	CMD
5	CLK
2	CD/DAT3
8	DAT1
1	DAT2
6	GND

uSD

J1

GND

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

SPI Selection Switch

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

VMCU VMCU VMCU VMCU VMCU VMCU

R38 10K %1 0402
R39 10K %1 0402
R40 10K %1 0402
R41 10K %1 0402
C78 0402 100nF 6V3

GND

Texas Instruments
SN3257QPWRQ1

16	VCC		
	INPUT	CH1	
4	D1	S1A	2
7	D2	S2A	5
9	D3	S3A	11
12	D4	S4A	14
		CH2	
1	SEL	S1B	3
15	EN	S2B	6
		S3B	10
8	GND	S4B	13

U12

SD_MOSI
SD_MISO
SD_SCK
SD_SS

FOTA_RESET
FOTA_MOSI
FOTA_MISO
FOTA_SCK
FOTA_SS

FOTA microcontroller ICSP pins.
FOTA_ICSP
Active when MUX_Direction signal is LOW.

MASTER_MOSI
MASTER_MISO
MASTER_SCK
MASTER_SS
MASTER_RESET

Master microcontroller ICSP pins.
MASTER_ICSP
Active when MUX_Direction signal is HIGH.

SIGNAL_SD_MUX_DIRECTION

If SEL pin = LOW, Input is connected to CH1 (Default).
If SEL pin = HIGH, Input is connected to CH2.

3V3_FOTA
Active HIGH

R42 47K %1 0402
C79 0402 33pF 6V3

GND GND GND

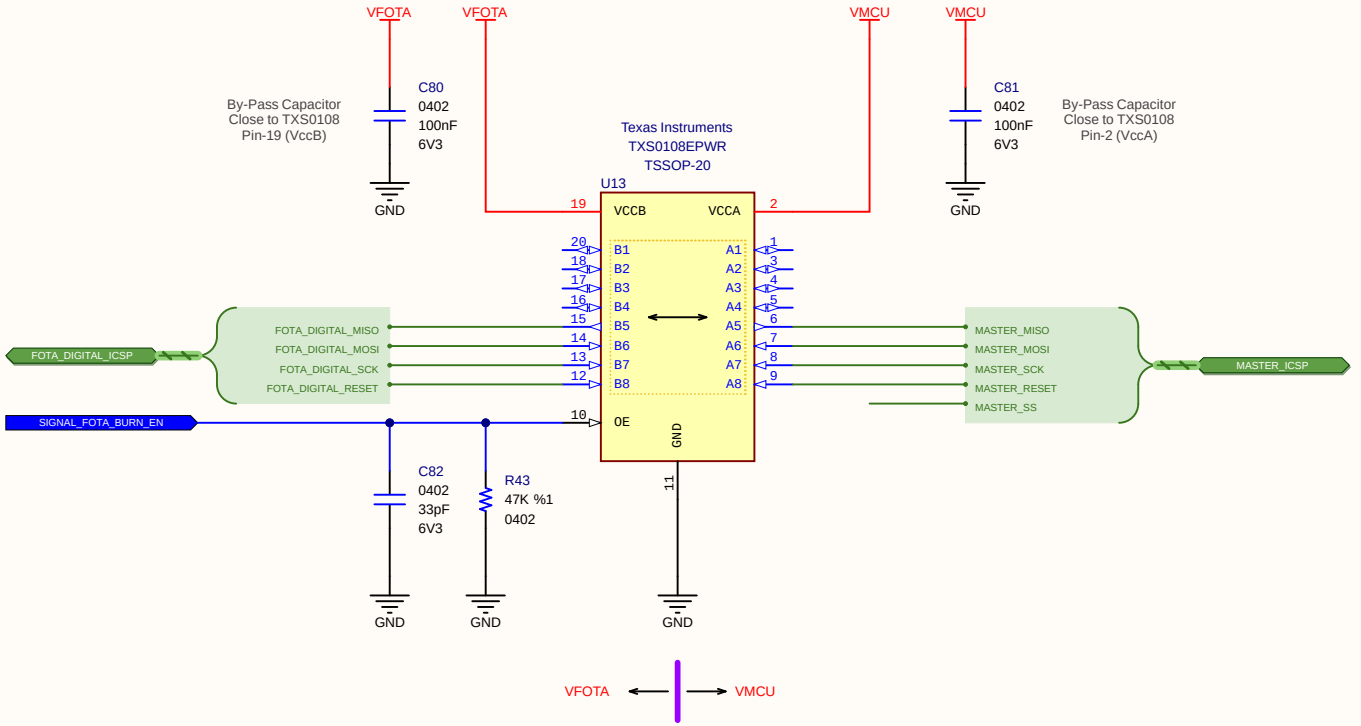
MUX_Direction signal pull-down resistor and filter capacitor.

Title	SD Card & Select Switch		
Size: A4	**Number:** 45	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:14	**Sheet** 45 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\SD Card.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

OVOO

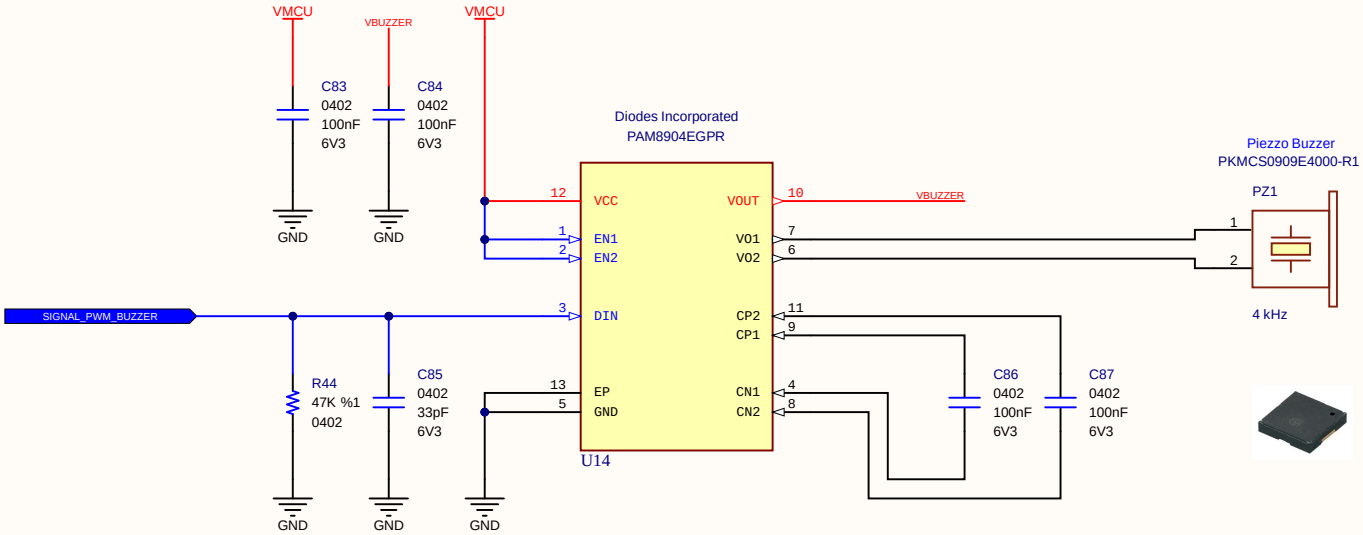
ICSP Burn Buffer



Title	**FOTA Burn Buffer**		
Size: A4	**Number:** 46	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 46 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\ICSP Burn Buffer.SchDoc			

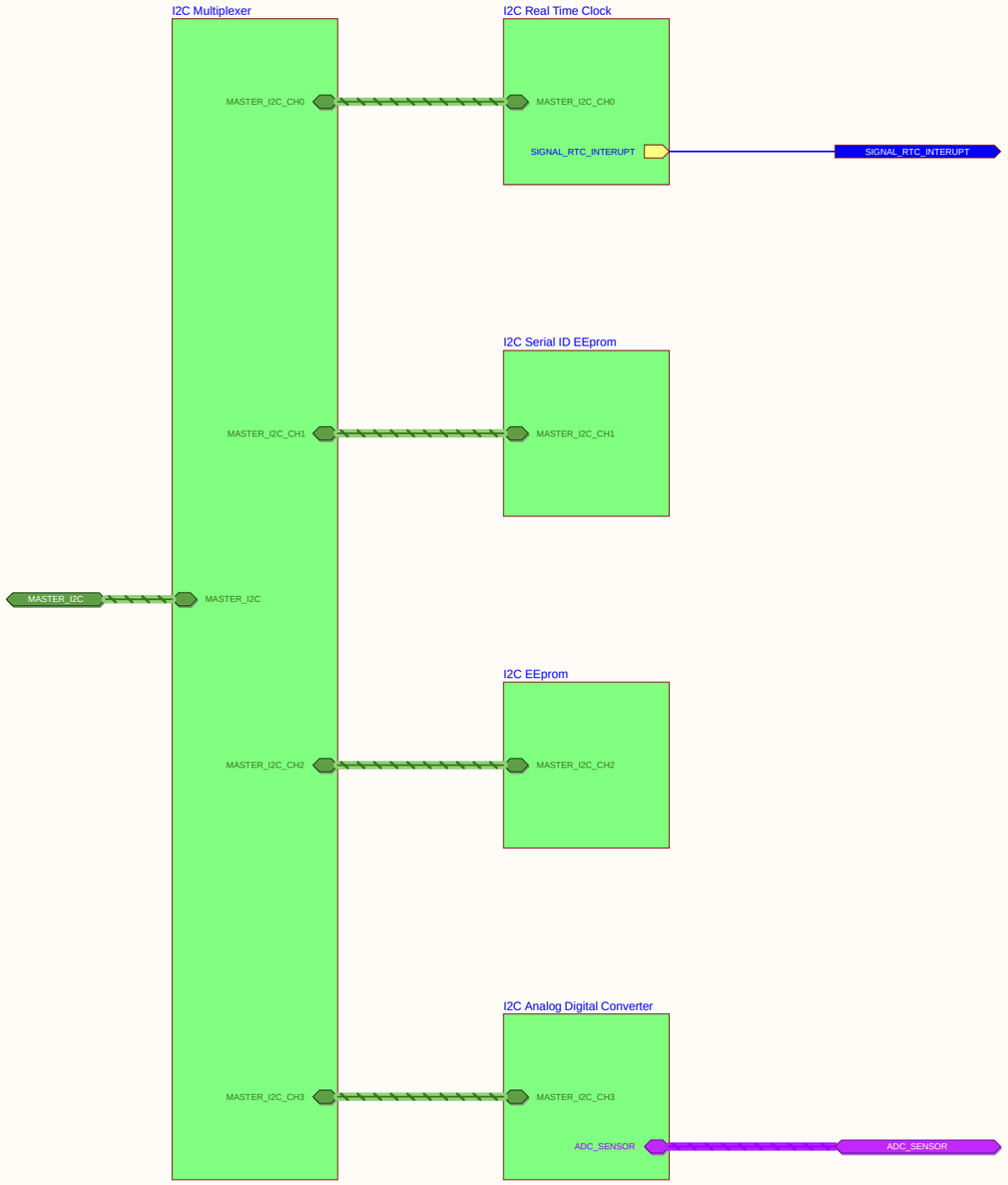
Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

Piezzo Buzzer



Title	**Buzzer**		
Size: A4	**Number:** 47	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 47 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Buzzer.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

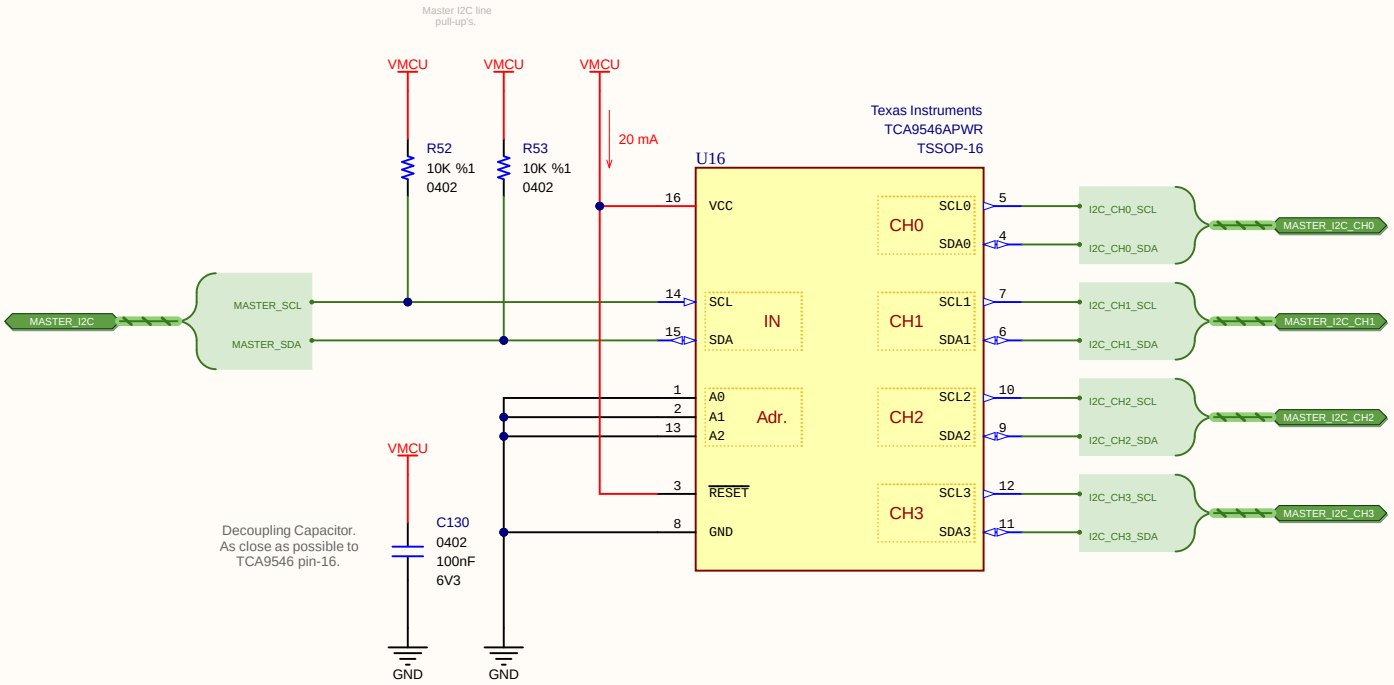


Title	I2C Network Block Diagram		
Size: A3	**Number:** 48	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 48 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\I2C Network.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortairmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

OVOO

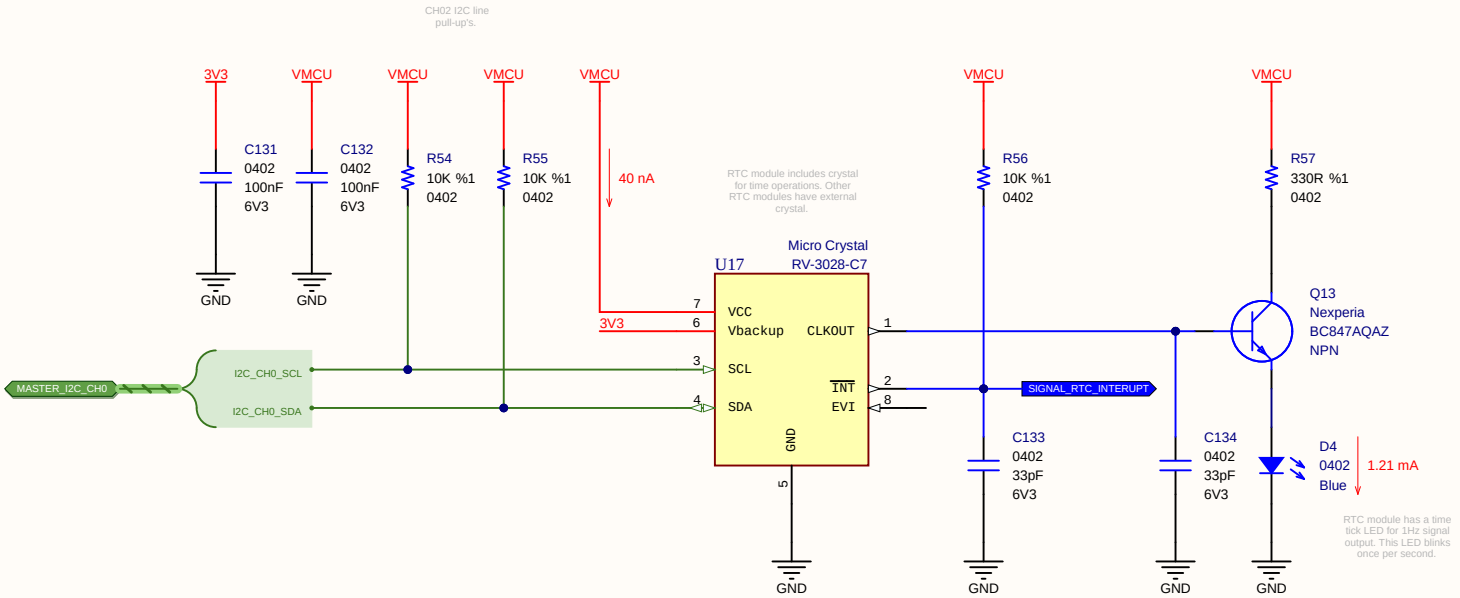
I2C Multiplexer



Title	I2C Multiplexer		
Size: A4	**Number:** 49	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 49 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\I2C Multiplexer.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

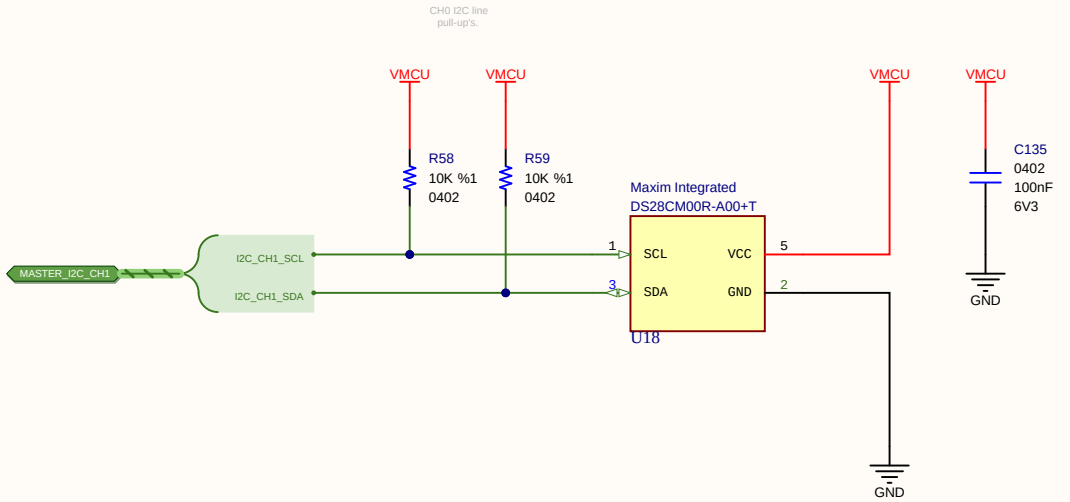
Real Time Clock



Title	**I2C Real Time Clock**		
Size: A4	**Number:** 50	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 50 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Real Time Clock.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok. Birgül Apt. No: 19/6
Meram / Konya
Turkiye

I2C Serial ID EEPROM

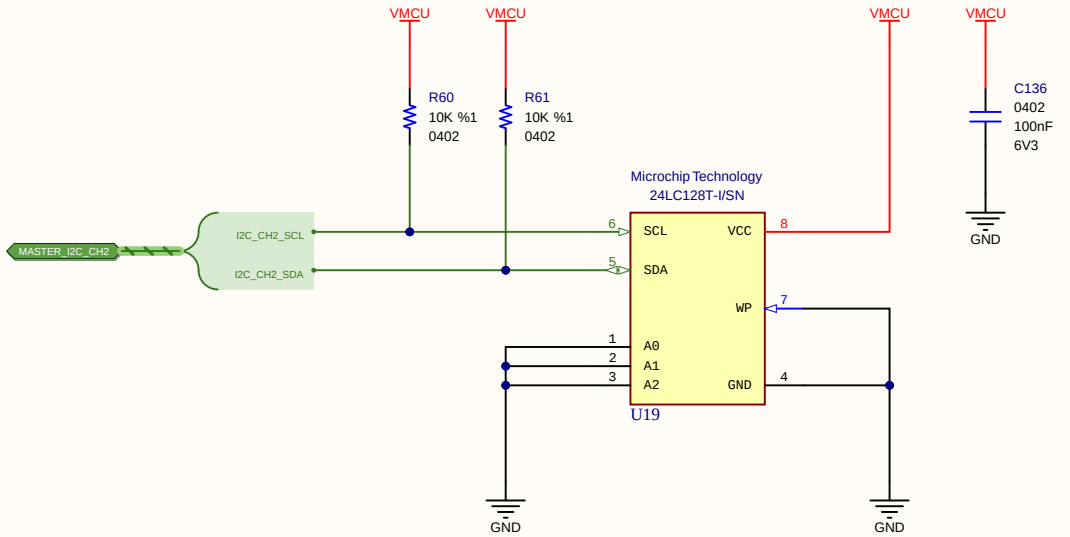


Title	I2C Serial ID EEprom		
Size: A4	**Number:** 51	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 51 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Serial ID EEPROM.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

EEPROM

CH03 I2C line
pull-up's.

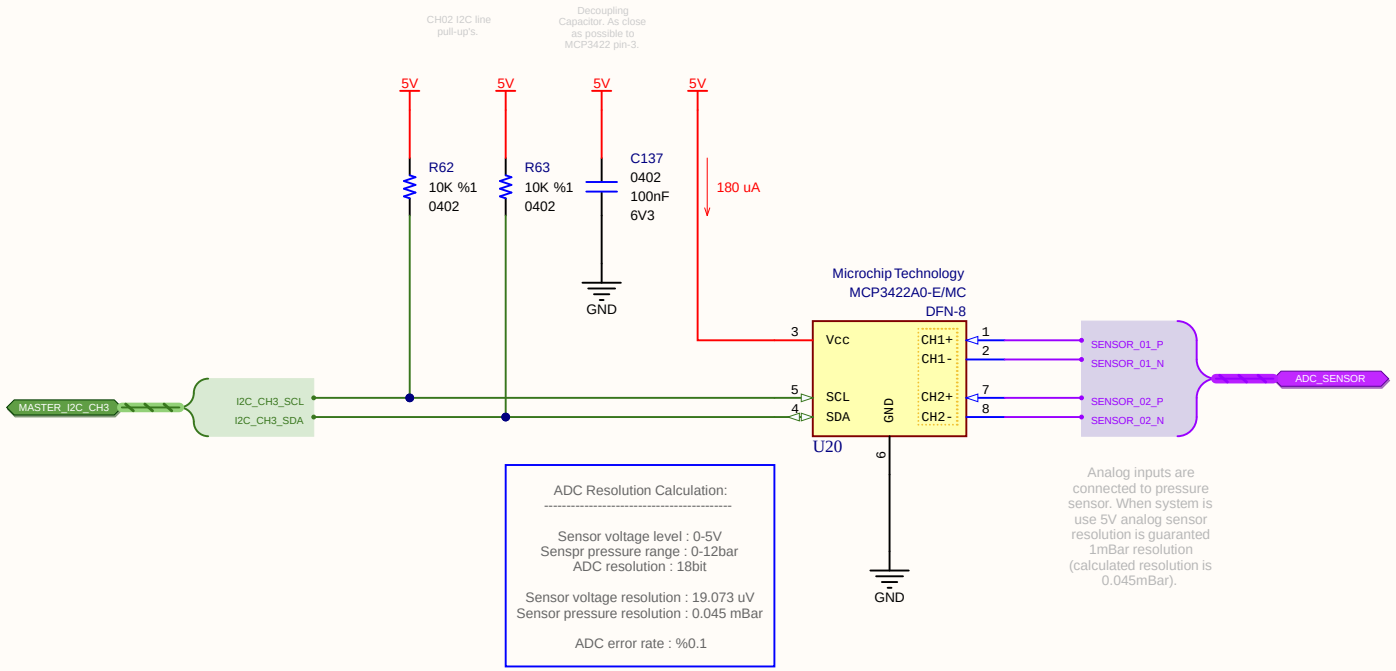


Title	**I2C EEprom**		
Size: A4	**Number:** 52	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 52 of 53	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\EEPROM.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

OVOO

Analog Digital Converter



ADC Resolution Calculation:

Sensor voltage level : 0-5V
Senspr pressure range : 0-12bar
ADC resolution : 18bit

Sensor voltage resolution : 19.073 uV
Sensor pressure resolution : 0.045 mBar

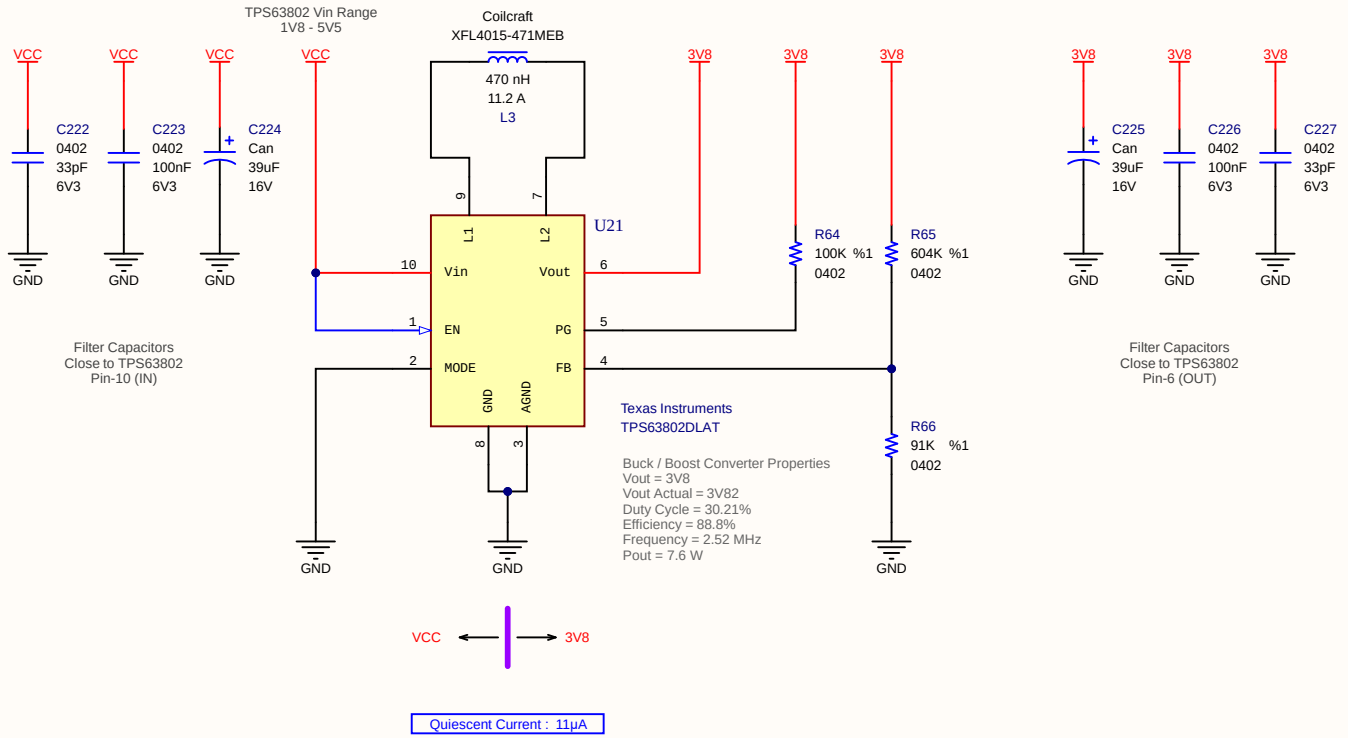
ADC error rate : %0.1

Analog inputs are connected to pressure sensor. When system is use 5V analog sensor resolution is guaranted 1mBar resolution (calculated resolution is 0.045mBar).

Title	Analog Digital Converter		
Size: A4	**Number:** 53	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** 53 of 53	
File:	C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\Analog Digital Converter.SchDoc		

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

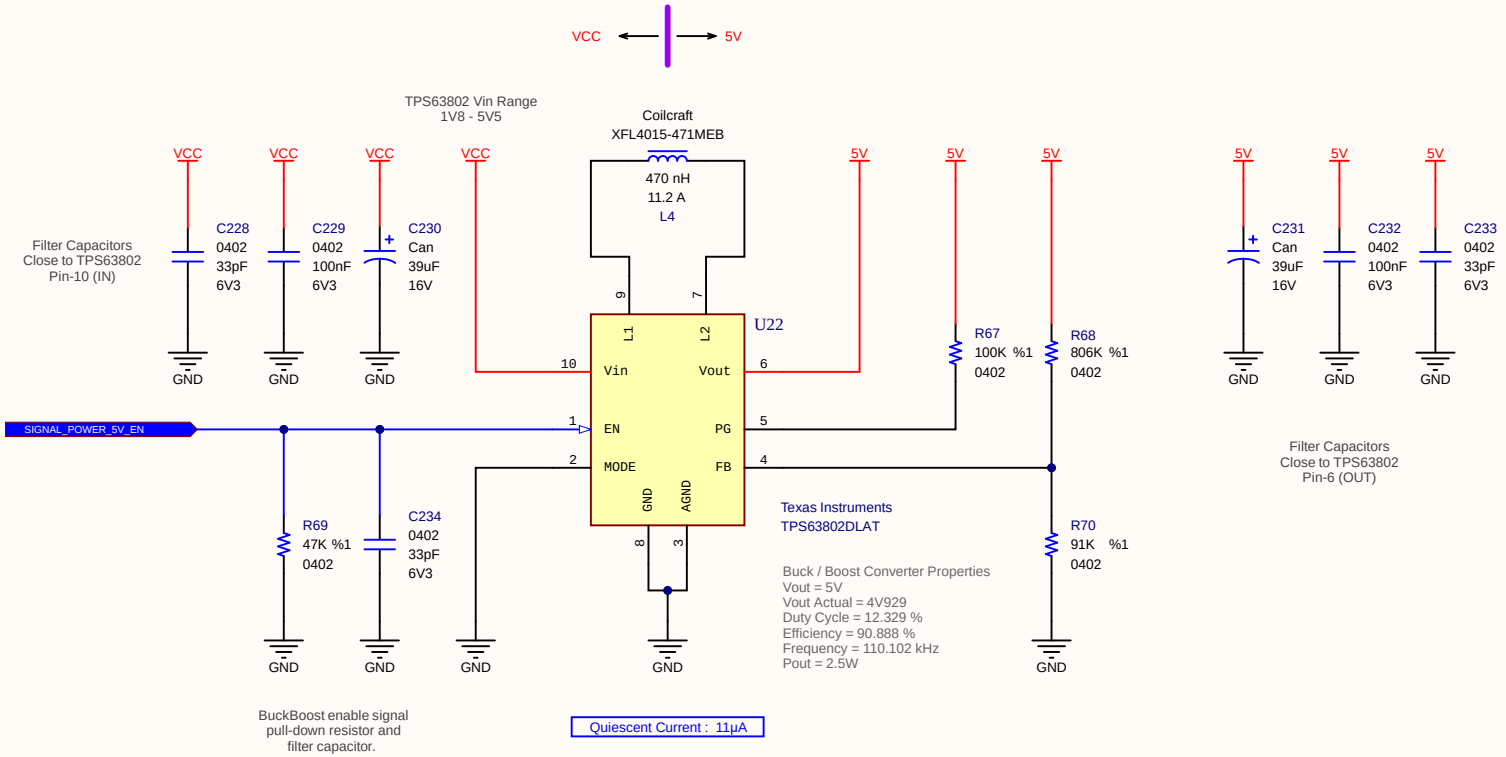
3V8 Buck Boost Converter



Title	3V8 DC/DC Buck Boost Converter		
Size: A4	**Number:** AA004	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** of	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\3V8 Buck Boost Converter.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye

5V Buck Boost Converter



Title	5V DC/DC Buck Boost Converter		
Size: A4	**Number:** AA004	**Revision:** B100AA R4	
Date: 28.01.2021	**Time:** 11:45:15	**Sheet** of	
File: C:\Altium Projects\B100\[AA]\Design Files\B100AA\Schematics\5V Buck Boost Converter.SchDoc			

Ovoo Electronics
Necip Fazil Mah. Ortaırmak Sok.
Birgül Apt. No: 19/6
Meram / Konya
Turkiye