

|  |          |                |                             |              |
|--|----------|----------------|-----------------------------|--------------|
| Title  |          |                | ActuatorControl Board v3.0. |              |
| Design Engineer:   |          | Milomir Spajić | Revision: v2                | Size: A4     |
| Date:  | 5.5.2020 | Time:          | 22:43:54                    | Sheet * of * |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\ActuatorControl |          |                |                             |              |


Memristor Robotics

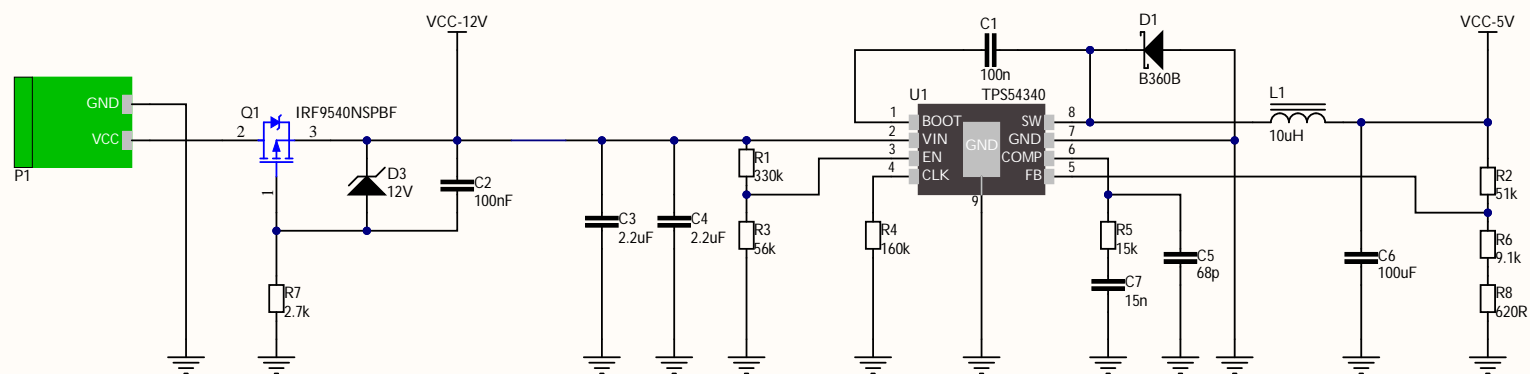
Vladimira Perića Valtera 2


21000 Novi Sad

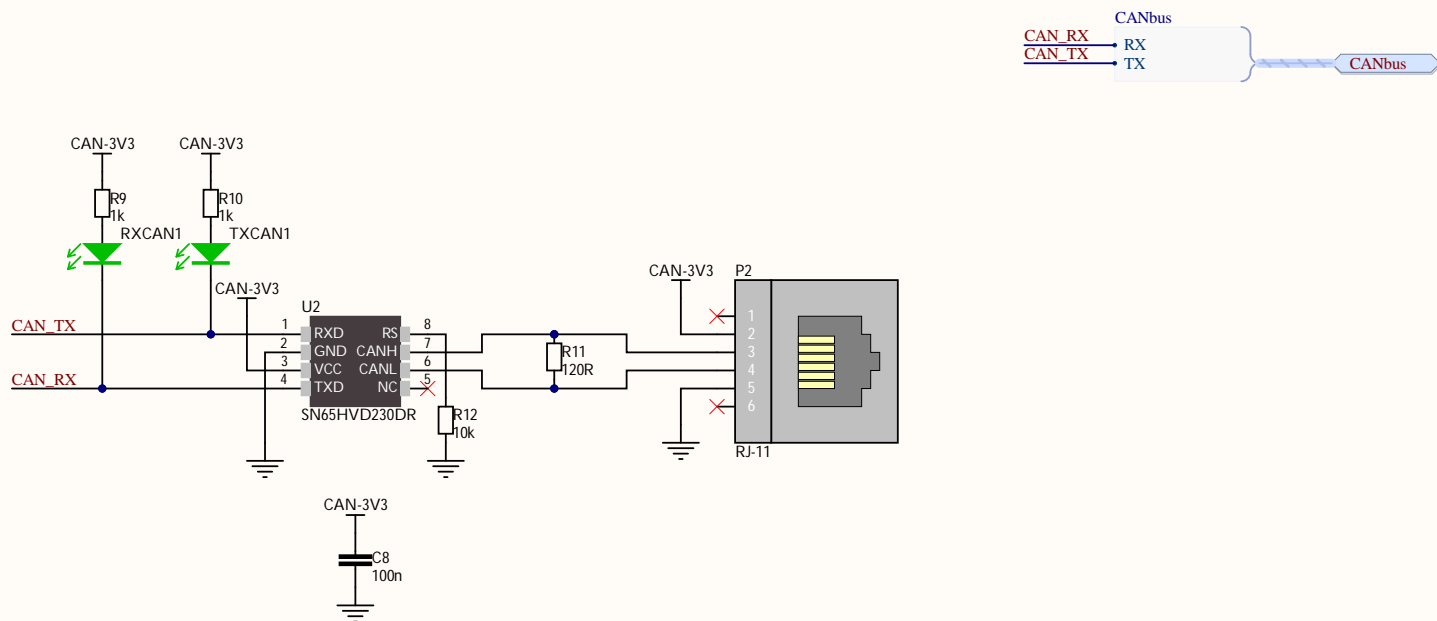
Serbia

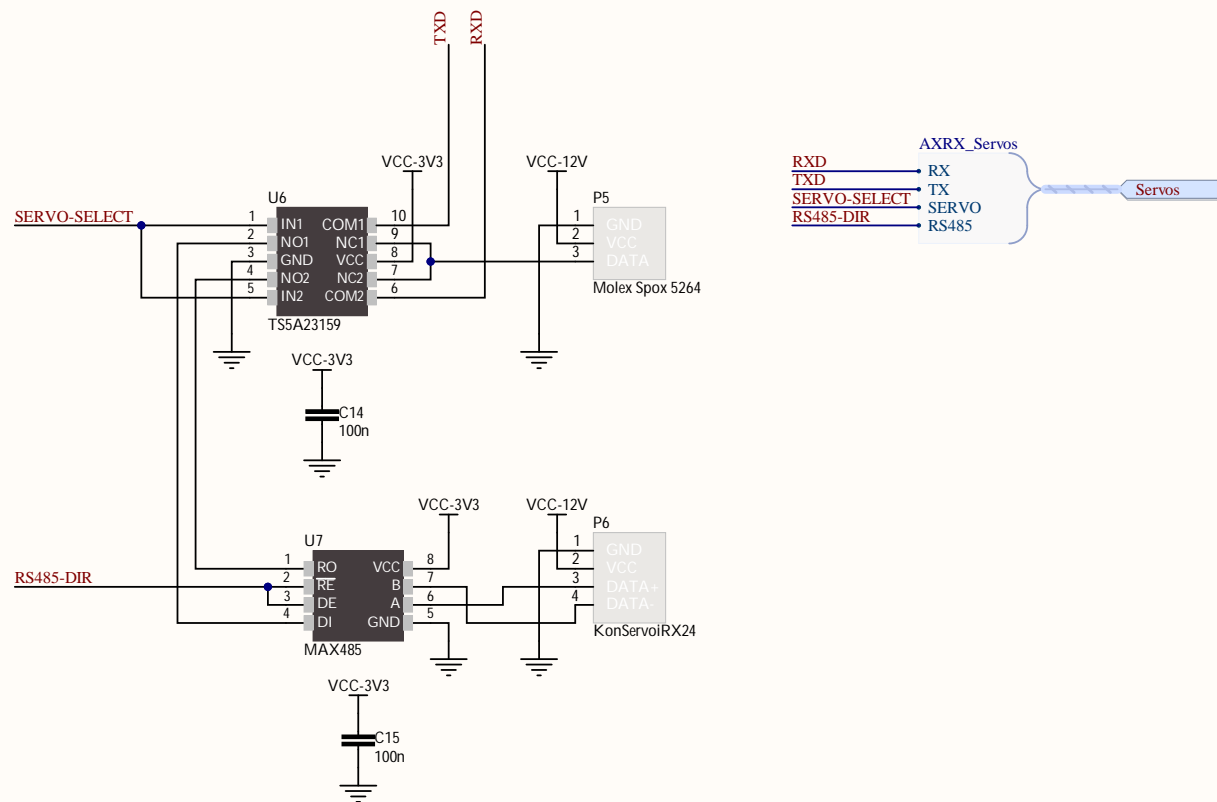
[www.memristor-robotics.io](http://www.memristor-robotics.io)




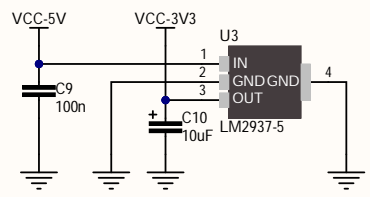



|  |  |  |   |  |
|--|--|--|---|--|
| Title <b>Memristor Power 5.0</b>   |  |  | Memristor-Robotics  |  |
| Design Engineer: <b>Nikola Rašević</b>   |  |  | Vladimira Perića Valtera 2  |  |
| Date: 5.5.2020 Time: 22:43:54  |  |  | 21000 Novi Sad  |  |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\BUCK_5v_TPS |  |  | Serbia  |  |
| Revision: v1   |  |  | www.memristor-robotics.io   |  |
| Size: A4   |  |  |  |  |

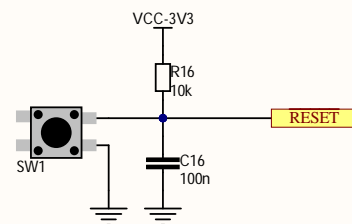





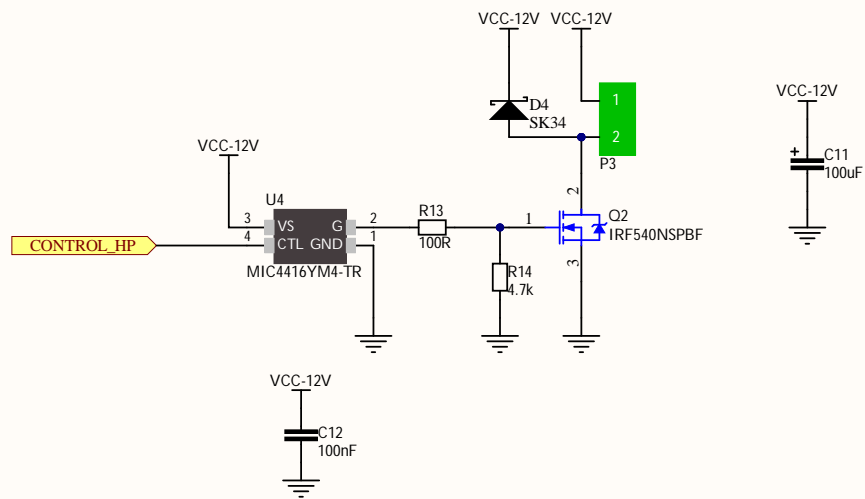
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| Title <b>Dynamixel Servoes Module</b>   |                |              | Memristor Robotics   |  |  |
| Design Engineer: <b>Nikola Rašević</b>  | Revision: *    | Size: A4     | <a href="http://www.memristor-robotics.io">www.memristor-robotics.io</a> |  |   |
| Date: 5.5.2020  | Time: 22:43:54 | Sheet * of * |  |  |   |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\Dynamixel Servoes Module |                |              |  |  |   |



|   |                |              |   |  |
|---|----------------|--------------|---|--|
| Title 3v3 LDO Module  |                |              | Memristor Robotics  |  |
| Design Engineer: Nikola Rašević   | Revision: *    | Size: A4     | *   |  |
| Date: 5.5.2020  | Time: 22:43:54 | Sheet * of * | *   |  |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\LDO_3v3_LM2937-5 |                |              |  |  |



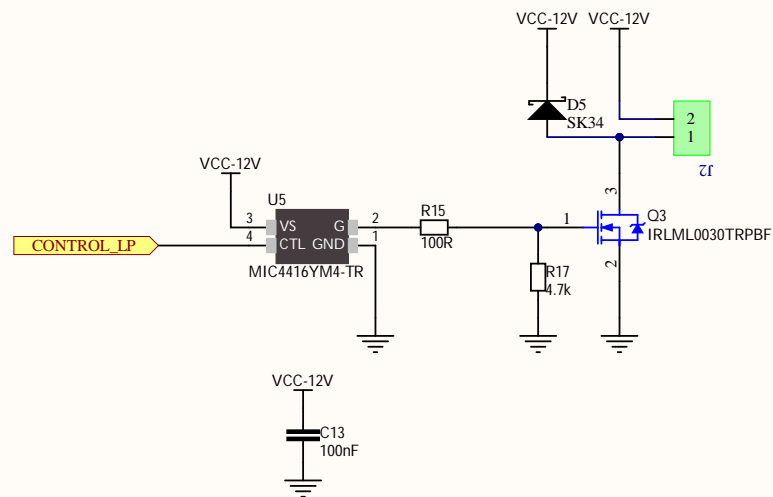
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| Title <b>MCU Reset Module</b>  |                   |                       | Memristor Robotics   |             |  |
| Design Engineer: <b>Nikola Rašević</b>   |                   |                       | Revision:    *   | Size:    A4 |   |
| Date:    5.5.2020  | Time:    22:43:54 | Sheet    *    of    * | <a href="http://www.memristor-robotics.io">www.memristor-robotics.io</a> |             |   |
| File:    D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\MCLR_AVR.Sch |                   |                       |  |             |   |




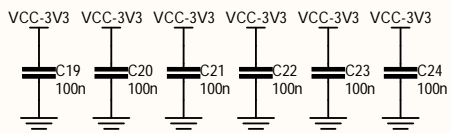
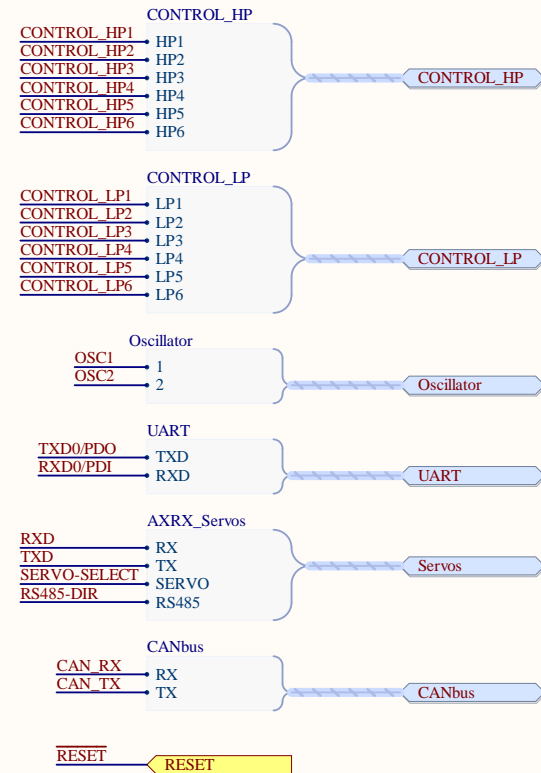
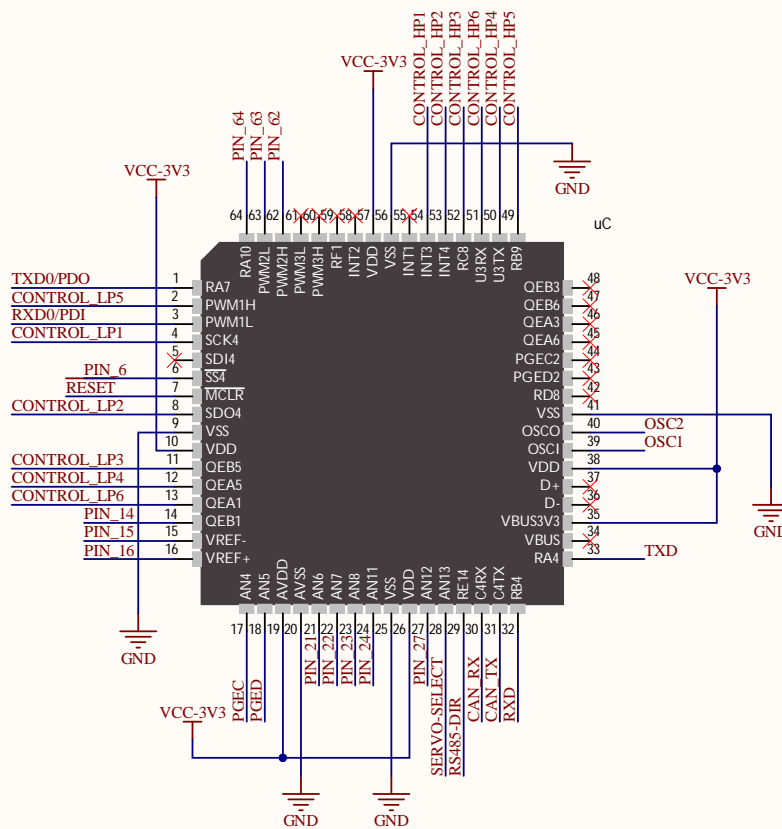
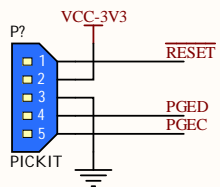
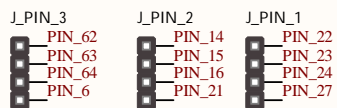
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|--|----------------|--------------|---------------------------|--|
| Title <b>High Power MOSFET</b>   |                |              | Memristor Robotics        |  |
| Design Engineer: <b>Nikola Rašević</b>   | Revision: *    | Size: A4     | *                         |  |
| Date: 5.5.2020   | Time: 22:43:54 | Sheet * of * | *                         |  |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\MOSFET_IRF540 |                |              | www.memristor-robotics.io |  |




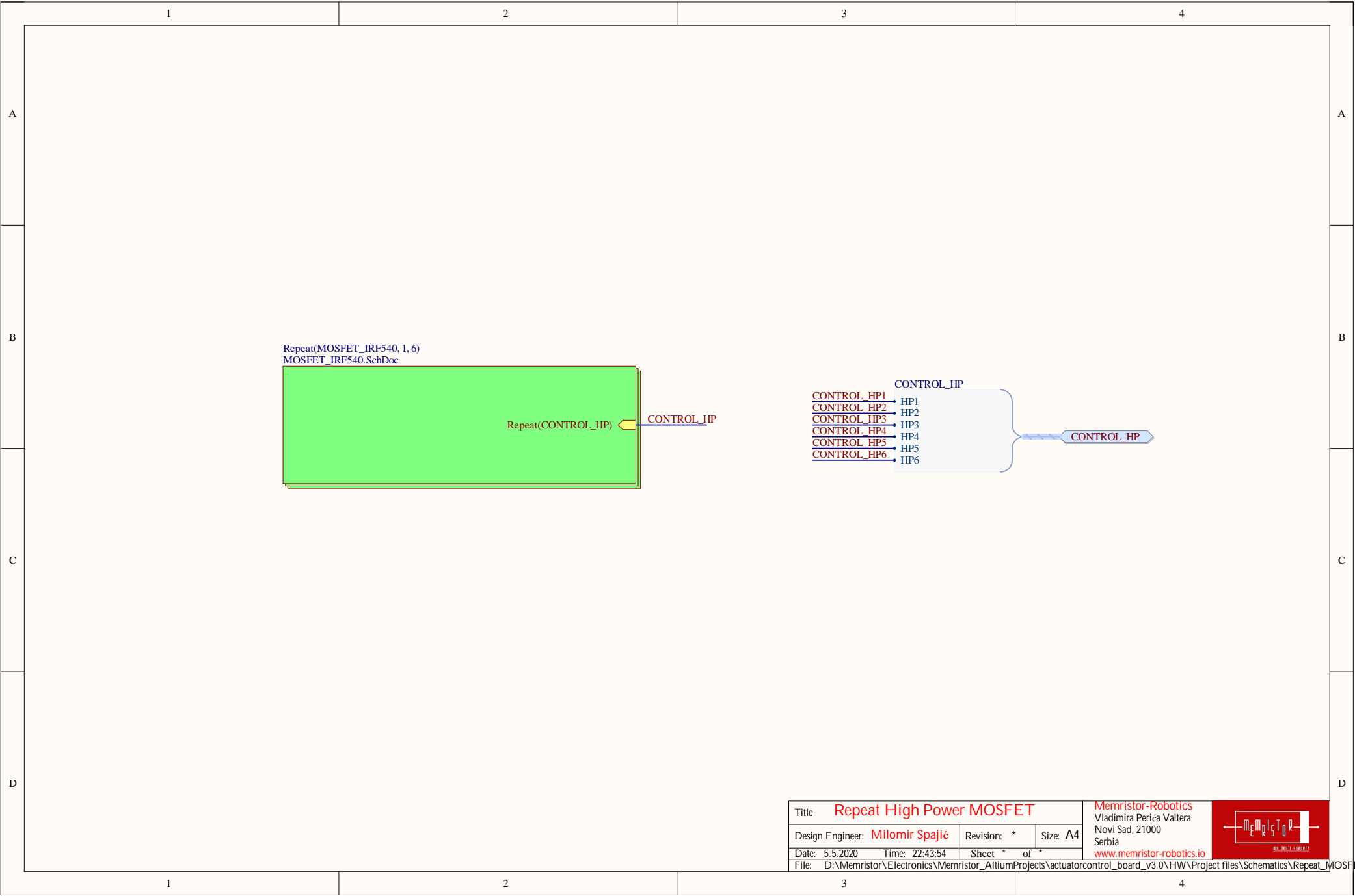


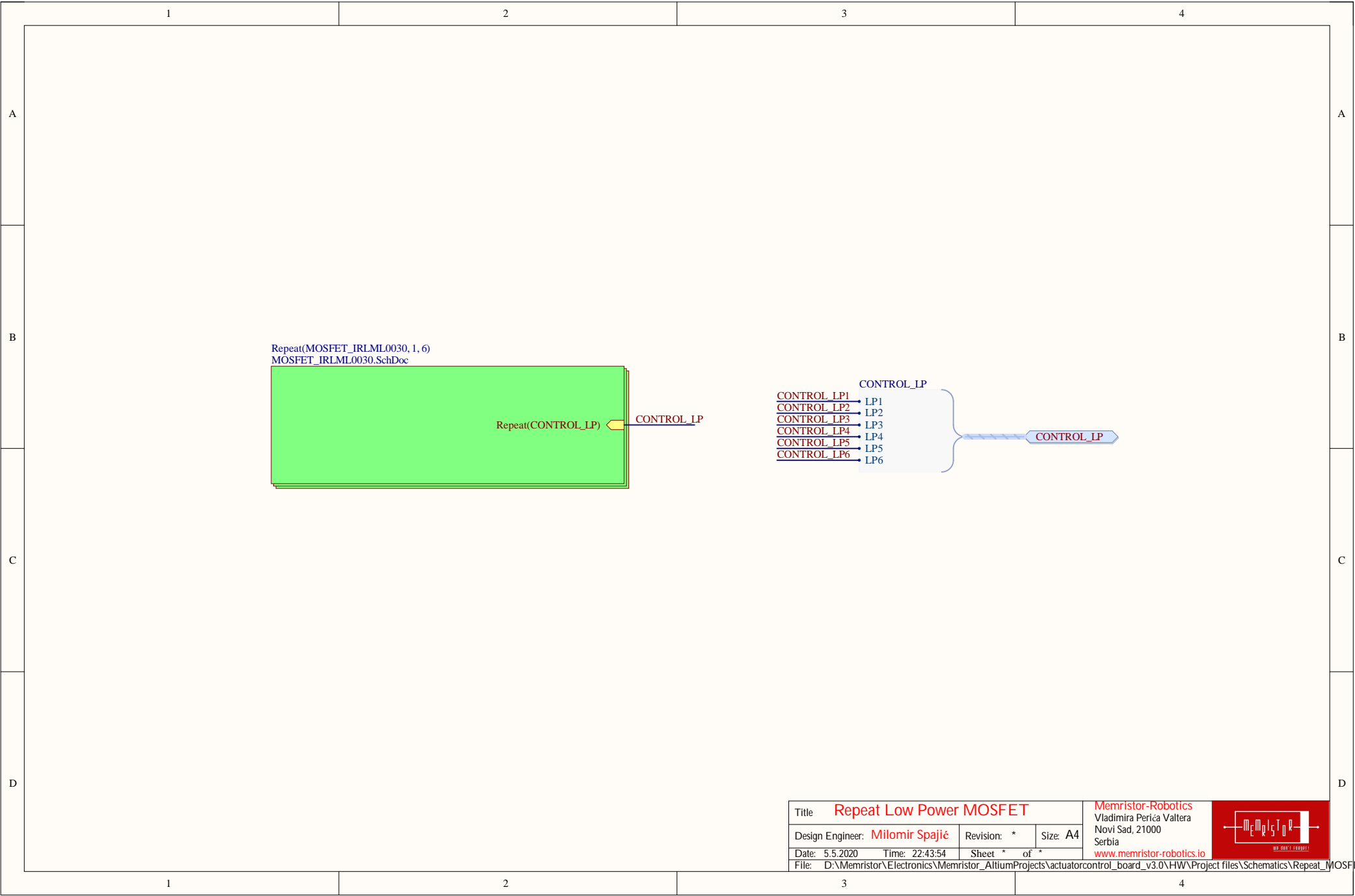


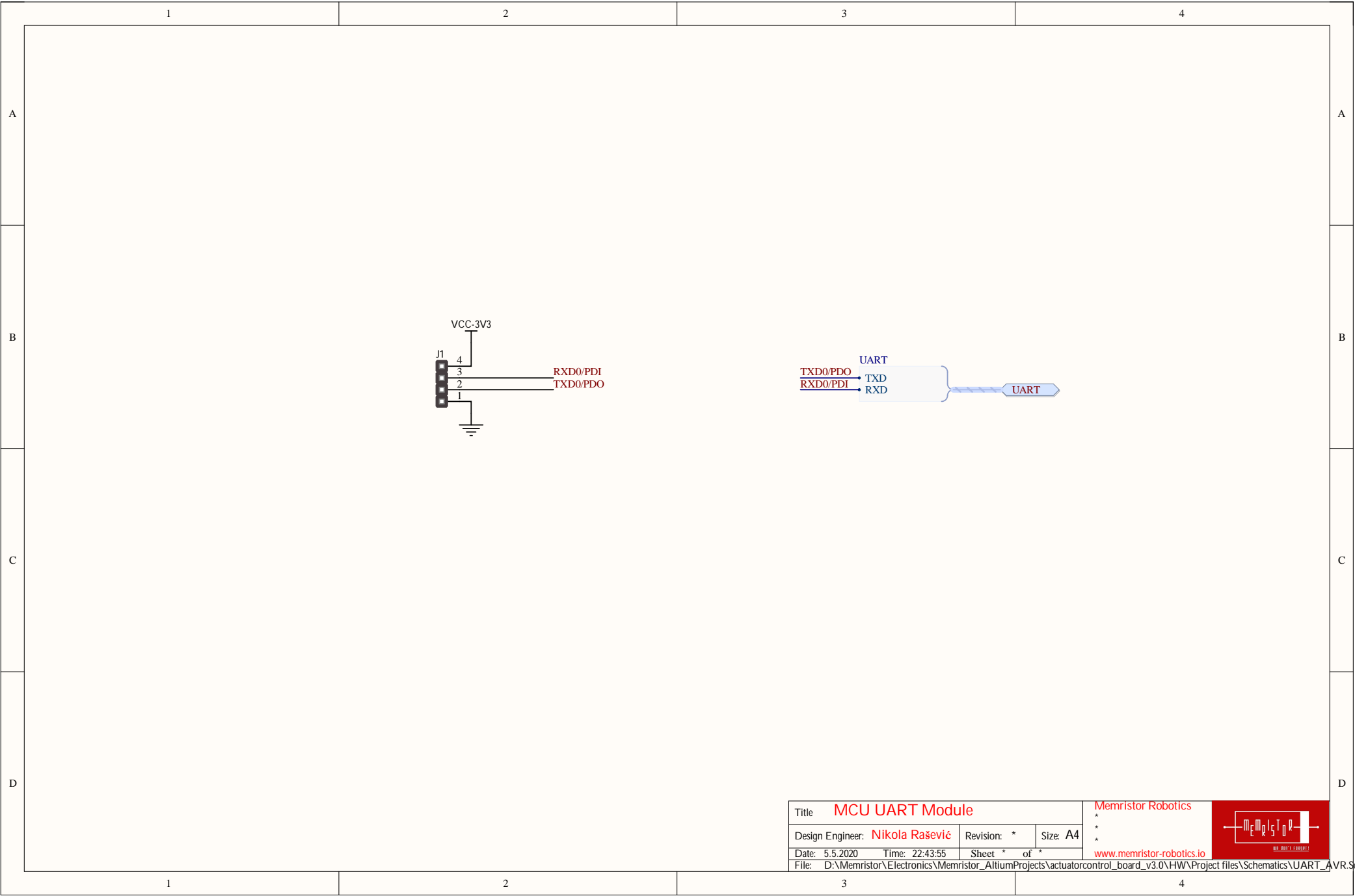
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|---|-------------------|-----------------------|--|--------------------|--|---|
| Title <b>Low Power MOSFET</b>   |                   |                       |  | Memristor Robotics |  |  |
| Design Engineer: <b>Nikola Rašević</b>  |                   | Revision:    *        | Size:    A4  | *<br>*<br>*        |  |   |
| Date:    5.5.2020   | Time:    22:43:54 | Sheet    *    of    * | <a href="http://www.memristor-robotics.io">www.memristor-robotics.io</a> |                    |  |   |
| File:    D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\MOSFET_IRLM |                   |                       |  |                    |  |   |




|   |              |          |   |
|---|--------------|----------|---|
| Title <b>PIC32MK</b>  |              |          |  |
| Design Engineer: <b>Milomir Spajić</b>  | Revision: *  | Size: A4 |   |
| Date: 5.5.2020 Time: 22:43:54   | Sheet * of * |          |   |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\PIC32MK_AQB. |              |          |   |







|   |          |                |                 |           |                    |   |
|---|----------|----------------|-----------------|-----------|--------------------|---|
| Title   |          |                | MCU UART Module |           | Memristor Robotics |   |
| Design Engineer:  |          | Nikola Rašević |                 | Revision: | *                  | Size: A4  |
| Date:   | 5.5.2020 | Time:          | 22:43:55        | Sheet     | *                  | of *  |
| File: D:\Memristor\Electronics\Memristor_AltiumProjects\actuatorcontrol_board_v3.0\HW\Project files\Schematics\UART_AVR.Sch |          |                |                 |           |                    |  |

| Designator   | Manufacturer Part Number  | Description  | Quantity |
|--|---------------------------|--|----------|
| C1, C8, C9, C14, C15, C16, C19, C20, C21, C22, C23, C24  |                           | CAP CER 100n 10V X5R 10% 0603  | 12       |
| C2, C12_MOSFET_IRF5401, C12_MOSFET_IRF5402, C12_MOSFET_IRF5403, C12_MOSFET_IRF5404, C12_MOSFET_IRF5405, C12_MOSFET_IRF5406, C13_MOSFET_IRLML00301, C13_MOSFET_IRLML00302, C13_MOSFET_IRLML00303, C13_MOSFET_IRLML00304, C13_MOSFET_IRLML00305, C13_MOSFET_IRLML00306 |                           | CAP CER 100n 50V X7R 10% 0805  | 13       |
| C3, C4   |                           | CAP CER 2.2u   | 2        |
| C5   |                           | CAP CER 68p 0603   | 1        |
| C6   |                           | CAP CER 100u X5R 6.3V 10% 1210                                       | 1        |
| C7   |                           | CAP CER 15n 0603   | 1        |
| C10  |                           | CAP TANT 10u   | 1        |
| C11_MOSFET_IRF5401, C11_MOSFET_IRF5402, C11_MOSFET_IRF5403, C11_MOSFET_IRF5404, C11_MOSFET_IRF5405, C11_MOSFET_IRF5406   |                           | CAP ALU 4.7u 25V 20%   | 6        |
| C17, C18   |                           | CAP CER 20p 0805   | 2        |
| D1   | B360B                     | DIODE SCHOTTKY 60V 3A DO214AC  | 1        |
| D3   | B360B                     | DIODE ZENER  | 1        |
| D4_MOSFET_IRF5401, D4_MOSFET_IRF5402, D4_MOSFET_IRF5403, D4_MOSFET_IRF5404, D4_MOSFET_IRF5405, D4_MOSFET_IRF5406, D5_MOSFET_IRLML00301, D5_MOSFET_IRLML00302, D5_MOSFET_IRLML00303, D5_MOSFET_IRLML00304, D5_MOSFET_IRLML00305, D5_MOSFET_IRLML00306                 | SK34                      | DIODE SCHOTTKY 40V 3A DO214AC  | 12       |
| J1, J_PIN_1, J_PIN_2, J_PIN_3  |                           |  | 4        |
| J2_MOSFET_IRLML00301, J2_MOSFET_IRLML00302, J2_MOSFET_IRLML00303, J2_MOSFET_IRLML00304, J2_MOSFET_IRLML00305, J2_MOSFET_IRLML00306   |                           | Wire-To-Board Terminal Block, 2, 150 V, 10 A, 30 Awg, 16 Awg, 1.4 Mm | 6        |
| L1   | XAL7030-103MEB            | FIXED IND 10uH 5.3A  | 1        |
| P1   | 2EDGRC-5.08-02P-14-00A(H) | TERM BLOCK HDR 2POS 90DEG 5.08MM                                     | 1        |
| P2   | RJ-11                     |  | 1        |
| P3_MOSFET_IRF5401, P3_MOSFET_IRF5402, P3_MOSFET_IRF5403, P3_MOSFET_IRF5404, P3_MOSFET_IRF5405, P3_MOSFET_IRF5406   |                           | CONNECTOR FOR MOTOR OUTPUT   | 6        |
| P5   |                           | KonServoiAX12  | 1        |
| P6   |                           | Molex Spox 5264  | 1        |
| P7   |                           | BLUE_5PIN_CONNECTOR  | 1        |
| Q1   | IRF9540NSPBF              | P-MOS  | 1        |
| Q2_MOSFET_IRF5401, Q2_MOSFET_IRF5402, Q2_MOSFET_IRF5403, Q2_MOSFET_IRF5404, Q2_MOSFET_IRF5405, Q2_MOSFET_IRF5406   | IRF540NSPBF               | N-MOS  | 6        |
| Q3_MOSFET_IRLML00301, Q3_MOSFET_IRLML00302, Q3_MOSFET_IRLML00303, Q3_MOSFET_IRLML00304, Q3_MOSFET_IRLML00305, Q3_MOSFET_IRLML00306   | IRLML0030TRPBF            | N-MOS  | 6        |
| R1   |                           | RES SMD 330 kOhm 1/8W 0805   | 1        |
| R2   |                           | RES SMD 51 kOhm 1/8W 0805  | 1        |
| R3   |                           | RES SMD 56 kOhm 1/8W 0805  | 1        |
| R4   |                           | RES SMD 160 kOhm 1/8W 0805   | 1        |
| R5   |                           | RES SMD 15 kOhm 1/8W 0805  | 1        |
| R6   |                           | RES SMD 9.1 kOhm 1/8W 0805   | 1        |
| R7   |                           | RES SMD 2.7 kOhm 1/8W 0805   | 1        |
| R8   |                           | RES SMD 620 Ohm 1/8W 0805  | 1        |
| R9, R10  |                           | RES SMD 1 kOhm 1/8W 0805   | 2        |
| R11  |                           | RES SMD 120 Ohm 1/8W 0805  | 1        |
| R12, R16   |                           | RES SMD 10 kOhm 1/8W 0805  | 2        |
| R13_MOSFET_IRF5401, R13_MOSFET_IRF5402, R13_MOSFET_IRF5403, R13_MOSFET_IRF5404, R13_MOSFET_IRF5405, R13_MOSFET_IRF5406, R15_MOSFET_IRLML00301, R15_MOSFET_IRLML00302, R15_MOSFET_IRLML00303, R15_MOSFET_IRLML00304, R15_MOSFET_IRLML00305, R15_MOSFET_IRLML00306     |                           | RES SMD 100 Ohm 1/8W 0805  | 12       |
| R14_MOSFET_IRF5401, R14_MOSFET_IRF5402, R14_MOSFET_IRF5403, R14_MOSFET_IRF5404, R14_MOSFET_IRF5405, R14_MOSFET_IRF5406, R17_MOSFET_IRLML00301, R17_MOSFET_IRLML00302, R17_MOSFET_IRLML00303, R17_MOSFET_IRLML00304, R17_MOSFET_IRLML00305, R17_MOSFET_IRLML00306     |                           | RES SMD 4.7 kOhm 1/8W 0805   | 12       |
| RXCAN1, TXCAN1   | APT2012SGC                | LED GREEN CLEAR 0805 SMD   | 2        |
| SW1  |                           |  | 1        |
| U1   | TPS54340                  | IC REG BUCK ADJ 3.5A 8SOPWVRPAD                                      | 1        |
| U2   | SN65HVD230DR              | IC EMC CAN TRANSCIEVER 8-SOIC  | 1        |
| U3   | LM2937-5                  | IC REG LINEAR 5V 400MA SOT223-4                                      | 1        |
| U4_MOSFET_IRF5401, U4_MOSFET_IRF5402, U4_MOSFET_IRF5403, U4_MOSFET_IRF5404, U4_MOSFET_IRF5405, U4_MOSFET_IRF5406, U5_MOSFET_IRLML00301, U5_MOSFET_IRLML00302, U5_MOSFET_IRLML00303, U5_MOSFET_IRLML00304, U5_MOSFET_IRLML00305, U5_MOSFET_IRLML00306                 | MIC4416YM4-TR             | IC DRIVER MOSF LOW SIDE SOT143-4                                     | 12       |
| U6   | TSSA23159                 | IC SWITCH DUAL SPDT 10MSOP   | 1        |
| U7   | MAX485                    | IC TXRX RS485/RS422 8-SOIC   | 1        |
| uC   | PIC32MK1024MCF064         | IC MCU 32BIT 1MB FLASH 64TOFP  | 1        |
| Y1   | ABMM2-8.000MHZ-E2-T       | CRYSTAL 8.0000MHZ 18PF SMD   | 1        |