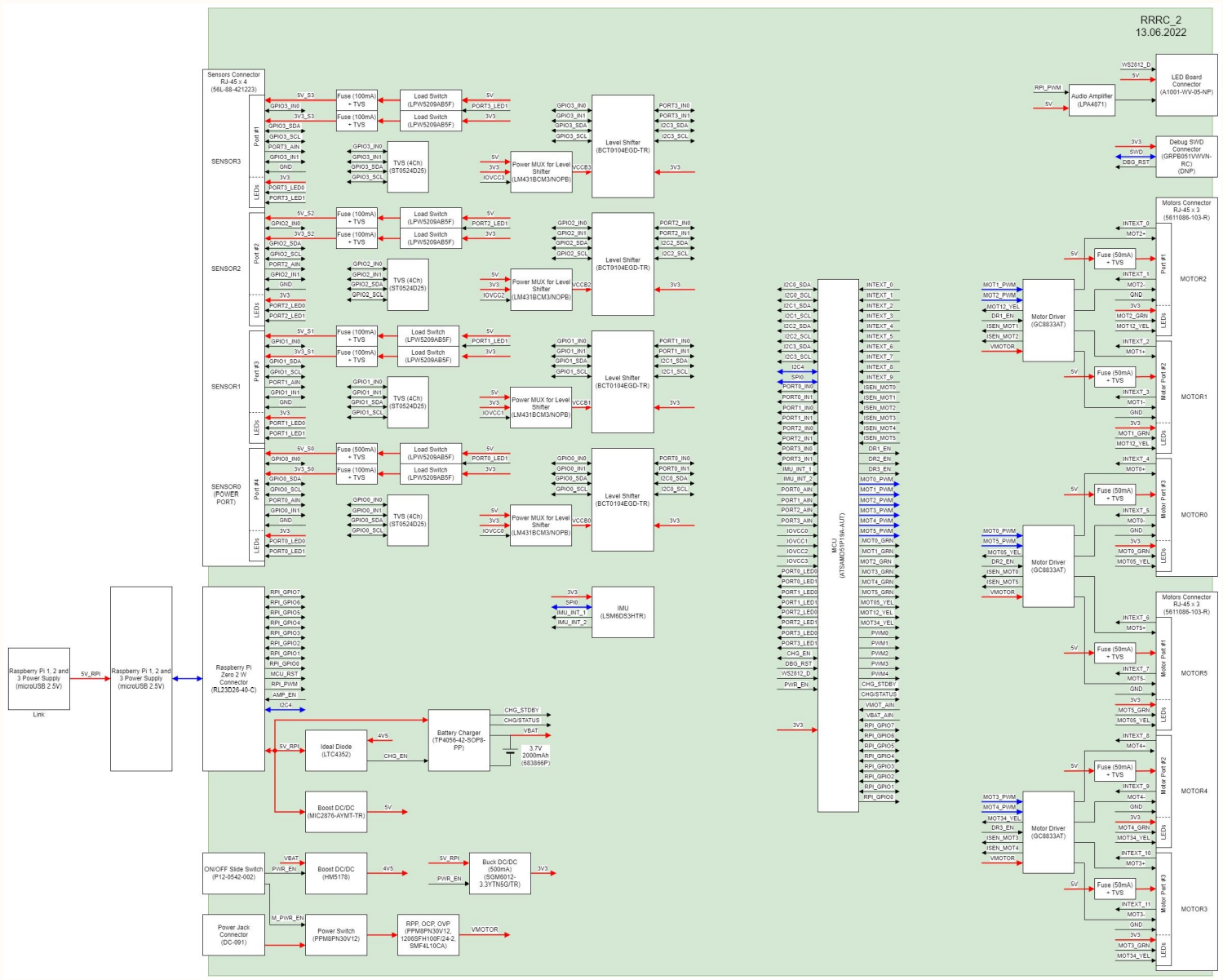

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MCU	3
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RPi Connector	7
Mechanicals	8

Revision	Date	Change
1.1	08.07.2021	Initial version
2.2	01.06.2022	Some components were changed

Project Name	RRRCv2		
Title	Title	Revision	2.2.1
Size A2	Author Aleksandr Dudko	Reviewed YES	Approved YES
Date: 27.06.2022		Sheet 1	of 8

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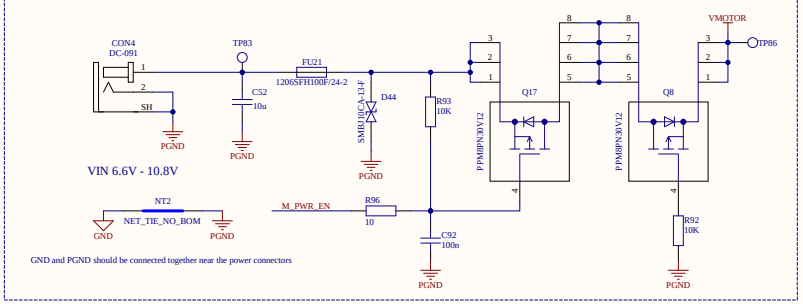
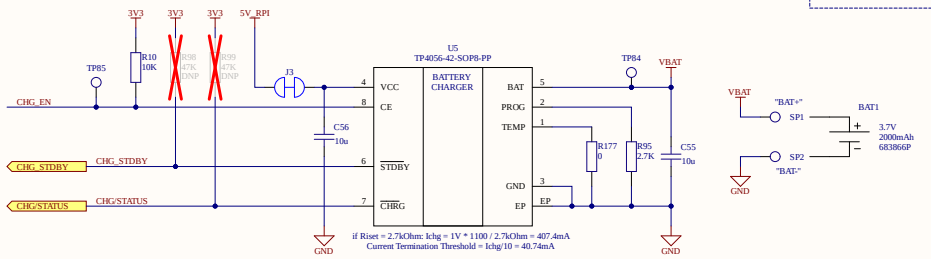
Power Input for Motors

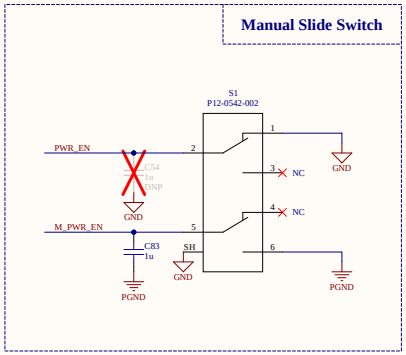


GND and PGND should be connected together near the power connectors

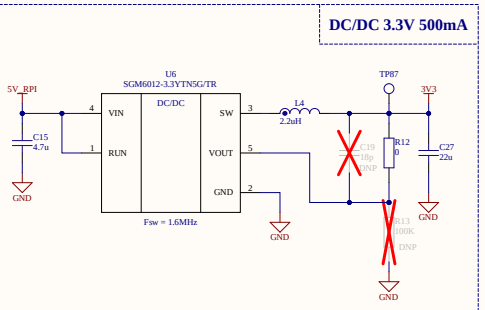
Battery Charger



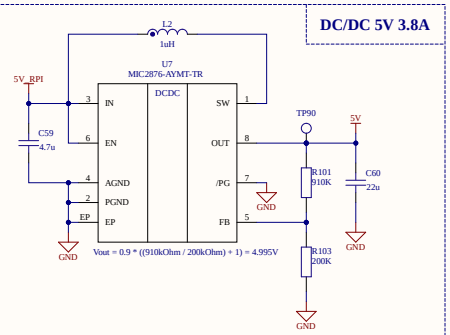
Manual Slide Switch



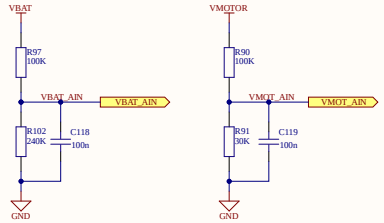
DC/DC 3.3V 500mA



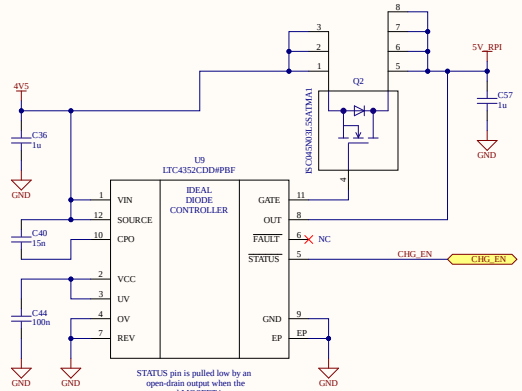
DC/DC 5V 3.8A



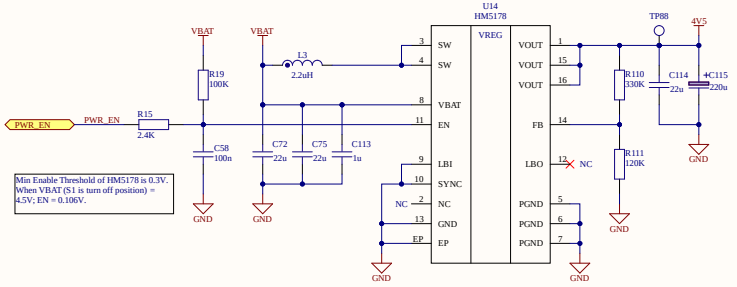
Measuring Voltages



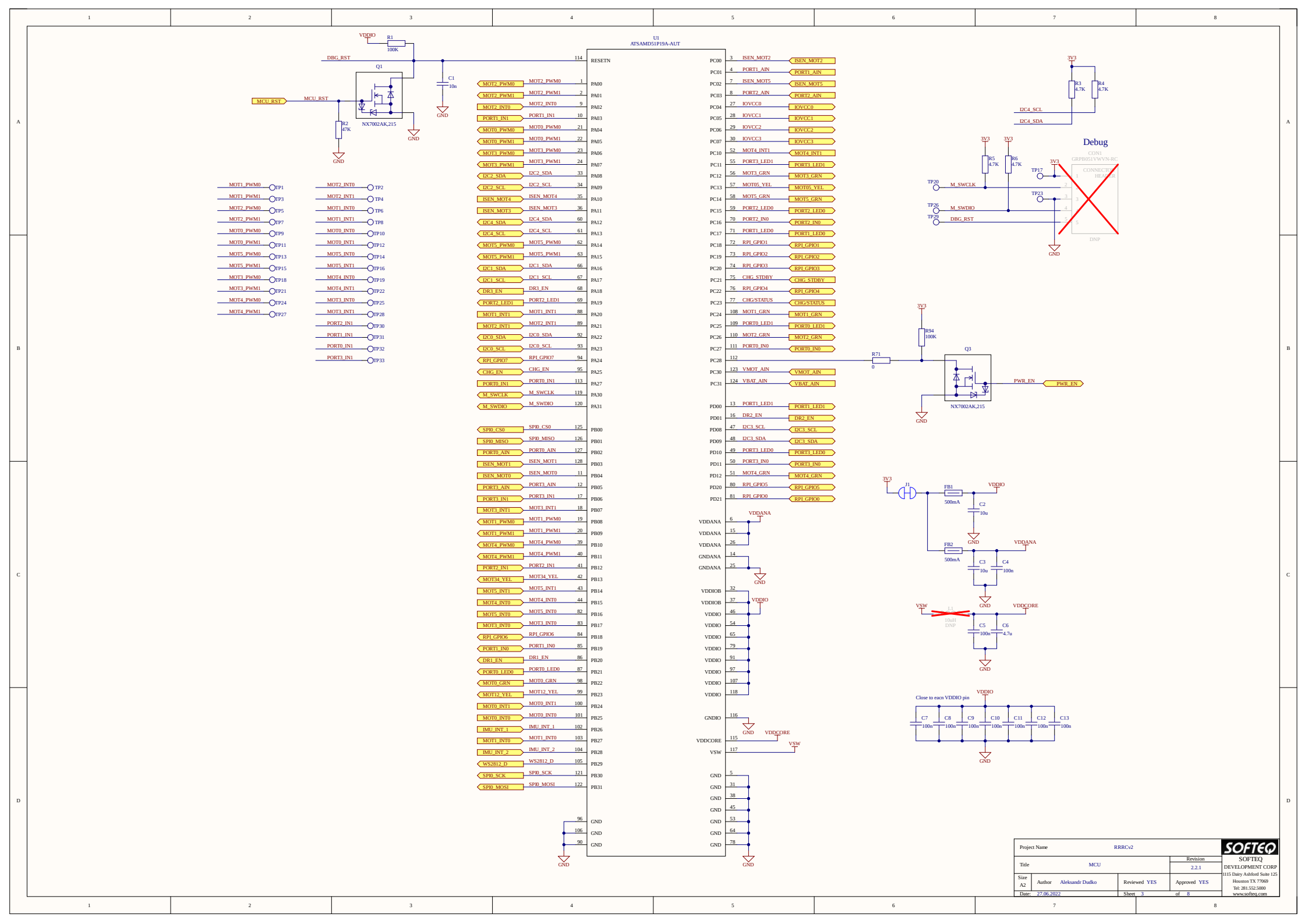
Ideal Diode



DC/DC 4.5V 2.5A



Project Name	RRRCv2		SOFTEQ
Title	Power	Revision	SOFTEQ DEVELOPMENT CORP
		2.2.1	1115 Dairy Ashford Suite 125 Houston TX 77069 Tel: 281.552.5000 www.softeq.com
Size A2	Author Aleksandr Dudko	Reviewed YES	Approved YES
Date: 27.06.2022		Sheet 2	of 8


U1
ATSAMD51P19A-AUT
RESETN
PA00
PA01
PA02
PA03
PA04
PA05
PA06
PA07
PA08
PA09
PA10
PA11
PA12
PA13
PA14
PA15
PA16
PA17
PA18
PA19
PA20
PA21
PA22
PA23
PA24
PA25
PA27
PA30
PA31
PB00
PB01
PB02
PB03
PB04
PB05
PB06
PB07
PB08
PB09
PB10
PB11
PB12
PB13
PB14
PB15
PB16
PB17
PB18
PB19
PB20
PB21
PB22
PB23
PB24
PB25
PB26
PB27
PB28
PB29
PB30
PB31
PC00
PC01
PC02
PC03
PC04
PC05
PC06
PC07
PC10
PC11
PC12
PC13
PC14
PC15
PC16
PC17
PC18
PC19
PC20
PC21
PC22
PC23
PC24
PC25
PC26
PC27
PC28
PC30
PC31
PD00
PD01
PD08
PD09
PD10
PD11
PD12
PD20
PD21
VDDANA
GNDANA
VDDIOB
VDDIO
GNDIO
VDDCORE
VSW
GND
VDDIO
R1
100K
DBG_RST
Q1
MCU_RST
NX7002AK,215
R2
47K
C1
10n
GND
R3
4.7K
R4
4.7K
3V3
I2C4_SCL
I2C4_SDA
Debug
R5
4.7K
R6
4.7K
TP17
TP20
M_SWCLK
TP23
TP26
M_SWDIO
TP29
DBG_RST
CON1
GRPB051VWVN-RC
CONNECTOR
HEADER
DNP
R94
100K
R71
0
Q3
PWR_EN
NX7002AK,215
J1
FB1
500mA
FB2
500mA
C2
10u
C3
10u
C4
100n
VDDANA
VSW
L1
10uH
DNP
C5
100n
C6
4.7u
VDDCORE
Close to eacn VDDIO pin
C7
100n
C8
100n
C9
100n
C10
100n
C11
100n
C12
100n
C13
100n
MOT1_PWM0
MOT1_PWM1
MOT2_PWM0
MOT2_PWM1
MOT0_PWM0
MOT0_PWM1
MOT5_PWM0
MOT5_PWM1
MOT3_PWM0
MOT3_PWM1
MOT4_PWM0
MOT4_PWM1
MOT2_INT0
MOT2_INT1
MOT1_INT0
MOT1_INT1
MOT0_INT0
MOT0_INT1
MOT5_INT0
MOT5_INT1
MOT4_INT0
MOT4_INT1
MOT3_INT0
MOT3_INT1
PORT2_IN1
PORT1_IN1
PORT0_IN1
PORT3_IN1
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP18
TP19
TP21
TP22
TP24
TP25
TP27
TP28
TP30
TP31
TP32
TP33
ISEN_MOT2
PORT1_AIN
ISEN_MOT5
PORT2_AIN
IOVCC0
IOVCC1
IOVCC2
IOVCC3
MOT4_INT1
PORT3_LED1
MOT3_GRN
MOT05_YEL
MOT5_GRN
PORT2_LED0
PORT2_IN0
PORT1_LED0
RPI_GPIO1
RPI_GPIO2
RPI_GPIO3
CHG_STDBY
RPI_GPIO4
CHG/STATUS
MOT1_GRN
PORT0_LED1
MOT2_GRN
PORT0_IN0
VMOT_AIN
VBAT_AIN
PORT1_LED1
DR2_EN
I2C3_SCL
I2C3_SDA
PORT3_LED0
PORT3_IN0
MOT4_GRN
RPI_GPIO5
RPI_GPIO0
SPI0_CS0
SPI0_MISO
PORT0_AIN
ISEN_MOT1
ISEN_MOT0
PORT3_AIN
PORT3_IN1
MOT3_INT1
MOT1_PWM0
MOT1_PWM1
MOT4_PWM0
MOT4_PWM1
PORT2_IN1
MOT34_YEL
MOT5_INT1
MOT4_INT0
MOT5_INT0
MOT3_INT0
RPI_GPIO6
PORT1_IN0
DR1_EN
PORT0_LED0
MOT0_GRN
MOT12_YEL
MOT0_INT1
MOT0_INT0
IMU_INT_1
MOT1_INT0
IMU_INT_2
WS2812_D
SPI0_SCK
SPI0_MOSI
M_SWCLK
M_SWDIO
DR3_EN
CHG_EN
PORT0_IN1
I2C2_SDA
I2C2_SCL
ISEN_MOT4
ISEN_MOT3
I2C4_SDA
I2C4_SCL
MOT5_PWM0
MOT5_PWM1
I2C1_SDA
I2C1_SCL
PORT2_LED1
MOT1_INT1
MOT2_INT1
I2C0_SDA
I2C0_SCL
RPI_GPIO7
CHG_EN
PORT0_IN1
M_SWCLK
M_SWDIO
Project Name
RRRCv2
Title
MCU
Revision
2.2.1
Size
A2
Author
Aleksandr Dudko
Reviewed
YES
Approved
YES
Date:
27.06.2022
Sheet
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8
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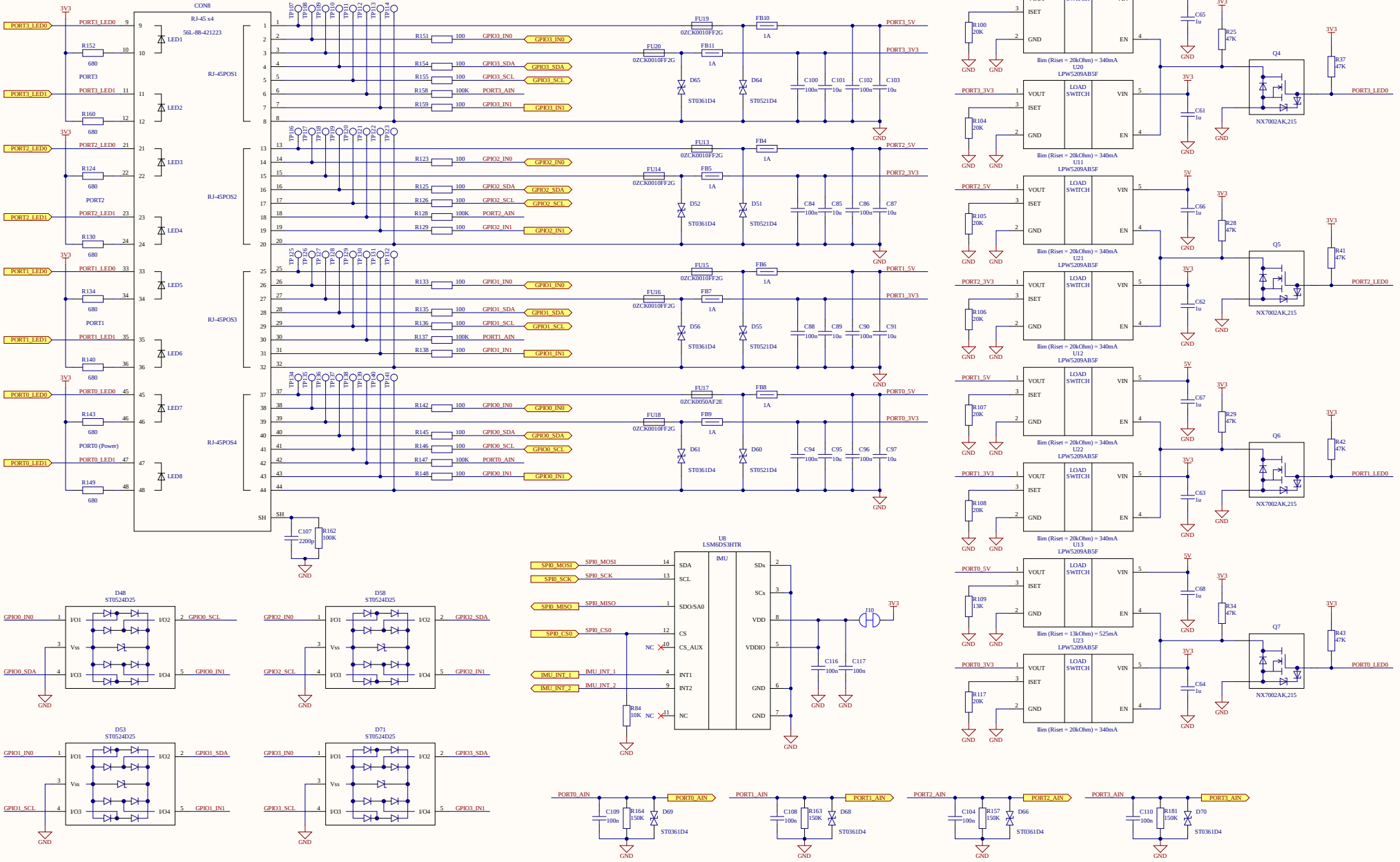
Port array for sensors



Project Name	RRRCv2		SOFTEQ
Title	Sensor Ports	Revision	2.2.1
Size A2	Author Aleksandr Dudko	Reviewed YES	Approved YES
Date: 27.06.2022		Sheet 4	of 8

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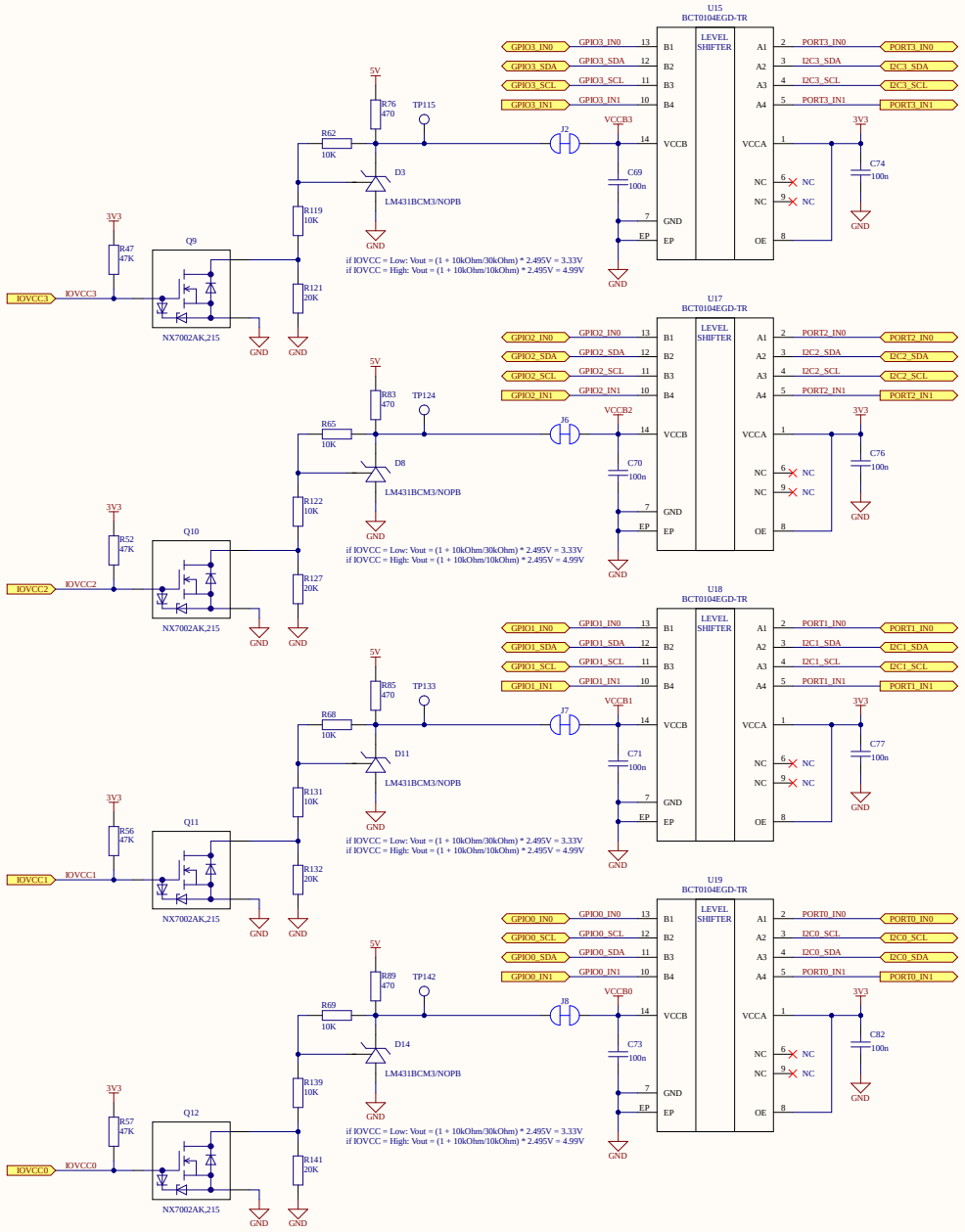

Project Name	RRRCv2		SOFTEQ
Title	Level Shifters	Revision	2.2.1
Size A2	Author Aleksandr Dudko	Reviewed YES	Approved YES
Date: 27.06.2022	Sheet 5	of 8	

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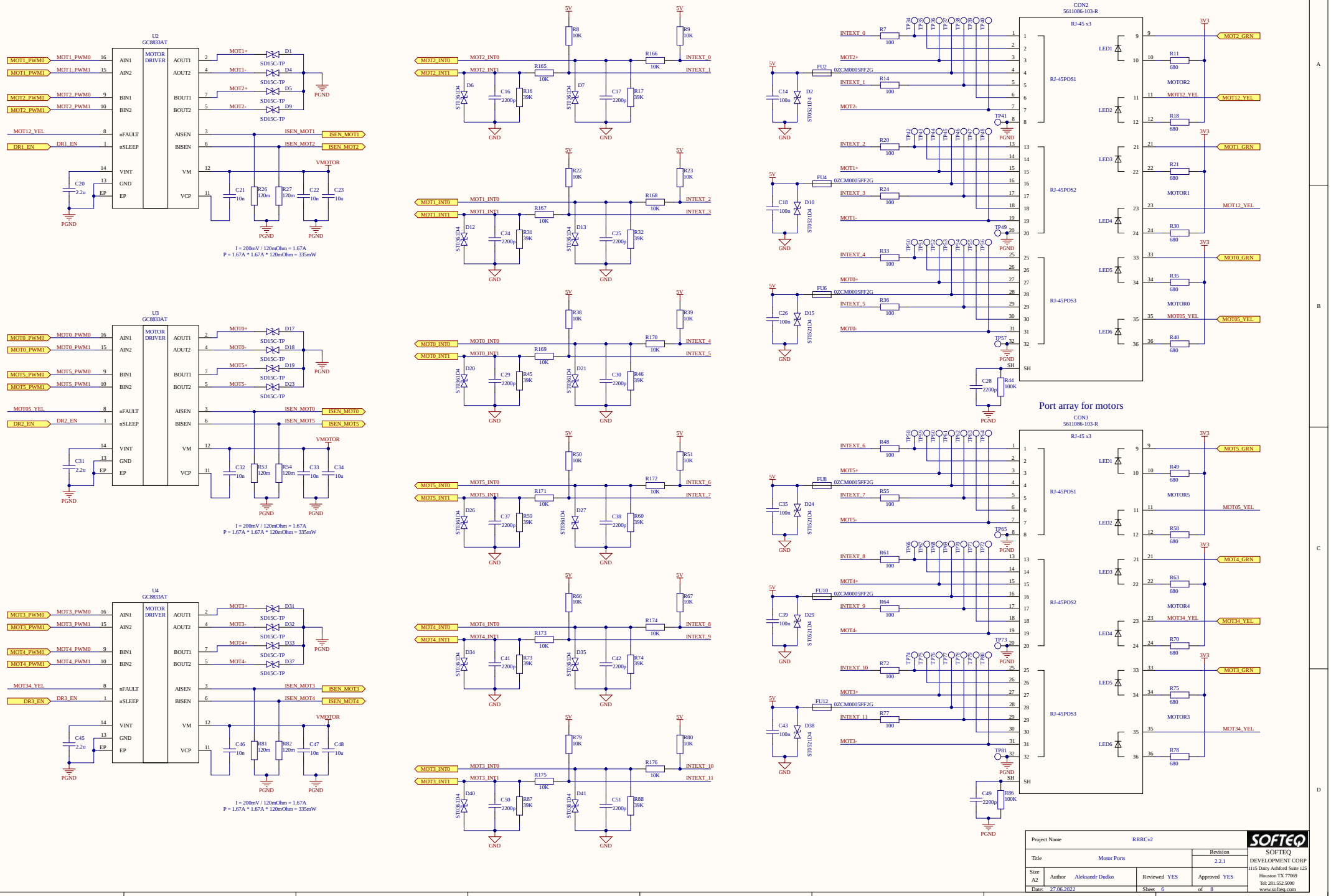
U2
GC8833AT
MOTOR DRIVER
MOT1_PWM0
MOT1_PWM1
MOT2_PWM0
MOT2_PWM1
MOT12_YEL
DR1_EN
AIN1
AIN2
BIN1
BIN2
nFAULT
nSLEEP
VINT
GND
EP
AOUT1
AOUT2
BOUT1
BOUT2
AISEN
BISEN
VM
VCP
MOT1+
MOT1-
MOT2+
MOT2-
D1
D4
D5
D9
SD15C-TP
PGND
ISEN_MOT1
ISEN_MOT2
VMOTOR
C20 2.2u
C21 10n
R26 120m
R27 120m
C22 10n
C23 10u
I = 200mV / 120mOhm = 1.67A
P = 1.67A * 1.67A * 120mOhm = 335mW
U3
GC8833AT
MOT0_PWM0
MOT0_PWM1
MOT5_PWM0
MOT5_PWM1
MOT05_YEL
DR2_EN
MOT0+
MOT0-
MOT5+
MOT5-
D17
D18
D19
D23
ISEN_MOT0
ISEN_MOT5
C31 2.2u
C32 10n
R53 120m
R54 120m
C33 10n
C34 10u
U4
GC8833AT
MOT3_PWM0
MOT3_PWM1
MOT4_PWM0
MOT4_PWM1
MOT34_YEL
DR3_EN
MOT3+
MOT3-
MOT4+
MOT4-
D31
D32
D33
D37
ISEN_MOT3
ISEN_MOT4
C45 2.2u
C46 10n
R81 120m
R82 120m
C47 10n
C48 10u
5V
MOT2_INT0
MOT2_INT1
R8 10K
R9 10K
R165 10K
R166 10K
INTEXT_0
INTEXT_1
D6
D7
C16 2200p
C17 2200p
R16 39K
R17 39K
GND
MOT1_INT0
MOT1_INT1
R22 10K
R23 10K
R167 10K
R168 10K
INTEXT_2
INTEXT_3
D12
D13
C24 2200p
C25 2200p
R31 39K
R32 39K
MOT0_INT0
MOT0_INT1
R38 10K
R39 10K
R169 10K
R170 10K
INTEXT_4
INTEXT_5
D20
D21
C29 2200p
C30 2200p
R45 39K
R46 39K
MOT5_INT0
MOT5_INT1
R50 10K
R51 10K
R171 10K
R172 10K
INTEXT_6
INTEXT_7
D26
D27
C37 2200p
C38 2200p
R59 39K
R60 39K
MOT4_INT0
MOT4_INT1
R66 10K
R67 10K
R173 10K
R174 10K
INTEXT_8
INTEXT_9
D34
D35
C41 2200p
C42 2200p
R73 39K
R74 39K
MOT3_INT0
MOT3_INT1
R79 10K
R80 10K
R175 10K
R176 10K
INTEXT_10
INTEXT_11
D40
D41
C50 2200p
C51 2200p
R87 39K
R88 39K
Port array for motors
CON2
5611086-103-R
RJ-45 x3
RJ-45POS1
RJ-45POS2
RJ-45POS3
INTEXT_0
INTEXT_1
INTEXT_2
INTEXT_3
INTEXT_4
INTEXT_5
MOT2+
MOT2-
MOT1+
MOT1-
MOT0+
MOT0-
FU2
FU4
FU6
0ZCM0005FF2G
D2
D10
D15
C14 100n
C18 100n
C26 100n
C28 2200p
R44 100K
SH
TP41
TP49
TP57
LED1
LED2
LED3
LED4
LED5
LED6
R11 680
R18 680
R21 680
R30 680
R35 680
R40 680
MOTOR2
MOTOR1
MOTOR0
MOT2_GRN
MOT12_YEL
MOT1_GRN
MOT0_GRN
MOT05_YEL
3V3
CON3
5611086-103-R
INTEXT_6
INTEXT_7
INTEXT_8
INTEXT_9
INTEXT_10
INTEXT_11
MOT5+
MOT5-
MOT4+
MOT4-
MOT3+
MOT3-
FU8
FU10
FU12
D24
D29
D38
C35 100n
C39 100n
C43 100n
C49 2200p
R86 100K
TP65
TP73
TP81
R49 680
R58 680
R63 680
R70 680
R75 680
R78 680
MOTOR5
MOTOR4
MOTOR3
MOT5_GRN
MOT34_YEL
MOT4_GRN
MOT3_GRN
MOT34_YEL
Project Name
RRRCv2
Title
Motor Ports
Revision
2.2.1
Size
A2
Author
Aleksandr Dudko
Reviewed
YES
Approved
YES
Date:
27.06.2022
Sheet
6
of
8
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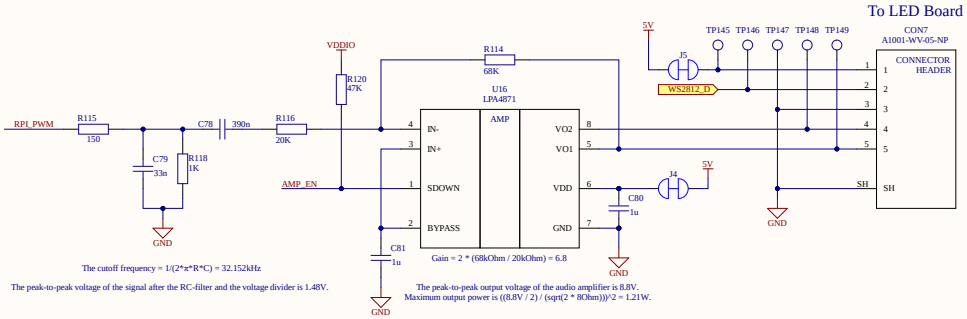

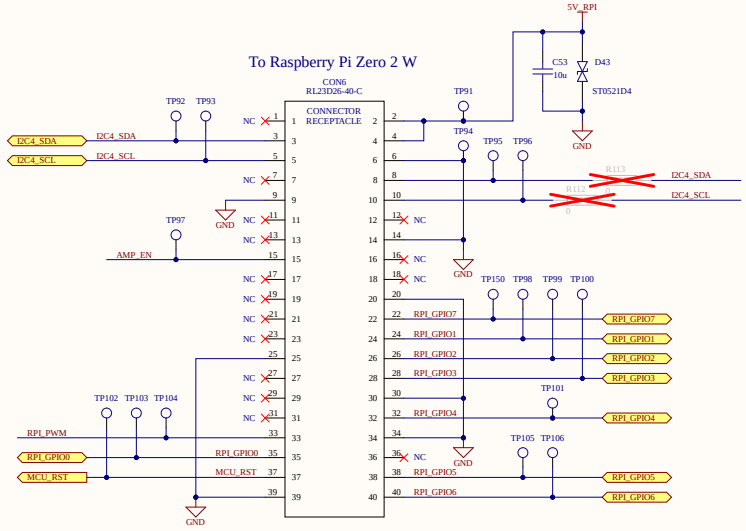

Project Name	RRRCv2		
Title	RPi Connector		Revision 2.2.1
Size A2	Author Aleksandr Dudko	Reviewed YES	Approved YES
Date: 27.06.2022		Sheet 7	of 8

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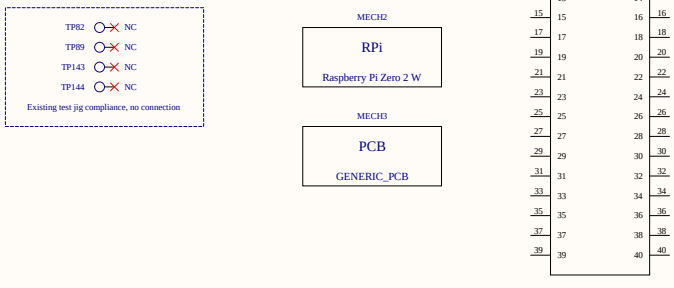

Project Name	RRRCv2		SOFTEQ
Title	Mechanicals	Revision	SOFTEQ DEVELOPMENT CORP
		2.2.1	1115 Dairy Ashford Suite 125
Size A2	Author Aleksandr Dudko	Reviewed YES	Approved YES
Date: 27.06.2022		Sheet 8	of 8

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