Sheet: Power System

File: Power_System.sch

Sheet: Nano Interface

File: Nano_Interface.sch

Sheet: Sensors

File: Sensors.sch

Sheet: Actuators

File: Actuators.sch

LOGIC
GSE
INPUT

J2
Barrel_Jack

C1
1uF

GND

FOR REV B:
R5 = 2.7k
R4 = 2k

23.7k R1

10.2k R4

5k R2

5k R5

GND

GND

U6
TPS2121RUXR

771 IN1   OUT 881
6 PR1   ST 9
5 OV1

GND

+5V

SW1

1   2
SW_SPST

LOGIC
BUS

C5
100uF

R9
47R

FOR REV B:
ADD MORE THAN OR EQUAL TO 100uF

D2
LED

221 IN2
4 OV2

3 CP2

11 SS
10 ILIM

GND 12

GND

GND

C4
1uF

R8
18.7k

GND

D1
STPS5L60S

23.7k R6

5k R7

GND

FOR REV B:
INSTALL 5V->2k->CP2->2k->GND
AND
C4 = 0.01uF

LOGIC
BATTERY
INPUT

J1
Conn_01x02_Male

VLOGIC_BAT

C2
1uF

GND

PS1
R-745.0D

VIN   VOUT 50

ON/OFF

VADJ 12

GND 8

R3
2.6k

C3
100uF

GND

MOTOR
BATTERY
INPUT

J3
Conn_01x02_Male

VMOTOR_BAT

C6
1uF

GND

JLBAT1

JMBAT1

JVBUS1

C7
1uF

C8
10uF

C9
100uF

GND   GND   GND

SW2

1   2
SW_SPST

VBUS

MOTOR
BUS

R10
470

D3
LED

GND

DRIVE MOTOR

STEERING SERVO

+5V

C10
0.1uF
GND

+5V
R12 10k
R13 10k

+5V
R11 10k

GND GND

U1
PCA9685PW
26 SCL   VDD 28
27 SDA   LED0 6   INA
25 EXTCLK LED1 7   INB
23 OE   LED2 8   DRIVE_PWM
          LED3 9   IN1
          LED4 10   IN2
          LED5 11
1 A0   LED6 12
2 A1   LED7 13
3 A2   LED8 15
4 A3   LED9 16
5 A4   LED10 17
24 A5   LED11 18
          LED12 19
          LED13 20
    VSS   LED14 21
          LED15 22
14
GND

SCL
SDA

I2C ADDRESS: 1000_000X (0x80)

VBUS   VBUS   Q1
                CSD17501Q5A   VCC

C12   1   5
0.1uF   + C15   C16
GND   47uF 0.1uF
        VCC   GND   GND

+5V
R25 4.7k   R27 4.7k

INA   R20 1k
INB   R21 1k
DRIVE_PWM R22 1k

ENA   R23 1k
ENB   R24 1k

              R26
DRIVE_CS_ADC 10k   TP1

U3
VNH5019ATR-E
4 INA   VBAT 12
10 INB   CP   11
7 PWM   VCC 3
5 EN/DIAGA OUTA 1   OUTA
9 EN/DIAGB OUTB 15 OUTB
6 CS_DIS   GNDA
8 CS   GNDB
   26   18

R19 10k   C11 33nF   R28 1k
GND   GND   GND   GND GND

J5
Conn_01x02_Male
1
2

D4
LED_Dual_2pin

R30 4.7k

VBUS

+ C13   C14
22uF   0.1uF
GND   GND

IN1 3 IN1   OUT1 6
IN2 2 IN2   OUT2 8
       5 VM
       1 GND ILIM 4
U2
DRV8871DDA
GND   R29 30K
              GND

J6
Conn_01x05_Female
1
2
3
4
5

+5V

STEERING_POS_ADC

GND

Sheet: /Actuators/
File: Actuators.sch
Title: Robocar, Pinky, Actuators
Size: B   Date: 2019-12-28   Rev: A
KiCad E.D.A. kicad (5.1.5-0-10_14)   Id: 3/5

VBUS U5 +5VA
NCP1117-5.0_SOT223

C19
10uF
GND GND GND

C20
10uF

OUTA
R34
10k
R35
470R
R36
10k
OUTB

U7
AMC1301DWVR

+5VA +5V

VDD1
VDD2
VINP
VINN
VOUTP
VOUTN
GND1
GND2

C18
33nF

C21
33nF

VMOTOR_P_ADC
VMOTOR_N_ADC

GND

+5V

C17
1uF
GND

+5V

R31 R32 R33
10k 10k 10k

ALERT/RDY
VDD
AIN0
AIN1 SCL
AIN2 SDA
AIN3 ADDR
GND

STEERING_POS_ADC
DRIVE_CS_ADC
VMOTOR_P_ADC
VMOTOR_N_ADC

U4
ADS1115IDGS

SCL
SDA

GND GND

I2C ADDRESS: 1001_000X (0x90)

+5V +5V +5V

U8
INA260

R37 R39
10k 10k

C22
1uF
GND

VMOTOR_BAT

IN+ ALERT
VBUS SCL
SDA
IN- A0
A1

SCL
SDA

VS
GND

GND

I2C ADDRESS: 1001_111X (0x9E)

+5V +5V +5V

U9
INA260

R38 R40
10k 10k

C23
1uF
GND

VLOGIC_BAT

IN+ ALERT
VBUS SCL
SDA
IN- A0
A1

SCL
SDA

VS
GND

GND

I2C ADDRESS: 1001_010X (0x94)
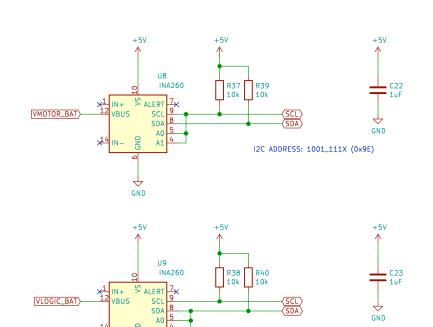
Sheet: /Sensors/
File: Sensors.sch

Title: Robocar, Pinky, Sensors
Size: B   Date: 2019-12-28   Rev: A
KiCad E.D.A. kicad (5.1.5-0-10_14)   Id: 4/5

J8
Conn_02x03_Odd_Even

GND	6	5	+3.3V
SCL	4	3	SDA
GPIO79	2	1	GPIO50

SHITTY ADD-ON
V. 1.69BIS
COMPLIANT

J7
Conn_01x04_Male

1	+5V
2	GND
3	SDA
4	SCL

J4
Conn_02x06_Odd_Even

+3.3V	1	2	+5V
SDA	3	4	+5V
SCL	5	6	GND
GPIO216	7	8	UART2_TX
GND	9	10	UART2_RX
GPIO50	11	12	GPIO79