Also compatible: PIC32MZ0512EFF144-I/PL (~$13)

Figure out antenna

U1A
PIC32MZ2048EFH144-I/PL

Bump1	1	AN23/RG15	
Bump2	2	EBIA5/AN34/PMA5/RA5	
Bump3	3	EBID5/AN17/RPE5/PMD5/RE5	
Bump4	4	EBID6/AN16/PMD6/RE6	
RE7	5	EBID7/AN15/PMD7/RE7	
IC3	6	EBIA6/AN22/RPC1/PMA6/RC1	
RJ8	7	AN35/ETXD0/RJ8	
MotorCurrent1	8	AN36/ETXD1/RJ9	
Fault1	9	EBIBS0/RJ12	
	10	EBIBS1/RJ10	
U2TX	11	EBIA12/AN21/RPC2/PMA12/RC2	
U6TX	12	EBIWE/AN20/RPC3/PMWR/RC3	
IC4	13	EBIOE/AN19/RPC4/PMRD/RC4	
SCK2	14	AN14/C1IND/RPG6/SCK2/RG6	
SDI2	15	AN13/C1INC/RPG7/SDA4/RG7	
SDO2	16	AN12/C2IND/RPG8/SCL4/RG8	
	17	VSS	
	18	VDD	
	19	EBIA16/RK0	
	20	MCLR	
SS2*	21	EBIA2/AN11/C2INC/RPG9/PMA2/RG9	
	22	TMS/AN24/RA0	
SDI6	23	AN25/RPE8/RE8	
SDO6	24	AN26/RPE9/RE9	
U5RX	25	AN45/C1INA/RPB5/RB5	
Refl3	26	AN4/C1INB/RB4	
Refl2	27	AN37/ERXCLK/EREFCLK/RJ11	
RJ13	28	EBIA13/PMA13/RJ13	
RJ14	29	EBIA11/PMA11/RJ14	
RJ15	30	EBIA0/PMA0/RJ15	
U5TX	31	AN3/C2INA/RPB3/RB3	
	32	VSS	
	33	VDD	
	34	AN2/C2INB/RPB2/RB2	
U6RX	35	PGEC1/AN1/RPB1/RB1	
	36	PGED1/AN0/RPB0/RB0	
	72	OSC2/CLKO/RC15	LED5
	71	OSC1/CLKI/RC12	LED6
	70	AN33/RPD15/SCK6/RD15	SCK6
	69	AN32/RPD14/RD14	SS6*
	68	EBIA4/PMA4/RH7	LED3
	67	AN42/ERXD2/RH6	LED4
	66	AN41/ERXD1/RH5	LED1
	65	AN40/ERXERR/RH4	LED2
	64	VDD	
	63	VSS	
	62	AN10/RPB15/OCFB/RB15	SS3*
	61	AN9/RPB14/SCK3/RB14	SCK3
	60	AN8/RB13	Hold*
	59	AN7/RB12	Write Protect*
	58	TDO/AN31/RPF12/RF12	SS5*
	57	TDI/AN30/RPF13/SCK5/RF13	SCK5
	56	TCK/AN29/RA1	MotorCurrent2
	55	VDD	
	54	VSS	
	53	EBIA17/RK3	RK3
	52	EBIA3/PMA3/RK2	RK2
	51	EBIA1/PMA1/RK1	RK1
	50	AN6/RB11	Refl1
	49	CVREFOUT/AN5/RPB10/RB10	RB10
	48	EBIA7/AN49/RPB9/PMA7/RB9	SDI3
	47	EBIA10/AN48/RPB8/PMA10/RB8	SDO3
	46	RH3	RH3
	45	EBIRP/RH2	RH2
	44	AN39/ETXD3/RH1	RH1
	43	AN38/ETXD2/RH0	RH0
	42	AVSS	
	41	AVDD	
	40	VREF+/CVREF+/AN28/RA10	RA10
	39	VREF-/CVREF-/AN27/RA9	RA9
	38	PGED2/AN47/RPB7/RB7	U4TX
	37	PGEC2/AN46/RPB6/RB6	U4RX

U1B
PIC32MZ2048EFH144-I/PL

	73	VBUS	
	74	VUSB3V3	
	75	VSS	
	76	D-	
	77	D+	
	78	RPF3/USBID/RF3	
OC1	79	SDA3/RPF2/RF2	
Dir1	80	SCL3/RPF8/RF8	
IC2	81	ERXD0/RH8	
Switch1	82	ERXD3/RH9	
Switch2	83	ECOL/RH10	
Switch3	84	EBIRDY2/RH11	
SCL2	85	SCL2/RA2	
SDA2	86	EBIRDY1/SDA2/RA3	
Fault2	87	EBIA14/PMCS1/PMA14/RA4	
	88	VDD	
	89	VSS	
	90	EBIA9/RPF4/SDA5/PMA9/RF4	
	91	EBIA8/RPF5/SCL5/PMA8/RF5	
U1RX	92	EBIA18/RK4	
U1TX	93	EBIA19/RK5	
USB_RST	94	EBIA20/RK6	
	95	RPA14/SCL1/RA14	
SDO4	96	RPA15/SDA1/RA15	
SS4*	97	EBIA15/RPD9/PMCS2/PMA15/RD9	
SCK4	98	RPD10/SCK4/RD10	
SDI4	99	EMDC/RPD11/RD11	
RH12	100	ECRS/RH12	
RH13	101	ERXDV/ECRSDV/RH13	
RH14	102	RH14	
RH15	103	EBIA23/RH15	
IC1	104	RPD0/RTCC/INT0/RD0	
	105	SOSCI/RPC13/RC13	
	106	SOSCO/RPC14/T1CK/RC14	
	107	VDD	
	108	VSS	
	144	EBID4/AN18/PMD4/RE4	
	143	EBID3/RPE3/PMD3/RE3	U2RX
	142	EBID2/PMD2/RE2	GPS_Reset
	141	TRD0/SQID0/RG13	GPS_INT
	140	TRD1/SQID1/RG12	
	139	TRD2/SQID2/RG14	
	138	EBID1/PMD1/RE1	
	137	VDD	
	136	VSS	
	135	EBID0/PMD0/RE0	
	134	EBICS3/RJ7	
	133	EBICS2/RJ6	
	132	EBICS1/RJ5	Status_Green
	131	EBICS0/RJ4	Status_Yellow
	130	TRD3/SQID3/RA7	
	129	TRCLK/SQICLK/RA6	
	128	EBID8/RPG0/PMD8/RG0	SDO5
	127	EBID9/RPG1/PMD9/RG1	SDI5
	126	EBIA21/RK7	
	125	EBID10/RPF1/PMD10/RF1	
	124	EBID11/RPF0/PMD11/RF0	
	123	VSS	
	122	VDD	
	121	ETXCLK/RPD7/RD7	
	120	ETXEN/RPD6/RD6	U3RX
	119	SQICS1/RPD5/RD5	U3TX
	118	SQICS0/RPD4/RD4	OC2
	117	EBIA22/RJ3	SS1*
	116	EBIRDY3/RJ2	Dir2
	115	EMDIO/RJ1	
	114	ETXERR/RJ0	
	113	EBID13/PMD13/RD13	IMU_INT2
	112	EBID12/RPD12/PMD12/RD12	IMU_INT1
	111	EBID15/RPD3/PMD15/RD3	SDO1
	110	EBID14/RPD2/PMD14/RD2	SDI1
	109	RPD1/SCK1/RD1	SCK1

OtherSensors
File: OtherSensors.kicad_sch

Buttons
File: Buttons.kicad_sch

IMU
File: IMU.kicad_sch

USB
File: USB.kicad_sch

GPIO
File: GPIO.kicad_sch

Power
File: Power.kicad_sch

GPS
File: GPS.kicad_sch

LED
File: LED.kicad_sch

SPI_UART
File: SPI_UART.kicad_sch

Memory
File: Memory.kicad_sch

Motor
Signal Conditioning?

File: Motor.kicad_sch

SW1
Reset

J1
SNAP Program

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole

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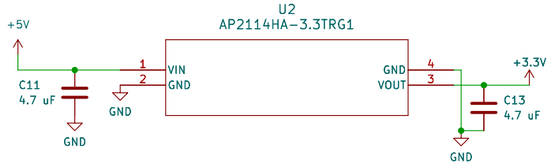
Sheet: /
File: MainBoard.kicad_sch

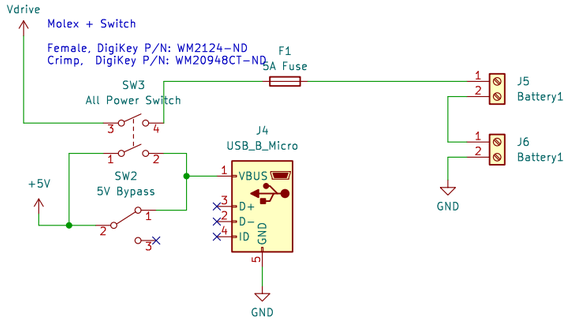
Title: MCU Controller

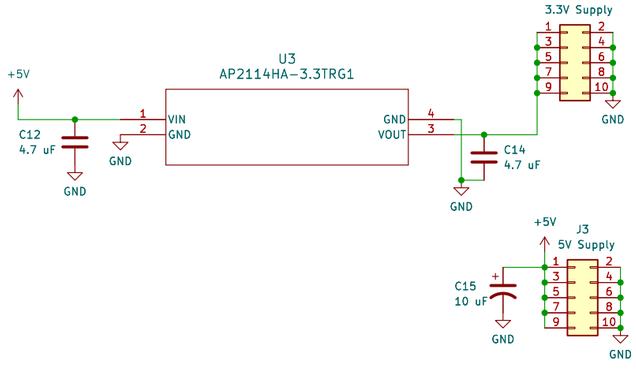
Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 1/12

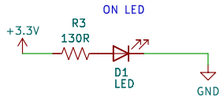
Inputs:
1) Motor Battery: 2x NiMH Battery, 7.2 V Each
2) Battery For Jetson: 12 V
3) Battery for MCU: 5 V

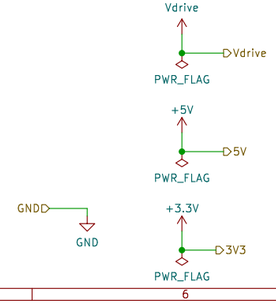
Allow MCU 3.3V/5V to be supplied by motor battery or external 5 V battery











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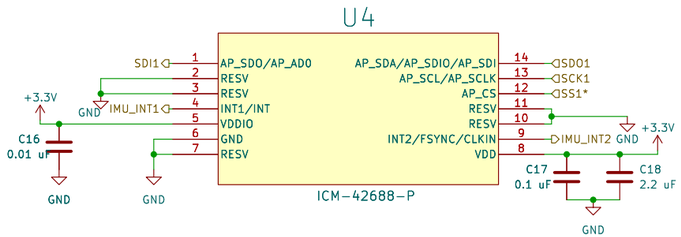
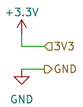
Sheet: /Power/
File: Power.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 2/12

6 Axis IMU: Accel + Gyro, Temperature





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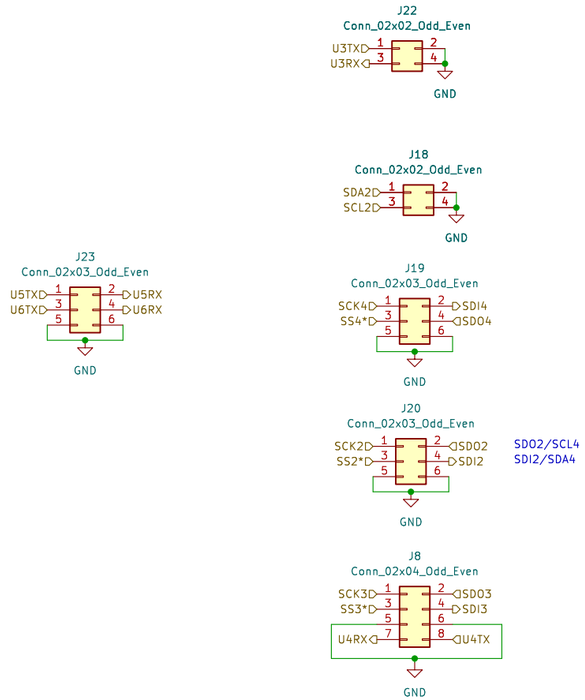
Sheet: /IMU/
File: IMU.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 3/12



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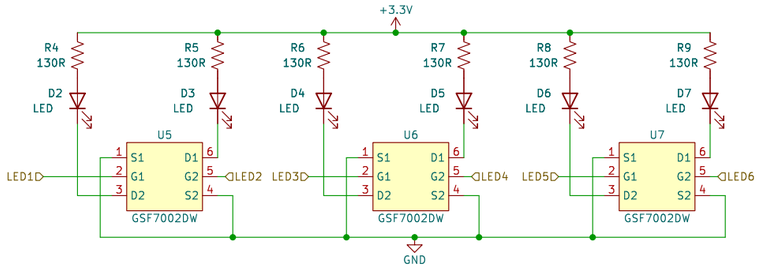
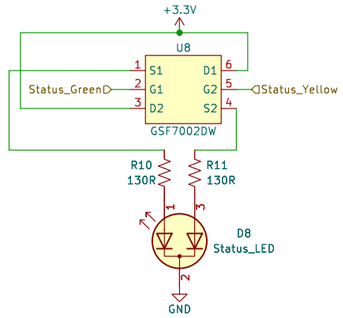
Sheet: /SPI_UART/
File: SPI_UART.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 4/12





2.54 mm Lead spacing

Corresponding Female: DigiKey PN 900-0022013037-ND
Corresponding Crimp : DigiKey PN WM2756CT-ND

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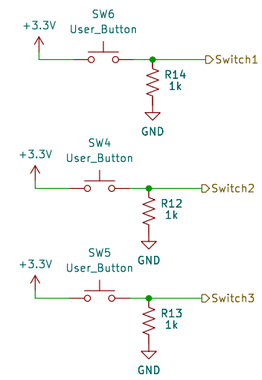
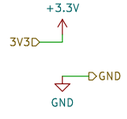
Sheet: /LED/
File: LED.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 5/12

Corresponding Female: DigiKey PN 900-0022013027-ND
Corresponding Crimp : DigiKey PN WM2756CT-ND
Button   : DigiKey PN EG2025-ND





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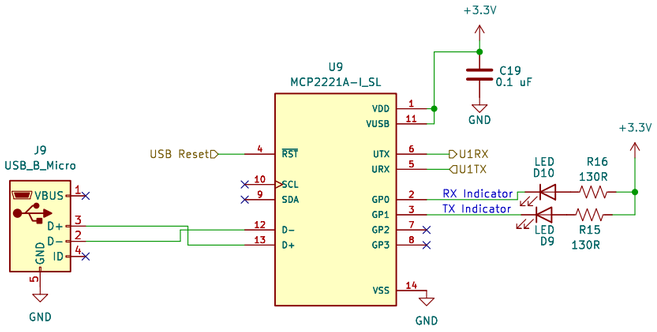
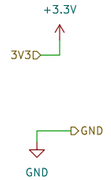
Sheet: /Buttons/
File: Buttons.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 6/12





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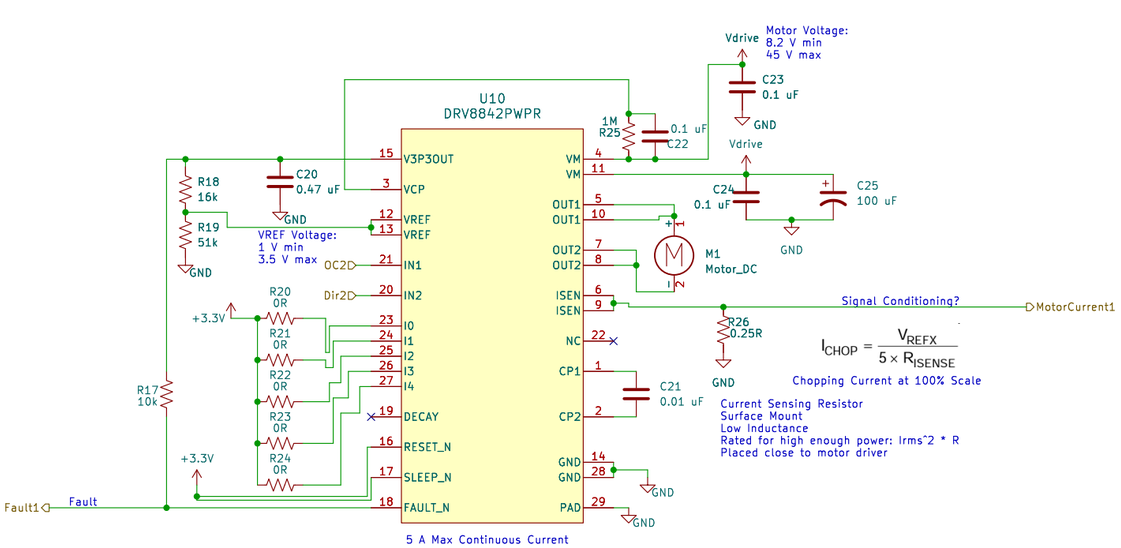
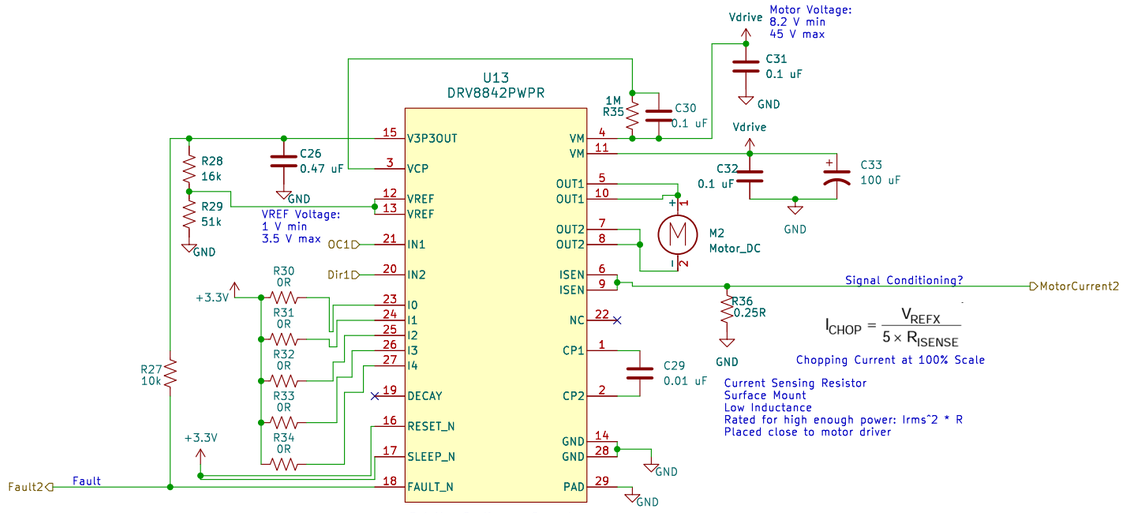
Sheet: /USB/
File: USB.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 7/12





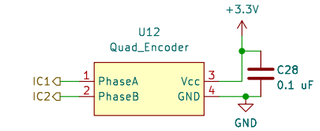
xIN1	xIN2	xOUT1	xOUT2
0	0	L	L
0	1	L	H
1	0	H	L
1	1	H	H

PWM Frequency:
100 kHz max

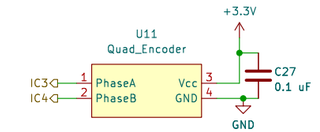
Slow Decay: Logic low
Mixed Decay: Open
Fast Decay: Logic high

I0 – I4 Function

I[4..0]	RELATIVE CURRENT (% FULL-SCALE CHOPPING CURRENT)
0x00h	0%
0x01h	5%
0x02h	10%
0x03h	15%
0x04h	20%
0x05h	24%
0x06h	29%
0x07h	34%
0x08h	38%
0x09h	43%
0x0Ah	47%
0x0Bh	51%
0x0Ch	56%
0x0Dh	60%
0x0Eh	63%
0x0Fh	67%
0x10h	71%
0x11h	74%
0x12h	77%
0x13h	80%
0x14h	83%
0x15h	86%
0x16h	88%
0x17h	90%
0x18h	92%
0x19h	94%
0x1Ah	96%
0x1Bh	97%
0x1Ch	98%
0x1Dh	99%
0x1Eh	100%
0x1Fh	100%



Corresponding Female: DigiKey PN WM2002-ND
Corresponding Crimp : DigiKey PN WM2756CT-ND



Corresponding Female: DigiKey PN WM2002-ND
Corresponding Crimp : DigiKey PN WM2756CT-ND

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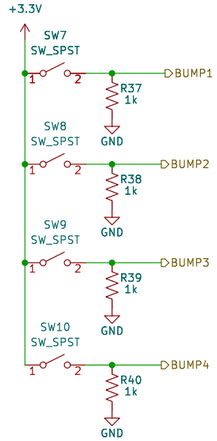
Sheet: /Motor/
File: Motor.kicad_sch

Title: MCU Controller

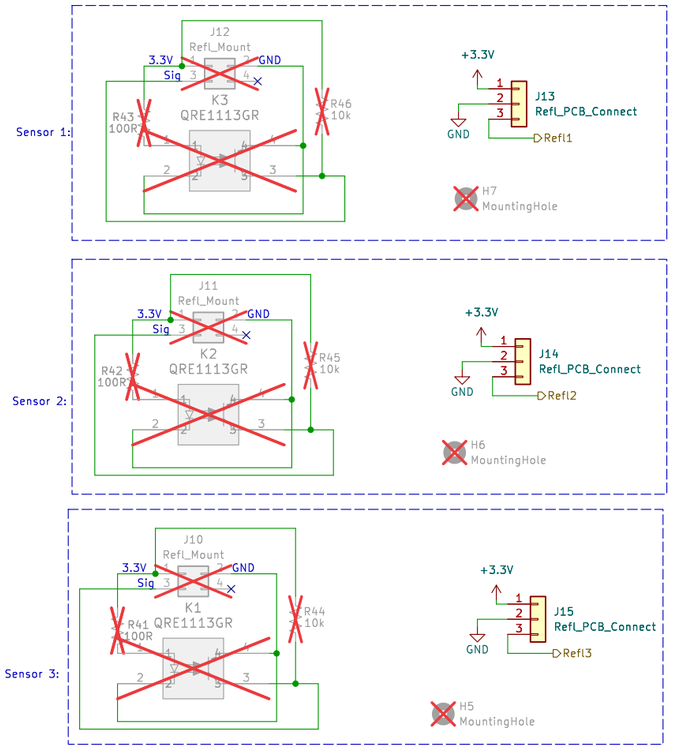
Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 8/12

Bumper Sensors



Corresponding Female: DigiKey PN 900-0022013027-ND
Corresponding Crimp : DigiKey PN WM2756CT-ND
Limit Switch : DigiKey PN _____

Reflective Optical Sensors (Cliff Sensor)



Corresponding Female: DigiKey PN 900-0022013037-ND
Corresponding Crimp : DigiKey PN WM2756CT-ND

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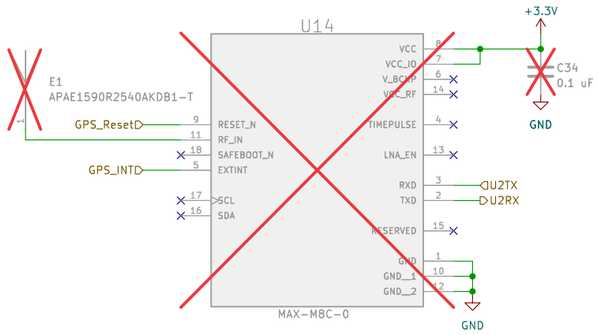
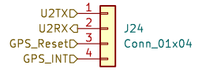
Sheet: /OtherSensors/
File: OtherSensors.kicad_sch

Title: MCU Controller

Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 9/12





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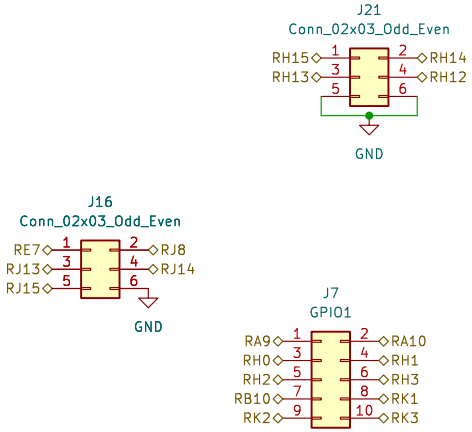
Sheet: /GPS/
File: GPS.kicad_sch

Title: MCU Controller

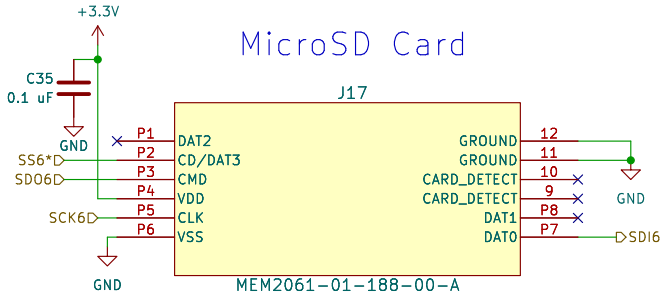
Size: B	Date:	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.6		Id: 10/12

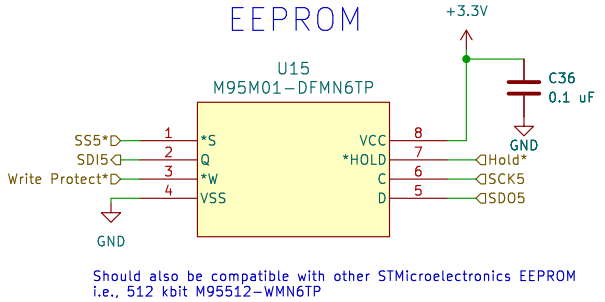


Sheet: /GPIO/
File: GPIO.kicad_sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 7.0.6		Id: 11/12





Sheet: /Memory/	
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Title:	
Size: A4	Date:
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