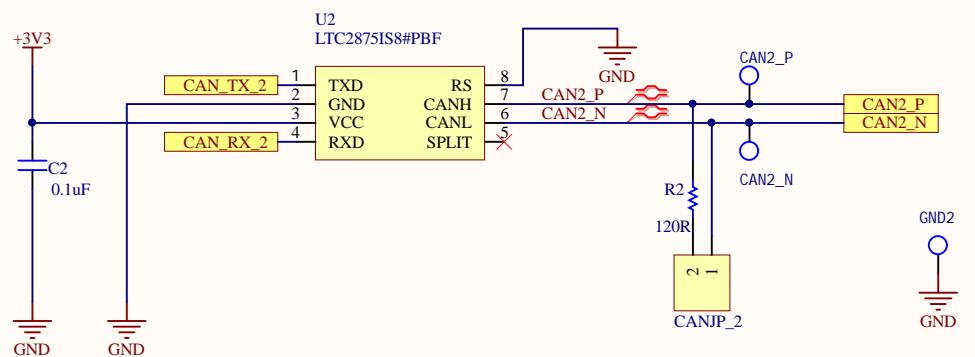
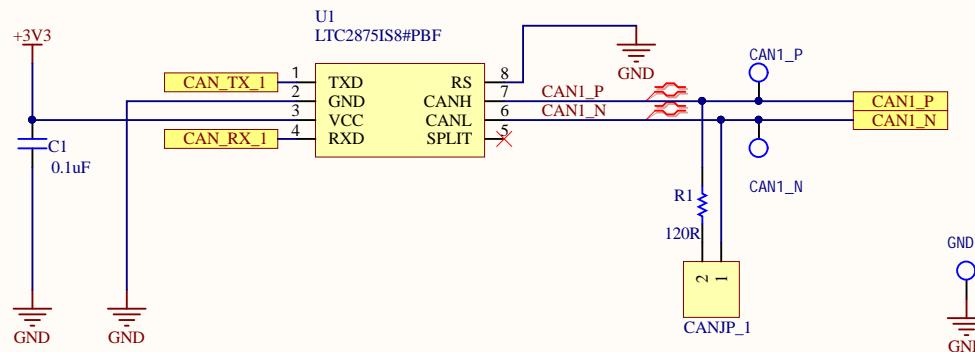
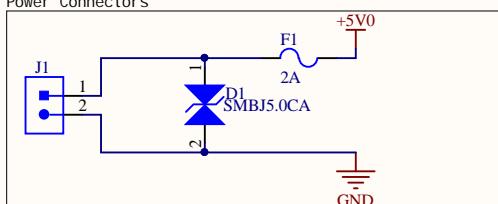


CAN Transceivers

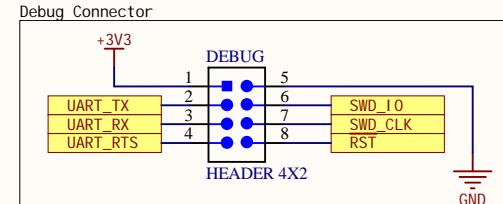


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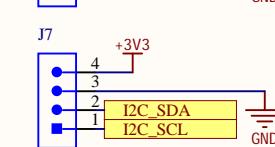
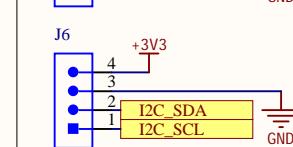
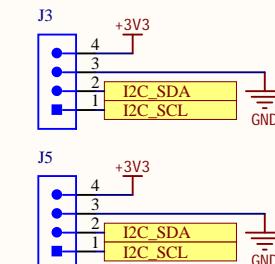
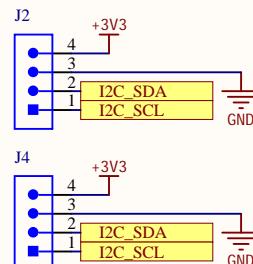
Power Connectors



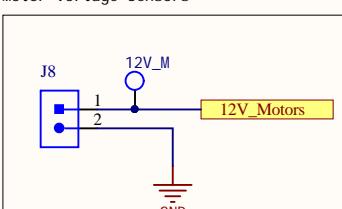
Debug Connector



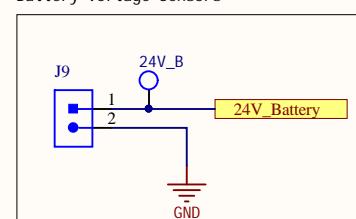
I2C Current Sensors



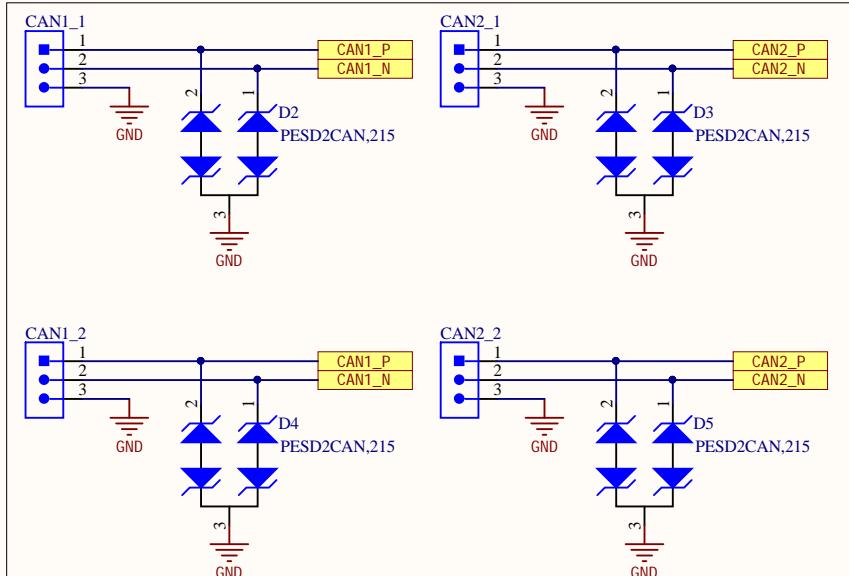
Motor Voltage Sensors



Battery Voltage Sensors



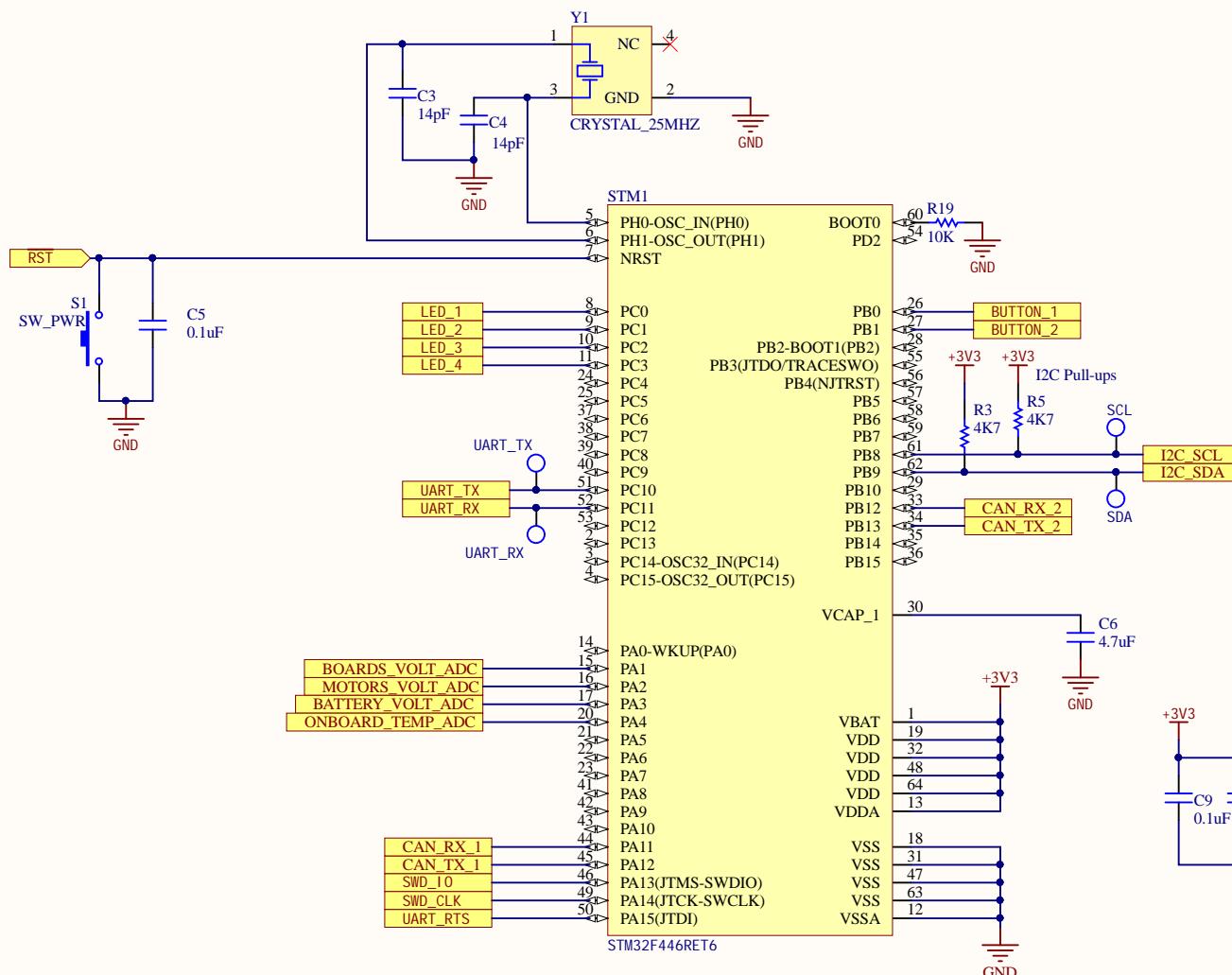
CAN Connections



Connectors

Title Connectors		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6	
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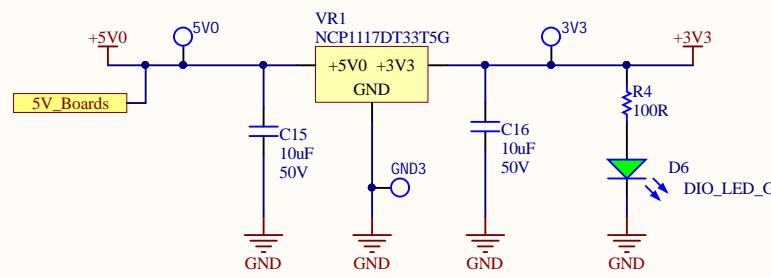
STM32F446RET6



Bypass Capacitors

Title: MCU		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: *	TEAM
Date: 1/28/2020	Sheet of	
File: C:\Users\kyleh\Desktop\Works\UWRT\MarsRover2020-PCB\Projects\Safety\Rev1\sch\MCU.SchDoc		

5V-3.3V LDO

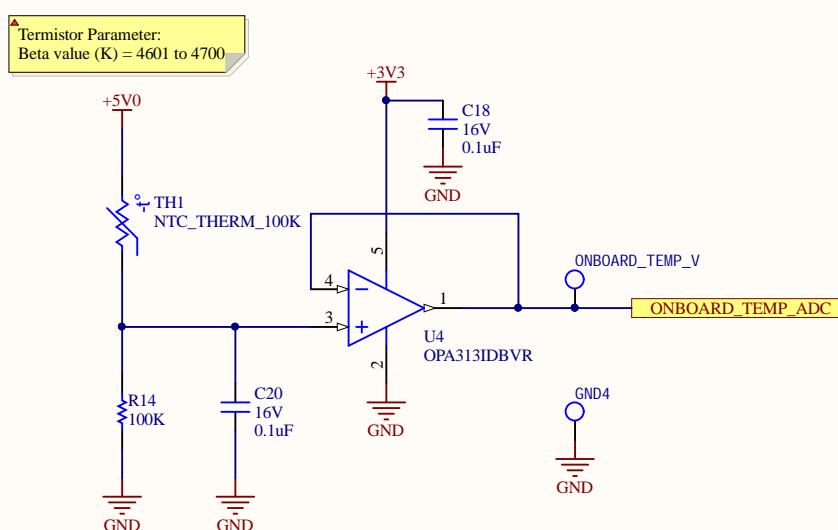


Current Calculations

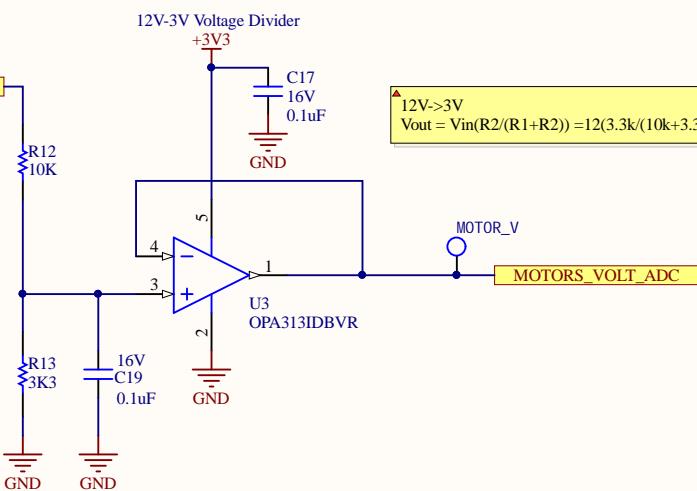
Green LED voltage drop: 2.2V
 $- I = (3.3 - 2.2V)/120 = 10.83mA$

Title Power		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6	
Size: Letter Drawn By: *			
Date: 1/28/2020 Sheet of 1			
File: C:\Users\kyleh\Desktop\Works\UWRT\MarsRover2020-PCB\Projects\Safety\Rev1\sch\POWER.SchDoc			

A

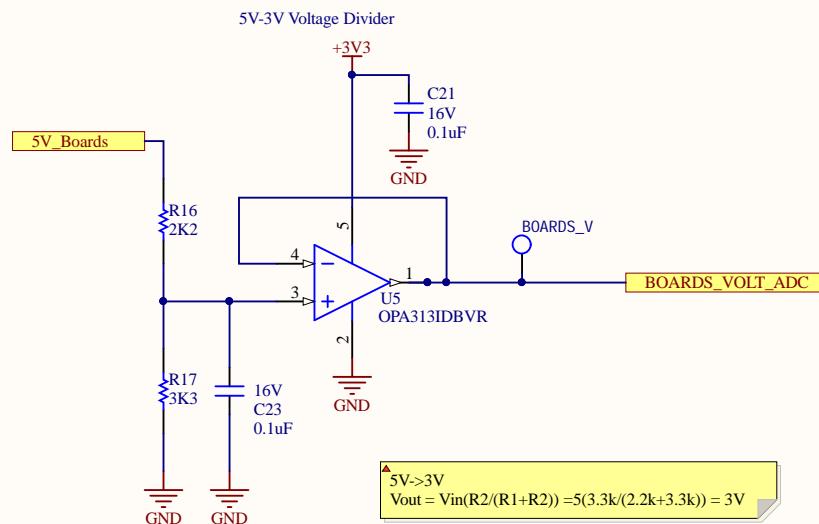


B



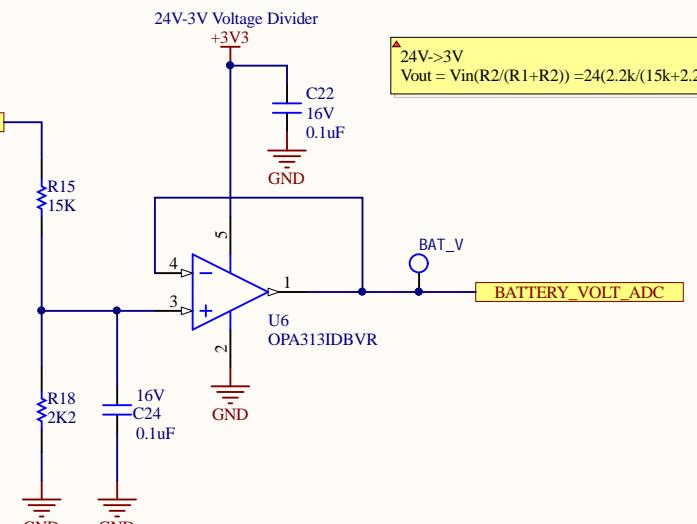
A

C



D

Rev 2 TODO:
Consider putting two resistors in series for 24-3 voltage divider to reduce BOM lines



B

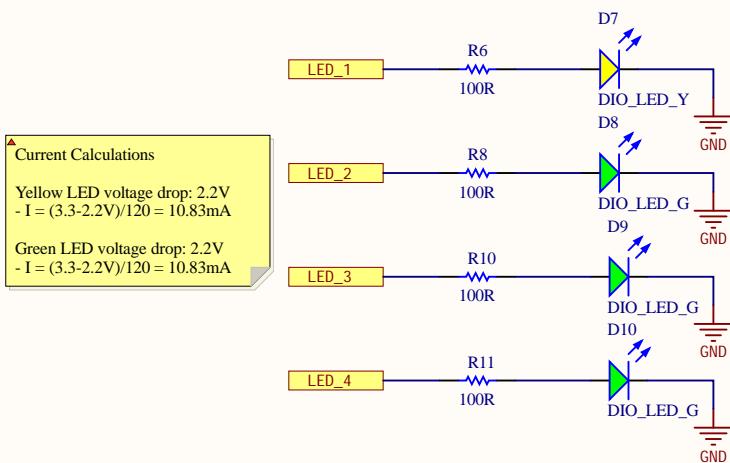
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D

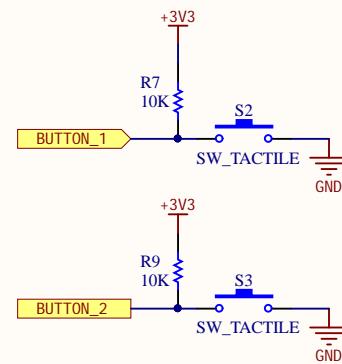
A

A

Test LEDs



Test Buttons



C

C

Title: Support		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: *	
Date: 1/28/2020	Sheet of	
File: C:\Users\kyleh\Desktop\Works\UWRT\MarsRover2020-PCB\Projects\Safety\Rev1\sch\Support.schDoc		UW ROBOTICS TEAM

Line #	Name	Description	Designator	Quantity	Manufacturer 1	Manufacturer Part Number 1	Manufacturer Lifecycle 1	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Supplier Subtotal 1
TESTPOINT	Loop testpoint through-hole pad	3V3, 5V0, 12	20	Key stone Electro	5002		Volume Production	Digi-Key	36-5002-ND	0.35	7
CAP_01	CAP CER 0.1UF 16V X7R 0603	C1, C2, C5, C	16	Yageo	CC0603KRX7R7BB104		Volume Production	Digi-Key	311-1088-1-ND	0.048	0.768
CL10C14	Cap Ceramic 14pF 50V COG 5% SMD	C3, C4	2	Samsung	CL10C14QJB8NNNC		Volume Production	Digi-Key	1276-2187-1-ND	0.1	0.2
CAP_4.7	CAP CER 4.7UF 6.3V X5R 0603	C6, C12	2	Yageo	CC0603KRX5R5BB475		Volume Production	Digi-Key	311-1521-1-ND	0.24	0.48
CAP_1u	CAP CER 1uF 16V Y5V 0603	C8	1	Yageo	CC0603ZRY5V7BB105		Volume Production	Digi-Key	311-1372-1-ND	0.1	0.1
CAP_10u	CAP CER 10000PF 16V X7R 0603	C14	1	Yageo	CC0603KRX7R7BB103		Volume Production	Digi-Key	311-3369-1-ND	0.1	0.1
10uF	CAP CER 10uF 50V X5R 1206	C15, C16	2	Murata	GRT31CR61H106KE01L		Volume Production	Digi-Key	490-12456-1-ND	0.71	1.42
CON_3M_SM4	CAN1_1, CA	4	JST	B3B-PH-SM4-TB(LF)(SN)			Volume Production	Digi-Key	455-1735-1-ND		
JUMPER_1	HEADER 2X1	CANJP_1, CA	2	TE Connectivity	87220-2		Volume Production	Digi-Key	A 26542-ND	1.6	3.2
TVS_DIO	TVS DIODE 5V 9.2V DO214AA	D1	1	Littlefuse	SMBJ5.0CA		Volume Production	Digi-Key	SMBJ5.0CALFC-TND	0.39	0.39
TVS_DIO	TVS DIODE 24V 41V SOT323	D2, D3, D4, D	4	Nexperia	PESD2CAN.215			Digi-Key	1727-3891-1-ND	0.43	1.72
DIO_LED	LED GREEN DIFFUSED 0805 SMD	D6, D8, D9, D	4	O sram Opto	LGR971-KN-1		Volume Production	Digi-Key	475-1410-1-ND	0.27	1.08
DIO_LED	LED YELLOW DIFFUSED 0805 SMD	D7	1	O sram Opto	LYR976-PS-36		Volume Production	Digi-Key	475-2560-1-ND	0.29	0.29
HEADER_CONN	CONN HEADER VERT 8POS 2.54MM	DEBUG	1	Harwin	M20-9980445		Volume Production	Digi-Key	952-2122-ND		
FUSE_2A	FUSE SMD 2A 32V	F1	1	Littlefuse	0467002 NRHF		Volume Production	Digi-Key	F7132CT-ND	1.2	1.2
CON_2M_SM4	J1, J8, J9	3	JST	B2B-PH-SM4-TB(LF)(SN)			Volume Production	Digi-Key	455-1734-1-ND		
CON_4M_SM4	J2, J3, J4, J5,	6	JST	B4B-PH-SM4-TB(LF)(SN)			Volume Production	Digi-Key	455-1736-1-ND		
RES_120	RES SMD 120 OHM 5% 1/10W 0603	R1, R2	2	Yageo	RC 0603JR-07120RL		Volume Production	Digi-Key	311-120GRCT-ND	0.019	0.19
RES_4K7	RES SMD 4.7K OHM 5% 1/10W 0603	R3, R5	2	Yageo	RC 0603JR-074K7L		Volume Production	Digi-Key	311-4.7KGRCT-ND	0.019	0.19
RES_100	RES SMD 100 OHM 1% 1/10W 0603	R4, R6, R8, R	5	Yageo	RC 0603FR-07100RL		Volume Production	Digi-Key	311-100HRCT-ND	0.023	0.23
RES_10K	RES SMD 10K OHM 5% 1/10W 0603	R7, R9, R12,	4	Yageo	RC 0603JR-0710KL		Volume Production	Digi-Key	311-10KGRCT-ND	0.019	0.19
RES_3K3	RES SMD 3.3K OHM 5% 1/10W 0603	R13, R17	2	Yageo	RC 0603JR-073K3L		Volume Production	Digi-Key	311-3.3KGRCT-ND	0.019	0.19
RES_100	RES SMD 100K OHM 5% 1/10W 0603	R14	1	Yageo	RC 0603FR-07261KL		Volume Production	Digi-Key	311-261KHRCT-ND	0.1	0.1
RES_15K	RES SMD 15K OHM 5% 1/10W 0603	R15	1	Yageo	RC 0603JR-^*15KL			Digi-Key	311-15KGRCT-ND	0.1	0.1
RES_2K2	RES SMD 2.2K OHM 1% 1/10W 0603	R16, R18	2	Yageo Phycomp	RC 0603FR-072K2L		Volume Production	Digi-Key	311-2.20KHRCT-ND	0.1	0.2
SW_PWR	Power Switch (Red)	S1	1	ITC C&K	PTS830GM140SMTRLFS		Volume Production	Digi-Key	C KN10587CT-ND	0.51	0.51
SW_TAC	Tactile Switch (Grey)	S2, S3	2	Omron	B3U-110P		Volume Production	Digi-Key	SW1021CT-ND	1	2
STM_32F	ARM Cortex-M4 32-bit MCU + FPU, 512	STM1	1	STMicroelectronics	STM32F446RET6		Volume Production	Digi-Key	497-15376-ND	7.38	7.38
NTC_TH	NTC THERM NTC 100KOHM 4700K 0603	TH1	1	Panasonic	ERT-J1VV104J		Volume Production	Digi-Key	P10555CT-ND	0.24	0.24
IC_TXRX	IC TXRX CAN 4Mbps 8SO	U1, U2	2	Analog Devices / LTC	2875IS8#PBF		Volume Production	Digi-Key	LTC 2875IS8#PBF-ND	4.16	8.32
OPA3131	IC OPAMP GP 1 CIRCUIT SOT23-5	U3, U4, U5, U	4	Texas Instruments	OPA3131DBVR		Volume Production	Digi-Key	296-35607-1-ND	0.88	3.52
5V0_3V3	IC REG LINEAR 3.3V 1A DPAK	VR1	1	ON Semiconductor	NCP1117DT33T5G		Volume Production	Digi-Key	NCP1117DT33T5GOSCT	0.47	0.47
CRYSTA	CRYSTAL 25.0000MHz 12pF SMD	Y1	1	Kyocera AVX	CX2520DB25000H0FLC1		Volume Production	Digi-Key	1253-1724-1-ND	0.72	0.72