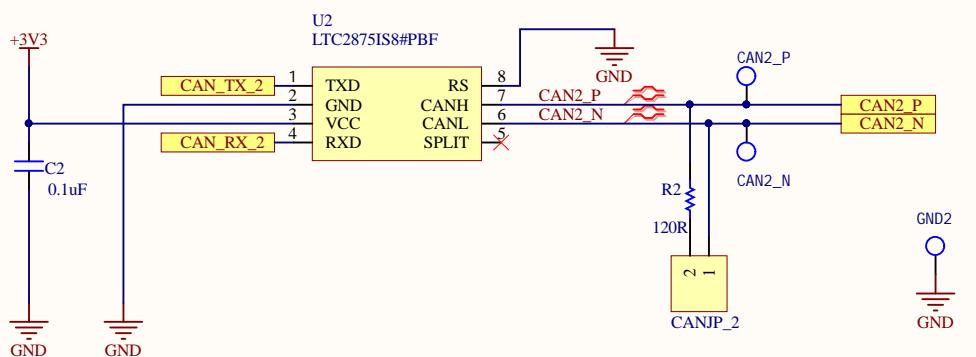
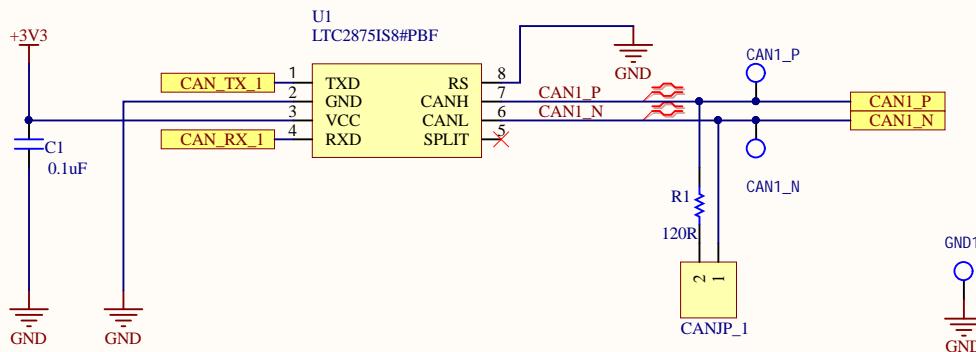


## CAN Transceivers

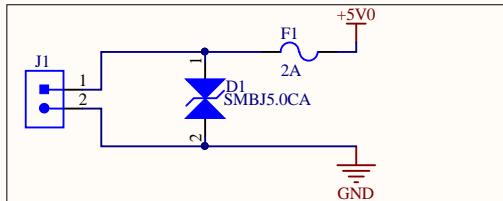


Title CAN		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: Qin yang Bao, Nic cole Rosario	
Date: 1/29/2020	Sheet of	
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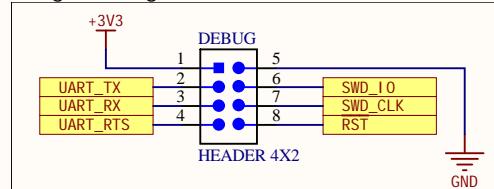


# Connectors

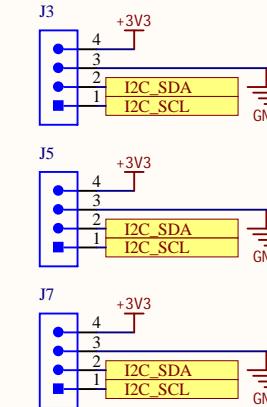
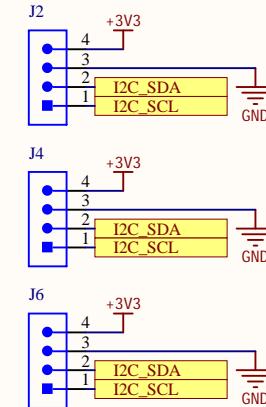
**Power Connector**



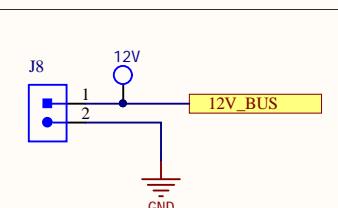
**Programming Connector**



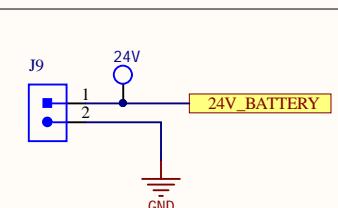
**I2C Current Sensors**



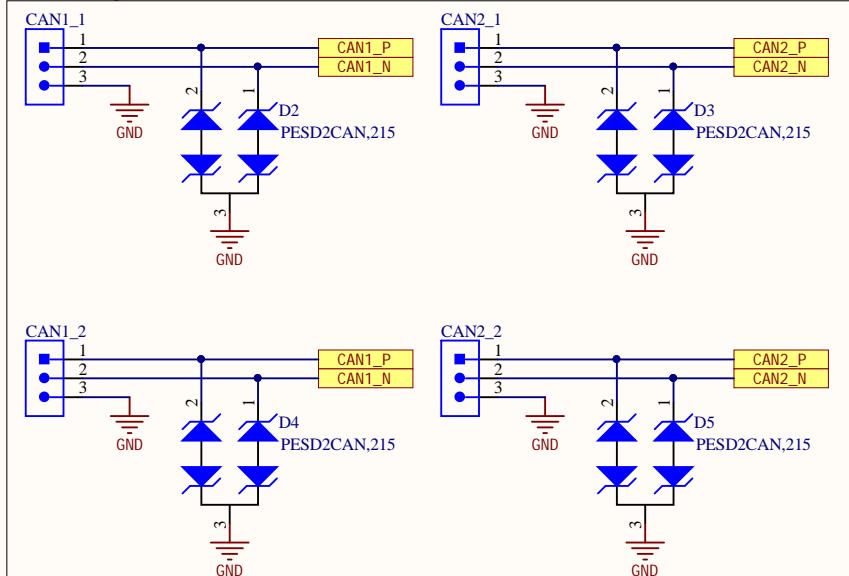
**Motor Voltage**



**Battery Voltage**



**CAN Daisy Chain Connectors**



**Title Connectors**

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Date: 1/29/2020

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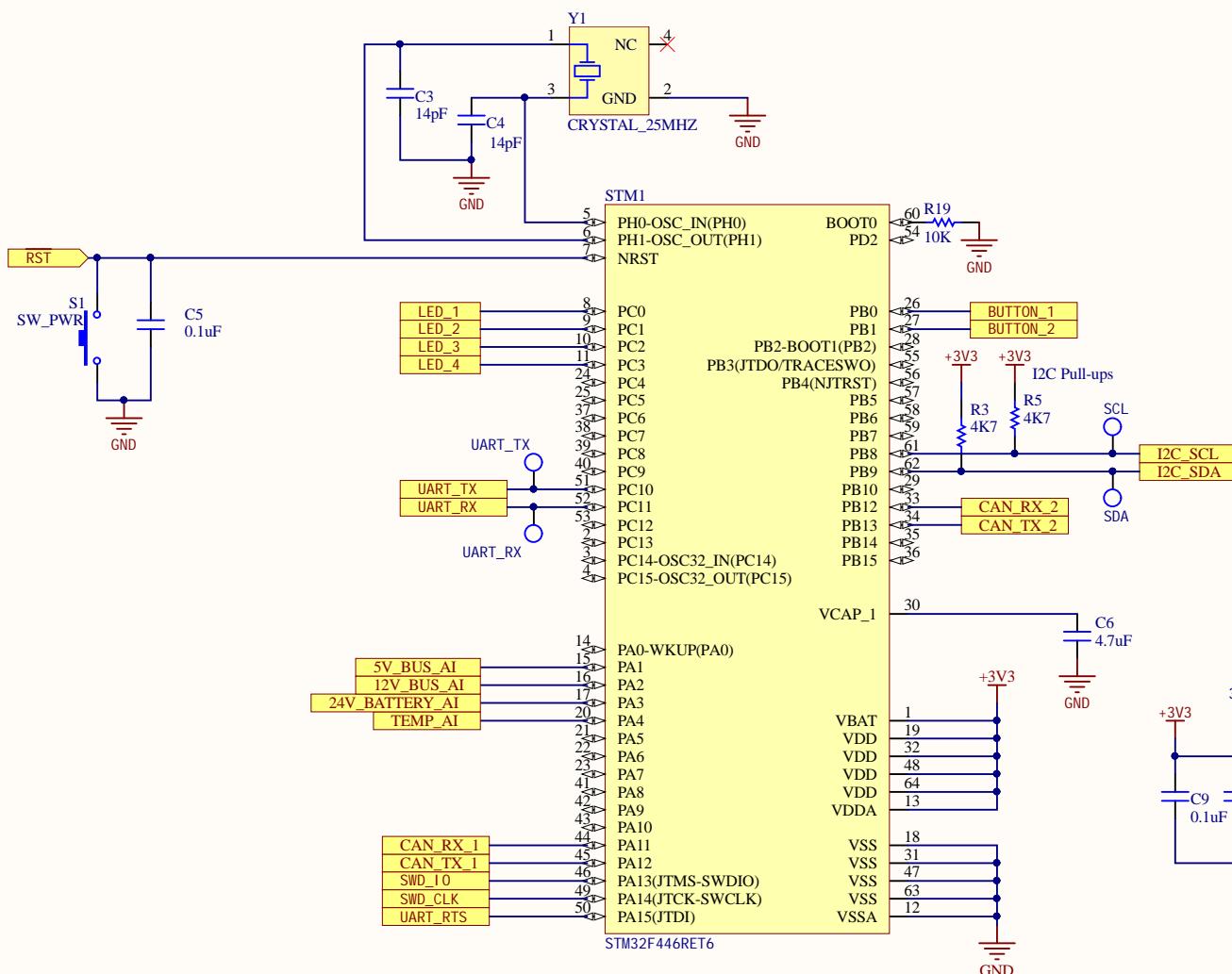
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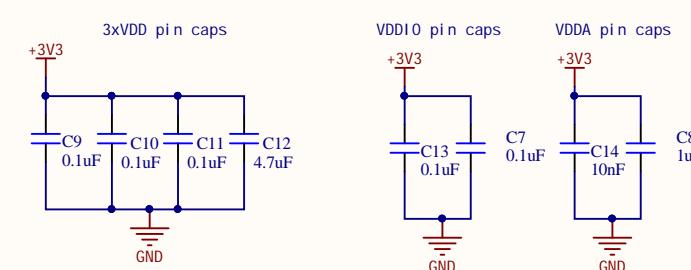


A

# STM32F446RET6



## Bypass Capacitors



Title: MCU

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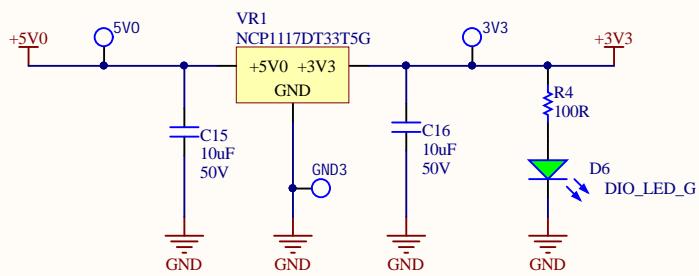
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## 5V-3.3V LDO



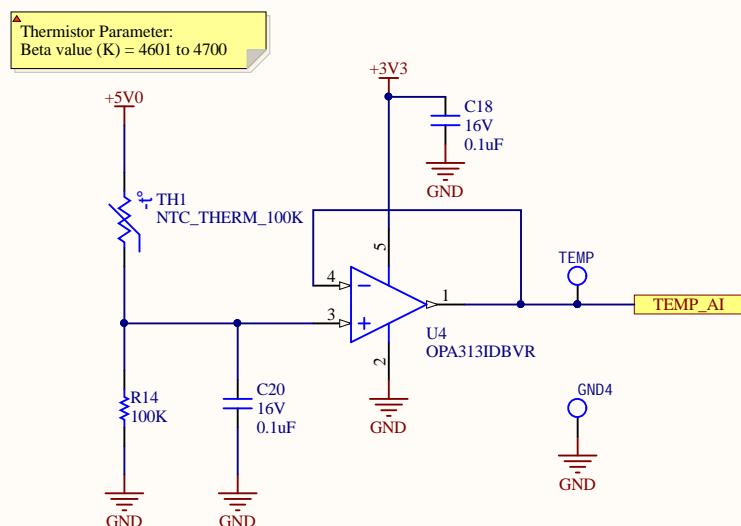
### Current Calculations

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

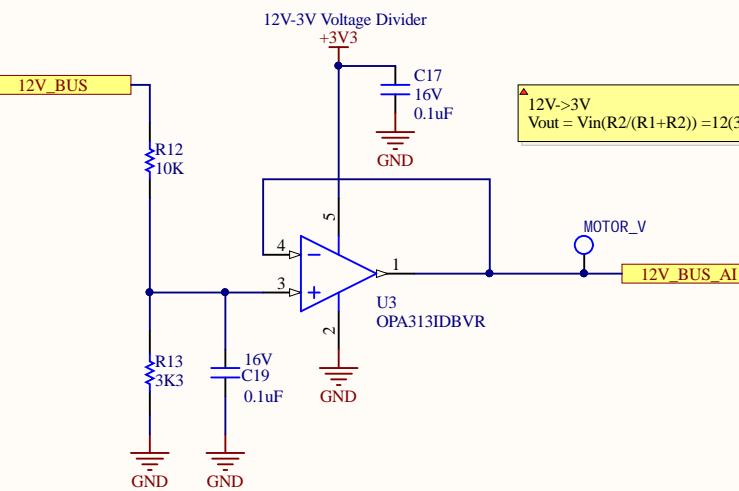
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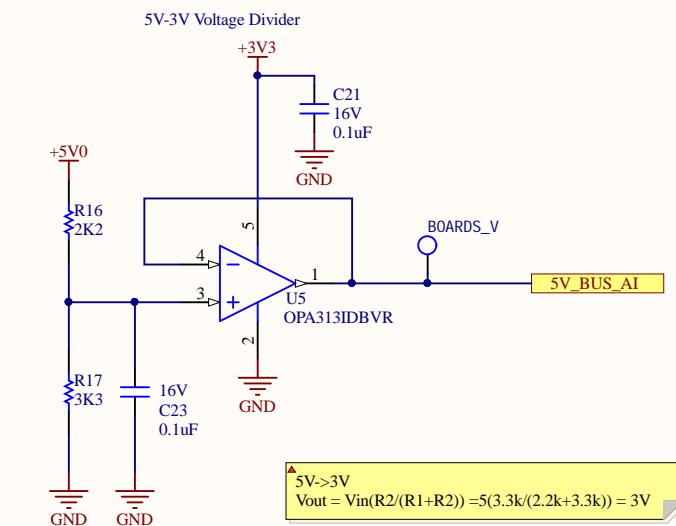
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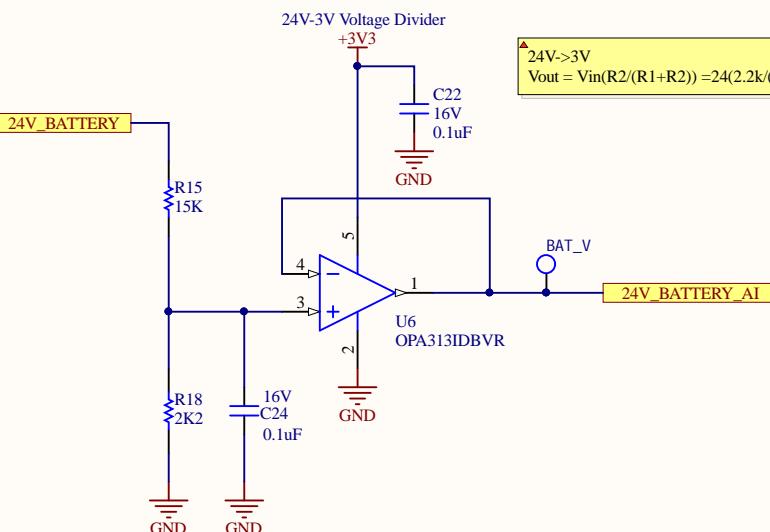
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C



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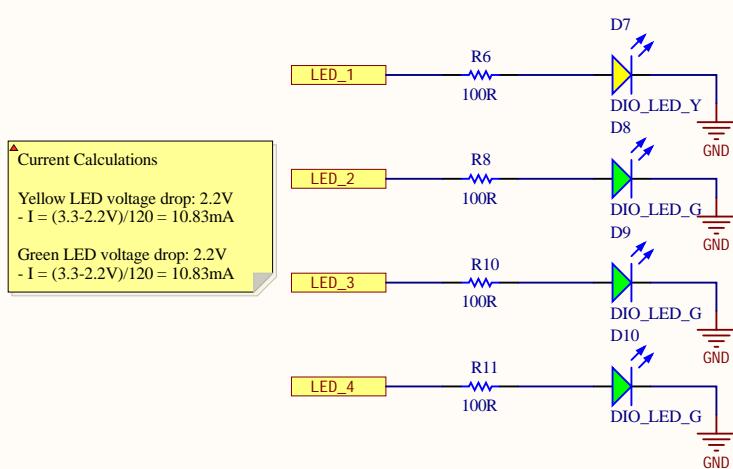
D

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

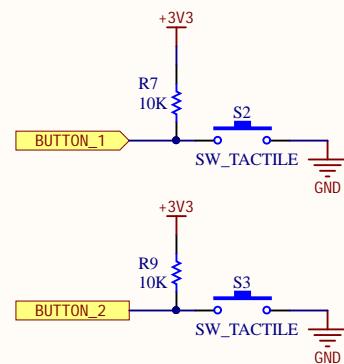
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A

## Test LEDs



## Test Buttons



B

B

C

C

D

D

### Title Support

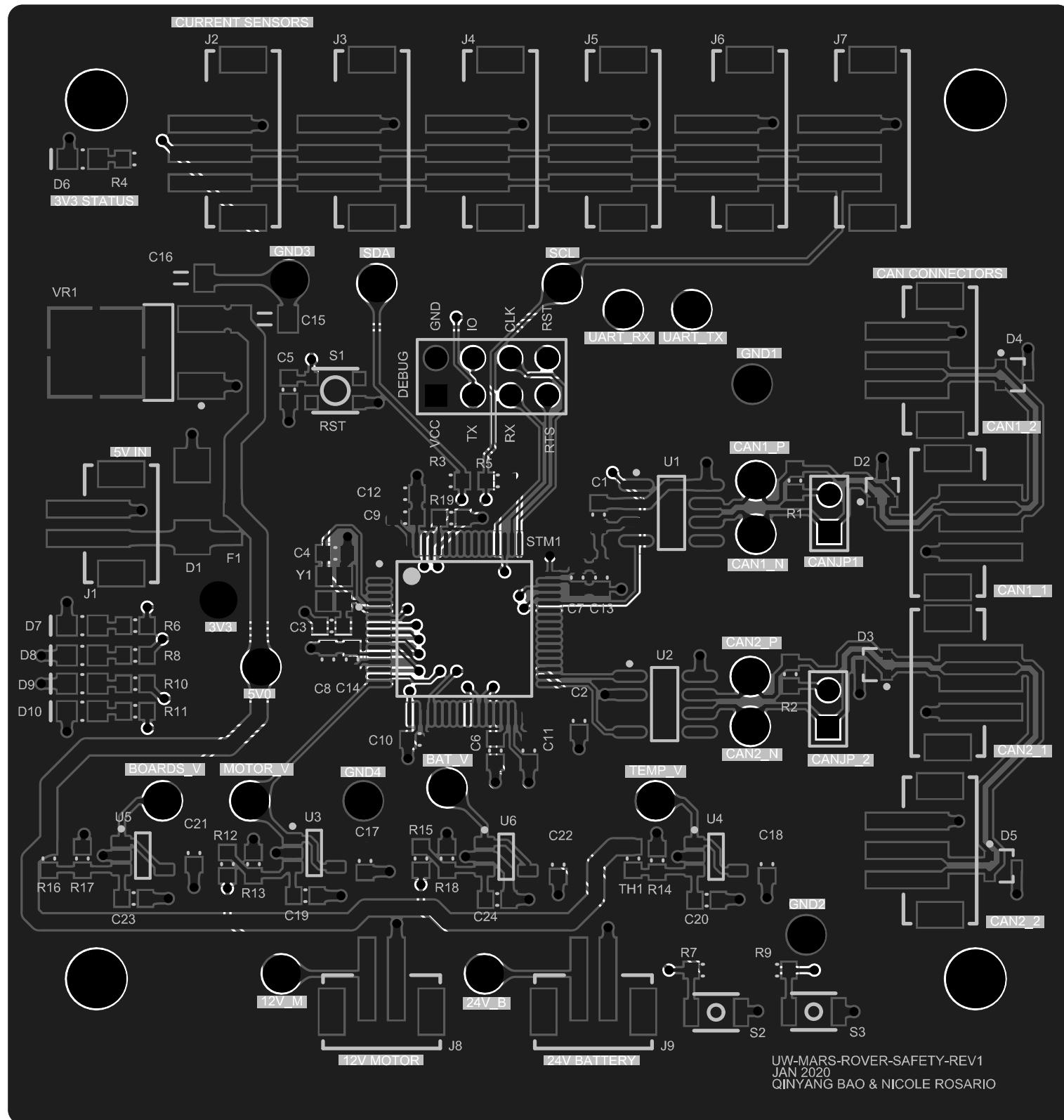
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Line #	Name	Description	Designator	Quantity	Manufacturer 1	Manufacturer Part Number 1	Manufacturer Lifecycle 1	Supplier 1	Supplier Part Number 1	Supplier
TESTPOINT	Loop testpoint through-hole pad	3V3, 5V0, 12V		20	Keystone Electron	5002	Volume Production	Digi-Key	36-5002-ND	
CAP_0.1uF	CAP CER 0.1UF 16V X7R 0603	C1, C2, C5, C		16	Yageo	CC0603KRX7R7BB104	Volume Production	Digi-Key	311-1088-1-ND	
CL10C140	Cap Ceramic 14pF 50V COG 5% SMD 0603	C3, C4		2	Samsung	CL10C140JB8NNNC	Volume Production	Digi-Key	1276-2187-1-ND	
CAP_4.7uF	CAP CER 4.7UF 6.3V X5R 0603	C6, C12		2	Yageo	CC0603KRX5R5BB475	Volume Production	Digi-Key	311-1521-1-ND	
CAP_1uF	CAP CER 1UF 16V Y5V 0603	C8		1	Yageo	CC0603ZRY5V7BB105	Volume Production	Digi-Key	311-1372-1-ND	
CAP_10nF	CAP CER 10000PF 16V X7R 0603	C14		1	Yageo	CC0603KRX7R7BB103	Volume Production	Digi-Key	311-3369-1-ND	
10uF	CAP CER 10UF 50V X5R 1206	C15, C16		2	Murata	GRT31CR61H106KE01L	Volume Production	Digi-Key	490-12456-1-ND	
CON_3M_SM4	CAN1_1, CAN			4	JST	B3B-PH-SM4-TB(LF)(SN)	Volume Production	Digi-Key	455-1735-1-ND	
JUMPER	HEADER 2X1	CANJP_1, CAN		2	TE Connectivity	87220-2	Volume Production	Digi-Key	A26542-ND	
TVS_DIO1	TVS DIODE 5V 9.2V DO214AA	D1		1	Littelfuse	SMBJ5.0CA	Volume Production	Digi-Key	SMBJ5.0CALFCT-ND	
TVS_DIO2	TVS DIODE 24V 41V SOT323-3	D2, D3, D4, D		4	Nexperia	PESD2CAN.215		Digi-Key	1727-3891-1-ND	
DIO_LED1	LED GREEN DIFFUSED 0805 SMD	D6, D8, D9, D		4	Osram Opto	LGR971-KN-1	Volume Production	Digi-Key	475-1410-1-ND	
DIO_LED2	LED YELLOW DIFFUSED 0805 SMD	D7		1	Osram Opto	LYR976-PB-36	Volume Production	Digi-Key	475-2560-1-ND	
HEADER_4CONN	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	Littelfuse	O467002.NRHF	Volume Production	Digi-Key	F7132CT-ND	
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_120K	RES SMD 120 OHM 5% 1/10W 0603	R1, R2		2	Yageo	RC0603JR-07120RL	Volume Production	Digi-Key	311-120GRCT-ND	
RES_4K7	RES SMD 4.7K OHM 5% 1/10W 0603	R3, R5		2	Yageo	RC0603JR-074K7L	Volume Production	Digi-Key	311-4.7KGRCT-ND	
RES_100K	RES SMD 100 OHM 1% 1/10W 0603	R4, R6, R8, R		5	Yageo	RC0603FR-07100RL	Volume Production	Digi-Key	311-100HRCT-ND	
RES_10K	RES SMD 10K OHM 5% 1/10W 0603	R7, R9, R12, R		4	Yageo	RC0603JR-0710KL	Volume Production	Digi-Key	311-10KGRCT-ND	
RES_3K3	RES SMD 3.3K OHM 5% 1/10W 0603	R13, R17		2	Yageo	RC0603JR-073K3L	Volume Production	Digi-Key	311-3.3KGRCT-ND	
RES_100K	RES SMD 100K OHM 5% 1/10W 0603	R14		1	Yageo	RC0603FR-07261KL	Volume Production	Digi-Key	311-261KHRCT-ND	
RES_15K	RES SMD 15K OHM 5% 1/10W 0603	R15		1	Yageo	RC0603J**15KL		Digi-Key	311-15KGRCT-ND	
RES_2K2	RES SMD 2.2K OHM 1% 1/10W 0603	R16, R18		2	Yageo Phycomp	RC0603FR-072K2L	Volume Production	Digi-Key	311-2.20KHRCT-ND	
SW_PWR	Power Switch (Red)	S1		1	ITT C&K	PTS830GM140SMTRLFS	Volume Production	Digi-Key	CKN10587CT-ND	
SW_TACT	Tactile Switch (Grey)	S2, S3		2	Omron	B3U-1100P	Volume Production	Digi-Key	SW1021CT-ND	
STM32F4	ARM Cortex-M4 32-bit MCU+FPU, 512 K	STM1		1	STMicroelectronics	STM32F446RET6	Volume Production	Digi-Key	497-15376-ND	
NTC_THERM	THERM NTC 100KOHM 4700K 0603	TH1		1	Panasonic	ERT-J1VV104J	Volume Production	Digi-Key	P10555CT-ND	
IC_TXRX_C	IC TXRX CAN 4MBPS 8SO	U1, U2		2	Analog Devices / Linear	LTC2875IS8#PBF	Volume Production	Digi-Key	LTC2875IS8#PBF-ND	
OPA3131U	IC OPAMP GP 1CIRCUIT SOT23-5	U3, U4, U5, U		4	Texas Instruments	OPA3131DBVR	Volume Production	Digi-Key	296-35607-1-ND	
EVO_2V2	IC REG LINEAR 2.2V/1A DPAK	V01		1	ON Semiconductor	NCP1112DT2T5COSCT-N	Volume Production	Digi-Key	NCP1112DT2T5COSCT-N	