Additional Schematic Drawings

MSP430

MSP430.sch

Teensy

Teensy.sch

Sensors

Sensors.sch

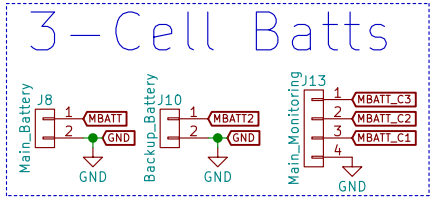
Power

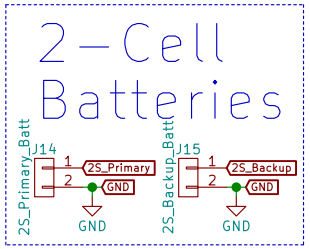
Power.sch

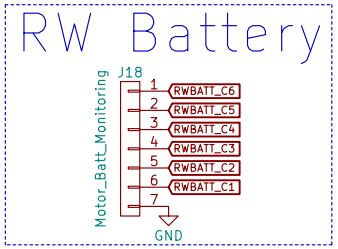
TVS and TP

TVS and TP.sch

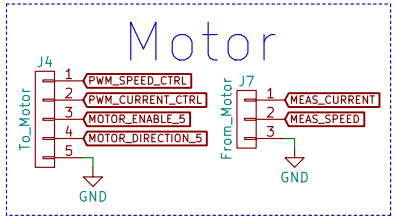
Battery & Power Connections

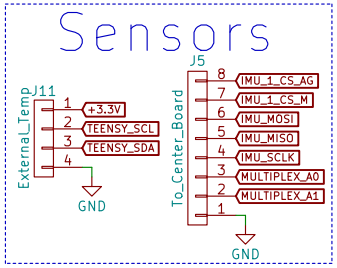


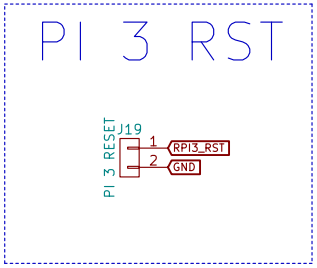




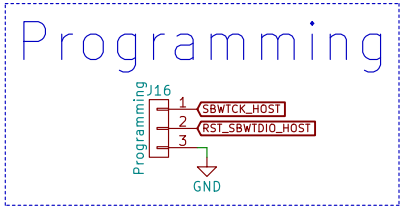
Teensy 3.6 Interfaces

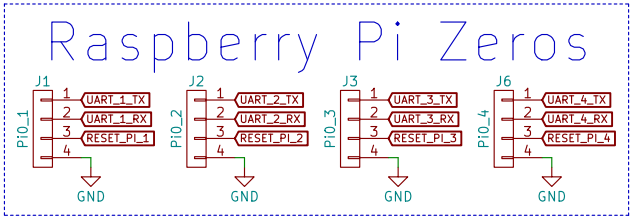


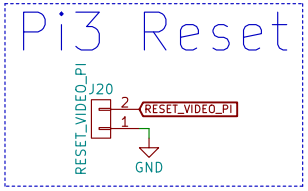


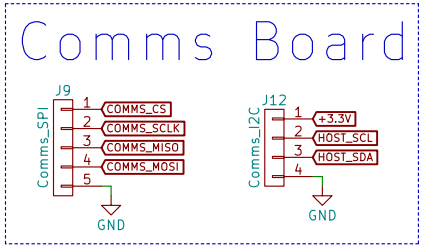


MSP-430 Interfaces

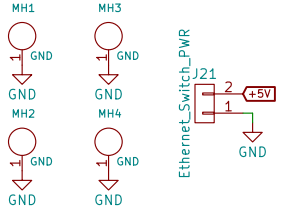




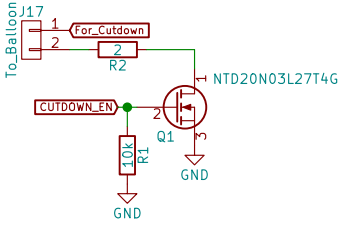




Mounting Holes & Switch PWR



Cutdown Mechanism



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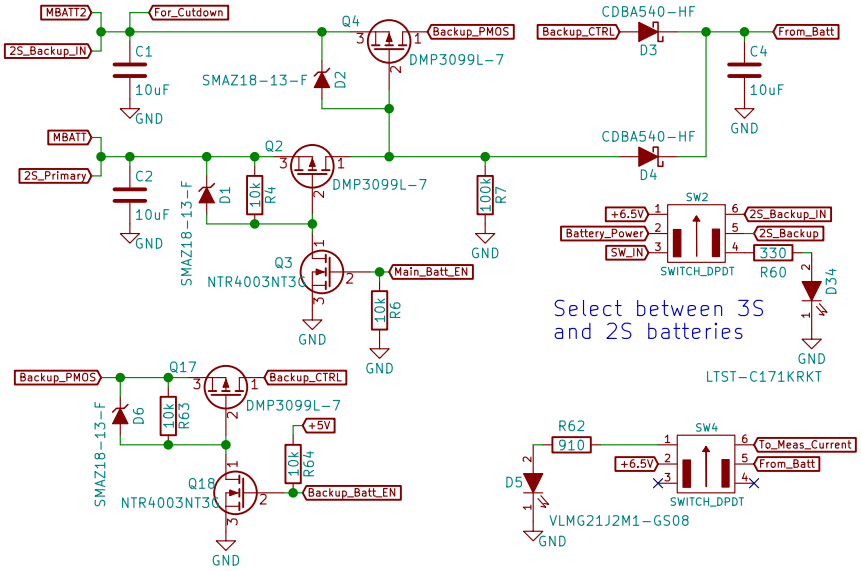
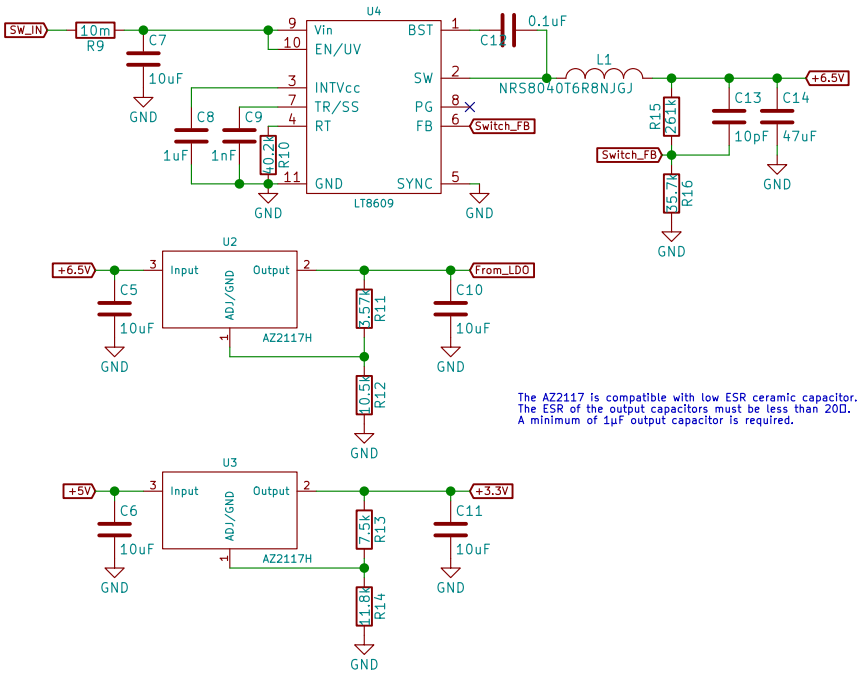
Battery Input and Switchover

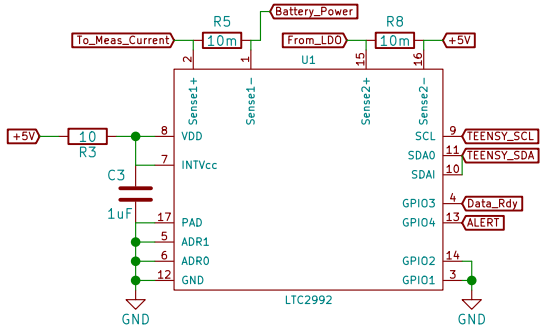
The system is initially powered off of the backup battery but then switches to the main battery during the initialization sequence by toggling the "Batt_EN" GPIO high



DC–DC Regulators



Current Measurement



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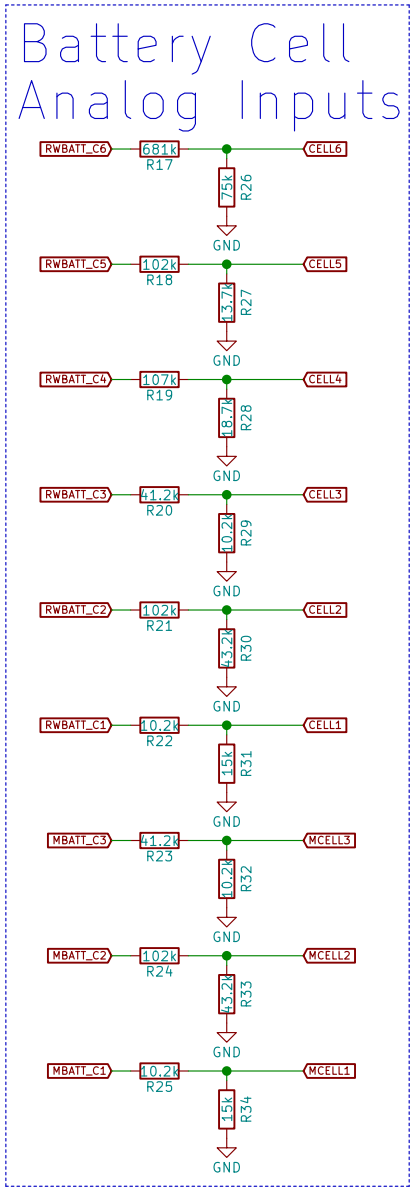

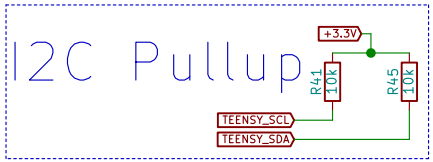

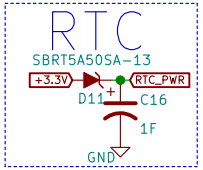

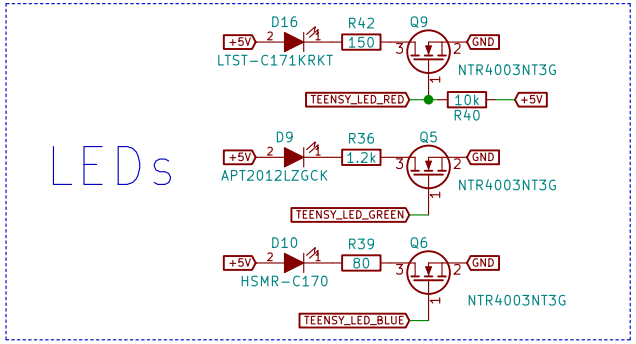

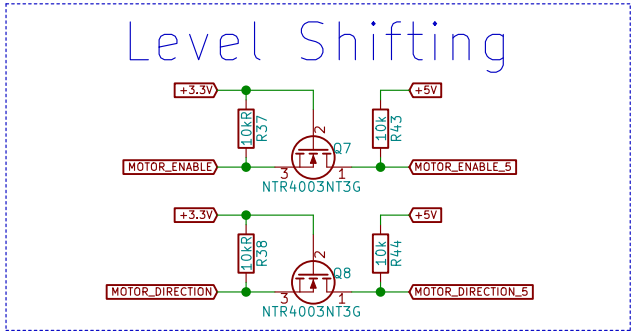

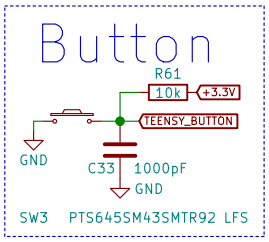

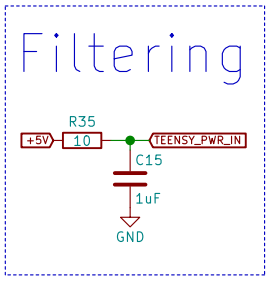

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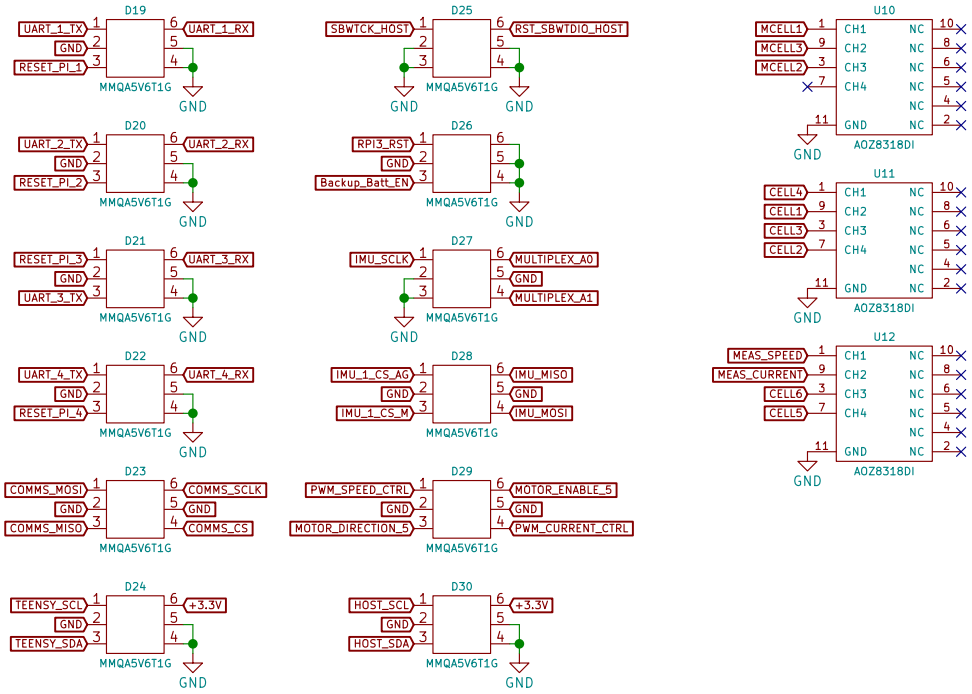

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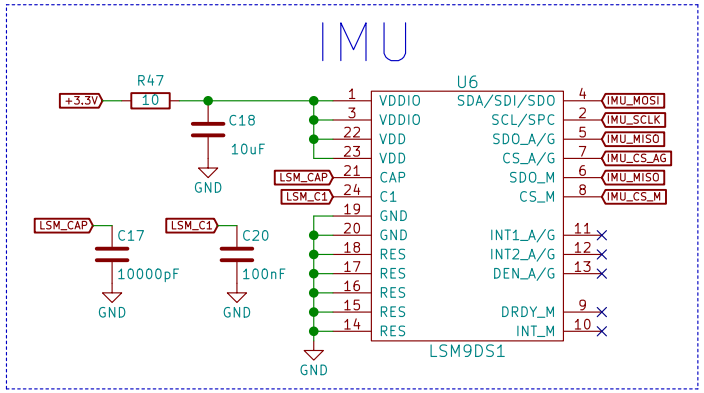

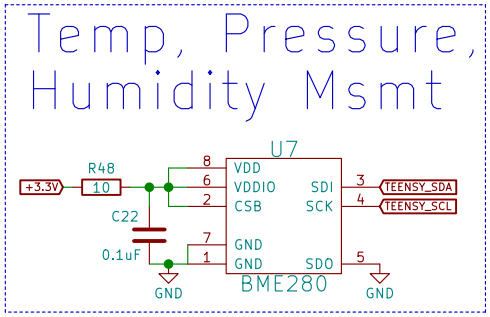

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KiCad E.D.A. kicad 4.0.4-stable		Id: 5/6

Host MSP430 Pinout

Layout: Place decoupling capacitor as close to pins as possible

U8

+3.3V — 10 R49 — C23 100nF — GND; 0 R50

	80	AVCC1	
	61	DVCC1	
	20	DVCC2	
	40	DVCC3	
MSP_LED_GREEN	1	P1.0_TA0.1_DMAE0_RTCCLK_A0_C0_VREF-_VEREF	
MSP_LED_BLUE	2	P1.1_TA0.2_TA1CLK_COUT_A1_C1_VREF+_VEREF+	
MSP_LED_RED	3	P1.2_TA1.1_TA0CLK_COUT_A2_C2	
DAQCS_CS	16	P1.3_TA1.2_UCB0STE_A3_C3	
MULTIPLEX_A0	17	P1.4_TB0.1_UCA0STE_A4_C4	
MULTIPLEX_A1	18	P1.5_TB0.2_UCA0CLK_A5_C5	
DAQCS_MOSI	51	P1.6_TB0.3_UCB0SIMO_UCB0SDA_TA0.0	
DAQCS_MISO	52	P1.7_TB0.4_UCB0SOMI_UCB0SCL_TA1.0	
	4	P3.0_A12_C12	
	5	P3.1_A13_C13	
	6	P3.2_A14_C14	
	7	P3.3_A15_C15	
	47	P3.4_TB0.3_SMCLK	
	48	P3.5_TB0.4_COUT	
	49	P3.6_TB0.5	
	50	P3.7_TB0.6	
COMMS_MOSI	53	P5.0_UCB1SIMO_UCB1SDA	
COMMS_MISO	54	P5.1_UCB1SOMI_UCB1SCL	
COMMS_SCLK	55	P5.2_UCB1CLK_TA4CLK	
COMMS_CS	56	P5.3_UCB1STE	
UART_3_TX	65	P5.4_UCA2TXD_UCA2SIMO_TB0OUTH	
UART_3_RX	66	P5.5_UCA2RXD_UCA2SOMI_ACLK	
RESET_VIDEO_PI	67	P5.6_UCA2CLK_TA4.0_SMCLK	
	68	P5.7_UCA2STE_TA4.1_MCLK	
HOST_SDA	13	P7.0_UCB2SIMO_UCB2SDA	
HOST_SCL	14	P7.1_UCB2SOMI_UCB2SCL	
	25	P7.2_UCB2CLK	
	26	P7.3_UCB2STE_TA4.1	
	27	P7.4__TA4.0_A16	
	28	P7.5_A17	
	29	P7.6_A18	
	30	P7.7_A19	
	21	PJ.0_TDO_TB0OUTH_SMCLK_SRSCG1_C6	
	22	PJ.1_TDI_TCLK_MCLK_SRSCG0_C7	
	23	PJ.2_TMS_ACLK_SROSCOFF_C8	
	24	PJ.3_TCK_SRCPUOFF_C9	
LF_IN	77	PJ.4_LFXIN	
LF_OUT	78	PJ.5_LFXOUT	
HF_IN_1	74	PJ.6_HFXIN	
	75	PJ.7_HFXOUT	
	41	P2.0_TB0.6_UCA0TXD_UCA0SIMO_TB0CLK_ACLK	UART_1_TX
	42	P2.1_TB0.0_UCA0RXD_UCA0SOMI	UART_1_RX
	43	P2.2_TB0.2_UCB0CLK	DAQCS_SCLK
	63	P2.3_TA0.0_UCA1STE_A6_C10	
	64	P2.4_TA1.0_UCA1CLK_A7_C11	
	35	P2.5_TB0.0_UCA1TXD_UCA1SIMO	UART_2_TX
	36	P2.6_TB0.1_UCA1RXD_UCA1SOMI	UART_2_RX
	62	P2.7	
	31	P4.0_A8	CUTDOWN_EN
	32	P4.1_A9	
	33	P4.2_A10	
	34	P4.3_A11	
	57	P4.4_TB0.5	RESET_PI_1
	58	P4.5	RESET_PI_2
	59	P4.6	RESET_PI_3
	12	P4.7	RESET_PI_4
	8	P6.0_UCA3TXD_UCA3SIMO	UART_4_TX
	9	P6.1_UCA3RXD_UCA3SOMI	UART_4_RX
	10	P6.2_UCA3CLK	
	11	P6.3_UCA3STE	
	69	P6.4_UCB3SIMO_UCB3SDA	
	70	P6.5_UCB3SOMI_UCB3SCL	
	71	P6.6_UCB3CLK	
	72	P6.7_UCB3STE	
	15	P8.0	MSP_GPIO_0
	44	P8.1	MSP_GPIO_1
	45	P8.2	MSP_GPIO_2
	46	P8.3	MSP_GPIO_3
	37	TEST_SBWTCK	SBWTCK_HOST
	38	RST_NMI_SBWTDIO_N	RST_SBWTDIO_HOST
	79	AVSS1	
	76	AVSS2	
	73	AVSS3	
	60	DVSS1	
	19	DVSS2	
	39	DVSS3	

MSP430FR5994

GND

Low-Freq. Oscillator

Y1: LF_IN — C30 22pF — 32.768 kHz — C31 22pF — LF_OUT; GND

High-Freq. Oscillator

U9: ASEMB-24MHZ-XY-T

1	Standby	Output	3 HF_IN_1
2	GND	VDD	4 — 10 R59 — +3.3V; C32 10000pF — GND

GND

LEDs

D31 LTST-C171KRKT	+5V	R57 150	Q14 NTR4003NT3G	GND
MSP_LED_RED		10k R46		+5V
D7 APT2012LZGCK	+5V	R54 1.2k	Q12 NTR4003NT3G	GND
MSP_LED_GREEN				
D8 HSMR-C170	+5V	R55 80	Q15 NTR4003NT3G	GND
MSP_LED_BLUE				

I2C Pullup

+3.3V — R51 10k — HOST_SCL; R52 10k — HOST_SDA

Reset

R53 10k — +3.3V; RST_SBWTDIO_HOST — C24 1000pF — GND; GND

SW1 PTS645SM43SMTR92 LFS

DC Filtering

+3.3V — C25 1uF — C26 10uF — C27 100nF — C28 100nF — C29 100nF — GND

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