

# ATM3330e EVALUATION BOARD (with J-Link OB)

Release Date	Revision	Design Eng.	Design Notes
10/03/21	-00	AD	Initial release
12/01/21	-10	AD	Ground pin 33 of MK22 Change Paris Part Number to ATM3330e Change resistors and supplies to adjust brightness of LEDs Change R61 to 20K and R62 to 16K due to availability Change several components to NL by default Short SB119 by default Add two SB121 and SB122 to VDDPA
5/25/22	-20	AD	Remove the 20-pin Interface connector J8 Remove the Arduino connectors J10, J11, J13, J14 Remove the Trace/Debug connectors J7, J9 All GPIOs directly connected to J12 Analog switches are used to connect/disconnect K22 and peripherals
7/20/22	-21	AD	Loaded R69 I2C data pull-up 915MHz Harvester Match Updated RFIO Match Updated Li-Ion charge pump ckt Changed VAUX cap to 4.7uF and C63 to 0ohm Load C17 (VDDPA bypass) with 1uF
11/08/22	-22	AD	Updated U1 pin names for pins 20 (VBAT) and 28 (VBATLI) Renamed nets: VBATT to VBAT, and VBATTLI to VBATLI Updated RFIO Match (L11, C21, L12, C20) Updated WuRx Match (C25, L4, C24)
11/21/22	-31	AD	Changed JP29 to J28 to select between VBAT and VBATLI Removed C9 and JP3 (harvesting meter), added a TP25 (VSTORE) Added R99 to keep SWD and BBOOT connected by default Added short SB145 and R101, R102 to Li-Ion Charging Ckt Added short SB146 to ground the negative terminal of PV cell Changed C63 (0ohms on RES pin 29 of U1) to R103 (0ohms) Added R104 as an option to connect VCCIO to Coin Cell Added Brownout/LPComp Ckt (R105, R106, C73) Added R100 between P13 and U7 Changed 32kHz clock for boost ckt from P13 to P4
03/31/23	-32	AD	Modified the description for C12
08/15/23	-40	AD	Added VCCIO tracking circuit. Changed Sensor control from I2C1 (P6/P7) to I2C0 (P16/P17). Added inductive boost circuit option.

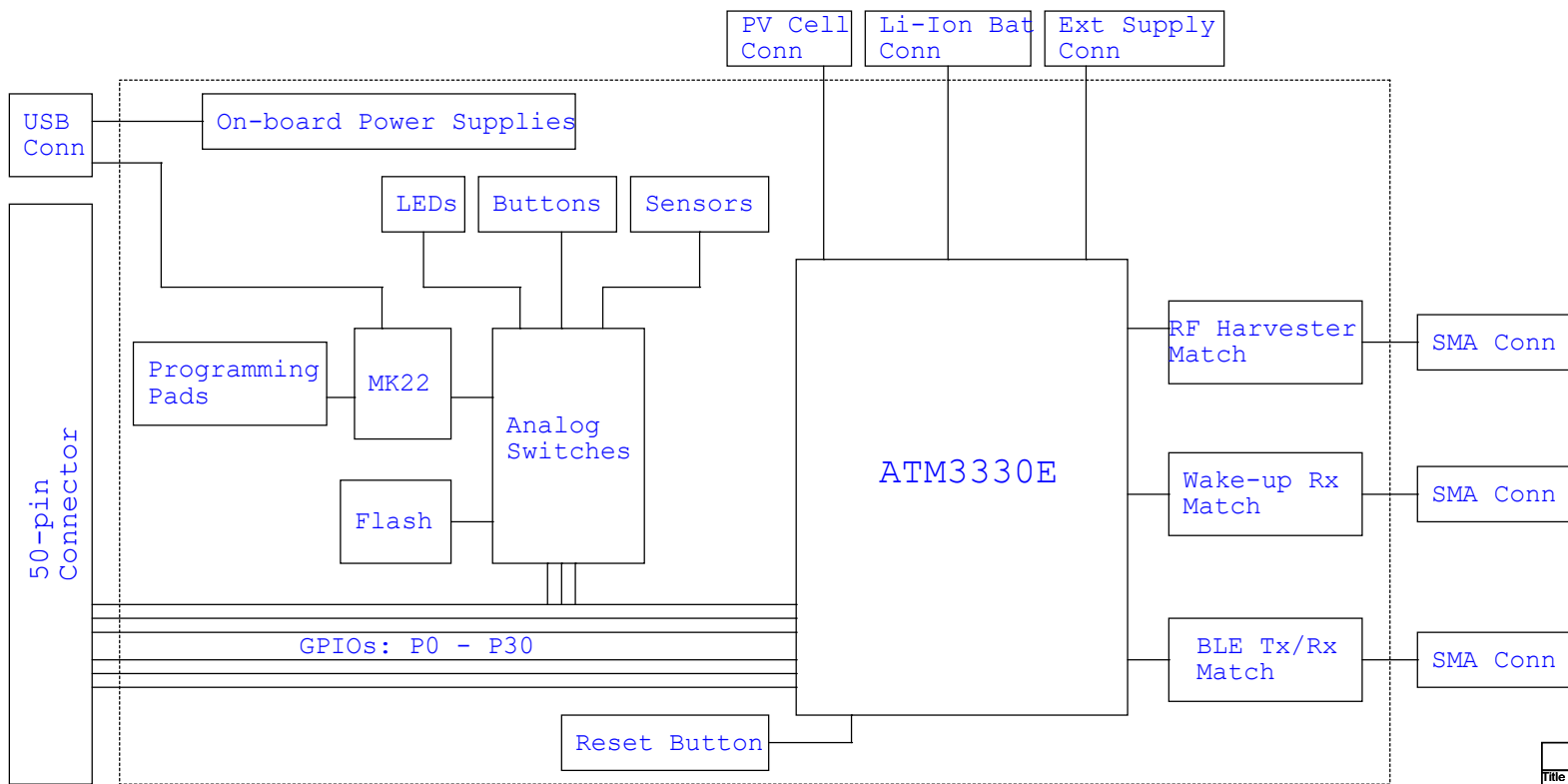
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Campbell, CA 95008

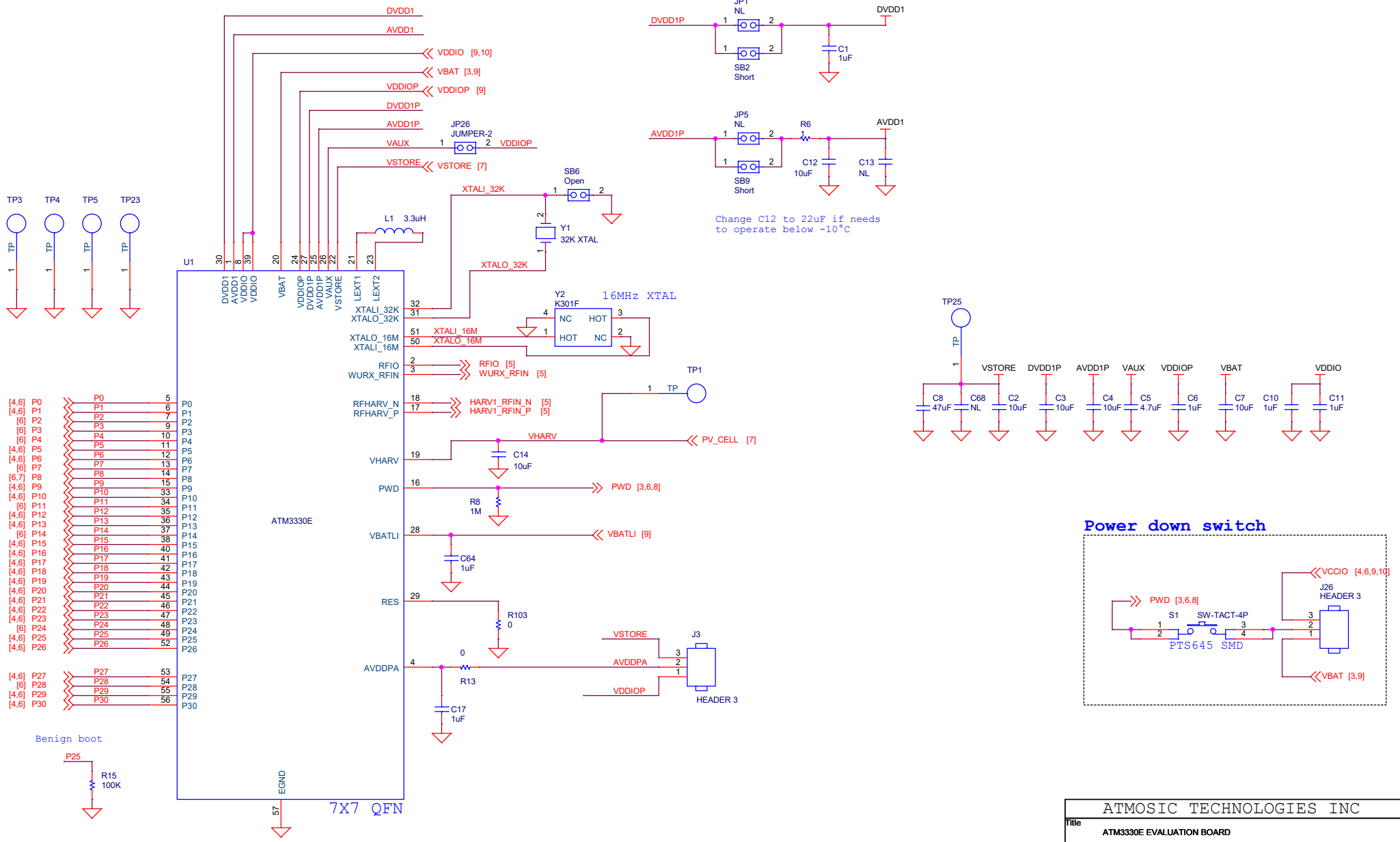
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## Block Diagram



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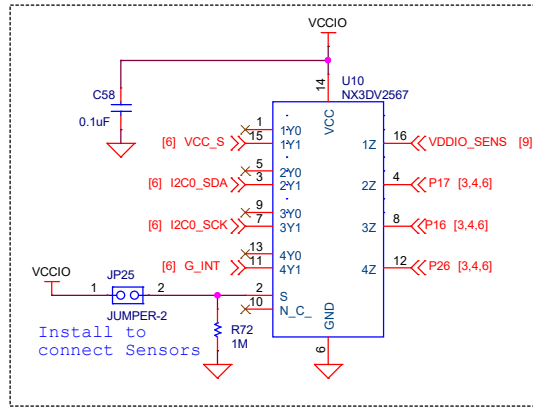
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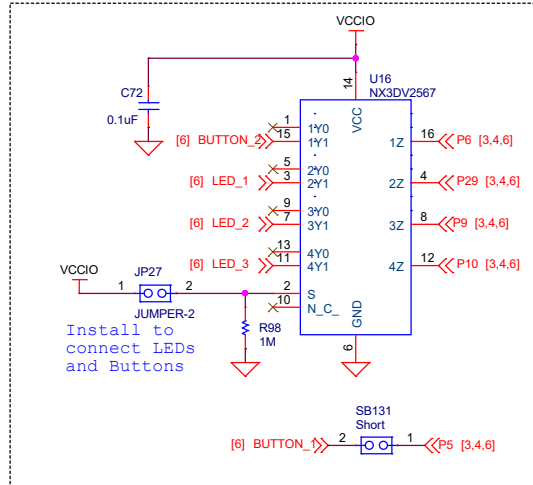
## GPIO MUX

- [3,6] P0\_GPIO >> <<P0 [3,4,6]
- [3,6] P1\_GPIO >> <<P1 [3,4,6]
- [3,6] P2\_GPIO >> <<P2 [3,6]
- [3,6] P3\_GPIO >> <<P3 [3,6]
- [3,6] P4\_GPIO >> <<P4 [3,6]
- [3,6] P5\_GPIO >> <<P5 [3,4,6]
- [3,6] P6\_GPIO >> <<P6 [3,4,6]
- [3,6] P7\_GPIO >> <<P7 [3,6]
- [3,6,7] P8\_GPIO >> <<P8 [3,6,7]
- [3,6] P9\_GPIO >> <<P9 [3,4,6]
- [3,6] P10\_GPIO >> <<P10 [3,4,6]
- [3,6] P11\_GPIO >> <<P11 [3,6]
- [3,6] MODE\_0 >> <<P12 [3,4,6]
- [3,6] P12\_GPIO >> <<P12 [3,4,6]
- [3,6] P13\_GPIO >> <<P13 [3,4,6]
- [3,6] P14\_GPIO >> <<P14 [3,6]
- [3,6] MODE\_1 >> <<P15 [3,4,6]
- [3,6] P15\_GPIO >> <<P15 [3,4,6]
- [3,6] P16\_GPIO >> <<P16 [3,4,6]
- [3,6] P17\_GPIO >> <<P17 [3,4,6]
- [3,6] P18\_GPIO >> <<P18 [3,4,6]
- [3,6] P19\_GPIO >> <<P19 [3,4,6]
- [3,6] P20\_GPIO >> <<P20 [3,4,6]
- [3,6] P21\_GPIO >> <<P21 [3,4,6]
- [3,6] P22\_GPIO >> <<P22 [3,4,6]
- [3,6] P23\_GPIO >> <<P23 [3,4,6]
- [3,6] P24\_GPIO >> <<P24 [3,6]
- [3,6] MODE\_2 >> <<P25 [3,4,6]
- [3,6] P25\_GPIO >> <<P25 [3,4,6]
- [3,6] P26\_GPIO >> <<P26 [3,4,6]
- [3,6] P27\_GPIO >> <<P27 [3,4,6]
- [3,6] P28\_GPIO >> <<P28 [3,6]
- [3,6] P29\_GPIO >> <<P29 [3,4,6]
- [3,6] P30\_GPIO >> <<P30 [3,4,6]

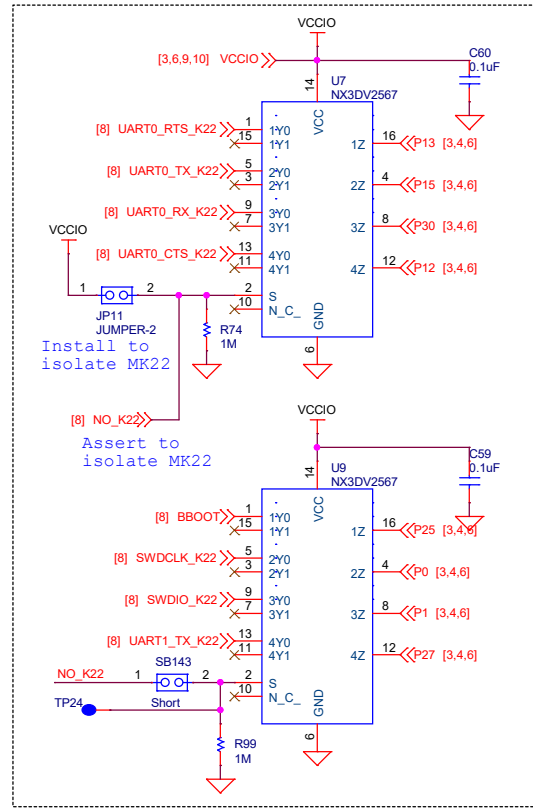
## CONNECT SENSORS TO ATM3330



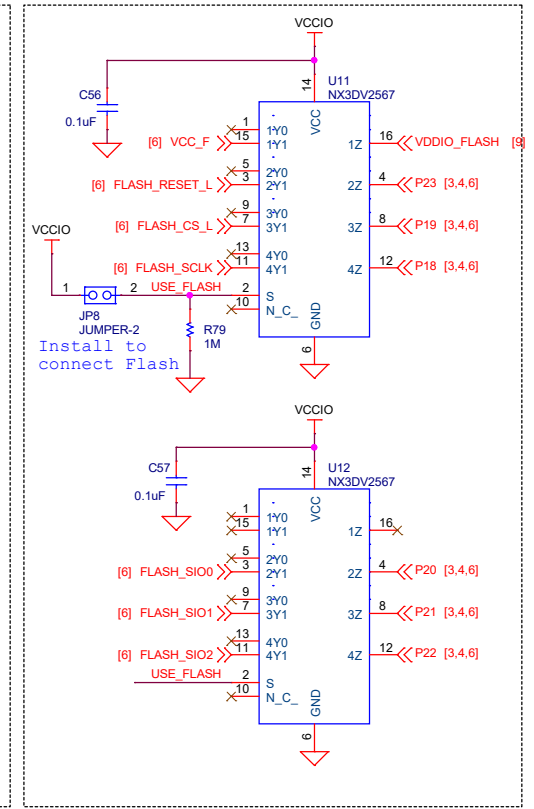
## CONNECT LEDS/BUTTONS TO ATM3330



## ISOLATE MK22 FROM ATM3330

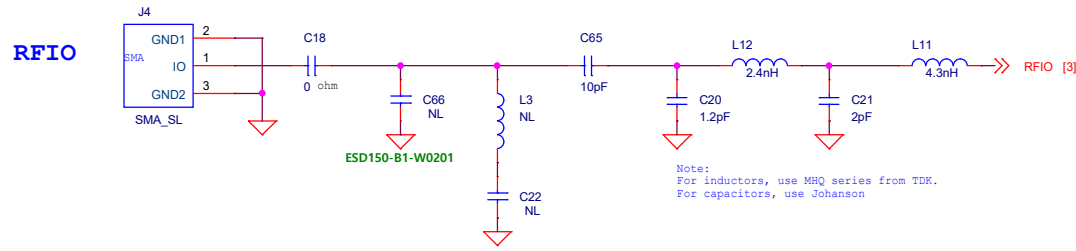


## CONNECT FLASH TO ATM3330

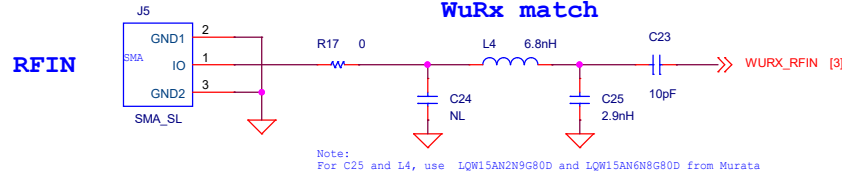


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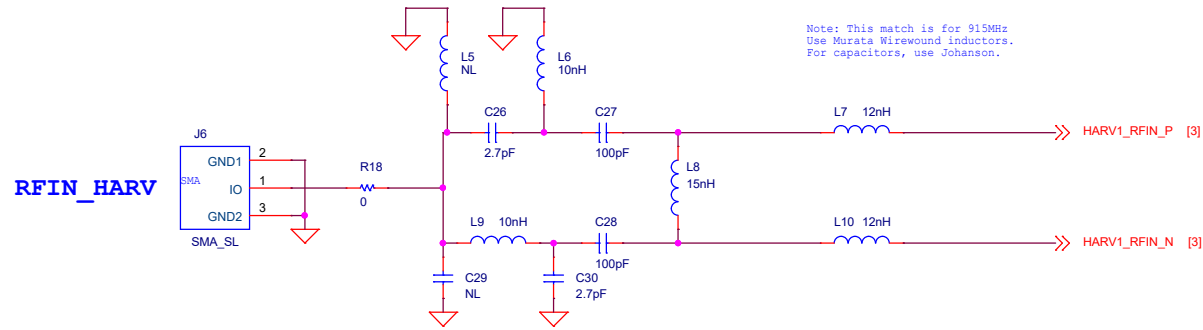
### BLE front-end match



### WuRx match

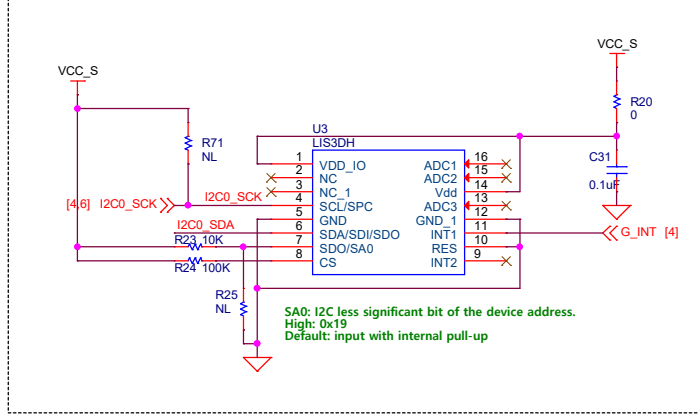


### RF Harvester front-end & ANT

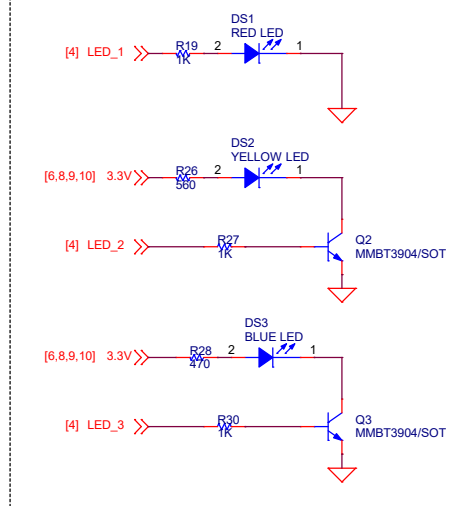


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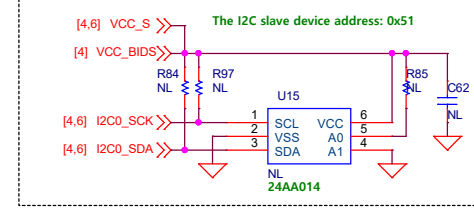
## MOTION SENSOR



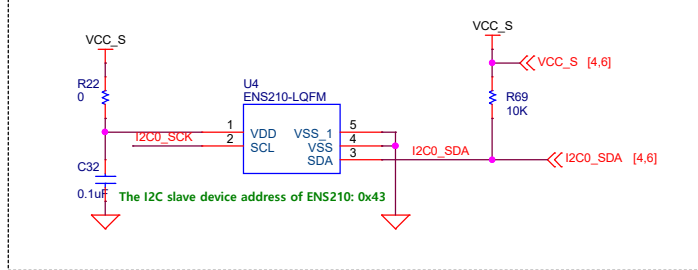
## LEDS



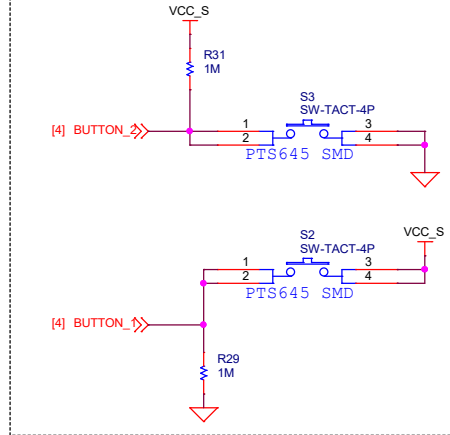
## BIDS (1Kbits)



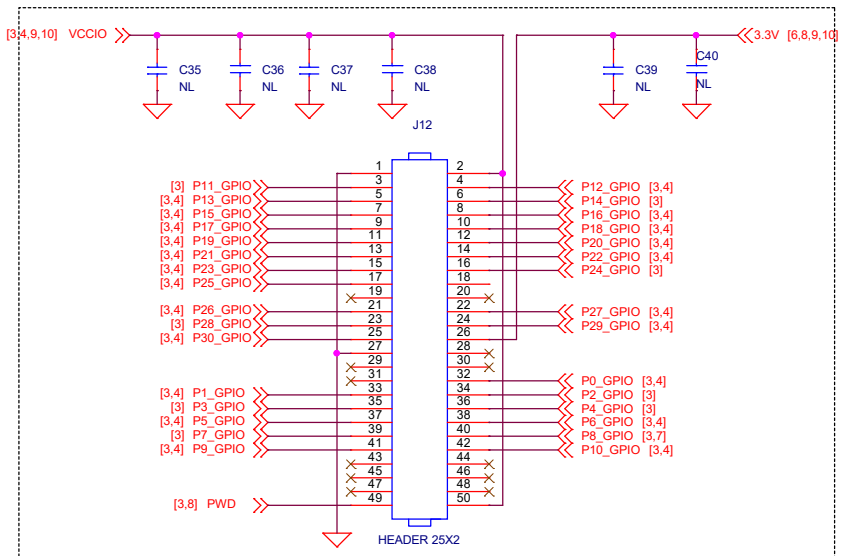
## TEMP/HUM SENSOR



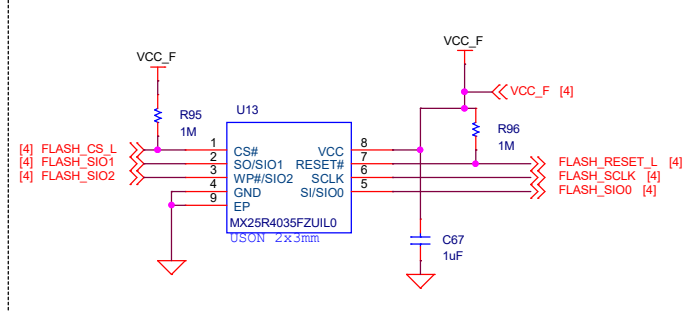
## PUSH BUTTONS



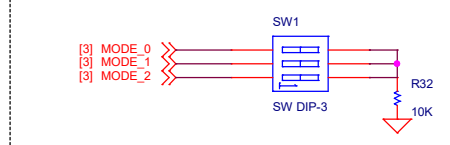
## 50-PIN CONNECTOR I/O INTERFACE



## FLASH

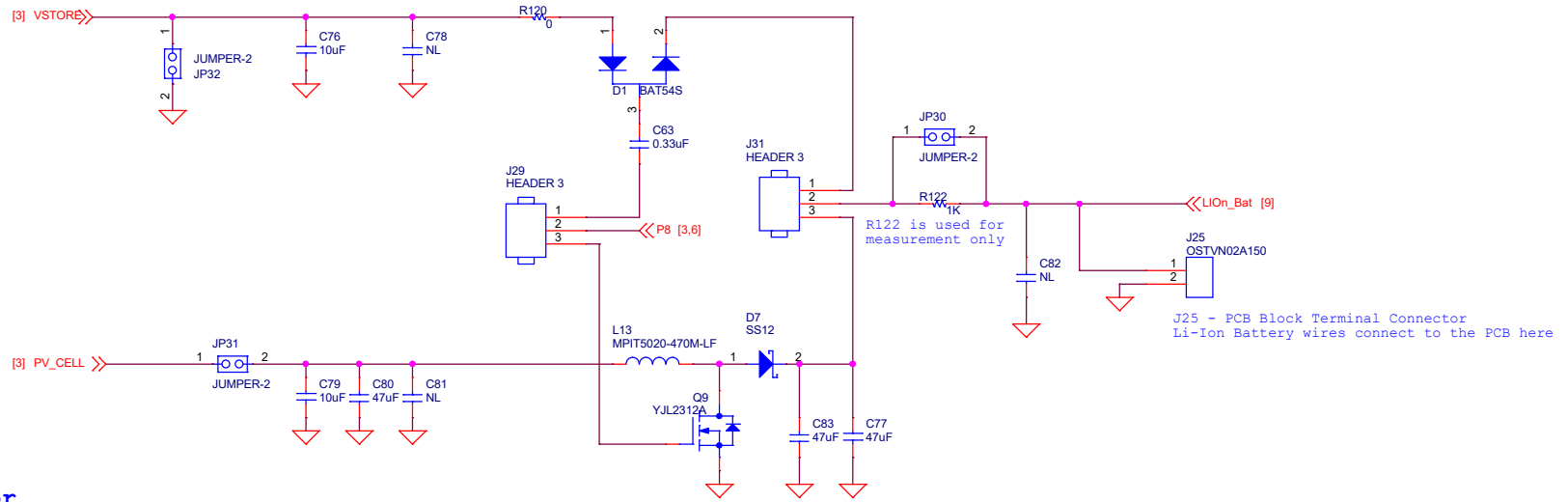


## HARV MODES

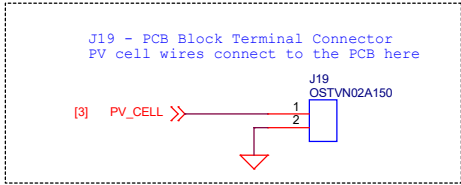


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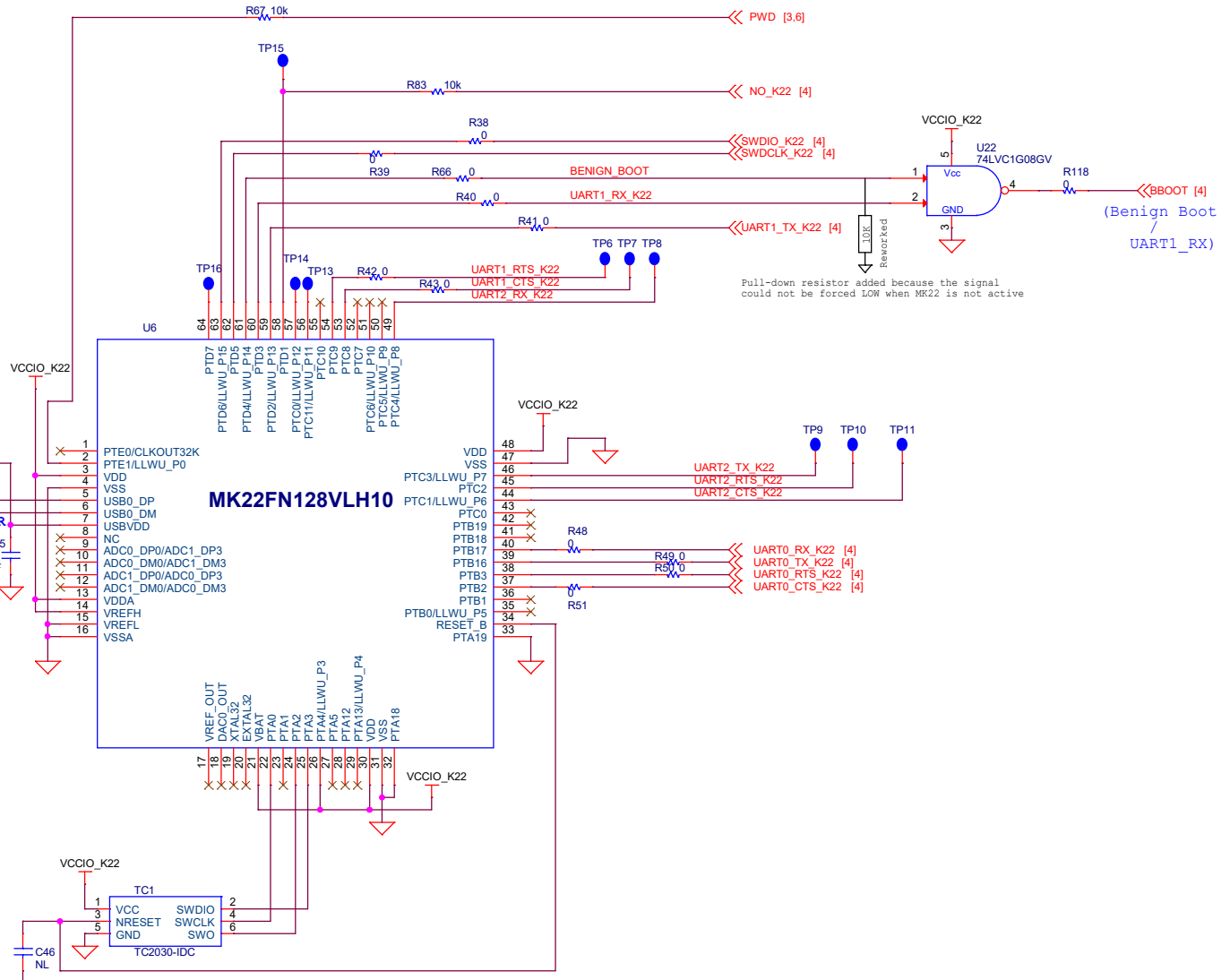
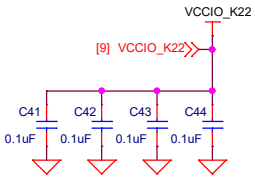
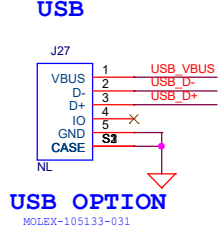
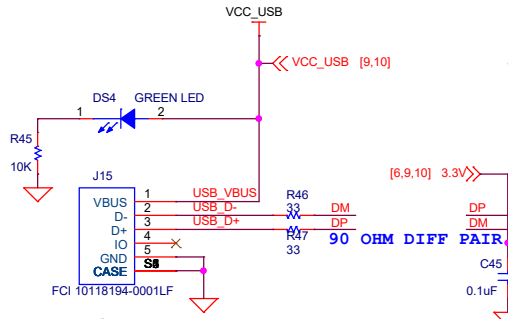
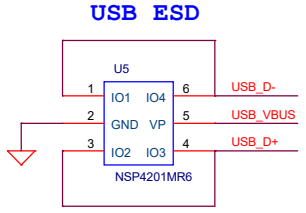
# Li-Ion Charging Ckts



## PV Cell connector



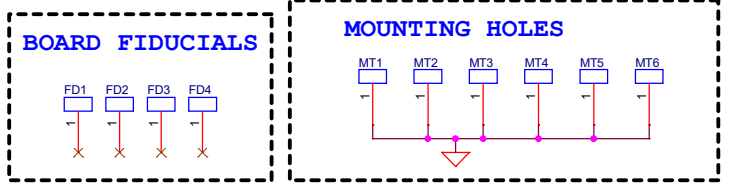
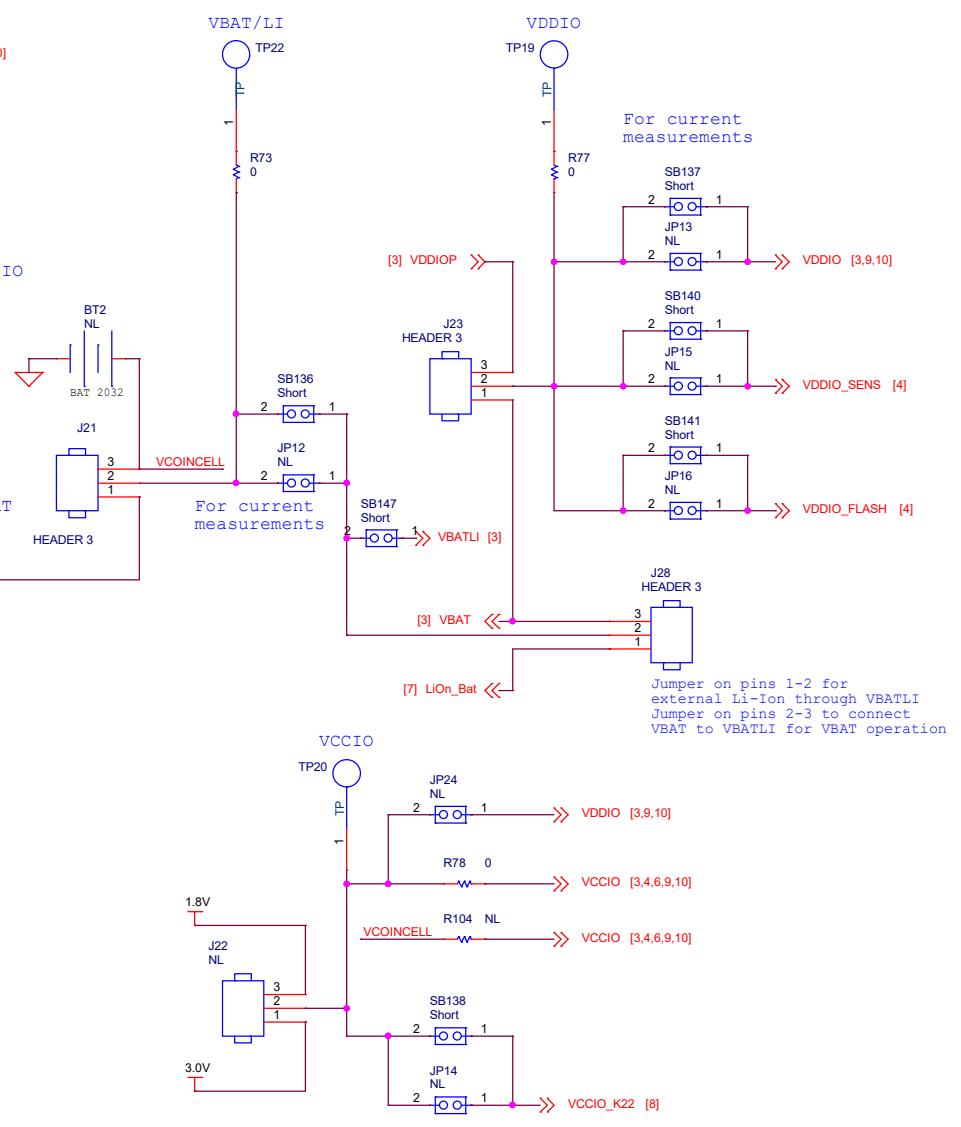
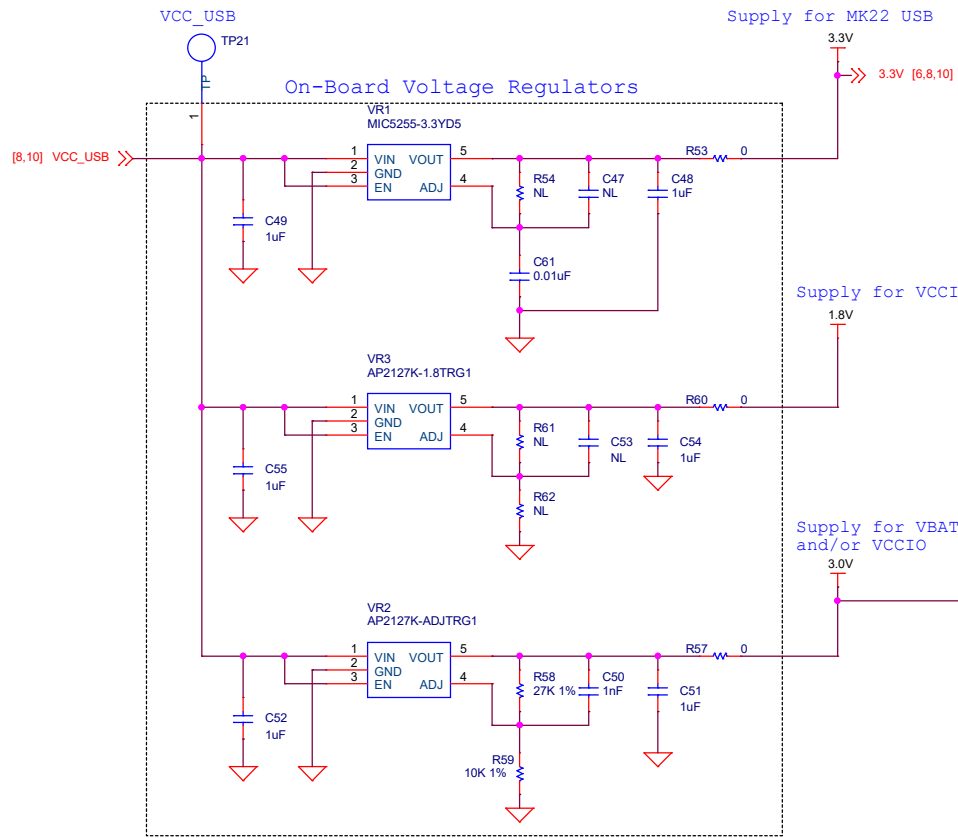
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Full-down resistor added because the signal could not be forced LOW when MK22 is not active

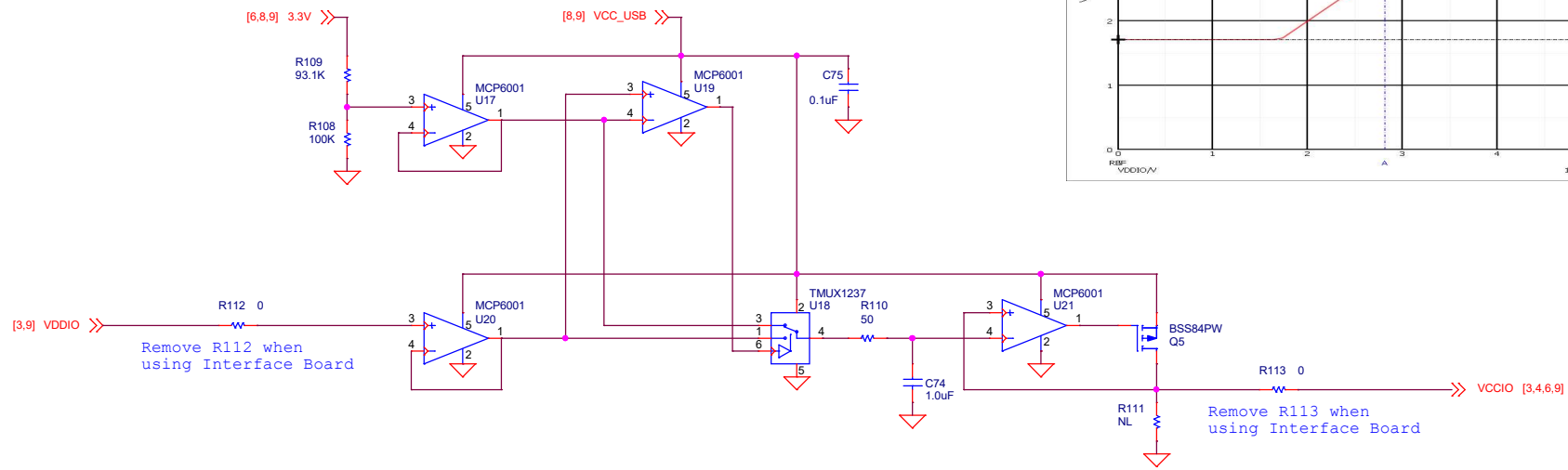
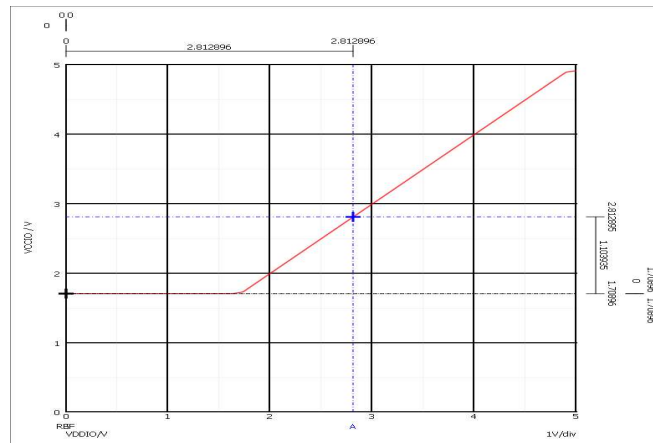
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VDDIO < 1.72V: VCCIO = 1.71V  
 VDDIO >=1.72V: VCCIO = VDDIO



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# Common EVB Operation Modes

#	Operation Mode	Description	COIN - VBAT - 3V	1.8V - VCCIO - 3V	VDDIOP - VDDIO - VBAT	VBAT - VBATLI - VBATLI	VDDIO Test Loop	VCCIO Test Loop	VBAT/LI Test Loop	PV CELL Connector	Li-Ion Battery Connector	Sensors Accelerometer enable	J-Link Bypass	Flash enable	Button & LED enable	VAUX - VDDIOP	PV HARV enable	COIN CELL - VCCIO	USB connection to laptop	Coin Cell Battery holder
1	Default VBAT operation	VBAT = 3V generated by on-board voltage regulator VDDIO = 1.8V internally generated by ATM3330 EVB is powered through USB connection to laptop	1-2	2-3	2-3	2-3	open	open	open	optional	open	optional	optional	optional	optional	open	optional	open	connected	optional
2	VBAT operation with Coin Cell	VBAT = 3V Coin Cell Voltage VDDIO = 1.8V internally generated by ATM3330 EVB is powered by the Coin Cell	2-3	2-3	2-3	2-3	open	open	open	optional	open	optional	installed	optional	optional	open	optional	open	optional	battery installed
3	VBAT operation with Power Profiling	VBAT = external DC supply VDDIO = 1.8V internally generated by ATM3330 EVB peripherals are powered through USB connection to laptop	open	2-3	2-3	2-3	open	open	DC supply	optional	open	open	installed	open	open	open	optional	open	connected	optional
		VBAT = external DC supply VDDIO = 1.8V internally generated by ATM3330 EVB peripherals are powered through Coin Cell	open	open	2-3	2-3	open	open	DC supply	optional	open	open	installed	open	open	open	optional	0 ohms	not needed	battery installed
4	VBATLI (3V) operation	VBATLI = 3V generated by on-board voltage regulator VDDIO = 1.8V internally generated by ATM3330 EVB is powered through USB connection to laptop	1-2	2-3	2-3	open	open	open	open	optional	open	optional	optional	optional	optional	open	optional	open	connected	optional
5	VBATLI (using Coin Cell) operation	VBATLI = Coin Cell Voltage VDDIO = 1.8V internally generated by ATM3330 EVB peripherals are powered through USB connection to laptop	2-3	2-3	2-3	open	open	open	open	optional	open	optional	installed	optional	optional	open	optional	open	optional	battery installed
6	VBATLI (using External Li-Ion battery) operation	VBATLI = External Li-Ion battery Voltage VDDIO = 1.8V internally generated by ATM3330 EVB peripherals are powered through USB connection to laptop	open	2-3	2-3	1-2	open	open	open	optional	Li-Ion battery connected	optional	installed	optional	optional	open	optional	open	optional	optional
7	VBATLI operation with Power Profiling	VBATLI = external DC supply VDDIO = 1.8V internally generated by ATM3330 EVB peripherals are powered through USB connection to laptop	open	2-3	2-3	1-2	open	open	DC supply	optional	open	open	installed	open	open	open	optional	open	connected	optional
		VBATLI = external DC supply VDDIO = 1.8V internally generated by ATM3330 EVB peripherals are powered through Coin Cell	open	open	2-3	1-2	open	open	DC supply	optional	open	open	installed	open	open	open	optional	0 ohms	not needed	battery installed
8	3V VBAT with external VDDIO operation	VBAT = 3V generated by on-board voltage regulator VDDIO = VBAT EVB is powered through USB connection to laptop	1-2	1-2	1-2	2-3	open	open	open	optional	open	optional	optional	optional	optional	installed	optional	open	connected	optional
		VBAT = 3V generated by on-board voltage regulator VDDIO = External DC supply EVB is powered through USB connection to laptop	1-2	open	open	2-3		DC supply	open	open	optional	open	optional	optional	optional	optional	installed	optional	open	connected

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