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4	PK20D72M (100LQFP+Socket)
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Revisions			
Rev	Description	Date	Approved
X1	Draft	19 May 11	
A	Release	17 June 11	
A1	<ul style="list-style-type: none"> <li>1. Update the block diagram to K20D72M</li> <li>2. Add 1.8V LDO U13 for MCU power selection</li> <li>3. Add Micro USB connector J19</li> <li>4. Change OSC circuit, remove 0ohm resistor R54, R56, R58, R60, R61, R64, R65, R66, R67 for disconnect the external 32KHz crystal to main OSC.</li> <li>5. Remove R63 for disconnect net CLKINO to main OSC</li> <li>6. Change ADC channel from PTC9 to PTE0 for measure divided VREGIN</li> <li>7. Connection UART0 signals to TWRPI J8</li> <li>8. Add test point TP12, TP13 for TSI pads</li> <li>9. Change touch pad D7, D8 to LED</li> <li>10. Add microphone and buzzer</li> </ul>	22 Aug 11	
B	Elevator connector symbol got updated. Pins A47 & A48 connections VREFH/VREFL deleted	27 Sep 11	
BX1	<ul style="list-style-type: none"> <li>1. 3.3V selection Jumper , J18 deleted</li> <li>2. P3V3_ELEV net name changed to P3V3_REG</li> <li>3. P3V3 Net name changed to V_BRD for the following Interfaces Microphone, POT, Flex Bus &amp; IRDA</li> <li>4. P3V3_MCU Net change to MCU_PWR</li> <li>5. Change resistor R129 to a jumper J18</li> <li>6. Change resistor R143, R144 from no populate to populate</li> <li>7. Change Net for microphone from PTB0/ADC0_SE8/TSI0_CH0 to ADC1_DP0</li> <li>8. Buffer (U7) SN74HCT125D replaced with Voltage translators SN74LVC1T45.</li> </ul>	15 Nov 11	
C	Release for Pilot production	13 Dec 11	
C1	Change net name from CMP0_IN0 to CMP0_IN1 for Infrared section in page 6	1 March 12	

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Designer: Jay Hartvigsen		Drawing Title: <b>TWR-K20D72M</b>	
Drawn by: Manjula		Page Title: <b>Table of Contents/Revisions</b>	
Approved: Jay Hartvigsen		Size C	Document Number SCH-27182 PDF: SPF-27182
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### Power & Ground Nets

1. Unless Otherwise Specified:

- All resistors are in ohms
- All capacitors are in uF
- All voltages are DC
- All polarized capacitors are aluminum electrolytic

2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

3. Device type number is for reference only. The number varies with the manufacturer.

4. Special signal usage:

- \_B Denotes - Active-Low Signal
- <> or [] Denotes - Vectored Signals

5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.

NET	VOLTAGE	DESCRIPTION
P5V_USB	5V	Primary input power. Filtered from USB connector. Input to USB power switch.
P5V_SW	5V	Output of USB power switch controlled by the 5V_EN signal from the JM60 MCU. Used by OSBDM voltage translation circuits.
P5V_TRG_USB	5V	Output of USB power switch controlled by the VTRG_EN signal from the JM60 MCU. Provides input to regulator.
P3V3_REG	3.3V	Output of regulator using USB power input (P5V_TRG_USB).
P1V8	1.8V	Output of regulator U13
V_BRD	3.3V or 1.8V	MCU & Interface circuit input power
VDDA	3.3V	VDDA power for MCU and analog circuits. Filtered from P3V3_MCU.
VREFH	3.3V	Upper reference voltage for ADC on the MCU. Filtered from VDDA.
VREFL	0V	Lower reference voltage for ADC on the MCU. Filtered from VSSA.
VSSA	0V	VSSA power for MCU and analog circuits. Filtered from GND.
GND	0V	Digital Ground.

ELEVATOR CONNECTORS Sheet 8

Sheet 3

K20D72M MCU  
(100LQFP)  
32.768 KHz XTAL  
8 MHz XTAL  
VSSA/VDDA filter  
VREFH/VREFL filter  
VREF\_OUT  
VREGIN, VOUT33  
VBAT

Sheet 4

K20D72M MCU  
(100LQFP+socoket)  
32.768 KHz XTAL  
8 MHz XTAL  
VSSA/VDDA filter  
VREFH/VREFL filter  
VREF\_OUT  
VREGIN, VOUT33  
VBAT

Sheet 5

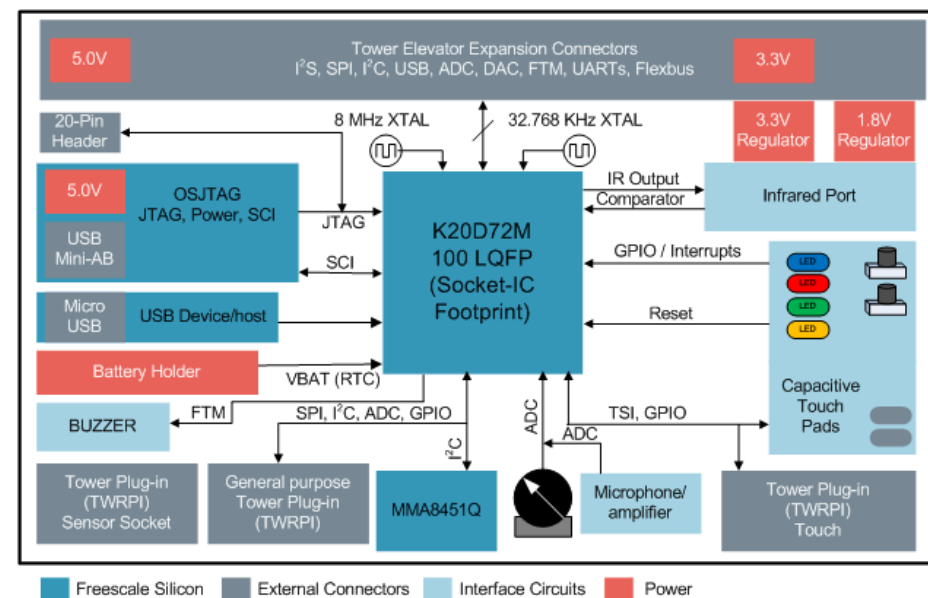
OSJTAG/USB Bridge Circuit  
USB Mini B Connector  
MC9S08JM60  
Voltage Translation  
OSJTAG/JTAG Header  
Power Supply Circuits

Sheet 6

INFRARED PORT  
PUSH BUTTONS  
ADDRESS LATCH  
USB Host and Device

Sheet 7

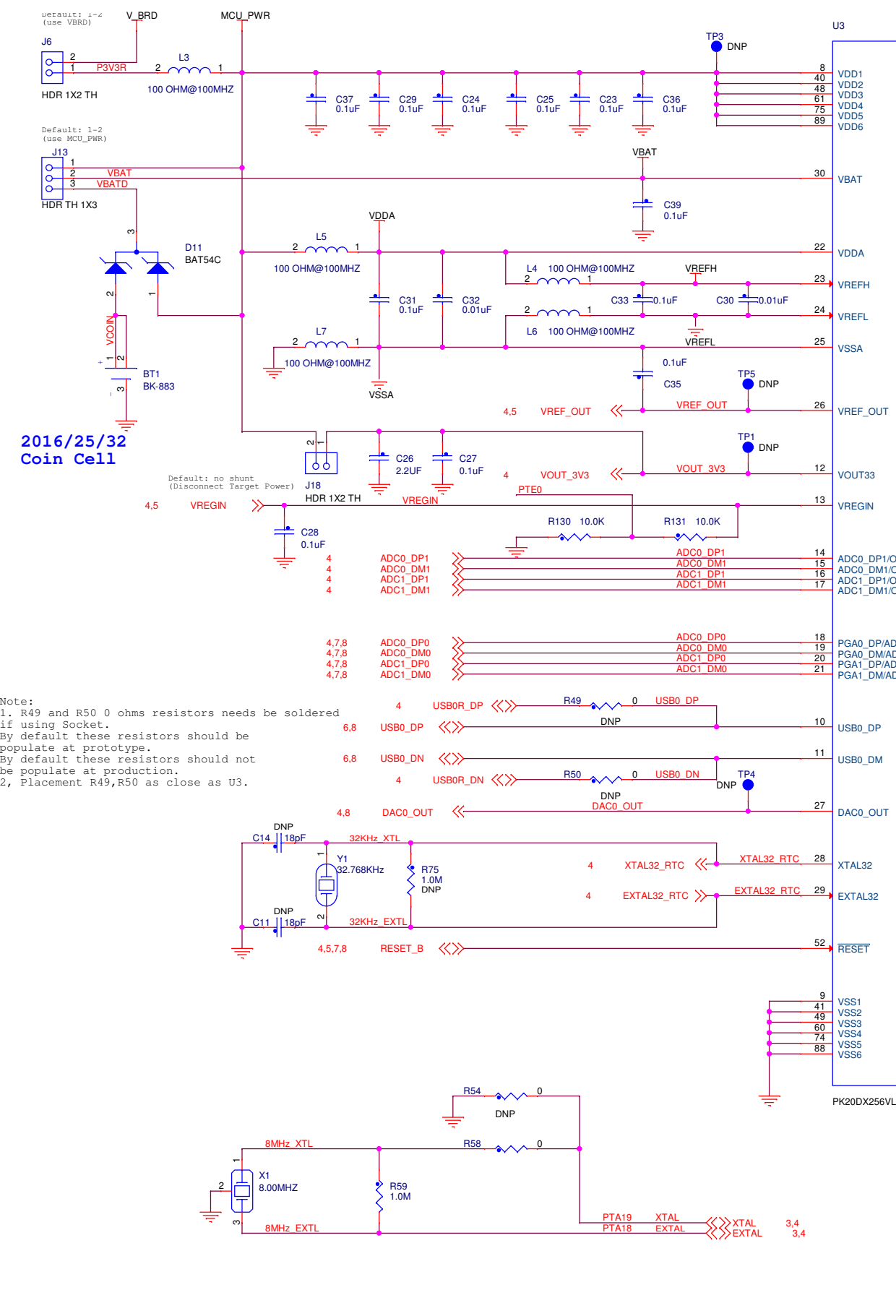
TOWER PLUG-IN (TWRPI)  
SENSOR HEADERS  
TOUCH ELECTRODES  
WITH LEDS  
TOUCH HEADER  
POTENTIOMETER  
ACCELEROMETER  
MICROPHONE  
BUZZER



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**TWR-K20D72M**  
Page Title:  
**Notes & Block Diagram**

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2016/25/32  
Coin Cell

Note:  
1. R49 and R50 0 ohms resistors needs be soldered if using Socket.  
By default these resistors should be populate at prototype.  
By default these resistors should not be populate at production.  
2. Placement R49,R50 as close as U3.



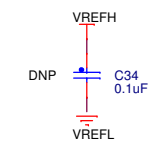
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Page Title: **PK20D72M (100LQFP)**

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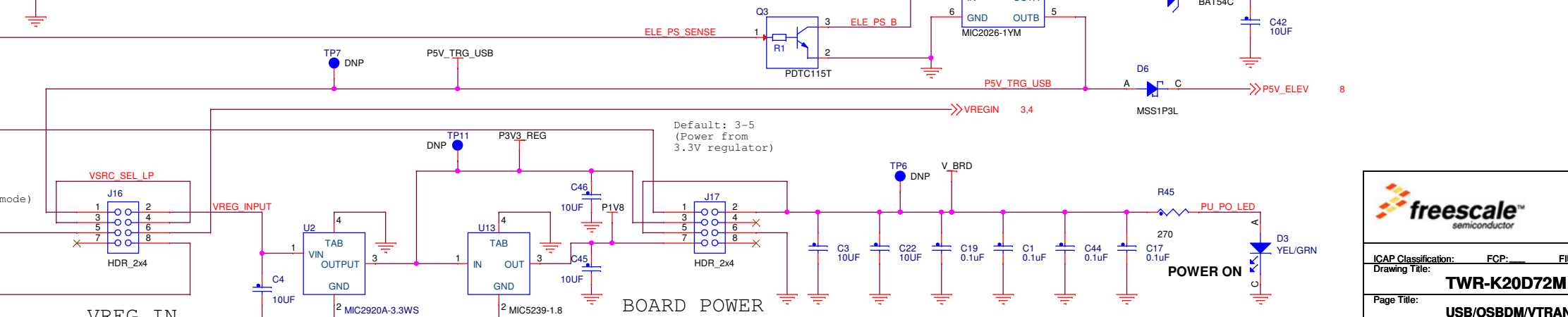
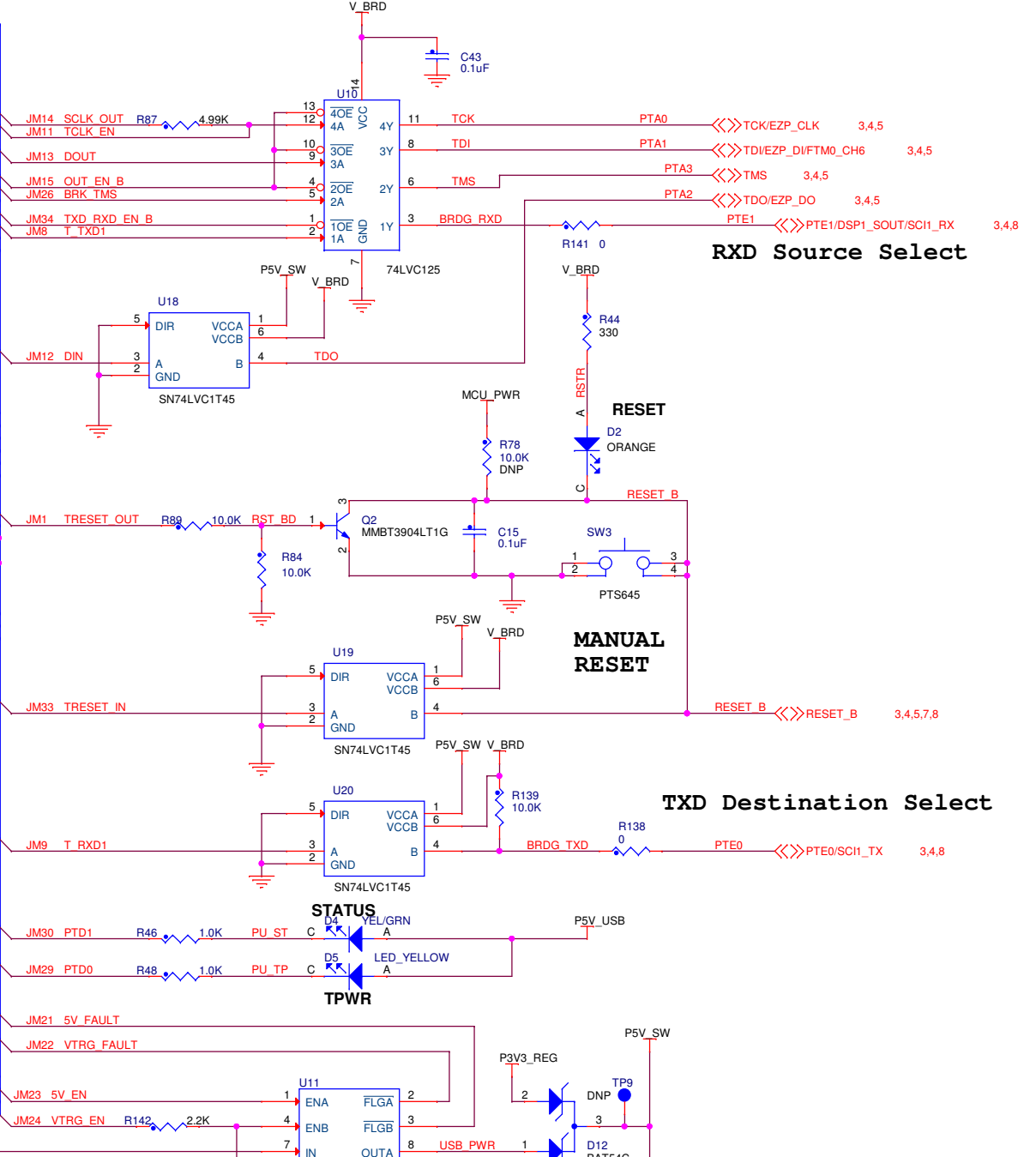
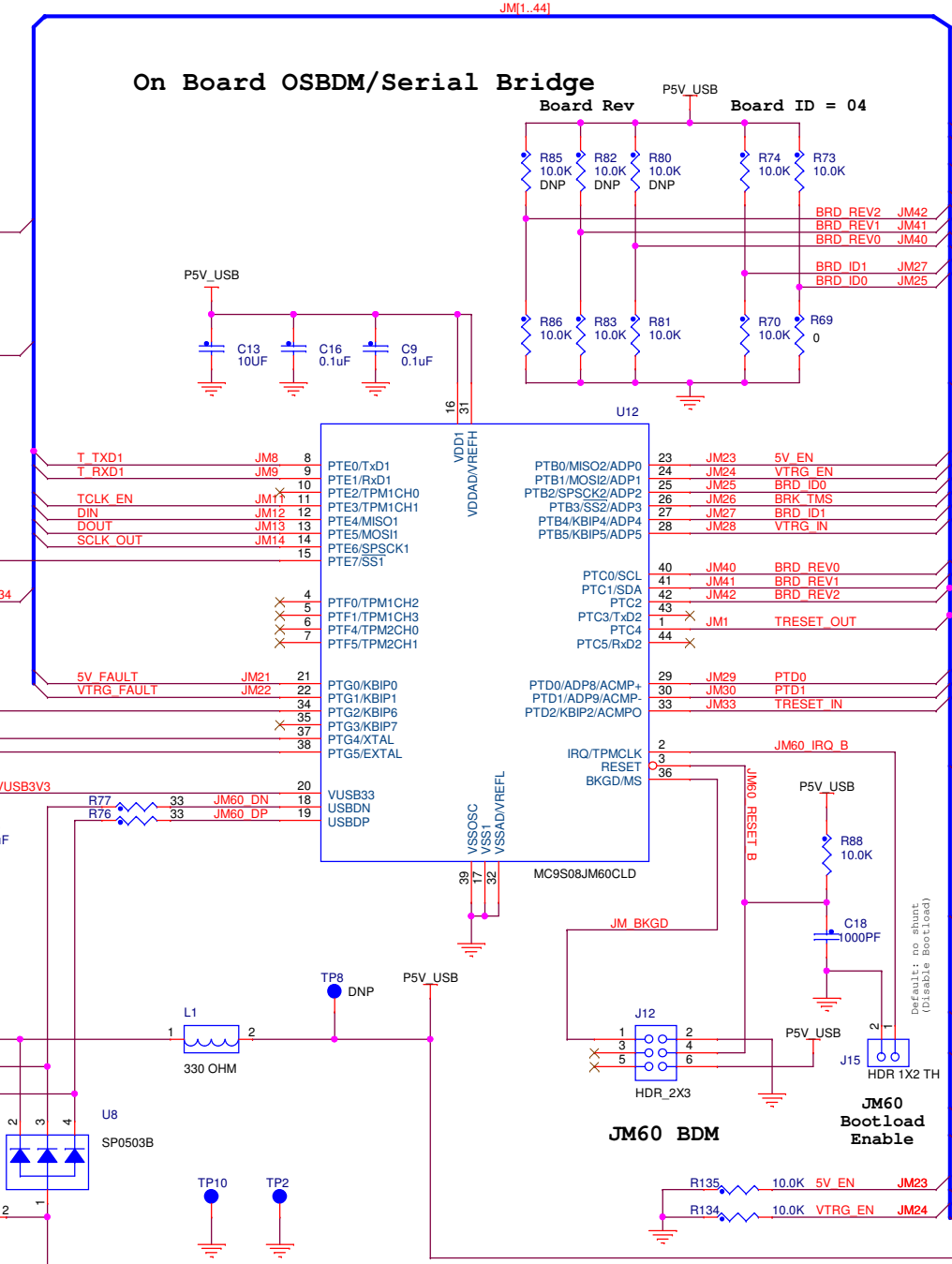
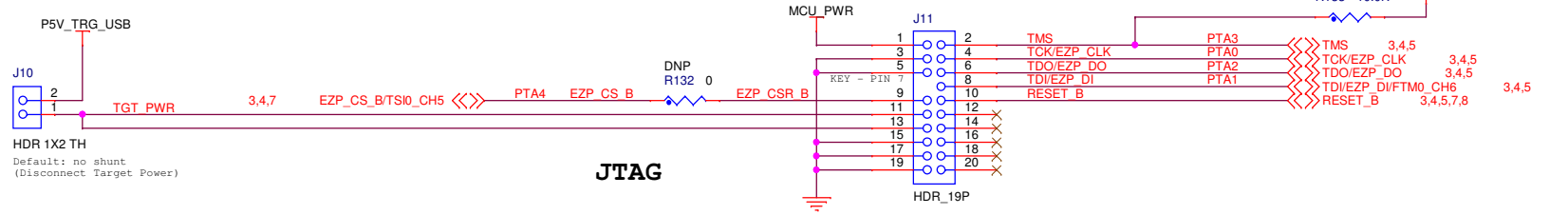
VREF BYPASS



PK20DX256VLL7 + IC500-1004-004P  
DNP

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Drawing Title: **TWR-K20D72M**  
Page Title: **PK20D72M (100LQFP+Socoket)**

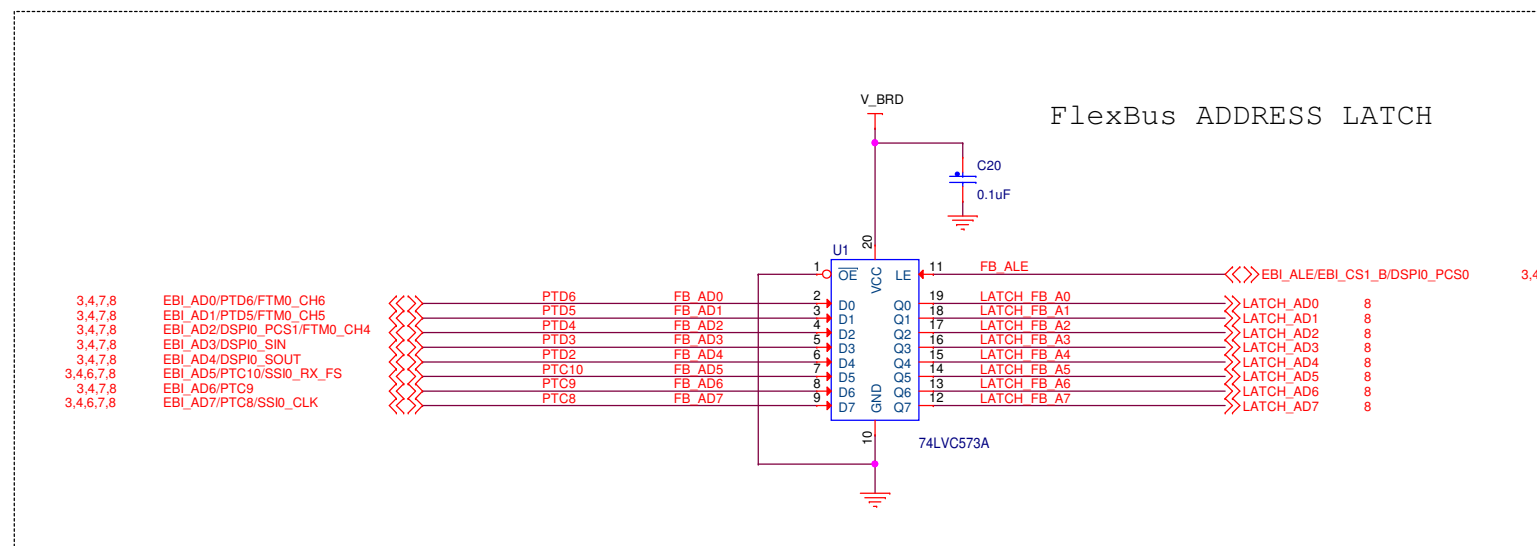
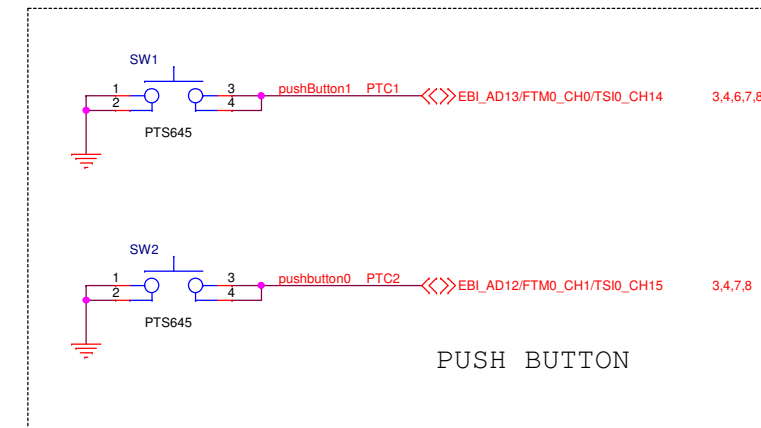
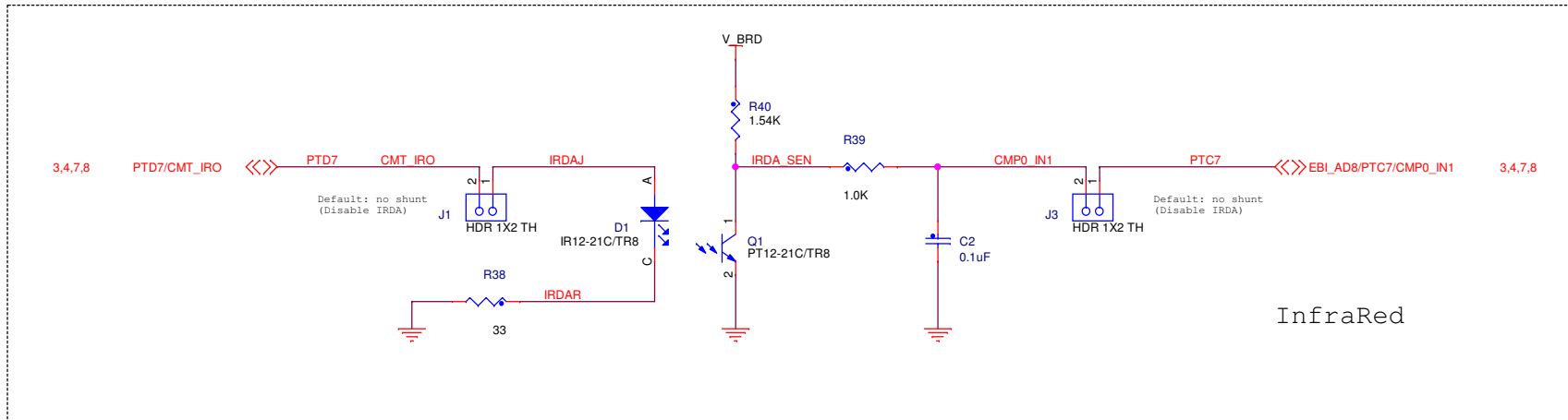
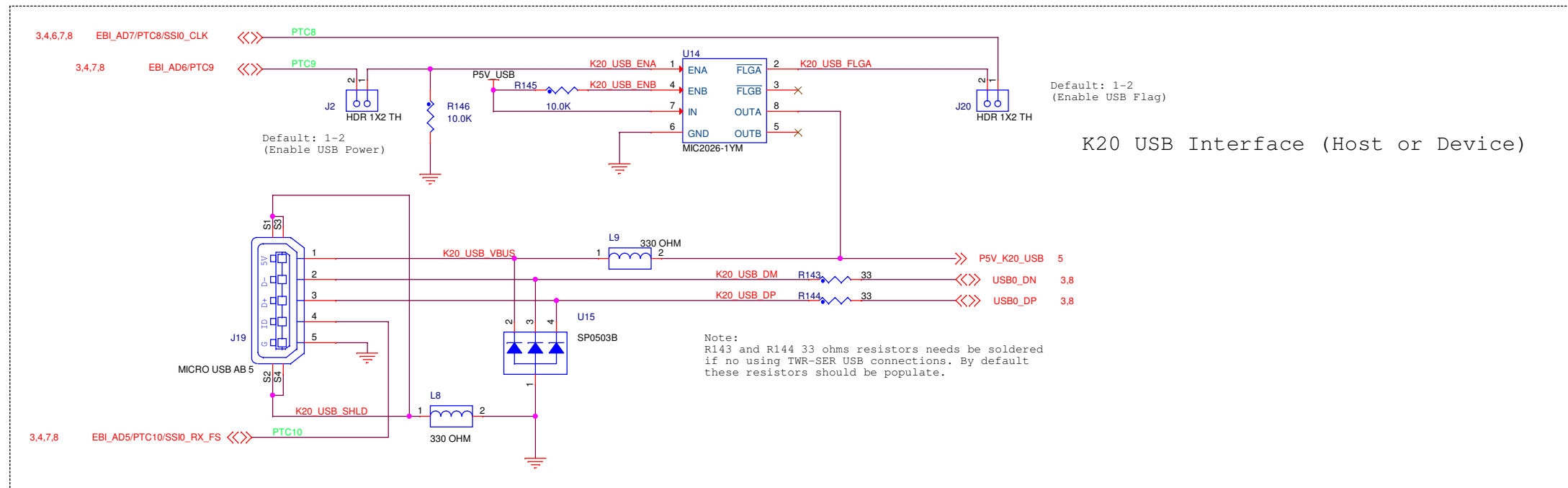
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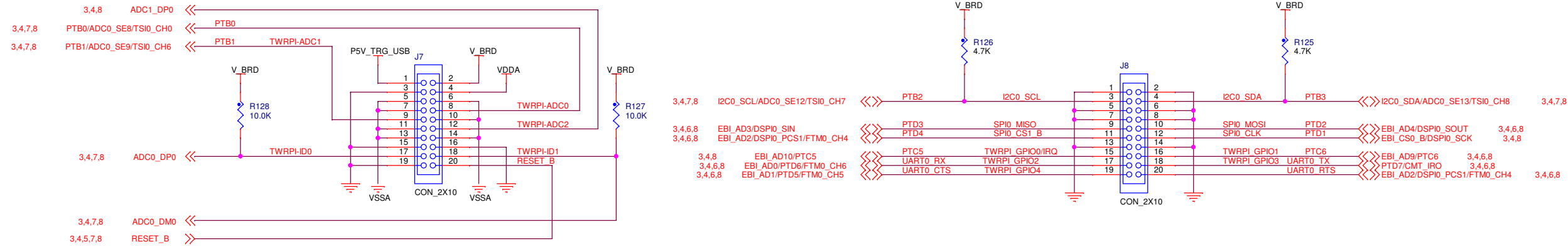
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Drawing Title: **TWR-K20D72M**  
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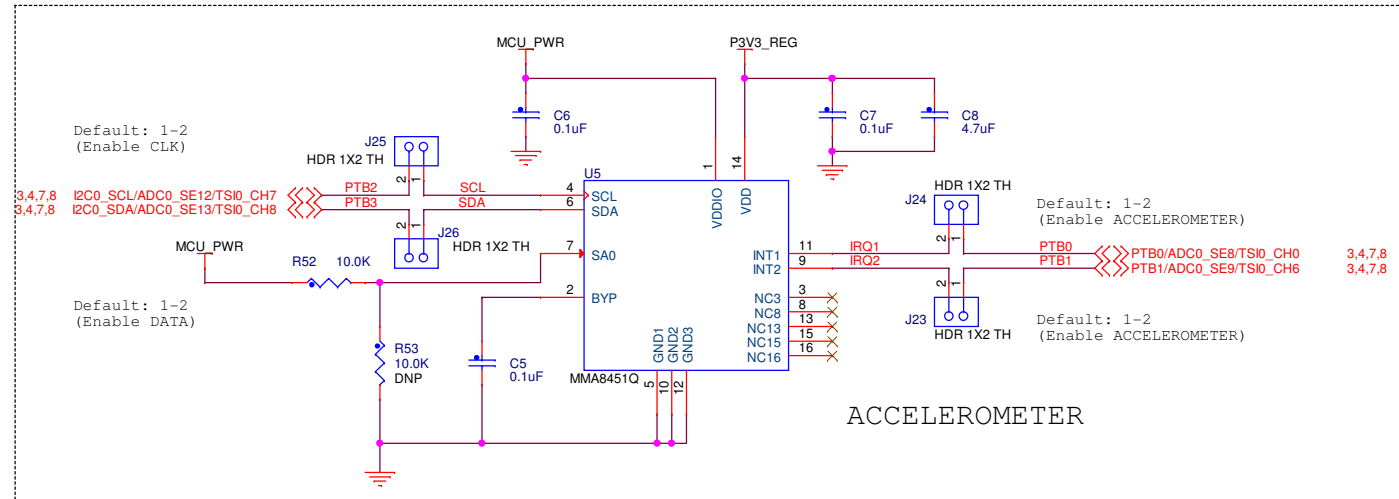
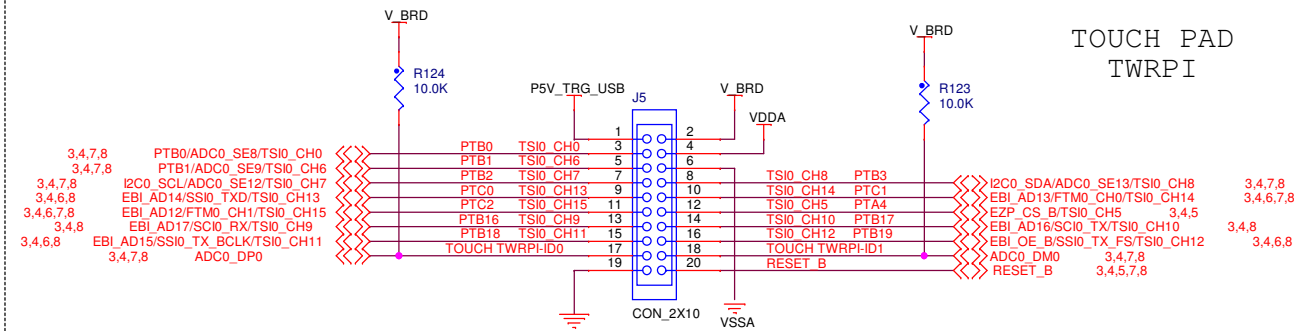




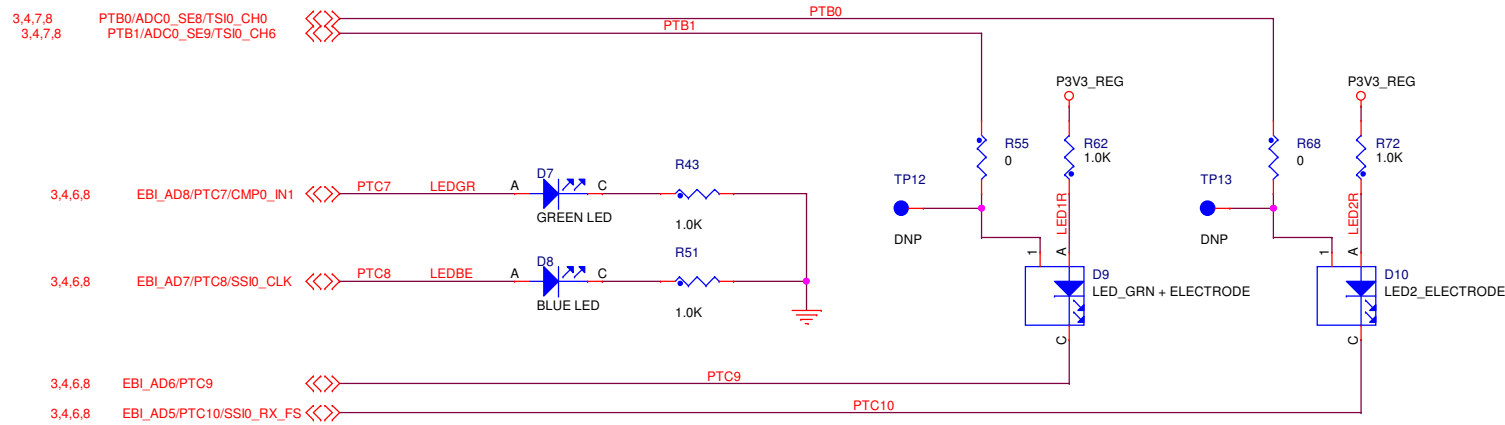
### GENERAL PURPOSE TWRPI



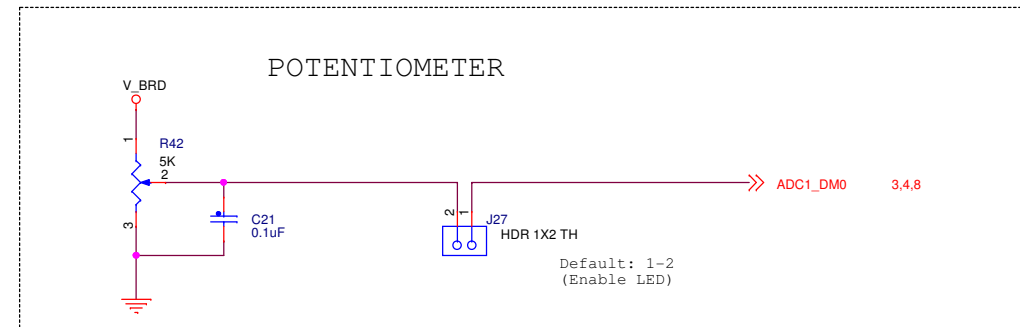
### TOUCH PAD TWRPI



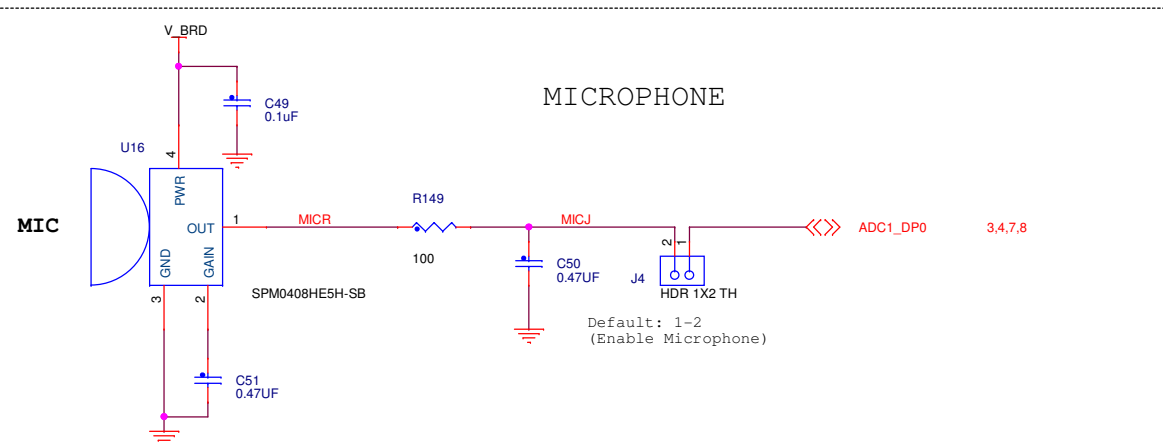
### TOUCH ELECTRODES WITH LEDs



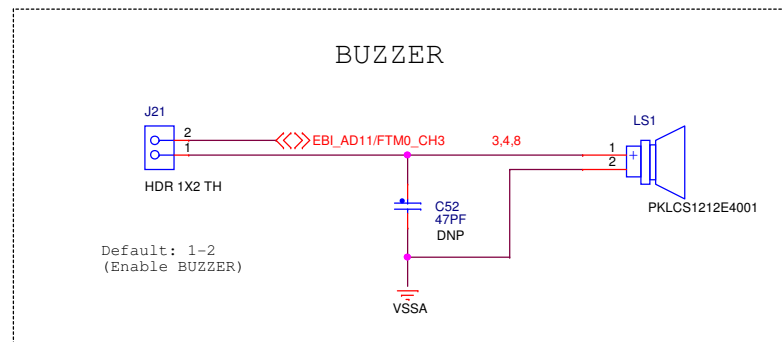
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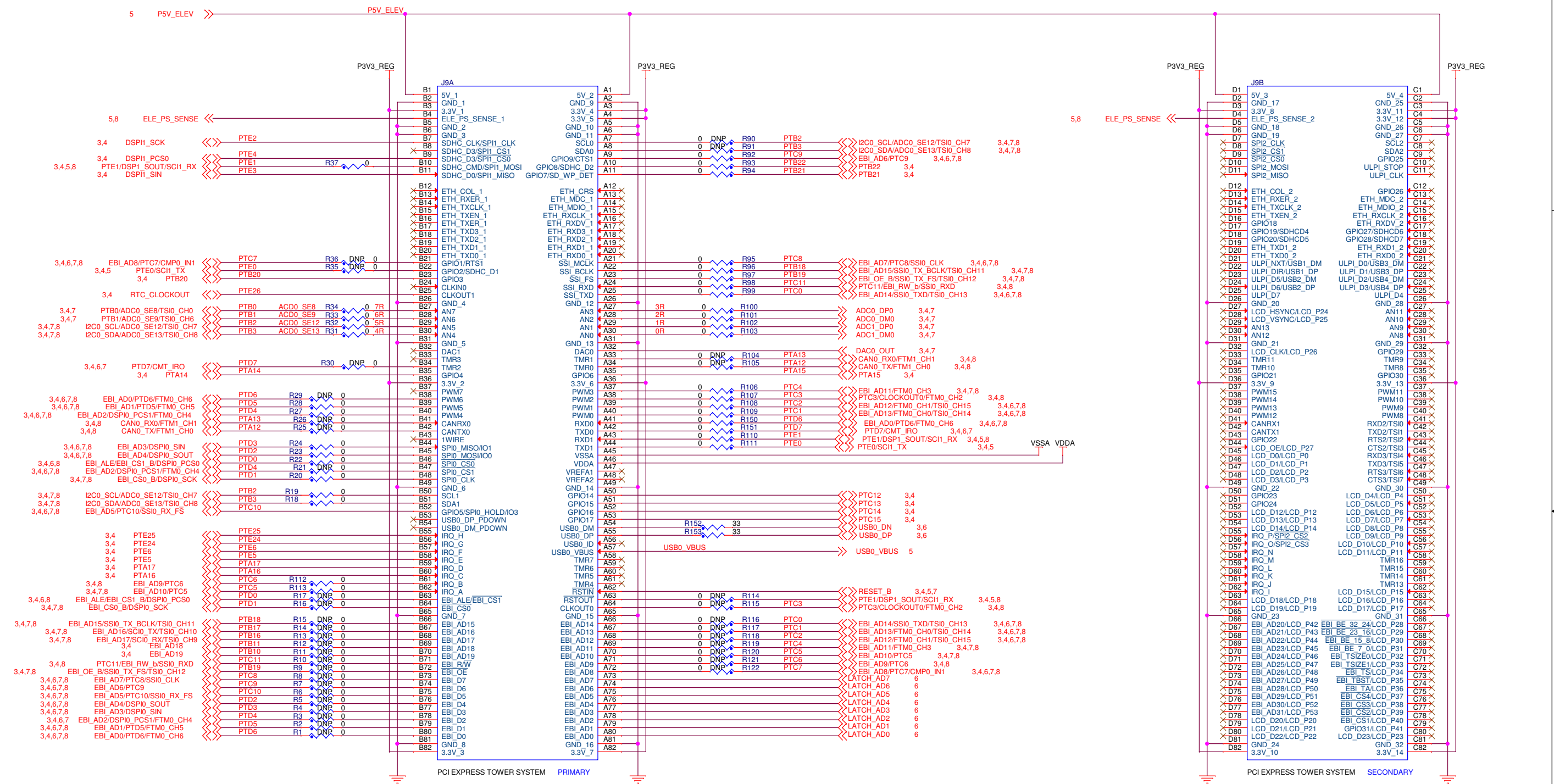


### MICROPHONE



### BUZZER





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