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Revisions

Rev	Description	Date	Approved
XI	Release to CAD	10 Oct 11	J.H.
A	Release to Production	21 Oct 11	J.H.

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Design: Jay Hartvigsen	Drawing Title: TWR-K60D100M	ICAP Classification: FCF:	PUB: <input checked="" type="checkbox"/>
Drawn by: Jay Hartvigsen	Page Title: Table of Contents/Revisions		
Approved: Lawrence Shellaby	Size: C	Document Number: SCH-27291 PDF: SPF-27291	Rev: A
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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.

Power & Ground Nets

NET	VOLTAGE	DESCRIPTION
P5V_USB	5V	Primary input power. Filtered from USB connector. Input to USB power switch.
P5V_TRG_USB	5V	Output of USB power switch controlled by the VTRG_EN signal from the JM60 MCU. Provides input to regulator.
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_ELEV	5V	5V power on the Tower Elevator. This board provides power from P5V_TRG_USB to the elevator connectors through a diode.
P3V3	3.3V	Output of 3.3V regulator using USB power input (P5V_TRG_USB).
P1V8	1.8V	Output of 1.8V regulator using P3V3 power input.
V_BRD	1.8V/3.3V	Board power - selected from either the 1.8V or 3.3V supplies by a header and shunt.
MCU_PWR	1.8V/3.3V	MCU digital power. Filtered from V_BRD.
VDDA	3.3V	VDDA power for MCU and analog circuits. Filtered from 3V3_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.



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ELEVATOR CONNECTORS

Sheet 8

Sheet 5

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

Sheet 4

K60DN512VMD10 MCU
50 MHz XTAL
32.768 KHz XTAL
VSSA/VDDA filter
VREFH/VREFL filter
VREF_OUT
VREGIN, VOUT33
VBAT

Sheet 6

INFRARED PORT

Sheet 6

PUSH BUTTONS

Sheet 7

LEDs

Sheet 6

SD CARD SOCKET

Sheet 7

GENERAL PURPOSE
TOWER PLUG-IN (TWRPI)
JACK

Sheet 7

ANALOG INPUTS
MMA78451Q ACCELEROMETER
POTENTIOMETER

Sheet 7

TOUCH
TOWER PLUG-IN (TWRPI)
JACK



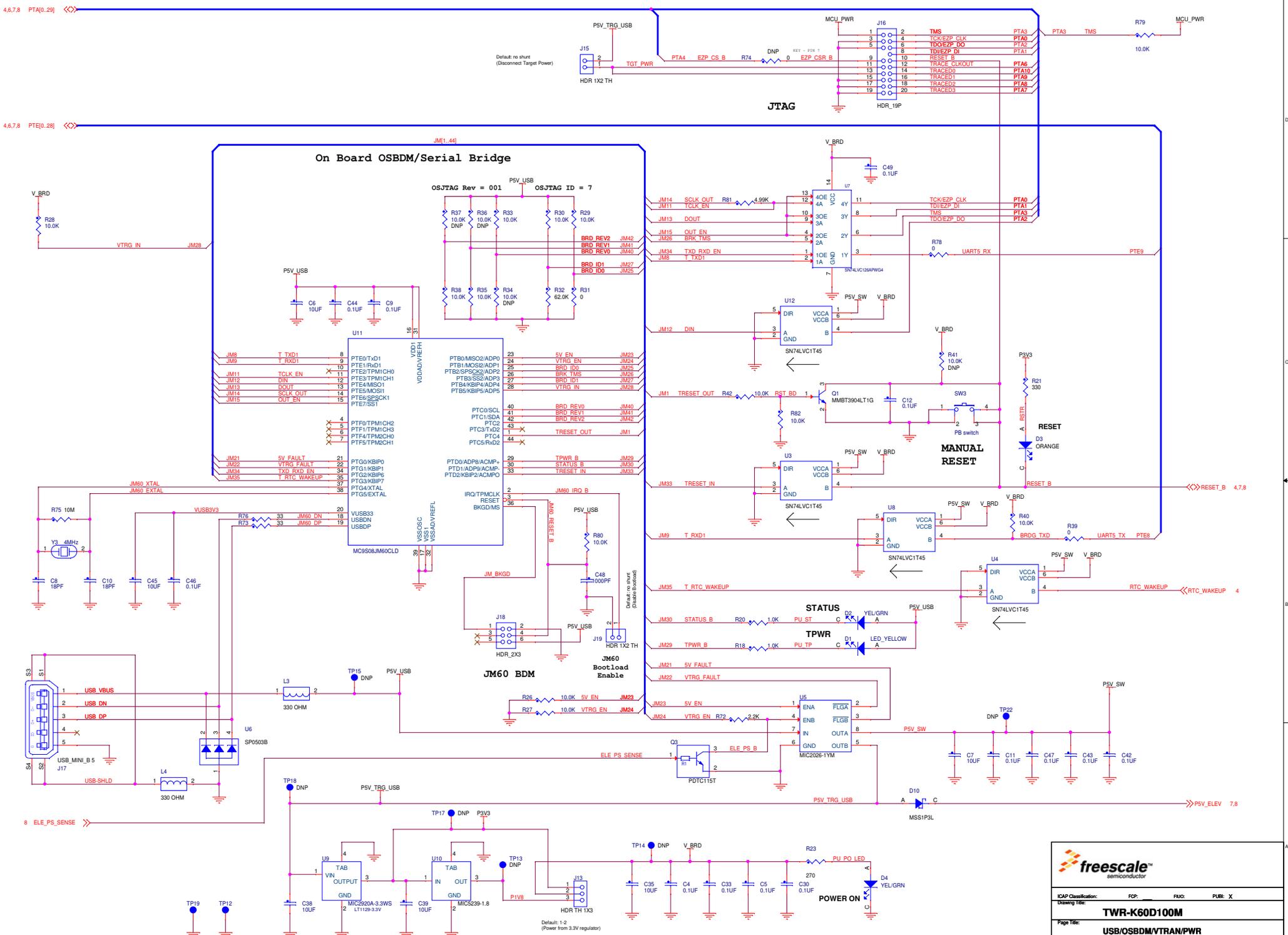
ICAP Classification: FCP: FUD: PUB: X

Drawing Title: **TWR-K60D100M**

Page Title: **Block Diagram**

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Note that not all functions of the board will operate at 1.8V.

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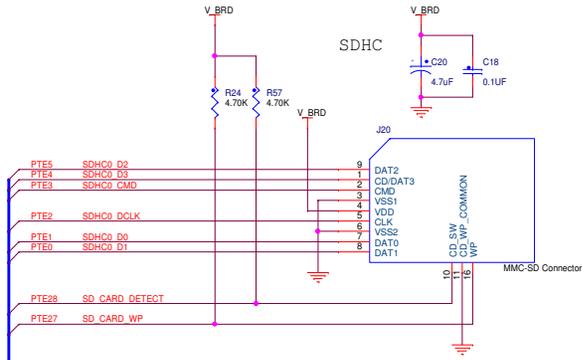
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Drawing Title: **TWR-K60D100M**

Page Title: **USB/OSBDM/VTRAN/PWR**

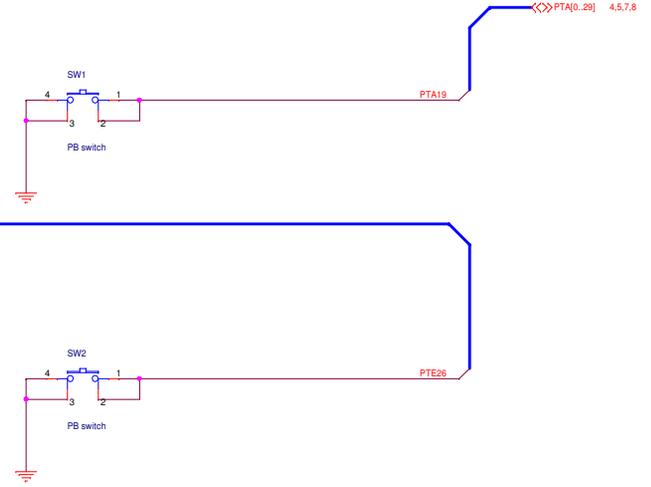
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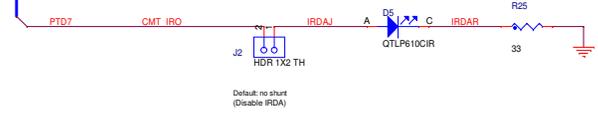
Note: this SDHC socket is powered by V_BRD which may be 1.8V or 3.3V. No provision is made for dynamic switching between the two voltages. Therefore, this interface may not work properly with all SD cards when the MCU is running from 1.8V.

INTERRUPT PUSH BUTTONS

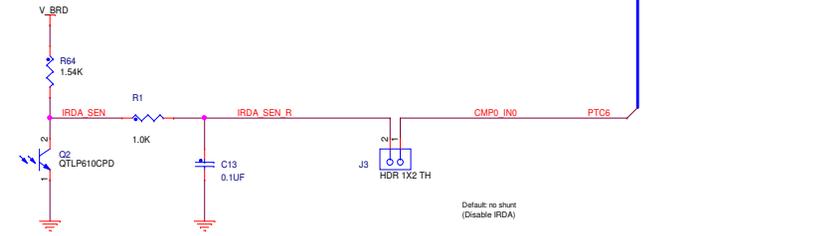


4.5,7,8 PTE[0..28]

4,7,8 PTD[0..15]



IRDA



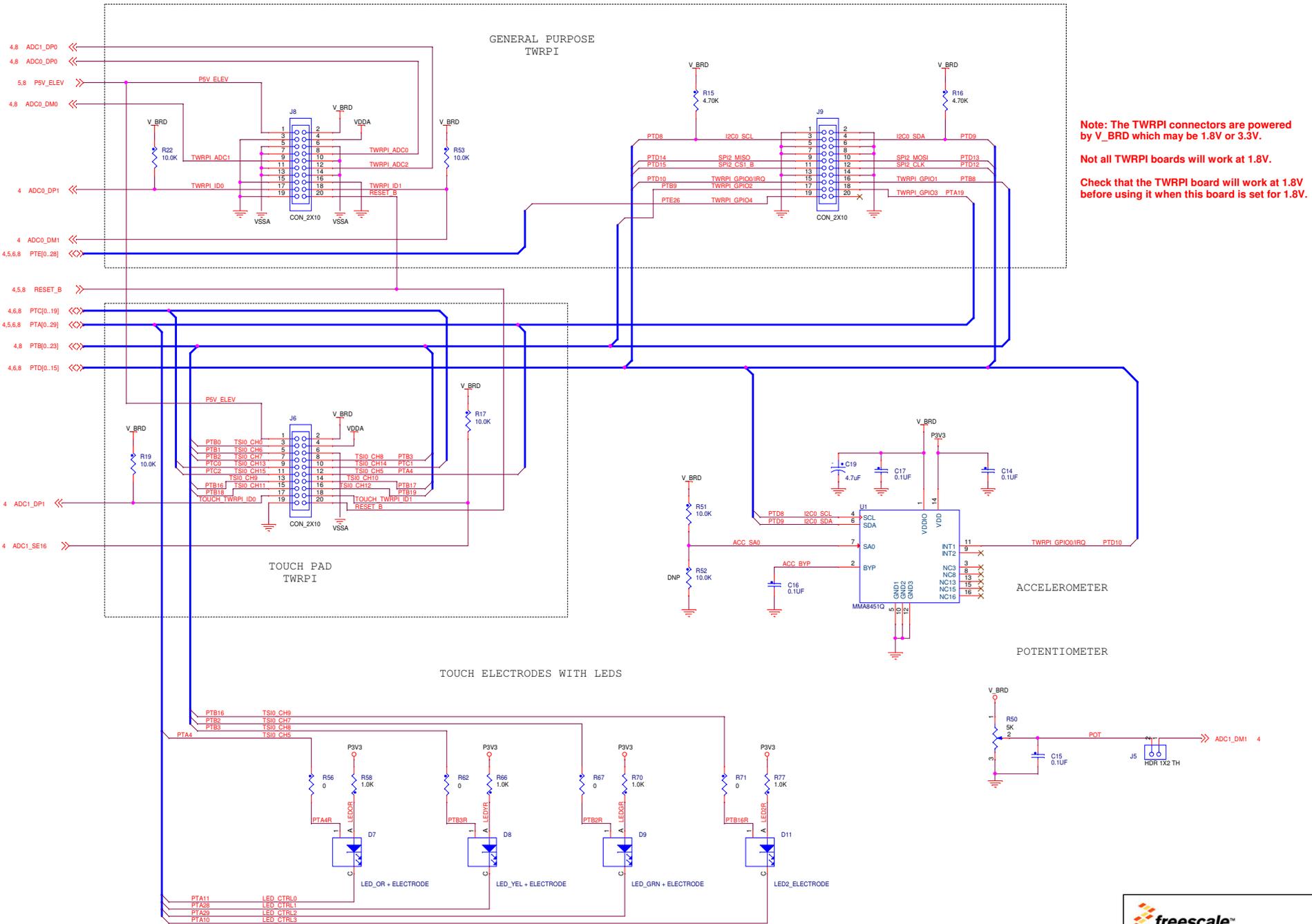
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Page Title: **Peripherals**

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Note: The TWRPI connectors are powered by V_BRD which may be 1.8V or 3.3V.

Not all TWRPI boards will work at 1.8V.

Check that the TWRPI board will work at 1.8V before using it when this board is set for 1.8V.

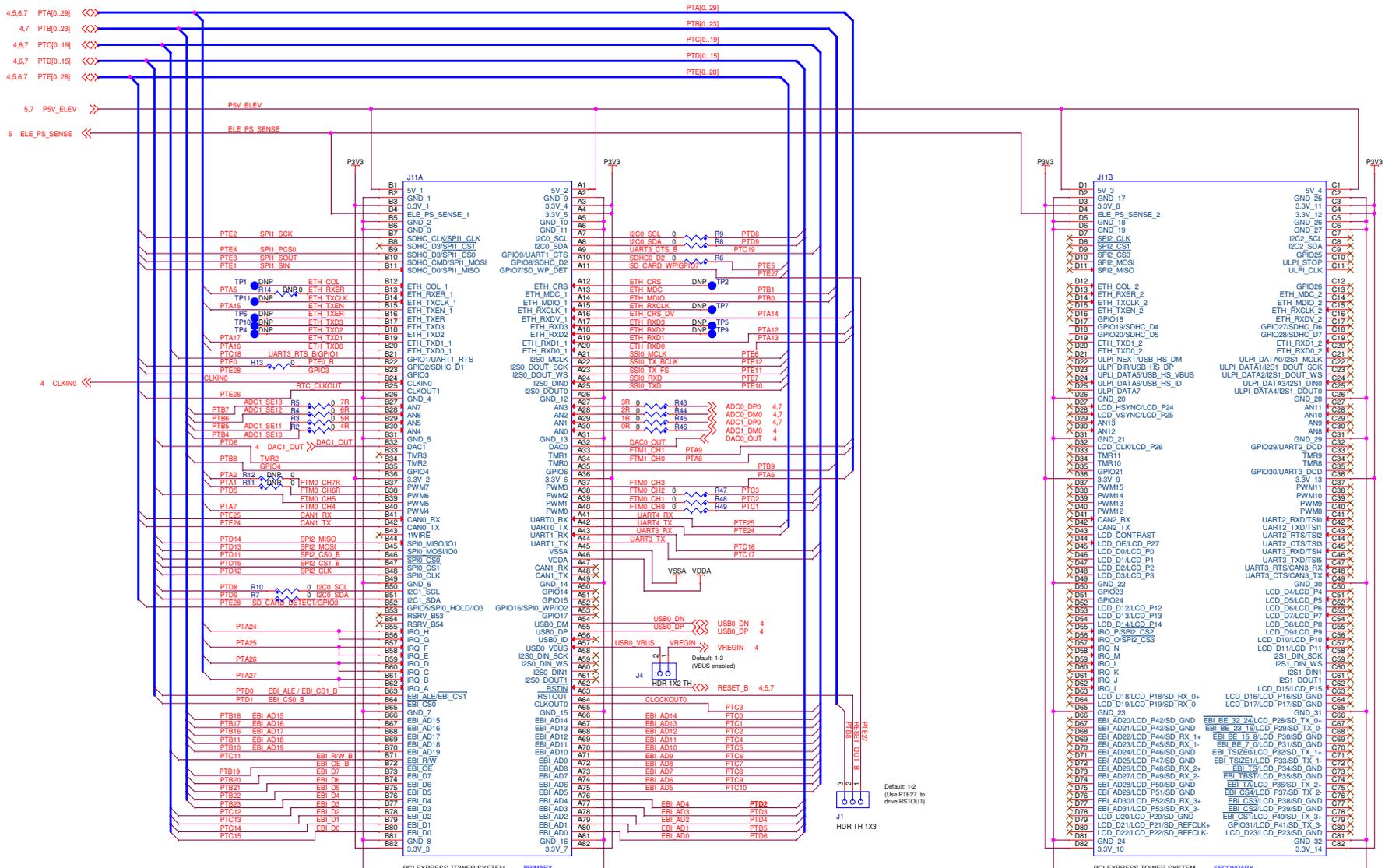
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Page Title: **Sensors**

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