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Revisions			
Rev	Description	Date	Approved
X1	Release to CAD	10 Oct 11	J.H.
A	Release to Production	21 Oct 11	J.H.

		Microcontroller Solutions Group 6501 William Cannon Drive West Austin, TX 78725-8598	
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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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ified:
ms
JF

Power & Ground Nets

- 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_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

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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

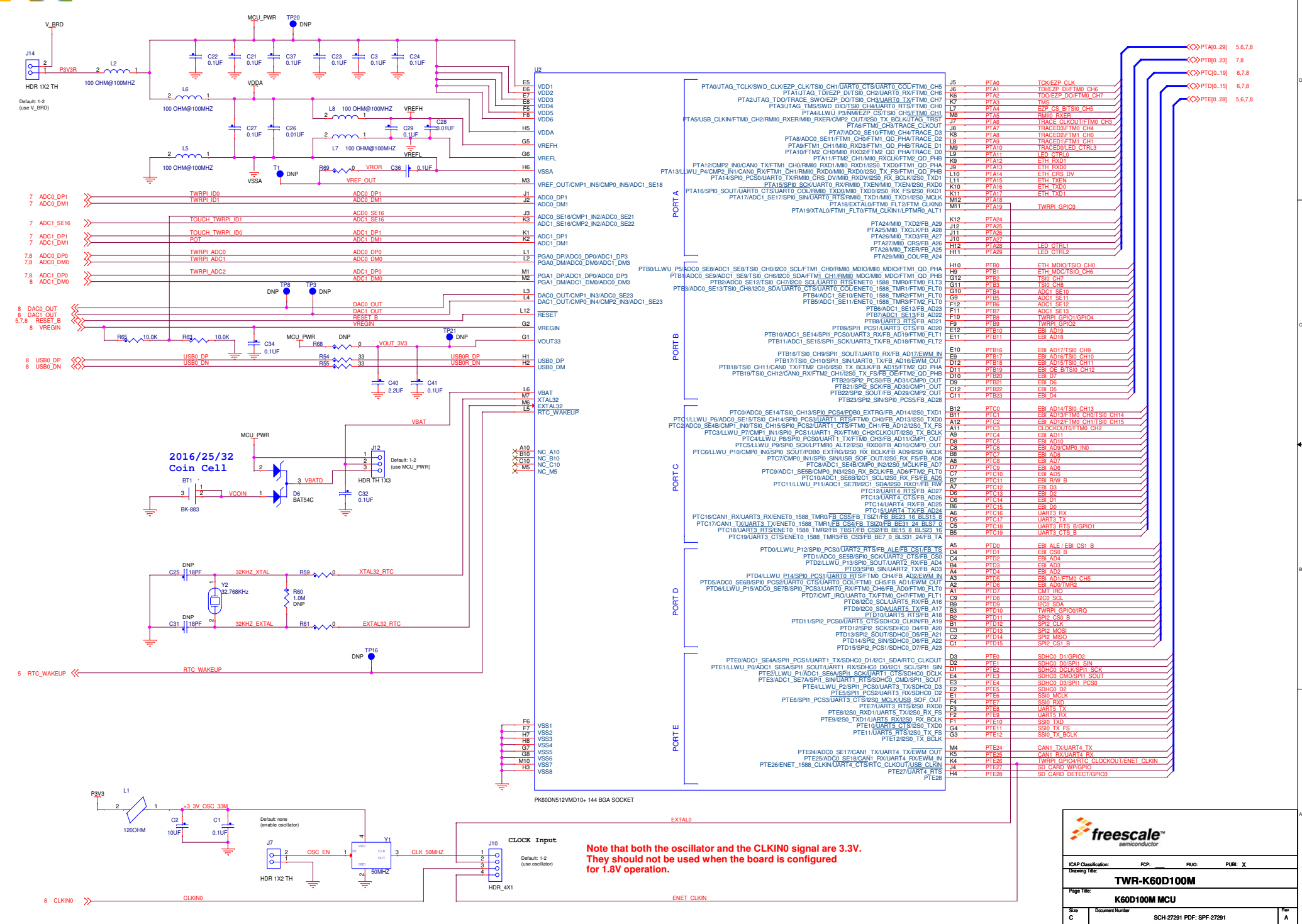
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ANALOG INPUTS
MMA78451Q ACCELEROMETER
POTENTIOMETER

Sheet 7

TOUCH
TOWER PLUG-IN (TWRPI)
JACK

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Block Diagram	
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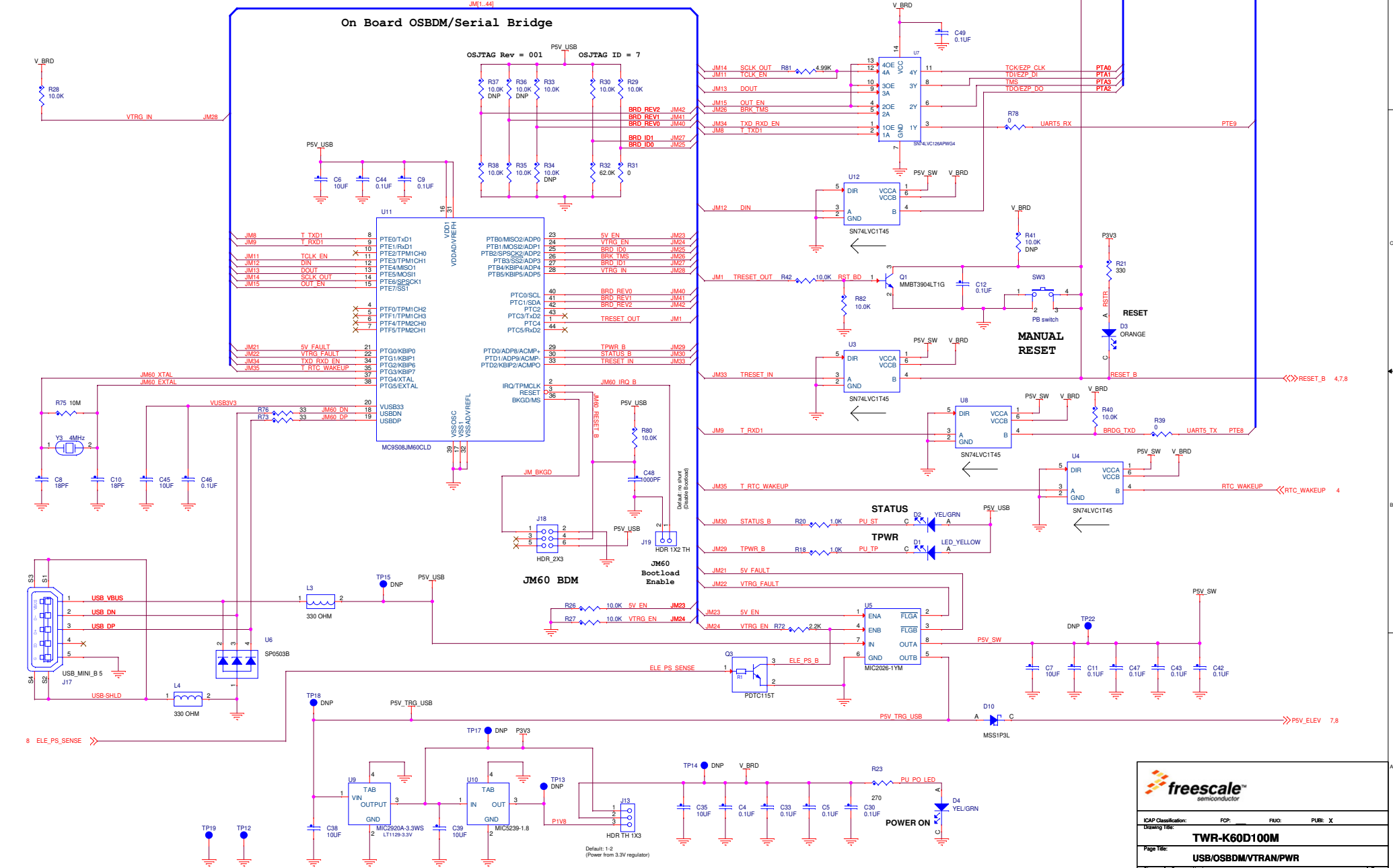
2016/25/32 Coin Cell

Note that both the oscillator and the CLKIN0 signal are 3.3V. They should not be used when the board is configured for 1.8V operation.

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K60D100M MCU	
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4.6,7,8 PTE[0,28] <<>



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

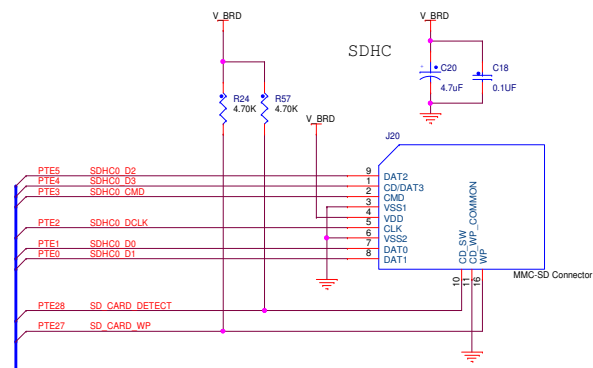
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Drawing Title: **TWR-K60D100M**

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

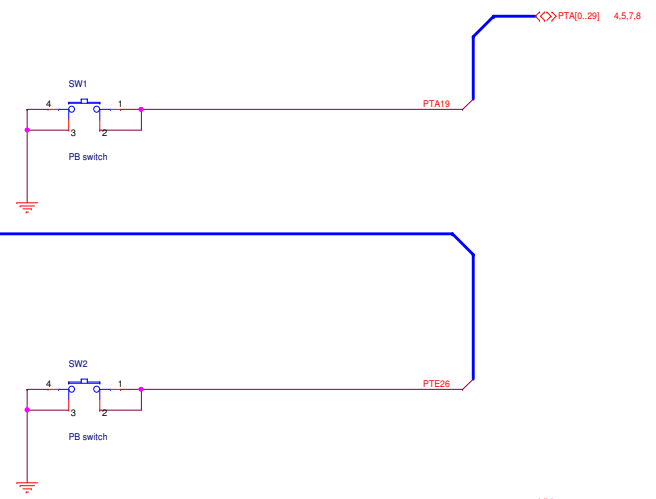
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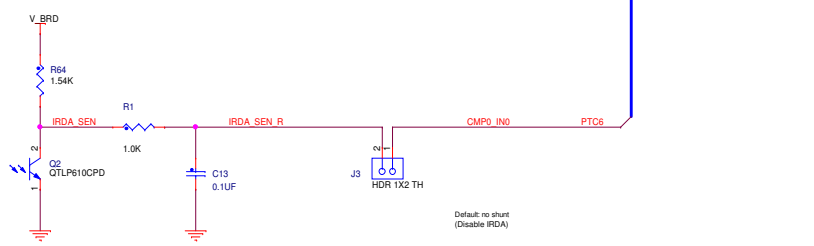
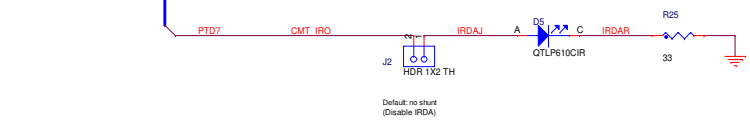


Note: this SDHC socket is powered by V_BRD which may be 1.8V or 3.3V. No provision is made for dynamic switching between the two voltages. Therefore, this interface may not work properly with all SD cards when the MCU is running from 1.8V.

INTERRUPT PUSH BUTTONS



IRDA



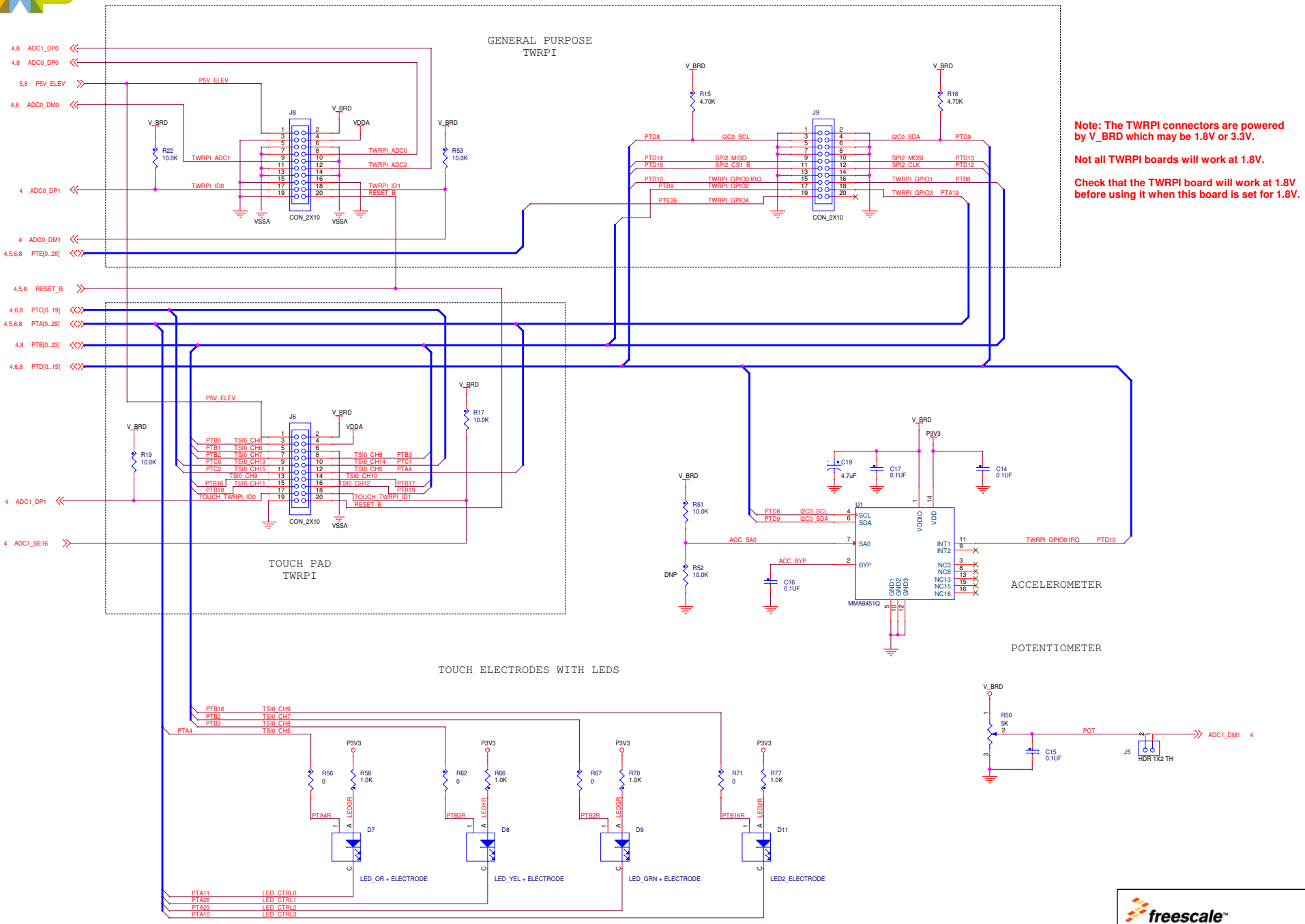
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Note: The TWRPI connectors are powered by V_{BRD} which may be 1.8V or 3.3V.

Not all TWRPI boards will work at 1.8V.

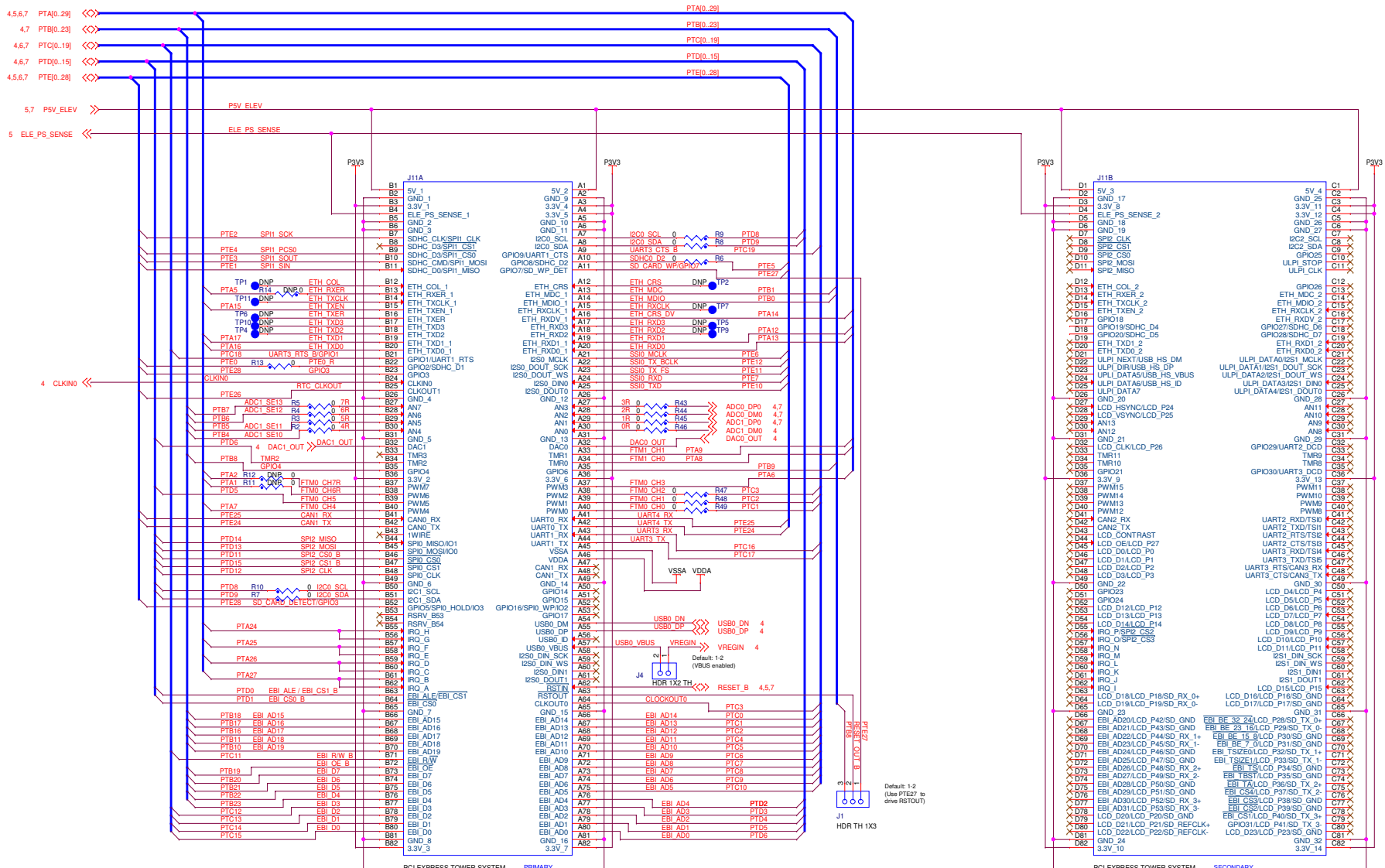
Check that the TWRPI board will work at 1.8V before using it when this board is set for 1.8V.

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