### Power & Ground Nets

<table>
<thead>
<tr>
<th>NET</th>
<th>VOLTAGE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>P5V_USB</td>
<td>5V</td>
<td>Primary input power. Filtered from USB connector. Input to USB power switch.</td>
</tr>
<tr>
<td>P5V_TRG_USB</td>
<td>5V</td>
<td>Output of USB power switch controlled by the VTRG_EN signal from the JN60 MCU. Provides input to regulator.</td>
</tr>
<tr>
<td>P5V_SW</td>
<td>5V</td>
<td>Output of USB power switch controlled by the 5V_EN signal from the JN60 MCU. Used by OSRAM voltage translation circuits.</td>
</tr>
<tr>
<td>P5V_ELEV</td>
<td>5V</td>
<td>5V power on the Tower Elevator. This board provides power from P5V_TRG_USB to the elevator connectors through a diode.</td>
</tr>
<tr>
<td>P3V3</td>
<td>3.3V</td>
<td>Output of 3.3V regulator using USB power input (P5V_TRG_USB).</td>
</tr>
<tr>
<td>P1V8</td>
<td>1.8V</td>
<td>Output of 1.8V regulator using P3V3 power input.</td>
</tr>
<tr>
<td>V_BRD</td>
<td>1.8V/3.3V</td>
<td>Board power - selected from either the 1.8V or 3.3V supplies by a header and shunt.</td>
</tr>
<tr>
<td>MCU_PWR</td>
<td>1.8V/3.3V</td>
<td>MCU digital power. Filtered from V_BRD.</td>
</tr>
<tr>
<td>VDDA</td>
<td>3.3V</td>
<td>VDDA power for MCU and analog circuits. Filtered from V3V_MCU.</td>
</tr>
<tr>
<td>VREFH</td>
<td>3.3V</td>
<td>Upper reference voltage for ADC on the MCU. Filtered from VDDA.</td>
</tr>
<tr>
<td>VREFL</td>
<td>0V</td>
<td>Lower reference voltage for ADC on the MCU. Filtered from VSSA.</td>
</tr>
<tr>
<td>VSSA</td>
<td>0V</td>
<td>VSSA power for MCU and analog circuits. Filtered from GND.</td>
</tr>
<tr>
<td>GND</td>
<td>0V</td>
<td>Digital Ground.</td>
</tr>
</tbody>
</table>
ELEVATOR CONNECTORS

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

Sheet 8
Note that not all functions of the board will operate at 1.8V.
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.
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.