
 Table of Contents	
	Diagram
4	MCF51JF 64pin MCU & SKT
5	MCF51JF 44pin MCU
6	USB/OSBDM/V-TRAN/PWR
7	Peripherals
8	Sensors
8	Elevator Connectors

Revisions			
Rev	Description	Date	Approved
A	Proto Release	23-FEB-11	J.H.
B	Proto Update	13-APR-11	J.H.
C	Proto Update	26-APR-11	J.H.

		Microcontroller Solutions Group	
		6501 William Cannon Drive West Austin, TX 78735-8598	
This document contains information proprietary to Freescale Semiconductor and shall not be used for engineering design, procurement or manufacture in whole or in part without the express written permission of Freescale Semiconductor.			
Designer: Jay Hartvigsen		Drawing Title: TWR-MCF51JF	
Drawn by: Jay Hartvigsen		Page Title: Table of Contents/Revisions	
Approved: Marilyn Hubbard	Size C	Document Number SCH-26990 PDF: SPF-26990	Rev C
Date: Tuesday, April 26, 2011		Sheet 1 of 9	



wise Specified:
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_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. Goes to regulator input select header.
USB0_VBUS	5V	USB power from primary elevator.
P5V_JF_USB	5V	Secondary input power. Filtered from JF micro AB USB connector. Goes to regulator input select header
P5V_ELEV	5V	Power from the elevator boards.
P3V3	3.3V	Output of 3.3V regulator. May also be supplied externally by connecting to the board voltage select header at pins 1 and 4.
V_BRD	1.8-3.3V	Output of 1.8v or 3.3V 3 regulators as selected by the board voltage select header. May also be supplied externally by connecting to the board voltage select header at pins 3 and 4.
VREG_IN	5V	Power into the on board voltage regulators.
MCU_PWR	1.8-3.3V	MCU digital power. Filtered from V_BRD
VDDA	1.8-3.3V	VDDA power for MCU and analog circuits. Filtered from MCU_PWR.
VREFH	1.8-3.3V	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.

ICAP Classification: FCP: _____ FILE: X PUBL: _____		
Drawing Title: TWR-MCF51JF		
Page Title: Notes		
Size C	Document Number SCH-26990 PDF: SPF-26990	Rev C
Date: Tuesday, April 26, 2011	Sheet 2 of 9	

ELEVATOR CONNECTORS

Sheet 9

Sheet 6

OSBDM/USB Bridge Circuit
 USB Mini B Connector
 MC9S08JM60
 Voltage Translation
 OSBDM AND EZPORT Header
 Power Supply Circuits

Sheets 4 and 5

MCF51JF128 MCU
 8 MHz XTAL
 VSSA/VDDA filter
 VREFH/VREFL filter
 VREF_OUT
 VREGIN, VOUT33

Sheet 7

INFRARED PORT

Sheet 7

PUSH BUTTON
 SAI HEADER
 AUDIO OUTPUT JACK
 JF USB MICRO AB
 CONNECTOR WITH
 POWER SWITCH

Sheet 8

CAPACITIVE TOUCH PADS
 WITH LEDs

Sheet 8

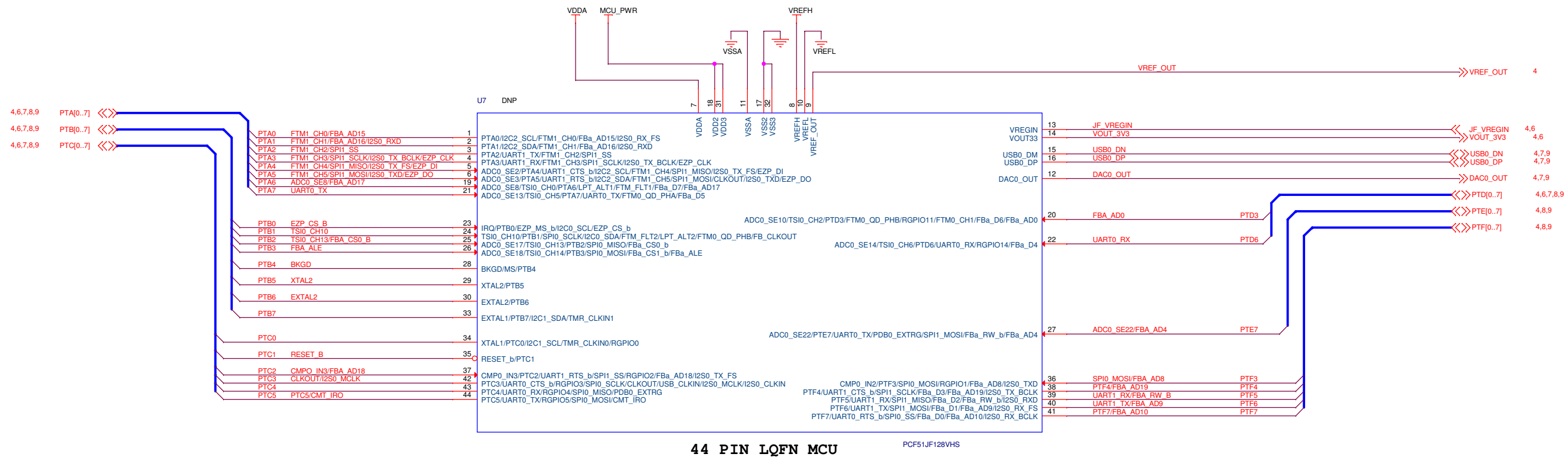
TOWER PLUG-IN (TWRPI)
 GENERAL PURPOSE HEADERS

Sheet 8

ANALOG INPUTS
 MMA7660 ACCELEROMETER
 POTENTIOMETER
 MICROPHONE

Sheet 8

TOWER PLUG-IN (TWRPI)
 TOUCH HEADER

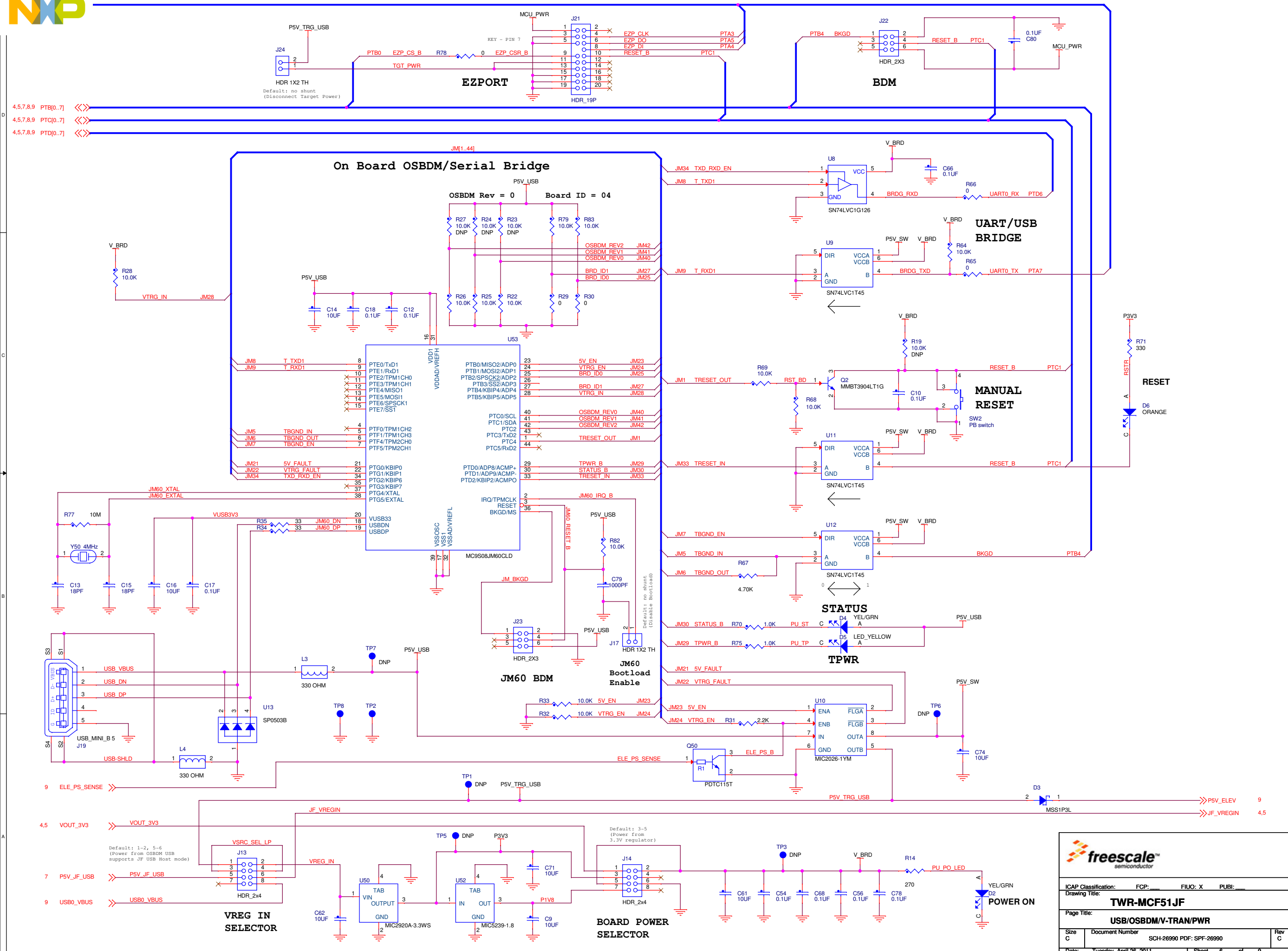


THE 44 PIN MCU ON THIS PAGE AND THE 64 PIN MCU AND 64 PIN SOCKET ON THE PREVIOUS PAGE ARE ALL WIRED IN PARALLEL.

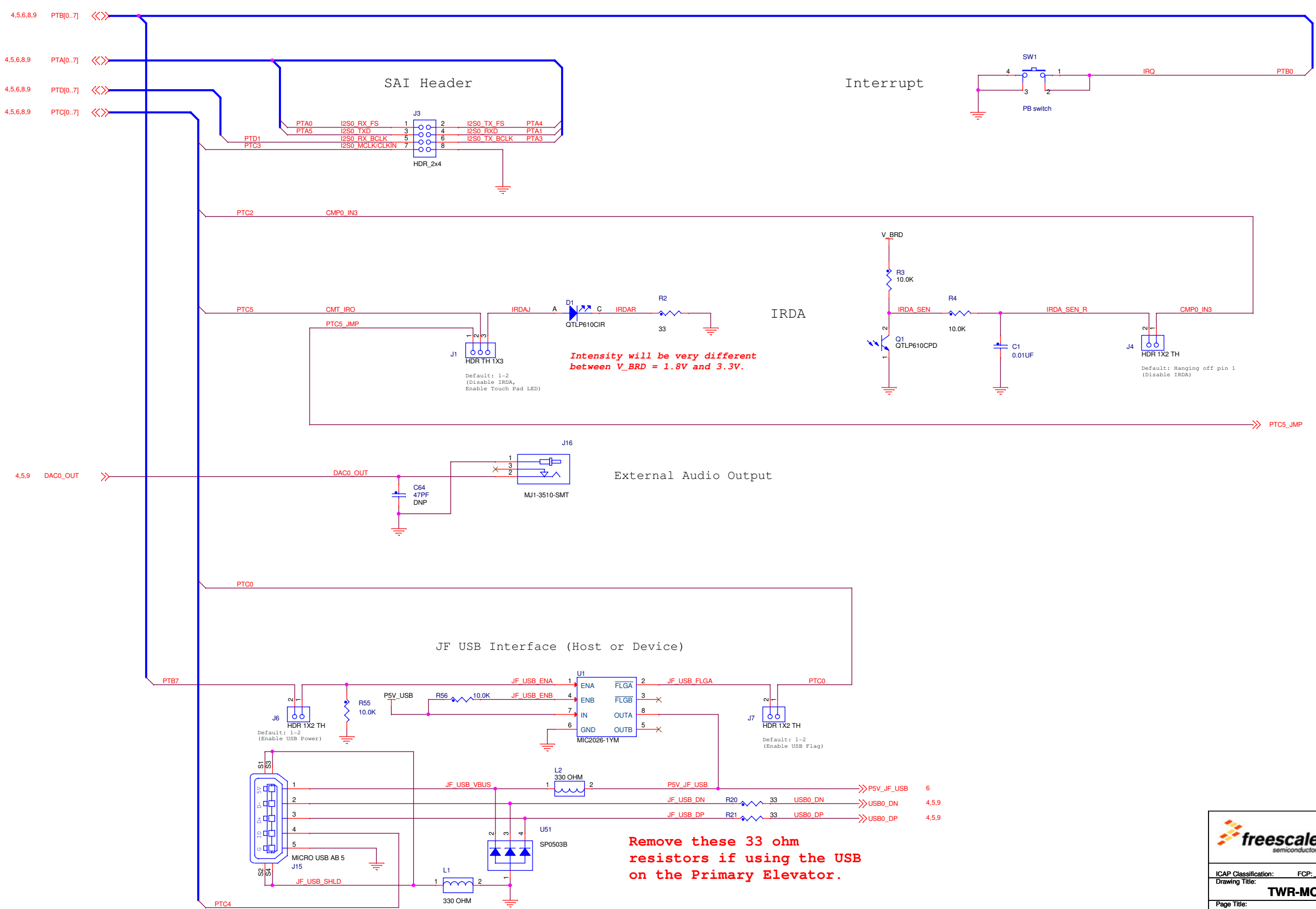
THEY ARE CONCENTRICALLY PLACED ON THE BOARD AND ONLY ONE IS USED DEPENDING ON THE ASSEMBLY.



4.5,7,8,9 PTB[0..7] <<>
 4.5,7,8,9 PTC[0..7] <<>
 4.5,7,8,9 PTD[0..7] <<>



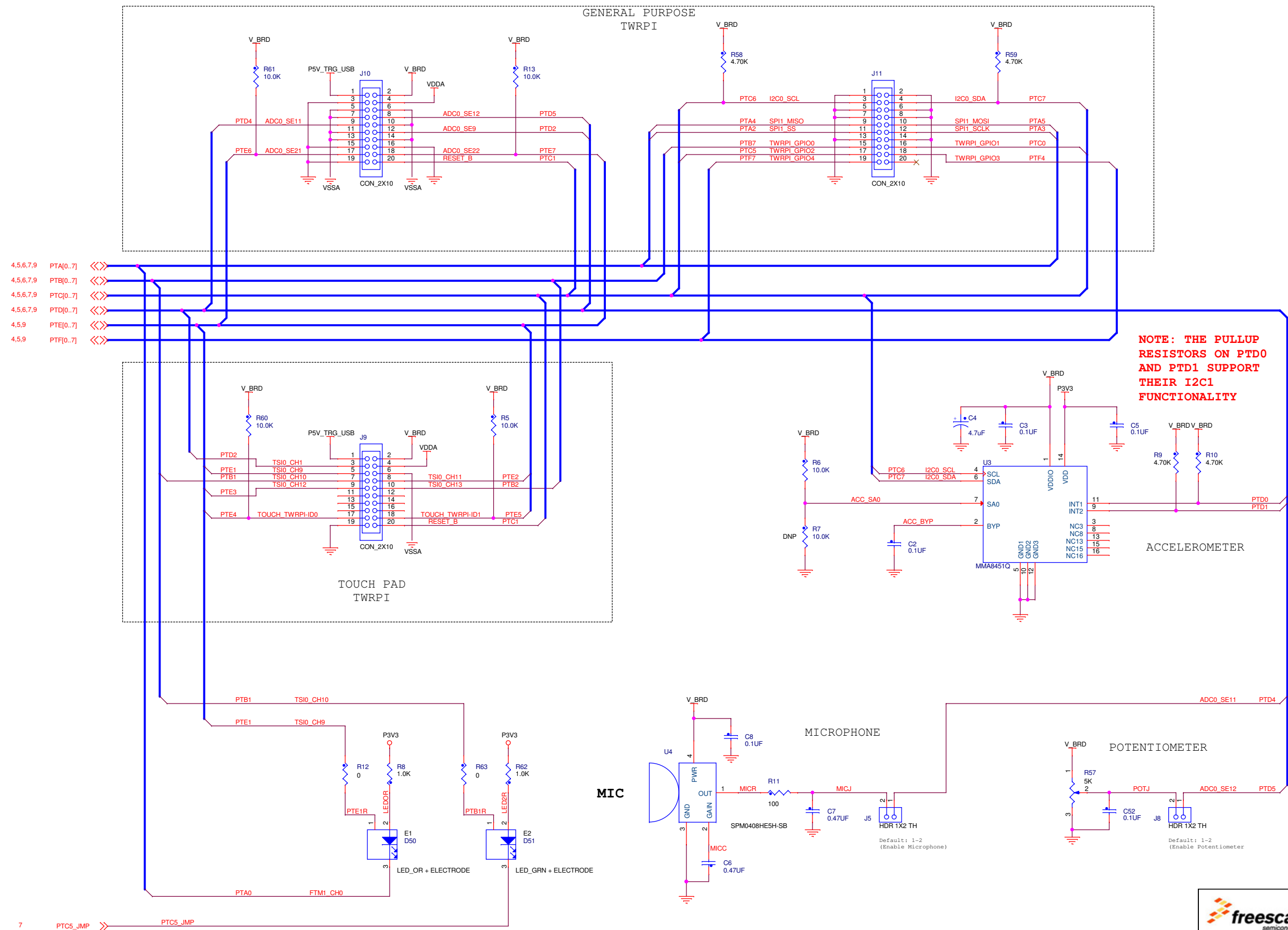
ICAP Classification:	FCP: _____ FIUO: X PUBI: _____
Drawing Title:	TWR-MCF51JF
Page Title:	USB/OSBDM/V-TRAN/PWR
Size C	Document Number SCH-26990 PDF: SPF-26990
Date:	Tuesday, April 26, 2011
	Sheet 6 of 9



Intensity will be very different between V_BRD = 1.8V and 3.3V.

Remove these 33 ohm resistors if using the USB on the Primary Elevator.

ICAP Classification: FCP: FILIO: X PUBI:		
Drawing Title: TWR-MCF51JF		
Page Title: Peripherals		
Size C	Document Number SCH-26990 PDF: SPF-26990	Rev C
Date: Tuesday, April 26, 2011	Sheet 7 of 9	



NOTE: THE PULLUP RESISTORS ON PTD0 AND PTD1 SUPPORT THEIR I2C1 FUNCTIONALITY

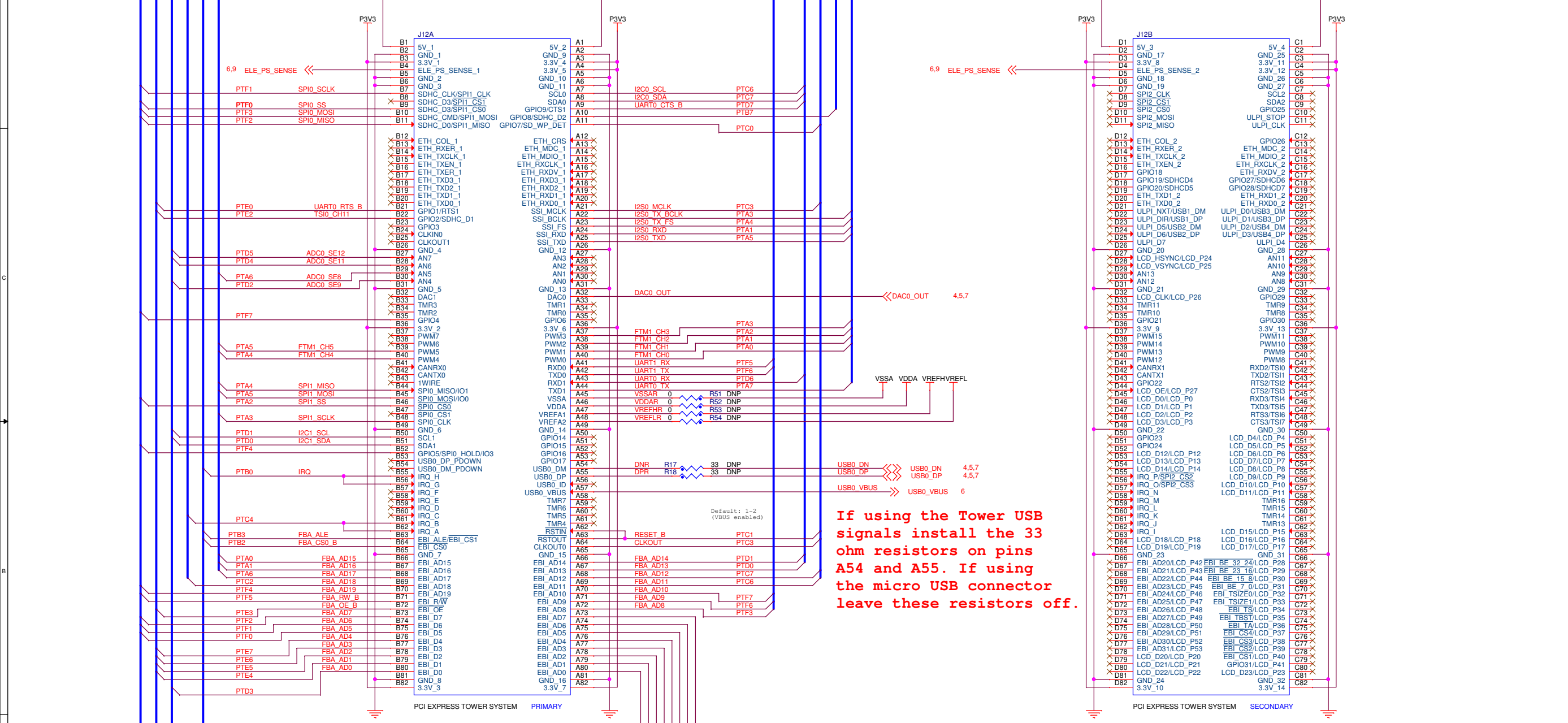
- 4,5,6,7,9 PTA[0..7]
- 4,5,6,7,9 PTB[0..7]
- 4,5,6,7,9 PTC[0..7]
- 4,5,6,7,9 PTD[0..7]
- 4,5,9 PTE[0..7]
- 4,5,9 PTF[0..7]

ICAP Classification: FCP: FILUO: X PUBI:		
Drawing Title: TWR-MCF51JF		
Page Title: Sensors		
Size C	Document Number SCH-26990 PDF: SPF-26990	Rev C
Date: Tuesday, April 26, 2011	Sheet 8 of 9	

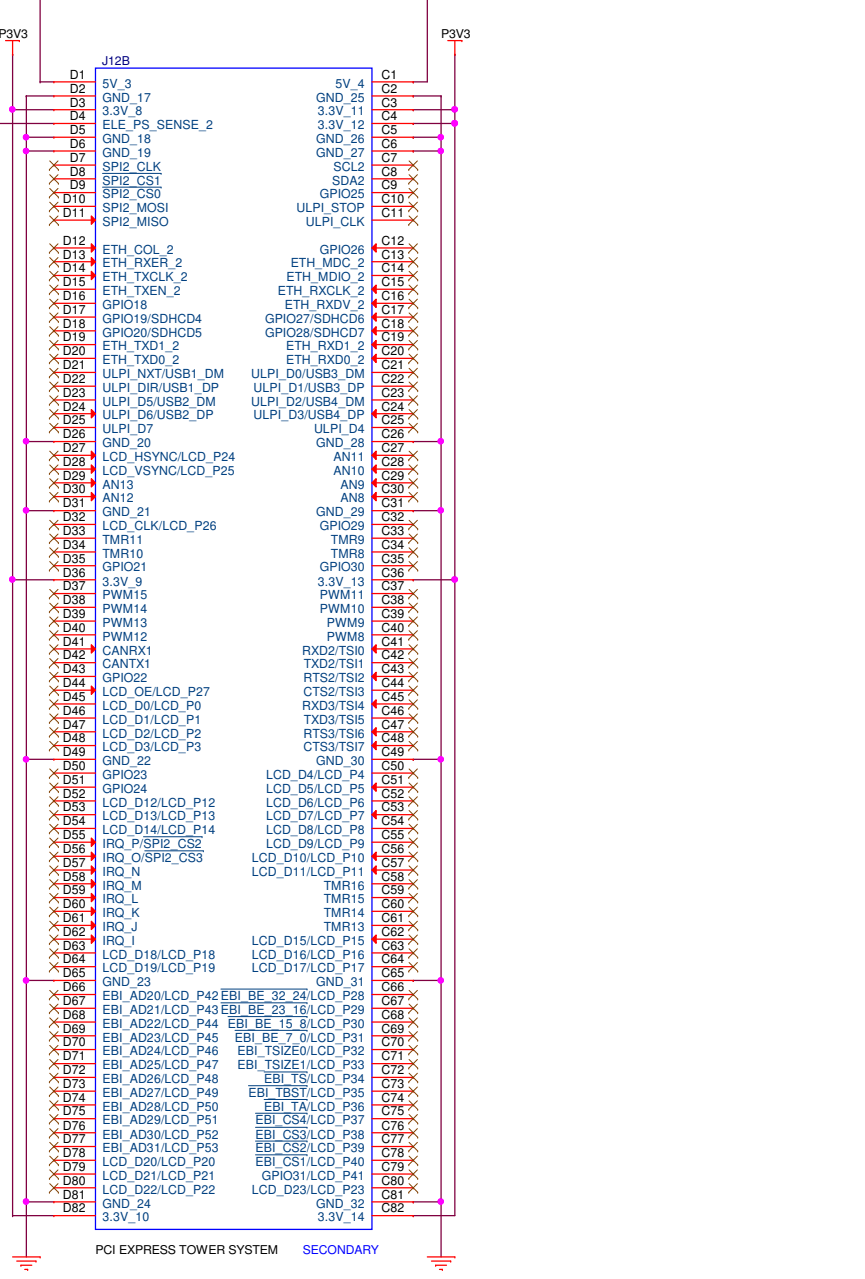
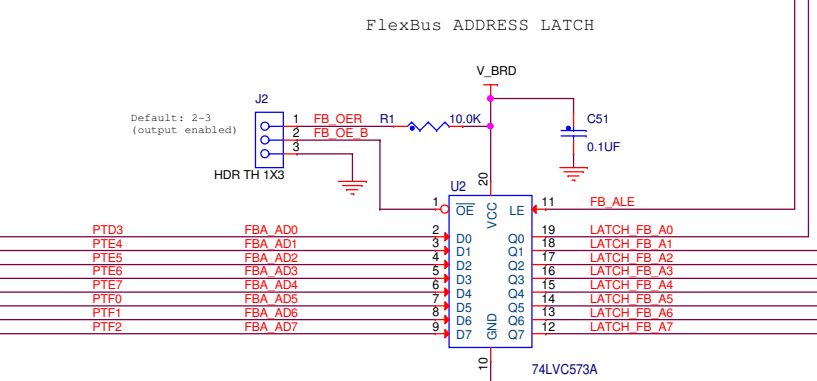


4,5,6,7,8 P1B[0..7] <<>
 4,5,6,7,8 PTC[0..7] <<>
 4,5,6,7,8 PTD[0..7] <<>
 4,5,8 PTE[0..7] <<>
 4,5,8 PTF[0..7] <<>

6 P5V_ELEV <<>



If using the Tower USB signals install the 33 ohm resistors on pins A54 and A55. If using the micro USB connector leave these resistors off.



freescale
 semiconductor

ICAP Classification: FCP: FILU: X PUBI:
 Drawing Title: **TWR-MCF51JF**
 Page Title: **Elevator Connectors**

Size	Document Number	Rev
C	SCH-26990 PDF: SPF-26990	C

Date: Tuesday, April 26, 2011 | Sheet 9 of 9