


<b>NXP</b>		<b>Table of Contents</b>
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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.

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Designer: Jay Hartvigsen		Drawing Title: <b>TWR-MCF51QM</b>	
Drawn by: Jay Hartvigsen		Page Title: <b>Table of Contents/Revisions</b>	
Approved: Marilyn Hubbard	Size: C	Document Number: SCH-26989 PDF: SPF-26989	Rev: C
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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_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 PUBLI: _____		
Drawing Title: <b>TWR-MCF51QM</b>		
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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

MCF51QM128 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  
 ANALOG TERMINAL BLOCK

Sheet 8

CAPACITIVE TOUCH PADS  
 WITH LEDs

Sheet 8

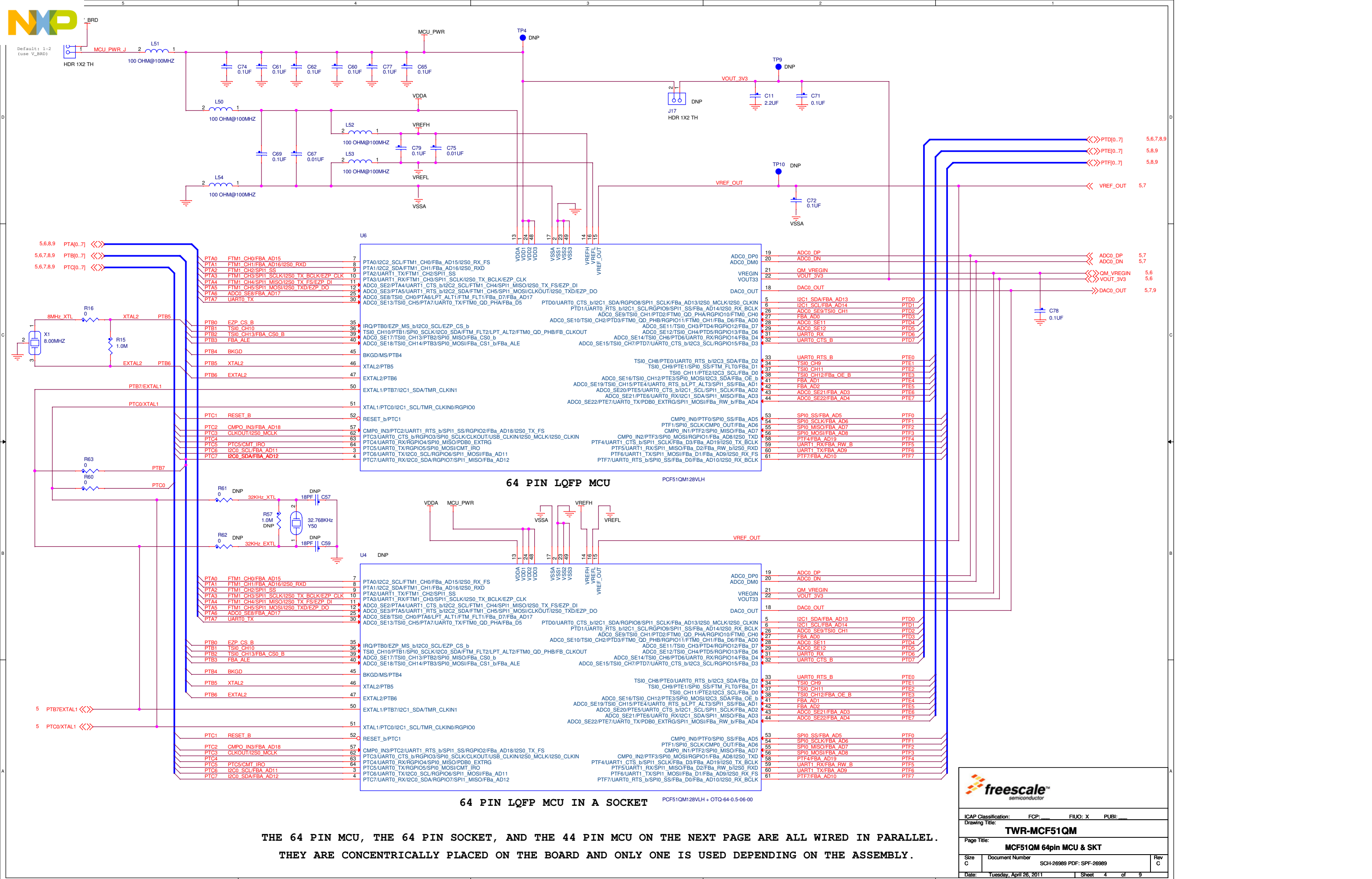
TOWER PLUG-IN (TWRPI)  
 GENERAL PURPOSE HEADERS

Sheet 8

ANALOG INPUTS  
 MMA7660 ACCELEROMETER  
 POTENTIOMETER  
 MICROPHONE

Sheet 8

TOWER PLUG-IN (TWRPI)  
 TOUCH HEADER



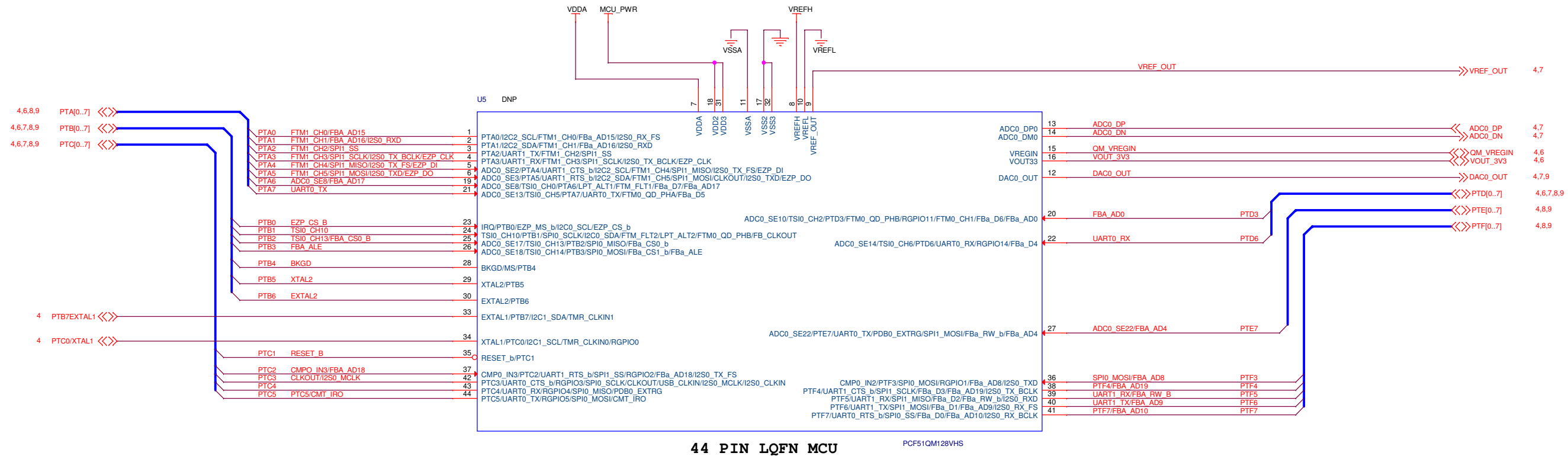
64 PIN LQFP MCU IN A SOCKET PCF51QM128VLH + OTQ-64-0.5-06-00

THE 64 PIN MCU, THE 64 PIN SOCKET, AND THE 44 PIN MCU ON THE NEXT PAGE ARE ALL WIRED IN PARALLEL. THEY ARE CONCENTRICALLY PLACED ON THE BOARD AND ONLY ONE IS USED DEPENDING ON THE ASSEMBLY.

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ICAP Classification: FCP: \_\_\_\_\_ FIJU: X PUBI: \_\_\_\_\_  
 Drawing Title: **TWR-MCF51QM**  
 Page Title: **MCF51QM 64pin MCU & SKT**

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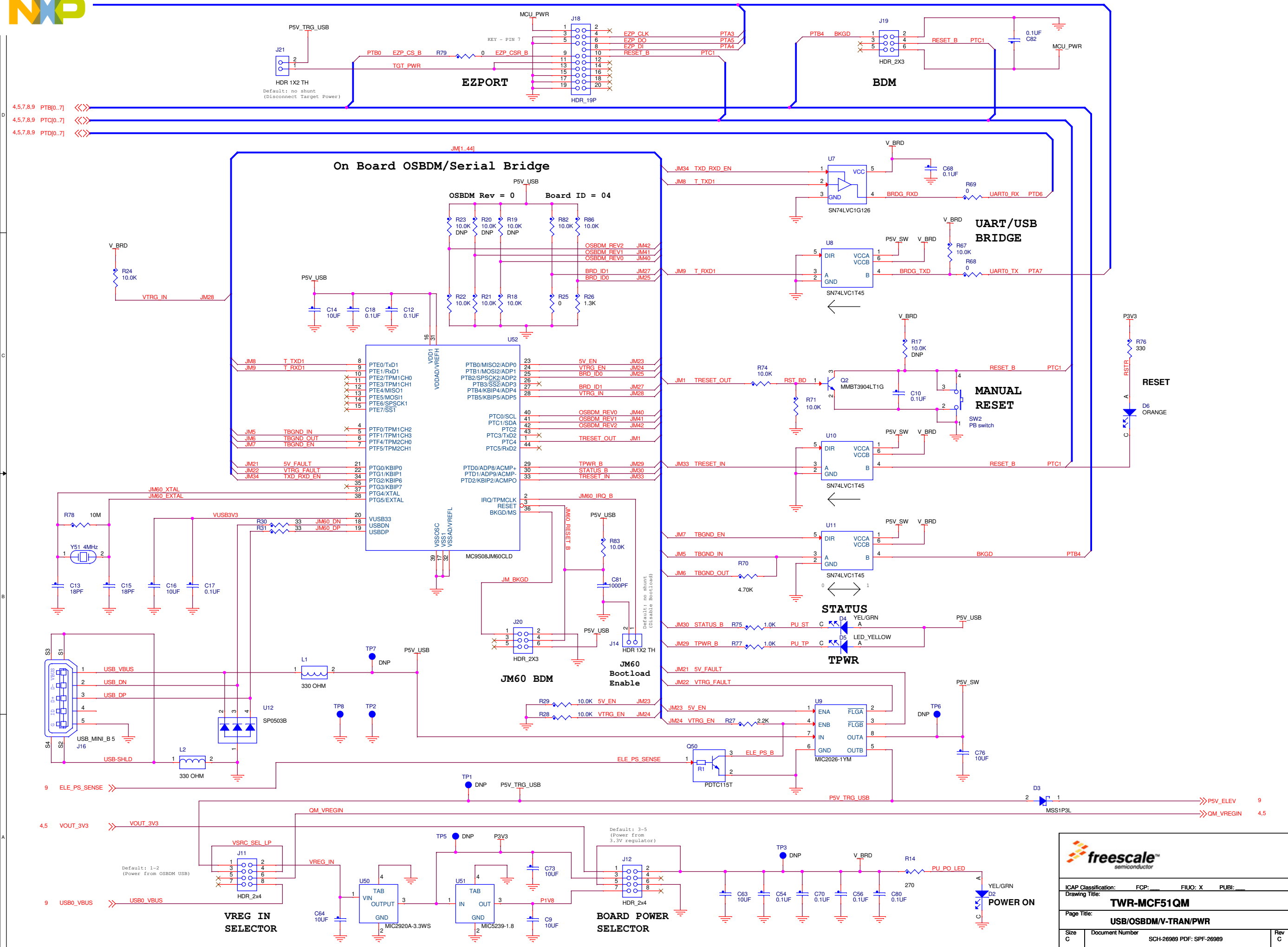
44 PIN LQFN MCU PCF51QM128VHS

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.

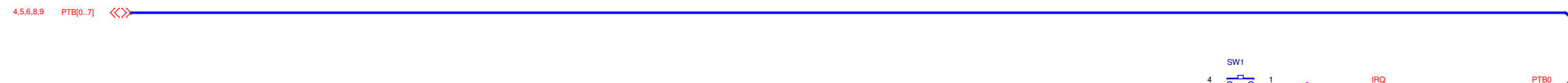
THEY ARE CONCENTRICALLY PLACED ON THE BOARD AND ONLY ONE IS USED DEPENDING ON THE ASSEMBLY.



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



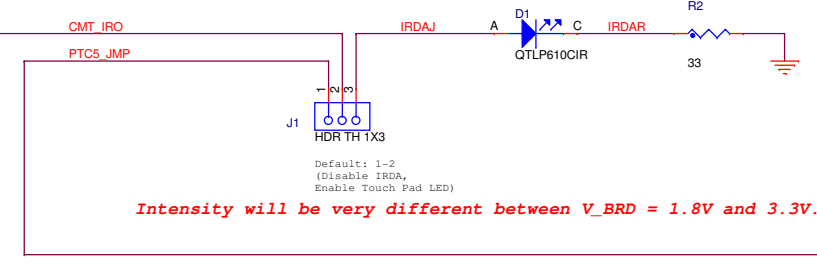
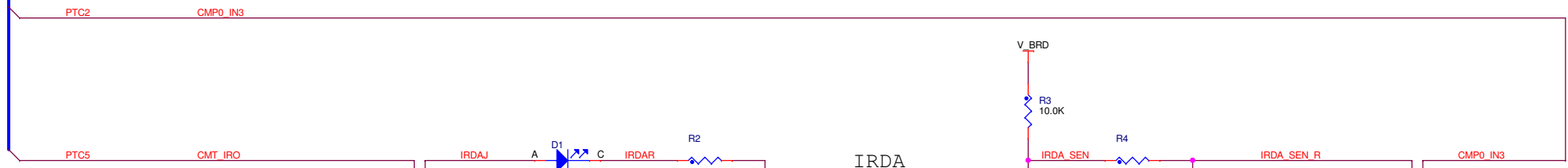
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Drawing Title:	<b>TWR-MCF51QM</b>
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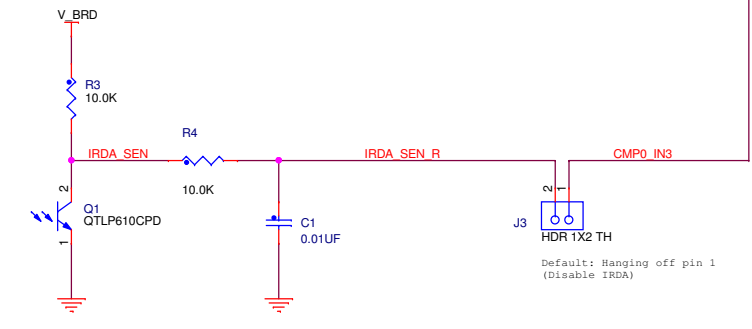
Interrupt



4,5,6,8,9 PTC[0..7] <<>

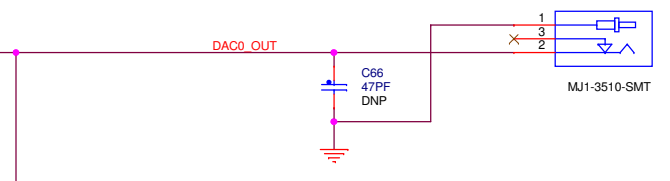


IRDA



PTC5\_JMP 8 >>>

4,5,9 DAC0\_OUT >>>



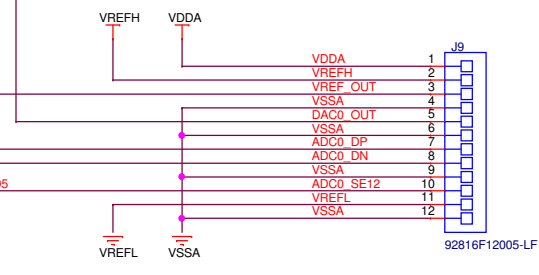
External Audio Output

4,5 VREF\_OUT <<<

4,5 ADC0\_DP <<<

4,5 ADC0\_DN <<<

4,5,6,8,9 PTD[0..7] <<>

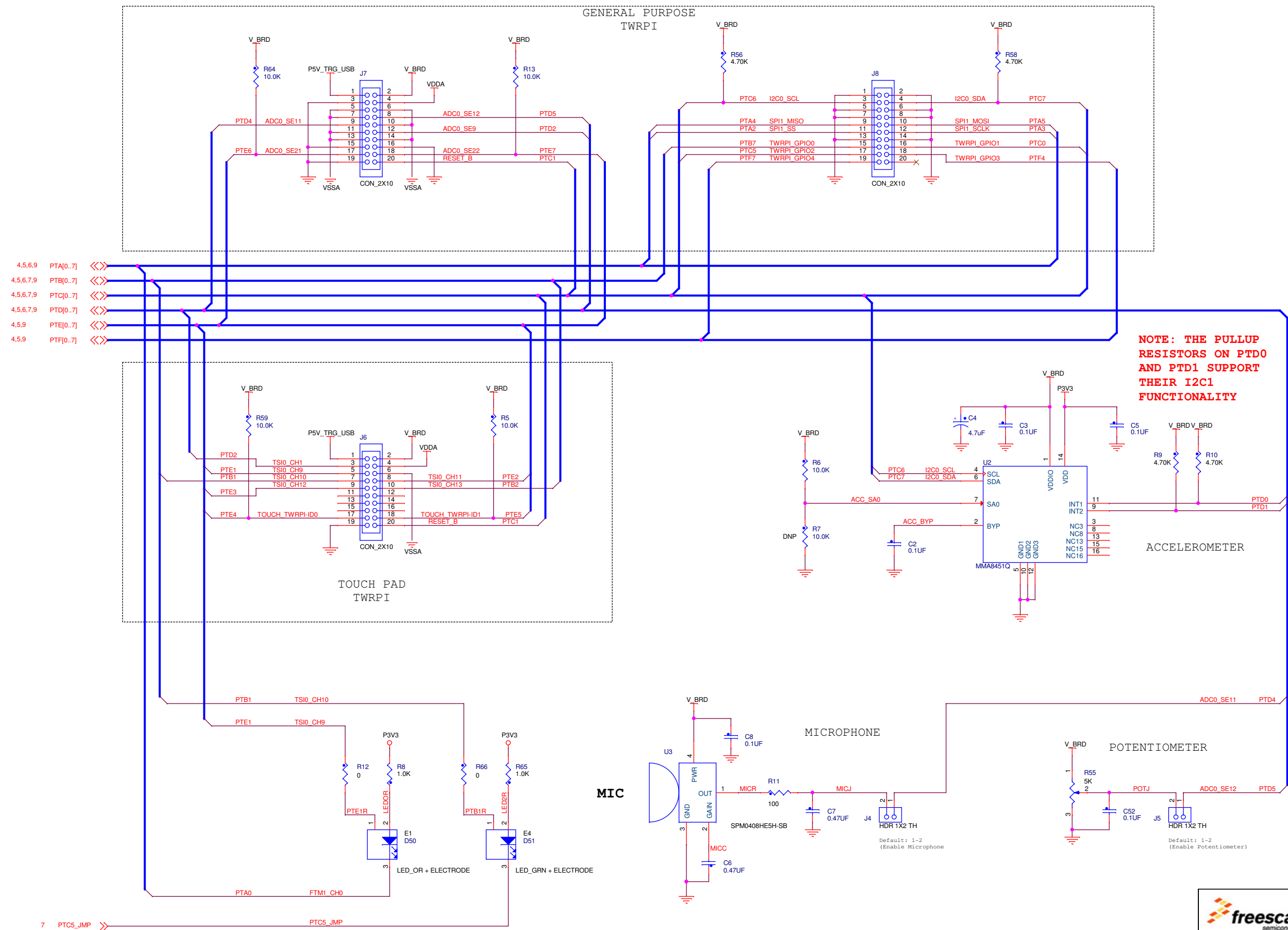


ICAP Classification: FCP: FILIO: X PUBI:

Drawing Title: **TWR-MCF51QM**

Page Title: **Peripherals**

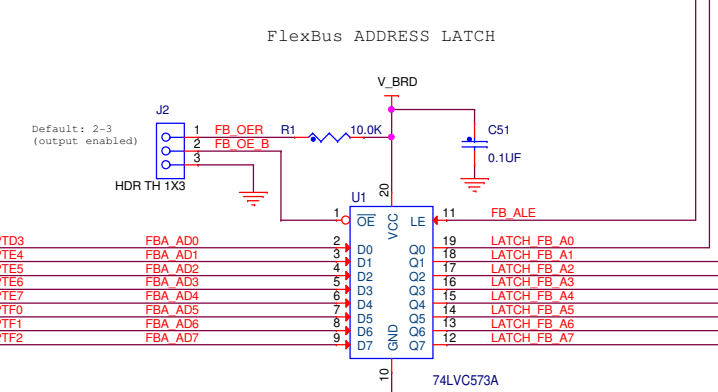
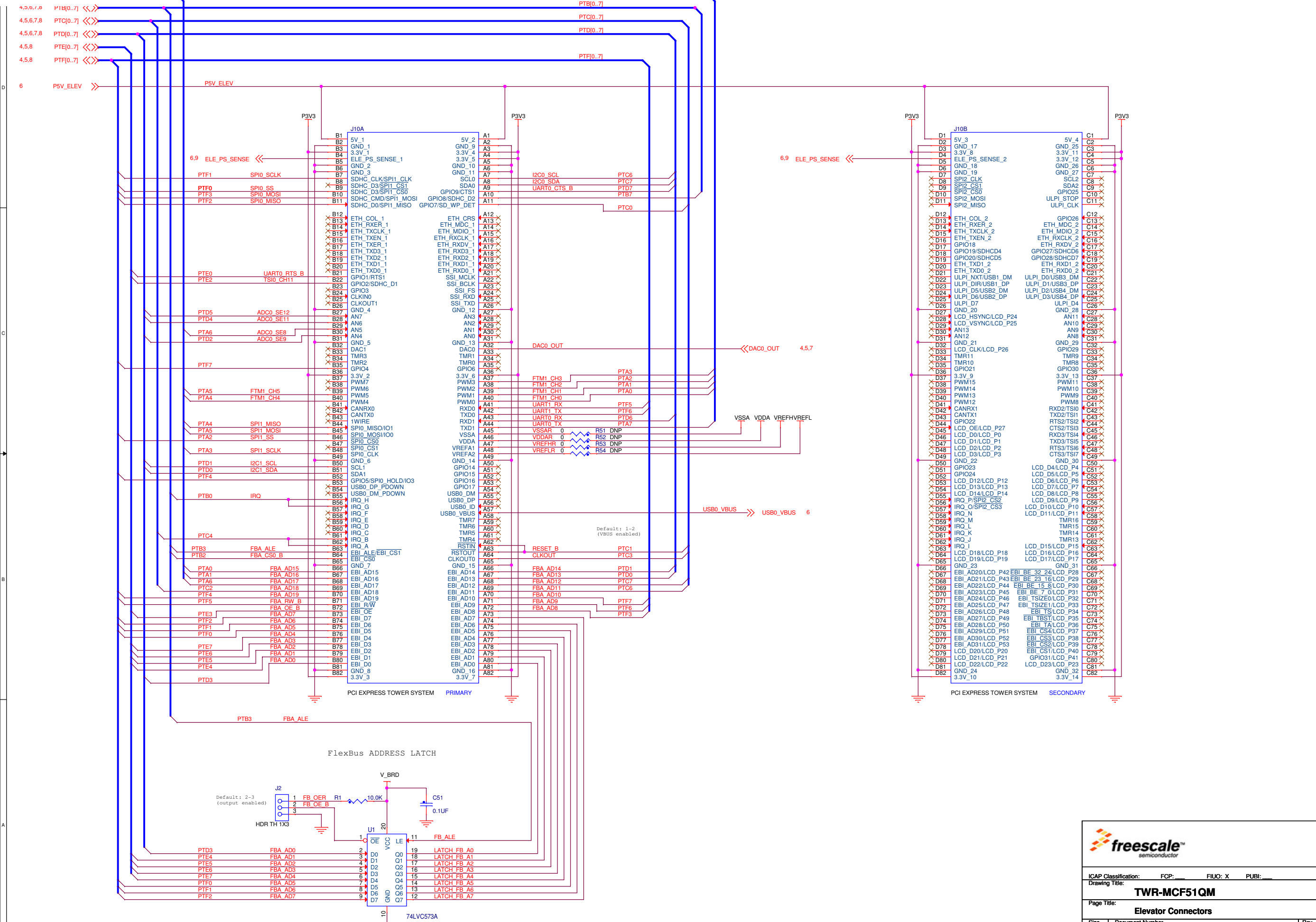
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**NOTE: THE PULLUP RESISTORS ON PTD0 AND PTD1 SUPPORT THEIR I2C1 FUNCTIONALITY**

- 4,5,6,9 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] <<>





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