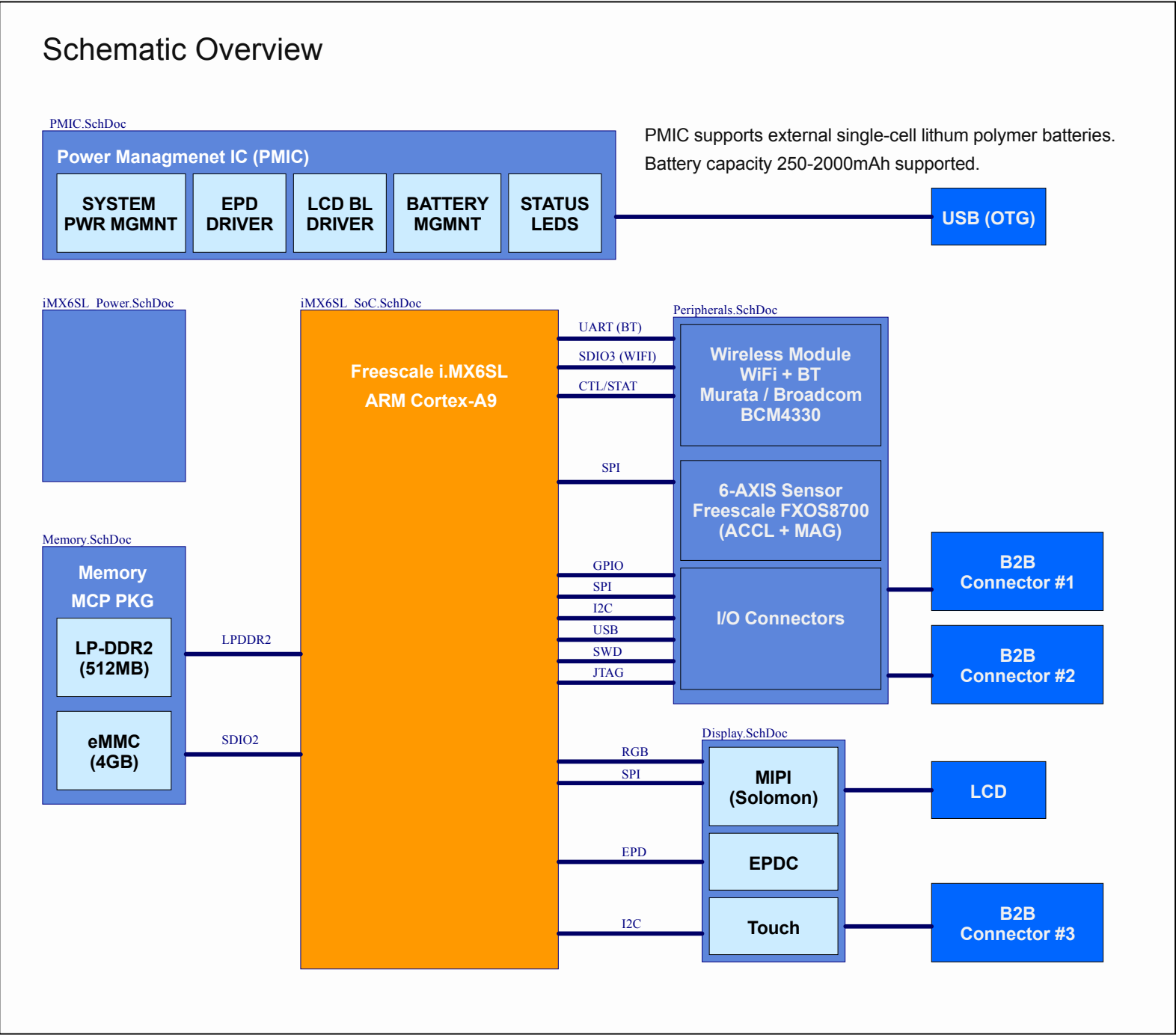


WaRP Mainboard Schematics

The Wearable Reference Platform (WaRP) has been developed in conjunction with Freescale, Kynetics, and Revotics. The hardware is designed by Revotics and is maintained and licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. For the latest information, please visit our website at: <http://revotics.com/warp>




Document History

Date	Comment	Revision
01/15/2015	Initial Public Release	v1.11



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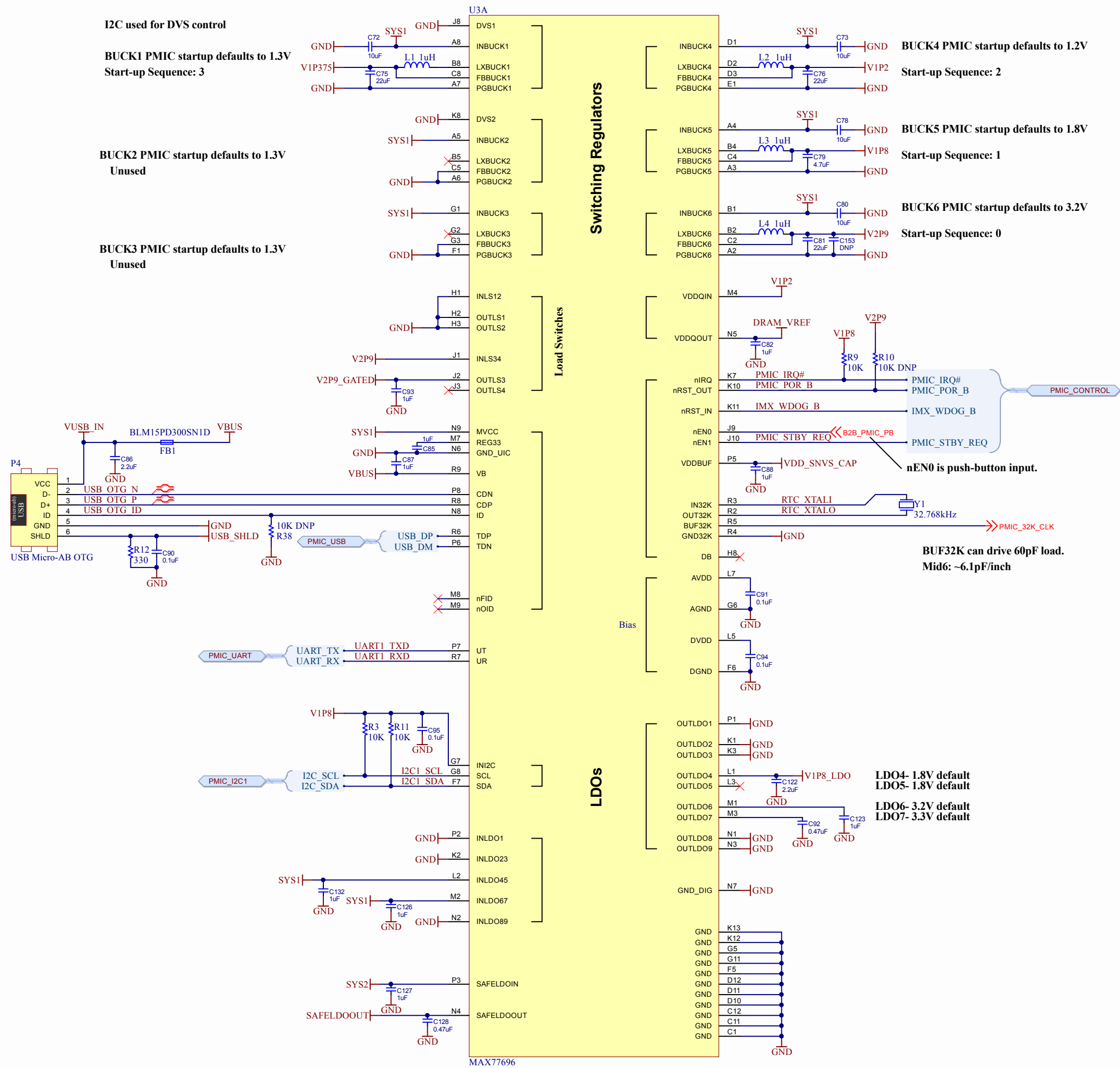
Project Name WaRP Mainboard			
Title Overview	Revision v1.12	Author Revolution Robotics, Inc. revotics.com Please visit our site for support and additional info.	
Filename: SystemLevel\Blocks.SchDoc			
Date: 3/4/2015	Sheet Number: 1 of 7		

I2C used for DVS control

BUCK1 PMIC startup defaults to 1.3V
Start-up Sequence: 3

BUCK2 PMIC startup defaults to 1.3V
Unused

BUCK3 PMIC startup defaults to 1.3V
Unused



PMIC Output Connections			
V1P375V - 1400mA			
VDD_ARM	1100mA	iMX6SL	
VDD_SOC	650mA	iMX6SL	
VDD_PU	150mA	iMX6SL	
V1P2V - 610mA			
NVCC_DRAM	400mA	iMX6SL	
VDD2 + VDDCA	???	LPDDR2	
V1P8V - 800mA			
NVCC_18IO	400mA	iMX6SL	
VDDIO	3mA	FXOS8700	
VDD1	???	LPDDR2	
VBB 2P9V - 415mA			
NVCC_33IO	30mA	iMX6SL	
VNVS	30uA	iMX6SL	
VDD	3mA	FXOS8700	
VCCQ + VCC	???	eMMC	

PMIC UT and UR are passthrough connections

LDO89 will leak 250uA if enabled via software.

Total effective capacitance on BUCK5 outputs should be <18.8uF (see worksheet).

SYS2/CHNGINA provide reverse boost functionality for 5V/accessory power.

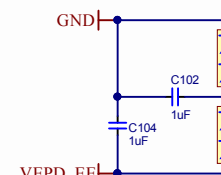
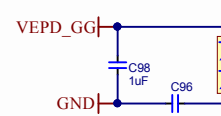
NOTE A. VCEN is internally OR'd with I2C register. Tie to GND and read EPDPK status from I2C.

NOTE B. Terminate THM 100k to GND and 100k to THMB to bias temp reading to safe level in fuel gauge algorithm. Set the JEITA bit to 0 to not use THM in the charging algorithm.

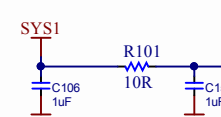
NOTE C. Status LEDs on dev board only. For Final board, connect INLEDSRC to GND. For Dev board, C124 can be used as resistor pad to GND input if R16 is depopulated.

NOTE D. INN should have decoupling cap. A close decoupling cap exists on the wifi block on the opposite side of the board. Total cap should be sufficient to cover both.

VEPD_GG +22V 15mA



VEPD_EE -20V 15mA



VEPD_GG +22V 15mA



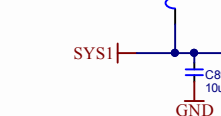
VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



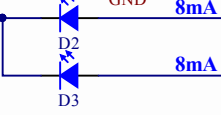
VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



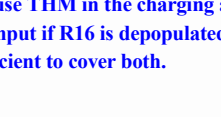
VEPD_GG +22V 15mA



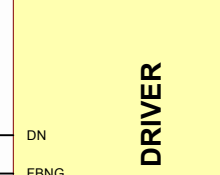
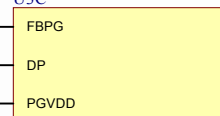
VEPD_GG +22V 15mA



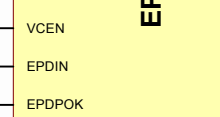
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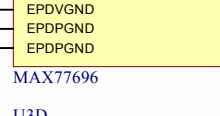
VEPD_GG +22V 15mA



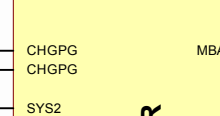
VEPD_GG +22V 15mA



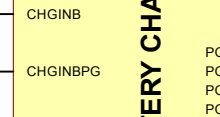
VEPD_GG +22V 15mA



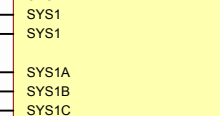
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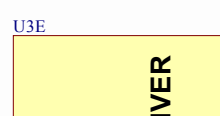
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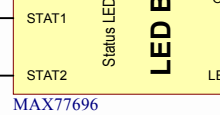
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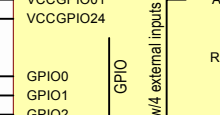
VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



VEPD_GG +22V 15mA



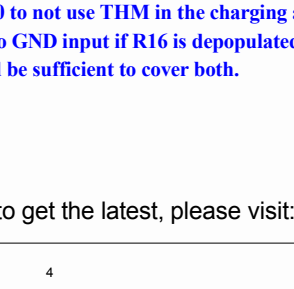
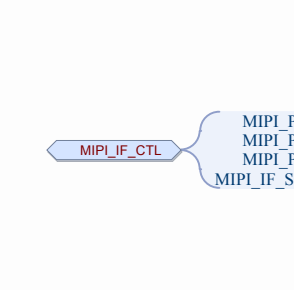
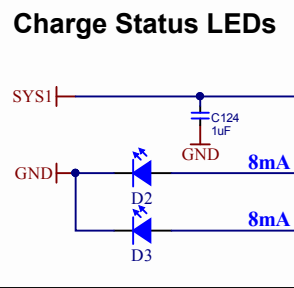
VEPD_GG +22V 15mA




EPDC DRIVER

BATTERY CHARGER

LED BL DRIVER



Project Name			
WaRP Mainboard			
Title PMIC		Revision v1.12	Author Revolution Robotics, Inc. revotics.com Please visit our site for support and additional info.
Filename: PMIC.SchDoc			
Date: 3/4/2015	Sheet Number: 2 of 7		

A

B

C

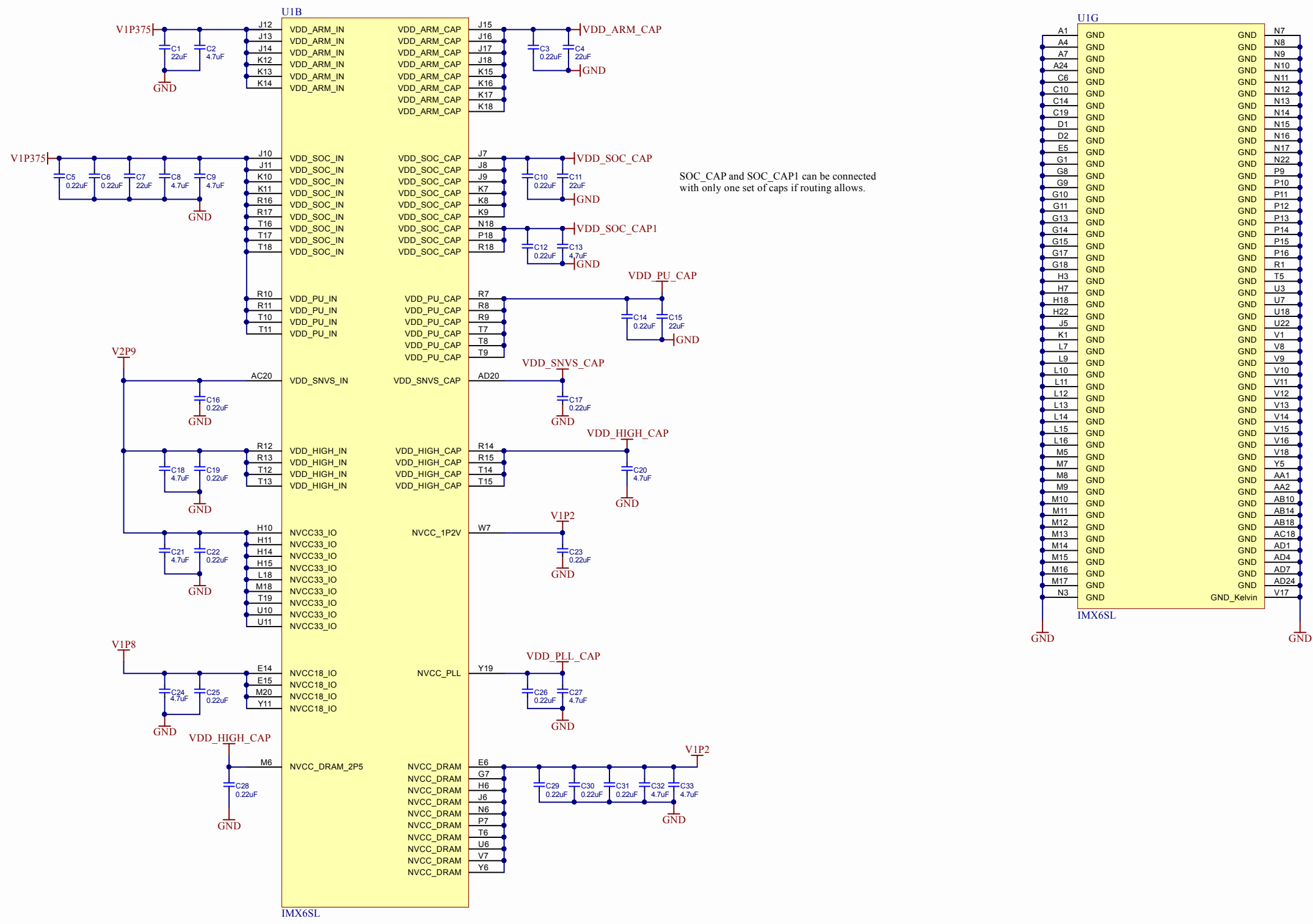
D

A

B


C

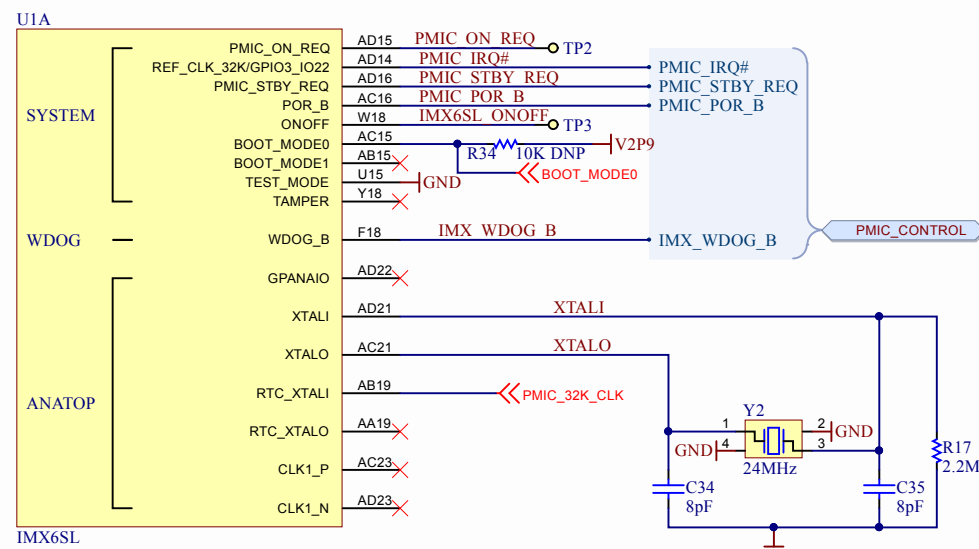
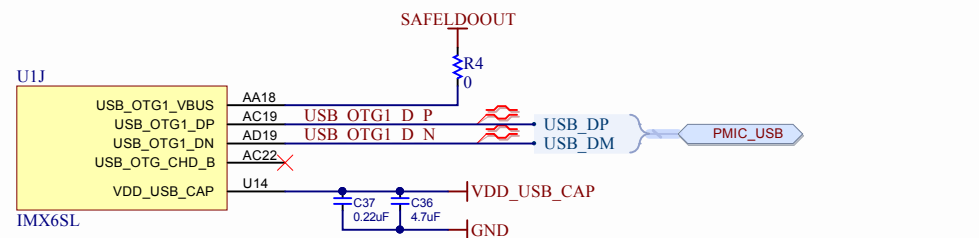
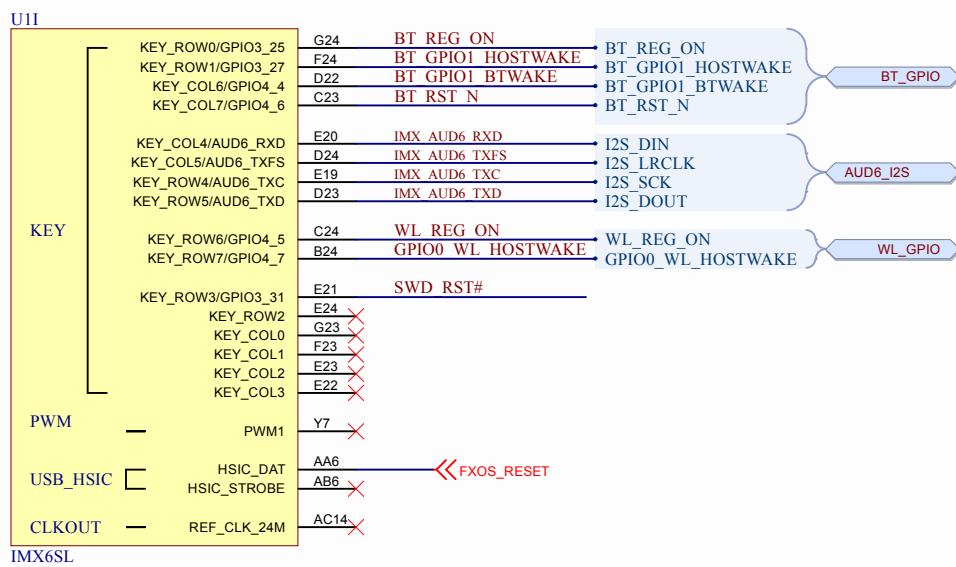
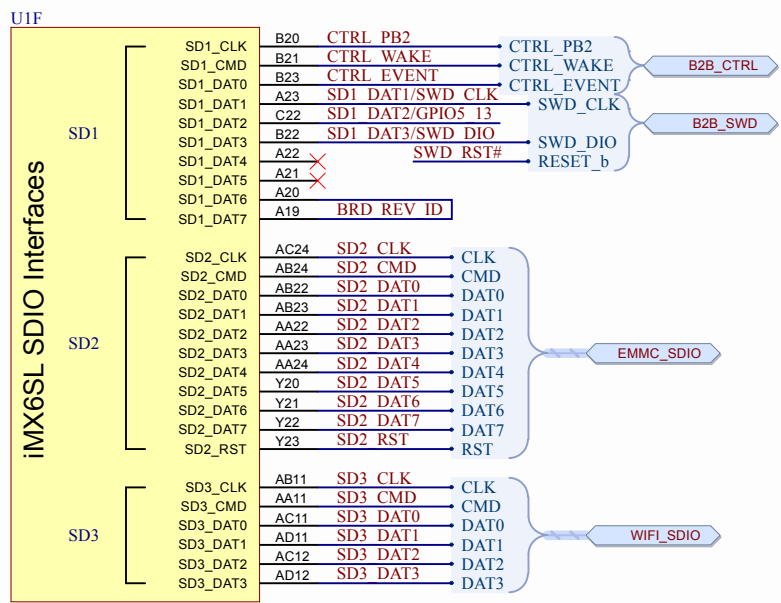
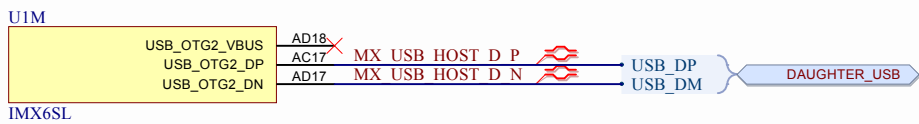
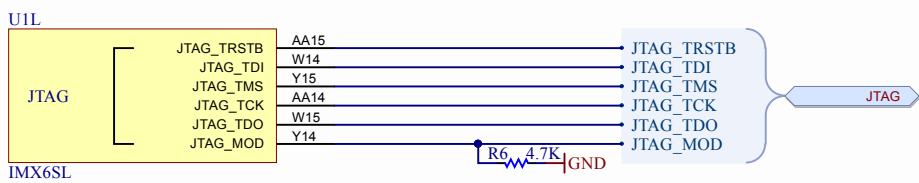
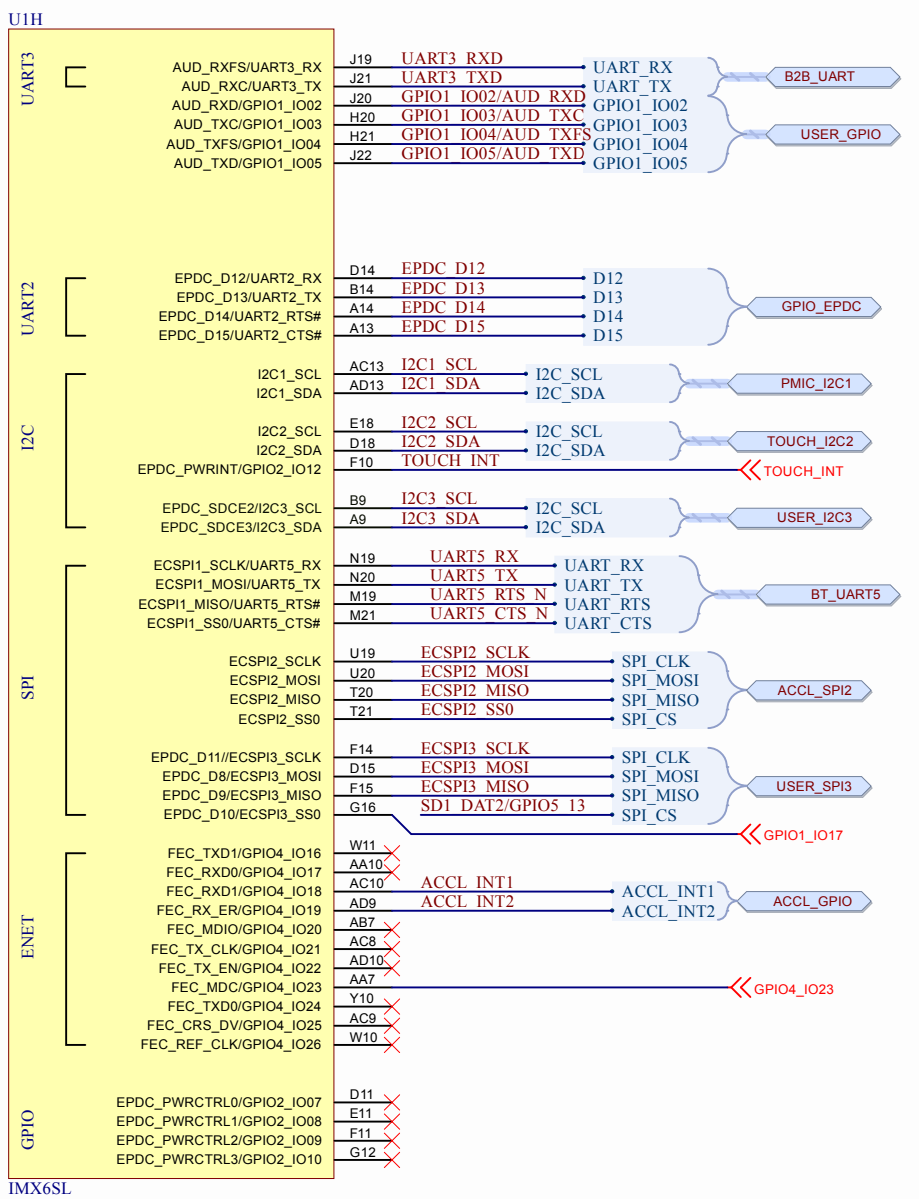
D



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Project Name			
WaRP Mainboard			
Title	i.MX6SL Power	Revision	v1.12
Filename: iMX6SL_Power.SchDoc		Author	
Date: 3/4/2015		Revolution Robotics, Inc. revotics.com	
Sheet Number:		3 of 7	
		Please visit our site for support and additional info.	



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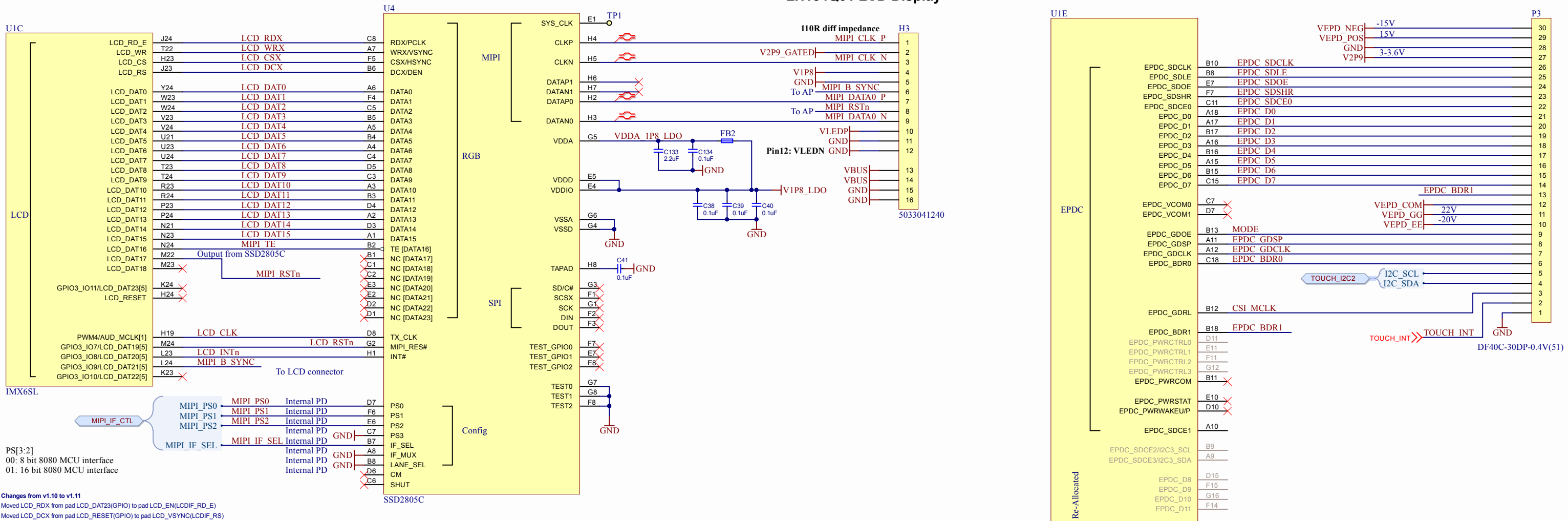
Project Name WaRP Mainboard			 Revolution Robotics, Inc. revotics.com Please visit our site for support and additional info.
Title i.MX6SL SoC	Revision v1.12		
Filename: iMX6SL_SoC.SchDoc			
Date: 3/4/2015	Sheet Number: 4 of 7		

iMX6SL SSD2805C 8080 Video Interface

SSD2805C MIPI Bridge


LH154Q01 LCD Display

iMX6SL EPDC Interface

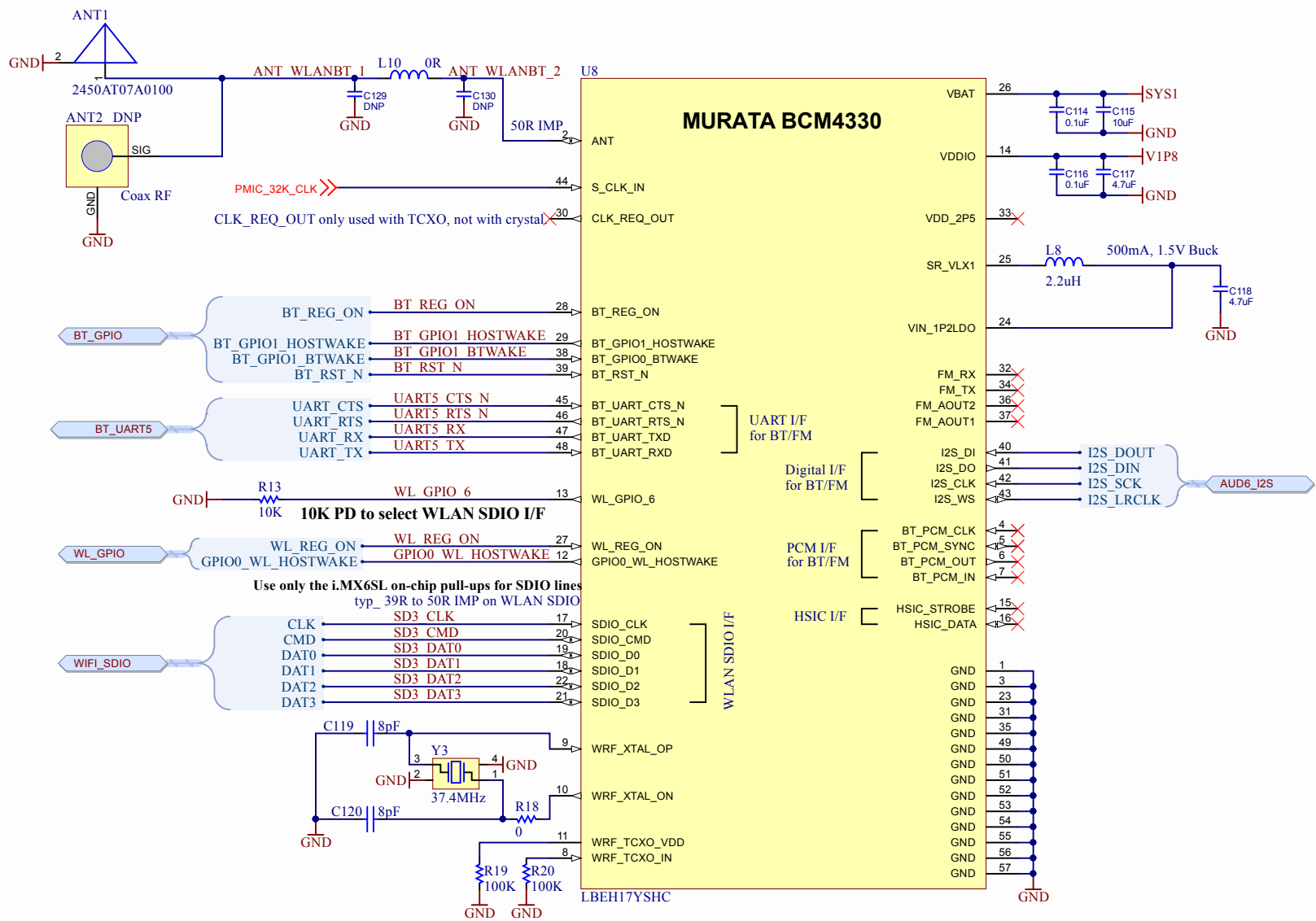
LH154Q01 LCD Touch Connector
ET017QC1 EPDC

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Project Name WaRP Mainboard			 Revolution Robotics, Inc. revotics.com Please visit our site for support and additional info.
Title Display (MIPI + EPD)	Revision v1.12		
Filename: Display.SchDoc			
Date: 3/4/2015	Sheet Number: 6 of 7		

Wireless



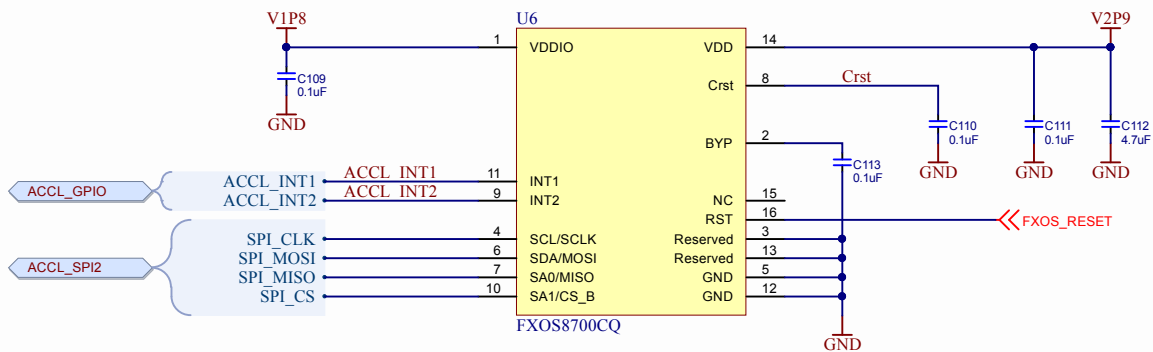
R18 Typical value listed as 0-330 dependent upon crystal.
Value may need optimization.

WLAN GPIO strapping options for WLAN I/F selection

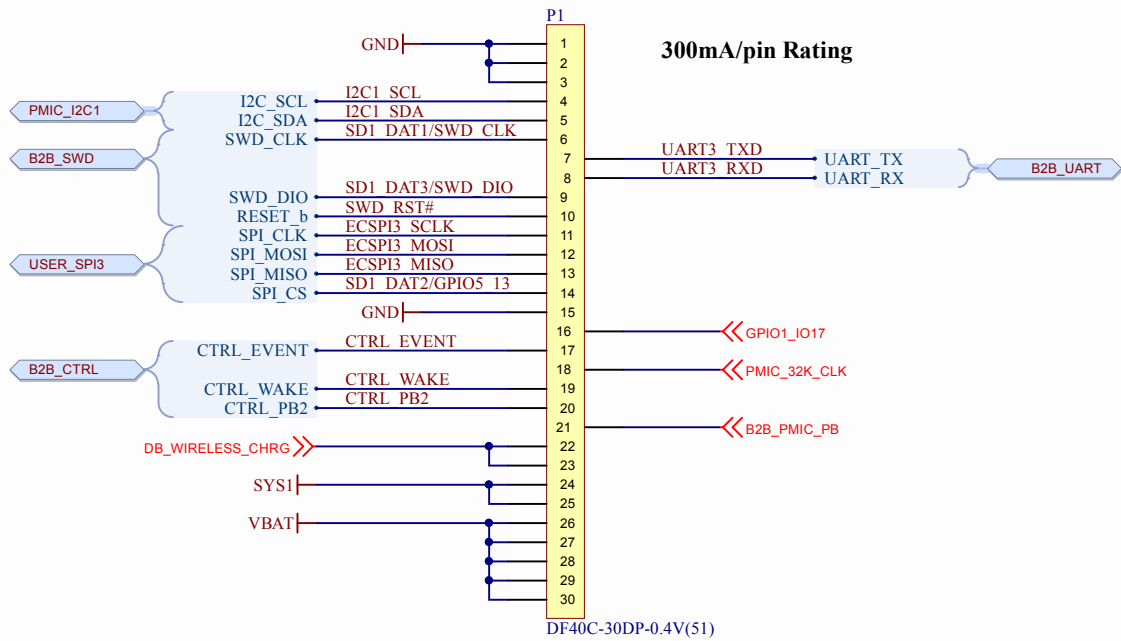
WL_GPIO_6	Pin		Interface
	SDIO D2	SDIO D1	
PullDN	---	---	SDIO
PullUP	PullDN	---	SPI
PullUP	PullUP	PullDN	Normal HSIC
PullUP	PullUP	PullUP	Bootloader-less HSIC

Resistor size is 10kOhm or less for each setting.

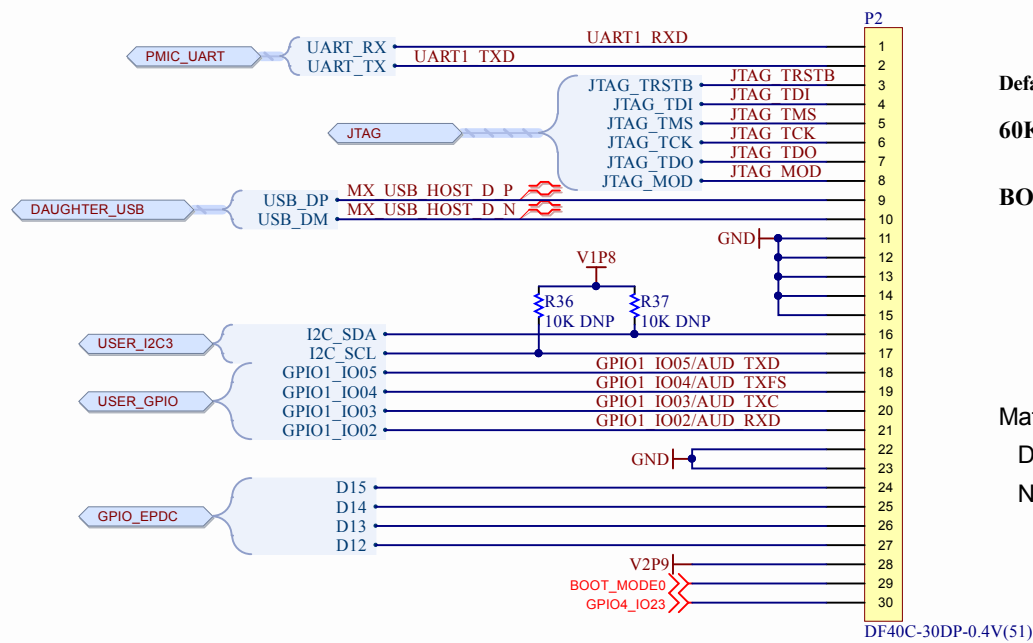
FXOS8700 Accelerometer



Daughterboard Connector (Port 1)



Mechanical/Debug Connector (Port 2)



Default BOOT MODE jumpers should be added to mainboard

60KO-140KO Internal PD on iMX6SL

00 - Boot from fuses

BOOT_MODE[1:0] 01 - Serial Downloader

10 - Internal Boot (Development)

Mating connector to use on Daughterboard:

DF40HC(3.0)-30DS-0.4V(51)


Note: Work with all height variants (dependent only on DB)

See the Displays schematic page for the 3rd I/O connector (Port 3)



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Project Name WaRP Mainboard			
Title Peripherals	Revision v1.12	Author Revolution Robotics, Inc. revotics.com Please visit our site for support and additional info.	
Filename: Peripherals.SchDoc			
Date: 3/4/2015	Sheet Number: 7 of 7		