



Thunderboard Sense

EFR32MG12P332F1024GL125

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MEMS Microphone & RGB LEDs	4
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Revision History

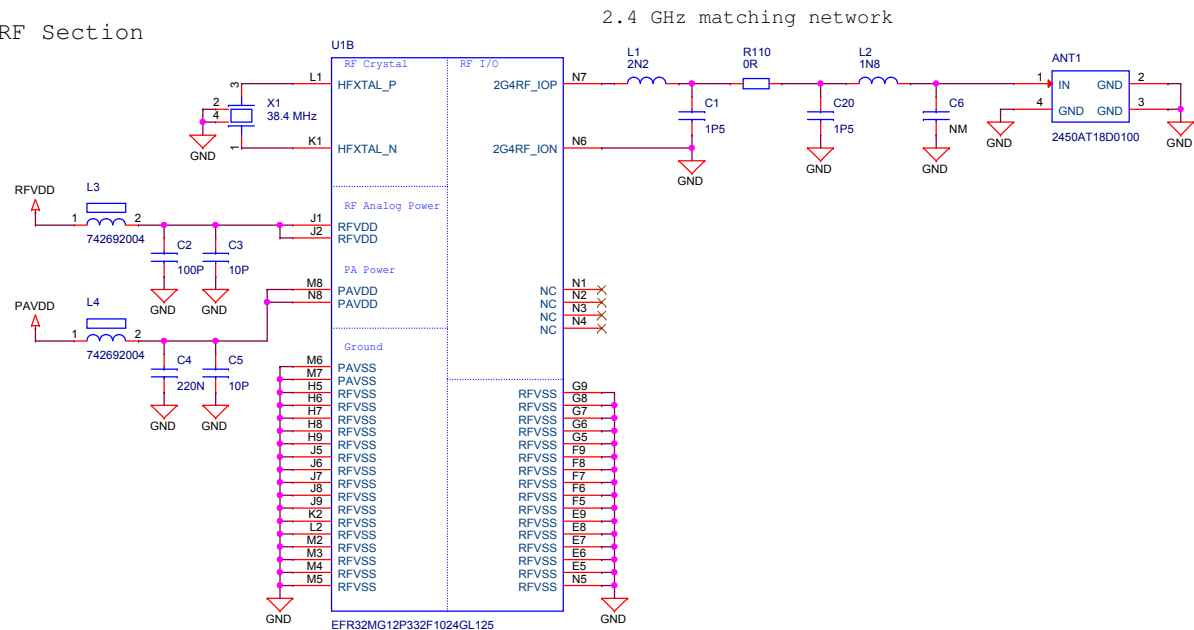
Rev.	Description
A00	Initial prototype version.
B00	Updated EFR32 and debugger IC revisions. Replaced analog microphone with an I2S-based digital one.
B01	Changed microphone to Knowles SPH0645LM4H-B
C00	Updated microphone and SPI Flash pinout. Changed to Invensense microphone and 9-axis IMU.
C01	Updated hall effect sensor (si7210) revision.
D00	Changed back to Invensense 6-axis IMU.



SCHEMATIC1

<p>SILICON LABS</p>		Schematic Title	
		Thunderboard Sense	
Designed: DDB Approved: JNO		Page Title	
		Title Page	
Size: A3	BOM Doc No: <Cage Code>	Document number	Revision
Design Created Date: Wednesday, November 30, 2016	Sheet Created Date: Wednesday, November 30, 2016	Document number: BRD4166A	Revision: D00
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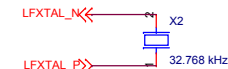
RF Section



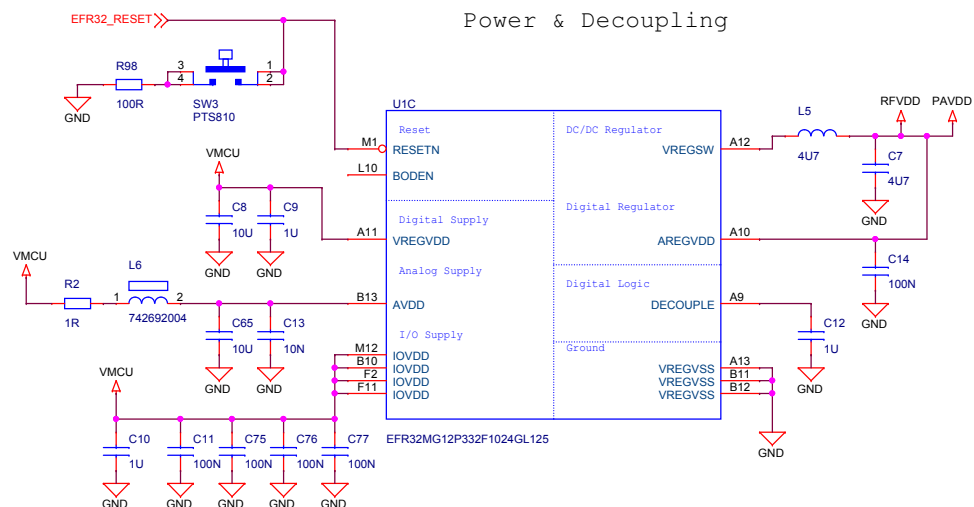
Mounting Holes




Low Frequency Crystal

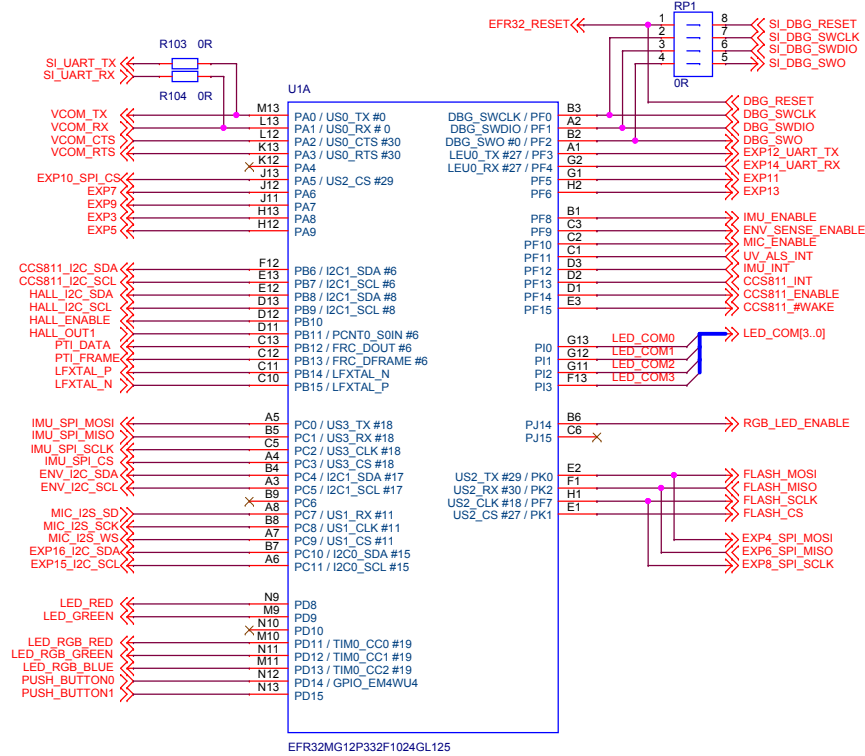


Reset button

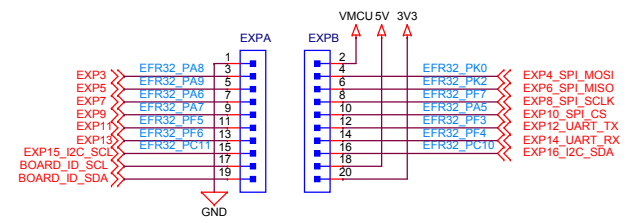


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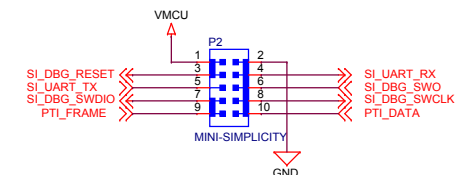
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Designed: DDB Size: A3 Design Created Date: Wednesday, November 30, 2016		Page Title	
		EFR32 - RF, power & IO	
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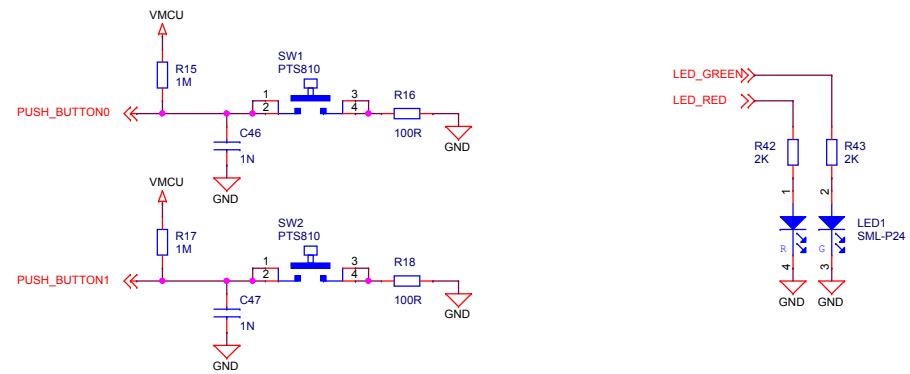
Breakout Pads - EXP Header



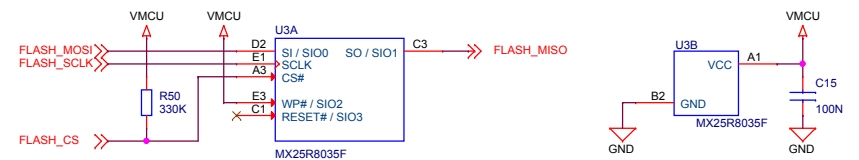
Mini Simplicity Connector



Push Buttons & LEDs



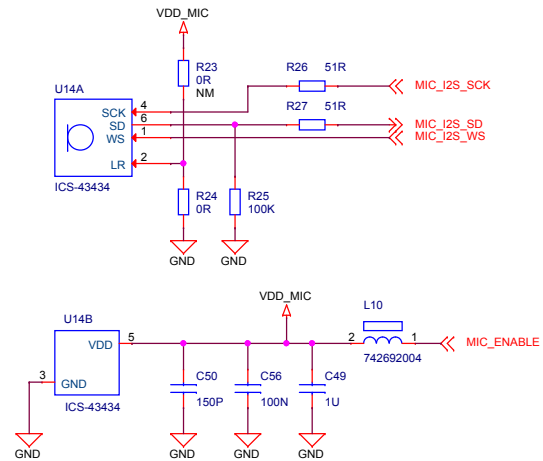
SPI Flash



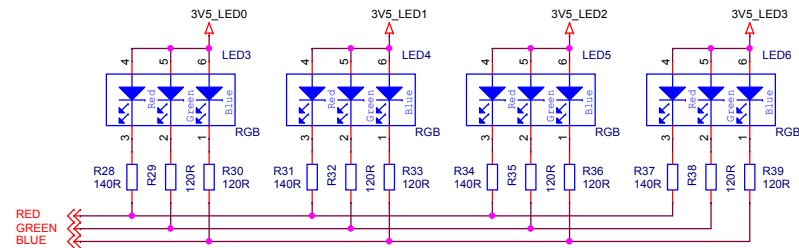
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		EFR32 connections & interfaces	
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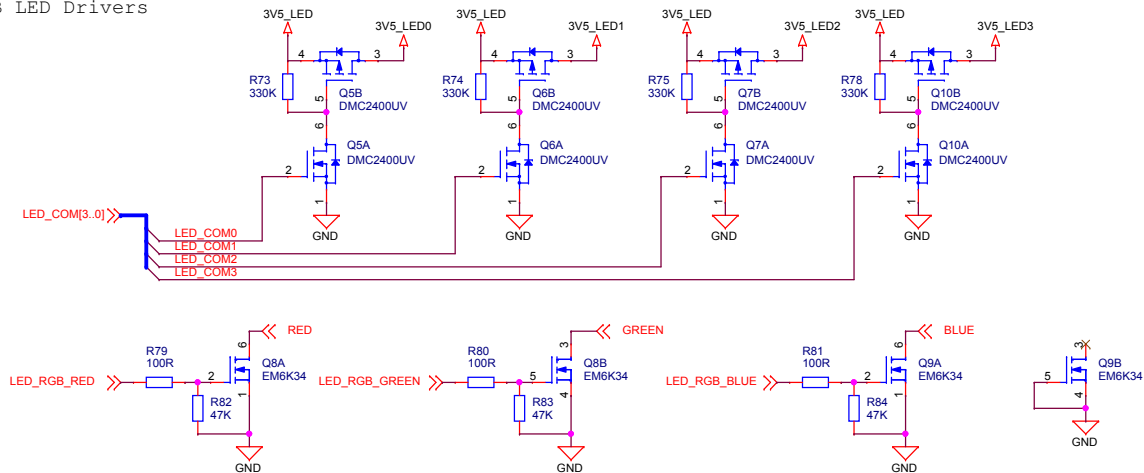
MEMS Microphone



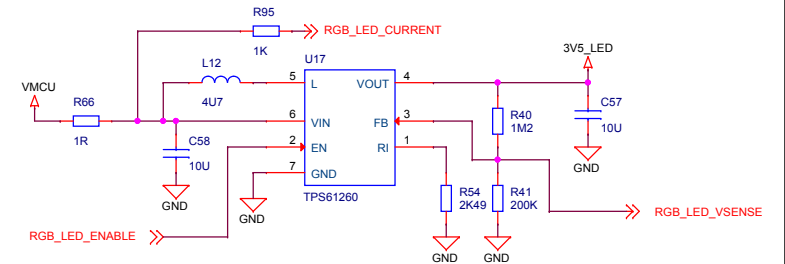
RGB LEDs




RGB LED Drivers



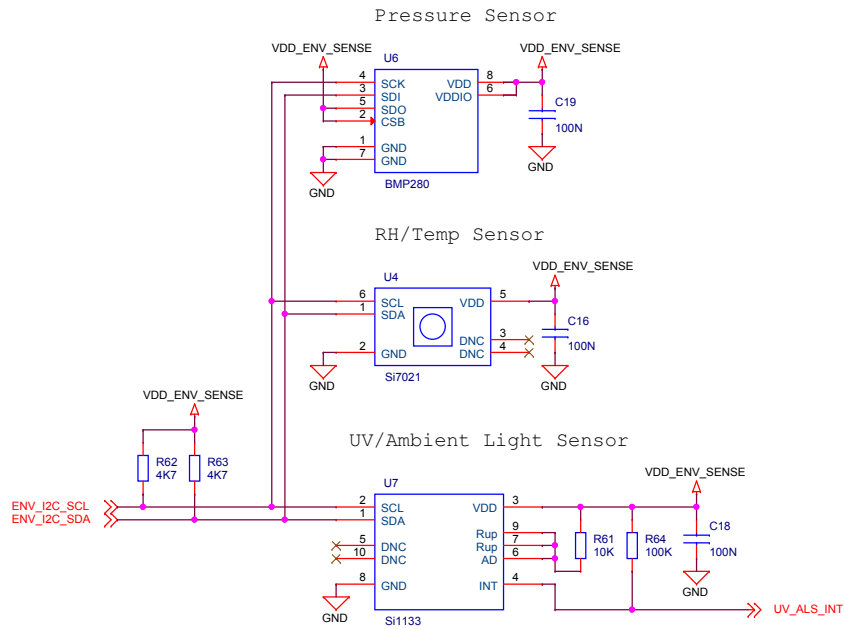
RGB LED power supply



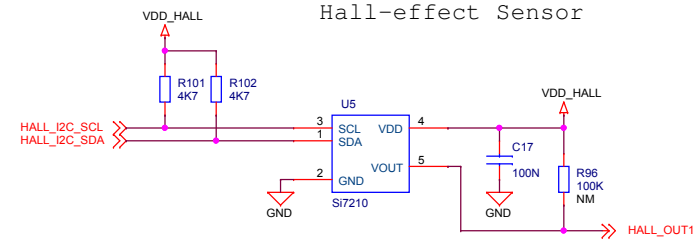
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		MEMS Microphone & RGB LEDs	
Sheet Created Date: Wednesday, November 30, 2016 Sheet Modified Date: Monday, September 25, 2017		Document number	Revision
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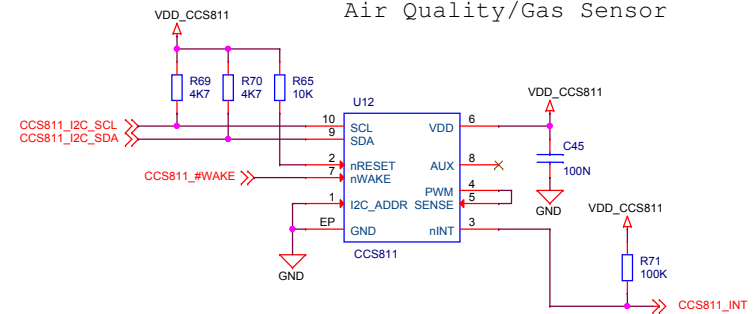
Environmental Sensors



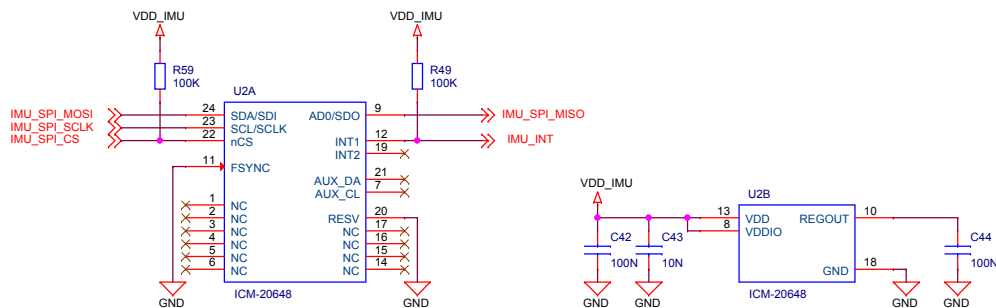
Hall-effect Sensor



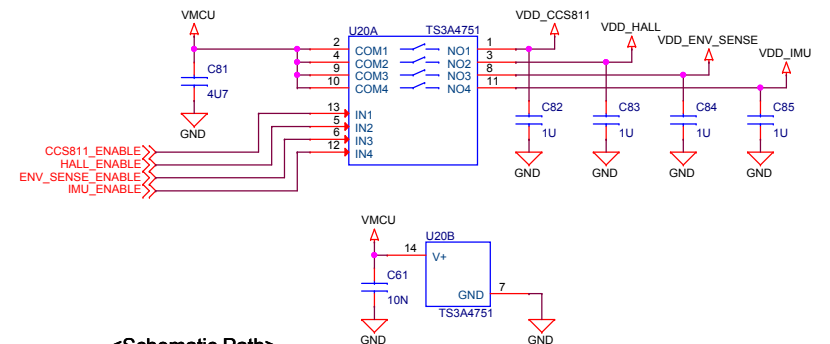
Air Quality/Gas Sensor



6-axis inertial sensor



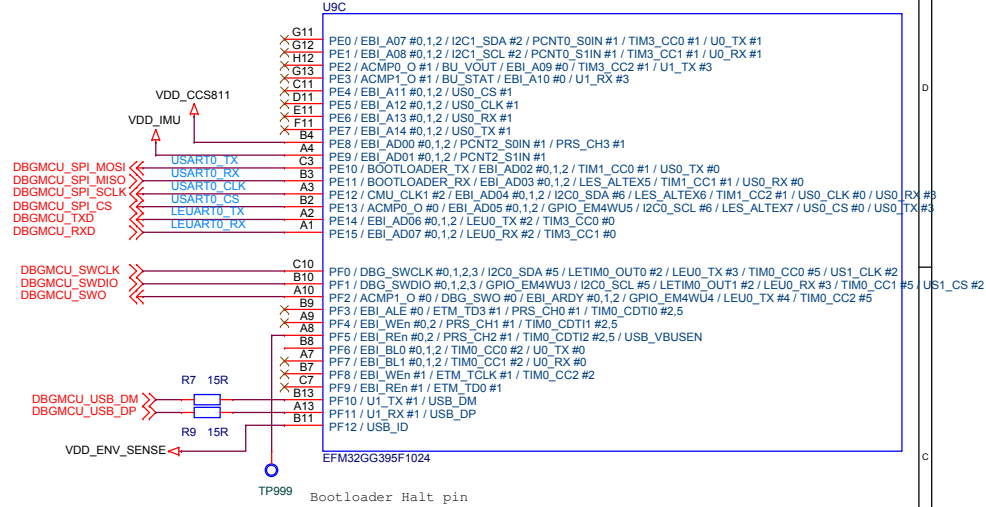
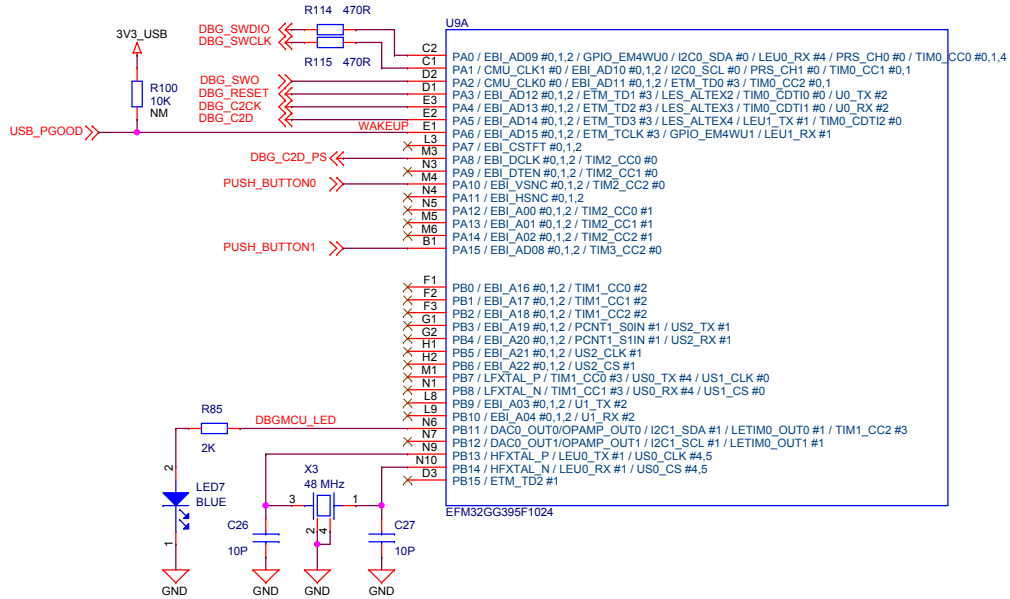
Sensor Power Control



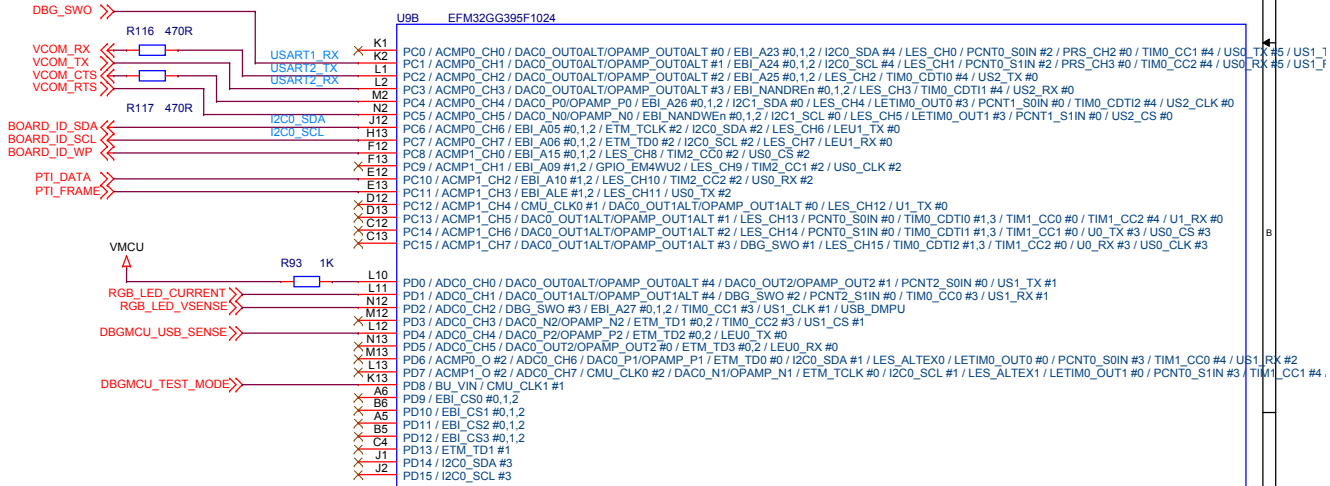
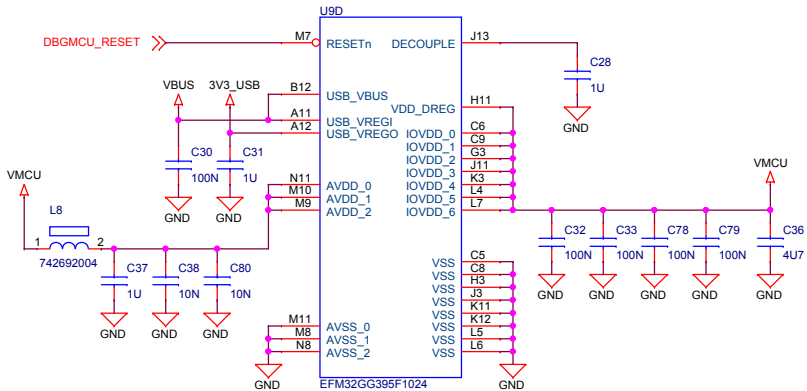
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		I2C & SPI Sensors	
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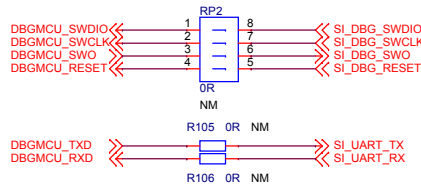
Debug MCU Connections



Debug MCU Decoupling



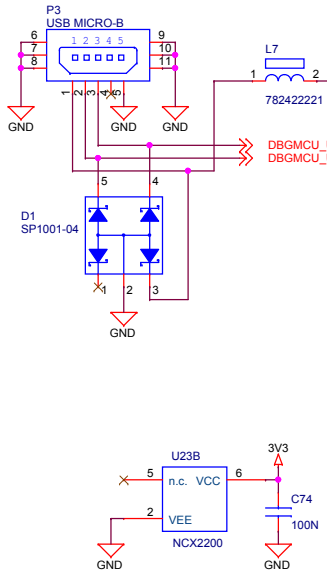
Debug MCU Connections to Mini Simplicity Header



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SCHEMATIC1

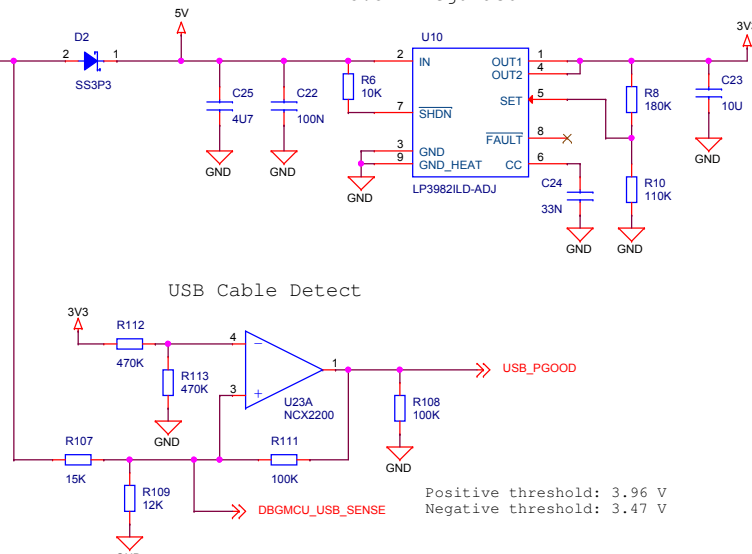
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		Thunderboard Sense 2	
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		Debug MCU	
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USB Connector

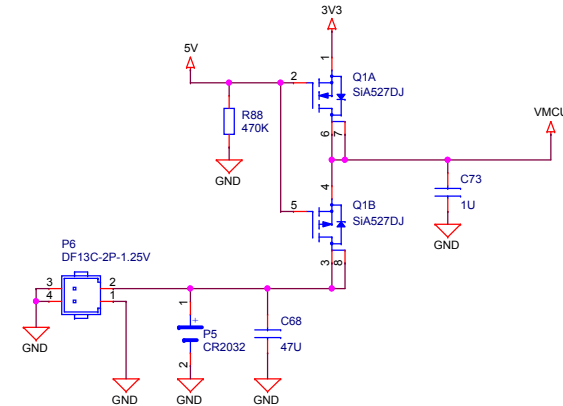


User can supply 3.6 - 5.5 on "5V" pin instead of using the USB cable

3.3 V Regulator

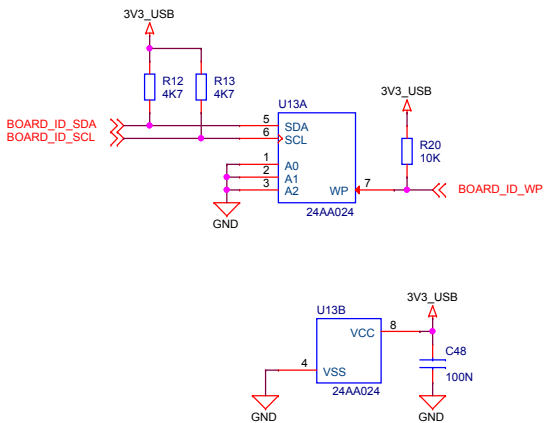


Board power select circuit

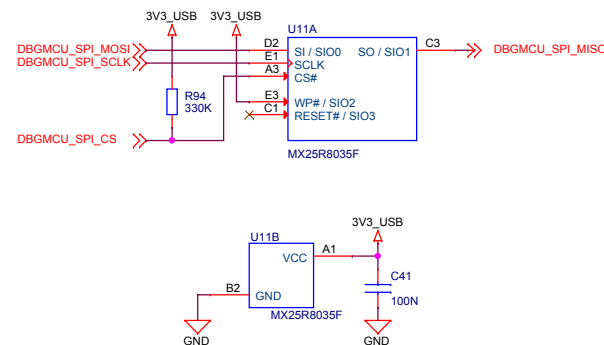


Q1 switches from battery power to USB when USB is plugged in. Additionally, the Mini Simplicity Debug connector can supply power directly to the target voltage domain.

Board ID EEPROM

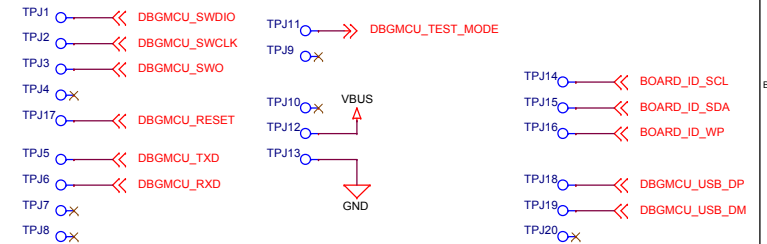


SPI Flash




Note: The SPI flash is only available to the debug mcu when the USB cable is plugged in!

Test Points



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		Debug Misc. & Power	
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