



## Thunderboard EFM32GG12

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## Revision History

Rev.	Description
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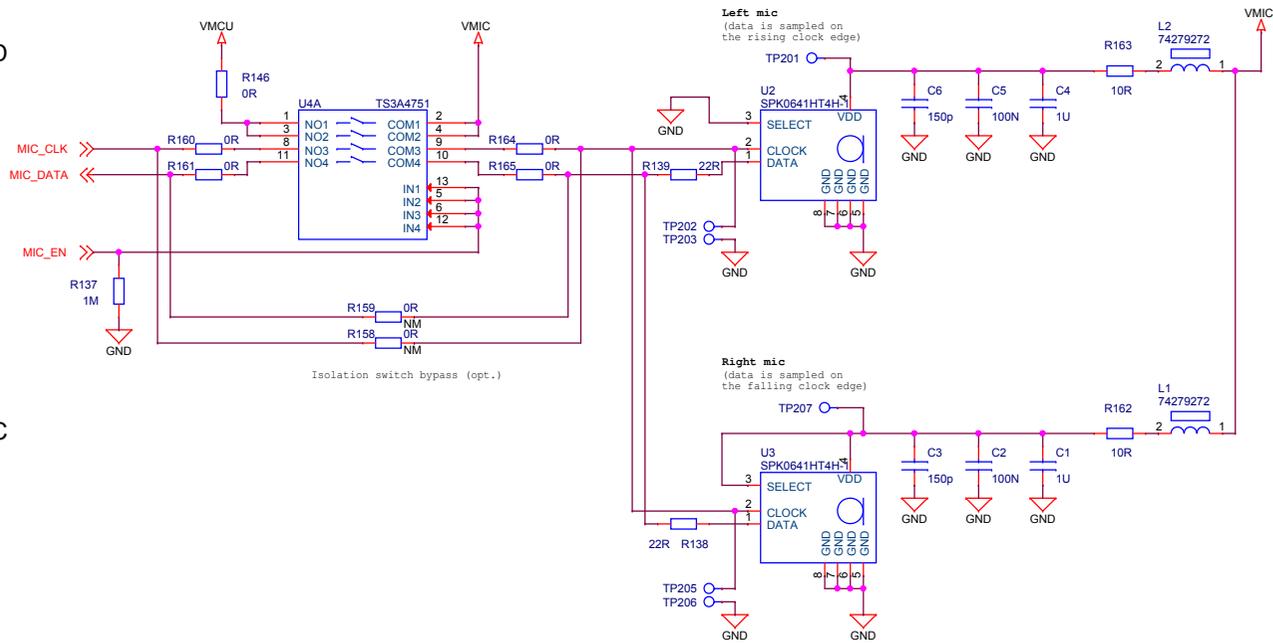
A00	Initial verison.
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A01	Fixed error in silk screen and changed U18 to buffer with tri-state
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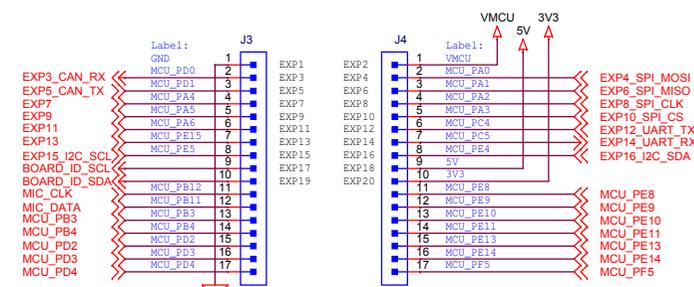


 <b>SILICON LABS</b>		Schematic Title	
		<b>Thunderboard EFM32GG12</b>	
Designed: MER		Approved: JSH	
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Document number		Revision	
<b>BRD2207A</b>		<b>A01</b>	
Sheet Modified Date: Thursday, October 04, 2018		Sheet 1 of 6	

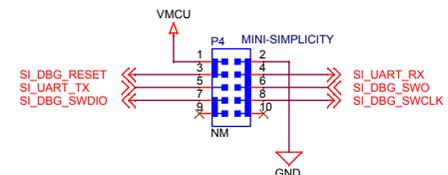
# PDM microphones in stereo mode



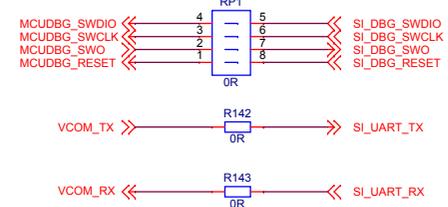
# Breakout Pads - EXP Header & Additional IO



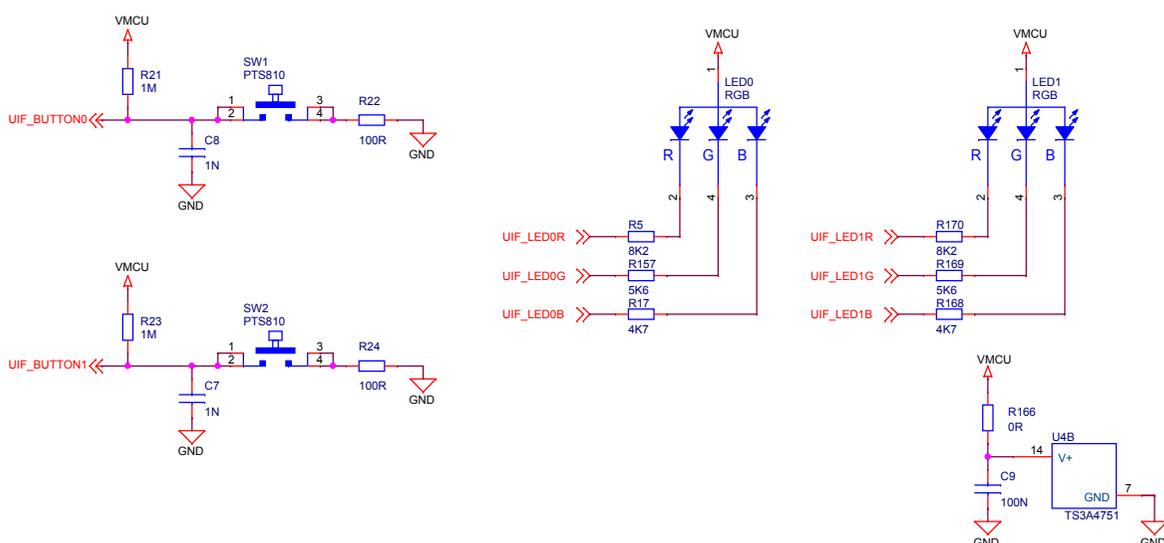
## Mini Simplicity Connector



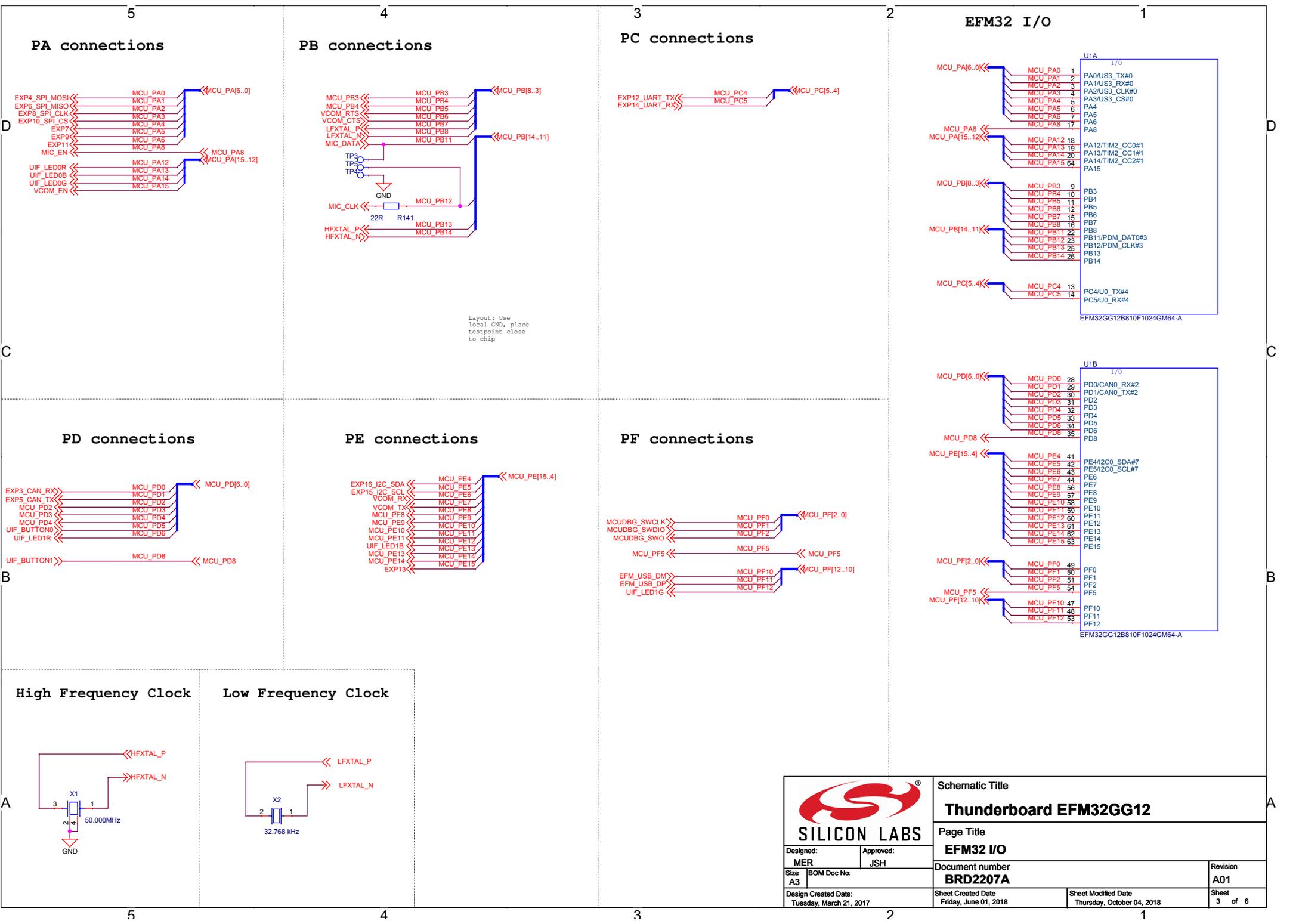
Target MCU connections to Mini Simplicity Header



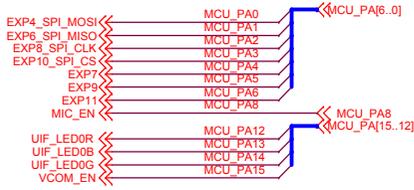
# Push Buttons & LEDs



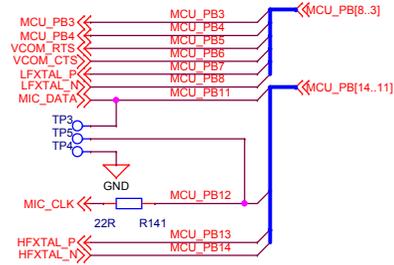
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		<b>Thunderboard EFM32GG12</b>	
Designed: MER Size: A3 Design Created Date: Tuesday, March 21, 2017		Page Title	
		<b>Microphones and LEDs</b>	
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**PA connections**

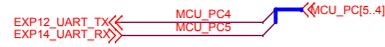


**PB connections**

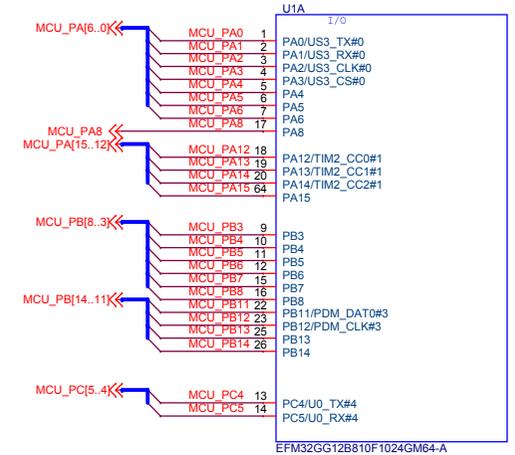


Layout: Use local GND, place testpoint close to chip

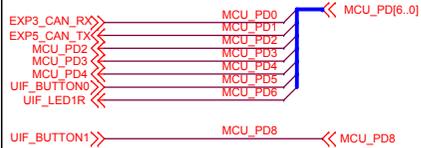
**PC connections**



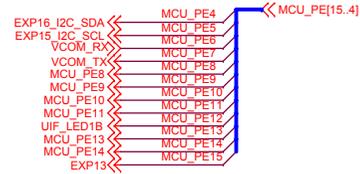
**EFM32 I/O**



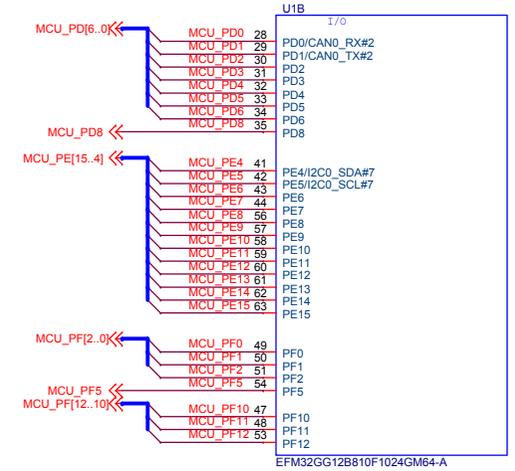
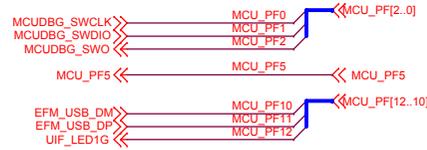
**PD connections**



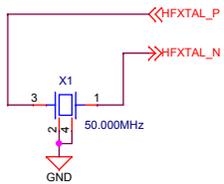
**PE connections**



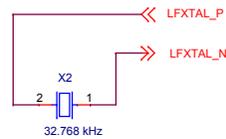
**PF connections**



**High Frequency Clock**

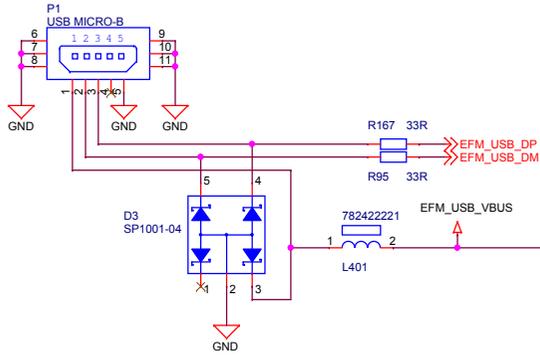


**Low Frequency Clock**

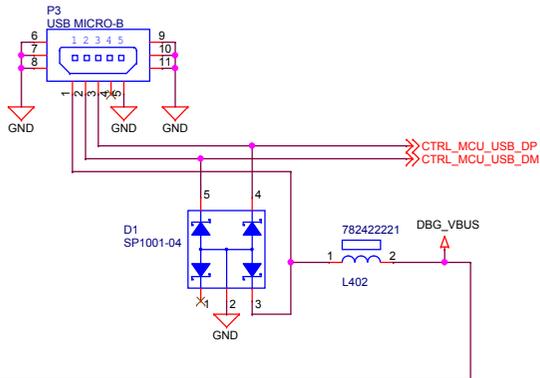


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		<b>Thunderboard EFM32GG12</b>	
Designed: MER Size: A3		Page Title	
		<b>EFM32 I/O</b>	
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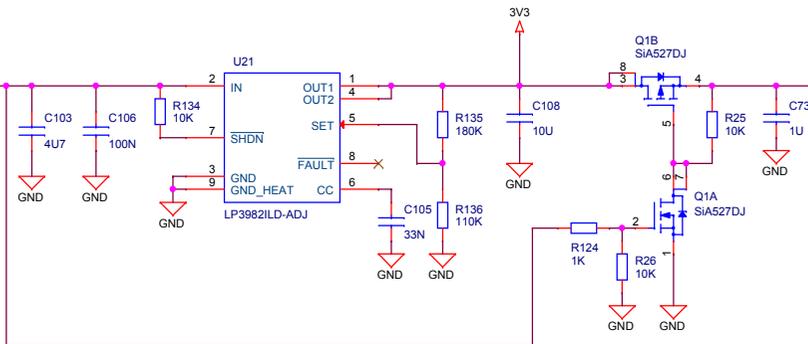
### EFM32GG12 USB Connection and ESD Protection



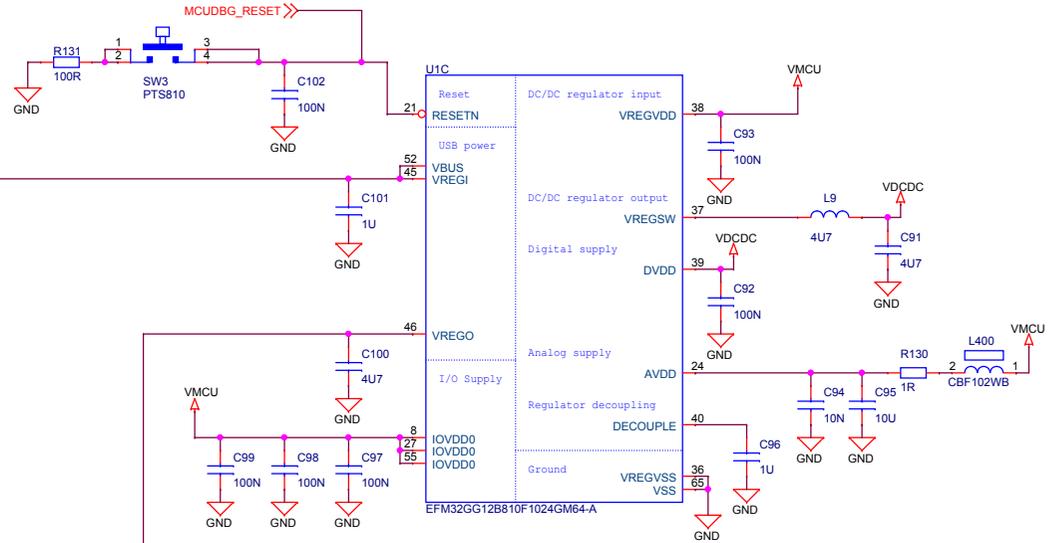
### Debug USB Connection and ESD Protection



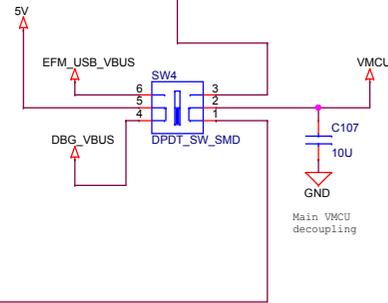
### 3.3 V Regulator



### EFM32GG12 Giant Gecko Power and Decoupling



### Board Power Select Switch



SWITCH POSITION	VMCU SOURCE	5V SOURCE
MCU USB	EFM32GG12 on-chip regulator, which is powered by the MCU USB connector.	EFM32 VBUS
DBG USB	3.3 V board regulator, which is powered by the DBG USB connector.	Debug VBUS



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**Thunderboard EFM32GG12**

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**USB, Power and decoupling**

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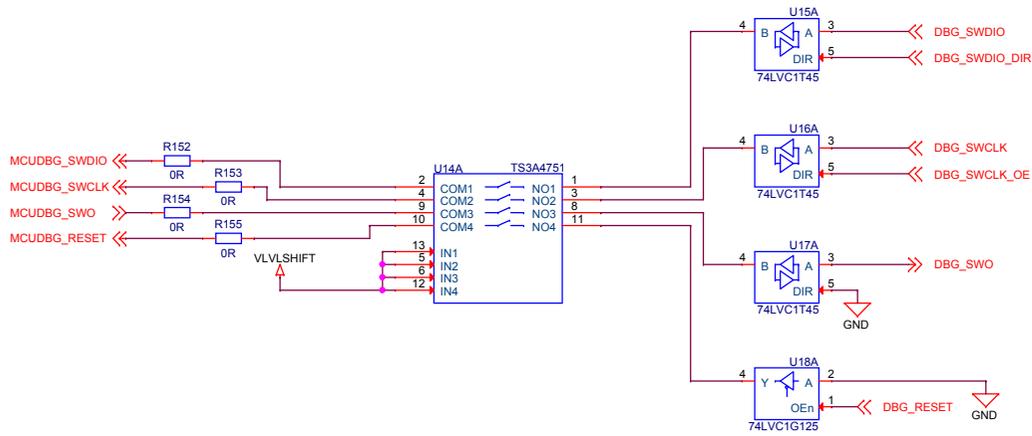
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Revision

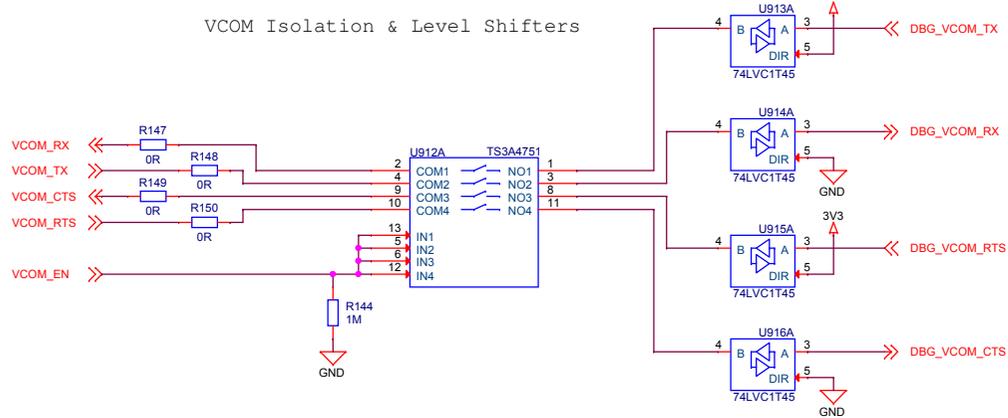
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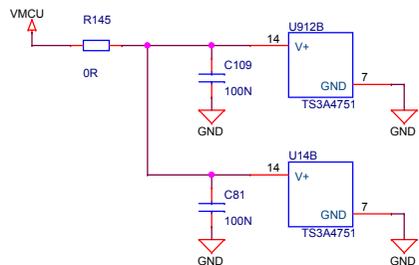
### Debug Isolation Switch & Level Shifters



### VCOM Isolation & Level Shifters

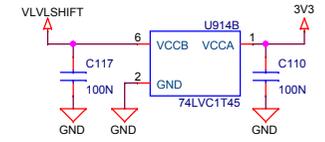
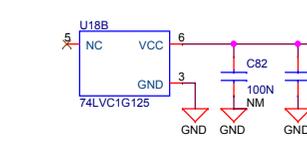
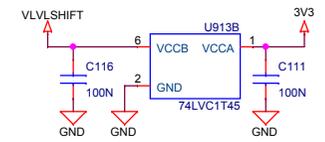
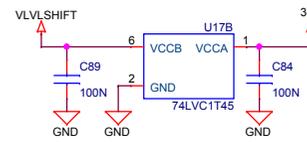
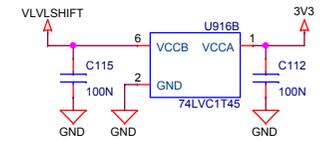
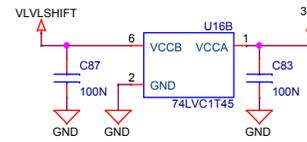
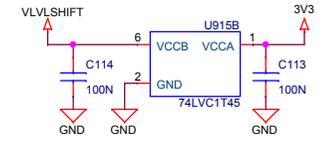
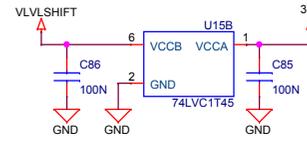
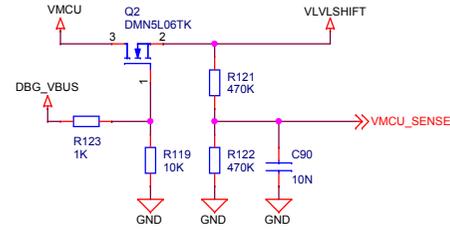


### Isolation Switch Power Supply



### Level Shifter Power Supply

Q2 isolates VMCU from level shifters and disables U14 when debug USB cable is not inserted



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**Levelshift and Isolation**

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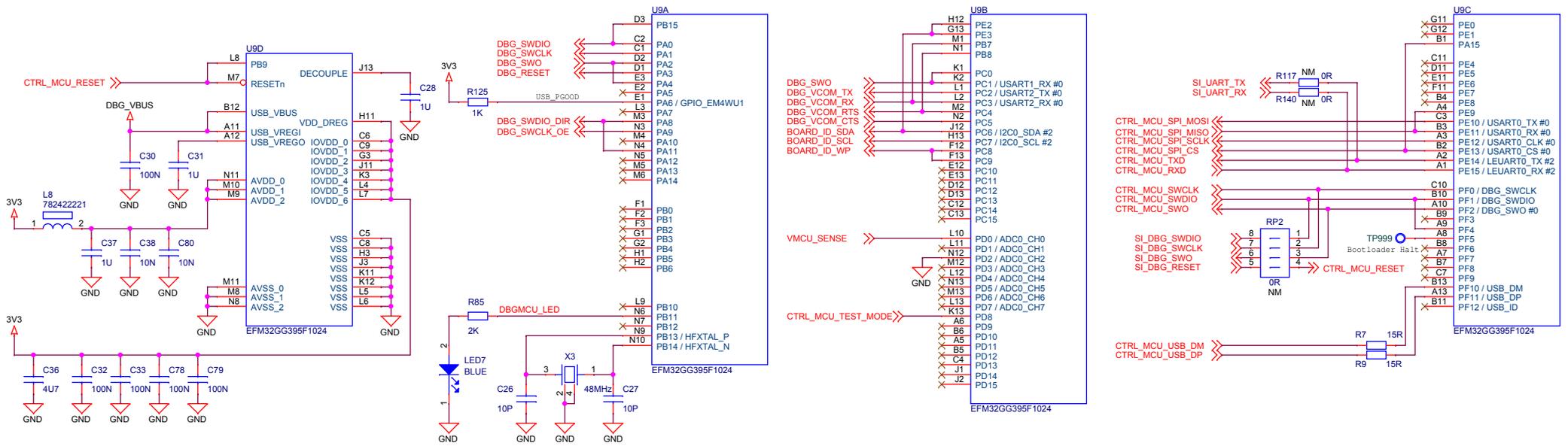
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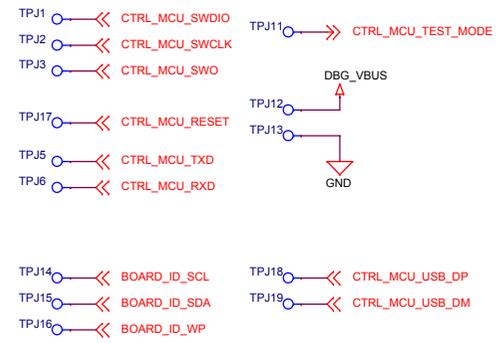
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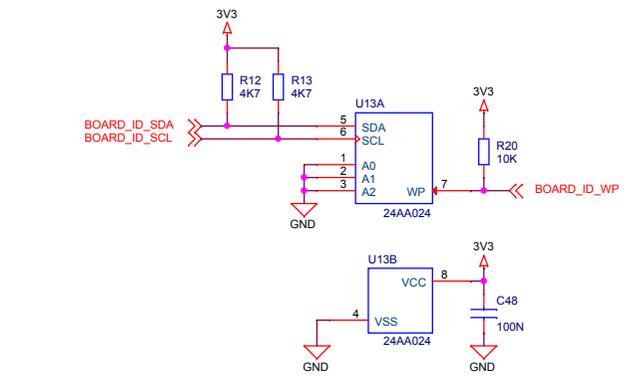
# On-board Debugger



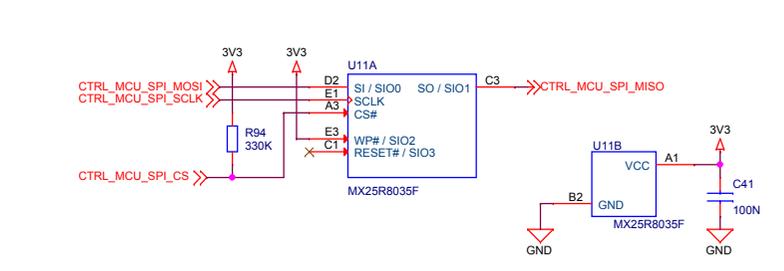
## Test Points



## Board ID



## Serial Flash



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		<b>Thunderboard EFM32GG12</b>	
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		<b>On-board Debugger</b>	
Document number <b>BRD2207A</b>		Revision	
		<b>A01</b>	
Sheet Created Date: Friday, May 05, 2017		Sheet Modified Date: Thursday, October 04, 2018	
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