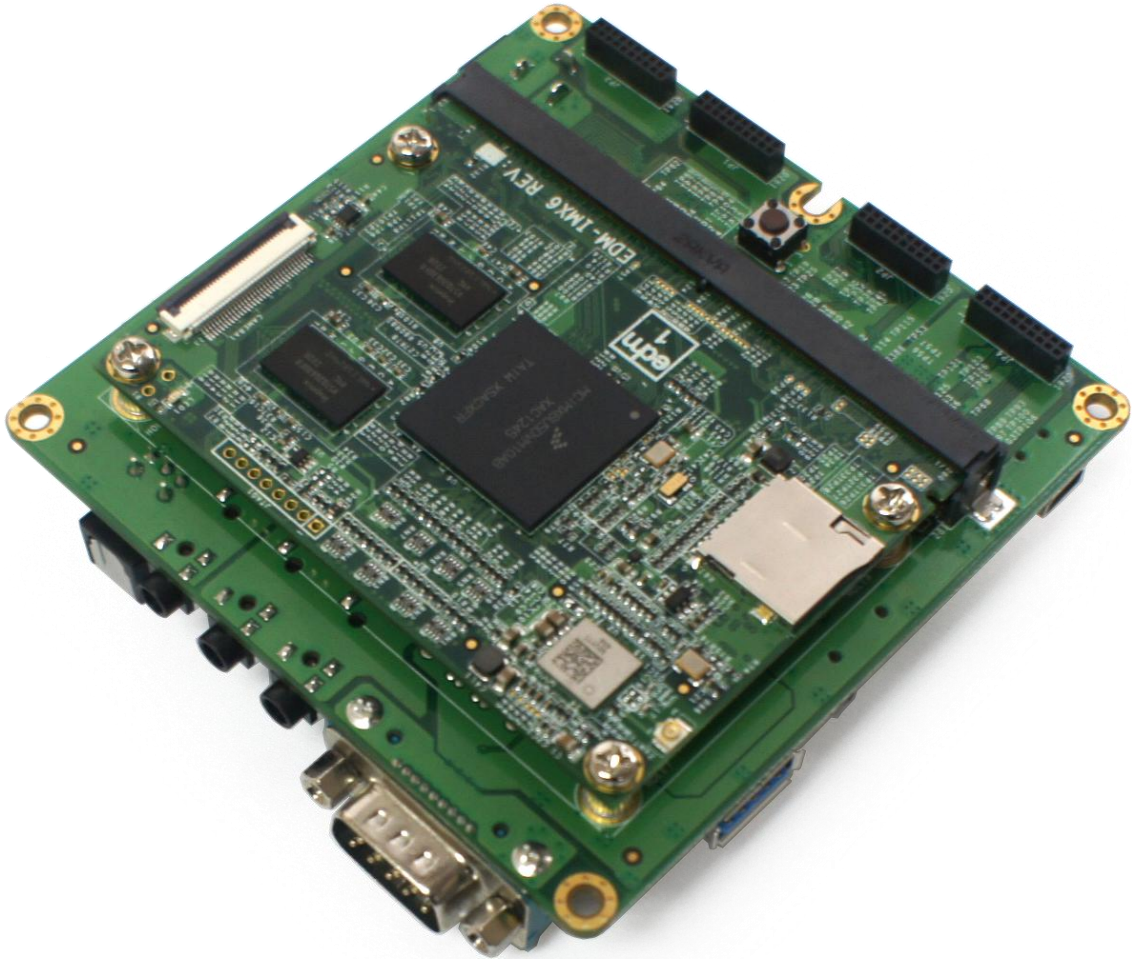




**WANDBOARD.ORG**



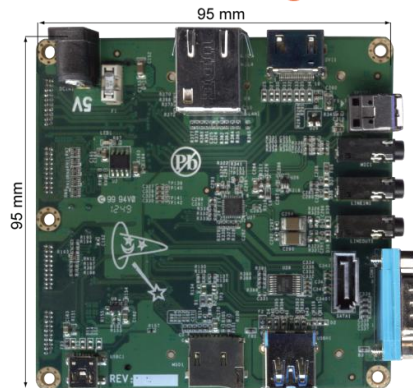
# **WANDBOARD USER GUIDE**

(20130208)



Freescale i.MX6 Cortex-A9  
Low cost open source community  
Development Board

### Dimensional drawing

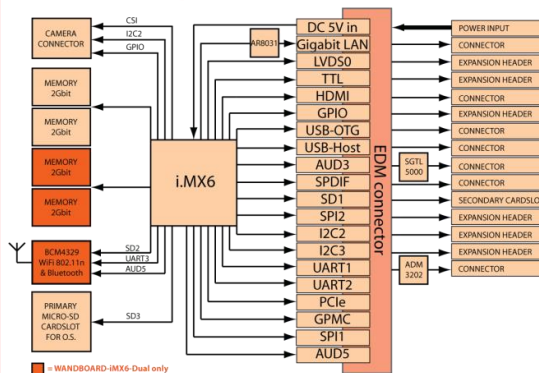


### Specifications

	Wandboard Solo	Wandboard Dual
Processor	i.MX6 Solo	i.MX6 DualLite
Cores	ARM Cortex-A9	ARM Cortex-A9
	Single core @ 1GHz	Dual core @ 1GHz
Memory	512 MB DDR3	1 GB DDR3
Audio	✓	✓
Optical S/PDIF	✓	✓
HDMI	✓	✓
Camera interface	✓	✓
micro SD cardslot	2	2
Serial port	✓	✓
Expansion Header	✓	✓
USB	✓	✓
USB OTG	✓	✓
SATA connector	Not populated	Not populated
Gigabit LAN	✓	✓
WIFI (802.11n)	X	✓
Bluetooth	X	✓

Complete Schematics, Source Code and Documentation can be found on [www.wandboard.org](http://www.wandboard.org)

### Block diagram

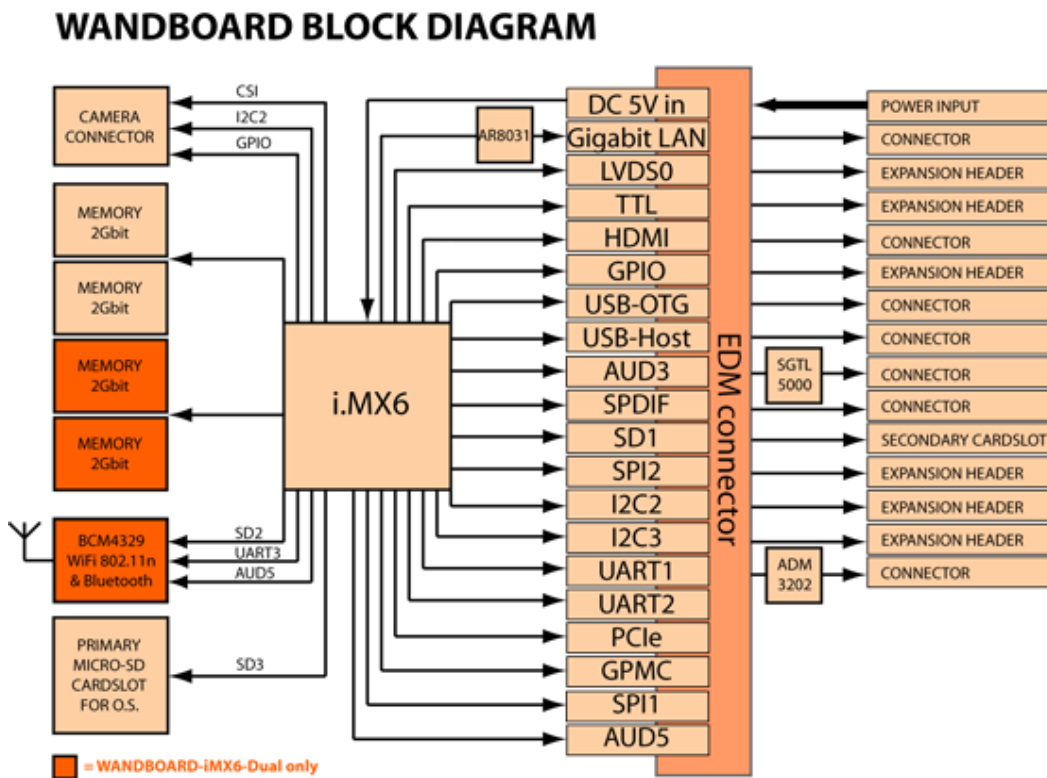


### Order information

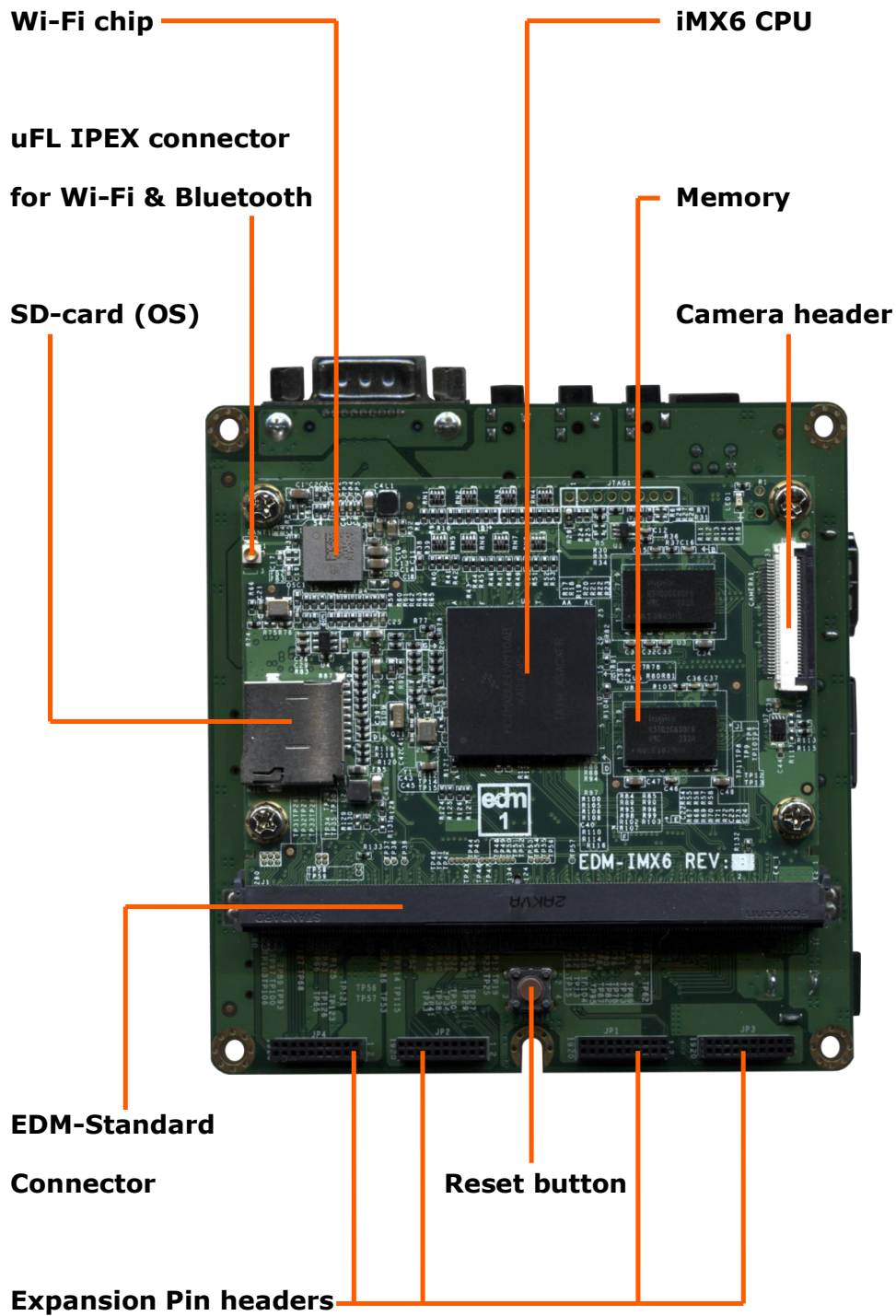
Wandboard Solo      i.MX6 Solo  
Wandboard Dual      i.MX6 DualLite  
Accessory              Enclosure

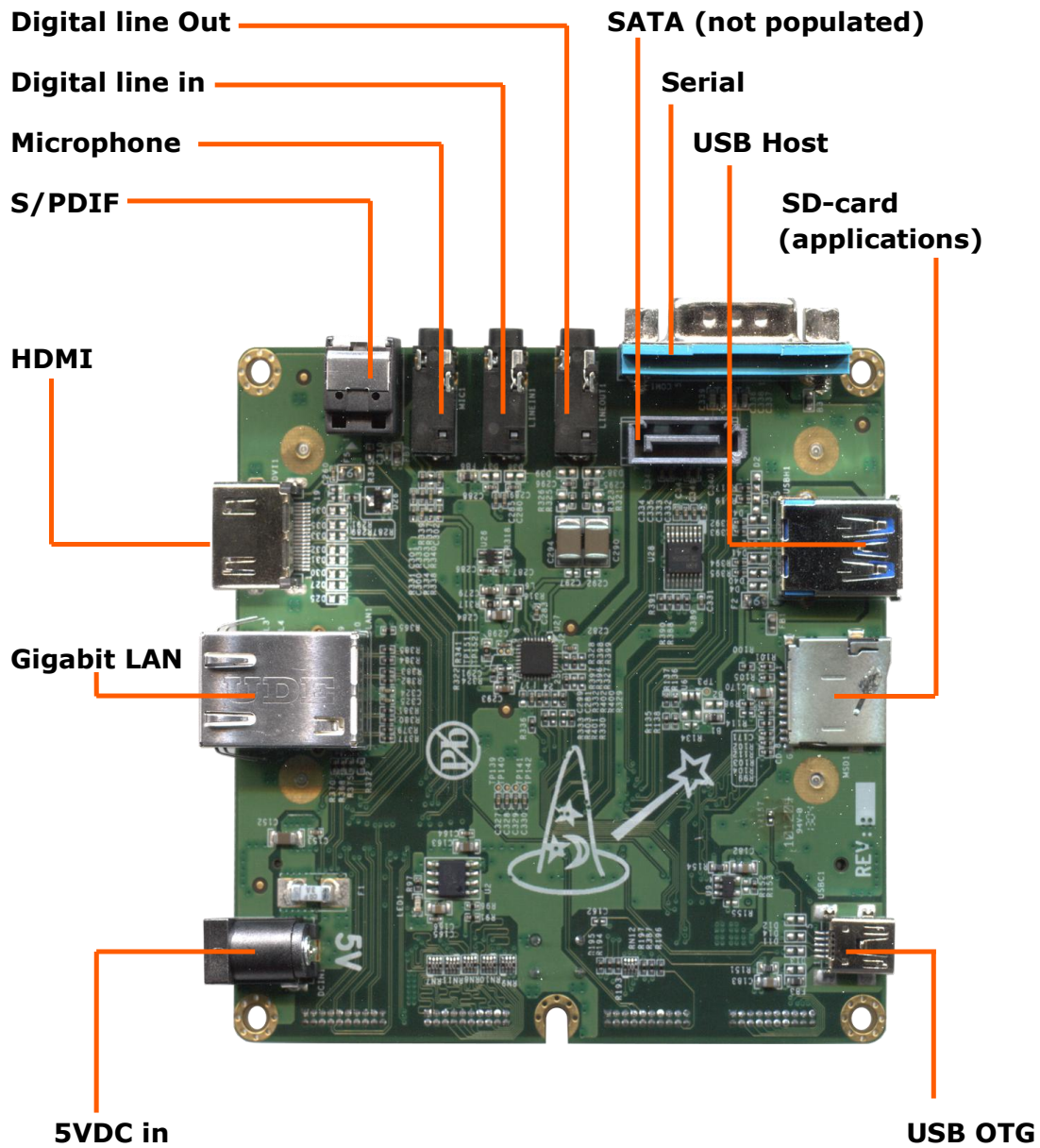


# Block Diagram

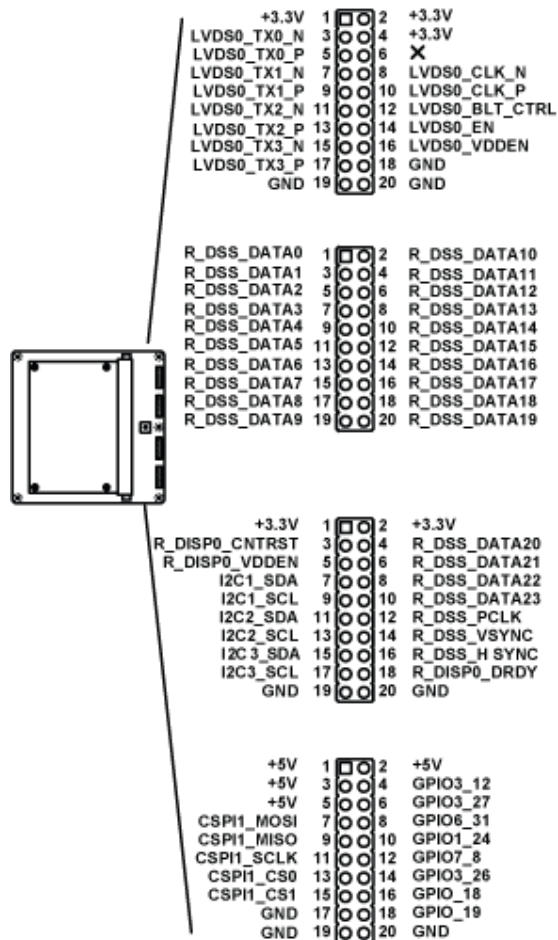


# Overview



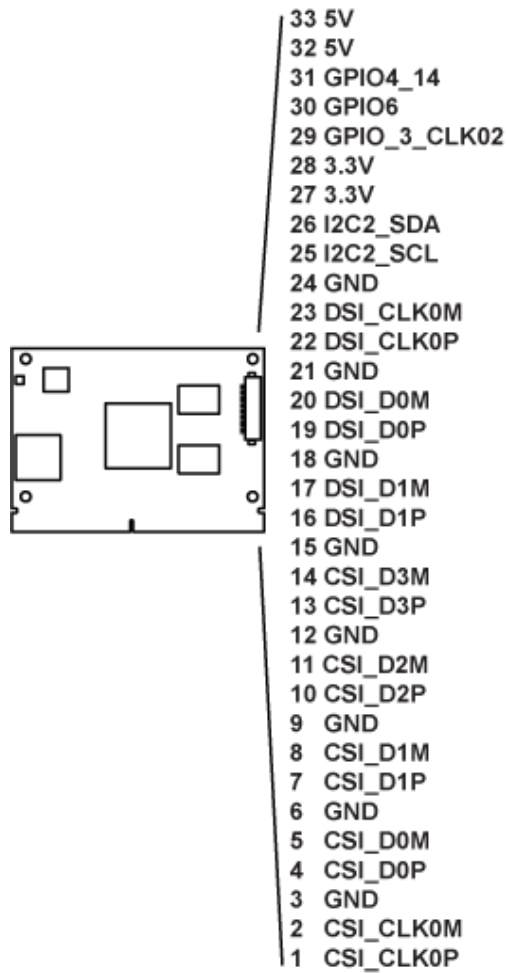


# Expansion pin headers



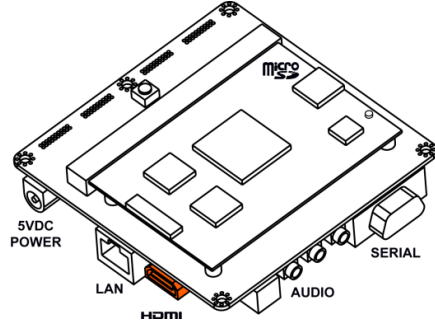


## Camera header

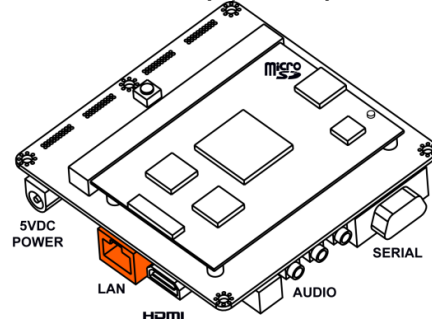


## Quick Start Guide

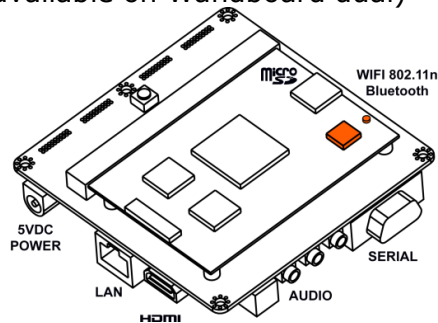
**a) Connect display:** use a quality HDMI cable to connect to your HDMI TV or Monitor.



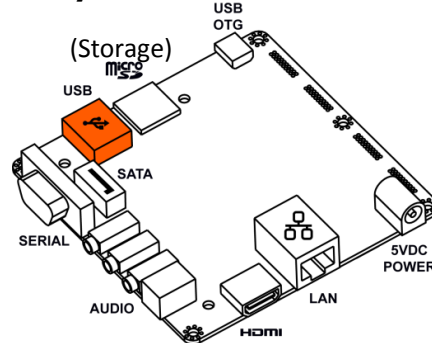
**b) Connect network:** use a standard RJ45 LAN cable to connect your wired network (optional)



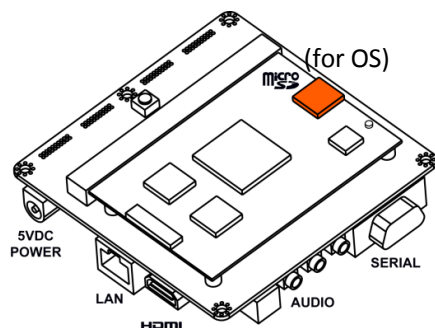
**c) Connect wireless antenna** (sold separately). This option is only available on Wandboard dual)



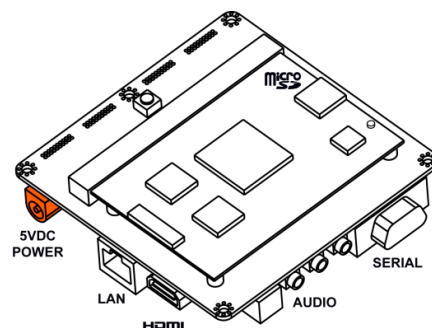
**d) Connect a standard USB mouse or keyboard**



**e) Insert the microSD (orange microSD card slot)**



**f) Power up:** Plug in a power supply (5 VDC at 2A is recommended)



Read the last 2 pages of this document to create a microSD card containing the Operating System.





## Preparing the bootable microSD card for your Wandboard

The microSD card that is created below will contain the Wandboard operating system. A large number of demo runtime images are available.

### 1. Procedures to get you started

- a) Download your preferred Wandboard runtime image  
<http://www.wandboard.org/index.php/downloads>
- b) Extract the file that you just downloaded
  - Right click on the file and choose "Extract all".
  - The extracted files will contain a file ending in *.img*

### 2. Instructions for Linux users

This paragraph explains how to create a SD card using Linux desktop or notebook. The SD card can be made using a standard terminal.

```
# dd if=*.img of=/dev/sdd bs=1M
```

replace *\*.img* with the full name of the SD card image and replace */dev/sdd* with your SD card device".

### 3. Instructions for Windows users

This paragraph explains how to create a SD card using Windows desktop or notebook.

**Note:** the *.img* file can only be written to your microSD card by special disk imaging software. This disk imaging software is included in the downloads at [wandboard.org](http://wandboard.org) or can be downloaded according the instructions in paragraph 3.1.

#### 3.1 Download the Win32DiskImager software

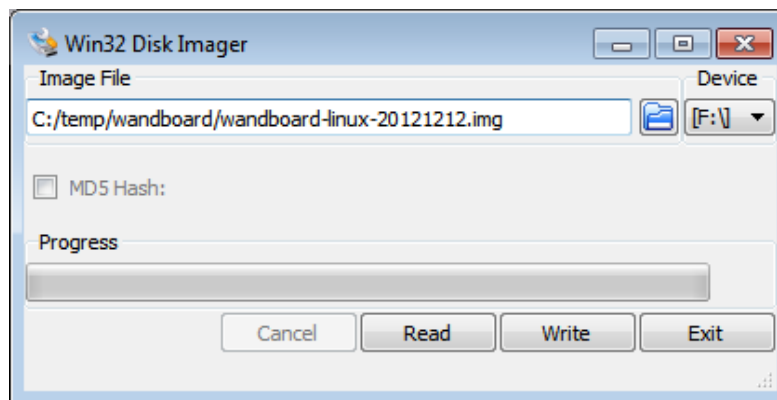
- a) Download *win32diskimager-binary.zip* from:  
<http://sourceforge.net/projects/win32diskimager/>
- b) Right click on the file and choose "Extract all".
- c) This will create a new folder called *win32diskimager-binary*



You are now ready to write the Wandboard runtime image to your microSD card.

### 3.2 Writing the image to the microSD card

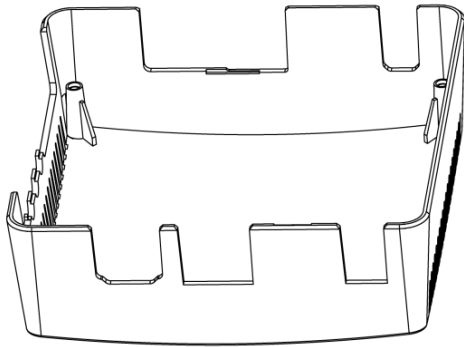
- a) Insert your microSD card into your PC (Check which drive is assigned to your device).
- b) In the folder you made in step 3.1(c), run the file named *Win32DiskImager.exe* (in Windows Vista, 7 and 8 we recommend that you right-click this file and choose "Run as administrator").
- c) If the SD card (*Device*) you are using isn't found automatically. Click on the drop down box and select it
- d) In the *Image File* box, choose the *.img* file that you download previously



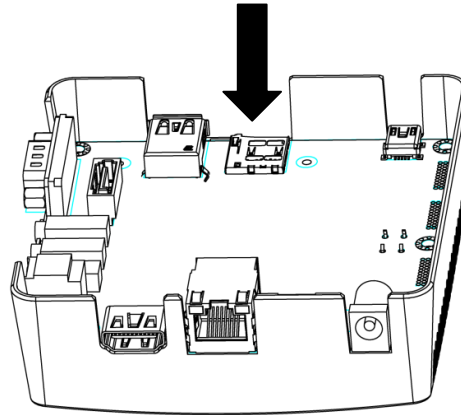
**Warning:** Make sure you write to the correct device. (check step 3.2a)

- e) Click *Write*
- f) After a few minutes you receive a notification that your microSD has been created successfully.

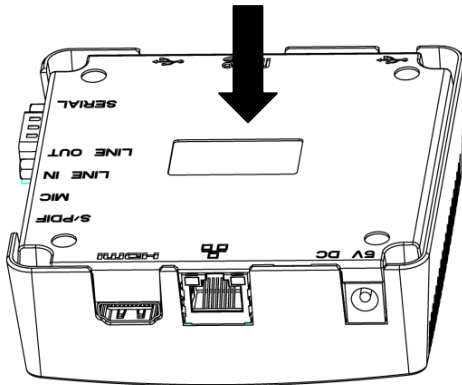
# Assembly of the Wandboard Enclosure



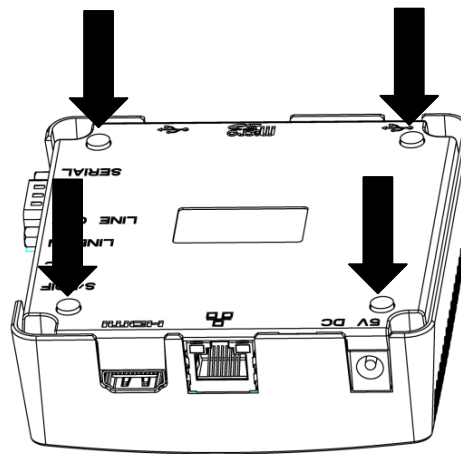
Step1 - Place the top-case on a soft surface



Step2 - Insert your Wandboard



Step3 - Insert bottom part



Step4 - Fasten the screws and  
the rubber feet



## Schematics

On the following pages you will find the schematics of the Freescale iMX6 module and the Wandboard Interface Board.

Components marked with -x are not populated.

# EDM-iMX6 REV:A

## PAGE TITLE

P01 Index

P02 iMX6 POWER

P03 iMX6 DDR3

P04 iMX6 SOC

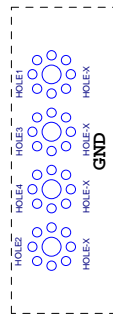
P05 iMX6 USB

P06 GiGa Ethernet

P07 WLAN & BT

P08 Expansion CONN.

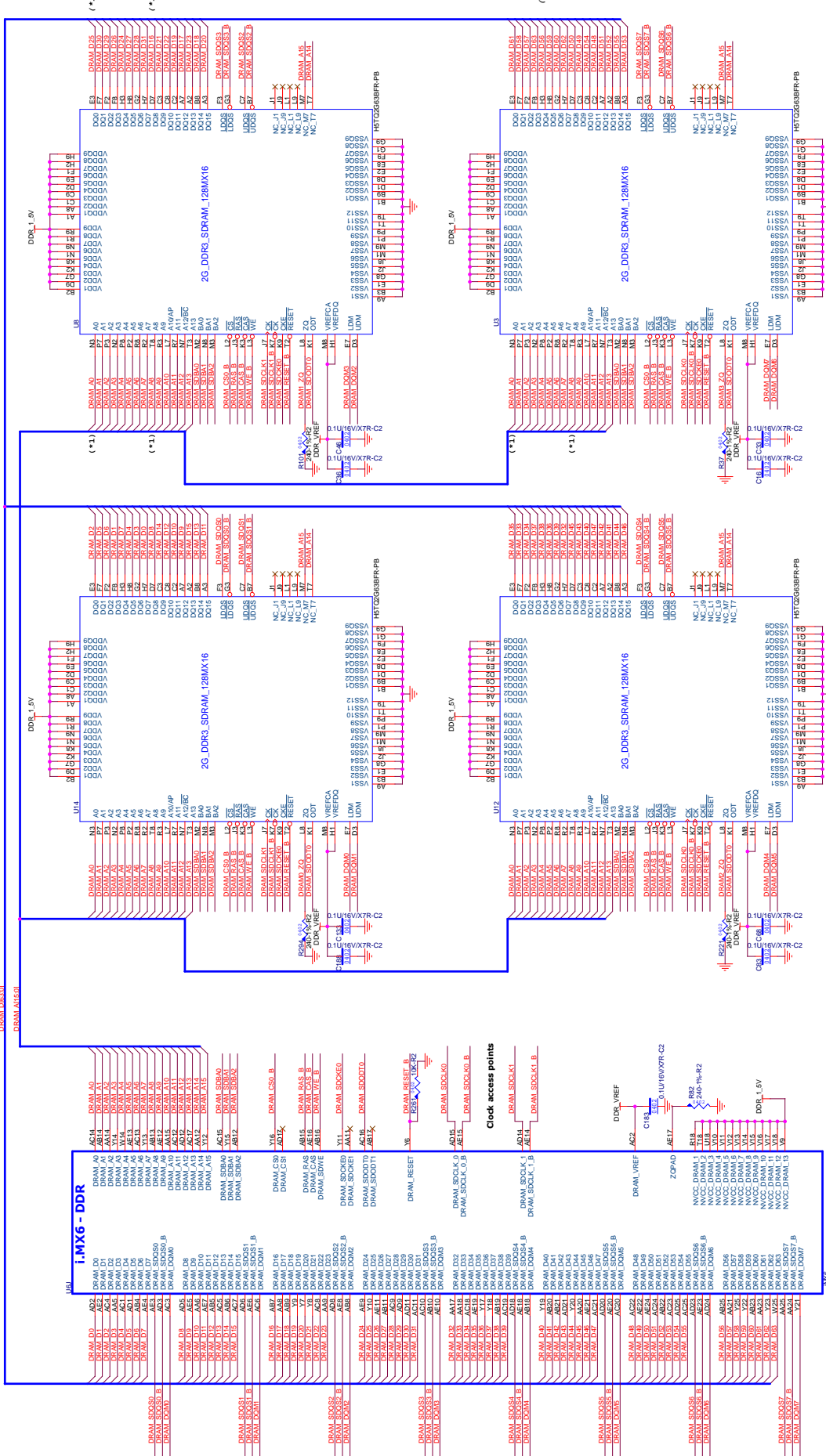
FM9 iMDSX	FM8 iMDSX	FM13 iMDSX	FM8 iMDSX	FM11 iMDSX	FM7 iMDSX	FM6 iMDSX	FM5 iMDSX	FM2 iMDSX	FM iMDSX	FM10 iMDSX	FM11 iMDSX	FM1 iMDSX
○	○	○	○	○	○	○	○	○	○	○	○	○
×	×	×	×	×	×	×	×	×	×	×	×	×





**I.MX6 - POWER**

**MX6 power domains under-BGA decoupling**



(\*) - Pinout address and function

(\*) - Pinout address and function

(\*) - Pinout address and function

(\*) - Pinout address and function

(\*) - Pinout address and function

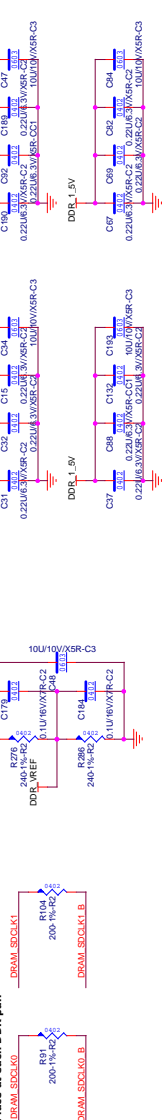
(\*) - Pinout address and function

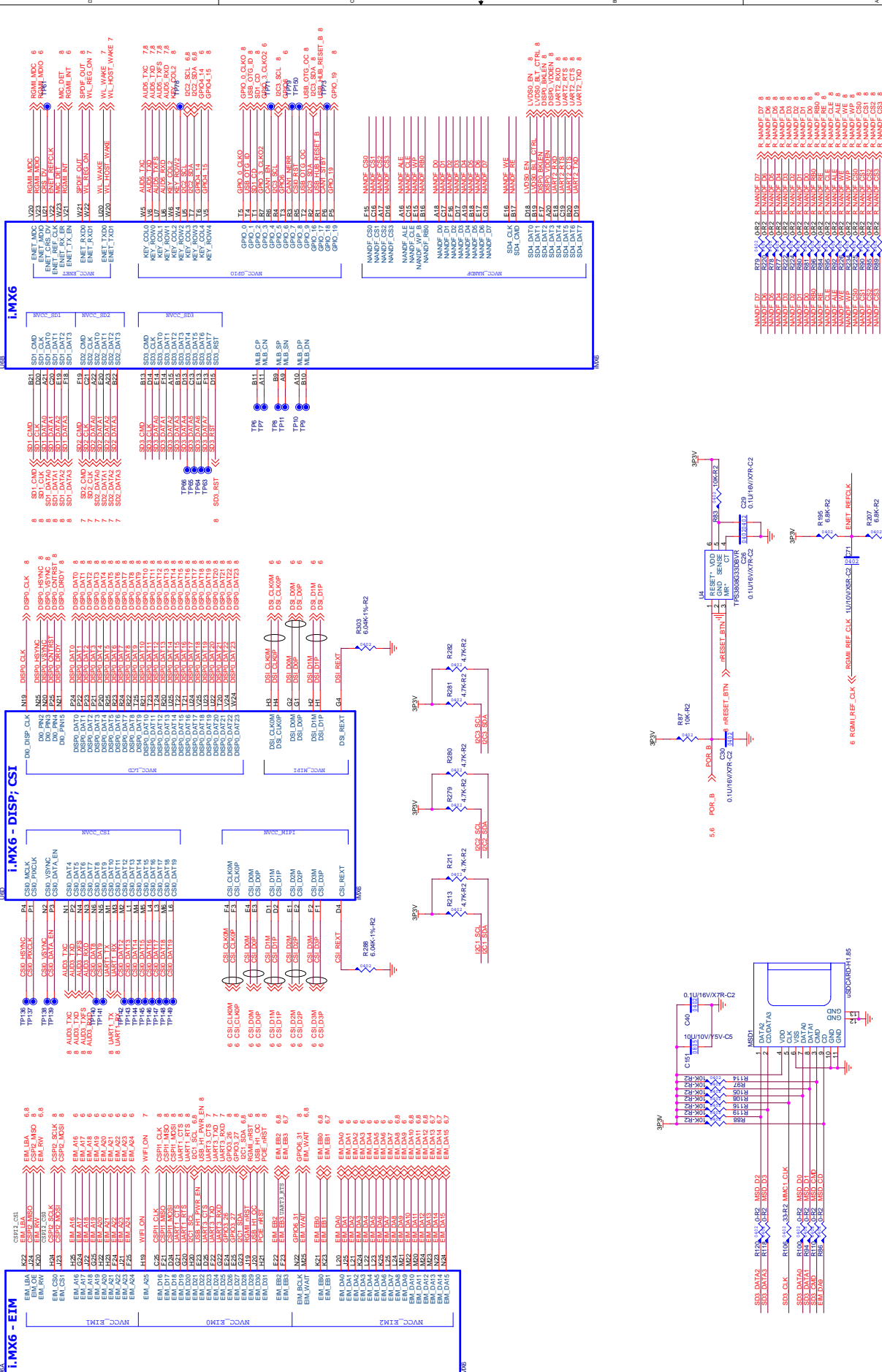
(\*) - Pinout address and function

(\*) - Pinout address and function

(\*) - Pinout address and function

Clock terminators  
Place at each DDR pair

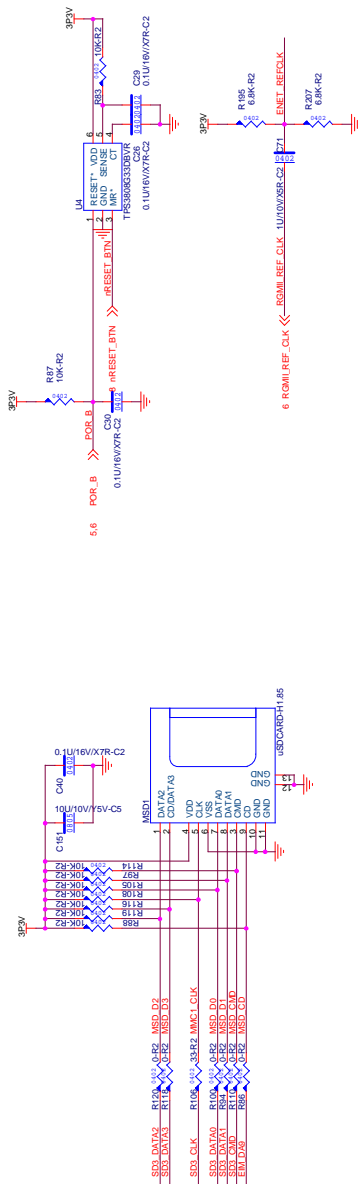




**I.MX6**

**I.MX6 - DISP/CSI**

**I.MX6 - EIM**













# WAND REV:A

## PAGE TITLE

P01 Index

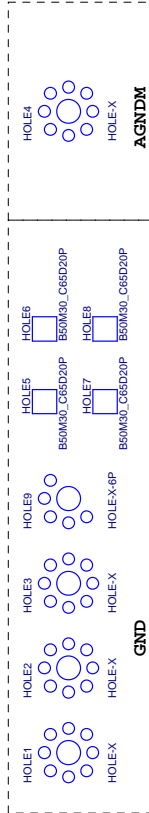
P02 Expansion CONN.

P03 DC-DC & M-SD

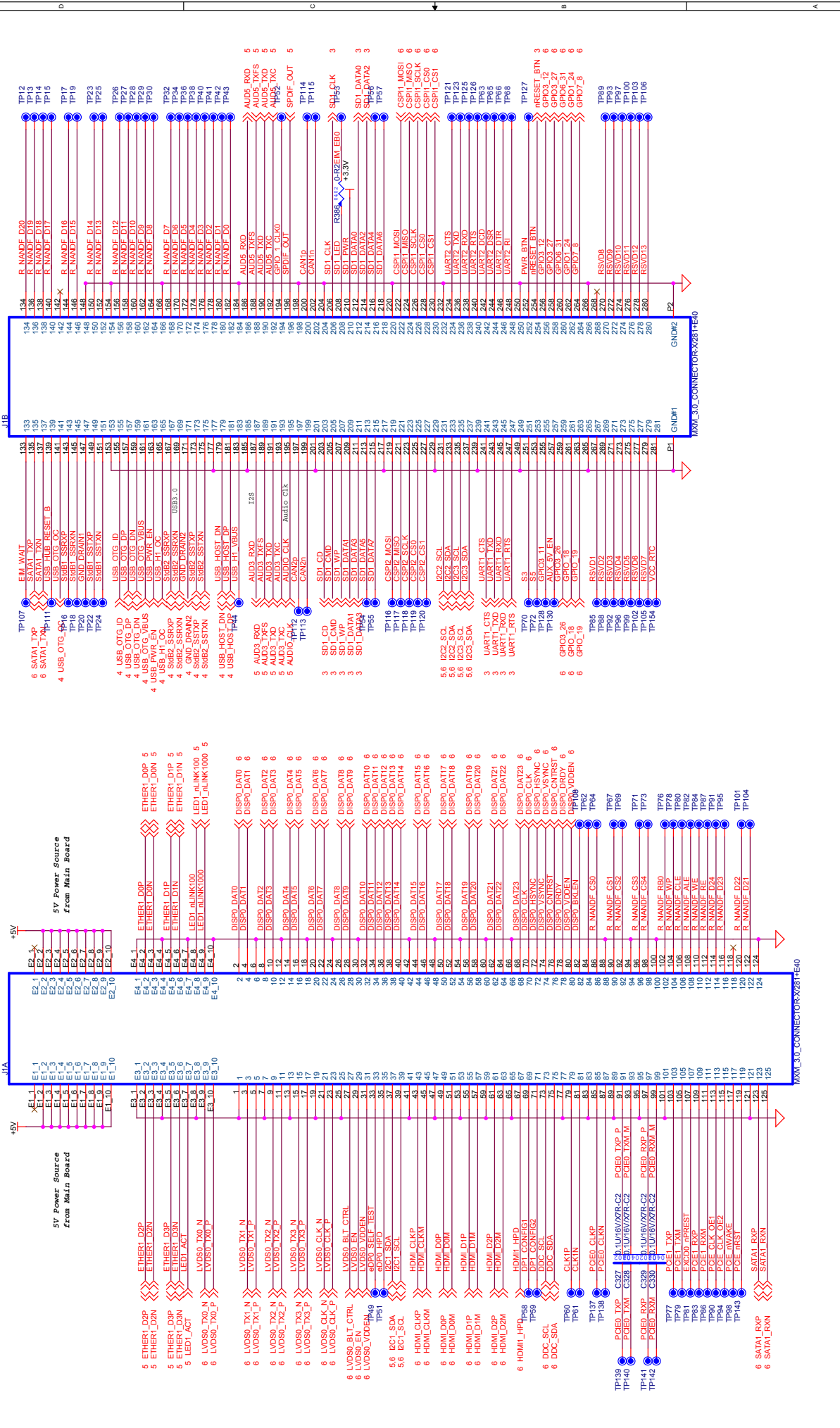
P04 HOST & Client

P05 Audio & RJ45

P06 LVDS & HDMI & SATA



FM1	FM2	FM3	FM4	FM5	FM6	FM7	FM8
FRMDS-X	FRMDS-X	FRMDS-X	FRMDS-X	FRMDS-X	FRMDS-X	FRMDS-X	FRMDS-X
⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗



WANDBOARD.ORG

Board to Board Conn.

WAND

File: \_\_\_\_\_

Size: \_\_\_\_\_

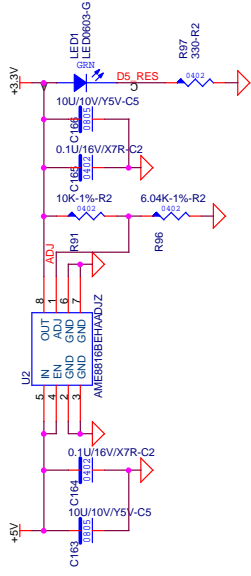
Custom: \_\_\_\_\_

Date: Thursday, February 07, 2013

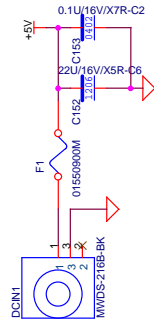
Sheet: 2 of 6

Rev: A

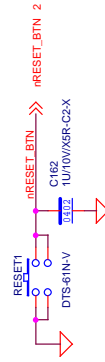
**DC-DC**



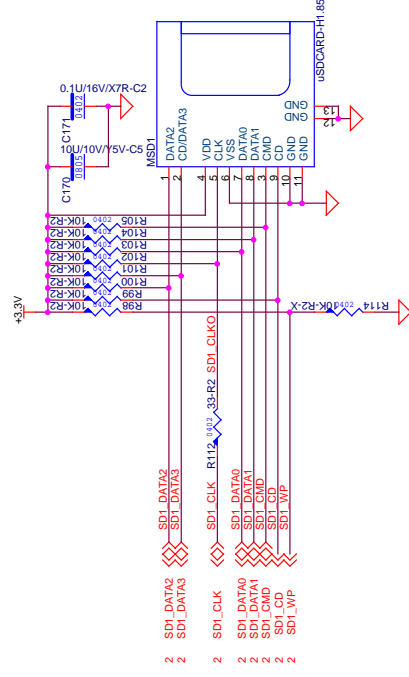
**DC JACK**



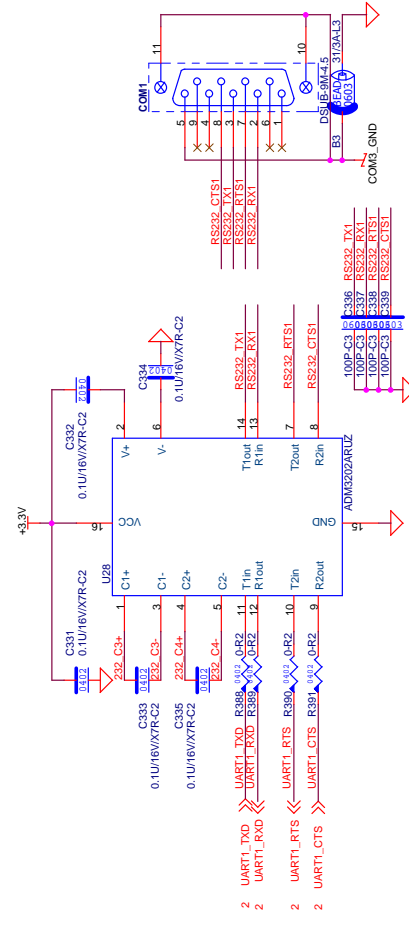
**Button**



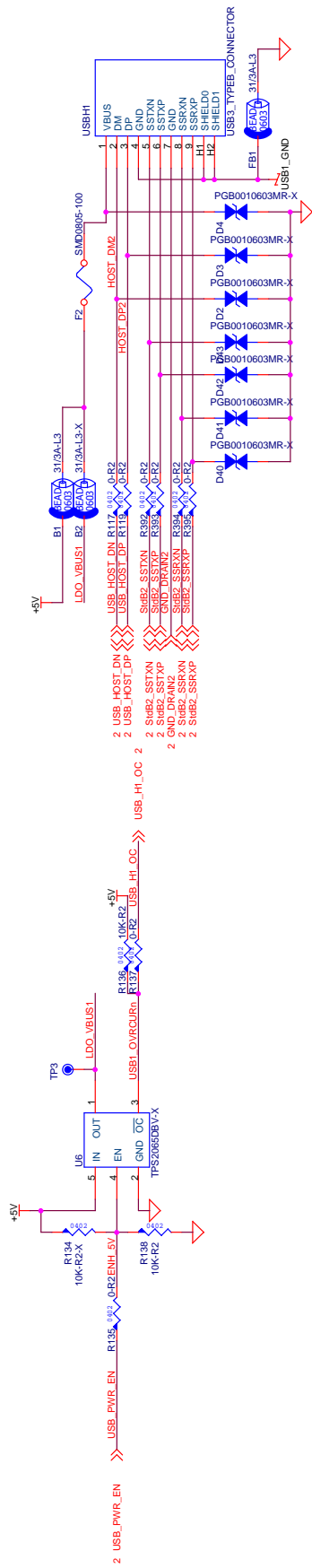
**Micro-SD**



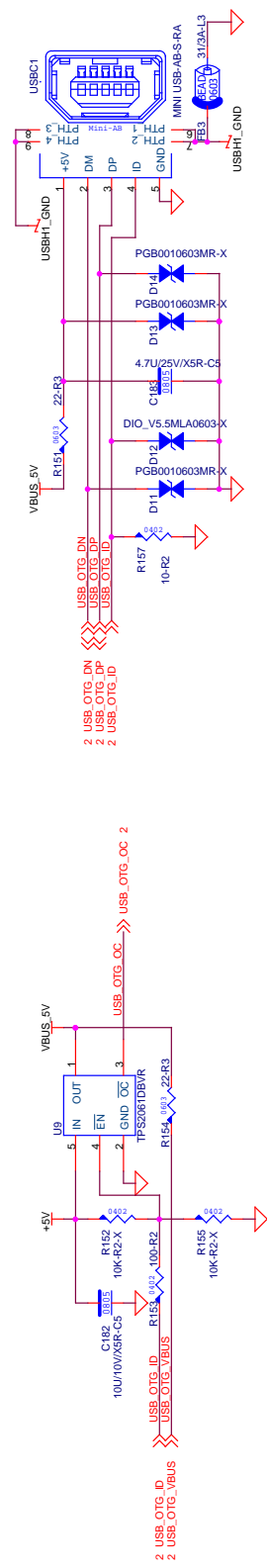
**UART**



**HOST USB**



**OTG USB**



<b>WANDBOARD.ORG</b>			
Title			
Size	Document Number	<b>Host &amp; Client USB</b>	
Customer	WAND	WAND	
Date:	Thursday, February 07, 2013	Sheet	4 of 6
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