



5

4

3

2

1

A

A

B

B

C

C

D

D

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The figure shows a top-down view of a rectangular object. The drawing includes a title block in the bottom right corner and dimension lines indicating size.

Title Block:

Title	
OPENCALC OC1 TITLE	
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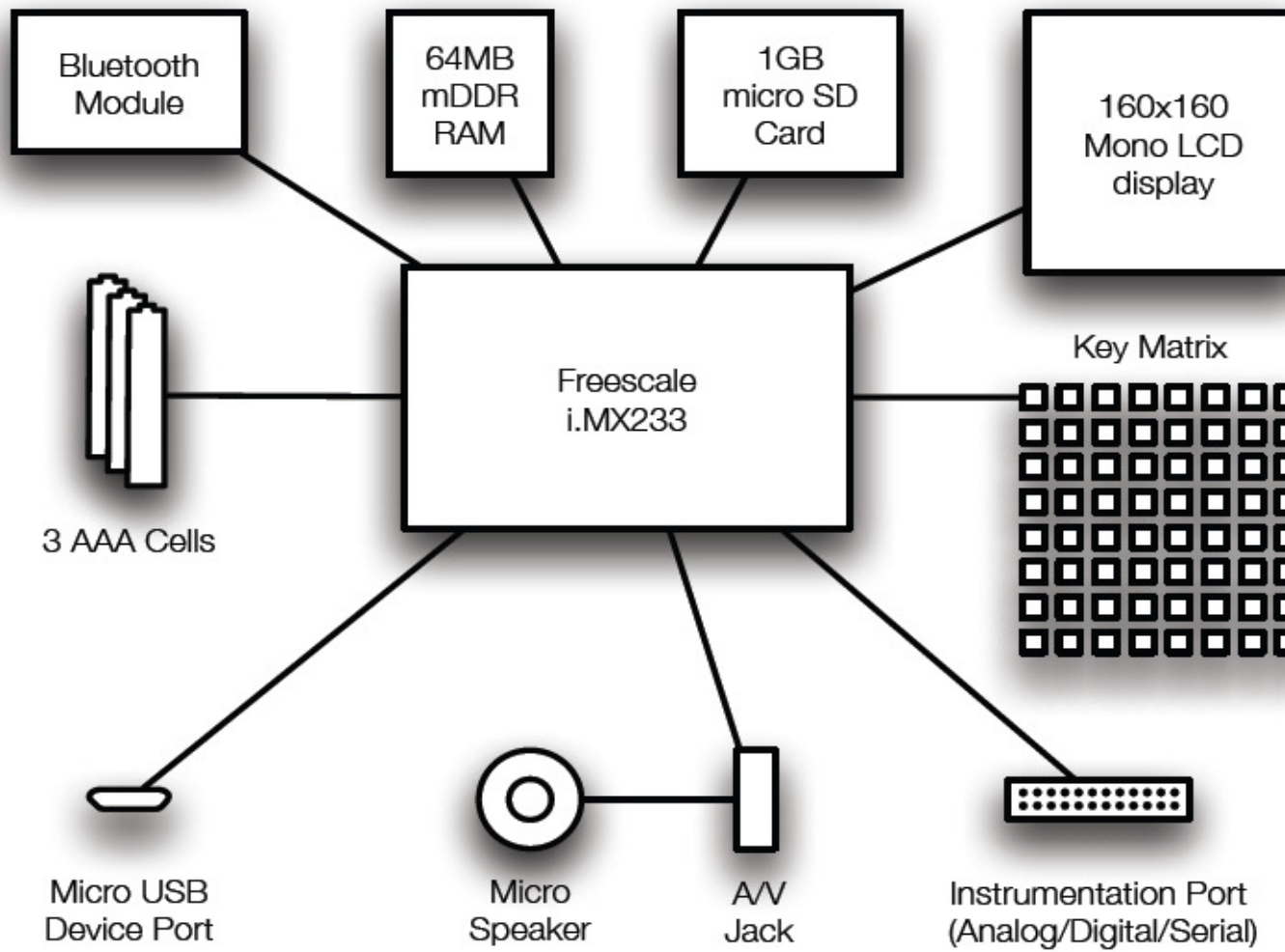
Dimensions:

- Horizontal dimensions: 5, 4, 3, 2, 1 (from left to right).
- Vertical dimensions: A, B, C, D (from bottom to top).

Text:

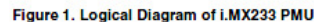
OPENCALC PA1

OPENCALC BLOCK DIAGRAM



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OPENCALC OC1 BLOCK DIAGRAM		
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- * Everything
- * Use LRDAC 7 to monitor battery (RM 32.5), use FIQ for quick shutdown



Should DQS have pulldowns on board?

Q. I removed a battery related capacitors on BATT and DCCD_BATTERY, and the schottky between BATT and V4P2. Is that acceptable, assuming we never plan to use a battery? Seems like it should be okay, right?

A. From Jim's perspective, it's fine with the analog designers. They'd prefer to keep BATT and DCCD_BATT at some known voltage so they aren't floating, even if they aren't being used. So they recommended adding a 1K resistor from those pins to VDDIO.

There should be a very bulk capacitor required though.

From a software standpoint, it should be ok as far as I know. I've tested booting and running without a battery although not extensively.

I still want to know if the battery charger as in its present state it could cause problems if left active with no battery actually attached.

Unfortunately, the battery charger driver is also part of the power source driver so the driver module itself can't be omitted. I suggest apps look at this driver and consider the best way to disable the Battery Charger disabled for devices with no battery attached.

Q. How much power does the MX233 Take:
A. MX233 Power Consumption Spreadsheet
http://sites.google.com/a/britepad.com/project/documents/IMX23_Power_Consumption_Calculator_REVA_10-06-2009.xls

Q. In USB-only power mode is it possible to enumerate at 100mA VBUS current consumption?
 A. Our team believes this is possible, but is not supported by default in the BSP today. Using mobile DDR would be recommended to achieve this reliably.

Q. Is it possible to get down to 2.5mA VBUS, yet still monitor the USB lines and resume when the USB bus resumes? I'm assuming that we power-gate the DDR to off, and only use on-chip RAM.
 A. Our team believes this is possible, but is not supported by default in the BSP today. 2. Using mobile DDR and it is only put in self refresh, not gated off. It is not possible using DORI and leaving it in self refresh.

Q. If #2 is possible, is it possible to power-gate the DDR and ensure no voltage is sent to the DDR pins during the DDR-gate-off mode? i.e. is it possible to guarantee that all pins connected to the DDR are driven LOW, or at least floating?

A. For mDDR, we don't have the ability gate it's power off internally. We can configure the chip in it's lowest power mode which causes it to lose the contents of memory (consult mDDR datasheet for more info). But this is unnecessary.

Q. OTP: I can't tell if the OTP block is really one-time-programmable. Is this really a one-time programmable block, or is it reprogrammable?

A. These are truly one-time programmable bits. They are implemented using an eFuse technology. You only get one shot at greatness here. ;~)

Q. PSWITCH recovery vs. manual USB mode: Is there any difference between the USB boot mode (selected by the boot mode pins) and the recovery mode (selected by the PSWITCH) mode? Is this simply 2 ways of entering the same USB mode?

A. Yes, these are equivalent. PSWITCH is is just the manual entry into USB recovery mode. You can also enter USB recovery mode if there is a non-recoverable boot time error. Of course the bootmode switches can land you here as well.

A. Per AN3883 it can be done but ESD performance will be compromised. See the attached copy. I will also ask the factory to see if they can provide any more information.

Q. We plan on making this product run as a device on USB only with no battery; is there a problem running on 500mA USB only? What issues do you foresee? DDR1, Full speed core, display backlight?

A. AN3992 is a full speed device, so it will be fully attached* to a USB power supply. See AN3992 (attached) for a bit of information. There is another issue you need to work through. The on board supplies can support around 1.5W to at the very most, 2W of power. Now, the USB spec says that the host can supply up to 500mA at 5V, which is a hard limit, of course, is the USB 2.5W supply maximum as spec'd by USB 2.0. If you work off the charger spec you can see a lot more current but you end up not supporting any other power rails. I have been told many PC's will supply current in excess of the 500mA spec.

Q. Does the DC-DC only run off of 4.2V? that is: can we connect 5V to the 4.2V supply directly and avoid loosing the 0.8V drop in efficiency? ABS MAX ratings show VDD4P2V maximum at 4.242. Is that a hard requirement?

A. When using a 5V supply the 4P2 regulator is a hard requirement. Again AN3989 can shed a little light on the situation.

Q. What's the fundamental difference between the application UART and the debug UART? Does the debug UART have any special function in the various boot modes? Or is it simply a difference in speed it's capable of?

A. The debug UART is limited to 115.2Kbps with no flow control pins available in either package. The application UART's are capable of 3.25Mbps with one UART having flow control pins available in the 169 pin BGA, though not in the OFF.

Q. 1-Wire vs parallel JTAG info.
A. Check

Power Consumption Spreadsheet can be found here
<http://spreadsheets.google.com/a/britepad.com/ccc?key=0AkaMDBXLVs6ydExkMU82Wnc0UTQ5NU5ZdWhWzLzN3c&hl=en>

Title		
OPENCALC OC1 DESIGN NOTES		
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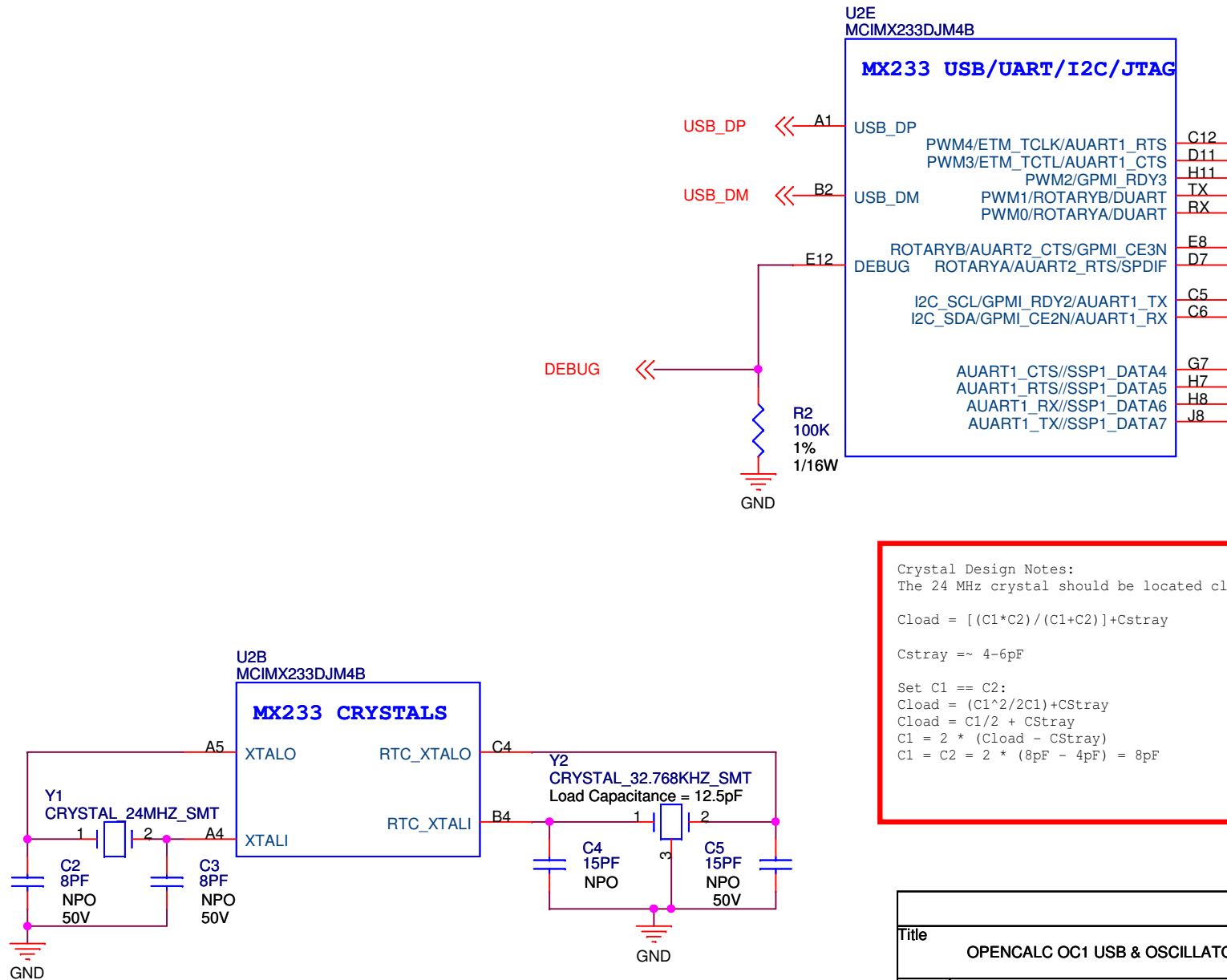
6/25/2011: Initial Revision

PORT USAGE:

- * I2C/AUART1 -> GEEK PORT
- * AUART2 (ALL 4 PINS) -> BLUETOOTH
- * EMI -> mDDR
- * SSP1 -> uSD card
- * LCD -> LCD
- * SAIF -> GEEK PORT gpio pins

Title			
OPENCALC OC1 CHANGELIST			
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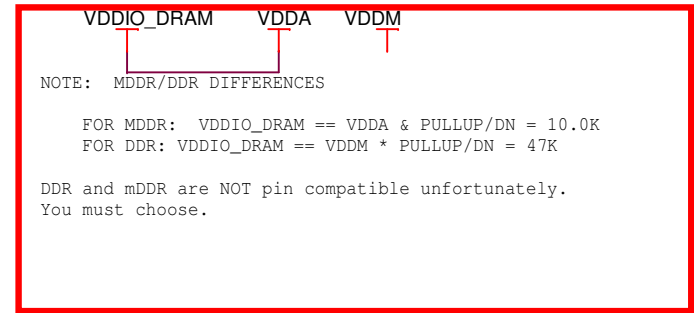
USB/CRYSTAL/JTAG



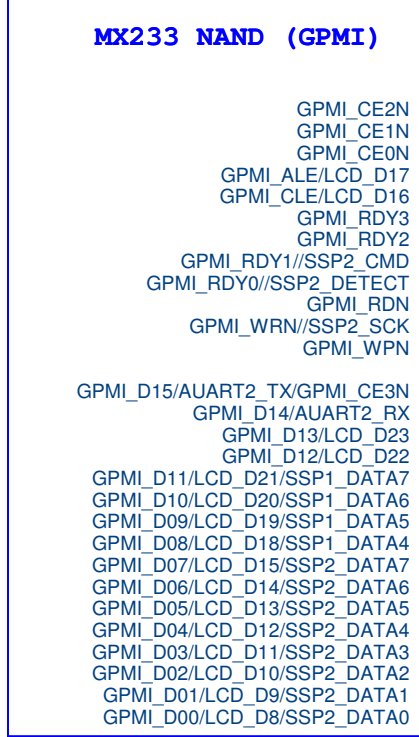
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OPENCALC OC1 USB & OSCILLATORS		
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CHUMBYONE uses a 110 ohm resistor between EMI_CLK and EMI_CLKN. But MX233 SPF77066_B1.PDF does not. Is it necessary/recommended?

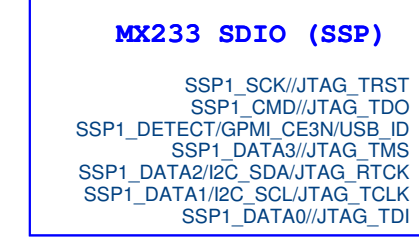
LAYOUT NOTE: CONTROL #of vias on DQx, DQS and CLK.



U2F
MCIMX233DJM4B



U2H
MCIMX233DJM4B

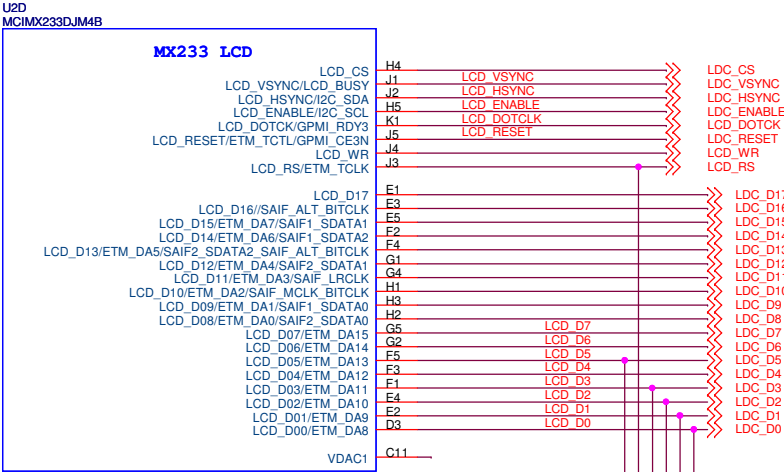


SD_SCK
SD_CMD
SD_DETECT
SD_DATA3
SD_DATA2
SD_DATA1
SD_DATA0

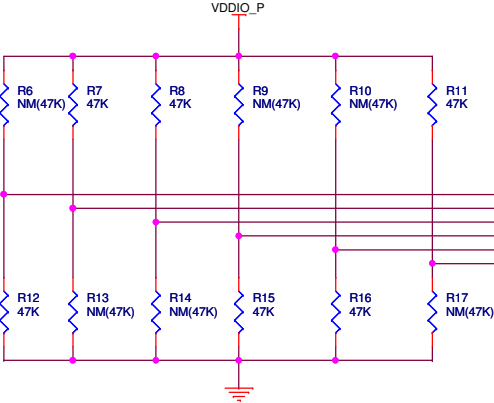
FLASH

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LCD INTERFACE



AS Per IMX23RM, page 2-7, table 2-8, 50K resistor is sufficient to overcome the pin keeper.



BOOT: Default to SDIO 1 Boot.

	D5	RS	D3	D2	D1	D0
USB	0	1	0	0	0	0
3.3V I2C MASTER	0	1	0	0	0	1
3.3V SPI FLASH 1 MASTER	0	1	0	0	1	0
3.3V SPI FLASH 2 MASTER	0	1	0	0	1	1
3.3V NAND	0	1	0	1	0	0
DEBUG	0	1	0	1	1	0
3.3V SD/MMC 1	0	1	1	0	0	1
3.3V SD/MMC 2	0	1	1	0	1	0
BOOT MODE FROM OTP	0	0	X	X	X	X
ETM ENABLE	1					

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