

EOMA-68

Embedded Open Modular Architecture

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About me

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goo.gl/a8718



What is EOMA?

- GPL-compliant low-cost open hardware
- Low BOM for a GNU/Linux computer
- Small form-factor Modular Computer (Credit-card size)

What is EOMA?

- PCMCIA as physical form-factor



Interface of EOMA-68

- 24-pin RGB/TTL (for LCD Panels)
- I2C
- USB (USB 1.0, USB 1.1 and optionally USB 2.0 480mb/s)
- 10/100 Ethernet (optionally 1000 ethernet)
- SATA-II (optionally SATA-III)
- 16 pins of General-purpose I/O (GPIO)

User-facing EOMA-68 Options

User-facing end of EOMA-68 Card can have sockets

Space limit is 55mm by 4.8mm

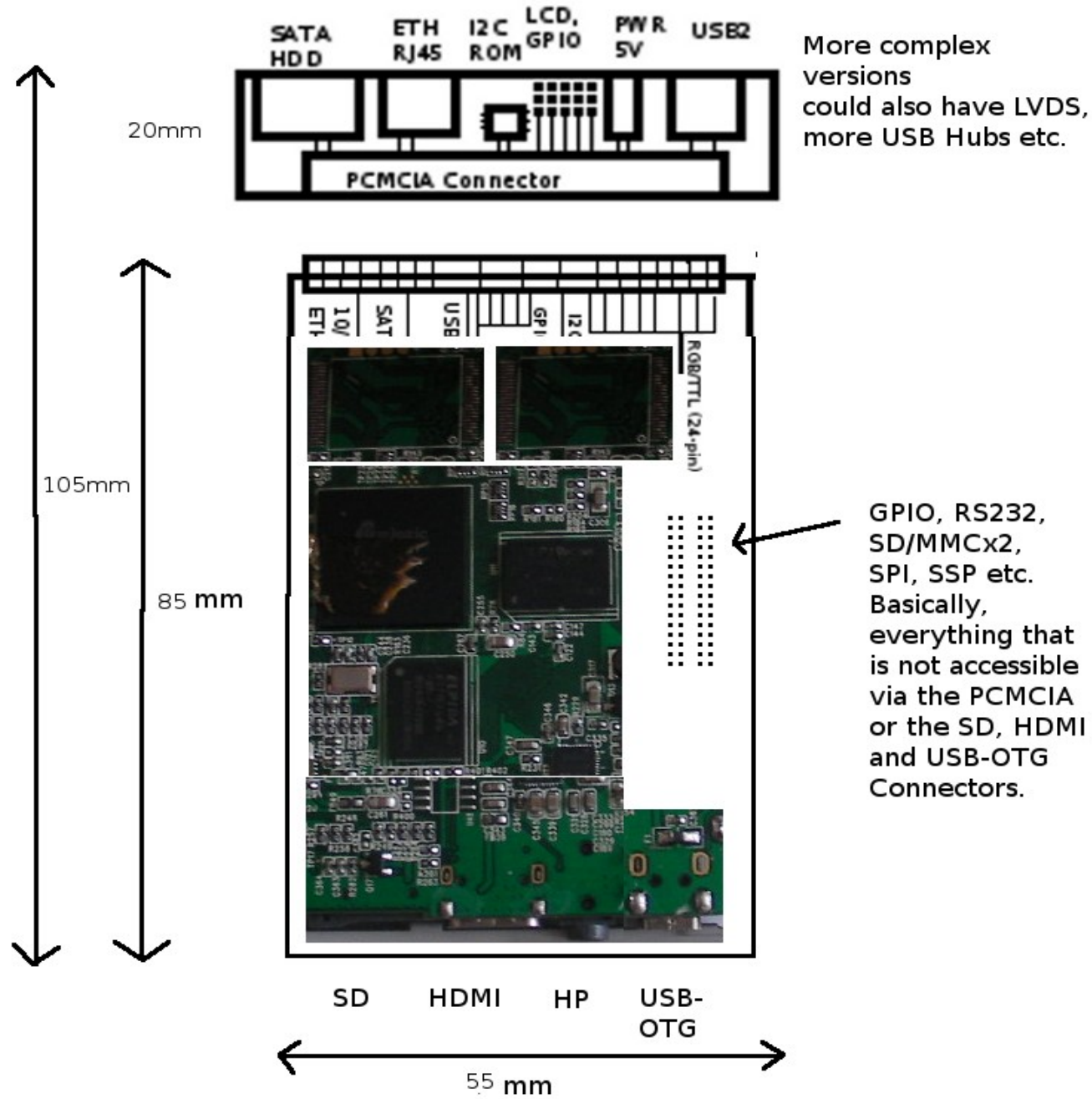
Examples

- HDMI (2nd simultaneous display from EOMA-68 RGB/TTL Interface)
- Audio (SPDIF, Headphones, Mic etc.)
- Micro SD (extra storage)
- USB-OTG (also for Power and Charging)
- Video input (if supported by the CPU)
- Anything else that fits into a 4.8mm height.

EOMA Motherboard

- Mini Engineering Board
- All-in-one Engineering Board
- Laptop Motherboard
- Tablet Motherboard
- LCD Monitor (TV)
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• Mini Engineering Board



• All-in-one Engineering Board

Connectors:

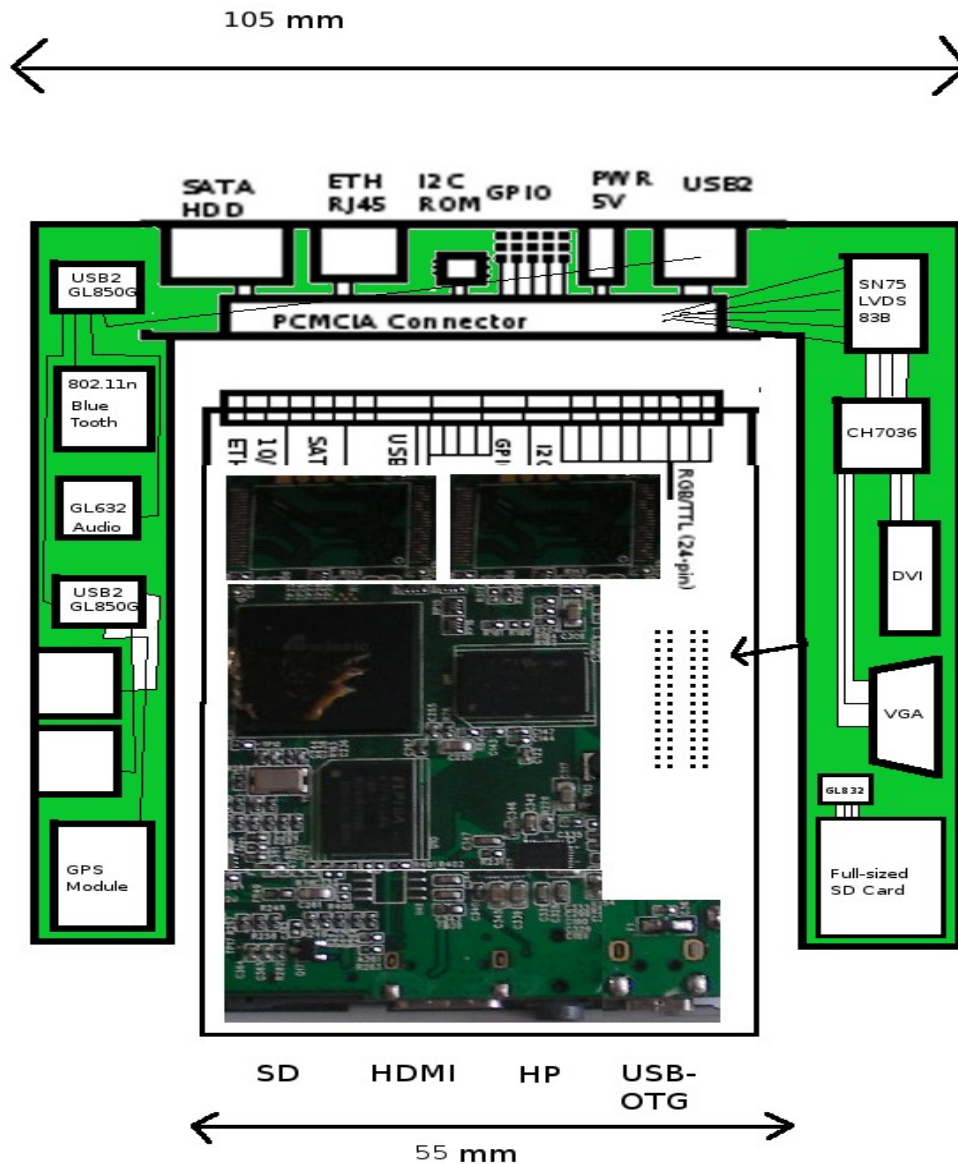
- * PCMCIA,
- * 3x USB2
- * SATA
- * DVI
- * VGA
- * RJ45
- * Power
- * SD/MMC

On PCMCIA Card:

- * HDMI
- * Micro-SD
- * USB-OTG
- * Headphones

Specifications:

- * 3x USB2 ports
- * SATA-II
- * 10/100 Ethernet
- * HDMI
- * 2nd VGA and DVI
- * GPS
- * Bluetooth
- * 802.11bgn WIFI
- * USB-OTG
- * Headphones
- * Micro SD
- * Full-sized SD (as USB)
- * GPIO (on header)
- * SD/MMC (on header)
- * SPI (on header)
- * SSP (on header)



GPIO, RS232, SD/MMCx2, SPI, SSP etc. Basically, everything that is not accessible via the PCMCIA or the SD, HDMI and USB-OTG Connectors.

BOM

- * GL832 (USB-SD/MMC)
- * 2x GL850G (4-port USB2)
- * SN75LVDS83B
- * Chronitel CH7036 (DVI+VGA)
- * GPS Module (USB)
- * RT3070 (802.11bgn WIFI)
- * GL632 (USB Audio)
- * PCMCIA CPU Module

• Laptop Motherboard

ICs BOM for Motherboard:

- * PMIC
- * GL850G (USB2)
- * STM32F (Cortex M3)
- * I2C EEPROM

Connectors BOM for Motherboard:

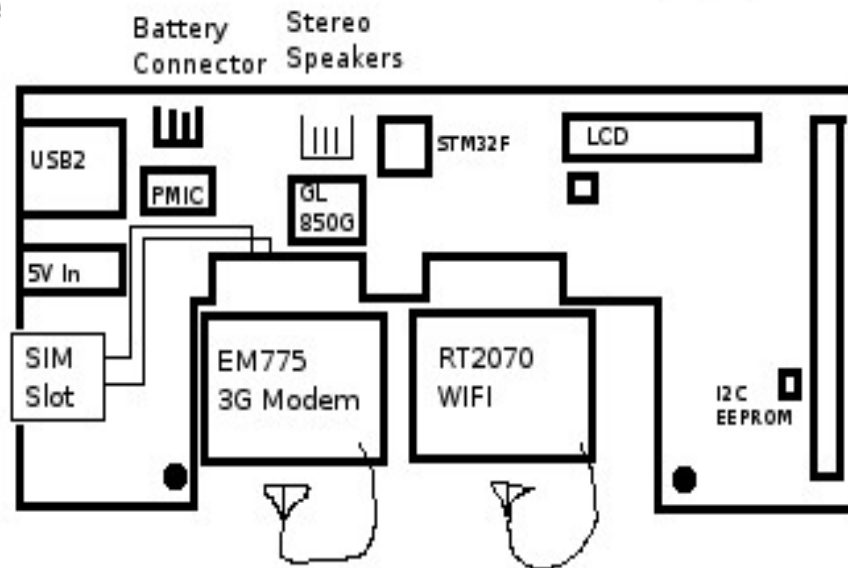
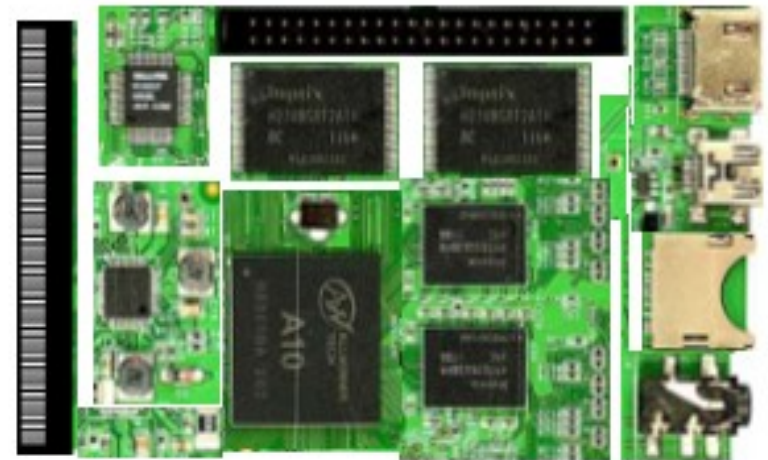
- * USB2
- * LCD (28/40-pin FPC)
- * PCMCIA (68-pin)
- * 5V Power
- * SIM Socket (optional)
- * Battery
- * Speakers
- * 2x PCI-e

ICs BOM for EOMA-PCMCIA CPU

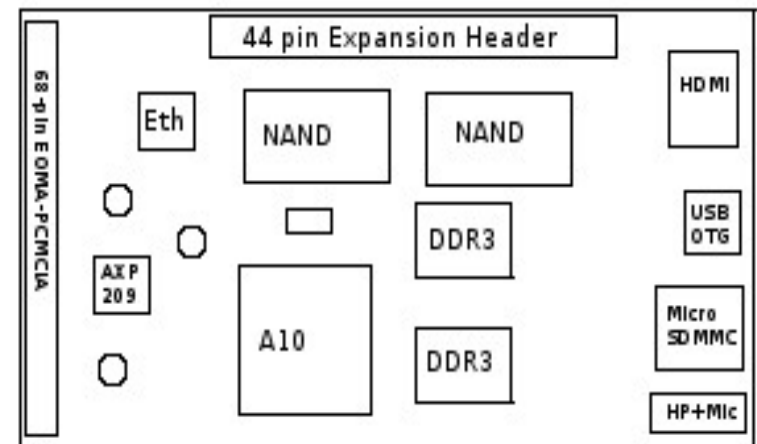
- * Allwinner A10 1Ghz
- * NAND Flash
- * DDR3 RAM
- * AXP209 PMIC
- * MII RTL8120 Ethernet
- * 3.3v LDO Regulator

Connectors BOM for EOMA_PCPCIA

- * Micro-HDMI
- * USB-OTG
- * Micro SD/MMC
- * HP+Mic
- * PCMCIA (68-pin)

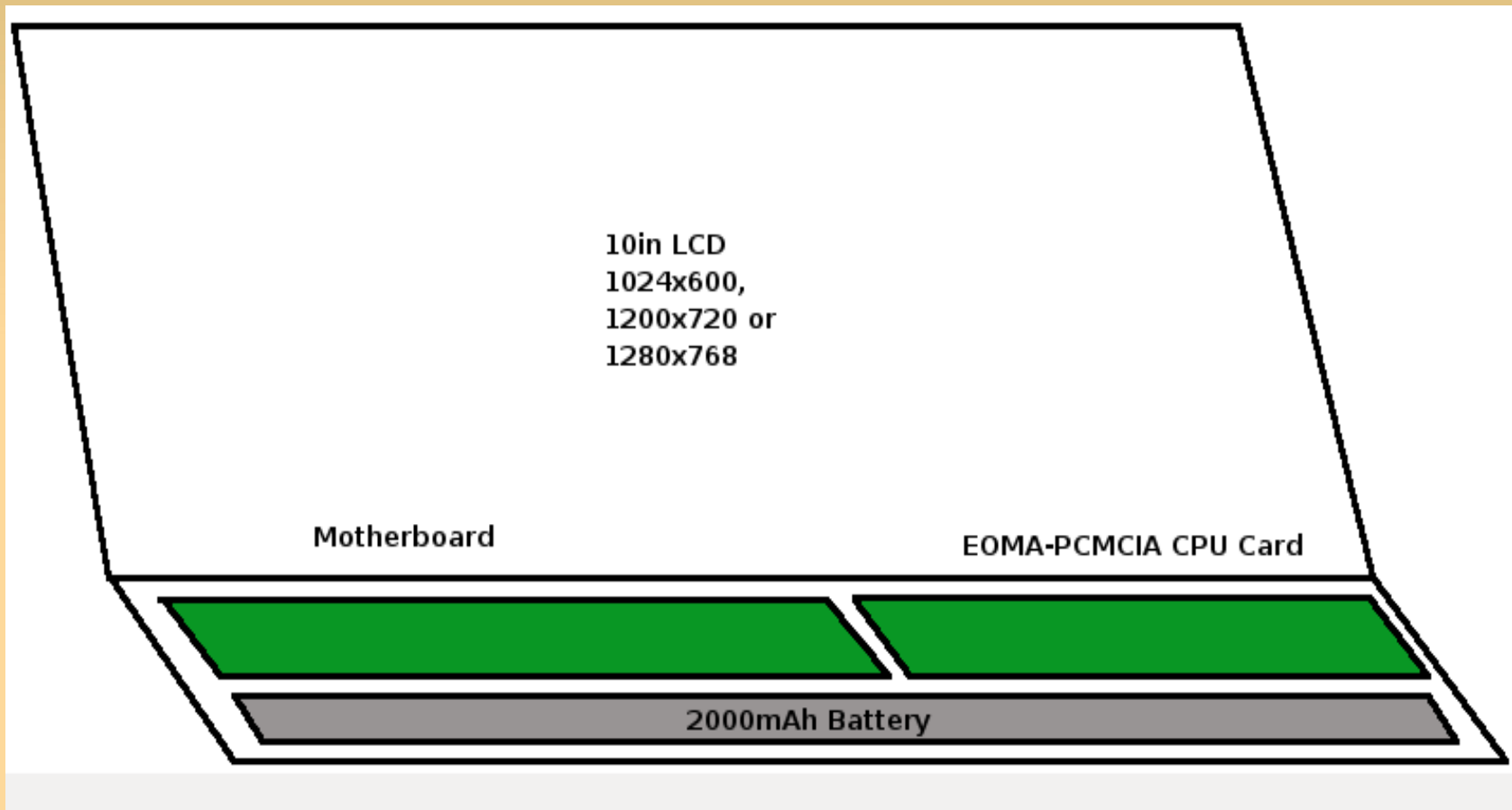


50mm x 90mm
2-4 layer PCB

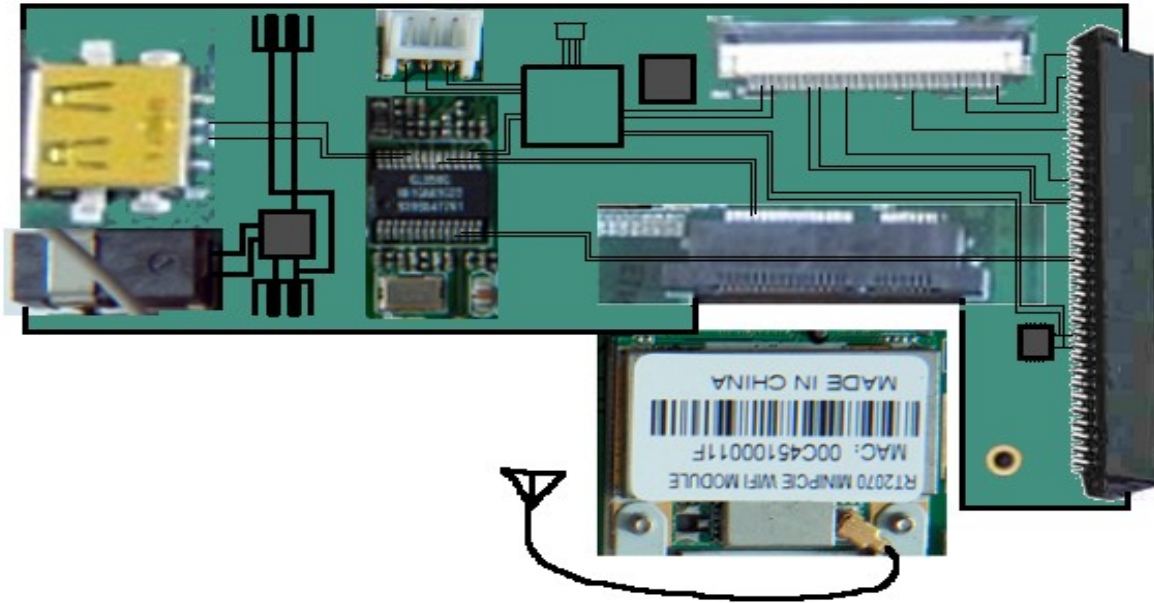


56mm x 90mm
6-8 layer PCB

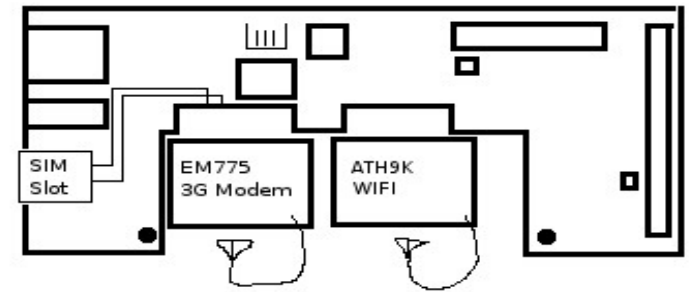
- **Laptop Motherboard**



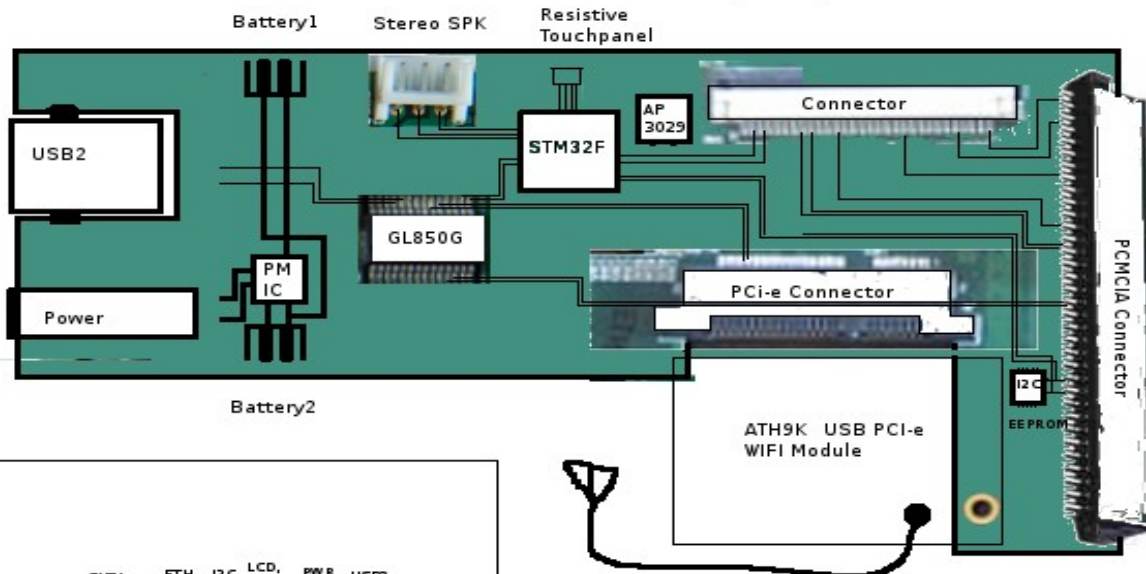
• Tablet Motherboard



Alternative (Internal 3G) Motherboard



Possibility:
Huawei EM775 PCI-e 3G Modem
as well as ATH9K WIFI both in
25x31mm Mini-PCI-e format



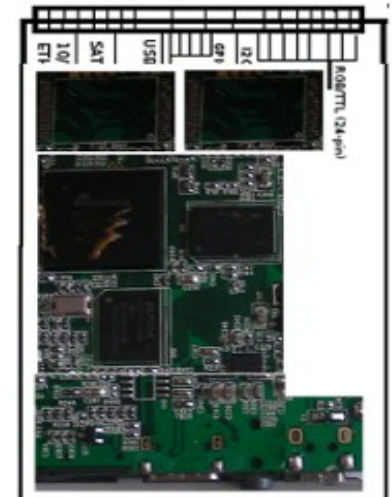
BOM (Connectors):

- * PCMCIA Inline Connector
- * USB2 Inline Connector
- * Power Socket
- * LCD Connector
- * PCI-e Inline Connector
- * Speaker Connector
- * 2x Battery Connectors

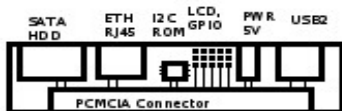
BOM (ICs etc)

- * GL850G 4-port USB2
- * 12.5mhz XTAL
- * ATH9K USB MiniPCI-e WIFI
- * I2C EEPROM (2048 bytes)
- * Power Management IC
- * AP3029 DC-DC Backlight
- * AT070TN93 7in LCD

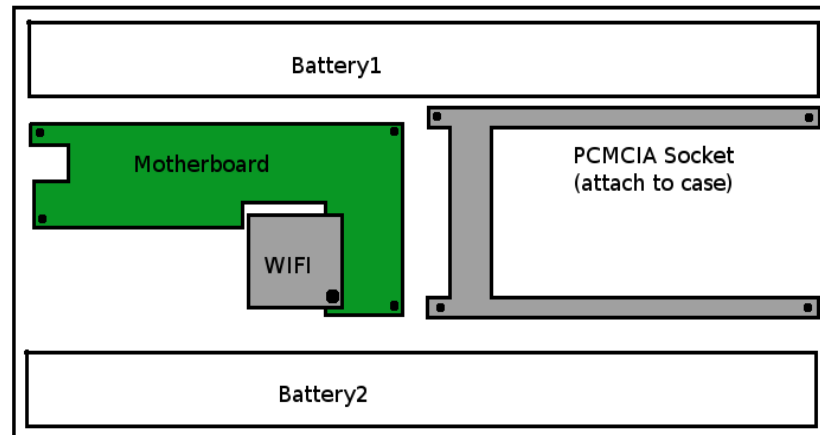
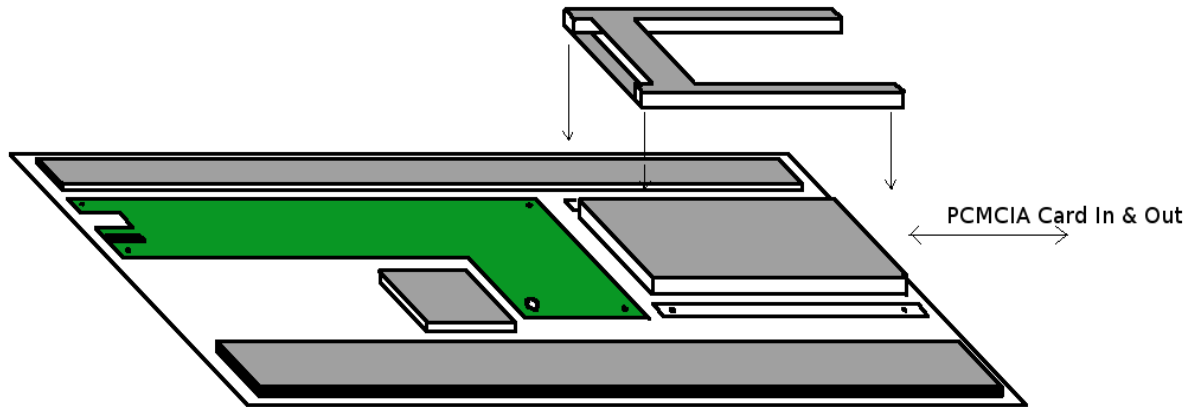
68-pin PCMCIA-style Connector



SD HDMI HP USB-OTG



• Tablet Motherboard



Why EOMA

- EOMA is an initiative to separate the platform from the widget
- System-On-Module in standardized 68 pin package
- OEMs receive standard platform that greatly reduces time-to-market
- OEMs no longer need to contract ODMs or have extensive software expertise to make a worthwhile product
- Utilize most of low cost SoC of your choice

Who made EOMA

- Rhombus Tech
- <http://rhombus-tech.net/>
- CIC - Community Interest Company
- Established to serve Free Software Developers, entrepreneurs, enthusiasts and Engineers with access to affordable, modern and importantly GPL-compliant hardware
- Rhombus plans to reinvest all profits into platform development and improvement
- Rhombus facilitates upstream integration with linux and other major OSS projects

The First EOMA-68

- Allwinner A10 – Cortex-A8 1GHz
- 1GB of RAM
- At least 1GB of NAND Flash (possibly up to 16GB)
- MALI 400MP 3D Graphics, OpenGL ES 2.0 compliant
- 2160p (double 1080p) Video playback
- HDMI, Micro-SD, Headphones Socket

Current status

- Preorder at
http://rhombus-tech.net/allwinner_a10/orders/
- lkcl is working with manufacturers to start production
- News at
http://rhombus-tech.net/allwinner_a10/news/

Play with A10

If you can't wait, you can

- Buy A10 dev kit (\$1000)

easy to develop

- Buy a cheap A10 tablet (\$100)

need sd breakout board to get console

http://elinux.org/Hack_A10_devices

- Buy a A10 TV box (\$70)

need sd breakout board or soldering

http://rhombus-tech.net/allwinner_a10/hacking_the_mele_a1000/

Play with A10

- All source code available
u-boot, linux kernel(2.6.36), buildroot, Android 2.3.4
- Mali - open-source, reverse-engineered graphics driver
this Mali driver will be the first ARM graphics hardware with a full open-source 3D-capable stack

Play with A10

- Boot from USB, never bricked
- Boot from sdcard, easy to try new distribution
- Debug mode, get uart/jtag from sd card pin
- Cheap

Thank you

Questions?