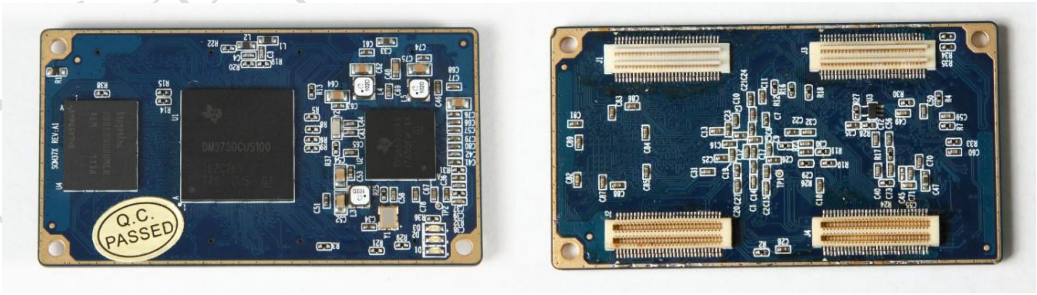
# 1. Product Overview

The SOM3730 is a high-performance System on Module developed by EMA. The size is only 30mmx43.7mm which makes it the smallest SOM in China. Based on Texas Instruments' DaVinci DM3730 digital media processor，SOM3730 boasts PC-like speeds up to 1 GHz ARM® Cortex™-A8 core and 800MHz C64x+™ DSP core, integrated Image Video Accelerator(IVA),3D Graphic Accelerator Engine and lots of high-performance peripheral signals.,SOM3730 integrate DM3730、PMIC、FLASH and DDR in a single system on chip, which solve the most complex problem of connection between DDR and CPU. The design has all functional pins of DM3730 out by B2B connectors which makes it easier for clients to use abundant resources to design embedded product. It is really an ideal choice for those request high definition video or large-scale data processing applications.EMA offers the newest Linux-2.6.32、Android2.2、WinCE6.0 Embedded systems and other software resources(such as BSP 、DVSDK etc.)for support.




1.1 SOM3730

Upgrading the System on Module from SOM3530 to SOM3730, products can improve 50% ARM performance、40% DSP performance and double graphic performance. As the software of DM3730 is compatible with OMAP35x and the DM3730 is compatible with SitaraTM AM37x (pin to pin), it is very



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492

convenient for upgrading higher performance of products. With 800MHz C64x+™ DSP and IVA, SOM3730 can realize audio and 720P high-definition video encoding and decoding independent of ARM processor, which extend advanced applications with 2D or 3D User Interface and high-definition video display.

When using SOM3730 System on Module for product design, EMA will offer referential schematic and PCB and other design materials for help. It is very convenient for clients to design baseboard, shorten construction cycle and amount of work, reduce the difficulty、the cost and the risk of the design, which make products appear on the market rapidly.


1.2 Applications based on SOM3730

# 2. Product Features

- Domestic minimum SOM，Only the baseboard space 30mm*43.7mm；
- DM3730 leads all the functions of 240 Pin，and Pin feet orderly make baseboard layout more simple；
- Using B2B interface，Compared to insert needle、stamp hole of the SOM interface design，greater stability and electrical properties is better；
- Industrial design，has the independent of ESD Ring preventing electromagnetic interference.



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492

# 3. Product Specification

## 3.1. Hardware Specification

| | | |
|---|---|---|
| Processor | TI DM3730 | 1G ARM Cortex™-A8 Core<br>NEON™ SIMD Coprocessor<br>800MHz TMS320C64x+ DSP<br>POWERVR SG™ 2D/3D graphics accelerator |
| RAM | 512MByte LPDDR | |
| Flash | 512MByte/1GByte NAND Flash | |
| LED | 1x Power indicator | |
| | 2x Programmable indicator | |
| SOM | 4x 0.5mm 60Pin B2B connector | |
| Connector Resource | 1x OMAP3 GPMC bus ( the whole signal out ) | |
| | 1x OMAP3 DSS bus ( the whole signal out ) | |
| | 1x AV/S-Video output | |
| | 1x Camera bus ( the whole signal out ) | |
| | 3x UART ( 4 lines: RX、TX、CTS、RTS ) | |
| | 2x MMC/SD/SDIO bus ( the whole signal out ) | |
| | 1x HSUSB 2.0 OTG(*2) | |
| | 2x HSUSB 2.0 ULPI bus(*1) | |
| | 4x MCSPI bus(*1) | |
| | 2x I2C bus(*1) | |
| | 4x MCBSP bus(*1) | |
| | 1x OneWire bus | |
| | 1x TI standard JTAG | |
| | 1x stereo headphone output ( dual channel ) | |
| | 1x Mono microphone input | |
| | 1x Mono audio output | |
| | 2x 8Ω 1W loudspeaker power amplifier output | |
| | 6x extra GPIO ( Includes 2x PWM ) | |
| | 4x ADC input | |
| | 6x Starting selection signal ( SYS_BOOT ) | |
| | 2x System reset signal | |
| | 1xWake up signal | |



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492

| | |
|---|---|
| | 2x External power source control output |
| | 4x TPS65951 dedicated external charging IC control signal |

◆ (*1)Some of the connector resources have multiplex, please refer to pin definition for more information.

◆ (*2) USB OTG function only use as USB Device.

## 3.2. Software Specification

| | | | |
|---|---|---|---|
| Linux | Boot code | version | x-load-1.5.0 u-boot 2009.11 |
| | | Starting mode | NandFlash and SD card support |
| | | Download mode | COM port and Ethernet support |
| | kernel | Kernel version | Linux2.6.32 |
| | | File system form | EXT3/NFS/ JFFS2/UBIFS |
| | | System LED | Led drive |
| | | Serial port | drive provide |
| | | RTC | Hardware clock drive |
| | | Ethernet | 10/100M Ethernet drive |
| | | USB host | USB host drive |
| | | USB device | USB device drive |
| | | LCD | LCD drive |
| | | Touch Screen | Touch Screen drive |
| | | MMC/SD | drive provide |
| | | AUDIO INPUT/OUTPUT | drive provide |
| | | TCP/IP | TCP/IP protocol support |
| | Configuration And service | Ifconfig , route etc. | Network configuration and related service program |
| | Basic tools | Common commands | cat,chmod,echo,free,init,kill,ls,mkdir,mount,ps,reboot,rm,lsmod,rmmod etc. |
| | BIOS | x-loader | SD and NAND FLASH |
| | | e-boot | SD and NAND FLASH |
| | OAL module | | REBOOT |
| | | | Watchdog |



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492

| | | | |
|---|---|---|---|
| WinCE6.0 | OAL | | RTC |
| | | KITL module | RNDIS KITL |
| | drive provide | Ethernet | drive provide |
| | | Touch Screen | drive provide |
| | | AUDIO INPUT/OUTPUT | drive provide |
| | | MMC/SD | drive provide |
| | | LCD | drive provide |
| | | Serial port | drive provide |
| | | OTG | drive provide |
| | | TCP/IP | TCP/IP protocol support |
| Android2.2 | Kernel version | Linux2.6.32 | |
| | drive provide | Serial port, RTC, Ethernet, LCD, Touch screen MMC/SD , USB OTG, USB , Audio input/output | |

## 3.3. Operating Condition

| Environment | Min | Normal | Max |
|---|---|---|---|
| Temperature (Commercial Version) | 0°C | / | 70°C |
| Temperature (Industrial Version) | -40°C | / | 80°C |

- The minimum consumption is measured value. During the measure, the system on module is power off and all the external supply power has been cut off.
- The typical consumption is measured value. During the measure, the SOM run at full speed.

The maximum consumption is estimated value. The estimated condition is that the SOM at full speed and all the external power supply network with the maximum current foreign power supply.

## 3.4. Electric Parameter

| Symbol | Condition | Min | Normal | Max | Unit |
|---|---|---|---|---|---|
| Static parameter ( Ta=+20°C ) | | | | | |
| $V_{VDD\_SOM}$ | VDD_SOM supply | 2.7V | 3.3V/3.6V/4.2V(1) | 4.5V | V |



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492

| | | | | | |
|---|---|---|---|---|---|
| | voltage | | | | |
| $V_{VDD\_RTC}$ | VDD_RTC supply voltage | 1.8V | 3.2V | 3.3V | V |
| I/O parameter | | | | | |
| $V_{IH}$ | High electrical input | 0.65xVDDS(2) | / | VDDS+0.3 | V |
| $V_{IL}$ | Low electrical input | -0.3 | / | 0.35xVDDS | V |
| $V_{OH}$ | High electrical output | 0.75xVDDS | / | VDDS | V |
| $V_{OL}$ | Low electrical output | 0 | / | 0.125xVDDS | V |
| Consumption parameter（VDD_SOM=+3.3V, Ta=+20°C） | | | | | |
| $I_{VDD\_SOM}$ | VDD_SOM supply current | 0.08 | / | 2000 | mA |
| $I_{VDD\_RTC}$ | VDD_RTC supply current | / | / | 0.1 | mA |
| $P_{SOM}$ | Consumption(3) | 0.264 | / | 6600 | mW |

- （1）Recommend using 3.3V、3.6V or 4.2V as VDD_SOM for voltage supply.
- （2）VDDS means I/O reference voltage. The I/O reference voltage of MMC1 is 3.0V，other I/O reference voltages is 1.8V.
- （3）The minimum consumption is measured value. During the measure, the system on module is power off and all the external supply power has been cut off.

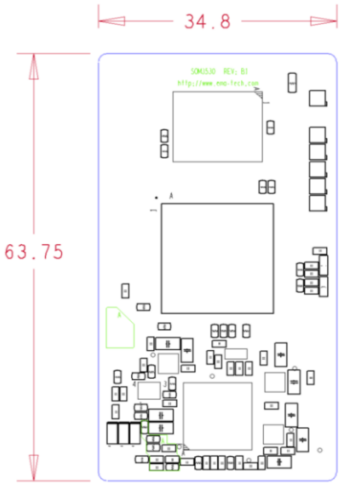
The maximum consumption is estimated value. The estimated condition is that the SOM at full speed and all the external power supply network with the maximum current foreign power supply.

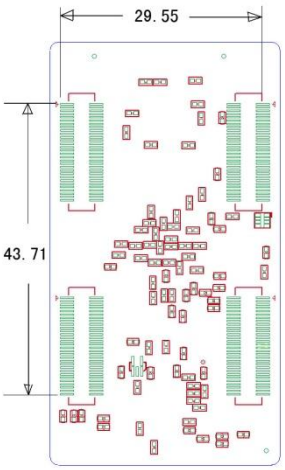
## 3.5. Mechanical Data

| | |
|---|---|
| PCB Dimensions | 1.37 x 2.51 inches（34.8 x 63.75mm） |
| Mechanical holes | 3 |



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492




# 4. Application Field

- High-end GPS Positioning System
- Face Recognition Monitoring System
- Automobile Multimedia System
- Portable Equipment
- High-end Industrial Equipment
- Medical Equipment
- Intelligent House System
- 2D/3D Game

# 5. Product Type Definition

## 5.1. Evaluation Board Order Information

| Type | SOM Collocation |
|---|---|
| EVM3730-B1-3990-LUNC0 | SOM-3730-B2-3990-C（default） |

## 5.2. Routine Type

According to your product demands, you can chose the capacity of the SDRAM and NAND Flash when you want to purchase our product in quantity. The Routine Type is as follow:



地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492

| Type | CPU | Frequency (MHz) | SDRAM (MB) | NAND Flash (MB) | Temperature |
|---|---|---|---|---|---|
| SOM-3730-B2-3990-C | DM3730 | 1000 | 512 | 512 | 0℃-70℃ |
| SOM-3730-B2-3990-I | DM3730 | 1000 | 512 | 512 | -40℃-85℃ |
| SOM-3730-B2-3890-C | DM3730 | 1000 | 256 | 512 | 0℃-70℃ |
| SOM-3730-B2-3880-C | DM3730 | 1000 | 256 | 256 | 0℃-70℃ |





地 址：广州市天河区粤垦路 38 号广垦商务大厦一座 7 楼
电 话：+86-020-87643879
网 址：www.ema-tech.com
传 真：+86-020-87245492