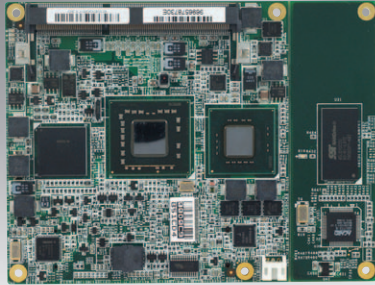


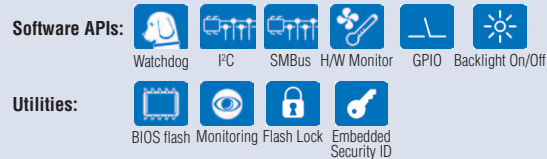
SOM-5787

Intel® Core™2 Duo Processor GS45 COM-Express Basic Module



Features

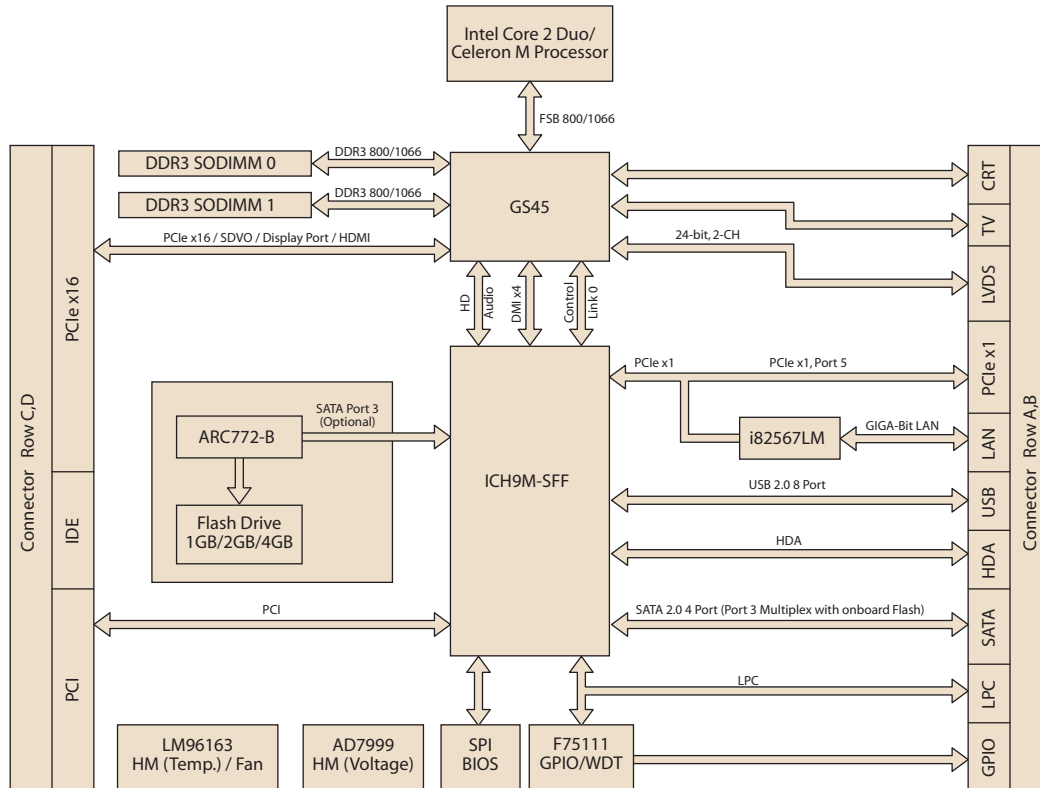
- Embedded Intel® Core™2Duo/Celeron® M processor
- Intel GMA X4500 Gen 5 DX10, HW support for H.264, VC-1 and MPEG2
- Supports 2 DDR3 SODIMM up to 8 GB
- Supports PCIe x16, 5 PCIe x1, 4 PCI, LPC, 3 SATAII, 8 USB2.0
- Supports embedded software APIs and Utilities



Specifications

| | | |
|------------------|--|---|
| Form Factor | COM-Express Basic Module, Type II Pin-out | |
| Processor System | CPU | Intel Core 2 Duo SP9300, LV Core 2 Duo SL9400, ULV Core 2 Duo SU9300 / Intel ULV Celeron M 722, ULV Celeron M 723 |
| | Front Side Bus | 800/1066 MHz |
| | System Chipset | Intel GS45/ICH9M SFF |
| | Intel AMT 4.0 | Yes |
| | BIOS | AMI 32 Mbit |
| Memory | Technology | DDR3 800/1066 MHz |
| | Max. Capacity | up to 8 GB |
| | Socket | 2 x 204-pin SODIMM sockets |
| Display | Chipset | Intel GS45 |
| | VRAM | DVMT 5.0 supports up to 1024 MB |
| | Graphics Engine | Mobile Intel GMA X4500 3D/2D engine, HDMI, Displayport, SDVO shared with PCIe x16 (PEG) |
| | LCD | Single and dual channel 24/48-bit LVDS |
| | TV-out | Yes |
| | VGA | up to QXGA (2048 x 1536) |
| | SDVO | 2 SDVO Ports |
| Dual Display | Dual Display of VGA, LVDS, TV-out, HDMI, Displayport, SDVO (Note: SDVO function is supported by customized BIOS) | |
| Ethernet | Chipset | Intel 82567 Gigabit Ethernet |
| | Speed | 10/100/1000 Mbps |
| WatchDog Timer | 256 timer intervals, from 0 to 255 sec or min setup by software, jumperless selection, generates system reset | |
| Expansion | LPC, PCIe x16, 5 PCIe x1, 4 PCI master | |
| I/O | SATA | 3 x SATAII (1 SATA port used for 2G onboard flash) |
| | SSD | 2 GB SSD Flash on board |
| | USB | 8 x USB 2.0 ports |
| | Audio | High definition audio interface |
| | GPIO | 8-bit GPIO |
| Power | Power Type | ATX, AT |
| | Power Supply Voltage | +12 V and +5 VSB for ATX, +12V for AT |
| | Power Consumption (Typical) | (1 GB DDR3 1066) SP9300: +12V @ 0.66A |
| | Power Consumption (Max. test in HTC) | (1 GB DDR3 1066) SP9300: +12V @ 2.1A |
| Environment | Operating Temperature | 0 ~ 60° C (32 ~ 140° F) |
| | Operating Humidity | 0% ~ 90% relative humidity, non-condensing |
| Mechanical | Dimensions | 125 x 95 mm (4.92" x 3.74") |

Board Diagram



Ordering Information

| Part No. | CPU | L2 Cache | Chipset | LVDS | VGA | SDVO | Giga LAN | HD Audio | PCIe x 16 | PCIe x 1 | PCI | USB 2.0 | SATA | LPC | Onboard flash | ATX Power | AT Power | Thermal Solution | Operating Temp. |
|------------------|--------------------------------------|----------|------------|--------|-----|------|----------|----------|-----------|----------|-----|---------|------------|-----|---------------|-----------|----------|------------------|-----------------|
| SOM-5787FG-S1A1E | Intel ULV Celeron M 723 1.2 GHz | 1 MB | Intel GS45 | 48-bit | Yes | 2 | 1 | Yes | 1 | 5 | 4 | 8 | 3 x SATAII | 1 | 2G | Yes | Yes | Active | 0 ~ 60° C |
| SOM-5787FG-S2A1E | Intel ULV Celeron M 722 1.2 GHz | 1 MB | Intel GS45 | 48-bit | Yes | 2 | 1 | Yes | 1 | 5 | 4 | 8 | 3 x SATAII | 1 | 2G | Yes | Yes | Passive | 0 ~ 60° C |
| SOM-5787FG-S3A1E | Intel ULV Core 2 Duo SU9300, 1.2 GHz | 3 MB | Intel GS45 | 48-bit | Yes | 2 | 1 | Yes | 1 | 5 | 4 | 8 | 3 x SATAII | 1 | 2G | Yes | Yes | Active | 0 ~ 60° C |
| SOM-5787FG-S9A1E | Intel LV Core 2 Duo SL9400, 1.86 GHz | 6 MB | Intel GS45 | 48-bit | Yes | 2 | 1 | Yes | 1 | 5 | 4 | 8 | 3 x SATAII | 1 | 2G | Yes | Yes | Active | 0 ~ 60° C |
| SOM-5787FG-U3A1E | Intel Core 2 Duo SP9300, 2.26 GHz | 6 MB | Intel GS45 | 48-bit | Yes | 2 | 1 | Yes | 1 | 5 | 4 | 8 | 3 x SATAII | 1 | 2G | Yes | Yes | Active | 0 ~ 60° C |

Development Board

| Part No. | Description |
|-------------------|---|
| SOM-DB5700G-00A2E | Development Board for COM-Express with GLAN |

Optional Accessories

| Part No. | Description |
|----------------|---|
| 1960048818N001 | Semi-Heat sink 125 x 95 x 17 mm |
| 1960048820N001 | Semi- Cooler 125 x 95 x 33.5 mm with 12 V Fan |

Packing List

| Part No. | Description | Quantity |
|----------------|---------------------|----------|
| - | SOM-5787 CPU Module | 1 |
| - | Utility CD | 1 |
| 1960046888N001 | Heatspreader | 1 |

Embedded OS

| OS | Part No. | Description |
|---------|------------|---------------------------------|
| Win XPE | 2070009650 | XPE WES2009 SOM-5787 V4.0 MUI24 |

Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

Software APIs

Control



GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.



SMBus

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.



I2C

I2C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s. The I2C API allows a developer to interface with an embedded system environment and transfer serial messages using the I2C protocols, allowing multiple simultaneous device control.

Display



Brightness Control

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.



Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

Monitor



Watchdog

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.



Hardware Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.



Hardware Control

The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

Power Saving



CPU Speed

Make use of Intel SpeedStep technology to reduce power consumption. The system will automatically adjust the CPU Speed depending on system loading.



System Throttling

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

Software Utilities



BIOS Flash

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.



Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.



Monitoring

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.



eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.



Flash Lock

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.