

Advantech COM systems: Powerful low-power solutions

Author: Carsten Rebmann
E-mail: carsten.rebmann@advantech.eu

Advantech's COM (computer on module) systems provide customers with a cost-efficient, fast, flexible and reliable solution for launching their products to market. Customers can concentrate on product know-how and find a perfect-fitting module for their applications, resting assured that an Advantech COM module's processor and its interface technology are the ideal match for a carrier board and chassis they have designed. Companies turn to COM solutions in applications ranging from industrial automation, to communications, avionics, medical technology and retail systems. In fact, the applications for Advantech COM systems are as boundless as your imagination.

When every electron counts

Many customers have computer-on-module applications that require very low power consumption, but at the same time require a fair amount of computational power and product flexibility. Energy efficiency is not only important in avoiding overheating, but is critical when modules have limited power sources such as batteries or Power over Ethernet (PoE).

In these types of applications every bit of electricity counts. Losing current due to leakage or running a stronger CPU than necessary can limit battery life. In the case of a PoE device, the product might fail in the development stage or its launch into the market, could be delayed because its power consumption exceeds PoE specifications.

When offering the set of features customers require, mass market Single Board Computer (SBC) products often do not fulfil customers' low power needs. However, completely designing a circuit board from the ground up is costly and many companies do not have the design teams necessary to implement all of the requirements onto a single board. Moreover, a specific project might be too small to warrant outsourcing circuit board design to a third party and companies would often rather keep proprietary design knowledge in-house.

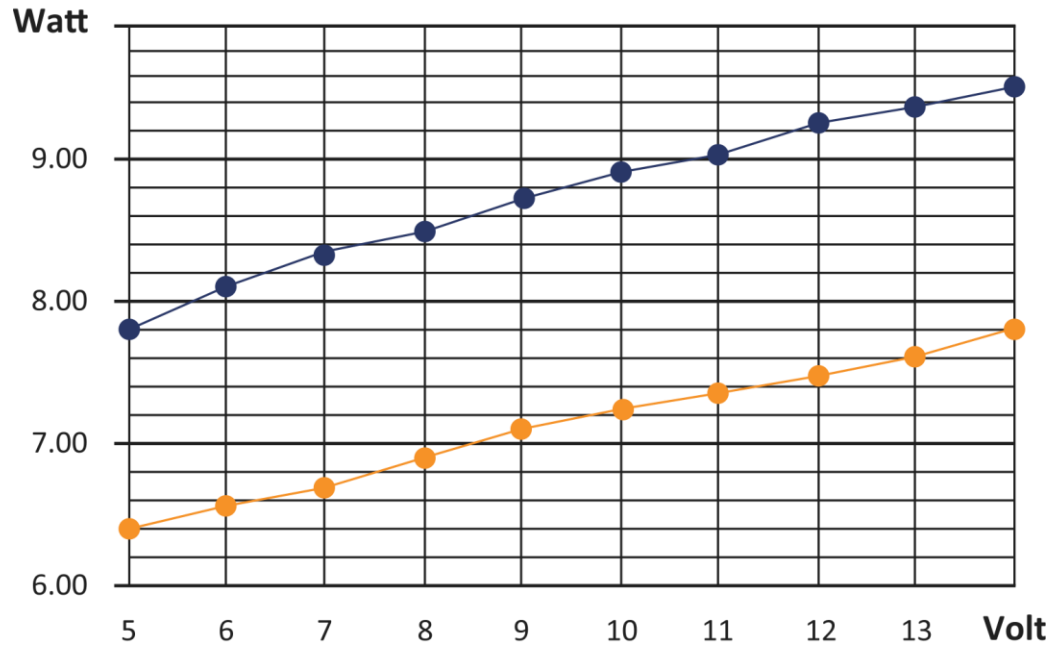
Advantech's energy-efficient SOM-7562 COM Module

This is where Advantech's SOM-7562 COM Module offers the perfect solution. This module boasts an embedded, ultra-low-voltage Intel® Atom™ N450 1.66 GHz CPU and an ICH8M chipset that has been fine-tuned for low power applications. The module's power consumption of typically around 10 watts can be reduced to as low as 6.4W for specific applications. This will allow a complete panel PC – including touch display and I/O controls – to run completely on PoE supply, which is 25.5W guaranteed for a powered device at the 802.3at Type 2 standard.

To regulate power use, Advantech can optimize the SOM-7562 Module's BIOS to switch off or clock down features (including: SATAII input/output, part of the PCI express lanes and USB interfaces, and downclocking the N450 processor to 1 GHz). In addition, Advantech has helped work on the design of carrier boards for its customers. In one example, the COM module was engineered to run on as low as 5 volts, far less than the 12V of a standard COM Express module, and contributing to savings of more than 1.5W. This equals a saving of around 15 percent of the total board power consumption simply by choosing the right supply voltage. Furthermore, customers can often save costs on the power supply components since the 12V is typically specially generated for the COM module

only.

SOM-7562 power consumption*



- Normal power consumption of the SOM-7562 in AT power mode over input voltage. Run WinXP with Advantech Burn-In test 6.0.
- Custom optimized BIOS (CPU reduced to 1.0GHz, turn-off/reduced clocks that are not used, disabled: SATA, PCIe lane 1-5, TVout, USB port 4) in AT power mode. Run WinXP with Advantech Burn-In test 6.0.

* Power consumption measured for the SOM-7562 without carrier board.

Tailor-made COM module solutions

Compatibility, flexibility and reliability are important to customers and to meet these needs Advantech offers Design Assistant Services that can assist with key projects.

This team can work with a customer's carrier board design engineers and offers tailor-made solutions that include schematic review, BIOS optimizations, placement and layout review, and customized alterations of COM modules. The result is a pro-active customization and review process that helps catch potential design errors before they happen, saving both time and money.

Packed with impressive features

The SOM-7562 Module supports standard embedded software systems: Windows CE 6.0, Windows XP Embedded, WES 7, Linux, QNX, and VxWorks. This gives designers the flexibility to determine which software is ideal for the specific application.

When it comes to connectivity, the SOM-7562 Module is unrivalled in the industry. It is equipped with 3 SATAII ports, up to 2GB of onboard flash memory, 8 USB 2.0 ports and an 8-bit GPIO (General Purpose Input/Output) interface, allowing connection to an array of devices and peripherals.

Five PCIe x1 slots add further expansion and connection options, while LPC support allows for backwards compatibility to legacy peripherals. An Intel 82567V Gigabit Ethernet chip delivers LAN connections at up to 1 Gbps.

In addition, Advantech offers a host of application programming interfaces (API), which include a watchdog timer that can restart the system, a hardware monitor that monitors temperature and voltage, and brightness and backlight controls. SMBus and I²C APIs enable developers to interface with the module using these protocols.

Graphics display is provided by an embedded Intel Gen3.5+ chipset that supports DVD-quality MPEG-2 decoding. Graphics output can be run through an 18-bit LVDS with a resolution of up to 1366 x 768 or a VGA connection that supports 1400 x 1050 pixels @ 60 Hz.

Rounding out the SOM-7562 Module's features are 512MB of on-board memory. Passive thermal dissipation through a heat spreader ensures operation in temperatures from 0°-60° and further adds to power savings.

The perfect choice for low power applications

The SOM-7562 COM Module is an excellent option for use in products that require high energy efficiency matched with strong processing power and an array of connection options. The module is an energy-efficient element in the total Advantech COM concept, which reduces time to market, lowers assembly costs, limits external exposure to proprietary design technology and offers outstanding product flexibility. All the while, customers can count on the reliability of COM modules that are used in a myriad of applications worldwide and an Advantech assistance team that will ensure an optimized COM solution for their needs.



The SOM-7562 COM Module will soon be available with the option of an Intel® Atom™ N455 1.66 GHz CPU that supports ultra-fast DDR3 memory.