

Intel® 815EM Chipset

The Internet and advanced applications are creating opportunities to think in new ways, and Intel has risen to the challenge by designing a platform that meets today's business needs while still maintaining compatibility with technology that is under development. Intel's new platform architecture delivers the superior performance and high scalability required for today's exciting e-Business and e-Home applications.

Intel's comprehensive efforts to enable the industry ensure fast deployment of next-generation platforms, maximizing your competitive advantage. Our world-class platform validation creates a robust foundation for emerging applications while minimizing deployment risks.



developer.intel.com

Product Overview

With the Intel® 815EM chipset, Intel has introduced innovative technology to optimize flexibility and stability in mobile Intel® Pentium® III and mobile Intel® Celeron™ processor-based laptops. Built on the strong foundation of Intel® 440BX AGPset technology, the Intel® 815EM chipset has re-engineered the PC platform, providing next-generation features and great graphics performance at a lower cost. Richer, robust 2D and 3D graphics are optimized thanks to an integrated chipset design that utilizes third-generation Intel® Graphics Technology. This integrated chipset offers innovative features with compelling performance while lowering overall system costs through smart integration. This complete platform solution utilizes a single driver featuring full backward compatibility for increased quality and reliability. Intel's 3D with Direct AGP is easily upgraded with the addition of 4MB of display cache. For maximum 3D performance and video quality, an external AGP4X graphics controller may be used.

The smart integration in the Intel 815EM chipset design is extended to feature internal LAN capability as well as four USB ports. By combining internal graphics, LAN, and support for four USB ports with the ability to take advantage of soft audio/modem technology, the Intel 815EM chipset delivers an ideal solution for new innovative form factors.

Optimized Intel® Hub Architecture

The Intel 815EM chipset is designed with integrated graphics and external AGP4X graphics support for ease of upgrade, and provides a platform that meets the performance, stability and reliability requirements of the most demanding customers.

- The 82815EM Graphics and AGP Memory Controller Hub (GMCH2-M) features Intel® Graphics Technology and unified graphics drivers built on Intel's stable production tested software code base. The 82815EM uses direct AGP (integrated AGP) to create vivid 2D and 3D effects and images. The 82815EM also features integrated Hardware-assisted Motion Compensation to improve soft DVD video quality and digital video-out port that enables connection to flat-panel displays or traditional TVs. The GMCH2-M also utilizes system memory efficiently for graphics, operating system and complex applications.
- The 82801BAM I/O Controller Hub (ICH2-M) delivers twice the I/O bandwidth as traditional bridge architecture and provides dedicated data

paths to fully optimize the additional bandwidth. The ICH2-M also integrates the Intel® SpeedStep™ logic, thereby reducing the platform bill of material cost for the OEM and provides enhanced power and thermal management features.

- Two USB controllers double the bandwidth to 24Mbps across four ports, representing a significant increase over integrated 1-4 port hubs at 12Mbps.
- AC97 audio supports full surround sound with up to six channels and a soft modem implementation.
- Integrated LAN capability can be enabled for three distinct networking environments: 1Mbps home PNA, 10/100Mbps LAN and managed 10/100Mbps LAN. All three solutions utilize Intel® SingleDriver™ Technology, a common set of drivers that simplify network complexity and increase the ease of deployment.
- ATA66/100 Hard Disk Drive support stands ready for the latest storage technology while remaining compatible with today's most cost-effective and popular HDD solutions. The Intel® Ultra ATA Storage Driver provides exceptional performance over standard ATA drivers.
- The 82807AA Video Controller Hub (VCH) connects directly to the digital video-out port on the GMCH2-M, enabling LVDS TFT panel support if the Intel 815EM integrated graphics is used.

The 815EM chipset offers features that add value and are cost-effective, without compromising system responsiveness and performance.

- The GMCH2-M is optimized for 100MHz SDRAM for system memory and is upgradeable, with a 4MB of display cache that boosts 2D and 3D graphics performance up to 30% over similar systems without display cache.
- The addition of an AGP4X graphics controller is also supported but optional. The AGP4X upgradeability allows best-of-class graphics acceleration in multimedia platforms.

Quality and Reliability

Built on third-generation chipset technology, the Intel® 815EM chipset offers the performance, stability and reliability that customers require for e-Business applications. The Intel 815EM chipset and drivers reduce support costs and validation costs, and offer a variety of sell-up opportunities while still providing flexibility and performance.

Features

■ Intel® SpeedStep™ Technology support

■ Intel® Hub Architecture

■ Intel® Graphics Technology

■ ATA66/100

■ Single driver for LAN

■ Integrated LAN connect interface

■ Alert on LAN* 1.0

■ Processor Side Bus

■ SDRAM system memory

■ Mobile ACPI support

■ Quad USB

■ Intel 3D with Direct AGP

■ AGP4X upgradeable

■ 4MB of 133 MHz SDRAM for display cache

■ AC97 Controller

■ Digital Video Output

■ Soft DVD MPEG-2 playback with HW motion compensation

Benefits

■ Brings higher performance and optimal battery life to mobile PCs

■ Increased I/O bus bandwidth allows better concurrency for next-generation e-Business applications

■ More stable platform, higher quality graphics, reduced OEM support costs

■ Fastest data/file transfer

■ Single LAN driver across all Intel solutions, from home PNA to our PCI controllers

■ Flexibility for multiple, cost-effective network solutions, from home PNA to 10/100 Mbps Ethernet with LAN manageability

■ Emits an alert in case of software failures or system intrusion, even when the O/S is not present or the system is suspended

■ Supports 100 MHz configurations

■ 100 MHz SDRAM support; cost effective high-volume memory support

■ Power management for longer battery life

■ Two controllers for four ports, doubling the bandwidth at 24 Mbps

■ Vivid 2D and 3D graphics

■ 2X increase in graphics bandwidth over AGP2X allows highest graphics performance

■ A dedicated graphics subsystem accelerator that compliments system memory to provide up to 30% boost for better 2D and 3D graphics performance over similar systems without display cache

■ Better audio quality, with six channels and surround sound capability

■ Allows connection to LVDS TFT flat-panel displays or traditional TVs; compatible with DVI

■ Lifelike audio and video

Product

82815 (GMCH2-M)

82801AA (ICH2-M)

82807AA (VCH)

Package

544 Ball Grid Array (BGA)

360 Ball Grid Array (EBGA)

196 Plastic Ball Grid Array (pBGA)

Intel Access

Developer's Site

<http://developer.intel.com/>

Intel® Chipsets Home Page

<http://developer.intel.com/design/chipsets/>

Other Intel Support:

Intel Literature Center

<http://developer.intel.com/design/litcentr/>
(800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada)
International locations please contact your local sales office.

General Information Hotline

(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST



Intel Corporation assumes no responsibility for the use of any circuitry other than circuitry embodied in an Intel product. Information contained herein supersedes previously published specifications on these devices from Intel.
*Other brands and names are the property of their respective owners.

For more information, visit the Intel Web site at: developer.intel.com

UNITED STATES AND CANADA
Intel Corporation
Robert Noyce Bldg.
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119
USA

EUROPE
Intel Corporation (UK) Ltd.
Pipers Way
Swindon
Wiltshire SN3 1RJ
UK

ASIA-PACIFIC
Intel Semiconductor Ltd.
32/F Two Pacific Place
88 Queensway, Central
Hong Kong, SAR

JAPAN
Intel Kabushiki Kaisha
P.O. Box 115 Tsukuba-gakuen
5-6 Tokodai, Tsukuba-shi
Ibaraki-ken 305
Japan

SOUTH AMERICA
Intel Semicondutores do Brazil
Rue Florida, 1703-2 and CJ22
CEP 04565-001 Sao Paulo-SP
Brazil