

MB86R01 Graphics SoC “Jade”



Description

The new-generation Graphics Display Controllers (GDCs) from Socionext feature an SoC architecture based on the ARM®926 core. The first offering in the new series, the MB86R01, incorporates Socionext's well-established MB86296 3D graphics core that has been upgraded to support high-speed DDR memory. Fabricated in Socionext's standard 90nm process, the MB86R01 SoC is targeted to provide the optimal balance of power (low leakage current) and performance.

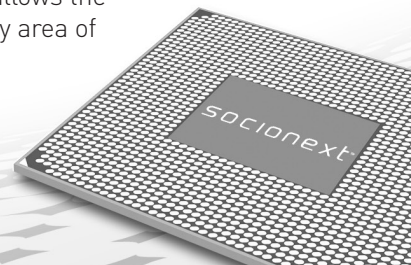
The MB86R01 graphics SoC features a hierarchical bus system that isolates high-performance functions (such as 3D graphics processing) from routine operations (such as low-speed I/O). Socionext has designed the ARM processor to run at twice the rate of the graphics core to reduce memory bus contention between these two primary functions. (The ARM runs at 333 and the graphics core at 166MHz.)

Central to MB86R01's architecture is a full 3D geometry processing unit that is capable of performing all primary 3D operations including transformations, rotations, back-face culling, view-plane clipping and hidden-surface management.

A display controller supports two capture sources (YUV/ITU656 or RGB) and enables both upscaling and downscaling of the video image. The video may also be mapped to any one of the six display layers, and may be texture-mapped to polygons to create special effects. The display controller is also capable of dual digital outputs, supporting multiple monitor configurations in different resolutions. The content may either be the same or unique to each panel. For example, a single MB86R01 controller could support a 1024 x 768 resolution center console featuring a navigation system and an 800 x 480 resolution rear-seat display for video. The menu buttons or icons might be shared between the two displays.

The MB86R01's six display layers may be viewed as six individual frame buffers or as individual canvases, each of which can contain unique content. The layers can be optimally sized to save memory and improve system throughput and graphics performance.

Consider a menu bar, for example. If the actual graphics area is only 60 x 400 pixels, the device allows the layer to be set to match the display area of



The MB86R01 also features two hardware cursors, each of which may be a bitmap of up to 64 x 64 pixels. Movement of

Several interfaces are available – SD Card interface, IDE, USB, SPI, UARTs and a Flash/ SRAM port. ADC and DAC are also included.