



GP-3 Product Overview

Product Description

GigaPixel's GP-3™, based on the Giga3D™ architecture, is a high-performance, high visual quality, and low-cost 3D graphics core available for licensing. GP-3 verilog models, C-sim models, test suites, and software drivers are available for integration into your final product.

Fully compliant with Direct3D and OpenGL, GP-3 is extremely flexible and programmable. Features are configurable to meet the requirements in different market segments.

GP-3's patent-pending technology has an advanced geometry engine that transforms coordinate, texture, and color parameters from model space to screen space. The tiling, visibility, and rendering subsystem tiles the frame, determines visible pixels, and renders the tiles. The rendering engine processes only the pixels that will be visible. And setup, shading, and texturing are done only on visible pixels as well, greatly reducing internal processing and memory bandwidth requirements.

The core performs full-scene, full-speed anti-aliasing—*there's no speed penalty even at high screen resolutions!* Framebuffer reads, Z-buffer reads, large numbers of polygons within a tile, and transparency problems have been solved with our Giga3D architecture.

GP-3 correctly implements the pipeline to ensure full 3D API compatibility. GP-3 does not require any CPU overhead in the driver or software applications to support the underlying hardware.

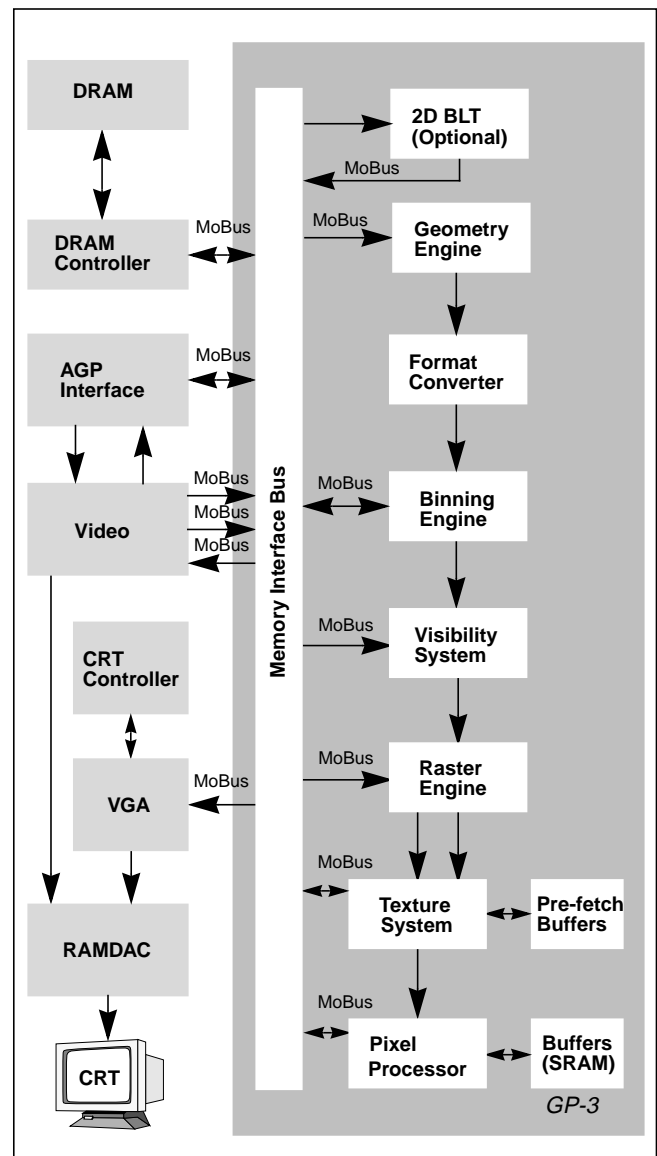
Memory Interface Bus

MoBus, a general-purpose connection bus, is characterized by a 32-bit address bus and demultiplexed read and write data buses. Due to its crossbar architecture, MoBus is scalable, allowing split transactions as well as pipelined data access requests and data transfers. MoBus employs a very straightforward bus protocol, enabling easy interfacing to your system.

See the back of this data sheet for a complete list of GP-3 features and specifications.

GPDRV

GPDRV, GigaPixel's software driver for the GP-3, is a portable, API-neutral hardware abstraction layer which hides the details of programming the GP-3 hardware from the API implementor. GPDRV is tuned for high performance, with all speed-critical paths provided to the client environment as inline functions. GigaPixel also provides reference OpenGL and Direct3D implementations which use GPDRV.



Giga3D GP-3 Core Features and Performance Specifications

- Direct 3D and OpenGL compatible
- Full scene, full-speed anti-aliasing
- Geometry acceleration
- Tri-linear mipmapping: 2 textures and 4 pixels/clock
- Anisotropic filter
- Perspective correction
- Hardware binning
- Floating point setup engine
- Visibility optimizations
- Fill rate (depth complexity = 4): 25.6 Gtexel/sec @200Mhz (12.8 Gsamples/sec)
- Polygon rate: 33-66 million/sec
- Z buffer (24 bit)
- Z buffer read back
- Z function
- Sub-pixel and sub-texel accuracy
- Diffuse shading
- Specular
- 32-bit color
- Alpha blending
- Alpha test
- Alpha function
- Geometry: triangle lists, fans and strips; lines, points
- Shadows
- Spot lights
- Non-square texture support
- Texture compositing
- DXT-1 texture compression
- Texture formats: RGB565, RGBA5551, RGBA4444, RGB888, RGBA8888, BGR565, BGRA5551, BGRA4444, BGR888, BGRA8888, LA88, L8, and A8
- Texture wrap modes: repeat, clamp, mirror, and border
- Texture filters: point, bilinear, trilinear, and anisotropic
- Texture blending: DX-6 and DX-7
- Multi-texture
- Render to texture
- Fog (per pixel and per vertex): linear, exp, and exp2
- Pixel blending: src alpha blend and dst alpha blend
- Stencil operation
- Embossed bump mapping
- 2D
- Gate count: 4 M
- SRAM: 80 Kbytes
- Tile size: 32×32 pixels

About GigaPixel

GigaPixel Corporation™ was founded in August 1997 to develop and license 3D graphics cores to chip, board, and system companies. The management and engineering team have extensive product development and business experience in graphics and video markets.