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MB86298 'RUBY'
GRAPHICS PROCESSING UNIT

FUJITSU

MB86298 'RUBY' graphics processing unit

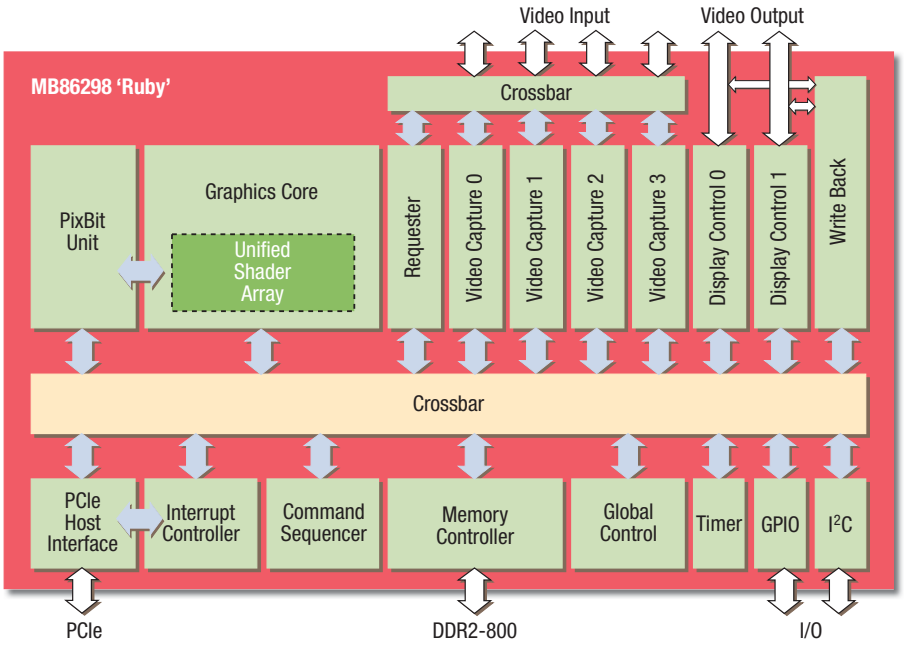
MB86298 'Ruby' (TEBGA543 package)

Description

MB86298 'Ruby' is a 90nm CMOS graphics processing unit based on a new chip architecture design. The chip is specified for demanding requirements and delivers optimal performance, low power consumption and targets graphic applications in the high-end sector of automotive, avionics and industrial application fields.

- Automotive applications
  - Infotainment systems
  - Driver information
  - Driver assistance
  - Rear-seat entertainment
- Avionics & marine applications
  - Primary flight displays
  - Moving map displays
  - Marine instrumentation
- Industrial applications
  - Medical equipment
  - Control terminals
  - Gaming machines

MB86298 'Ruby' provides high performance 3D-rendering functions in combination with enhanced video capturing.



MB86298 block diagram

A fully programmable unified vertex and fragment shader architecture is intended for use with OpenGL® ES 2.0 applications.

State-of-the-art interfaces to the host and graphic memory provide the necessary bandwidth for the data throughput of future high-end graphics applications. Hardware support for some functions of the OpenVG 1.1 standard is also included.

Key features

- CMOS 90nm technology
- Programmable unified shader architecture
- Designed for use with OpenGL ES 2.0
- 32/64-bit ext. DDR2-800 SDRAM interface
- PCI Express host interface
- Dual independent display outputs
- Dual view display support
- Four independent digital video inputs
- Full scene anti-aliasing (4 x 4)
- Temperature range -40 to +85°C

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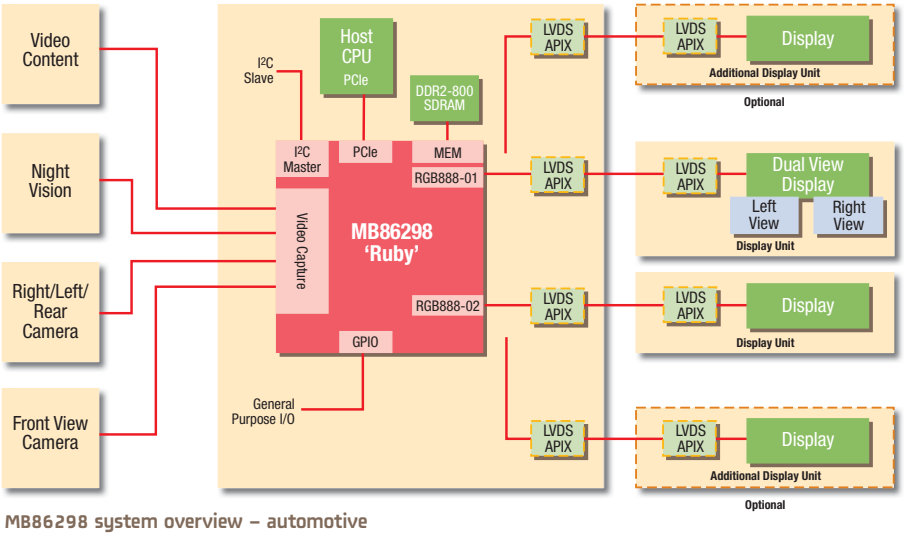
Feature set

- New 2D/3D graphics engine with a general-purpose, programmable Unified Shader including support for the OpenGL shading language with a shading language compiler (SL Compiler)
- Full Scene Anti-Aliasing (FSAA) and high-performance copy and blend blit operations by separate hardware unit (PixBlt unit)
- Full hardware support of ROP2 and ROP3 raster operations
- Two display controllers with maximum resolution of e.g. 1280 x 1024 or 1600 x 600 pixels
- Dual display signal output and combined output for dual view displays
- 8 layers of overlay per display controller, 4 alpha planes, constant alpha value or alpha from pixel data available for blending on each layer
- Dithering and Colour look-up-table for gamma correction
- Four independent digital video capture channels - 3x ITU-R BT.656 and 1x ITU-R BT.656 or DRGB888 - with adaptive de-interlacing (still image detection) and up-/ downscaling



MB86298 system overview – automotive

- Supported video input resolutions: ITU-R BT 601/656, DRGB 888 (up to 1280 pixel horizontal resolution) and SMTPE 296M (1280 x 720/60p, 1280 x 720/59.94p, 1280 x 720/50p)
- Frame-rate conversion
- Video texturing (e.g. for warping applications)
- Write-back of display output to video memory
- Brightness, contrast, saturation control for video
- Built-in chroma-keying

- PCI Express Host Interface (1 lane TX/RX) – requester and completer functionality
- Big/Little endian swapping
- External Interrupt output
- 32/64-bit external DDR2 SDRAM interface (up to DDR2-800)
- I²C master functionality
- GPIO: 8 pins with edge-detection interrupts
- Spread-spectrum clock generation
- TEBGA-543 package
- CMOS 90nm technology
- Temperature range -40 to +85°C

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