S1D13506 Color LCD/CRT/TV Controller

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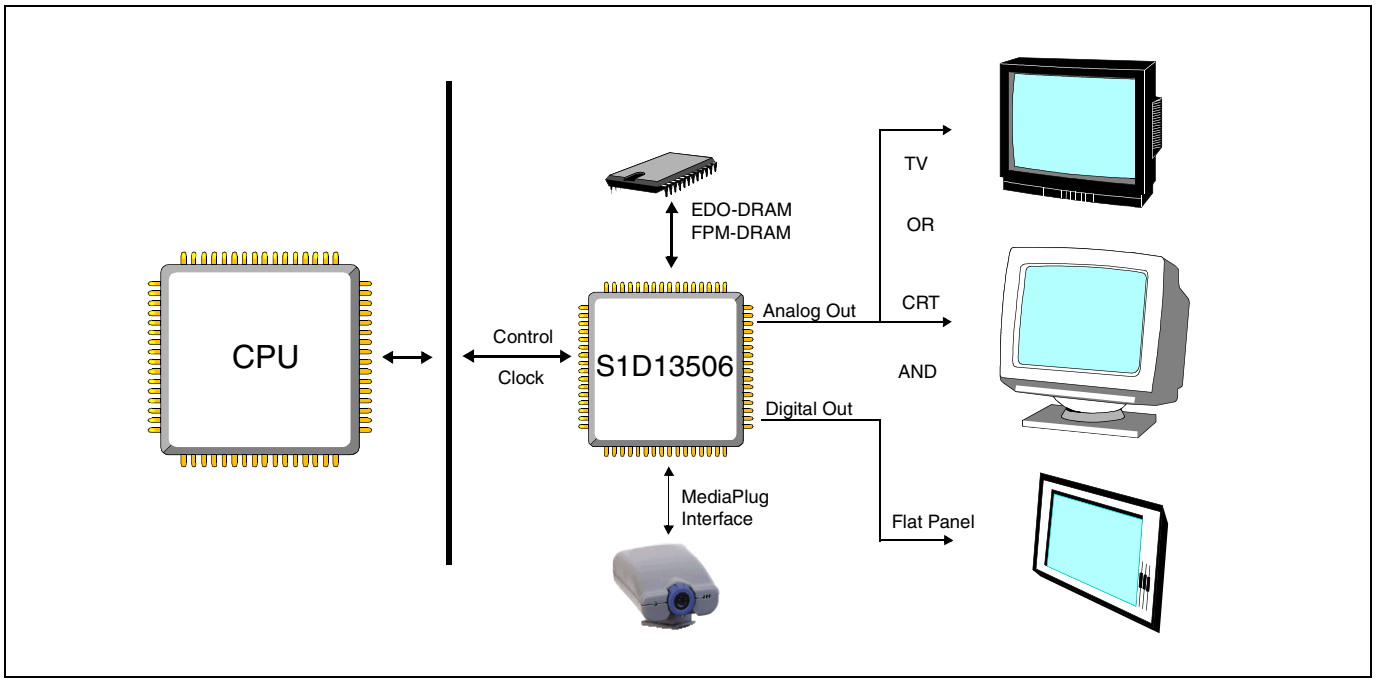
The S1D13506 is a color LCD/CRT/TV graphics controller interfacing to a wide range of CPUs and display devices. The S1D13506 architecture is designed to meet the low cost, low power requirements of the embedded markets, such as Mobile Communications, Hand-Held PC's, and Office Automation.

The S1D13506 supports multiple CPUs, all LCD panel types, CRT, TV, and additionally provides a number of differentiating features. Products requiring digital camera input can take advantage of the directly supported WINNOV VideumCam™ digital interface. EPSON Independent Simultaneous Display allows the user to configure two different images on two different displays, while the SwivelView™, Hardware Cursor, Ink Layer, and BitBLT engine offer substantial performance benefits. These features, combined with the S1D13506's Operating System independence, make it an ideal display solution for a wide variety of applications.

■ FEATURES

- 16-bit EDO-DRAM or FPM-DRAM interface.
- Memory size options:
  - 512K bytes using one 256K×16 device.
  - 2M bytes using one 1M×16 device.
- Multiple CPU interface support.
- Resolutions up to:
  - 640x480 at a color depth of 16 bpp.
  - 800x600 at a color depth of 16 bpp.
- Display Support for:
  - 4/8/16-bit passive panels.
  - 9/12 TFT/D-TFD panels.
  - 18-bit TFT/D-TFD to a depth of 64K colors.
  - CRT.
  - NTSC and PAL TV Output.
- SwivelView™: 90°, 180°, 270° hardware rotation of displayed image.
- EPSON Independent Simultaneous Display: displays different images on different displays.
- Virtual Display Support: displays images larger than the panel size through the use of panning.
- Hardware Cursor or full screen Ink Layer.
- 2D BitBLT Engine.
- WINNOV Videum® Cam digital camera interface.
- Software initiated Power Save Mode.
- Operating System Independent.

■ SYSTEM BLOCK DIAGRAM



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■ DESCRIPTION

Memory Interface
- 16-bit EDO-DRAM or FPM-DRAM interface.
- Addressable as a single linear address space.

CPU Interface
- Supports the following interfaces:
  - EPSON E0C33
  - Hitachi SH-4/SH-3
  - ISA bus
  - Motorola M68xxx
  - Motorola MPC821
  - MPU with programmable READY
  - NEC MIPS VR41xx
  - PC Card (PCMCIA)
  - Philips MIPS PR31500/PR31700
  - StrongARM (PC Card)
  - Toshiba MIPS TX39xx
- CPU Write buffer.

Display Support
- LCD Panels: 4/8/16-bit passive LCD interface.
  9/12-bit TFT/D-TFD.
  18-bit TFT/D-TFD to a depth of 64K colors.
- CRT: Embedded RAMDAC for direct analog CRT.
- TV: Composite/S-Video TV output.
  NTSC/PAL support.
  Flicker filter.
  Luminance filter.
  Chrominance filter.
- Maximum resolution of 800x600 at 16 bpp.

Power Down Modes
- Software initiated power save mode.
- LCD Power Sequencing.

Digital Video Camera Interface
- Built-in WINNOV Videum® Cam digital camera interface.

Display Modes
- 4/8/16 bit-per-pixel (bpp) support on LCD, CRT and TV.
- Up to 64 shades of gray on monochrome LCD panels using FRM and Dithering.
- Up to 64K colors on passive LCD, active matrix TFT/D-TFD, CRT and TV in 16 bpp modes.
- SwivelView™: 90°, 180°, 270° hardware rotation of displayed image.
- EPSON Independent Simultaneous Display (EISD): displays different images on different displays.
- Virtual Display Support: displays images larger than the panel size through the use of panning and scrolling.
- Hardware Cursor or full screen Ink Layer.

Acceleration
- 2D Engine including the following BitBLTs:
  - Write BLT
  - Solid Fill
  - Transparent Write BLT
  - Read BLT
  - Move BLT with Color Expansion
  - Move BLT
  - Pattern Fill
  - Transparent Move BLT
  - Color Expansion

Operating Voltage
- 2.7 volts to 5.5 volts.

Package
- 128-pin QFP15.

CONTACT YOUR SALES REPRESENTATIVE FOR THESE COMPREHENSIVE DESIGN TOOLS

- S1D13506 Technical Manual
- S5U13506 Evaluation Boards
- CPU Independent Software Utilities
- QNX® Photon Display Driver
- VXWorks® UGL and WindML Display Drivers
- Windows® CE Display Driver

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