Features and Specifications

Key product features

1. Independent programmable color depth and resolution selection for main window, PIP1, and PIP2
   - Color depth: 32 bpp (full color), 16 bpp, and 8 bpp
   - Resolution: Up to 1024 x 768 (maximum pixels and clock frequency of 65 MHz)
2. Multiple windows (main window, PIP1, and PIP2) with overlay features.
   PIP2 supports alpha blending and transparencies
3. Alpha blending (PIP2)
   Supports constant alpha value (8-bit) or dynamic alpha value (alpha map)
4. Lookup table (LUT) for gamma correction (256 x 24 bits x 2 banks)
   8-bit independent for each of RGB, main, PIP1, PIP2 selectable
5. 4-channel PWM signal output for backlight control
   3 channels for RGB (brightness can fluctuate on the time axis) and 1 channel for W (brightness is fixed on the time axis)

Product specifications

Product model number	S1D13L04
Supported resolutions	From QVGA (320×240) to XGA (1024×768)
External display buffer	External SDRAM (16-bit data bus, up to a maximum of 16 megabytes)
Display support	RGB interface (18/16-bit color TFT panel)
Display functions	Multiple window support for up to 3 layers (main, PIP1, and PIP2) Mirror and 180-degree picture rotation Alpha blending Gamma correction Pseudo color expansion Interrupt: non-display period (Vsync) maskable interrupt, delayed Vsync interrupt
CPU interface	16-bit direct/indirect interface Registers are memory-mapped - M/R# input selects between memory and register address space Serial host interface
Backlight control	4-ch PWM signal output
Operating voltage	2 power supplies PLL/OSC/COREVDD: 1.8 V and IOVDD: 3.3 V
Power consumption	Power Save mode: 12.8 mW (typical) During operation: 200 mW (typical) * Reference values when a still image is displayed on a VGA panel
GPIO (number of I/O ports)	25 max.
Package	208-pin QFP22-208 (pin pitch: 0.5 mm)