

LCD Flat Panel Processor with Built-in MCU, NTSC/PAL/SECAM Decoder, T-CON and Analog RGB Support

TW8816B3

General Description

The TW8816 is a highly integrated multi-purpose LCD display solution for both analog and digital panels. To reduce BOM cost, TW8816 integrates an 8-bit MCU and a CCFL or LED controller. Through multiple input ports, TW8816 can directly display video and graphic content from a variety of devices including TV Tuners, DVD players, back-up cameras, DTV/DMB receivers and navigation/GPS receivers.

Features

- Supports analog inputs including CVBS, S-Video, YPbPr & RGB signals and digital inputs including 24 bit RGB & 8/16/24 bit YCbCr. Interlaced and progressive ITU 656 inputs are supported.
- Supports both digital & analog panels up to WXGA resolutions
- Integrates cost saving features including LED controller, CCFL controller, programmable panel offset control and on-chip 8 bit 8051 MCU with SPI interface
- Embedded Image Enhancement
 - Programmable CTI, hue, brightness, saturation, contrast & sharpness control
 - Black/White Stretch
 - Programmable favorite color enhancement- up to three colors
 - Programmable Gamma Correction tables

Analog Video Decoder

- NTSC (M, 4.43) and PAL (B, D, G, H, I, M, N, N combination), PAL (60), SECAM with automatic format detection
- Advanced synchronization processing for VCR trick play signal
- Three 10-bit ADCs and analog clamping circuit.
- Built-in analog anti-aliasing filter
- Fully programmable static gain or automatic gain control for the Y or CVBS channel
- Programmable white peak control for the Y or CVBS channel
- Software selectable analog inputs allows any of the following
 - Up to 4 composite video
 - UP to 3 S-Video
 - Up to 2 analog YPbPr and RGB
- 4-H adaptive comb filter Y/C separation
- PAL delay line for color phase error correction
- BOTTOM VIEW Digital PLL for both color and horizontal locking
- Programmable hue, brightness, saturation, contrast, sharpness, Gamma control, and noise suppression
- Automatic color control and color killer

Analog RGB / YPbPr Input

- Built-in sync processor for SOG support
- Built-in Line-locked PLL supporting up to 108MHz
- Built-in input measurement function

Digital Interface

- Allows connection to 8/16/24-bit RGB/YCbCr
- Support both interlaced and progressive ITU 656.

TFT Panel Support

- Supports a variety of Digital single pixel TFT panels and Analog active matrix TFT panels
- Supports digital TTL panel up to WXGA(1280 x 768), 100MHz and analog panel up to WQVGA (480 x 234), 20 MHz
- Supports 3, 4, 6 or 8 bits per pixel format

Built-in Microcontroller

- Supports external SPI Interface and I2C Master interface with GPIO
- Supports 8 MCU GPIO, 1 UART (up to 9600bps)
- Support IR or interrupt with GPIO

TW8816B3

CCFL and LED Controller

- Single channel CCFL controller based on push-pull architecture
- Lamp fault monitoring- Lamp Open, Lamp Over-current, Failure to Strike and Over-voltage
- Programmable Lamp Frequency to move EMI spurs out of band
- Analog or digital brightness control. 300:1 dimming range with the digital brightness control.
- Low power stand-by mode
- Fine dimming control step (128 steps)

OSD

- Built-in OSD controller with integrated character 202 ROM fonts, programmable 227 RAM fonts and 512 characters display RAM.
- Multi-window (4) OSD support with color pallet
- 16 font & window colors available
- Support OSD overlay with alpha blending

Image Enhancement

- Programmable hue, brightness, saturation, and contrast controls.
- Sharpness control with vertical peaking
- Programmable CTI control
- Built-in de-interlacing engine
- Independent RGB gain and offset controls
- Panorama / Water-glass scaling
- YCbCr hue adjustment
- Programmable Gamma correction tables
- Programmable favorite color enhancement

Power Management

- Supports Panel power sequencing.
- Supports DPMS for monitor power management.
- 1.8 / 3.3 V operation

Timing Controller (TCON)

- Support programmable interface signals for control
- Column (source) driver / row (gate) driver

Miscellaneous

- Supports 2-wire serial bus interface
- Spread spectrum PLL
- Low-speed ADC for KEY scan
- Programmable panel VCOM offset control
- 5V tolerant I/O
- Power-down mode
- DFT
- Typical power consumption < 500mW
- Single 27MHz crystal

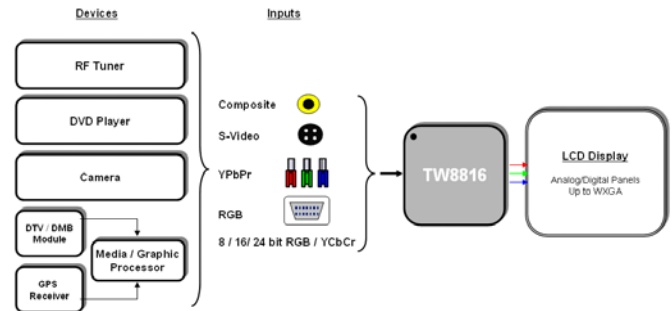


FIGURE 1. TYPICAL DIAGRAM

For additional products, see www.intersil.com/en/products.html

Intersil products are manufactured, assembled and tested utilizing ISO9001 quality systems as noted in the quality certifications found at www.intersil.com/en/support/qualandreliability.html

Intersil products are sold by description only. Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see www.intersil.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Intersil:](#)

[TW8816-BB3-GR](#) [TW8816-BB3-GRT](#) [TW8816-LB3-CR](#) [TW8816-LB3-GR](#) [TW8816-LB3-GRS](#) [TW8816-LB3-GRST](#)
[TW8816-LB3-GRT](#)