

TW8817

Low cost, highly integrated LCD controller for digital LCD panels

The TW8817 is a highly integrated low cost TFT flat panel controller supporting digital panels. To reduce BOM cost, TW8817 integrates a SECAM/NTSC/PAL video decoder supporting CVBS & S-Video inputs, an 8-bit MCU, a CCFL controller and a LED controller. The TW8817 integrates a high quality NTSC/PAL/SECAM 2D video decoder and a 2D De-interlacer/Scaler.

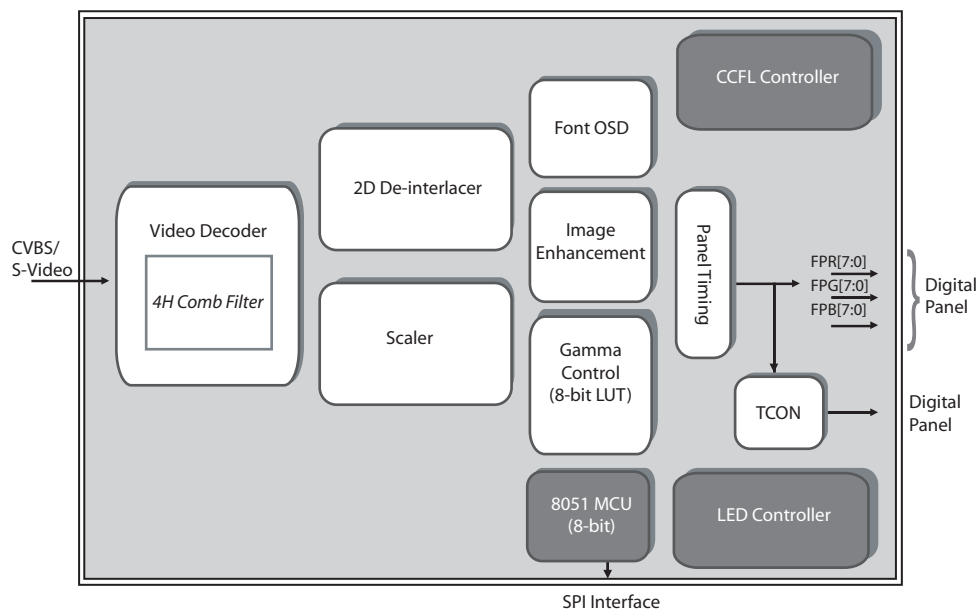
Target Applications

- Navigation + DVD + TV
- Back up Camera
- Rear Seat Entertainment
- Car TV
- Portable DVD
- PMP
- Portable TV
- Door Phone
- Photo Frame
- DMB TV
- Baby Monitor
- Home Audio
- In Flight Entertainment

Key Features

- Supports analog inputs including CVBS & S-Video signals
- Supports digital panel up to SVGA resolution
- Integrated 8-bit 8051 MCU, CCFL and LED controller
- Built-in 8 color font based OSD with ~200 ROM & 75 RAM fonts. Supports Multi-color fonts by combining 3 single color fonts
- Embedded Image Enhancement
 - Programmable CTI, hue, brightness, saturation, contrast & sharpness control
 - Black/White Stretch
 - Programmable favorite color enhancement- up to three colors (Skin, Grass & Sky)
 - Programmable Gamma Correction table

TW8817 Functional Block Diagram



Order Information

Part #	Name	Description	Pin Count	Body Size
TW8817	TQFP 80	Thin Quad Flat Package	80	12 x 12 mm ²

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Analog Video Decoder

- NTSC (M, 4.34) 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
- Two 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 combinations:
 - 2 composite video
 - 1 S-Video
- 4-H adaptive comb filter Y/C separation
- PAL delay line for color phase error correction
- 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
- Detection of level of copy protection according to Macrovision standard

TFT Panel Support

- Supports a wide variety of Digital single pixel active matrix TFT panels
- Supports digital TTL panel up to SVGA
- Supports 3, 4, and 6 bits per pixel format

Font OSD

- Built-in Font OSD with 202 ROM and programmable 227 RAM fonts. Supports Multi-color fonts by combining 3 single color fonts
- Multi-window OSD support with color pallet
- Support OSD overlay with alpha blending

Built-in Microcontroller

- Support external SPI Interface
- Support I2C Master interface with GPIO
- Support 2 LED signal interface with GPIO
- Support UART interface with GPIO
- Support IR or interrupt with GPIO

LED Controller

- Boost-up
- DC and PWM Dimming Control
- Built-in Open LED Protection
- 1MHz fixed Switching Frequency
- Resistor-programmable LED Current

CCFL 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 vdimming range with the digital brightness control
- Low power stand-by mode

Image Processing & Enhancement

- Built-in 2D de-interlacing engine
- Built-in high quality scalar
- Programmable hue, brightness, saturation, contrast
- Sharpness control with vertical peaking
- Programmable color transient improvement control
- Panorama / Water-glass scaling
- Programmable Gamma correction tables
- Black/White Stretch
- 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
- Temperature rating: -40 C to +85 C
- Spread spectrum PLL
- Low-speed ADC for KEY scan
- Programmable panel VCOM offset control
- 5V tolerant I/O
- Power-down mode
- Single 27MHz crystal