



TECHWELL
DISPLAY



Automotive Display ICs

TW8833

Cost-effective, highly integrated LCD controller for analog LCD panels

The TW8833 is a highly integrated cost-effective LCD controller supporting analog LCD panels. TW8833 integrates a high quality NTSC/PAL/SECAM 2D comb video decoder, 2D de-interlacer, and an improved H/V scaling engine. Additional features include a robust font-based OSD engine, independent mirroring functionality for the scaler and OSD, serial RGB output, and an LED backlight controller.

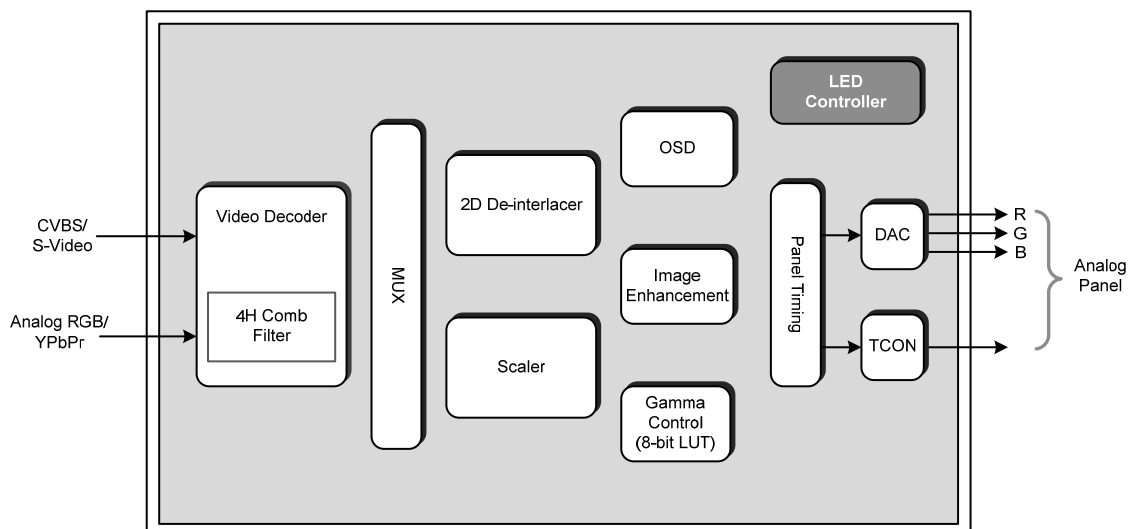
Target Applications

- Navigation + DVD + TV
- Back up Camera
- Rear Seat Entertainment
- Car TV
- Portable DVD
- PMP / PND / Portable TV
- Door Phone
- Photo Frame
- DMB TV
- Baby Monitor
- Home Automation

Key Features

- Supports analog inputs including CVBS, S-Video, and 480i Component (YPbPr)
- Drives analog panels up to WQVGA resolution
 - Analog TCON with delta RGB support
- Built-in font-based OSD with 256 programmable fonts and a 384 character display RAM
- Integrated LED backlight controller (single string)
- Supports VCOM-DC, VCOM-AC and spread spectrum clock
- Independent mirror function for the scaler and the OSD
- Embedded Image Enhancement
 - Programmable CTI, hue, brightness, saturation, contrast & sharpness control
 - Black/White Stretch
 - Programmable Gamma Correction table

TW8833 Functional Block Diagram



TW8833

Advanced LCD controller with on-chip MCU
and 65K color 16-bit OSD support

Analog Video Decoder

- NTSC (M, 4.34), PAL (B, D, G, H, I, M, N combination)
PAL (60), SECAM with automatic format detection
- 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
 - YPbPr (480i)
- 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 analog active matrix TFT panels
- Supports analog panels up to WQVGA (480 x 234), 20MHz

Font OSD

- Built-in Font OSD with 256 programmable fonts and 384 character display RAM. Supports Multi-color fonts by combining 3 single color fonts
- Multi-window OSD support with color pallet
- Support OSD overlay with alpha blending

Image Processing & Enhancement

- Built-in 2D de-interlacing engine
- Improved high quality H/V scaler engine
- Mirror function (scaler and OSD independently)
- 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

LED Controller

- Boost-up
- DC and PWM Dimming Control
- Built-in Open LED Protection

Timing Controller (TCON)

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

Miscellaneous

- Supports 2-wire serial bus interface
- Spread spectrum clock support
- VCOM-DC, VCOM-AC, DC-DC converter
- Programmable panel VCOM offset control
- 5V tolerant I/O
- Power-down mode
- Single 27MHz crystal
- Triple 5V DAC
- 1.8 / 3.3V operation
- Temperature rating: -40 C to +85 C
- 48-pin QFN package

About Techwell

Techwell is a fabless semiconductor company that designs, markets and sells mixed signal integrated circuits in the security surveillance, automotive infotainment, and consumer markets. Founded in 1997, we currently have over 200 employees and are headquartered in San Jose, California, with additional R&D and sales activities in South Korea, Japan, Taiwan, and China. NASDAQ: TWLL