



**TECHWELL
DISPLAY**



Automotive Display ICs

TW8810

3D Decoder based on LCD controller
for Sharp™ dual-view digital panel

The TW8810 is a highly integrated LCD TFT flat panel controller for Sharp™ dual-view LCD panel primarily targeting front console and rear-seat automotive infotainment applications. The TW8810 integrates a high quality NTSC/PAL/SECAM 3D video decoder and a 2D de-interlacer with low angle compensation. In addition, built-in dual-view mixer enables direct support for Sharp™ dual-view panel.

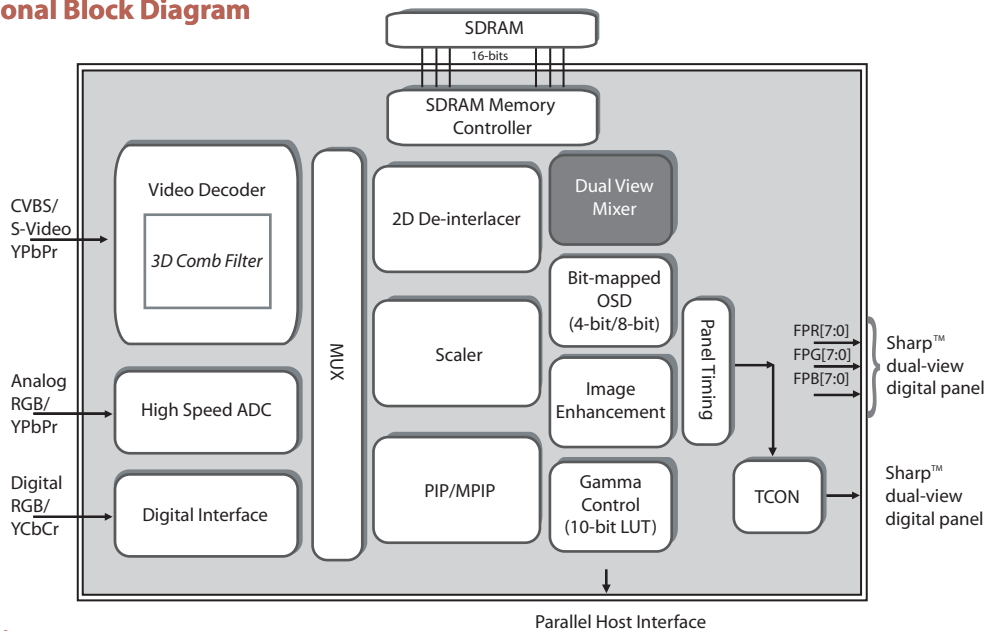
Target Applications

- Sharp™ Dual View Display based applications only
- Navigation + DVD + TV
- Back up Camera
- Rear Seat Entertainment
- Car TV
- Portable DVD player
- Portable TV
- In Flight Entertainment

Key Features

- Supports analog inputs including CVBS, S-Video, YPbPr & RGB signals and digital inputs including 8/16/24 bit RGB/YCbCr. Interlaced and progressive ITU 656 inputs are supported
- Supports Sharp™ dual-view digital panel with resolutions up to WVGA
- Integrated low cost 16-bit SDRAM memory controller supporting up to 8MB SDRAM external memory
- Supports PIP/MPIP
- Built-in dual-view mixer block to support Sharp™ dual-view digital panel
- Built-in dual window bit-mapped (4/8-bits) OSD
- Supports external 18-bit OSD with alpha blending control
- PIP Overlay
- 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 tables

TW8810 Functional Block Diagram



Order Information

Part #	Name	Description	Pin Count	Body Size
TW8810	PQFP 208	Plastic Quad Flat Package	208	28 x 28 mm ^{^2}

3D 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
- Three 10-bit ADCs and analog clamping circuit.
- 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:
 - Up to 4 composite video
 - Up to 2 S-Video
 - Up to 1 YPbPr
- High quality motion adaptive 3D comb filter for both NTSC and PAL with concurrent 3D noise reduction
- PAL delay line for color phase error correction
- Image enhancement with 2D dynamic peaking and CTI
- Digital sub-carrier PLL for accurate color decoding
- Digital horizontal PLL and Advanced synchronization processing for VCR playback and weak signal performance
- Programmable hue, brightness, saturation, contrast, sharpness
- High quality horizontal and vertical filtered down scaling with arbitrary scale down ratio
- Detection of level of copy protection according to Macrovision standard
- Supports YPbPr input up to 1080i with sub-sampled resolution
- Support automatic standard detection for YPbPr input

Analog RGB Inputs

- Triple high speed 8-bit ADCs with clamping and programmable gain amplifier.
- Up to two independent RGB / YPbPr channels with corresponding SOG
- Built-in line locked PLL with sync separator
- Allows high resolution components inputs like DTV 480i, 480p, 576i, 576p, 720p & 1080i
- Supports PC inputs up to SXGA

8/16/24-bit YCbCr Inputs

- Allows connection with alternative Video and PC Graphics inputs
- Support both 656 and 601 video formats
- Allows connection to HDMI receiver

TFT Panel Support

- Supports Sharp™ dual-view panel up to WVGA
- Supports 3, 4, 6 or 8 bits per pixel up to 16.8 million colors with built-in dithering engine
- Support single channel TTL panel
- Built-in programmable timing controller

Miscellaneous

- Power-down mode
- Temperature rating: -40 C to +85 C
- Single 27MHz crystal
- 208-pin PQFP package

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Font OSD

- Dual window 4-bit/8-bit bitmapped OSD
- Built-in OSD controller with BitBlit Engine
- Supports variety functions included like blinking, transparency and blending
- Supports External 18-bit OSD with external alpha blending control
- Support OSD compression

PIP Function

- PIP with variable sub window size
- Support PIP alpha blending
- POP and Multiple PIP support
- Built-in high quality down scaling

Image Processing & Enhancement

- Built-in 2D de-interlacing engine with proprietary low angle compensation circuit for smooth video rendering
- Built-in high quality scaler with nonlinear scaling support- Panorama & Water-glass
- Programmable hue, brightness, saturation, contrast
- Sharpness control with vertical peaking
- Programmable color transient improvement control
- Supports programmable cropping of input video and graphics
- Independent RGB gain and offset controls
- DTV hue adjustment
- Programmable Gamma correction for each color
- Operated in Frame Sync mode only
- Black/White Stretch
- Programmable favorite color enhancement

SDRAM (up to 8MB)

- Support 16-bit bus width SDRAM

Host Interface

- Supports 2-wire serial bus interface
- Supports 8Bits Parallel Host Interface

Clock Generation

- Frequency synthesizer with spread spectrum generate memory and display clocks
- Spread spectrum profile based on triangular modulation with center spread
- Modulation frequency and spread width can be selectable

Power Management

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