intersil™

LCD Video Processor with Built-in Decoder, MCU, OSD, TCON and Analog RGB Input Support

TW8835

The TW8835 incorporates many of the features required to create multi-purpose in-car LCD display system in a single package. It integrates a high quality 2D comb NTSC/PAL/SECAM video decoder, triple high speed RGB ADCs, high quality scaler, versatile OSD, and high performance MCU. Its image video processing capability includes arbitrary scaling, panoramic scaling, image mirroring, image adjustment and enhancement, Black and White Stretch, etc. On the input side, it supports a rich combination of CVBS, S-video, component video, analog RGB as well as digital YCbCr/RGB inputs. On the output side, it supports a variety of digital panel types with its built-in timing controller. The integration of additional touch screen controller, LED driver controller, PWM and MCU makes this a versatile solution for many portable applications.

Applications

- In-car display
- Portable DVD and DVRs players
- Portable media player

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

- 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 composite, S-video, analog YPbPr or RGB
- High quality adaptive 2D comb filter for both NTSC and PAL inputs
- 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

Analog RGB Inputs

- Triple high speed 10-bit ADCs with clamping and programmable gain amplifier
- SOG and H/V sync support for YPbPr or RGB input
- Built-in line locked PLL with sync separator
- Supports input resolution up to 1080p

Digital Inputs Support

- Supports both BT656 and 601 video formats
- Supports YCbCr/RGB 24-bit input
- Supports RGB 565 + BT 656 at the same time
- Supports input resolution up to 1080p

TFT Panel Support

- Built-in programmable timing controller
- Supports 3, 4, 6 or 8 bits per pixel up to 16.8 million colors with built-in dithering engine
- Supports digital panel up to XGA resolution
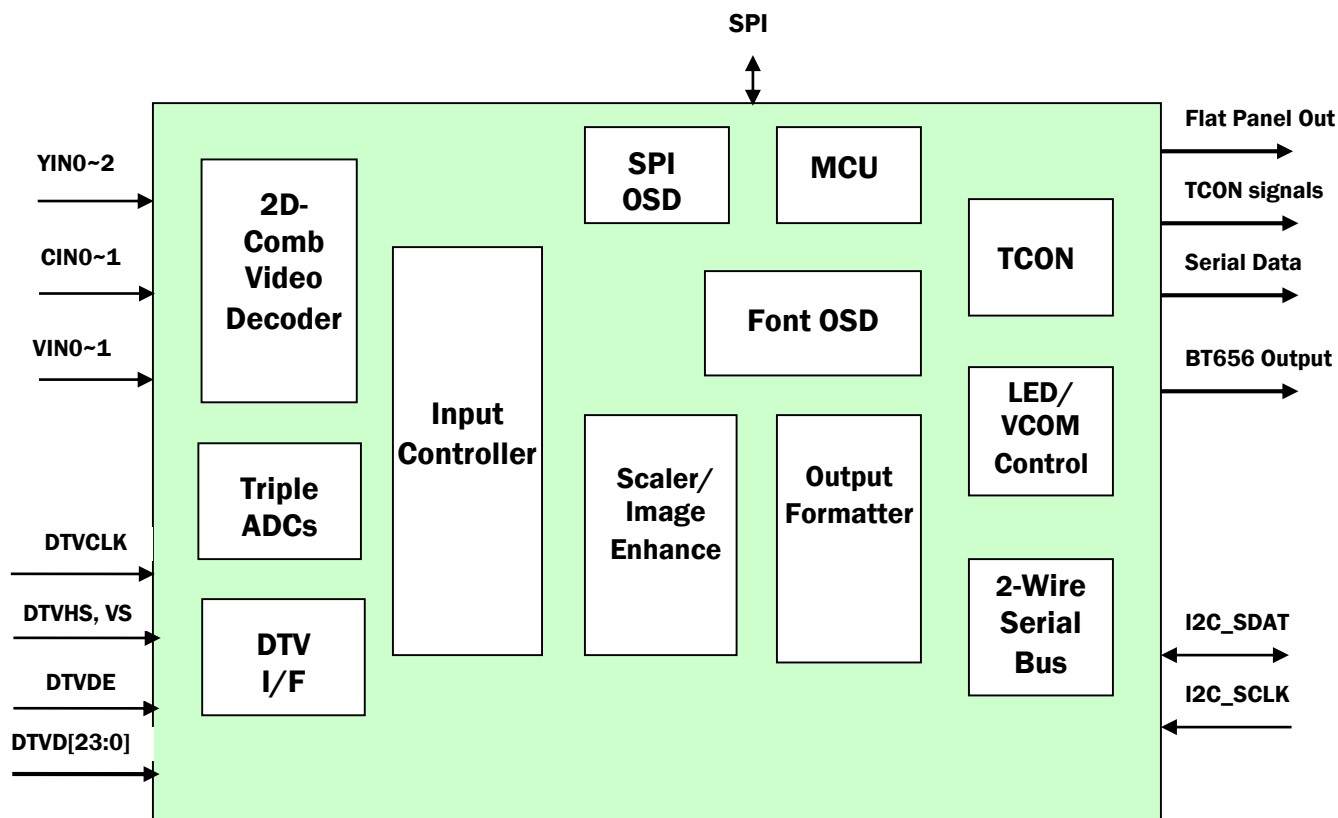- Supports Serial (8-bit) RGB panel

Font Based On Screen Display

- Four window font OSD with bordering / shadow
- 10KB programmable font RAM and 512 display RAM
- 1/2/3/4 bits/pixel
- Supports variable width (12/16), height (2~32)

SPI Flash Based On Screen Display

- Nine bitmap based OSD windows through SPI
- Supports 4/6/8 bits/pixel
- Supports RLE decompression for one window
- Supports overlapping between windows

TW8835 Functional Block Diagram

SPI

YIN0~2

CIN0~1

VIN0~1

DTVCLK

DTVHS, VS

DTVDE

DTVD[23:0]

2D-
Comb
Video
Decoder

Triple
ADCs

DTV
I/F

Input
Controller

SPI
OSD

MCU

Font OSD

Scaler/
Image
Enhance

Output
Formatter

TCON

LED/
VCOM
Control

2-Wire
Serial
Bus

Flat Panel Out

TCON signals

Serial Data

BT656 Output

I2C_SDAT

I2C_SCLK

Mouser Electronics

Authorized Distributor

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