TW9992

Low Power NTSC/PAL Video Decoder with Differential CVBS Inputs and MIPI-CSI2 Output Interface

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The TW9992 is a low power NTSC/PAL analog video decoder that is designed for automotive applications. It supports single-ended, differential and pseudo differential composite video inputs. Integrated short-to-battery and short-to-ground detection, advanced image enhancement capabilities such as the programmable Automatic Contrast Adjustment (ACA) and the MIPI-CSI2 output interface make the TW9992 an ideal solution for demanding automotive camera applications.

Features

Analog Video Decoder

- Software selectable analog input control allows for combinations of single-ended CVBS, and differential CVBS
- Built-in analog anti-alias filter
- Two 10-bit ADCs and analog clamping circuit
- Fully programmable static gain or automatic gain control for the Y channel
- Programmable white peak control for the Y channel
- 4-H adaptive comb filter Y/C separation
- PAL delay line for color phase error correction
- Digital subcarrier PLL for accurate color decoding
- Digital horizontal PLL for synchronization processing and pixel sampling
- Advanced synchronization processing and sync detection for handling nonstandard and weak signal
- Automatic color control and color killer
- Chroma IF compensation
- VBI slicer supporting industrial standard data services
- VBI data passthrough, raw ADC data output
- Programmable output cropping

Video Processing

- Automatic Contrast Adjustment (ACA)
- RGB565
- Programmable hue, brightness, saturation, contrast and sharpness.
- Image enhancement with peaking and CTI

MIPI Output

- MIPI 1.1 compliant unidirectional output format
- YUV 422 or RGB565 output format

Digital Output

- Output voltage 1.8V to 3.3V with 3.3V tolerance

Miscellaneous

- Low power consumption: 100mW typical
- Power save and Power-down mode
- Short-to-battery detection test
- Short-to-ground detection test
- Two-wire MPU serial bus interface
- Supports real time control interface
- Single 27MHz crystal for all operations
- Supports 24.54MHz and 29.5MHz crystal for high resolution square pixel format decoding
- 3.3V tolerant I/O
- 1.8V/3.3V power supply
- 32 Ld QFN (WQFN with wettable flanks)
- TW9992AT-NA1-GE is AEC-Q100 qualified

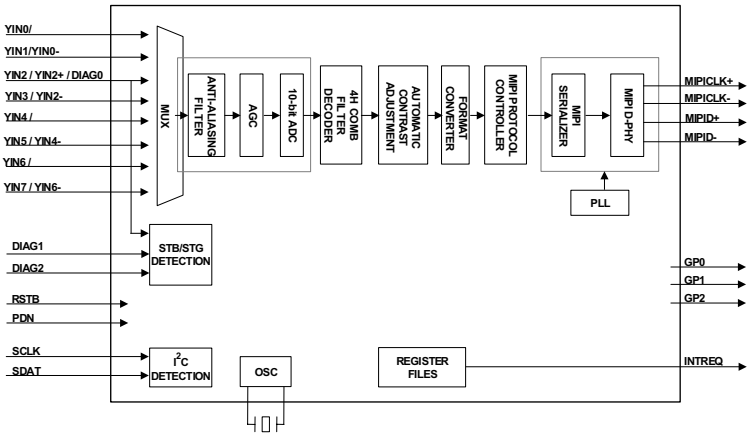

FIGURE 1. TW9992 FUNCTIONAL BLOCK DIAGRAM