TW9909

5x10-Bit Multi-Standard 3D Comb Filter Video Processor with SCART and RGB Mixing Support

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Techwell's TW9909 is a high performance NTSC/PAL/SECAM multi-standard 10-bit video decoder plus SCART/YCbCr component inputs and analog RGB overlay support designed for multimedia applications.

TW9909 uses the mixed-signal 2.5V/3.3V CMOS technology to provide a low-cost and low-power integrated solution. Minimum external components are required due to its integrated analog front-end containing anti-aliasing filter, AGC, clamping, and five 10-bit high speed ADCs. For composite inputs, an adaptive comb filter and luma/chroma processing produce exceptionally high quality pictures using proprietary techniques. A high quality internal scaling engine offers arbitrarily filtered down scaling of the output video. Its VBI capability is enhanced with built-in VBI slicer, filter, FIFO and VBI data pass-through function to support common data services.

Features

The main features of the TW9909 are

- NTSC (M, 4.43) and PAL (B, D, G, H, I, M, N, N combination), PAL (60), SECAM support with automatic format detection
- Advanced synchronization processing for VCR trick mode and weak signal
- Software selectable 14 analog input terminals allow maximum flexibility:
- Up to five composite, or two S-Video or two YCbCr inputs
- Up to two SCART RGB inputs with FB.
- Five 10-bit ADCs with clamping circuit and anti-aliasing filter built-in
- Fully programmable static or automatic gain control for the Y and G(Y) channel
- Programmable white peak control for the Y channel
- High quality analog RGB/YCbCr mixing by Fast Blanking signal
- Adaptive 4H comb filter for the best image quality
- PAL delay line for color phase error correction
- Digital sub-carrier PLL for accurate color decoding
- Digital Horizontal PLL and advanced synchronization processing for non-standard video signals
- Programmable hue, brightness, saturation, contrast, and sharpness
- Blue stretch function
- Image enhancement with 2D peaking and CTI.
- Automatic color control and color killer
- IF compensation filter
- Detection of level of copy protection according to Macrovision standard
- YCbCr input supports 480i/576i and sub-sampled 480p/576p with auto-detection.

Video Output

- Support both free-running and line-locked clock outputs
- Programmable output cropping
- High quality horizontal filtered scaling with arbitrary scale down ratio
- 10-bit or 20-bit output interface
- ITU-R 601 or ITU-R 656 compatible output YCbCr(4:2:2) output format
- VBI slicer supporting industrial standard data services with data packet filter capability
- Built-in VBI FIFO for convenient access through host interface
- VBI data pass through, raw ADC data for Intercast™
- Field locked audio clock generator

Miscellaneous

- Two wire MPU serial bus interface
- Power-down mode
- Typical power consumption 0.4W
- Single 27MHz crystal for all standards
- Supports 24.54MHz and 29.5MHz crystal for high quality square pixel format
- 3.3V / 5V tolerant I/O
- 2.5V / 3.3V Power Supply
- 80 pin TQFP package

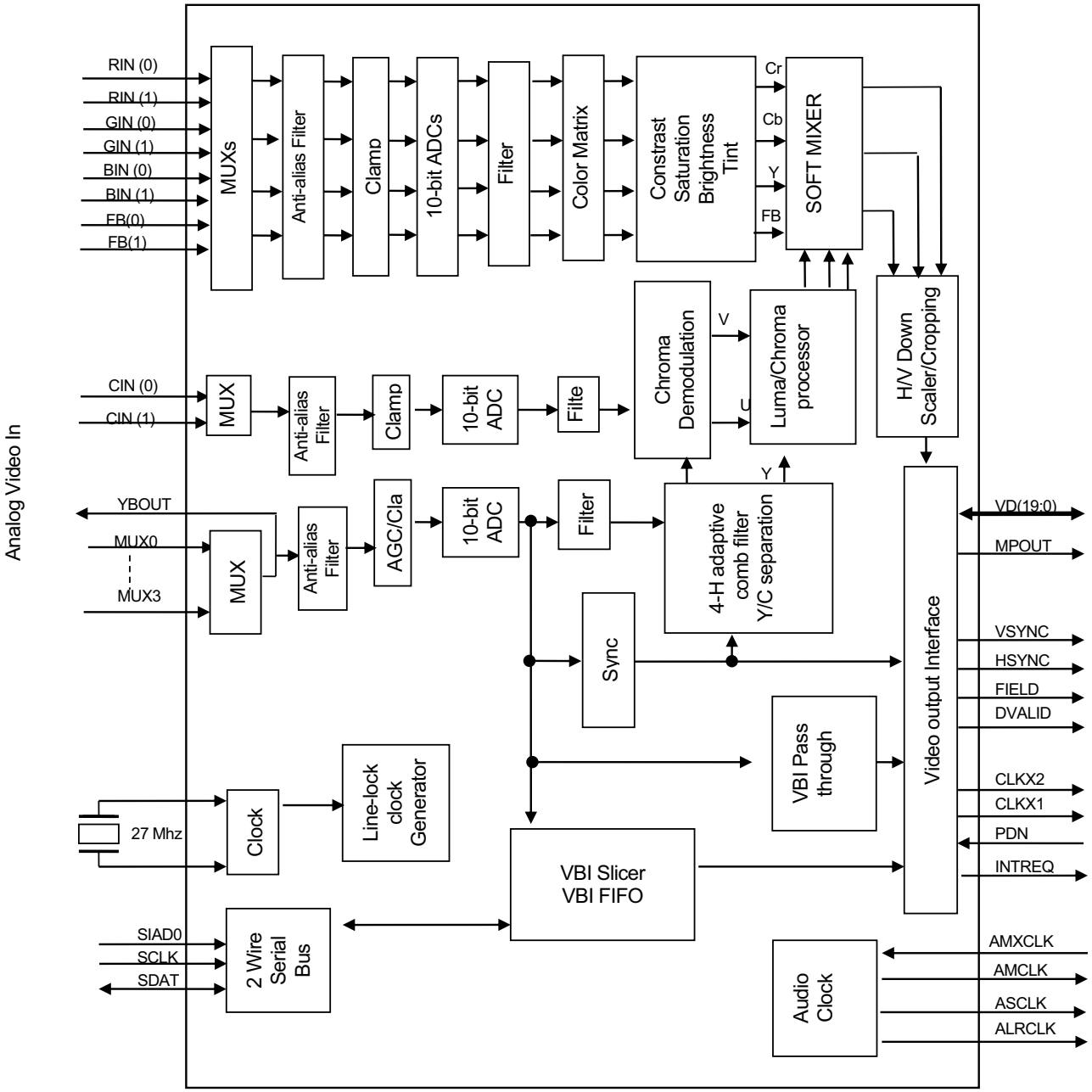


FIGURE 1. TW9909 BLOCK DIAGRAM

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