



TW6816

**4-CH Audio/Video Decoders
with 66MHz PCI Interface**

Target Application

- PCI DVR Card

The TW6816 is a highly integrated single-chip solution that supports multi-channel real time video and audio capture via PCI interface for PC DVR applications. It contains four high quality NTSC/PAL/SECAM video decoder that converts analog composite video signal to digital component YCbCr data, and utilizes an adaptive 4H comb filter for separating luminance and chrominance to reduce cross noise artifacts. TW6816 contains a high performance proprietary DMA controller that fully utilizes the PCI bandwidth, enabling it to transfer video and audio data at optimal throughput rate.

TW6816 has the versatility to support a wide variety of video applications, including decoding and transferring 4 channel real-time D1 video, or 16 channel non real-time D1 video, and supporting multiple video display formats such as D1, half D1 and CIF.

Video Decoder

- NTSC (M, 4.43) and PAL (B, D, G, H, I, M, N, N combination), PAL (60), SECAM support with automatic format detection
- Software selectable analog inputs allows any of 4 CVBS per one video ADC
- Four 10-bit ADCs and analog clamping circuit for CVBS input
- Fully programmable static gain or automatic gain control for the Y channel
- Programmable white peak control for CVBS channel
- 4-H adaptive comb filter Y/C separation
- PAL delay line for color phase error correction
- Image enhancement with 2D peaking and CTI
- Digital sub-carrier PLL for accurate color decoding
- Digital Horizontal PLL for synchronization processing and pixel sampling
- Advanced synchronization processing and sync detection for handling non-standard and weak signal
- 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
- Programmable output cropping

Video Scaler

- High quality horizontal filtered scaling with arbitrary scale down ratio
- Phase accuracy better than 1/32 pixel
- Selectable anti-alias filter

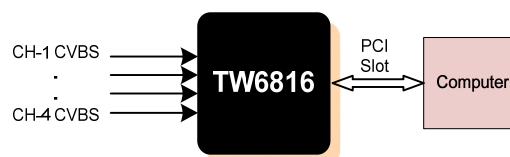
Audio Capture

- Four 10-bit ADC for analog audio digitizing.
- Programmable Sampling rate.

PCI

- 66MHz/33MHz PCI with M66EN interface
- PCI Rev. 2.2-3.0 compliant
- ACPI support
- Integrated Video/Audio DMA controller
- Support both selectable one real-time video and 4x switching non real-time video

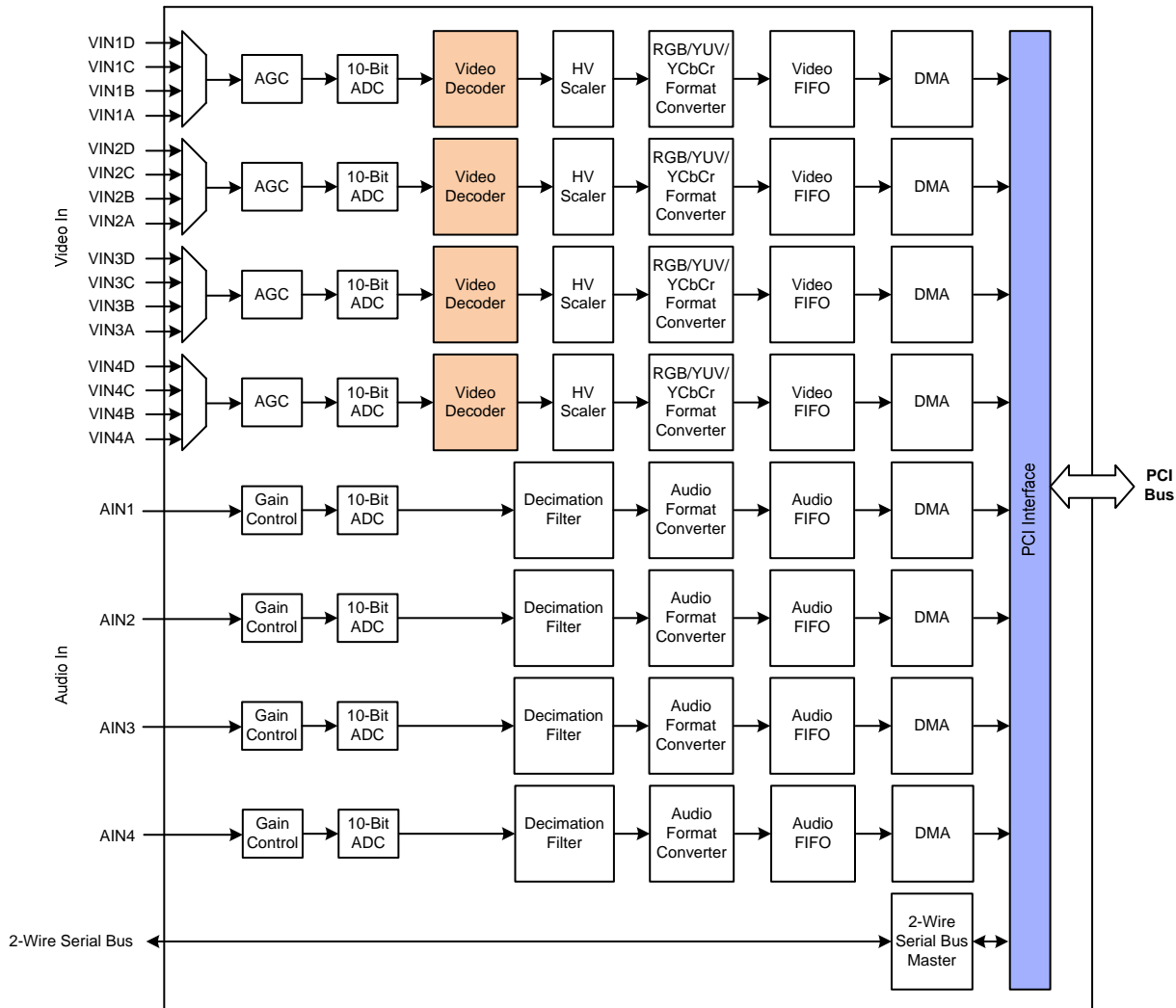
TW6816 Typical System Solution Diagram



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TW6816 Block Diagram



Miscellaneous

- Support mode: RGB32/24/16/15, YUY2, Y41P, Y411, UYVY and YVYU
- 400Kbps Two-wire MPU serial bus Master interface
- Power-down mode
- Single 27MHz crystal for all standards
- 5V tolerant I/O
- 1.8 V power supply
- 100-pin LQFP package

About Techwell

Techwell is a semiconductor company that designs, markets and sells mixed signal integrated circuits for multiple video applications in the security surveillance, automotive and consumer electronics markets. Techwell designs both general purpose and application specific products that enable the conversion of analog video signals to digital form and perform advanced digital video processing to facilitate the display, storage and transport of video content. Headquartered in San Jose, CA, Techwell currently has over 200 employees in the U.S., Korea, Taiwan, China and Japan.

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