

VW2005 MPEG-1, -2, -4 Audio/Video/System Encoder Chip

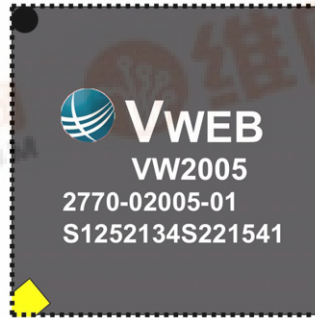
Product Brief

The VW2005 is a real-time MPEG-1, -2 and -4 audio/video encoder chip that fully complies with the MPEG and H.263 standards. The VW2005 accepts uncompressed ITU-R.BT-656 video and I²S audio, compresses the video into MPEG-1, -2, -4 or H.263 format, compresses the audio into MPEG-1 Layer I, Layer II, MP3, AAC* or AC-3 audio format, and outputs them as transport stream for network applications or program streams for storage applications. The VW2005 also support uncompressed video pass through the PCI bus for real time preview function.

Feature List

Video Encoding

- MPEG-1
- MPEG-2 MP@ML
- MPEG-4 Simple Profile @ L1, L2 and L3, with extensions to full D1 and interlaced video
- H.263 baseline
- Adaptive field/frame motion estimation and DCT type
- 4:2:2 to 4:2:0 conversion
- Scene change detection
- Inverse telecine (3:2 pulldown)
- Motion estimation search range +/- 127 pels horizontal and +/- 63 pels vertical, with half-pel accuracy
- 8-tap horiz. filter and 4-tap vert. filter
- Extraction of VBI data



- Private and user data insertions from VBI or host/PCI port
- Adjustable controls
- Fixed frame rates of 29.97 (NTSC) or 25 (PAL) frames per second, or variable frame rates in low delay mode
- Constant or variable bit-rate from 64 Kb/s to 15 Mb/s
- Horizontal sizes of 176, 180, 320, 352, 360, 480, 528, 544, 640, 704 and 720 pixels
- Vertical sizes of 120, 144, 240, 288, 480, 512, 576 lines (NTSC) or 144, 288, 576, 608 lines (PAL)
- Programmable GOP structure and length: I, IP, IBP and IBBP
- Programmable low delay mode

Audio Encoding

- MPEG-1 Layer I, and II
- MPEG-1 Layer III (MP3)
- 2-channel consumer grade AAC¹
- 2-channel consumer grade AC-3
- G.711, G.732.1¹, G.726, G.729

- Sampling frequencies: 8, 16, 22.05, 24, 32, 44.1 and 48 KHz.
- Bits per channel: 16, 20, 24, 32

Multiplexing

Input

- User data or VBI data insertion

Output

- MPEG-1 System Stream
- MPEG-2 PS or TS
- MPEG-4 Encapsulated in MPEG-2 TS and PS
- PES and ES output

Interfaces

Host Interfaces

- PCI interface: 32 bits, 33 MHz
- 16-bit Motorola-style interface
- 16-bit Intel-style interface

System Interfaces

- GPIO (general purpose input/output): 12 pins
- ICI (inter-device communications Interface, similar to Philips I²C master mode only)
- 32-bit SDRAM memory interface, using 2Mx32 SDRAM
- Minimum SDRAM requirement: 8 MB
- ROM Interface

A/V Input Interfaces

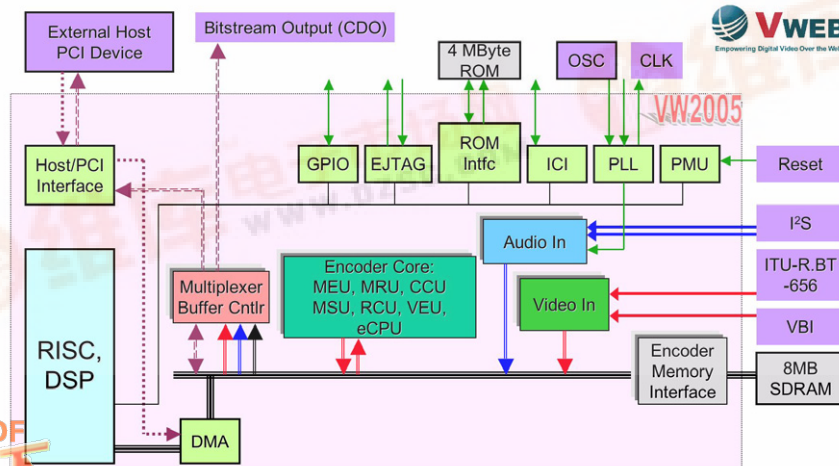
Uncompressed Input

- Video: 8-bit ITU-R.BT-656
- Audio: I²S (2 each)
- VBI, user data: 8-bit video input

A/V Output Interfaces

Compressed Output

- 8-bit / 1-bit compressed data output interface (CDO)
- Host/PCI interface
- Uncompress video out to PCI interface



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General System Facts

- 162 MHz RISC processor with DSP extensions for multiplexing and audio encoding
- 365-pin PBGA package; physical dimensions: 27 mm by 27mm
- Input voltages:
 - 1.8 V internal
 - 3.3 V I/O

Applications

The VW2005 is ideally suited for the following consumer applications:

- Home gateway servers
- PC capture devices for video capture, content creation, and display
- Personal video recorder (PVR)
- VCD, Super-VCD and DVD format for publishing
- Camcorders and network cameras

In addition, the VW2005 is suited for the following network applications:

- IP set-top box for B2B applications
- Streaming video distribution over DSL, cable, ethernet, fiber and wireless networks
- Video conferencing
- Security / surveillance
- Video-on-demand servers

Features and Benefits

Saves money and power

- Uses 8 MB of external SDRAM
- Uses 32-bit SDRAM interface
- Proprietary motion estimation algorithm
- MPEG-4 compression reduces storage requirement 100% compared to MPEG-2 compression

Reduces time to market

- MPEG-1, -2, -4 and H.263 with A/V/S layer fully integrated on a single silicon

Superior video quality

- The rate control algorithm results in a superior video quality

Superior flexibility

- Programmable frame rates, bit rates, resolution and low delay mode
- Programmable GOP structure

Superior ingenuity

- MPEG-1, -2, -4 full-D1 interlaced encoder
- H.263 baseline
- Low latency support

Licensing & Royalties

Customers who have plans to use Vweb chips with one or more specially licensed audio and video functionalities are required to register with and pay royalties to the respective license holders: Dolby for AC-3, Thomson for MP3, Spiro Lab for G.729, 4C Entity for CPRM, and MPEG-LA for MPEG. Vweb can ship products with support for these functionalities only to customers registered with the respective licensing bodies.

Contacts

Sales and Marketing

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Technical Support

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Ordering Information

	Vweb Part Number
VW2005 chip	2770_02005_01
SDK + basic firmware	5920_2010D_x0 ¹
SDK source code	5920_2010S_x0 ¹
License-required firmware (for PS)	
AC3 encoder	5921_2005A_C0
MP3 encoder	5921_2005M_P0