XCode™ 2106 Product Brief

XCode™-2106 is a single stream PCI Express MPEG encoder integrated circuit (IC). It has the following highlights:

♦ PCI Express x1
♦ Single D1 MPEG2 / 4 (ASP, SP) encode capable
♦ Mirror encode – single 656 stream can generate two streams with same content at different formats
♦ Pixel-based motion adaptive 3D comb-filter and temporal/spatial filter
♦ Transport stream I/O for ATSC, DVB-T, and ISDB-T support

Summary of Features

MPEGPerfection™ Encoding

♦ MPEG2 (up to ML@MP)
  • 525/60 NTSC up to 720 x 480 @ 30fps
  • 625/50 PAL up to 720 x 576 @ 25fps
♦ MPEG4 up to D1 (with PSP™, iPOD™, DivX™ remux)
  • ASP (L0 – L5)
  • SP (L0 – L3)
♦ VBR or CBR encoding up to 15 Mbps
♦ Programmable GOP structure
♦ Variable frame rate control
♦ Field/frame motion estimation
  • ± 300 pixel window
♦ Half pel accuracy
♦ 4:2:2 to 4:2:0 conversion
♦ Intelligent sharpness control
♦ Inverse telecine (3:2 pulldown)
♦ Scene change detection

Digital Video Filtering

♦ Pixel-based motion-adaptive 3D comb filter
♦ Pixel-based temporal/spatial filter
♦ Image edge rectification

Audio Encoding/Transcoding

♦ Programmable audio block:
  • AC3, AAC, MP3, MPEG-1 Layer II, G.726, PCM encoding and transcoding
♦ Sampling rates: 32, 44.1, 48, 96 kHz
  • Compressed bit rates up to 448 kbits/sec

Stream Formats Supported (In/Out)

♦ Elementary Stream (ES), Packetized Elementary Stream (PES), Program Stream, Transport Stream (TS), DVD-VR Program Streams
♦ YUV in/out stream support (uncompressed)

Technology

♦ Efficient low power design
♦ 0.13µm CMOS technology

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Interfaces

- Transport stream (2 serial or 2 parallel) inputs
- 16/32 bit DDR SDRAM memory controller:
  - Supports 512 Mb, 256 Mb, 128 Mb, 64 Mb DRAM densities
  - Supports 16, 32 bit wide memory parts
- PCI Express x1 interface
- I^2C – master and master/slave

- 8/10 bit CCIR 656 input
- I^2S input
- Transport stream output with remultiplexer
- SPI EEPROM interface for self-boot
- JTAG interface port
- General Purpose I/O

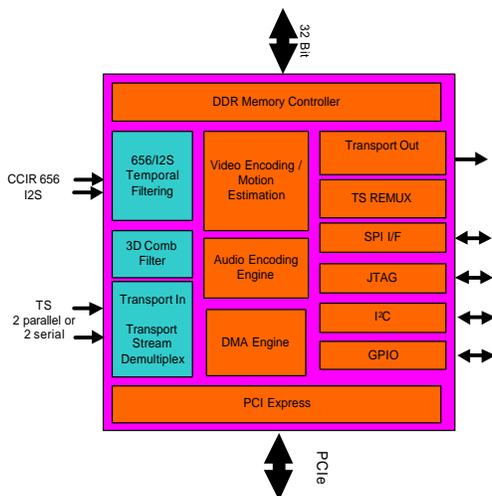## Typical Applications

- Analog TV tuner add-in boards
- Hybrid analog/digital TV tuner boards
- Media Center PCs
- Residential Gateways
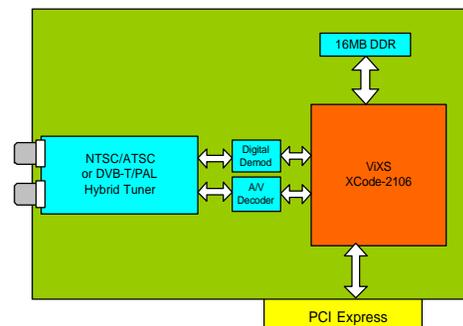- Personal Video Recorders (PVRs)
- DVD recorders
- Set-Top Boxes

Core Technologies

- MPEGPerfection™ technology redefines low-bitrate compression giving DVD quality encoding at 1.5Mbps - less than a third of DVD video bitrates
- TurboMPEG™ technology allows users to convert formats, resolution, and frame rates of pre-compressed video, at 2X-12X faster than real-time, to fit video to any viewing device

XCode™ 2106 Block Diagram

Single Hybrid TV Tuner PCI Express Card