SOC®

System-On-Chip Technologies

Transcoder IP Cores

Our transcoder IP cores are designed for seamless video conversion between MPEG-2 and H.264 formats as well as between and H.264 and H.265. The transcoders deliver low-latency and high-quality video processing, enabling efficient conversion between format streams across various profiles.

MPEG-2 to H.264/H.264 to MPEG-2 Transcoder IP Core

SOC MPEG2-H.264 and H.264-MPEG2 Transcoder Solutions:

Unlock seamless video conversion with SOC's advanced transcoder solutions. Our dual-purpose transcoder supports both MPEG2-to-H.264 and H.264-to-MPEG2 conversions, offering exceptional quality and low-latency performance.

Available in flexible FPGA IP core formats for Xilinx and Altera FPGAs, as well as standalone all-in-one System-on-Module (SoM) cards, SOC's transcoder solutions cater to diverse application needs. The SoM modules easily integrate with user devices or PCBs via a standard DDR3 memory connector, allowing for smooth integration with FPGAs, microprocessors, or direct I/O interface chips.

Enhance your product development with SOC's comprehensive development boards, and choose between licensing our IP cores for production or leveraging our ready-to-use modules for rapid prototyping and deployment.

MPEG-2 to H.264/H.264 to MPEG-2 Transcoder IP Core

Key Features

- All-hardware
- High Speed (Low latency)
- Small Silicon Footprint
- Low Power
- High Reliability (due to hardware architecture)
- High transcoding accuracy
- Automatic adapting profiles
- Up to 60fps
- User controllable API
- Option of IP Core or Module
- Video Transmission (Network) Cores available
- Development Board available

MPEG-2 to H.264/H.264 to MPEG-2 Transcoder IP Core Specifications

Specification	MPEG-2 to H.264	H.264 to MPEG-2
Standard:	MPEG-2/H.264 (ISO/IEC 13818/ISO/IEC14496-10)	MPEG-2/H.264 (ISO/IEC 13818/ISO/IEC14496-10)
Profiles:	High, Main, Baseline	High, Main, Baseline
Video resolutions:	Up to 1080i/p	Up to 1080i/p
Frame rate:	Up to 60fps	Up to 60fps
Chroma formats:	4:2:2 or 4:2:0	4:2:2 or 4:2:0
Input format	MPEG-2 Elementary, or Transport Stream	H.264 Elementary, or Transport Stream
Output format:	H.264 Elementary, or Transport Stream	MPEG-2 Elementary, or Transport Stream
Latency:	0.5ms	2 frames
Power consumption:	1.5w (IP Core)	1.5w (IP Core)

MPEG-2 to H.264/H.264 to MPEG-2
Transcoder IP Core FPGA Resources

FPGA Resources For MPEG-2 to H.264

Xilinx FPGAs
- Artix-7 A200T, 2 channels
- Kintex-7 K325, 4 channels

Altera FPGAs
- Arria-V
- Stratix-IV, V

FPGA Resources For H.264 to MPEG-2

Xilinx FPGAs
- Spartan-6 LX150
- Artix-7 A200T, 2 channels
- Kintex-7 K325, 4 channels

Altera FPGAs
- Cyclone-IV, V
- Arria-V
- Stratix-IV, V

H.264 to/from H.265
Transcoder IP Core

SOC H.264 to H.265/H.265 to H.264
Transcoder Solutions:

Unlock superior video quality and efficiency with SOC's advanced H.264-to-H.265 and H.265-to-H.264 transcoder solutions. Our cutting-edge transcoders deliver ultra-low latency and high-definition video conversion between H.264 and H.265 streams, catering to any profile for seamless media transitions.

Engineered for optimal performance, SOC's transcoders fit into Xilinx Artix-7 A200T FPGAs for single-channel operations, and scale up to larger FPGAs for multi-channel needs. The versatile design supports both FPGA IP core formats and standalone all-in-one modules.

The SOC transcoder IP cores are designed as System-on-Module (SoM) cards, integrating effortlessly with your devices or PCBs via a standard DDR3 memory connector. They offer flexible input and output options, including elementary and TS stream formats, and can interface with FPGAs, microprocessors, or I/O interface chips for streamlined product development.

Choose between our powerful codec modules or license our IP cores for comprehensive production solutions. SOC's product development boards provide hands-on opportunities to build and refine your products with our state-of-the-art transcoder technology.

H.264 to H.265/H.265 to H.264 Transcoder IP Core

Key Features

- All-hardware
- High Speed (Low latency)
- Small Silicon Footprint
- Low Power
- High Reliability (due to hardware architecture)
- High transcoding accuracy
- Automatic adapting profiles
- Up to 60fps, or 4K resolutions
- User controllable API
- Option of IP Core or Module
- Video Transmission (Network) Cores available
- Development Board available

H.264 to H.265/H.265 to H.264
Transcoder IP Core

Specification	H.264 to H.265	H.265 to H.265
Standard:	H.264 /H.265 (IEC14496-10/ (ISO/IEC 23008-2:2015)	H.264 /H.265 (IEC14496-10/ (ISO/IEC 23008-2:2015)
Profiles:	High, Main, Baseline	High, Main, Baseline
Video resolutions:	Up to 1080i/p	Up to 1080i/p
Frame rate:	Up to 60fps	Up to 60fps
Chroma formats:	4:2:2 or 4:2:0	4:2:2 or 4:2:0
Input format	H.264 Elementary, or Transport Stream	H.265 Elementary, or Transport Stream
Output format:	H.265 Elementary, or Transport Stream	H.264 Elementary, or Transport Stream
Latency:	0.5ms	0.5ms
Power consumption:	2.5w (IP Core)	2.5w (IP Core)

H.264 to H.265/H.265 to H.264 Transcoder IP Core

FPGA Resources For H.264 to H.265

Xilinx FPGAs
- Zynq-7100

Altera FPGAs
- Arria-10 XS/GX660

FPGA Resources For H.265 to H.264

Xilinx FPGAs
- Spartan-6 LX150
- Artix-7 A200T, 2 channels
- Kintex-7 K325, 4 channels

Altera FPGAs
- Cyclone-IV, V
- Arria-V
- Stratix-IV, V

H.264 HD/4K/8K
Video Encoder IP Core FPGA Resources

FPGA Resources For HD at ??fps

	Xilinx FPGAs	Intel FPGAs
Logic Resources:	110,000 LUTs	75,000 ALMs
Block RAM:	10Mbits	10Mbits
DSPs	235 DSPs	235 DSPs

FPGA Resources For 4K at 30fps

	Xilinx FPGAs	Intel FPGAs
Logic Resources:	120,000 LUTs	80,000 ALMs
Block RAM:	10Mbits	10Mbits
DSPs	250 DSPs	250 DSPs

FPGA Resources For 4K at 60fps

	Xilinx FPGAs	Intel FPGAs
Logic Resources:	240,000 LUTs	160,000 ALMs
Block RAM:	10Mbits	8Mbits
DSPs	250 DSPs	250 DSPs

H.264 HD/4K/8K
Video Encoder IP Core FPGA Resources

FPGA Resources For 4K at 120fps

	Xilinx FPGAs	Intel FPGAs
Logic Resources:	440,000 LUTs	295,000 ALMs
Block RAM:	40Mbits	40Mbits
DSPs	940 DSPs	940 DSPs

FPGA Resources For 8K at 30fps

	Xilinx FPGAs	Intel FPGAs
Logic Resources:	440,000 LUTs	300,000 ALMs
Block RAM:	40Mbits	40Mbits
DSPs	940 DSPs	940 DSPs

FPGA Resources For 8K at 60fps

	Xilinx FPGAs	Intel FPGAs
Logic Resources:	880,000 LUTs	600,000 ALMs
Block RAM:	40Mbits	40Mbits
DSPs	940 DSPs	940 DSPs