System-On-Chip Technologies

PRODUCT BRIEF

Video Decoder IP Cores

Experience exceptional video clarity with our high-performance MPEG-2, H.264, and H.265 Video Decoder IP Cores—versatile, reliable decoding engines trusted by leading broadcasters.

Supporting all standard resolutions and frame rates, these cores ensure flawless video delivery and adapt to incoming video parameters for a seamless viewing experience.

Designed for applications requiring hardware-grade reliability and fault-tolerant operation, our decoders provide the ultimate solution for high-quality, real-time video decoding.

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MPEG-2 HD/4K
Video Decoder IP Core

Harness the Power of MPEG-2 with SOC's Advanced HD/4K IP Cores

SOC offers the MPEG-2 decoder in two versatile formats: IP cores for FPGAs and standalone all-in-one modules. Available for both Xilinx and Intel (Altera) FPGAs, SOC configures the cores to meet your specific requirements, including custom I/O formats.

For easy integration, SOC's System-on-Module (SoM) cards—compact circuit boards built on SOC codec IP cores—can connect seamlessly to your devices or PCBs using a standard DDR3 memory connector.

Whether you choose IP cores or modules, SOC provides tailored solutions to suit your application needs.

Additionally, SOC offers comprehensive product development kits, empowering you to design and develop products utilizing our MPEG-2 video/audio decoder IP cores or modules.

MPEG-2 HD/4K
Video Decoder IP Core Key Features

- ALL-HARDWARE DESIGN (No embedded software)
- HIGH SPEED (Low latency)
- SMALL SILICON FOOTPRINT
- LOW POWER
- HIGH RELIABILITY (Due to hardware architecture)
- HIGH PRECISION - 10bits Available
- HIGH VIDEO QUALITY
- DECODE STREAMS WITH ANY BIT RATE
- USER CONTROLLABLE API
- OPTION OF IP CORE OR MODULE
- VIDEO TRANSMISSION (NETWORK) CORES AVAILABLE
- DEVELOPMENT BOARDS AVAILABLE

MPEG-2 HD/4K
Video Decoder IP Core Specifications

Specification	MPEG-2 HD	MPEG-2 4K
Standard:	MPEG-2/H.262 (ISO/IEC 13818)	MPEG-2/H.262 (ISO/IEC 13818)
Profiles:	High, Main, Baseline	High, Main, Baseline
Input bit rates:	1-100Mbps & above	1-100Mbps & above
Video resolutions:	Up to 1080i/p	Up to 2160p
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	MPEG-2 Elementary, or Transport Stream
Video output format:	RGB or YUV	RGB or YUV
Audio support:	MPEG-2 Layer-II or AAC	MPEG-2 Layer-II or AAC
Latency:	1/16 frame	1 frame
FPGAs:	Xilinx or Intel (Altera)	Xilinx or Intel (Altera)

H.264 HD/4K/8K
Video Decoder IP Core

Precision Control and Flexibility: Optimize your Design with SOC's Scalable H.264 HD/4K/8K Decoding Solutions

SOC offers high-performance H.264/AVC decoder IP cores compatible with both Xilinx and Intel (Altera) FPGAs, covering a range of resolutions from HD, 4K and 8K.

Our advanced decoder features a dynamic API, allowing real-time adjustments of key parameters like bit rate and precision to fit your specific application needs.

Optimize your video processing with our versatile video scaler IP core, which adjusts resolution and frame rate before encoding, all controllable via the API.

Enhance your video decoding capabilities with an optional network stack, enabling direct IP network connectivity through a convenient Ethernet port. Effortlessly integrate and transmit high-quality video streams with streamlined network access for a more efficient and versatile encoding solution.

Achieve superior video performance with SOC's innovative decoder solutions, designed for flexibility and top-tier quality in your projects.

H.264 HD/4K/8K
Video Decoder IP Core Key Features

- ALL-HARDWARE DESIGN (No embedded software)
- HIGH SPEED (Low latency)
- SMALL SILICON FOOTPRINT
- LOW POWER
- HIGH RELIABILITY (Due to hardware architecture)
- HIGH PRECISION - 10bits Available
- HIGH VIDEO QUALITY
- DECODE STREAMS WITH ANY BIT RATE
- USER CONTROLLABLE API
- OPTION OF IP CORE OR MODULE
- VIDEO TRANSMISSION (NETWORK) CORES AVAILABLE
- DEVELOPMENT BOARDS AVAILABLE

H.264 HD/4K/8K
Video Decoder IP Core Specifications

Specification	H.264 HD	H.264 4K	H.264 8K
Standard:	H.264/AVC (ISO/IEC14496-10)	H.264/AVC (ISO/IEC14496-10)	H.264/AVC (ISO/IEC14496-10)
Profiles:	High, up to level 4.1 Support lower profiles	High 4:2:2 Support lower profiles	High 4:2:2 Support lower profiles
Video resolutions:	Up to 1080i/p/ Up to 120fps	Up to 4K (3840X2160)/ Up to 60fps	Up to 8K (7680x4320)/ Up to 60fps
Precision	8/10 bits	8/10 bits	8/10 bits
Chroma formats:	4:2:2 or 4:2:0	4:2:2 or 4:2:0	4:2:2 or 4:2:0
Input format:	H.264 Elementary, or Transport Stream	H.264 Elementary, or Transport Stream	H.264 Elementary, or Transport Stream
Video output format:	RGB or YUV	RGB or YUV	RGB or YUV
Audio support:	MPEG-2 Layer-II or AAC	MPEG-2 Layer-II or AAC	MPEG-2 Layer-II or AAC
Latency:	1/16 frame	1 frame	1 frame
FPGAs:	Xilinx or Intel (Altera)	Xilinx or Intel (Altera)	Xilinx or Intel (Altera)

H.265 HD/4K
Video Decoder IP Core

Drive Innovation with SOC's H.265/HEVC IP Cores: High Efficiency, High Resolution, High Impact

SOC delivers performance H.265 HD/4K decoding in two dynamic formats to meet your needs: FPGA IP cores and all-in-one hardware modules.

- **FPGA IP Cores:** Available for both Xilinx and Altera FPGAs, these high-performance cores are customizable to your specific requirements, including I/O formats.
- **All-in-One Hardware Modules**: The SOC codec modules are System-on-Module (SoM) cards that connect seamlessly to your devices or PCBs using a standard DDR3 SODIMM connector.

Whether you choose IP cores or modules, SOC provides flexible solutions with the option of Xilinx or Altera FPGAs. Enhance your development process with our product development boards and explore our comprehensive offerings designed to elevate your video decoding performance.

MPEG-2 HD/4K
Video Decoder IP Core Key Features

- ALL-HARDWARE DESIGN (No embedded software)
- HIGH SPEED (Low latency)
- SMALL SILICON FOOTPRINT
- LOW POWER
- HIGH RELIABILITY (Due to hardware architecture)
- HIGH PRECISION - 10bits Available
- HIGH VIDEO QUALITY
- DECODE STREAMS WITH ANY BIT RATE
- USER CONTROLLABLE API
- OPTION OF IP CORE OR MODULE
- VIDEO TRANSMISSION (NETWORK) CORES AVAILABLE
- DEVELOPMENT BOARDS AVAILABLE

H.265 HD/4K
Video Decoder IP Core Specifications

Specification	H.265 HD	H.265 4K
Standard:	H.265/HEVC (ISO/IEC 23008-2:2015)	H.265/HEVC (ISO/IEC 23008-2:2015)
Profiles:	Main 4:2:2, 12	Main 4:2:2, 12
Input bit rates:	1-100Mbps & above	1-100Mbps & above
Video resolutions:	HD 1080p up to 120fps	4K at 30fps 4K at 60fps
Precision:	8-12 bits	8-12 bits
Chroma formats:	4:2:2 or 4:2:0	4:2:2 or 4:2:0
Output format:	H.265 Elementary, or Transport Stream	H.265 Elementary, or Transport Stream
Video output format:	RGB or YUV	RGB or YUV
Audio support:	MPEG-2 Layer-II or AAC	MPEG-2 Layer-II or AAC
Latency:	0.25ms	0.25ms
FPGAs:	Xilinx or Altera	Xilinx or Altera

SOC Decoder IP Core Design