# H.264/AVC Codec (Encoder and Decoder)

## 1.1 Production Overview

H.264/AVC codec for various kinds of multimedia products such as 4K Ultra HD TV, set-top box, and surveillance video camera. It can decode compressed video in a format of H.264 BP/MP/HP up to 4096x2304 resolution. It is also able to encode video into H.264 format of bitstream up to UHD. The H.264/AVC codec can perform simultaneous real time encoding, decoding, or both encoding and decoding of multiple video streams at multiple resolutions.

H.264/AVC is designed to optimally share most of the sub-blocks that are used in common for video processing, which contributes to the ultra-low power and low gate count.

## 1.2 Architecture



H.264/AVC codec is connected with a host CPU system via 32-bit AMBA 3 APB bus for system control and 64-bit AMBA3 AXI for data.

## 1.3 H.264/AVC Features

### 1.3.1 H.264/AVC Encoder

■ Capable of encoding BP/MP/HP profile @L4.2

■ Max resolution: 4096x2304, Min resolution: 96x16

■ Performance 1920x1080 60fps@266MHz

■ Supports MVC Stereo High profile with interview prediction only for anchor picture

■ The encoder uses only one reference frame for the motion estimation.

■ Rate Control(Frame Level and MB Level)

■ Supports CABAC/CAVLC

■ low delay coding

-less than 1ms delay for starting encoder with sub-frame synchronization

■ 2D cache for motion compensation to reduce external memory access

■ Region of Interest(ROI) picture encoding

■ 1/4-pel and 1/2-pel accuracy motion estimation with programmable search range up to [+/-64H, +/-48V]

■ Available block size can be configurable and 16x16,16x8,8x16,8x8 block size are supported

■ Intra prediction

-Luma I4x4 Mode: 9modes

-Luma I8x8 Mode: 9modes

-Luma I16x16 Mode: 4 modes(vertical ,Horizon ,DC, Plane)

-Chroma Mode: 3modes(Vertical, Horizon ,DC)

■ Filed encoding is available without PAFF, MBAFF

### 1.3.2 H.264/AVC Decoder

■ Fully compatible with the ITU-T Recommendation H.264 specification in BP, MP and HP

■ Supports MVC Stereo High profile

■ Max resolution: 4096x2304, Min resolution: 96x16

■ Supports CABAC/CAVLC

■ Variable block size (16x16, 16x8, 8x16, 8x8, 8x4, 4x8 and 4x4)

■ Error detection, concealment and error resilience tools with FMO/ASO support