System-On-Chip Technologies

PRODUCT BRIEF

SoM-X-Z7045 Module

(Commercial and Industrial Versions)

Product Description

The SOC **SoM-X-Z7045** System-On-Module (SoM) is a small circuit board based on the Xilinx Zynq-7 XC7Z045 FPGA. The SoM-X-Z7045 comes with two versions; commercial and industrial. The product codes for these versions are SoM-X-Z7045-C for commercial temperature and SoM-X-Z7045-I for industrial temperature. Both of the commercial and industrial versions use a standard 204 pin DDR3 SODIMM connector, which connects the module to the carrier board. The SoM-X-Z7045 can be used for any SoM applications with user firmware. SOC Technologies uses the SoM-X-Z7045 for video/audio codec applications based on the SOC high-performance MPEG Codec IP Cores.

A SoM-X-Z7035 which has a Zynq-7 XC7Z035 FPGA is also available. The SoM-X-Z7035 module is identical to the SoM-X-Z7045 except for the FPGA chip on the module.

SoM-X-Z7045 Features

- Zynq-7 XC7Z45 FPGA (with 2 ARM Cores)
- 4Gbits DDR3 RAM for FPGA logic
- 4Gbits DD3 RAM for the ARM Processors
- 256MB Flash Memory (for booting firmware storage)
- 27MHz and 100MHz Oscillators
- FPGA Firmware Key EEPROM
- Commercial and Industrial Versions
- Self-controlled booting sequence
- Small size 2.6”X2.7”

SoM-X-Z7045 top view

SOC Codec Modules based on SoM-X-Z7045

SOC supplies a number of MPEG codec modules based on the SoM-X-Z7045, which includes encoder, decoder, and transcoder modules. Details are provided in the Product Brief of “SOC MPEG Codec Modules based on the SoM-X-Z7045”.

Features of the SOC Codec Modules are:

- Zero Latency (0.25ms for HD Resolution, and 0.5ms for 4K)
- Low Power
- High Video Quality
- Easy to Integrate in User PCB
- Reference PCB Designs are available
- Technical Supports are available

SOC provides Evaluation Kits for the SOC Codec Modules which are plug-n-play circuit boards for testing/evaluating the performance of the codec modules. Refer to the Product Brief of SOC Codec Evaluation Kits or contact sales@soctechnologies.com for further information.

Generic SoM based on SoM-X-Z7045

The SoM-X-Z7045 can also be used as a generic System-on-Module (SoM) that allows users to develop their own firmware to make SoM products.

The SoM-X-Z7045 connects to a user carrier board using a standard off-the-shelf 204 pin DDR3 SODIMM connector, as shown in the following Figure. A number of products are available on the market. The product codes of the compatible connectors are listed in the figure as well.

Compatible connectors for the SOC SoM-X-Z7045 SoM:

- MM80-204B1-1
- MM80-204B1-1E
- AS0A621-U2SN-7F
- AS0A621-H2S6-7H

PCB Connectors for the SoM-X-Z7045

SOC also supply a number of Product development platforms for users to development the firmware for the SoM-X-Z7045 SoM. Refer to the Product Development Kit on the SOC website at www.soctechnologies.com/dev-kits for further details.

86 Rankin Street, Waterloo, Ontario, Canada N2V 1V9
Telephone: +1 (519) 880 – 8609 • E-mail: soc@soctechnologies.com • Web: www.soctechnologies.com

System-On-Chip Technologies

PRODUCT BRIEF

SOC MPEG Codec Modules based on SoM-X-Z7045

(Commercial and Industrial Versions)

Product Description

SOC Technologies supplies a number of MPEG Codec modules based on the SoM-X-Z7045, which include video/audio encoders, decoders, and transcoders, for both H.264/AVC and H.265/HEVC standard. Available codec modules are listed on the SOC website at www.soctechnologies.com/modules. A sample Product Table is shown below. The Product Code naming convention is shown in the chart at the bottom of this page.

The I/O's for the SOC Codec Modules based on the SoM-X-A200T are listed below:

Module Type	Input	Output
Encoder Module	YUV Video Data	TS Stream Data
Decoder Module	TS Stream Data	YUV Video Data
Transcoder Module	TS Stream Data	TS Stream Data

The SOC Codec Modules based on the SoM-X-Z7045 also have a –NET version which allows the modules to connect directly to an Ethernet PHY.

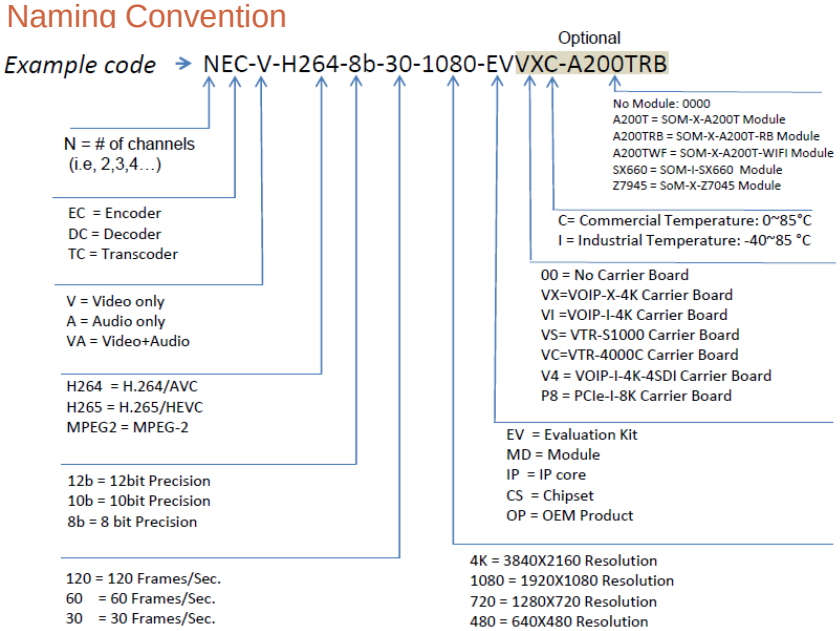
Codec Modules Specifications

- MPEG Standard: H.264/AVC or H.265/HEVC
- Profiles: H.264 High, Main, and Baseline; H.265 Main 4:2:2 12
- Output bit rates: 1-800Mbps & above
- Video resolutions: Up to 4K
- Frame Rate: Up to 60fps
- Chroma Formats: 4:2:2 or 4:2:0
- Precision: 8 bits or 10 bits or 12 bits
- Stream format: Transport Stream, or UDP/IP over Ethernet
- Video format: RGB or YUV
- Zero Latency: 0.25ms for HD and 0.5ms for 4K
- Power Consumption: 2-8w
- Working Temperature: 0°C-70°C (Commercial Version); -40°C-85°C (Commercial Version)

Sample Product Table (SOC Codec Modules based on the SoM-X-Z7045)

Product Code	Specifications						
	Standard	Profile	Resolution	Chroma	Precision	Frame Rate	Audio
DC-VA-H264-10b-60-1080-MD	H.264	up to High	up to 1080i/p	4:2:0/4:2:2	up to 10 bits	up to 60fps	AAC or MPEG2-L2
DC-VA-H264-10b-60-1080-MD	H.264	up to High	up to 1080i/p	4:2:0/4:2:2	up to 10 bits	up to 60fps	AAC or MPEG2-L2
DC-VA-H265-10b-60-1080-MD	H.265	Main 10	up to 1080i/p	4:2:0/4:2:2	up to 10 bits	up to 60fps	AAC
DC-VA-H265-10b-60-1080-MD	H.265	Main 10	up to 1080i/p	4:2:0/4:2:2	up to 10 bits	up to 60fps	AAC

SOC Product Code Naming Convention



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