SoM-X-A200T-RB Module
(Commercial and Industrial Versions)

Product Description

The SOC **SoM-X-A200T-RB** System-On-Module (SoM) is a small circuit board based on the Xilinx Artix-7 A200T FPGA. The SoM-X-A200T-RB comes with two versions, commercial and industrial. The product codes for these versions are SoM-X-A200T-RB-C for commercial temperature and SoM-X-A200T-RB-I for industrial temperature. Both versions use a standard Razor Beam connector for connecting to the carrier board. The SoM-X-A200T-RB can be used for any SoM applications with user firmware. SOC also provides firmware development platforms that allow the users to develop their own firmware for the SoM-X-A200T-RB.

SOC Technologies uses the SoM-X-A200T-RB for video/audio codec applications based on the SOC high-performance MPEG Codec IP Cores, including H.264 and MPEG2 encoders, decoders, and transcoder. Multiple channel modules are also available.

SoM-X-A200T-RB Features

- Artix-7 XC7A200T FPGA (Industrial or commercial temperature)
- 2X2Gbits DDR3 RAM
- BF512 DSP
- 256MB SD-RAM for the DSP
- 256MB Flash Memory (for booting firmware storage)
- 27MHz and 100MHz Oscillators
- FPGA Firmware Key EEPROM
- Commercial and Industrial Versions
- Self booting sequence (no power up sequencing required)
- Small size, 2.0"x 1.5".

SoM-X-A200T-RB top view   SoM-X-A200T-RB bottom view

SOC Codec Modules based on SoM-X-A200T-RB

SOC supplies a number of MPEG codec modules based on the SoM-X-A200T-RB, which include encoder, decoder, and transcoder modules. Details are provided in the Product Brief of "SOC MPEG Codec Modules based on the SoM-X-A200T-RB".

Features of the SOC Codec Modules are:

- Zero Latency (0.25ms for HD Resolution)
- 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-A200T-RB

The SoM-X-A200T-RB 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-A200T-RB connects to a user carrier board using a pair of off-the-shelf LSHM-150-04.0-L-DV-A-S-K-TR razor beam connectors, as shown in the following

Connector on the SoM-X-A200T-RB

The connectors for the SOC SoM-X-A200T-RB:
LSHM-150-04.0-L-DV-A-S-K-TR

PCB Connectors for the SoM-X-A200T-RB

SOC also supply a number of Product development platforms for users to develop the firmware for the SoM-X-A200T-RB SoM. Refer to the Product Development Kit on the SOC website at www.soctechnologies.com/dev-kits for further details.

SOC MPEG Codec Modules based on SoM-X-A200T-RB
(Commercial and Industrial Versions)

Product Description

SOC Technologies supplies a number of MPEG Codec modules based on the SoM-X-A200T-RB, which include video/audio encoders, decoders, and transcoders, for both H.264/AVC and MPEG-2 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-RB 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-A200T-RB also have a –NET version which allows the modules to connect directly to an Ethernet PHY.

Codec Modules Specifications

- MPEG Standard — H.264 or MPEG2
- Profiles: — High, Main, and Baseline
- Output bit rates: — 1-800Mbps & above
- Video resolutions: — Up to 1080i/p
- Frame Rate: — Up to 60fps
- Chroma Formats: — 4:2:2 or 4:2:0
- Precision: — 8 bits or 10 bits
- Stream format: — Transport Stream, or UDP/IP over Ethernet
- Video format: — RGB or YUV
- Zero Latency: — 0.25ms
- Power Consumption: — 1-4w
- 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-A200T-RB)

Product Code	Specifications						
	Standard	Profile	Resolution	Chroma	Precision	Frame Rate	Audio
EC-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
EC-VA-MPEG2-8b-30-1080-MD	MPEG2	up to High	up to 1080i/p	4:2:0/4:2:2	8 bits	up to 30fps	AAC or MPEG2-L2
DC-VA-MPEG2-8b-30-1080-MD	MPEG2	up to High	up to 1080i/p	4:2:0/4:2:2	8 bits	up to 30fps	AAC or MPEG2-L2

SOC Product Code Naming Convention

Example code → NEC-V-H264-8b-30-1080-EV VXC-A200TRB

Optional

N = # of channels (i.e, 2,3,4…)

EC = Encoder
DC = Decoder
TC = Transcoder

V = Video only
A = Audio only
VA = Video+Audio

H264 = H.264/AVC
H265 = H.265/HEVC
MPEG2 = MPEG-2

12b = 12bit Precision
10b = 10bit Precision
8b = 8 bit Precision

120 = 120 Frames/Sec.
60 = 60 Frames/Sec.
30 = 30 Frames/Sec.

No Module: 0000
A200T = SOM-X-A200T Module
A200TRB = SOM-X-A200T-RB Module
A200TWF = SOM-X-A200T-WIFI Module
SX660 = SOM-I-SX660 Module
Z7945 = SoM-X-Z7045 Module

C= Commercial Temperature: 0~85°C
I = Industrial Temperature: -40~85 °C

00 = No Carrier Board
VX=VOIP-X-4K Carrier Board
VI =VOIP-I-4K Carrier Board
VS=VTR-S1000 Carrier Board
VC=VTR-4000C Carrier Board
V4 = VOIP-I-4K-4SDI Carrier Board
P8 = PCIe-I-8K Carrier Board

EV = Evaluation Kit
MD = Module
IP = IP core
CS = Chipset
OP = OEM Product

4K = 3840X2160 Resolution
1080 = 1920X1080 Resolution
720 = 1280X720 Resolution
480 = 640X480 Resolution