Dual 3D/HD decoder with integrated MoCA 1.X

STMicroelectronics

STi7108M advanced decoder offers simultaneous full 3D graphics acceleration and MoCA 1.X

The STi7108M provides the same rich feature set as the STi7108 but also integrates a MoCA 1.x MAC and baseband processor (BB) which, together with a discrete analog front end (AFE) chip, can provide a full MoCA modem with minimal external components. The STi7108M addresses all MoCA® 1.0/1.1 bands using the appropriate 3rd party AFE IC. STi7108M platforms permit high-end HD broadcast/broadband content reception with simple and economical home media networking.

Key features

- Peak MoCA data rate of 170 Mbit/s
- Five MoCA QoS queues (PQoS, high, medium, low, broadcast)
- Connectivity to up to 16 MoCA nodes
- Advanced dual HD AVC, decoding H.264, MPEG-2, VC-1 or WMV9 internet video
- ARM® Mali-400™ graphics processor, supporting OpenGL-ES 2.0/1.x and OpenVG 1.1
- Dual ST40 processor architecture with 256-Kbyte L2 cache
- Inputs for up to 6 transport streams, including Ethernet, e-SATA, USB
- Processor engine performance up to a total of 4600 DMIPS
- Low-power architecture

Key benefits

- Certified MoCA (Multimedia over Coax Alliance) device
- Easy-to-install home networking using an economical MoCA implementation
- Permits reuse of pre-installed coaxial cable networks in the home
- Single device enabling 3D graphics, DVR, Flash or HDD storage
- Supports 3D user interfaces, program guides
- Supports 3D stereocopic broadcast
- Can decode high resolution 1080p 50/60 simultaneously with 1080i/720p picture-in-picture or mosaic formats
- Compliant with Energy Star Tier 2 and EU energy directives
- Certified with latest advanced security scheme

The STi7108M has dual ST40-300 CPU host processors linked to a 256-Kbyte L2 cache giving up to 3000 DMIPS performance and a total of 4600 DMIPs for flexible support of demanding AV, security and connectivity applications.

Block diagram
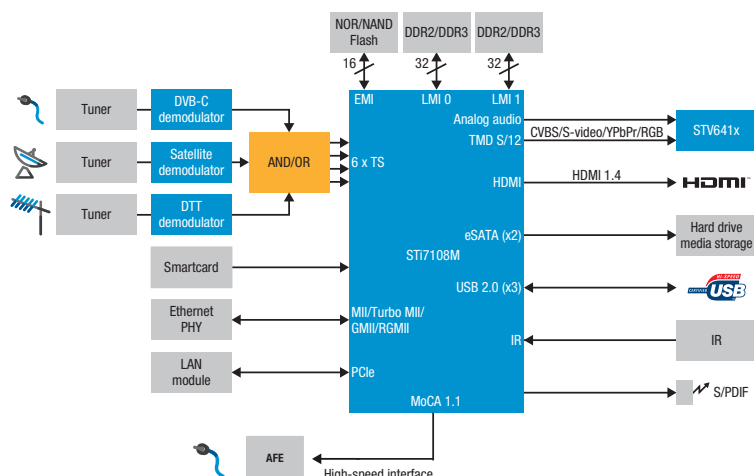
AFE transceiver chip

The STi7108M is connected to the AFE transceiver chip via 3-Gbit/s serial links (SerDes): one for transmission (Tx), and for reception (Rx). This structure allows the powerful (Tx) and sensitive (Rx) MoCA signals to be isolated from the backend IC ensuring EMI compliance and reducing design risk.

The MoCA AFE requires a 25 MHz crystal reference from which a 100 MHz reference clock is generated and fed to the STi7108M MoCA MAC and BB. The AFE is controlled by the STi7108M via an SPI interface.
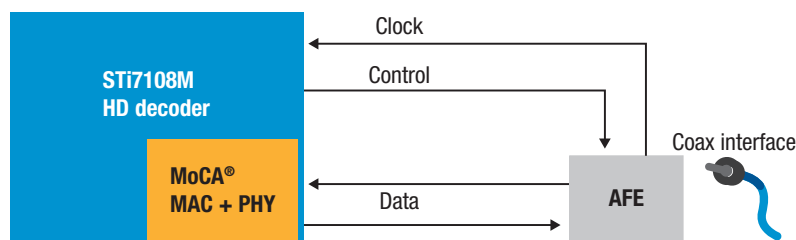
Key features of the AFE transceiver chipset are:

- Two supported bands:
  - 875 to 1500 MHz (AD9965)
  - 500 to 1000 MHz (AD9967)
- Minimized external components – no DCXO required
- Digital Tx/Rx IQ calibration
- Single differential RF I/O for Tx/Rx
- On-chip Tx/Rx switch
- High-speed serial I/O with digital MAC/PHY

Software and firmware

- Linux user space: MoCA manager
- Linux
  - TCP/IP (native)
  - Ethernet driver (Kernel)
- FW drivers to manage:
  - MoCA (standard)
  - Ethernet switch (optional)

Design resources

A reference design, together with a hardware development kit, is available for the STi7108M. Contact your local ST sales office for more information.