

DOCSIS 2.0+ cable modem chip with channel bonding

Data Brief

Features

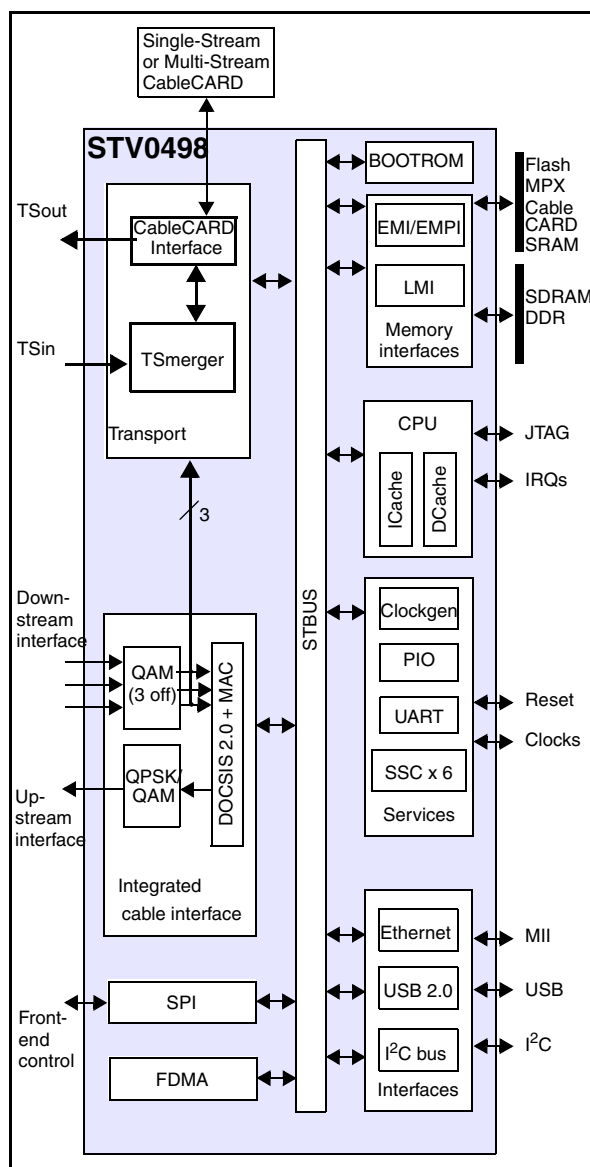
- High performance ST40 32-bit RISC CPU
- Code authentication mechanism embedded
- Three QAM demodulators with FECs
- Additional TS input
- DOCSIS 2.0 MAC and PHY
- Supports downstream channel bonding, compatible with DOCSIS 3.0 specification
- Supports SCTE-55 PHY parts 1 and 2
- Four-input stream merger
- Multi-Stream CableCARD interface
- Local memory interface
- USB 2.0 interface (includes PHY)
- Ethernet MII and reduced MII interfaces
- Configurable GPIO
- Flexible multi-channel DMA
- JTAG/TAP interface
- Special Isolate mode allows fully independent DOCSIS and video operations
- Glue-less interfacing to ST decoder devices
- Full toolset support
- 23mm x 23mm PBGA, 386+36 pins, 1mm pitch
 - Pb-free, RoHS (2002/95/EC) compliant.

Description

The STV0498 is a cable front-end solution for interactive and PVR set-top boxes.

Built around a powerful 450-DMIP processor there are three QAM demodulators with FEC, a DOCSIS modem supporting full DOCSIS2.0 operations and channel bonding up to 120 Mbit/s. The STV0498 supports both IPV4 and IPV6 protocols.

Ethernet and USB2.0 interfaces provide low-cost connections to the host computer.



Applications

- DOCSIS 2.0+ cable modem module
- Interactive cable set-top box
- eMTA terminal.

1 Applications

The STV0498 kit, when accompanied with a back-end decoder, provides a complete low-cost solution for interactive cable set-top boxes.

The STV0498 has been designed to work as a kit with an analog front-end companion chip, the STV0130. This analog chip does the analog-digital conversion for the QAM signal input and the digital-analog conversion for the DOCSIS return path whilst the STV0498 does the digital operations.

The STV0498 performs downstream and upstream operations for video and data. Three high-performance QAM/FEC modules demodulate and correct the cable signals to be sent either to a stream merger for video application or to the DOCSIS media access controller (MAC) for data flow. The forward error correction (FEC) blocks support the ITU-T J83 Annex A, B and C specification. The demodulators support square constellation from the QPSK used in legacy out-of-band (SCTE-55 parts 1 and 2) to QAM 256 and non-square constellation such as QAM 32 and QAM 128. The Japanese transport stream multiplex (TSMF) is also supported.

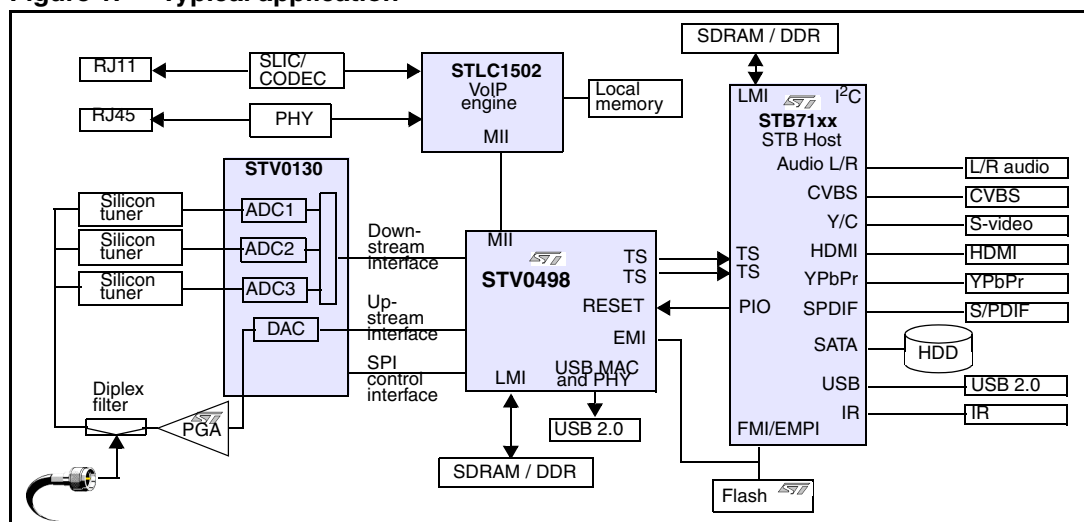
The merged video stream is compatible with Multi-Stream CableCARD. This stream is then sent to a standard video decoder. Up to three video channels can be received simultaneously.

The DOCSIS subsystem is fully compatible with the DOCSIS 2.0 specification and supports downstream channel bonding, compatible with the DOCSIS 3.0 specification, bringing the data rate up to 120 Mbit/s. Up to 16 QOS channels can be supported simultaneously. The STV0130 analog block provides direct connection to the upstream power amplifier. All DOCSIS operations are controlled by a high performance CPU running the OS21 operating system.

Integrated peripheral blocks (the Ethernet and USB interfaces, for example) provide low-cost connections between the DOCSIS modem and the host computer. MPX is a primary connection mode between the STV0498 and ST decoder chips.

Several modes of operations are available, from a stand-alone mode to a fully embedded solution with the back-end device.

Figure 1. Typical application



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
16-Feb-2007	1	Initial release.

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