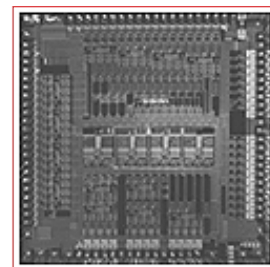




# BCM7010 PRODUCT Brief



## BCM7010 SET-TOP BOX DECODER

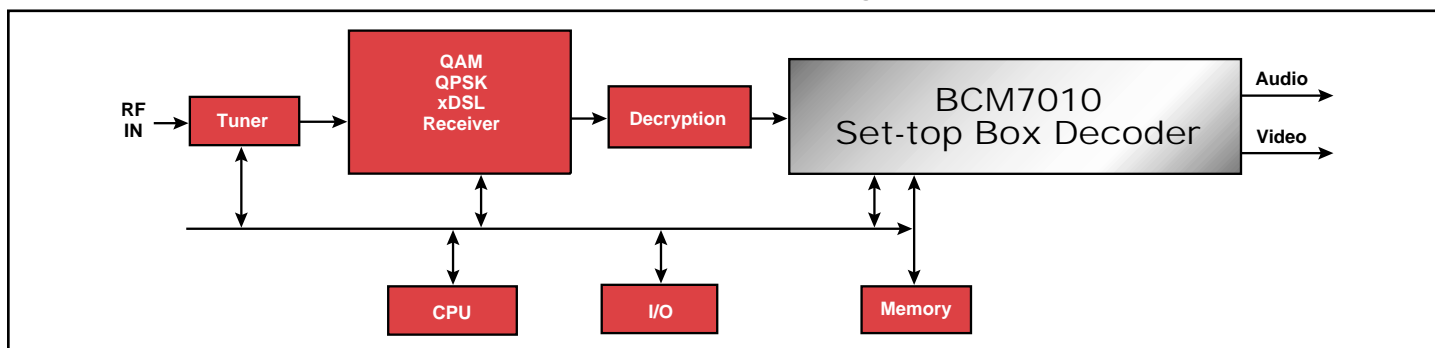
### BCM7010 FEATURES

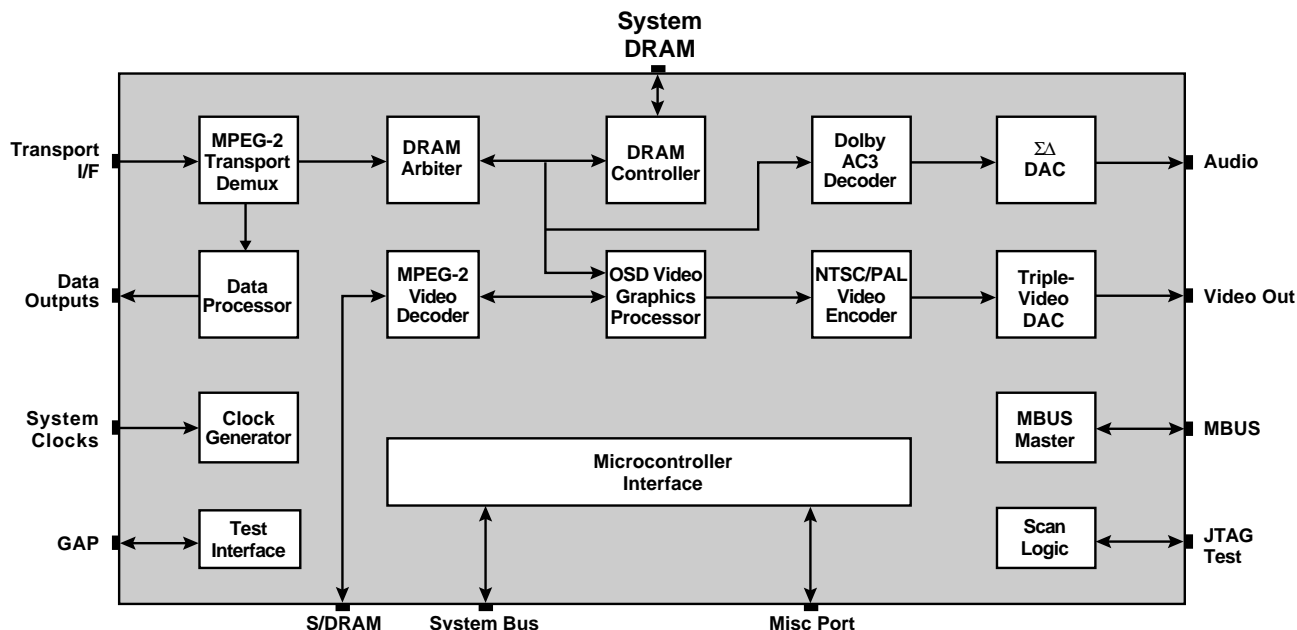
- The Broadcom® BCM7010 MPEG system-on-a-chip is used in digital set-top box applications to deliver video and audio signals to a television.
- **Complete MPEG-2 Subsystem**
  - Supports All North American Cable Requirements
  - Error Detection/Concealment Throughout Design
- **MPEG-2 System Transport Decoder**
  - PCR Clock Recovery
  - Automatic Audio/Video Synchronization Circuitry
  - Jitter Handling
  - Splice Point Handling
- **MPEG-2 Video Decoder**
  - Vertical/Horizontal Filters for Resizing/Repositioning
  - Supports 3:2 Pulldown, Pan & Scan Automatically
  - Closed Captioning, VITS Support
  - CCIR 656 Output
- **Dolby® Digital AC-3 Compliant Audio Decoder**
  - Includes Audio DAC's for R/L Channel Outputs
  - Implements Two-channel Mixdown
  - Supports SPDIF (AES/EBU) Serial Data Transmission
  - Supports Dynamic Range Compression
- **On-screen Display Graphics**
  - 4/8 bit/pixel with 16 Level Blend OSD Overlay Capability
- **NTSC/PAL Video Encoder with Macrovision™ and Integrated Triple DACs**
- **NTSC/PAL Encoder**
  - Includes Triple Video DAC for Composite and S-Video Outputs
  - Supports Macrovision 7.01

### SUMMARY OF BENEFITS

- The BCM7010 design is shipping in volume production today with a proven track record for deployment.
- The BCM7010 is compliant with the MPEG-2 systems and video specifications, and the Dolby Digital AC-3 specification.
- Supports all North American Cable Industry Legacy requirements.
- A highly-integrated solution enabling low complexity/ low cost digital set-top box IRDs.
- Integrated audio and video digital to analog converters (DACs) reduce system manufacturing costs and complexities.
- Supports the use of both low-cost SDRAM or EDO DRAM.
- The Dolby Digital AC-3 decoder and the MPEG-2 video decoder are hardwired solutions requiring minimal CPU resources.
- Interfaces seamlessly to all Broadcom physical layer devices including QAM, QPSK and xDSL product lines.

Set-Top Box Block Diagram





The **BCM7010** Set-Top Box Decoder is a highly-integrated system solution targeted at all types of digital set-top boxes. Integrated features in the **BCM7010** include a fully compliant MPEG-2 Transport stream parser and demultiplexer, an MPEG-2 compliant video decoder with error concealment capability, a Dolby Digital AC-3 audio decoder with audio DACs for the right and left output channels, an On-Screen-Display engine supporting 4 and 8-bit per pixel graphics with 16-level blend capability, and a digital NTSC/PAL video encoder with Macrovision 7.01 and triple video DACs which support both composite and S-Video outputs. The **BCM7010** microprocessor interface is used to control and monitor the **BCM7010** and is compatible with many widely accepted microprocessors used throughout the set-top box market today.

A transport stream delivered to the **BCM7010** is demultiplexed and checked for errors by the MPEG-2 transport decoder. Those packets which are necessary for system operation are delivered to the appropriate internal resource. Streams delivered to the MPEG-2 video decoder are decoded producing a CCIR-656 digital output stream. This digital video output stream can be mixed and blended with the OSD graphics objects. This digitally mixed stream is delivered to an internal NTSC/PAL encoder producing both composite video and S-Video analog waveforms. The NTSC/PAL encoder is compliant to the Macrovision 7.01

anticopy specification. Streams delivered to the Dolby Digital AC-3 decoder are decoded producing the 5.1 channels of PCM samples which are then mixed down to two channels, a Right and a Left, via the Dolby specified mixdown function. The right and left channels can then be output from the **BCM7010** as both a digital stream through the SPDIF interface and as analog Right and Left channels through the on chip audio DACs. The uncompressed Dolby Digital AC-3 stream can also be selected to be output through the SPDIF interface and delivered to an external Dolby Digital Receiver. PSI and SSI packets received by the transport demultiplexer are delivered to external DRAM for processing by the system microprocessor.

The **BCM7010** is a highly-integrated, very flexible, cost-effective solution targeted at digital set-top box applications. It is field proven and provides legacy support for all North American cable operations. The **BCM7010** is optimized for high-volume manufacturing. The level of integration in the **BCM7010** significantly reduces the cost and complexity of manufacturing digital set-top boxes. Broadcom has a significant portfolio of products in front-end technology needed to complete a digital set-top box design such as QAM, QPSK, and xDSL. These products interface seamlessly to the **BCM7010**, allowing Broadcom's customers to take full advantage of a complete low-cost chipset targeted at digital set-top box applications.

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