



## SINGLE LINK DVI TRANSMITTER WITH HIGH-BANDWIDTH DIGITAL CONTENT PROTECTION

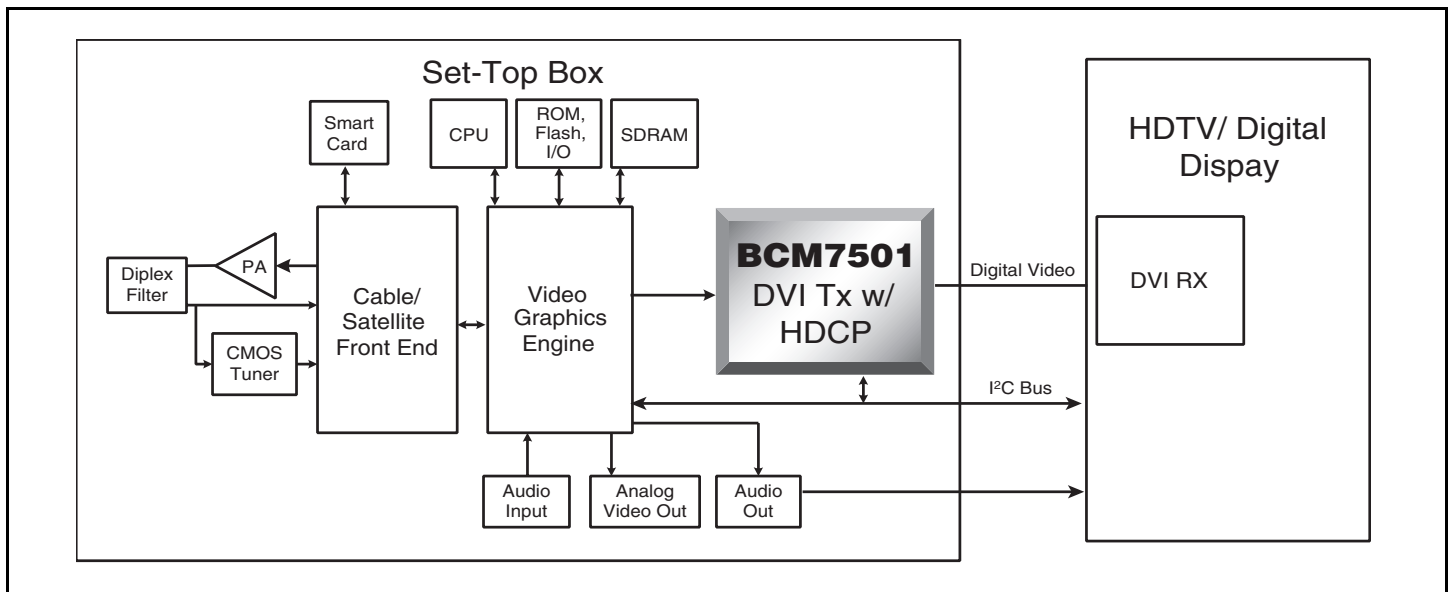
### FEATURES

- Fully compliant with DVI 1.0 specification
- High-bandwidth Digital Content Protection (HDCP)
- Supports resolutions SDTV, HDTV, and VGA-UXGA
- Scalable bandwidth: 25–165 Megapixels per second (Mpps)
- Programmable clock, data timing (deskew)
- I<sup>2</sup>C slave programming interface
- Support for hot plug detection
- Low-power, 1.8V core
- Configurable I/Os
- 1V–1.8V DVO interface
- 1.8V, 3.3V CMOS interface
- Powerdown mode
- 12-bit and 24-bit input modes using single and dual edge clocking schemes

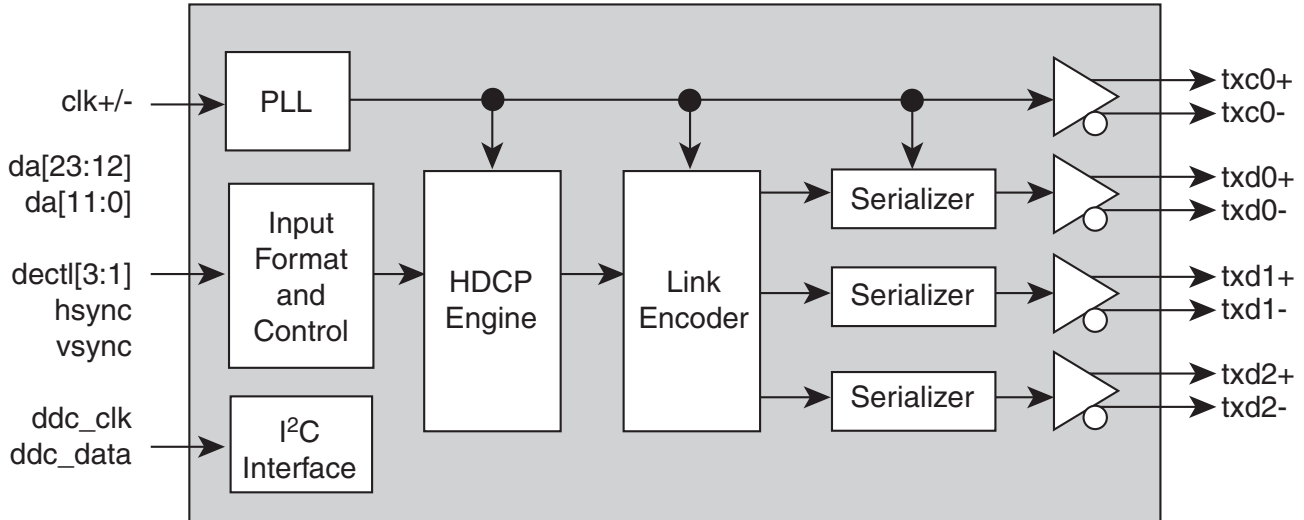
### SUMMARY OF BENEFITS

- High bandwidth supports HDTV formats, including 1080i and 720p
- Digital format provides for high-quality graphic images/overlays and low system cost
- HDCP secures protected video content as required by the Motion Picture Association of America (MPAA)
- Industry-standard interface transmits studio-quality video to any DVI/HDCP-enabled digital display from graphics cards, set-top boxes, DVDs, or any source of digital video content
- Unique HDCP implementation eliminates the need for an additional PROM, reducing overall system cost and complexity
- Adjustable slew rate control and voltage swing on Transition Minimized Differential Signal (TMDS) outputs allows for optimal drive configuration, reduced EMI, and increased cable lengths
- DVO and specialized interface modes reduce interface pin count

### DVI-Enabled Consumer Set-Top System Configuration



## OVERVIEW



The BCM7501 is part of Broadcom's family of video display products, and is a full rate, single link, DVI 1.0-compliant transmitter with HDCP content protection. The BCM7501 transmits digital video from a digital host such as a PC graphics card, set-top box, or DVD to a display such as an HDTV, flat panel display, or digital CRT. The DVI interface is uncompressed, low-cost, and digitally protected, making it ideal for Consumer Electronics (CE) applications.

The BCM7501 transmits up to 165 Mpps of true color (24 bits/pixel) video supporting resolutions from VGA (640 x 480) to UXGA (1600 x 1200). This bandwidth supports all television formats (including HDTV) and does not require compression, which can cause loss in image quality. The state-of-the-art, on-chip Phase Locked Loop (PLL) provides high-frequency, low-jitter clock synthesis allowing full resolution, quality, and performance.

The BCM7501 implements content protection of the TMDS link as described by the HDCP system specification (*Digital Content Protection LLC* at [www.digital-cp.com](http://www.digital-cp.com)). This feature allows for transmission of high-quality digital video, while satisfying the most stringent MPAA requirements and paving the way for Hollywood studios to release their highest resolution content. HDCP uses keys in both ends of a DVI link to authenticate and encrypt/decrypt the data stream, providing a secure, physical link between the transmitter and receiver. The BCM7501 transmitter utilizes a unique method of handling HDCP keys that provides maximum security and reduces overall system cost.

Designed by the world's leader in communications System-on-a-Chip circuits, the BCM7501 is a robust, highly-integrated device implemented in an advanced .18 $\mu$  process. The BCM7501 provides a secure, high-bandwidth digital interface for current and next-generation high-resolution products.

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