# BROADCOM®

C o n n e c t i n g
e v e r y t h i n g ®

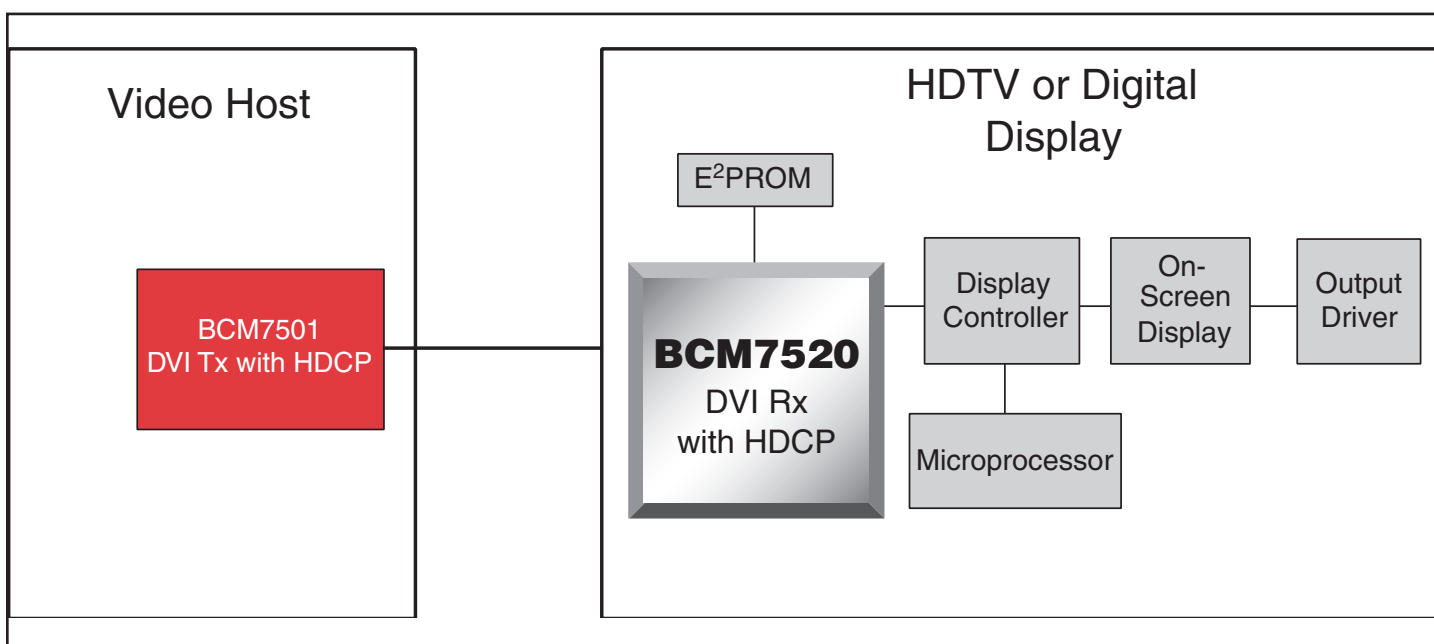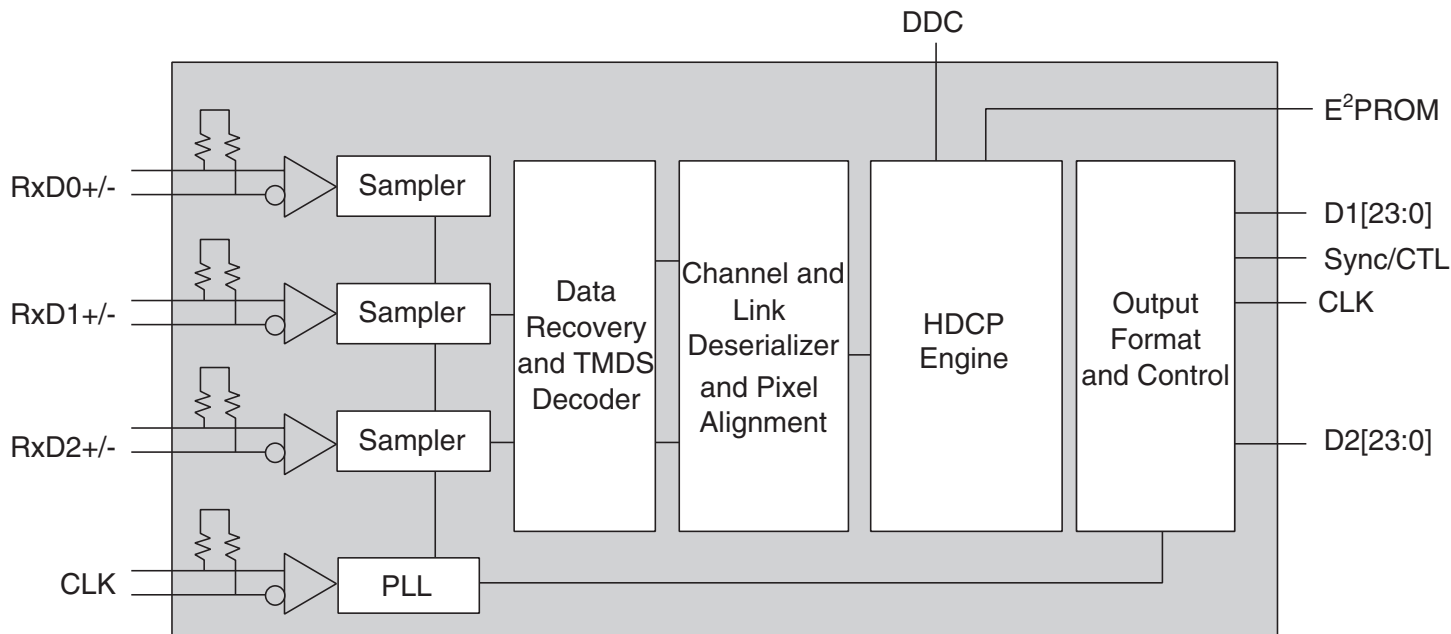# BCM7520 DVI RECEIVER WITH HDCP

## BCM7520 FEATURES

- Fully compliant with DVI 1.0 specification
- Scalable bandwidth: 25 – 165 Mpps
- Dual link capable for speeds up to 330 Mpps
- High-bandwidth Digital Content Protection (HDCP)
- Precise bit recovery with 6x oversampling
- Integrated line termination
- Allows inter-channel skew up to 1.9 pixel clock cycles (11.5 ns at 165 MHz)
- Staggered pixel outputs (reduced ground bounce)
- 24-bit, one pixel per clock, or 48-bit, 2 pixel per clock outputs
- Programmable output drive currents
- Secure, flexible HDCP key handling
- Programmable HSYNC correction filter
- Power down mode
- 100-pin, TQFP package
- Low power, 1.8V core
- 3.3V CMOS I/Os

## SUMMARY OF BENEFITS

- Industry-standard interface receives studio-quality video from any DVI/HDCP enabled video source, such as a PC, set-top box, DVD or game console.
- High Bandwidth supports VGA - UXGA and all digital television formats, including 720p and 1080i.
- Precise link synchronization provides optimal dual link performance when paired with a second BCM7520 DVI receiver.
- HDCP secures protected video content as required by the Motion Picture Association of America (MPAA).
- Digital, uncompressed format provides high-quality graphic images/overlays and low system cost.
- Robust data recovery and channel synchronization ensure interoperability with a variety of DVI transmitters.
- Flexible HDCP key storage eliminates cost and testability issues associated with physically protecting the external PROM.

### Digital Video System Diagram



Video Host

HDTV or Digital Display

E²PROM

BCM7501
DVI Tx with HDCP

BCM7520
DVI Rx
with HDCP

Display Controller

On-Screen Display

Output Driver

Microprocessor

The **BCM7520**, a member of Broadcom's family of display products, is a full-rate, DVI 1.0-compliant receiver with High-bandwidth Digital Content Protection (HDCP). The **BCM7520** is a high performance and robust interface for computing and entertainment systems alike. The receiver provides a secure, Transition Minimized Differential Signaling (TMDS®) link between a digital monitor or TV and any source of digital video content, such as a DVD player, digital set-top box or PC graphics card.

The **BCM7520** receives up to 165 Megapixels per second (Mpps) of true color, 24-bit video data supporting resolutions from VGA (640 x 480) to UXGA (1600 x 1200). This bandwidth supports all television formats, including HDTV, without requiring compression which can degrade image quality. For very high resolution displays or high refresh rates, the **BCM7520** functions as a dual link receiver when paired with an additional **BCM7520**. Dual link capability supports resolutions at UXGA and above.

The **BCM7520** includes integrated line termination to reduce communication impairments such as reflection, noise and ringing that can occur over the DVI cable. Precise termination, low-jitter PLLs and 6x oversampling enable the **BCM7520** to provide exceptionally accurate data recovery. Additionally, the pixel

alignment block corrects inter-channel skew up to 1.9 pixel clock cycles, making the **BCM7520** an extremely robust receiver that inter-operates reliably with the BCM7501 and other DVI transmitters.

HDCP encrypts data, allowing for the transmission of high-quality, uncompressed digital video while satisfying MPAA security requirements. HDCP uses keys in both the transmitter and receiver to authenticate and encrypt/decrypt the data stream, providing a secure, physical link between the transmitter and receiver. The **BCM7520** utilizes a unique method of handling HDCP keys that provides maximum security without compromising testability.

Designed by the world's leader in communications system-on-a-chip circuits, the **BCM7520** is a secure, robust, .18m DVI receiver, ideal for current and next-generation high-resolution display products.

Connecting
e v e r y t h i n g ®

**BROADCOM**®