

Combination TV Encoder and Digital Visual Interface (DVI) Transmitter

CX25890/1/2

Dual video streams, simultaneous operation, independent resolutions and content

Conexant's broadband communications portfolio includes a comprehensive suite of semiconductor solutions that enable the digital home and information network. The CX25890/1/2 is a high performance, single-chip device that combines a Digital Visual Interface (DVI) transmitter with a TV out encoder - each operating independently of one another. The combination device can be used in a variety of notebook and desktop PCs as well as consumer appliance applications such as set-top boxes and DVD players.

No limitations - Only flexibility

Today's graphics chips typically provide two digital output ports, which when combined with the CX25890/1/2 gives the user the ability to connect up to two different display media simultaneously. TV and video editing applications are well suited for this device. Download photos from your digital camera onto your PC - assemble a slide show – edit images and add captions - and see the results on the TV at the same time you're editing on a flat panel connected to your PC. Drive two different types of TVs off of one set-top box (one flat panel and one traditional analog TV). All these application scenarios are possible because the CX25890/1/2 truly provides system manufacturers the flexibility to create one design for multiple applications.

Three versions of the DVI transmitter + TV out encoder are available. All three provide simultaneous operation with different resolutions along with concurrent and independent content.

CX25890 has standard analog NTSC/PAL/SECAM/Component TV out and a single link DVI transmitter. It is the most cost-effective member of the product series.

CX25891 provides all features in the CX25890, adds high definition television (HDTV) TV out, and incorporates the ability to have a high-resolution dual link DVI output. The CX25891 supports any of the following combinations: TV out and single link DVI, dual link DVI, or two single DVI links.

CX25892 includes everything in the CX25891 but adds the industry standard high bandwidth digital content protection (HDCP), for both single link DVI and dual-link DVI.

The CX25890/1/2 is packaged in a 128-pin ETQFP (14.0 mm x 14.0 mm). All series members are pin compatible with each other.



Distinguishing Features

- Simultaneous DVI transmitter and TV output from two independent digital input streams
- Two different yet concurrent displays driven by two DVI links
- Flexible, single-chip solution for low, mid and high-end applications
- Lowest cost solution and component count requiring smaller layout space
- Highest performance TV out technology including HDTV output (CX25891/2 only)
- Adaptive flicker filtering for enhanced TV image output
- HDCP for CX25892
- Register compatible with prior Conexant TV encoders

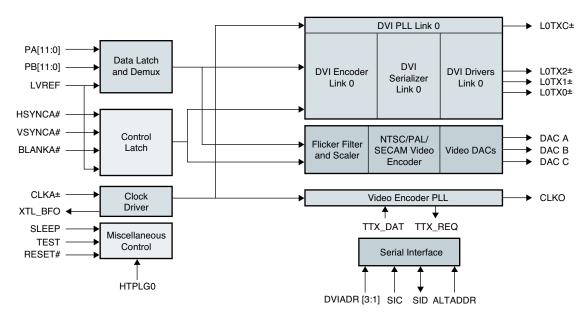
Part Number CX25890/1/2

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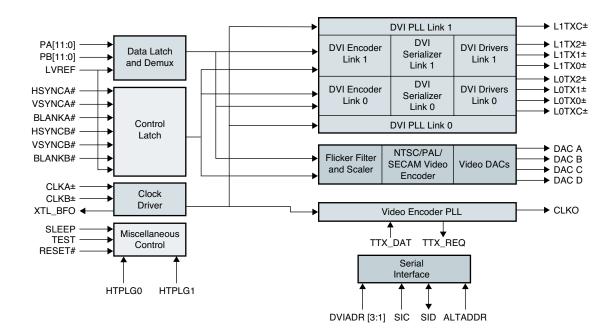
Description Video Encoder and DVI Transmitter

Feature Overview

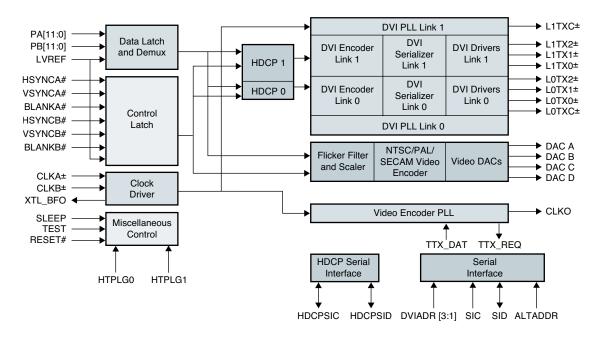
	TV Encoder	HDTV TV Out	Macrovision	Independent DVI Links (Channels)	HDCP 1.0	Concurrent Operation	Independent Resolutions on each channel
CX25890	Yes	No	Yes	1	No	Yes	Yes
CX25891	Yes	Yes	Yes	2	No	Yes	Yes
CX25892	Yes	Yes	Yes	2	Yes	Yes	Yes



CX25890 Block Diagram



CX25891 Block Diagram



CX25892 Block Diagram

CX25890/1/2 Features

CX25890

- Single-link DVI 1.0 transmitter
- DVI data rate from 25 MHz to 165 MHz
- DVI resolutions from 640 x 350 to 1600 x 1200 (60 Hz refresh)
- · Hot-plug detection for DVI
- Multiple power-down modes for DVI
- 3.3 V operation with scalable low-voltage graphics controller interface from 3.3 V to 0.8 V
- Multiple industry-standard digital input formats:
 - 15/16-bit RGB multiplexed
 - 24-bit RGB multiplexed (standard and alternate)
 - 16-bit 4:2:2 YCrCb multiplexed (TV out only)
 - 24-bit 4:4:4 YCrCb multiplexed (TV out only)
 - CCIR601 and CCIR656 interlaced (TV out only)
- VGA in to TV out with resolutions from 320 x 200 to 1024 x 768
- Software compatible with CX25872/3/4/5 (TV out only)
- Worldwide video output support
 - NTSC-M, -J, and -4.43
 - PAL-B, -D, -G, -H, -I, -M, -N, -Nc, and -60
 - SECAM
- · Interlaced and non-interlaced digital TV and DVI inputs
- Teletext encoding (WST system B) for various clock rates
- S-Video output (simultaneously with up to 1 Composite output NTSC, PAL, or SECAM)
- Closed caption encoding (NTSC and PAL)
- 5-line vertical filtering scaling for overscan compensation and flicker reduction
- Component YCRCB analog output
- Adaptive flicker filtering for enhanced image output
- · Luma and chroma comb filtering
- · Peaking filters for text sharpness
- · Macrovision 7.1.L1 copy protection
- Programmable power management
- VGA RGB or YUV output
- Master or slave clocking and timing operation
- Auto detection of TV
- WSS and CGMS support for variable clock rates
- 48 auto configuration modes

(CX25890 Continued)

- · 2-wire serial interface
 - TV out core has different device addresses and register bank than DVI transmitter core
- · Lower power standby
- Simultaneous output of CVBS, S-video, and DVI single link, or VGA RGB/YUV and DVI single link

CX25891

Same features as the CX25890 plus:

- Dual-link DVI supports DVI resolutions from 1600 x 1200 to 2048 x 1536 (maximum)
- Two simultaneous concurrent DVI links (same content) up to 1600 x 1200
- Two concurrent DVI links (different content) up to 1600 x 1200
- High-Resolution DVI 1.0 Support
- · HDTV output mode
 - Compliant with EIA770-3 and SMPTE274M/293M/296M
- Component (YPRPB) or RGB HD outputs
- Automatic tri-level sync and broad pulse generation
- HDTV Macrovision copy protection for 525p(480p) and 625p
- Support for Japan D1(525i), D2 (D1 and 525p),
 D3 (D2 and 750p), D4 (D3 and 1125i) HDTV format
- 1080i, 720p, 480p ATSC resolutions for both HDTV and DVI
- SCART RGB or Y/C output for Europe
- Component YUV analog output
- 4 x 10-bit DACs
- Simultaneous S-video with up to 2 Composite video outputs
- Standard PAL WSS and SECAM ITU-R TST.1119-1 wide-screen signaling
- EIAJ CPR-1204-1 and CPR-1204-2 supported too
- Pin compatibility with CX25890 and CX25892

CX25892

Same features as the CX25891 plus:

- High-bandwidth Digital Content Protection (HDCP) 1.0 support
- Pin compatibility with CX25890 and CX25891

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