Product Brief

Zoran Corporation
1390 Kifer Road
Sunnyvale, CA 94086-5305

Tel 408.523.6500
Fax 408.523.6501
www.zoran.com

ZORAN®

Description

Zoran's CVE4 Progressive Out Video Encoder is a silicon-efficient, high-quality Intellectual Property Core for video IC designs requiring the progressive scan TV output function. The CVE4 encodes YCrCb, 4:2:2 digital video into the 480p and 576p standards. All NTSC, PAL, or SECAM TV standards for interlaced output are also supported. CVE4 supports vertical blanking interval (VBI) encoding, including closed caption, teletext, WSS and CGMS-A encoding. CVE4 also includes support for Macrovision 7.1.L1, the copy protection scheme used in DVD players and set-top boxes. Six separate output busses for Y,

Composite, Chroma, and RGB provides for flexibility in connection and multiplexing to DACs.

Proven in silicon and shipping in the millions, the CVE4 progressive out video encoder greatly reduces the risk and time involved when integrating the progressive out video encoding function into an IC. When combined with Zoran's Frame-It-1 Video Deinterlacer, CVE4 provides an industry recognized standard for quality progressive scan output. CVE4 is incorporated into Zoran's own Vaddis DVD playback ICs.

Features

- 480p and 576p progressive output supported
- Encodes 4:2:2 YCrCb into all variations of NTSC, PAL or SECAM TV standards for interlaced output
- Simultaneous output of composite video, S-video and component video supported
- Dual chroma paths for optimal output of both composite video and S-Video component video
- CCIR 601, 604 and 656 and SMTPE 253 standards supported
- Macrovision 7.1.L1 copy protection

- 47-tap luma filter
- Outputs 10-bit data to DACs
- Vertical Blanking Interval (VBI) encoding support
- Closed caption, teletext, WSS & CGMS Encoding
- Uniform 54 MHz clock; fully synchronous design
- 4x oversampling of luminance and chrominance filter for interlace mode
- 2x oversampling for progressive scan mode
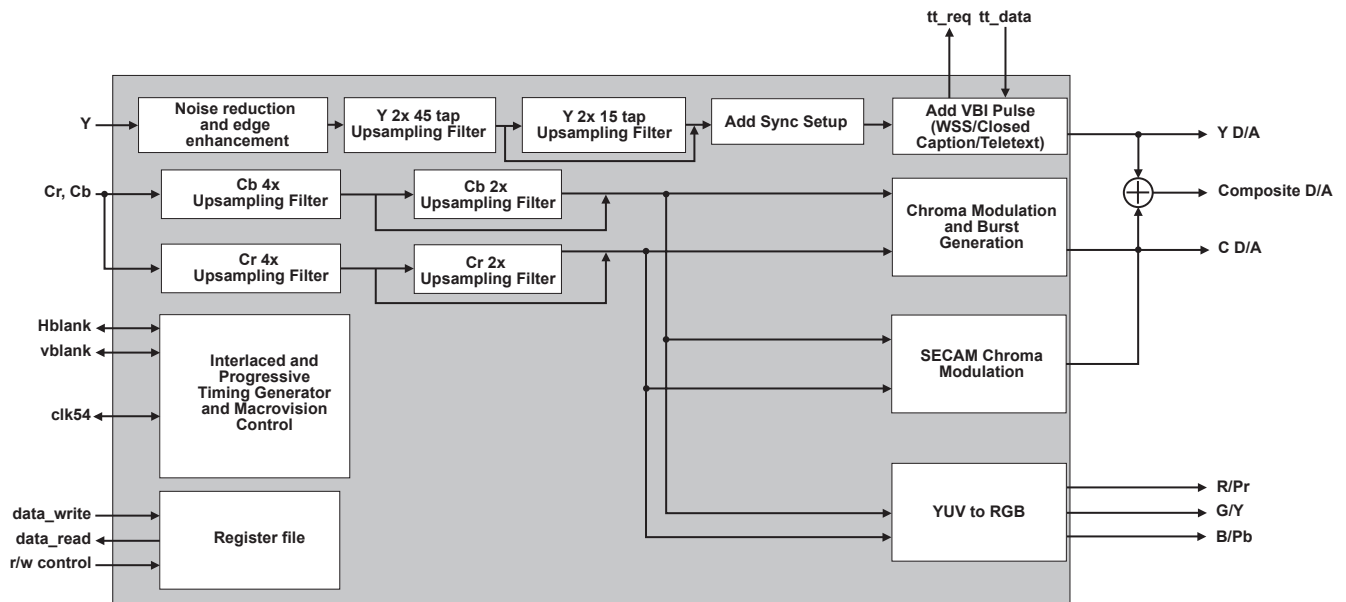- Process technology independent "softcore"

Integrated Circuit Applications

- PC video
- Digital TV

- Set top box decoders
- Any system requiring progressive TV output

Deliverables

- Compilable Verilog source code
- Bit accurate, cycle accurate C model
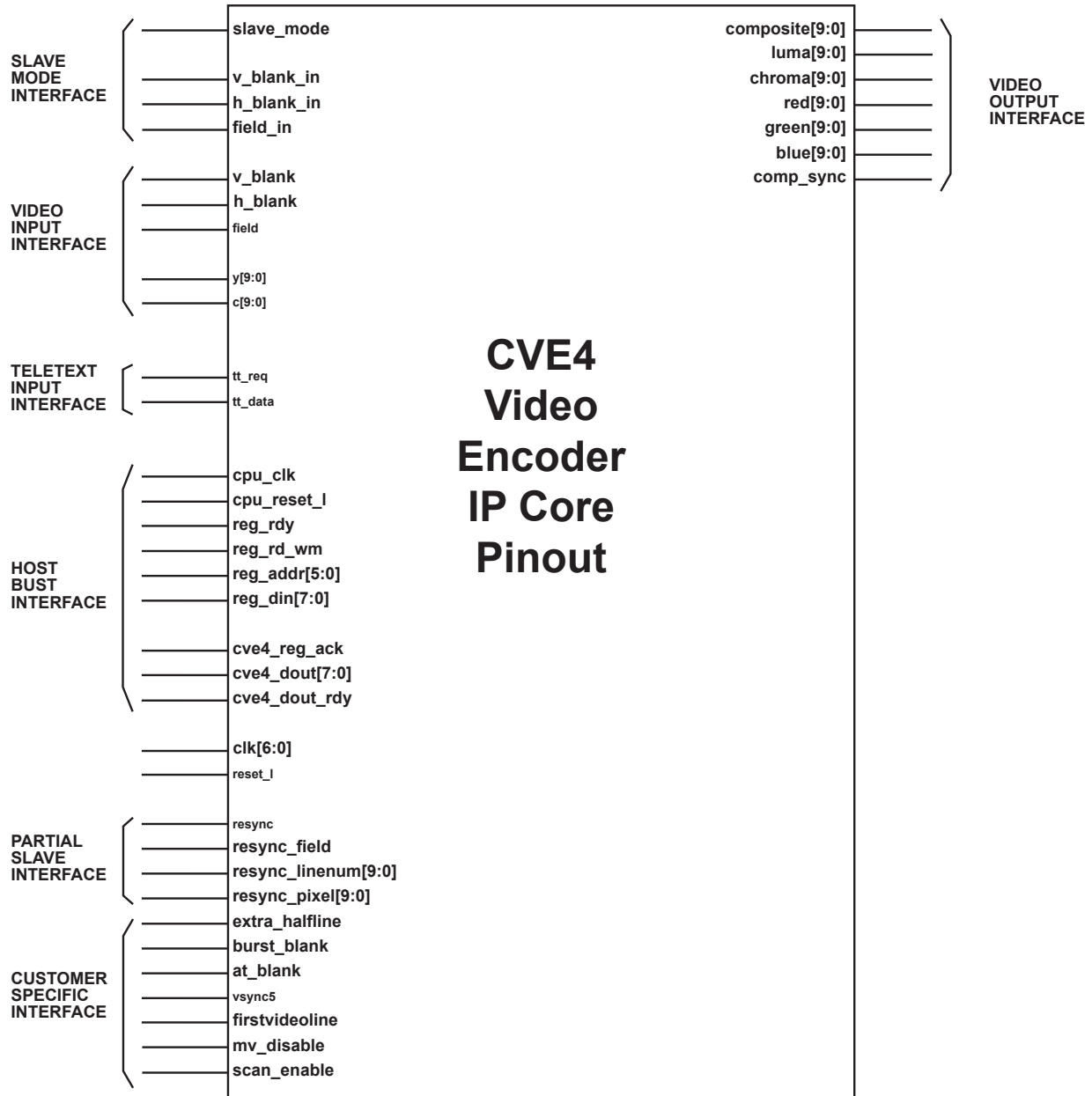- Synopsis synthesis scripts

- Test input files
- Documentation

CVE4 Progressive Out Video Encoder Block Diagram

Product Brief

CVE4 Progressive Out Video Encoder Logical Pinout

SLAVE MODE INTERFACE
- slave_mode
- v_blank_in
- h_blank_in
- field_in

VIDEO INPUT INTERFACE
- v_blank
- h_blank
- field
- y[9:0]
- c[9:0]

TELETEXT INPUT INTERFACE
- tt_req
- tt_data

HOST BUST INTERFACE
- cpu_clk
- cpu_reset_l
- reg_rdy
- reg_rd_wm
- reg_addr[5:0]
- reg_din[7:0]
- cve4_reg_ack
- cve4_dout[7:0]
- cve4_dout_rdy

- clk[6:0]
- reset_l

PARTIAL SLAVE INTERFACE
- resync
- resync_field
- resync_linenum[9:0]
- resync_pixel[9:0]

CUSTOMER SPECIFIC INTERFACE
- extra_halfline
- burst_blank
- at_blank
- vsync5
- firstvideoline
- mv_disable
- scan_enable

CVE4 Video Encoder IP Core Pinout

VIDEO OUTPUT INTERFACE
- composite[9:0]
- luma[9:0]
- chroma[9:0]
- red[9:0]
- green[9:0]
- blue[9:0]
- comp_sync

For more information, contact Zoran's Sunnyvale office or the office nearest you: