VC0325 USB 2.0 High-Speed PC Camera Processor with Built-in JPEG Encoder

General Description

VC0325 is a PC camera controller with USB 2.0 interface and USB 1.1 compatible. With high-speed USB2.0 transceiver VC0325 can easily achieve 30 fps with VGD image resolution and 60 fps with SIF image resolution. It also supports for off-the-shelf CMOS sensor up to 1.3M and CCD sensor to VGA pixel resolution by built-in JPEG encode engine.

VC0325 comes with 64-pin LQFP package at 10mm x 10mm foot print, which is valuable choice for high end PC camera and network camera.

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<tr>
<th>Sensor Support</th>
<th>Off-the-shelf CMOS sensors up to 1.3M pixel resolution and CCD Sensor to VGA</th>
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<tr>
<td>JPEG Encoder</td>
<td>Built-in</td>
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<tr>
<td>Video Output Format</td>
<td>1.3M, VGA, SIF, QSIF</td>
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<tr>
<td>Still Image Output Format</td>
<td>1.3M, VGA, SIF</td>
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<td>USB Protocol</td>
<td>USB 2.0 HS and FS</td>
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<tr>
<td>Max Frames/sec.</td>
<td>30 @ VGA, 60 @ SIF</td>
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<tr>
<td>OS</td>
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<tr>
<td>64 bit OS</td>
<td>Windows</td>
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<td>Special Effects</td>
<td>Relief, Negative……</td>
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<td>User-defined frame</td>
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<td>USB Video Class</td>
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<td>Digital Zoom</td>
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<td>Automatic exposure</td>
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<td>Auto Defect pixel detection and cancellation</td>
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<td>Auto White Balance</td>
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<td>Face tracking</td>
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</table>
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Chip Features

Imaging Applications
- Still image capture (one frame at a time)
- Video streaming up to 30fps at VGA resolution and 15fps@1.3M

Built-in 8-bit MCU
- High performance MCU core with rich supporting peripherals
- On-chip SRAM for high performance

GPIOs for Typical Camera Control Support
- Snapshot button
- Privacy shutter switch
- LED indicator

Image Processing
- 10-bit wide accuracy in color processing
- Auto Exposure (AE)
- Auto White Balance (AWB)
- Auto Gain Control (AGC)
- Auto defect pixel detection and cancellation
- Auto motion detection
- Auto flicker detection and cancellation
- Auto lens shading compensation
- Configurable image noise reduction
- Configurable image sharpness enhancement
- Configurable gamma and color correction
- Configurable brightness, color saturation, and hue
- Edge-adaptive CFA interpolation
- Back light compensation
- Support black and white sensor natively
- Up to 16 windows for statistical collection, exposure and backlight correction
- Embedded line buffers to capture, process and compress (MJPEG) 30fps VGA in YUV422 @ < 22:1 compression ratio over a USB 2.0 FS connection (< 62% bandwidth usage)
- Embedded line buffers to capture, process and compress (MJPEG) 15fps 1.3M in YUV422 @ < 6:1 compression ratio over a USB 2.0 HS connection (< 41% bandwidth usage)
- Histogram data (64 bins)

Output Video Format
- Bayer (raw 8 or 10 bits/pixel)
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- YUY2 (16 bits/pixel)
- JPEG/MJPEG

- Support for off-shelf VGA/1.3M CMOS sensor and VGA CCD sensor
- Support for USB 2.0 interface for data transfer
- Support for USB Video Class
- Support for various OS including 64-bit windows, windows, MAC, Linux…..

- Support for various Special Effects via hardware
  - Monochrome
  - Sepia
  - Special color
  - Negative
  - Relief
  - Sketch
  - ......

- Support for User-defined frame
- Support for Face tracking
- Support for USB Video Class
- 64-pin LQFP Package
- Compliance
  - USB Specification Rev.2.0 Compliance
  - Microsoft WHQL compliance

- Power Management
  - 1.8V Core and 3.3V I/O
  - Multiple Power Modes

- Operating Temperature
  - Extended -40°C to +125°C
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VC0325 Block Diagram

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