VC0326 USB 2.0 High-Speed PC Camera Processor with Built-in JPEG Encoder and Stereo ADC

General Description

VC0326 is Vimicro’s latest platform for high quality PC camera products, which is fully compliant with the increased bandwidth of USB 2.0 High-Speed (HS) protocol and USB audio class. VC0326 also integrates sensor interface, 10-bit imaging signal processor, built-in JPEG/MPEG2 encode engine, and AC97 interface. It also provides a high quality audio sampling function as sound recording by the built-in 16bit sigma-delta ADC. VC0326 is designed as a cost-effective device replacing the complex and costly chip sets used in current PC Cam/webcam designs.

VC0326 comes with 64-pin LQFP package at 10mm x 10mm footprint, which is a valuable choice for high end PC Camera and network camera.

<table>
<thead>
<tr>
<th>Sensor Support</th>
<th>Off-the-shelf CMOS sensors up to 1.3M pixel resolution and CCD Sensor to VGA</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPEG Encoder</td>
<td>Built-in</td>
</tr>
<tr>
<td>Video Output Format</td>
<td>1.3M, VGA, SIF, QSIF</td>
</tr>
<tr>
<td>Still Image Output format</td>
<td>1.3M, VGA, SIF</td>
</tr>
<tr>
<td>USB Protocol</td>
<td>USB 2.0 HS and FS</td>
</tr>
<tr>
<td>Max Frames/sec.</td>
<td>30 @ VGA, 60 @ SIF</td>
</tr>
<tr>
<td>OS</td>
<td>Windows, MAC, Linux, Vxworks, WinCE</td>
</tr>
<tr>
<td>64 bit OS</td>
<td>Windows</td>
</tr>
<tr>
<td>External ADC Interface</td>
<td>AC97</td>
</tr>
<tr>
<td>ADC</td>
<td>Embedded</td>
</tr>
<tr>
<td>Special Effects</td>
<td>Relief, Negative……</td>
</tr>
<tr>
<td>User-defined frame</td>
<td>Supported</td>
</tr>
<tr>
<td>USB Video Class</td>
<td>Supported</td>
</tr>
<tr>
<td>Digital Zoom</td>
<td>Supported</td>
</tr>
<tr>
<td>Echo Cancellation</td>
<td>Supported</td>
</tr>
<tr>
<td>Automatic exposure</td>
<td>Supported</td>
</tr>
<tr>
<td>Auto Defect pixel detection and cancellation</td>
<td>Supported</td>
</tr>
<tr>
<td>Auto White Balance</td>
<td>Supported</td>
</tr>
<tr>
<td>Face tracking</td>
<td>Supported</td>
</tr>
</tbody>
</table>
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 for black and white sensor natively
- Support for Echo Cancellation
- 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)

Audio pipe
- Programmable 2.7V, 2.0V, or 1.5V microphone bias voltage output
- 16-bit ADC (Sigma-Delta)
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- Digital AGC
- Volume/mute control
- Sample rate conversion mechanism
- AC97 interface

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

Output Audio Format
- PCM (8bits or 16 bits)

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

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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VC0326 Block Diagram

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