Product Brief:

DSKeye gigabit

Features
- 5.2 Mega pixel Omnivision camera
- Cyclone II FPGA
- Santa Cruz expansion interface
- 10/100/1000 Gigabit Ethernet interface

Applications
- Machine vision
- Video phone
- Remote image sensing
- Surveillance systems
- Biometrics
- Image recognition, filtering and compression
- Video streaming
- Stand-alone vision systems
- Net connected smart camera
- VoIP projects

The DSKeye from BITEC Ltd is a TI DSK daughterboard gathering the latest FPGA technology, a 5.2 mega pixel camera and user configurable interface options to deliver a Smart Camera system for development and research at a fraction of the cost normally associated with such technology.

The latest evolution of the DSKeye introduces gigabit Ethernet interfacing. Based on the latest ASIX™ high-performance 32/16-bit, tri-mode (10/100/1000) gigabit Ethernet MAC, the DSKeye now permits users to transfer image data using the latest networking technology.

A DSP/BIOS optimised port of the popular open source lwIP stack is included with the DSKeye. This software TCP/IP implementation allows high performance TCP/IP networking using standard Berkley Sockets or alternative low-level access.

The DSKeye still maintains the Santa Cruz interface headers for flexible interfacing. There is a growing range of standard daughter modules available via the ALTERA™ website. Developers can load peripheral devices such as UARTS, PIO etc and access them over the DSP bus.

For more information www.bitec.ltd.uk
Specifications

Camera
- 5.2 Mega pixel Omnivision CMOS sensor (ov5610 or ov5620)
- Array size
  - QSXGA: 2592x1944
  - SXGA: 1280x960
  - VGA: 640x480; 1280x480
  - HF: 320x200; 1280x200
- Electronic exposure
  - QSXGA: Up to 1998:1
  - SXGA: Up to 978:1
  - VGA: Up to 488:1
  - HF: Up to 208:1
- Output format: 10-bit digital RGB Bayer
- Lens size: 1/1.8"
- Lens Chief Ray Angle: 15 deg
- Max image transfer rate
  - QSXGA: 8 fps
  - SXGA: 30 fps
  - VGA: 60 fps
  - HF: 140 fps
- Sensitivity: 1.2 V/Lux/sec
- S/N ratio: 42dB
- Dynamic Range: 60 dB
- Pixel size: 2.775 um x 2.775 um
- Dark current: 10mV/sec @ 60 deg
- Fixed pattern noise: 0.05% of Vpeak-to-peak
- Image area: 14.22mm x 14.22mm
- 10 bit ADC output
- Bayer pattern output

Lens
- Focal length: 9.4mm
- F No: 3.0
- Distortion: <3.0%
- Focus: "M to infinity"
- FOV: 49 deg diagonal
- IR cut-off filter: 650nm
- Will accept user lenses with matching characteristics
- Mechanical shutter version available

Gigabit Interface
- ASIX™ AX88180 + Marvell 88E1111
- Compatible with IEEE802.3, 802.3u, and 802.3ab standards
- Support 10/100/1000Mbps data rate
- Support full duplex operation with 1000Mbps data rate
- Support full and half duplex operations with 10/100Mbps
- Support Wake-on-LAN function by following events
  - Detection of network link-up state
  - Receipt of a Magic Packet
- Standard Ethernet LED indication

Santa Cruz Expansion interface
- 40 user configurable buffered I/O signals connected to FPGA. All 5V tolerant
- 1 PLL connected clocked pins

- Range of third party interface boards available

ALTERA™, Cyclone II FPGA
- Cyclone II EP2C8
- 8256 logic elements
- 165888 RAM bits
- Large capacity for user defined signal processing logic
- Can be programmed using free, ALTERA Quartus II design suit.

Compatibility
The DSKeye gigabit is designed to run on TI DSKs including the C6x and C5x ranges. The supplied software is compatible with CCS version 2.1 and later.

Kit Contains
- DSKeye gigabit daughtercard
- ov5610 or ov5620 camera module
- Byteblaster download cable
- CD ROM containing sample and source code.
  - FPGA source
  - H263 video streaming
  - Image view over web browser example