DESIGNED FOR A WIDE VARIETY OF APPLICATIONS

Automotive Driver Assistance
Industrial Machine Vision
Security and Surveillance

Blackfin ADSP-BF60x Processors

Embedded Vision and High Performance Digital Signal Processing

How is the Pipeline Vision Processor (PVP) configured?

Developers can use c-callable APIs to program the PVP at the block level. This is known as the PVP API Library.

The PVP API Library Manual is distributed in CrossCore® Embedded Studio

In addition developers have access to libraries of image processing libraries developed by ADI. These the Image Processing Toolbox and the

Video Analytics Toolbox – These libraries of code implement image processing techniques by making efficient use of the 2 Blackfin processor cores and the PVP as applicable.

In addition there are PVP Code Examples including:

-Video 'talk-thru' example
-Edge Detection example using Traffic sign video for input and executing TSR
-Edge detection.c – source code made available

Does the PVPs' setup and data management occupy the processor cores?

The PVP is a hardware block that is configured by the manipulation of registers. This is done via a library of APIs and drivers, and the DSP core is involved in the setup and configuration, however the data flow and the real-time processing within the PVP is handled without core intervention.

Does the PVP consume the processors' internal or external memory?

The PVP has dedicated memory buffers designed specifically for its use, so the PVP does not consume or reserve memory from the L1, L2, or L3 memory spaces. Note that processed or preprocessed frames may be stored in L1, L2, or L3 for future processing or core use.

What is the difference between the PVP supporting HD resolution in the BF609 and VGA in the BF608?

The PVP hardware is the same in these 2 products; however the support for HD resolution (1280x940) in the BF609 video subsystem is a result of its ability to run at a faster internal clock rate. The BF608 video subsystem, capable of VGA (640x480) resolution at 30 fps, is specified at a slower internal rate.

Is the BF609 capable of processing all color components of an image?

The BF609 is capable of performance analytics on color video. This processing would be done in the core often based on a region of interest identified by the PVP. The PVP is designed to process a single color component.

The BF609 is capable of up to 5 concurrent ADAS functions… which resolution is supported?

VGA resolution.

Applicability of PVP over multiple applications

The PVP is useful in many types of image processing and video analytics. These techniques executed on the PVP and 2 DSP cores have utility in a number of applications including Automotive Advanced Driver Assistance Systems (ADAS), Embedded Vision and Robotics for Industrial Manufacturing Systems, Security and Surveillance system analytics, Image-based Bar Code Readers, and Document Scanners.

Are the software algorithms used with the PVP to implement the 5 ADAS functions available to customers?

There are a number of software libraries distributed with CrossCore® Embedded Studio including the Image Processing Toolbox and the Video Analytics Toolbox – These libraries of code implement image processing techniques by making efficient use of the 2 Blackfin processor cores and the PVP where applicable.

ANALOG DEVICES

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Is the PVP capable of processing 3 camera streams simultaneously?

3 simultaneous streams are not possible. The PVP can only be fed from one of the three ePPIs at a time. It is possible to process a stream from one source for a given time and then switch the PVP to operate on a different stream.

What Process Technology was used to fabricate the BF60x family?

65-nm Low Power process.

What is the typical Power Dissipation of the new BF609 processor?

The Typical room temperature power dissipation of the BF609 processor with both cores running at 500 MHz is estimated at ~400 mW.

Is this the first dual-core Blackfin? Was the ADSP-BF561 a precursor to this product? What are key improvements?

ADI's BF561 dual-core Blackfin can be thought of as a precursor. The BF60x family offers numerous improvements, including the video subsystem, improved on-chip bandwidth, safety features, connectivity such as USB, 2 10/100 Ethernet MACs with IEEE 1588 support, Removable Storage Interface, and upgraded memory with larger L1 and L2 sizes, and updated DDR2 and LPDDR1 support for external memory. In addition the BF608 and BF609 feature a video subsystem.

Does VisualDSP++® support the new BF609 family?

No. VisualDSP++ will continue to be supported for existing Blackfin, SHARC, and TigerSHARC products, however all new Blackfin and SHARC processors from ADI from the BF609 onwards will be supported in CrossCore® Embedded Studio only. Based on the industry standard Eclipse environment, CCES offers a much more modern and compelling development experience with a best in class smart editing environment and exceptional support for multi-core development and debugging.

What level of multicore programming support is provided?

MCAPI, the Multicore Communications API, was established by The Multicore Association (www.multicore-association.org).

It is targeted at closely distributed cores, and is processor independent, supporting homogeneous and heterogeneous topologies with a message passing API, Synchronization primitives.

Does CrossCore® Embedded Studio meet MISRA-C compliance?

Yes.

Is a Heat sink required?

No. The BF609 can run at 500 MHz each core at up to 105degC Tambient.

Is the ePPI available on all BF60x?

Yes, there are 3 ePPI ports, also known as Video ports, on all BF60x processors.

Where can I find Technical Support?

Visit the EngineerZone™, Analog Devices online technical support community:

http://ez.analog.com/welcome

To Contact Analog Devices Processor Technical Support: Click Here

www.analog.com/processors

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