



?

DVI™ TECHNOLOGY & i750 VIDEO PROCESSORS

Sanjay Vinekar

Intel Corporation

Slide 1



OUTLINE

- Video Processing Requirements in PCs
- i750 Design Objectives
- i750 Video System
- 82750PA, Pixel Processor
 - Block Diagram
 - Key Features
- 82750DA, Display Processor
 - Block Diagram
 - Key Features
- Component Summary
- i750B Video Processors
- Summary

Slide 2



Video Processing Requirements in PCs

Digital, CD-ROM based storage

- Interactivity
- High Storage Density
- Low data rate (1.2Mbit/sec)

30 Frames/second

256 X 240 minimum pixel resolution

8 bits/color component

Above requirements mean:

- Data is compressed before storage
(1.2Mbits to describe 256x240x30 pixels or .65bit/pixel)
- Data is decompressed before display
(for 12.5Mhz instruction rate, <7 instructions/pixel)

DVI™ Technology is a framework which makes Video Processing possible.



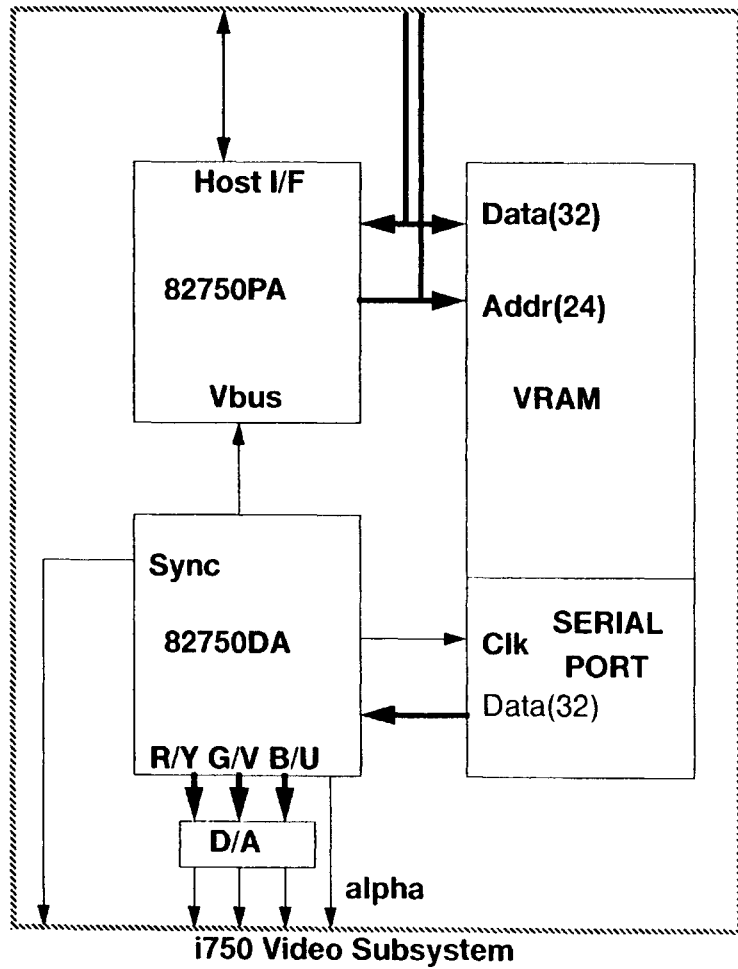
i750 Design Objectives

- Full Screen, 30fps Motion Video
- High Resolution Stills (512x400 VGA, 768x512 NTSC)
- Graphics (2-D and 3-D drawing and animation)
- Texture Mapping
- Special Effects
- Low System Cost
(<10 components for a multimedia subsystem)

Solution

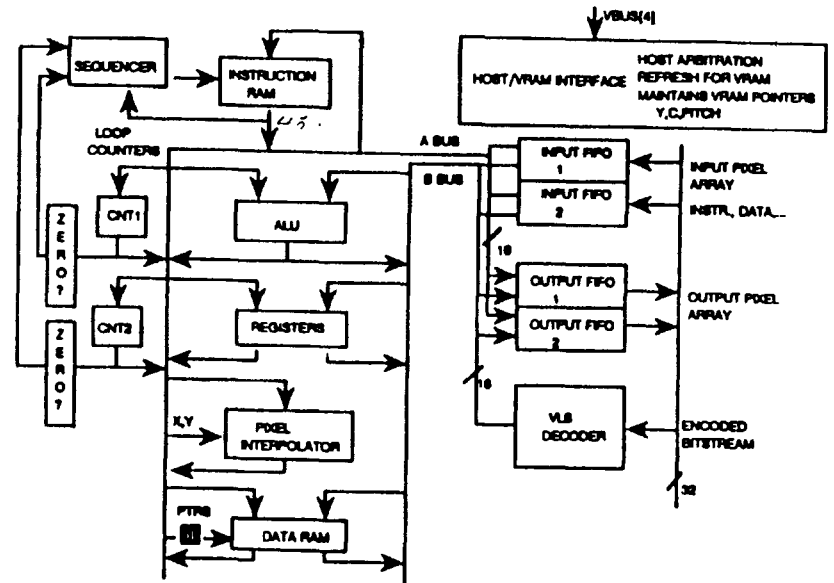
- 82750PA
-Microcode Programmable Pixel Processor
- 82750DA
-Highly Programmable Display Processor
- VRAM

intel®



Slide 5

intel®



82750PA Block Diagram

Slide 6



82750PA Key Features

Microcode Programmable

- Wide Instruction Word (48 bits)
- On-chip Instruction RAM (256 x 48)
- Zero-Delay Branching

Powerful Execution Unit

- Dual 16 Bus Architecture
- General Purpose ALU
- On-chip Data RAM (256x16)
- Register Files (8x16)
- Loop Counters(2)

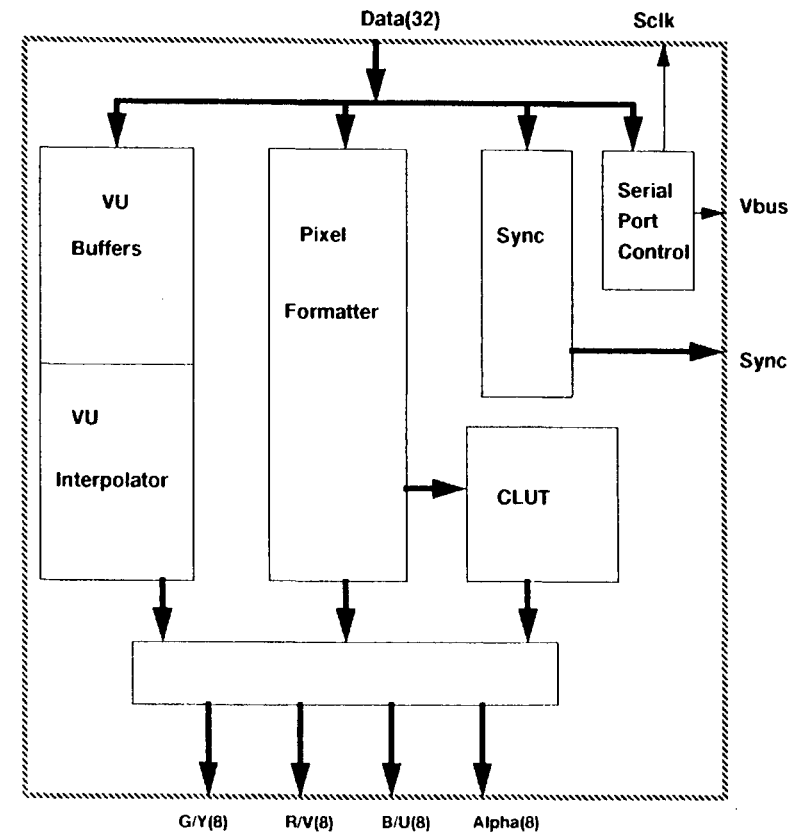
I/O

- 2 Input FIFOs
- 2 Output FIFOs

Special Purpose Hardware

- Pixel Interpolator
- Variable Length Sequence Decoder

Slide 7



82750DA Block Diagram

Slide 8



82750DA Key Features

Highly Programmable Sync & Timing

- All Sync Parameters Are Register Programmable
- Virtually Any Sync Format Can Be Programmed
VGA,NTSC,PAL,SECAM
- Many Pixel Resolutions Can Be Programmed
768x512,512x400,256x240

Interpolation Support for Subsampled Bitmaps

- On-chip Buffers For V,U Samples (2 x 256 pixels each)
- Real Time Interpolators For 2x and 4x

On-chip Color Lookup Table

Programmable Functional Modes

- 8,16,32-bit Graphics Modes
- 9-bit Video Mode
- Mixed Graphics & Video Mode

Special Functions

- Digitizing Support
- Keying And Overlay Support
- Alpha Channel Support



i750 Summary

	82750PA	82750DA
Clock	12.5Mhz	20.0Mhz
Process	CMOS,1.5micron	CMOS,1.5micron
Design	Si Compilation	Si Compilation
Package	132-pin CPGA	117-pin CPGA



i750B Chipset

- Full Custom
- CHMOS, 1 Micron Process
- Plastic Packaging

82750PB

- 2X Clock Speed
- 2X On-chip Memory
- 2X I/O Bandwidth

82750DB

- 2x Clock Speed
- Full 3 x 256 x 8 Color Look-up Table
- YUV-RGB conversion
- On-chip Video D/A



Summary

i750 Chipset brings Multimedia capability to PCs.

- Full Screen 30fps Motion Video
- CD-ROM Data rate
- Real-time Capture and Compression
- High Resolution Stills
- Graphics and Animation
- Texture Mapping
- Special Effects

- Highly Programmable

- Low System Cost

**i750B Video Processors Will Have 2X Performance
And Lower Cost**