Brooktree Reveals Multimedia Plans

New Chip Set Merges Audio, Video, Graphics on Local Bus

by James L. Turley

Moving beyond its traditional RAMDAC products, Brooktree (San Diego, Calif.) has announced a new set of chips for multimedia applications that brings together audio and video processing for the first time in one chip set. Coincident with the announcement, the company has formed a new multimedia division to handle the development and marketing of future devices.

Brooktree's approach to multimedia for the desktop is fundamentally different from existing designs. The MediaStream family uses a compressed storage format for full-motion video frames that uses substantially less memory than conventional frame buffers. The more compact video stream also relieves congestion on the local bus when transferring full-motion video from, say, a disk controller to the video controller.

The heart of the new family is the BtV2115 MediaStream controller. It acts as the central hub and is the only software-visible part. As Figure 1 shows, the 2115 has four ports: the host bus, which can be either VL Bus or PCI; a 32-bit path to standard VRAM; a port for the BtV2300 audio interface; and a connection for an optional BtV2811 video decoder. In a minimal configuration, only the host bus and the VRAM port are used; the 2300 adds stereo record and playback functions, while the 2811 permits direct input from NTSC or PAL video sources.

In Brooktree's design, a single VRAM array is used to store all audio, video, and graphics (as distinct from video) data. The 2115 controls the VRAM directly; the 2300 audio processor and 2811 video decoder, if present, communicate through the 2115. Although they share a physical VRAM array, all three data types are stored in different formats. The fourth member of the family, the BtV2487 PacDAC (packet data DAC) reads tagged data from the VRAM and decompresses images on the fly before driving analog RGB and NTSC or PAL outputs.

The packet data format distinguishes the Brooktree chip set from other implementations. Because video sources are stored in their native YUV format, these images consume much less space in VRAM than if each frame were converted to a traditional RGB pixel map. A 320×240 pixel true-color video image, for example, consumes only about 150K of VRAM, compared with 512K in a standard PC. A $1024 \times 768 \times 8$ background, two 240×180 4:2:2-encoded video windows, and stereo audio all fit in 1M of VRAM.

Color-space conversion is performed on the fly by the PacDAC as the data is read from VRAM. The 2115 controller and 2487 PacDAC have enough bandwidth to display two independent 320×240 true-color video streams at 30 frames per second over a graphics background. The PacDAC can also perform pixel interpolation, enlarging the video images as they are displayed.

Unlike conventional RAMDACs, the color depth of the video images is independent of the color depth of the graphics buffer. The separation of the video and graphics storage packets allows the chip set to display true-color video over simple 4- or 8-bit backgrounds—a common occurrence in multimedia Windows applications.

The BtV2300 audio processor communicates with the 2115 over a DIF-compliant bus. The DIF (Sony/Philips Digital Interchange Format) bus allows the chip set to connect directly to CD, DAT, and MiniDisc players and recorders without interface or conversion logic. The centralized control of the 2115 keeps audio and video synchronized. Such a holistic approach to synchronizing and managing different media promises to make MediaStream a strong competitor in the turbulent multimedia market. ♦

Price & Availability

Chip set samples are available now for $95; production is slated to begin in 2Q95. The chip set includes the BtV2115 MediaStream controller (PQFP-208), BtV2487 PACDAC (PQFP-100), and BtV2300 Audio Stream Interface (PLCC-44). For more information, contact Bill Berridge at Brooktree, 619.535.3273.

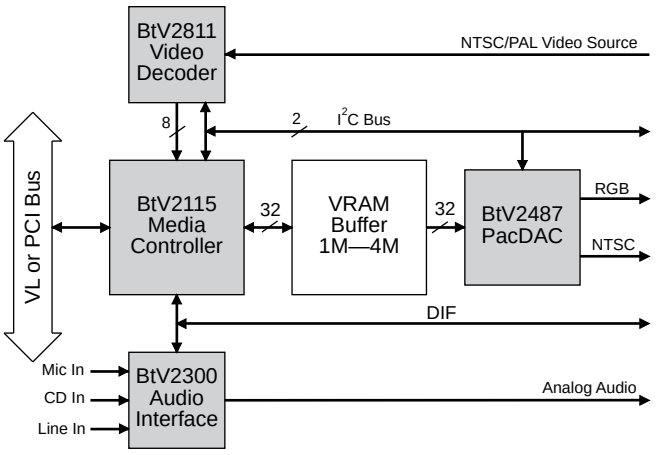

Figure 1. The MediaStream chip set uses a central stream controller with satellite controllers for audio processing and video input.

