

S3 Revamps Graphics Accelerator Line

Integrated Controllers at Low End, Video Acceleration at High End

by Linley Gwennap

Revitalizing its entire product line, S3 has announced five new graphics accelerators. The new chips span the range from highly integrated low-cost solutions to very high performance products. Except for the least expensive part, all are 64-bit designs. S3's technology has been lagging, particularly at the low end, where the company currently relies on the aging 805 (*see 061202.PDF*).

The 805 is replaced by two highly integrated controllers, the Trio32 and Trio64. These chips include a new graphics engine with substantially better performance than the 805. They also integrate a high-speed RAMDAC and clock generator. Taking advantage of the proximity of the graphics engine and RAMDAC, the chip transfers data between the two at speeds up to 135 MHz, twice as fast as some chips that use external RAMDACs. The clock generator includes a PLL that allows for a 67-MHz input clock, easing system design.

The Trio chips include a glueless interface to either PCI or VL-Bus, eliminating the need for external buffers or logic. The chips can connect to a separate video coprocessor using either the VESA Advanced Feature Connector interface or S3's proprietary shared frame buffer

interface. They also offer integrated power management.

Both use DRAM rather than VRAM to reduce subsystem cost. As their names imply, the Trio32 uses a 32-bit memory interface while the Trio64 uses 64-bit memory. The Trio32 supports up to 2M of memory; priced at \$20 in 10,000-unit quantities, the low-end chip is aimed at 486DX2 systems. The \$30 Trio64, with its higher bandwidth, can handle up to 4M of memory and is suited for DX4 and Pentium PCs with moderate graphics requirements. Both chips are sampling now, and S3 expects volume shipments by year end.

For high-performance desktops, S3 has extended its Vision line with the 866, 868, and 968. The 866 starts with a full-featured 64-bit graphics engine, while the 868 and 968 add video acceleration features, such as scaling, interpolation, and dithering (anti-aliasing). The two chips also perform YUV-to-RGB conversion on the fly; since many video compression algorithms use the YUV format, this feature allows the graphics chip to translate pixel data into the RGB format required by the RAMDAC, removing this burden from the CPU.

The three new chips are all pin-compatible. The 866 and 868 support up to 4M of DRAM for the frame buffer; the difference between the two chips is the 866's lack of video acceleration. The top-of-the-line 968 includes the video support and adds a controller for up to 8M of VRAM; it delivers the highest performance, particularly for demanding high-resolution, true-color applications.

The 866 carries a list price of \$38 in lots of 1,000 units, while the 868 goes for \$45 in the same quantities. The 968 runs \$60. All are expected to sample this month, with volume production in 4Q94.

S3, known for its broad software support, plans to offer a wide range of drivers for its new chips. In addition to Windows and OS/2, the company will deploy drivers for Windows NT on x86, PowerPC, Alpha, and MIPS processors. The Vision chips should be particularly attractive for these RISC platforms, given their high performance and aggressive prices.

The Trio chips, S3's first integrated controllers, strengthen the vendor's low end, where Cirrus has been the leading supplier with a line of integrated controllers. At the other end of the line, the new Vision accelerators deliver performance similar to that of speedy chips from companies like Matrox, but S3's devices are more reasonably priced and offer the advantage of pin-compatibility from the midrange through the high end. These new products should reaffirm S3's status as a volume leader in the desktop graphics market. ♦

Video Acceleration for \$19

While S3 puts video acceleration on its high-end controllers, Alliance Semiconductor (San Jose, Calif.) has brought video to the low end as well. The company has announced the ProMotion-3210, which performs image scaling, anti-aliasing, and YUV-to-RGB conversion, features that S3 includes in its Vision line. The Alliance chip includes a full-featured graphics engine as well.

The 3210 uses a 32-bit interleaved DRAM memory system to achieve bandwidth similar to a full 64-bit frame buffer. It connects to either PCI or VL-Bus. The chip is currently sampling, and Alliance expects it to reach volume production by October. In quantities of 25,000, the chip sells for just \$19.

The ProMotion part is certainly no match for the \$45-and-up S3 products. As a standard graphics accelerator, the 3210 will not achieve the same performance, due to its interleaved memory and less-powerful engine. S3 also provides more video features. But video acceleration is desired even at the low end, and Alliance is one of the first to deliver adequate video at the same price as a low-end graphics-only accelerator.