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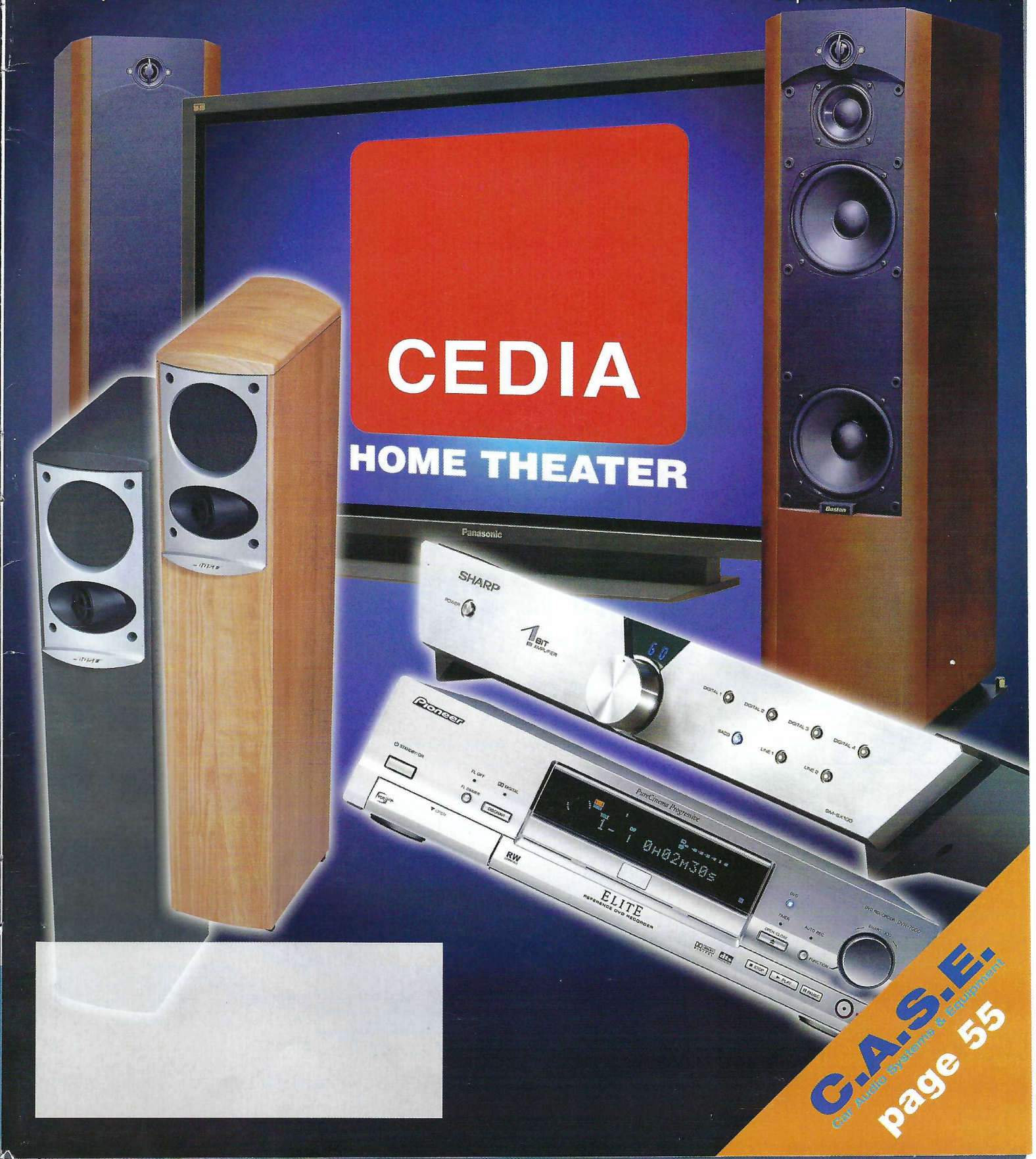

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SHARP'S SD-AT100 FAMILY HOME THEATER SYSTEM, ENDOWED WITH 1-BIT TECHNOLOGY

High-Performance Amps

NEW AMPLIFIER TECHNOLOGIES ARE PAVING THE WAY FOR BOTH HIGHER PERFORMANCE AND MORE STYLISH DESIGN

COMPANIES SUCH AS SHARP, TEXAS INSTRUMENTS and Cirrus Logic have made notable advances in digital amplifier designs, capable of impressive power output, full-range response and high efficiency. This exciting technology will enable retailers to deliver slim, modern-looking electronic components with the potential for tremendous sonic performance and a high sense of style.

"A Sharp 1-bit digital amplifier is nothing more than a high-powered digital-to-analog converter," explained Mark Knox, director of digital media devices at Sharp. "We have built a system that will play any source, from a PCM disc (post code modulation — refers to the traditional CD format) to a modern SACD disc. We start with either a stereo or multi-channel source in the digital domain. The data for each channel is converted to the SACD format, sampled at a rate of either 2.8 MHz or 5.6 MHz (depending on the product model), which is 64 or 128 times faster (respectively) than the sampling rate of a Compact Disc. The amplifier simply increases the amplitude of that high-speed digital signal and delivers it to the loudspeakers through a high-power low-pass filter. A loudspeaker, by the nature of how a transducer works, actually performs most of the digital-to-analog conversion simply due to the fact that no cone or diaphragm can move at a rate of 2.8 or 5.6 million times per second. Although this is a gross oversimplification of the 1-bit technology, it paints a reasonable picture of how the system works."

Sharp's goal with 1-bit is to accurately reproduce music. "Producers and musicians alike have commented to us that 1-bit remains more true to the actual sound of the instrument," said Knox. "1-bit digital recording systems are now being utilized by many recording studios, and portable One-bit recording devices are soon to follow," he added. "We are just beginning the process of changing the way music is recorded, played back, and received by consumers. 1-bit will allow us to increase fidelity while simultaneously decreasing size, weight, and power consumption. The 1-bit design requires approximately 30% less consumption for equal output in comparison to a traditional class A/B amplifier design." Thirty-six of the top audio manufacturers have joined to form the 1-bit audio consortium, indicating that they anticipate a bright future for the technology. "I expect that there will be a number of announcements at the upcoming CES (2003) highlighting new 1-bit licensing agreements with a host of CE manufacturers," Knox reported.

In addition to interest in the format from other camps, Sharp has branded a selection of 1-bit products bearing their own name, such as the SD-SG11 compact shelf system, the SD-SH111 and SD-AT100 home theater products, and the SD-EX100 and SD-EX101

BY MICAH SHEVELOFF

PANASONIC'S SA-XR10 HOME THEATER RECEIVER, CARRYING TEXAS INSTRUMENTS' DIGITAL AMPLIFIER TECHNOLOGY

(model numbers denoting black or silver finish) integrated systems. "When Sharp first introduced products containing the 1-bit digital audio amplification technology in 1999, they were targeted towards the dedicated audiophile who had the physical and fiscal resources to own a state-of-the-art audio system," said Knox. "Now, the SD-EX100 and SD-EX101 offer nearly the same incredible performance in compact, easy-to-install, integrated systems." Both models will carry MSRPs of $499.95.

The SD-AT100 and the SD-SH111 are the first to combine a multi-channel 1-bit digital amplifier with a built in DVD/CD player and Dolby Digital surround

THESE NEW DIGITAL AMPLIFIERS ARE CAPABLE OF IMPRESSIVE POWER OUTPUT, FULL-RANGE RESPONSE AND HIGH EFFICIENCY

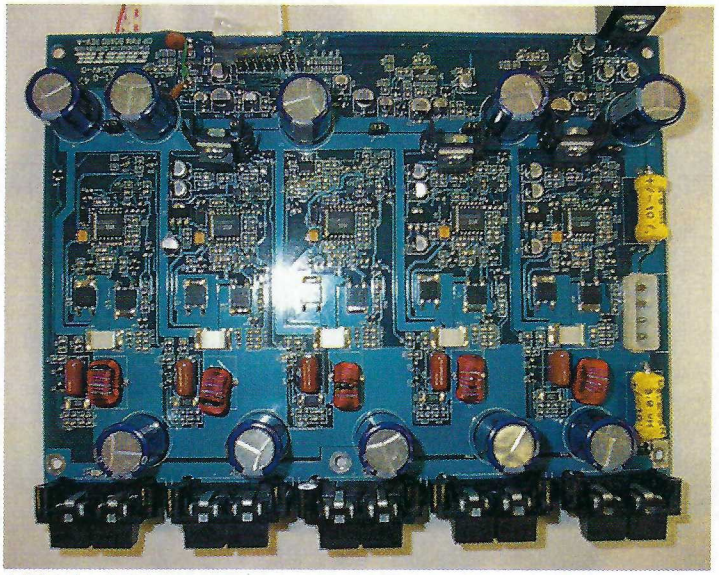
sound. (The SD-AT100 comes with six speakers, and samples audio signals at a rate of 2.8 MHz. The SD-SH111 comes with no speakers, but has upgraded hardware such as gold-plated binding posts for all six outputs, and the faster processor that samples at 5.6 MHz.) "Our 1-bit home theater systems provide six powerfully accurate amplifier channels, a precise DVD source component and complete A/V decoding and control in a compact package that is cosmetically compatible with Sharp's advanced display products," added Knox. Both units feature 25 watts per channel, an integrated CD/DVD system, and an AM/FM tuner. MSRP for either unit is $1,799.95. Sharp also expects to deliver a 1-bit powered five-channel (50 watts per channel) integrated CD/DVD receiver called the SD-AT50 in October. The product is slated to reach stores with an MSRP of $799.95.

TI'S TAKE ON DIGITAL AMPS

Texas Instruments has also focused on the development of digital amplifier products, and fully expects to find success in the automotive and portable audio categories as well as with home entertainment devices. "We already have achieved production levels that allow us to be competitive in price versus traditional A/V amplifiers, especially when considering the reduced shipping costs of finished goods built with lighter power supplies and heat sinks," commented Niels Anderskouv, director, digital audio group at Texas Instruments. Anderskouv added that an amplifier with more than 100dB of dynamic range that is fully digital and requires no negative feedback loop is quite revolutionary. "There are no slew rate limitations, and the amplifiers accept a direct digital signal from a CD, DVD-A or SACD," added Anderskouv. "The technology supports all formats." Anderskouv credited TI's success in developing these products due in part to expertise that came on board when the electronics giant purchased two smaller specialist companies; Burr Brown and Toccata. Texas Instruments currently manufactures 15-watt, 30-watt, 50-watt and 100-watt versions of its full-frequency digital amplifiers. The 15-watt version is slated mostly for applications such as digital and flat-panel TV. "The power consumption of these devices is much lower than conventional analog amplifier circuits — a vitally important advantage in Japan and Europe, where the cost of energy is much higher than it is in the U.S.," added Anderskouv, who noted that their designs can operate at full power and create almost no heat. The TI digital amplifiers have been tested to be more than 90% efficient.

PANASONIC'S PLASMA PARTNER

Panasonic has introduced an advanced home theater receiver called the SA-XR10, featuring a 6-x-100-watt digital amplifier sourced from Texas Instruments. "The digital amp was the key ingredient that enabled Panasonic to produce a receiver that is only 2" tall, and yet delivers unbelievable power and sound quality," reported Jim Kiczek, national marketing manager, Panasonic home audio products. "We expect the SA-XR10 to be a success with those customers who de-



CIRRUS LOGIC'S CS44211 FIVE-CHANNEL AMPLIFIER BOARD

sire high performance in a package that is very cool-looking. The SA-XR10 would be a great component to use in conjunction with a plasma TV," he added.

Developing digital amplifier products is part of a total entertainment strategy employed by Cirrus Logic, a prominent electronics manufacturer based in Austin, TX. Chip sets manufactured by Cirrus Logic can be found in nine of the top 11 A/V receivers sold today, in addition to their presence in HTIB (home-theater-in-a-box) systems, DVD recordable devices and personal video recorders. "We are enabling the builders of consumer audio products to move ahead efficiently with complete chipset solutions from end to end," explained Jon Maken, Sr., manager, product marketing at Cirrus Logic. "We certainly see a desire from some of our customers, such as Samsung, Apex, Bose, Harman, and Onkyo, for a solution that will allow them to offer consumers a slim, sleek, consumer-friendly single package with loudspeakers that is affordable," added Maken. In response to these trends, Cirrus Logic has created its Digital Power Line, including 50-watt and 100-watt (measured into 8-ohms) digital amplifiers. "These units provide the impact consumers are looking for today with home theater systems," Maken added. The Cirrus Logic architecture uses multiple devices, spreading whatever heat is generated across a larger area, increasing long-term reliability. "The digital amplifiers will lower component cost to consumers because there is less heat sinking required, reducing the overall size and shipping weight of the final products," said Maken.

THE DESIGNER'S VISION OF WHAT THE FUTURE OF AUDIO GEAR SHOULD LOOK LIKE CAN ONLY BECOME A REALITY IF THE 'BIG-BOX' LOOK CAN BE ABANDONED, & THE NEW TECHNOLOGIES ADAPTED TO SLEEK & APPEALING MODERN SHAPES

Maken also urged retailers and custom installers to select carefully when choosing digital amplifier products to sell in their stores. "Bad-sounding components will alienate consumers and could potentially do damage to the overall category," Maken warned. "Cirrus Logic has a hefty patent portfolio, and the objective of the total entertainment strategy is to enable the name-brand manufacturers to offer mainstream price-points for devices that have great sound."

There has been interest in the Japanese market for digital amplifiers, to power headphones and portable audio systems. "There is a pure marketing benefit to being able to offer an end-to-end, or 100% digital, solution," Maken said. "Even in a portable system, if the source is digital and the amp is digital, consumers in Japan appreciate the fact that everything has been done digitally. It is a great marketing tool," he added. The primary focus for Cirrus Logic is home and portable audio, although Maken conceded that automotive audio products would certainly benefit from the digital technology. "Our position as a leading supplier of digital audio solutions is based on the success of our digital-to-analog converters, video and DVD processors, and our complete DVD player on a board. The Digital Power Line will enable Cirrus Logic to offer total entertainment solutions to leading audio manufacturers."

THE DESIGNER'S VISION

The designer's vision of what the future of audio equipment should look like can only become a reality if the "big-box" look can be abandoned, and the new technologies adapted to sleek and appealing modern shapes. And this newfound design flexibility is a direct result of advancements such as the digital amplifier, combining high-quality sonic performance with groundbreaking levels of efficiency.